Trial decision

Invalidation No. 2017-800134

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The case of trial regarding the invalidation of Japanese Patent No. 3884028, entitled "Wide and Flat-bottomed Grab Bucket for Dredging", between the parties above has resulted in the following trial decision.

Conclusion

The trial of the case was groundless. The costs in connection with the trial shall be borne by the Demandant.

Reasons

No. 1 History of the procedures

A patent application for the invention according to Claims 1 to 4 of Japanese Patent No. 3884028 (hereinafter referred to as "the Patent") of the case was filed on May 24, 2004, and the establishment of patent right was registered on November 24, 2006. Then, in the procedure of the trial of Invalidation No. 2010-800231 (hereinafter, referred to as "Other Trial") according to the Patent No. 3884028, in accordance with the provisions of Article 134-3(5) of the Patent Act, it was considered that a request for correction was filed on December 1, 2014 by referring to the corrected scope of claims and the corrected specification attached to the rewritten request of Correction No. 2014-390124, and it was acknowledged to be corrected by the fourth trial decision (dated October 6, 2017) of the Other Trial.

The subsequent procedures are as follows.

1 Dated October 12, 2017 (Posted on October 13, 2017) Submission of Written request for trial and Evidence A No. 1 to Evidence A No. 17

2 Dated November 27, 2017 (dispatched on November 29, 2017) Notice of procedure suspension

3 Dated June 5, 2018 (dispatched on June 8. 2018) Notice of cancellation of procedure suspension

4 Dated August 7, 2018 Submission of Written reply and Evidence B No. 1 and Evidence B No. 2

5 Dated October 30, 2018 (dispatched on November 1, 2018) Notification of matters to be examined

6 December 12, 2018 Submission of Oral proceedings statement brief and Evidence A No. 18 to Evidence A No. 25-2 (Demandant)

7 Dated January 16, 2019 Submission of Oral proceedings statement brief (Demandee)

8 February 6, 2019 Oral proceeding

9 Dated February 20, 2019 Submission of Written statement (Demandee)

10 Dated March 6, 2019 Submission of Written statement (Demandant)

No. 2 The patent invention

The patent invention is corrected by the request for correction as follows.(Hereinafter, the invention according to Claim 1 is referred to as "Patent Invention 1" and the invention according to Claim 2 is referred to as "Patent Invention 2".)

"[Claim 1]

A wide and flat-bottomed grab bucket for dredging used for thin layer slime dredging construction, which journals an upper sheave to an upper frame coupling a handing rope, journals a lower sheave to a lower frame rotatably journaling a pair of left and right shells at both side places in a side view, rotatably journals lower end portions of left and right tie rods to the shells and upper end portions to the upper frame respectively, and winds an opening/closing rope between the upper sheave and the lower sheave to allow the shells to open and close,

wherein the shells have a wide flat-bottomed structure without a claw; shell covers are closely contacted on the upper parts of the shells; air vent holes are formed on a part of the shell covers, the air vent holes attached with lid bodies having opening/closing type rubber lids that open upward to drain water upward when descending underwater while expanding the shells to left and right sides, open upward as inner pressure rises also when the shells grip articles to be gripped above a predetermined capacity, and are closed by external pressure when the grab bucket moves underwater; and if a distance between axes of the tie rods journaling the shells in a front view is assumed to be 100, a width inner dimension of the shell in the side view is made 60 or more, both end portions of the shells bulge outward from the tie rods in the side view, both end portions of the shells bulge outward from the lower frame in the side view, and both end portions of the shells bulge outward from shafts journaling the lower frame and the shells in the side view (also, the front view is viewed from the axial direction of the shaft journaling the shells and the lower frame, and the side view is a view of the shaft journaling the shells and the lower frame from the side part of the axial direction).

[Claim 2]

The wide and flat-bottomed grab bucket for dredging according to Claim 1, wherein the shell covers are composed of shell cover upper stages, shell cover middle stages, and shell cover lower stage which are symmetrical, and a plurality of lid bodies are arranged between the shell cover upper stages and the shell cover middle stages."

No. 3 Outline of the Demandant's allegation and Means of proof

The Demandant submitted Evidence A No. 1 to Evidence A No. 17 as means of proof with a written request for trial.

Also, Evidence A No 18 to Evidence A No. 25-2 were submitted with an oral proceedings statement brief dated December 12, 2018.

Furthermore, a written statement dated March 6, 2019 was submitted.

1. Outline of the Demandant's allegation

The outline of reasons for invalidation of the Demandant's allegation is as

follows.

• Since Patent Invention 1 could have easily been invented by applying Well-known art 1 disclosed in Evidence A No. 8, A No. 11, A No. 12, A No. 15, and A No. 16, Well-known art 2 disclosed in Evidence A No. 8, A No. 9, A No. 10, A No. 11, and A No. 16, matters substantially described in Evidence A No. 7, Publicized prior art disclosed in Evidence A No. 12 and Evidence A No. 13, Publicized prior art disclosed in Evidence A No. 9, A No. 10, and A No. 11, and Well-known art 3 disclosed in Evidence A No. 8, A No. 15, A No. 16, and A No. 17 to the invention described in Evidence A No. 7, the Appellant should not be granted a patent for the invention according to Claim 1 of the present application in accordance with the provisions of Article 29(2) of the Patent Act. Thus, the patent falls under Article 123-1 (2) of the Patent Act, and should be invalidated.

• Since Patent Invention 2 could have easily been invented by applying Well-known art 1 disclosed in Evidence A No. 8, A No. 11, A No. 12, A No. 15, and A No. 16, Well-known art 2 disclosed in Evidence A No. 8, A No. 9, A No. 10, A No. 11, and A No. 16, matters substantially described in Evidence A No. 7, Publicized prior art disclosed in Evidence A No. 12 and Evidence A No. 13, Publicized prior art disclosed in Evidence A No. 9, A No. 10, and A No. 11, Well-known art 3 disclosed in Evidence A No. 8, A No. 15, A No. 16, and A No. 17, and Publicized prior art disclosed in Evidence A No. 15, A No. 16, and A No. 17, and Publicized prior art disclosed in Evidence A No. 14-1 to the invention described in Evidence A No. 7, the Appellant should not be granted a patent for the invention according to Claim 2 of the present application in accordance with the provisions of Article 29(2) of the Patent Act. Thus, the patent falls under Article 123-1 (2) of the Patent Act, and should be invalidated.

2 Means of proof

Evidence A No. 1: Patent publication of the case (Japanese Patent No. 3884028)

Evidence A No. 2: Warning letter from the Demandee to the Demandant

Evidence A No. 3: The determination 2011 (Gyo-Ke) 10414 (the First court decision)

Evidence A No. 4: The written request for trial for correction (Correction No. 2014-390124)

Evidence A No. 5: The written trial decision dated June 26, 2015 (the Third trial decision)

Evidence A No. 6: The determination 2015 (Gyo-Ke) 10419 (the Second court decision) Evidence A No. 7: Microfilm of Japanese Utility Model Application No. S50-170996

(Japanese Unexamined Utility Model Application Publication No. S52-83327)

Evidence A No. 8: Japanese Unexamined Patent Application Publication No. 2000-328594

Evidence A No. 9: Japanese Unexamined Patent Application Publication No. H9-151075

Evidence A No. 10: CD-ROM of Japanese Utility Model Application No. H4-49043 (Japanese Unexamined Utility Model Application Publication No. H6-1457)

Evidence A No. 11: Article introducing the 18th Ryuomaru owned by Daio Construction Co., Ltd in "Work vessel No. 243" issued by The Japan Workvessel Association

Evidence A No. 12: Microfilm of Japanese Utility Model Application No. S62-128283 (Japanese Unexamined Utility Model Application Publication No. S64-32888)

Evidence A No. 13: United States Patent No. 5553404 Specification

Evidence A No. 14-1: Design drawing for DAIGO KOUGYO, which is created by KOEI IRON WORKS CO., LTD., which is the Demandee

Evidence A No. 14-2: Drawing comparing the design drawing of Evidence A No. 14-1 and FIG. 3 of the Patent (Evidence A No. 1)

Evidence A No. 14-3: The homepage of DAIGO KOUGYO printed on a paper medium Evidence A No. 15: Registered Utility Model Publication No. 3046423

Evidence A No. 16: The homepage of TOA CORPORATION printed on a paper medium

Evidence A No. 17: Article entitled "Sealed Horizontal Excavating Grab Bucket" published in "Work vessel" No. 95 issued by The Japan Workvessel Association

Evidence A No. 18: United States Patent No. 2129158 Specification

Evidence A No. 19: Microfilm of Japanese Utility Model Application No. S49-52222 (Japanese Unexamined Utility Model Application Publication No. S50-141937)

Evidence A No. 20: Written statement of Mr. Kenzo UEMURA

Evidence A No. 21-1: The homepage of Keihin Kowan Koji CO.LTD. printed on a paper medium

Evidence A No. 21-2: Drawing that KOEI IRON WORKS CO., LTD. created on March 13, 2007

Evidence A No. 21-3: Drawing that KOEI IRON WORKS CO., LTD. created on April 12, 2011

Evidence A No. 21-4: Drawing that KOEI IRON WORKS CO., LTD. created on April 2, 2011

Evidence A No. 21-5: Drawing that KOEI IRON WORKS CO., LTD. created on

February 18, 1999

Evidence A No. 21-6: Drawing that KOEI IRON WORKS CO., LTD. created on March 19, 2012

Evidence A No. 22-1: The homepage of SHIRAKAI printed on a paper medium

Evidence A No. 22-2: The homepage of SHIRAKAI printed on a paper medium

Evidence A No. 23-3: Drawing that MINOTSU IRON WORKS Co. Ltd. created on August 4, 2009

Evidence A No. 22-4: Drawing that KOEI IRON WORKS CO., LTD. created on October 7, 1994

Evidence A No. 22-5: Drawing that MINOTSU IRON WORKS Co. Ltd. created on April 28, 2016

Evidence A No. 22-6: Drawing created by SHIRAKAI (the creation date is unknown)

Evidence A No. 23-1 to A No. 23-18: Photographs of a grab bucket for dredging taken by the Demandant on December 5, 2018

Evidence A No. 24: Comparison drawing of Evidence A No; 14-1 and Evidence A No.

23-14, that the Demandant created on December 5, 2018

Evidence A No. 25-1: Instruction of take-up bucket

Evidence A No. 25-2: Receipt of a bucket and a bucket stand

No. 4 Outline of the Demandee's allegation and Means of proof

Against this, the Demandee submitted Evidence B No. 1 and Evidence B No. 2 as means of proof with a written reply dated August 7, 2018.

Also, the Demandee submitted an oral proceedings statement brief dated January 16, 2019.

Furthermore, the Demandee submitted a written statement dated February 20, 2019.

1 Outline of the Demandee's allegation

The outline of the Demandee's allegation is as follows.

 \cdot The request of the case should be dismissed as an illegal request violating Article 167 of the Patent Act, or at least should be rejected as violation of the principles of good faith. (See Written reply, page 10, lines 19 to 21.)

 \cdot Even if examining each of sub cited documents alleged by the Demandant, it merely reaches Patent Inventions 1 and 2 starting from Invention A-7, and there is no easily-

conceived property. (See Written reply, page 49, lines 2 to 4, and page 54, line 12 to page 55, line 17.)

2 Means of proof

Evidence B No. 1: The determination 2017 (Gyo-Ke) 10202 (the Third court decision) Evidence B No. 2: Description of evidence 2

No. 5 Judgment by the body

No. 5-1 Regarding Article 167 of the Patent Act

In procedures for Other Trial relating to Patent No. 3884028, Evidence A No. 7 that is the primary cited document of the invalidation trial of the case was not submitted.

Further, since Evidence A No. 7 that is the primary cited document of the invalidation trial of the dame describes "a check valve 5 of a cover lid 2" that is not described in the primary cited documents of Other Trial (Evidence A No. 8 and Evidence A No. 9 of the invalidation trial of the case), and it can be said that Evidence A No. 7 is a evidence worth proving new facts, the evidence of the invalidation trial of the case and Other Trial is substantially different.

Therefore, the request for trial of the case does not violate the provisions of Article 167 of the Patent Act. Further, the Patent Act has no provisions that a request for trial is rejected on the ground of violation of the principles of good faith.

No. 5-2 Regarding Article 29(2) of the Patent Act (inventive step)

1 Regarding Evidence A No. 7 to Evidence A No. 25-2

(1) Description of Evidence A No. 7, matters described in Evidence A No. 7, and Invention A-7

Evidence A No. 7, regarding "Contamination Preventive Device in Bucket for Dredging," describes the following matters along with figures. (The underlines are added by the body; further, "ditch drilling" described in Evidence A No. 7 is considered to be an error of "excavating," and is hereinafter referred to as "excavating".)

A "Title of the device

Contamination Preventive Device in Bucket for Dredging" (Specification, page 1, lines 2 to 3)

B "Claim of Utility Model

A contamination preventive device in a bucket for dredging, wherein a cover lid 2 is provided at upper ends of a pair of shells 1 that open and close using a spindle 3 as a fulcrum, and a check valve 5 that can open and close using a shaft 4 as a fulcrum is provided on both of the cover lids 2." (Specification, page 1, lines 4 to 9)

C "Detailed Description of Device

The device is related to the contamination preventive device in a bucket for dredging, and the purpose thereof is to provide a bucket for dredging capable of effectively preventing the contamination of seawater and river water due to dredging work, thereby preventing the contamination pollution of seawater, river water, etc.

In the dredging construction of harbors, rivers, etc., although dredging work may be performed using the conventional clam shell bucket, there is no countermeasure against water pollution, rather than the contamination of water that occurs when excavating a bottom of the water, when excavated earth and sand are lifted from a water surface, the earth and sand that flow out with the water make the surface of the water more contaminated, and a wide range of water bodies is contaminated due to long-term continuous work. Accordingly, it also causes enormous damage to fisheries.

In order to solve the defect, a bucket is provided with a cover lid and the cover lid is equipped with a check valve to prevent the contamination of seawater, etc." (Specification, page 1, line 10 to page 2, line 9)

D "An example of the device will be explained with reference to the drawings, as follows.

That is, in the device, a pair of shells 1 opening/closing (rotating) using a spindle 3 as a fulcrum are provided with a cover lid 2 equipped with a check valve 5, and for example, as described in FIG. 1 to FIG. 4, the cover lid 2 is provided at an upper end portion of the shell 1, and the cover lid 2 is provided with the check valve 5 opening/closing (rotating) using a shaft 4 as a fulcrum.

In the bucket of the device, as illustrated in FIG. 1 to FIG. 4, as described above, the pair of shells 1 having the cover lids 2 equipped with the check valves 5 is provided with claws 6 at the lower ends, the shell 1 is assembled by the spindle 3 together with a weight 1a, an arm 7a fixed to an upper sheave box 7 and an arm 8journaled to the box 7 are connected to the upper end portions of the shells 1 with pins 9a and 9. The box 7 is provided with an upper sheave 10 and a guide roller 1 (Trial Decision's note: an error of "12"), and the weight 1a is provided with a lower sheave 11. A supporting wire 14 is attached to an upper part of the box 7 to suspend the whole of the bucket, and an opening/closing wire 15 is inserted from the guide roller 12, is wound around the lower sheave 11 and the upper sheave 10 so as to make two round trips, and fixed by a wire fixing bracket 13. The shells 1 are closed if hoisting the opening/closing wire 15, and are opened if lowering it.

In drawings, reference numeral 16 is an excavation surface, and reference numeral 16a is earth and sand." (Specification, page 2, line 10 to page 3, line 15)

E "The device is configured as described above, and the usage state and action of the bucket provided with the device are as follows.

That is, first, the supporting wire 14 suspends the whole of the bucket, and the opening/closing wire 15 is loosened. <u>The shell 1 is lowered into the water in an open</u> state, and at that time, as illustrated in FIG. 1, the check valve 5 is pushed up by pressure with the shaft 4 as a fulcrum, and the bucket is landed on the excavation surface 16 (sea bottom surface, river bottom surface, etc.) while removing air remaining in the shell 1. <u>Next</u>, the supporting wire 14 is stopped at that position, and the opening/closing wire 15 is hoisted to excavate with the claw 6 of the shell 1, as illustrated in FIG. 2. After the excavation is finished and the shell 1 (see FIG. 3) closes, while slightly loosening the supporting wire 14, the tension of the opening/closing wire 15 pulls the bucket up to the sea (water) and discharges the soil to a predetermined place.

In this case, since the check value 5 is closed to the cover lid 2 of the shell 1, the excavated earth and sand are completely confined in the shell 1 passing though the sea surface (water surface), and the outflow of earth and sand does not occur.

In this device, since the shell is provided with the cover lid equipped with the check valve that can be opened and closed, as described above, the check valve automatically acts to discharge air and close the cover lid, and the excavated earth and sand are stored in a sealed state in the shell closed with the cover lid with the check valve, so that the outflow of earth and sand does not occur also when the bucket is pulled up.

Therefore, the device rationally and effectively solves the contamination of river water and seawater in the conventional bucket for dredging by an extremely simple means. Further, in the adoption of the device, it is not necessary to modify the body of the bucket; the purpose can be fully achieved by simply modifying a part of the bucket, so that it is economical with a conventional bucket available. Even if adopting the invention, there is no risk of reducing the efficiency of dredging work, which is convenient. Furthermore, since the device can completely prevent the contamination pollution that naturally occurs in dredging work with a simple structure, it contributes significantly to the improvement of the dredging work and has a remarkable practical value." (Specification, page 3, line 16 to page 5, page 17)

F "Brief description of drawings

Drawings illustrate one embodiment of the device, <u>FIG. 1 is an explanatory view</u> illustrating a state of lowering and landing of a bucket for dredging that is equipped with the device, FIG. 2 is an explanatory view illustrating an excavation state by the bucket, and FIG. 3 and FIG. 4 are explanatory views illustrating a pulling-up state of the <u>bucket.</u>" (Specification, page 5, line 18 to page 6, line 4)

G FIG. 1 shows the bucket in a state that the shell 1 opens and the check valve 5 opens, FIG. 2 shows the bucket in a state that the shell 1 opens and the check valve 5 closes, and FIG. 3 shows the bucket in a state that the shell 1 closes and the check valve 5 opens. FIG. 4 shows a side view of the bucket for dredging.

H Referring to FIG. 1 to FIG. 4, the upper sheave box 7 is supported by the supporting wire 14. The upper sheave 10 is journaled to the upper sheave box 7. The lower sheave 11 is journaled to the weight 1a rotatably journaling the pair of left and right shells 1 and 1 at both side places in a side view. Of the left and right arms 7a and 8, one arm 7a is fixed to the upper sheave box 7, and the other arm 8 is pivotally attached to the upper sheave box 7. The lower end portions of both arms 7a and 8 are journaled to the shells 1. The opening/closing wire 15 is wound around between the upper sheave 10 and the lower sheave 11 to configure the shells so as to open/close.

I Referring to FIG. 4, in a side view, both end portions of the shells 1 bulge outward from the arms 7a and 8.

J Referring to FIG. 4, in a side view, the bottom portion of the shell 1 is flat and the claw 6 is provided on a lower side of the bottom portion of the shell 1.

Therefore, taking together the descriptions of A to J above and the drawings, it is recognized that Evidence A No. 7 describes the following invention (hereinafter, referred to as "Invention A-7").

"A flat-bottomed grab bucket for dredging used for dredging construction, which journals an upper sheave 10 to an upper sheave box 7 coupling a supporting wire 14, journals a lower sheave 11 to a weight 1a rotatably journaling a pair of left and right shells 1 at both side places in a side view, rotatably journals a lower end portion of one arm 8 of left and right arms 7a and 8 to the shell 1, rotatably journals an upper end portion to the upper sheave box 7, rotatably journals a lower end portion of the other arm 7a to the shell, fixes an upper end portion to the upper sheave 15 between the upper sheave 10 and the lower sheave 11 to allow the shells 1 to open and close,

wherein the shells 1 have a flat-bottomed structure with a claw;

cover lids 2 are provided at the upper end portions of the shells 1;

openings for venting air are formed on a part of the cover lids 2, the openings attached with opening/closing type check valves 5 that open upward to drain air upward when descending underwater while expanding the shells to left and right sides, and are closed when the bucket is pulled up to the sea; and

both end portions of the shells 1 bulge outward from the arms 7a and 8 in a side view (also, a front view is viewed from the axial direction of a spindle 3 journaling the shells 1 and the weight 1a, and the side view is a view of the spindle 3 journaling the shells 1 and the weight 1a from the side part of the axial direction)."

(2) Description of Evidence A No. 8, matters described in Evidence A No. 8 and Invention A-8

Evidence A No. 8 describes the following matters with drawings, concerning "Clamshell Bucket for dredging"

A "[Claim 1] A clamshell bucket for dredging which is provided with a right bucket and a left bucket so as to rotate about support shafts of lower end portions of left and right arms whose upper ends are journaled to a machine body suspended by a suspension rope from a crane, unites inside end edges of opening surfaces of the left and right buckets by a pivot, and raises and lowers the pivot with an opening/closing wire of a crane to open/close and move the left and right buckets, thereby dredging earth and sand on the seabed,

wherein a part other than the opening surfaces of the left and right buckets is made to have a sealed structure; a sealing packing is attached to a mating portion of the opening surfaces of the left and right buckets; and air vent ports and air vent doors for opening and closing the air vent ports are provided near the support shafts of the left and right buckets, the air vent doors configured to be at positions for opening the air vent ports when the left and right buckets open, and to be at positions for closing the air vent ports when the left and right buckets close."

B "[0001]

[Field of the Invention] <u>The present invention relates to a clamshell bucket for scooping</u> <u>up earth and sand, sludge, etc. on the seabed and dredging them</u>."

C "[0002]

[Conventional Art] A clamshell bucket dredges earth and sand at the cutting edge of a bucket and the bottoms of left and right buckets in a clam shell bucket, and picks it up on an earthen carrier.

[0003] Conventional examples of the clamshell bucket are shown in FIG. 5 to FIG. 8. FIG. 5 and FIG. 6 are front and side views with the bucket open, and FIG. 7 and FIG.8 are front and side views with the bucket closed.

[0004] In these figures, reference numeral 1 is a machine body, reference numerals 2 and 3 are left and right arms whose upper ends are journaled to the machine body 1, reference numerals 4 and 5 are left and right buckets provided so as to rotate around the support shafts 6 and 7 at lower end portions of the left and right arms 2 and 3, reference numeral 8 is a pivot that unites inside end edges of opening surfaces of the left and right buckets 4 and 5, reference numeral 9 is a pulley mechanism for raising and lowering the pivot 8, reference numeral 10 is a suspension wire from a crane, and reference numeral 11 is an opening/closing wire also from the crane.

[0005] In this conventional clamshell bucket, as shown in FIG. 5, the left and right buckets 4 and 5 are dropped to the seabed with the left and right buckets 4 and 5 fully opened, and the opening/closing wires 11 are operated to close the left and right buckets 4 and 5 to scoop the seabed sediment. Next, the suspension wire 10 is operated to pull up the left and right buckets 4 and 5 with the left and right buckets 4 and 5 closed as shown in FIGS. 7 and 8, and the left and right buckets 4 and 5 are opened on the earth carrier to load the earth and sand."

D "[0009] An object to be solved by the present invention is to prevent sludge and swage once scooped up in a bucket from being dropped or spilled into the sea, and to eliminate buoyancy and sludge hoisting due to air accumulated in the bucket."

E "[0013] FIGS. 1 to 4 show an embodiment of the present invention, FIG. 1

is a front view of the bucket closed, FIG. 2 is a side view thereof, FIG. 3 is a front view of the bucket opened, and FIG. 4 is a side view thereof.

[0014] In these figures, the same components as those of the conventional example are designated by the same reference numerals and repeated description thereof will be omitted.

[0015] The feature of this embodiment is that the left and right buckets 4 and 5 of the clamshell are completely box-shaped so that they are grounded on only one surface (opening surface). D-shaped rubber members (sealing packings) 12 are provided on the upper surfaces of the buckets 4 and 5, and the buckets 4 and 5 are opened and closed to compress and seal the buckets 4 and 5. Further, large air vent ports 13 and air vent doors 14 are installed on the left and right back surfaces of the buckets 4 and 5. The air vent door 14 has a platy shape in this embodiment, and its upper end is rotatably configured by a horizontal shaft.

[0016] According to this embodiment, as shown in FIG. 3, when the suspension wires 10 are operated with the left and right buckets 4 and 5 open and the buckets 4 and 5 are dropped into the sea, the air vent doors 14 provided on the bottom portions (upper portions during falling) of the buckets 4 and 5 are located at substantially vertical positions to open the air vent ports 13, and the air at the bottom portions of the buckets 4 and 5 is completely evacuated while falling in the sea. When the buckets 4 and 5 reach the seabed, the cutting edges of the buckets 4 and 5 scoop sludge by operating the opening/closing wires 11, and when the buckets 4 and 5 are closed, the D-shaped rubber members 12 completely seal the mouths of the buckets 4 and 5, and as shown in FIG. 1, the air vent doors 14 also close the air vent ports 13 to completely seal the buckets 4 and 5."

Further, according to the descriptions of A to E above and the drawings, Evidence A No. 8 describes the following matters.

F According to the descriptions of FIG. 2 to FIG. 4, the left and right buckets 4 and 5 are journaled to the sheave mechanism 9 so as to open/close at both side places in a side view.

G According to the descriptions of FIG. 1 to FIG. 4 and common general knowledge, an upper sheave (without a reference numeral) around which the opening/closing wire 11 is wound is journaled to the machine body 1, and a lower sheave (without a reference numeral) around which the opening/closing wire 11 is

wound is journaled to the pulley mechanism 9.

H According to the descriptions of FIG. 1 to FIG. 4, the left and right buckets 4 and 5 have a flat-bottomed structure without a claw.

I According to the descriptions of FIG. 1 to FIG. 4, both end portions of the left and right buckets 4 and 5 bulge outward from the left and right arms 2 and 3 in a side view.

J According to the descriptions of E above, FIG. 1 to FIG. 4, and common general knowledge, upper surfaces of the left and right buckets 4 and 5 are configured on upper parts of the left and right buckets 4 and 5, and a member configuring the left and right buckets 4 and 5 in a box-shape is located close thereto.

Therefore, taking together the descriptions of A to J and the drawings, it is recognized that Evidence A No. 8 describes the following invention (hereinafter, referred to as "Invention A-8").

"A flat-bottomed grab bucket for dredging used for slime dredging construction, which journals an upper sheave to a machine body 1 coupling a suspension wire 10, journals a lower sheave to a pulley mechanism 9 rotatably journaling a pair of left and right buckets 4 and 5 at both side places in a side view, rotatably journals lower end portions of left and right arms 2 and 3 to the left and right buckets 4 and 5 respectively and upper end portions to the machine body 1 respectively, and winds an opening/closing wire 11 between the upper sheave and the lower sheave to allow the left and right buckets 4 and 5 to open and close,

wherein the left and right buckets 4 and 5 are configured to have a wide flatbottomed structure without a claw; upper surfaces of the left and right buckets 4 and 5 are configured on upper parts of the left and right buckets 4 and 5, and a member configuring the left and right buckets 4 and 5 in a box-shape is located thereon; and both end portions of the left and right buckets 4 and 5 bulge outward from the left and right arms 2 and 3 in a side view".

(3) Description of Evidence A No. 9, matters described in Evidence A No. 9 and Invention A-9

Evidence A No. 9 describes the following matters with drawings, concerning

"Grab Bucket for Dredging".

A "[Claim 1] A grab bucket for dredging comprising: an upper frame suspended by a suspension rope; a bucket made of a pair of shell portions; a lower frame that journals the pair of shell portions so as to open and close; connection rods that connect the upper frame and the pair of shell portions, respectively; an upper sheave rotatably journaled to the upper frame; and a lower sheave rotatably journaled to the lower frame, wherein the upper sheave is composed of an upper vibration damping sheave and an optional number of upper boosting sheaves that are coaxially journaled; the lower sheave is composed of a lower vibration damping sheave and an optional number of boosting sheaves that are coaxially journaled; an opening/closing rope for opening and closing the buckets is made to be along a rope groove on one side in a foreand-aft direction of the upper vibration damping sheave, is guided to a rope groove on the other side in the fore-and-aft direction of the lower vibration damping sheave, is further wound around the rope groove in a lower half of the lower vibration damping sheave, and is sequentially wound around the upper boosting sheave and the lower boosting sheave; and a terminal thereof is fixed to the upper frame or the lower frame."

B "[0001]

[Field of the Invention] The present invention relates to a grab bucket for dredging. More specifically, the present invention relates to a grab bucket for dredging that expands a bucket suspended from a dredger's crane, scoops earth and sand on the bottom of water, closes the bucket, and unloads the earth and sand on a carrier or the like.

[0002]

[Conventional Art] Hereinafter, a conventional grab bucket for dredging will be described with reference to FIGS. 6 to 9. As shown in FIGS. 6 to 7, a bucket 1 composed of a pair of symmetrically configured shell portions 1A and 1B is rotatably journaled to a lower frame 2 via a shaft 3, and is rotatably journaled to an upper frame 5 via left and right connecting rods 4A and 4B. A predetermined number of sheaves 51 and 52 are rotatably journaled to the upper frame 5 and the lower frame 2, respectively, and an opening/closing rope 8 unwound from a crane winch such as a dredger is wound between these sheaves 51 and 52, after passing through a guide roll unit 53, as shown in FIG. 8. One end thereof is locked to a fixing bracket 9 on the side wall of the upper frame 5".

C "[0005] In view of such circumstances, it is an object of the present invention to provide a grab bucket for dredging in which the initial shaking of the bucket is hardly generated and the rope life of the opening/closing rope is extended".

D "[0006] [Means for solving the problem] The grab bucket for dredging according to Claim 1 is composed of an upper frame suspended by a suspension rope, a bucket made of a pair of shell portions, a lower frame that journals the pair of shell portions so as to open and close, connection rods that connect the upper frame and the pair of shell portions, respectively, an upper sheave rotatably journaled to the upper frame, and a lower sheave rotatably journaled to the lower frame, and is characterized in that the upper sheave is composed of an upper vibration damping sheave and an optional number of upper boosting sheaves that are coaxially journaled; the lower sheave is composed of a lower vibration damping sheave and an optional number of boosting sheaves that are coaxially journaled; an opening/closing rope for opening and closing the buckets is made to be along a rope groove on one side in a fore-and-aft direction of the upper vibration damping sheave, is guided to a rope groove on the other side in the fore-and-aft direction of the lower vibration damping sheave, further is wound around the rope groove in a lower half of the lower vibration damping sheave, and is sequentially wound around the upper boosting sheave and the lower boosting sheave; and a terminal thereof is fixed to the upper frame or the lower frame. In the grab bucket for dredging according to Claim 2, the upper sheave is installed parallel to the fore-and-aft direction of the bucket, the lower sheave is installed so as to intersect the fore-and-aft of the bucket, and the front of the sheave is located close to the right and the rear of the sheave is located close to the right. The rope groove on the front side of the upper vibration damping sheave and the rope groove on the front side of the lower vibration damping sheave are almost at the same position in a plan view. The grab bucket for dredging according to Claim 3 is characterized in that a guide sheave is attached at a position where the opening/closing rope along the rope groove of the upper vibration damping sheave is sandwiched.

[0007] [Embodiments of the invention] Next, embodiments of the present invention will be described with reference to the drawings. FIG. 1 is a side view of a grab bucket for dredging (hereinafter referred to as "the grab bucket") according to an embodiment of the present invention, FIG. 2 is a front view of the grab bucket, FIG. 3 is an explanatory view of a routing path for an opening/closing rope 8, FIG. 4 is a plan view of an upper sheave 11, a lower sheave 12, and a guide sheave 13, and FIG. 5 is an explanatory view of a vibration damping action in the initial hoisting motion of the grab bucket of the present invention.

[0008] In FIGS. 1 and 2, reference numeral 1 is a bucket, which is composed of a pair of symmetrically configured shell portions 1A and 1B, and each of the shell portions 1A and 1B is journaled by the shaft 3 so as to open and close, and is attached to the lower frame 2. Further, the lower ends of the connecting rods 4A and 4B are pin-connected to the shell portions 1A and 1B, respectively, and the upper ends of the connecting rods 4A and 4B are connected to the upper frame. The suspension rope 7 for suspending the entire grab bucket from a crane or the like is connected to the suspension ring 6 of the upper frame 5.

[0009] Two upper sheaves 11 are journaled to the upper frame 5, and two lower sheaves 12 are journaled to the lower frame 2. The upper sheave 11 is composed of one upper vibration damping sheave 11a and one upper boosting sheave 11b, both of which are arranged parallel to the fore-and-aft direction (horizontal direction in FIG. 1 and frontback direction in FIG. 2) of the bucket 1. A small-diameter guide sheave 13 is journaled and attached to the frame 5 at a position facing the rope groove on the front side (rear side) in the fore-and-aft direction of the upper vibration damping sheave 11a. The lower sheave 12 is composed of one lower vibration damping sheave 12a and one lower boosting sheave 12b, both of which intersect with respect to the fore-and-aft direction of the bucket 1 so that the front thereof is located close to the right and the rear thereof is located close to the left. Then, as shown in FIG. 4, in a plan view, a front side rope groove position of the upper vibration damping sheave 11a and a front rope position of the lower vibration damping sheave 12a substantially coincide with each other, a rear side rope groove position of the upper boosting sheave 11b and a rear side rope groove position of the lower vibration damping sheave 12a substantially coincide with each other, and a front side rope groove position of the upper boosting sheave 11b and a front side rope groove position of the lower boosting sheave 12b substantially coincide with each other.

[0010] The opening/closing rope 8 for opening and closing the bucket is wound as follows, between the upper sheave 11 and the lower sheave 12 in the sheave arrangement as described above. That is, as shown in FIGS. 1 and 3, the opening/closing rope 8 suspended from the crane or the like enters between the upper vibration damping sheave 11a and the guide sheave 13, is made to be along the rope groove on the rear side in the fore-and-aft direction of the upper vibration damping sheave 11a, then is guided to the rope groove on the front side in the fore-and-aft direction of the lower vibration damping sheave 12a, is wound around a lower half of the rope groove of the upper vibration damping sheave 11a, and then is wound around around

the upper boosting sheave 11b and the lower boosting sheave 12b in this order. The terminal 8e thereof is locked to a fixing bracket 9 formed on the upper frame 5.

[0011] In the grab bucket of this embodiment, in order to open and close the bucket 1, if the opening/closing rope 8 is unwound from the crane or the like, the bucket is opened by the weight of itself 1 as shown by an imaginary line in FIG. 1. If the opening/closing rope 8 is pulled up, an interval between the upper sheave 11 and the lower sheave 12 is shortened and the bucket 1 is closed".

E "[0016] [Effect of the Invention] According to the invention of Claim 1, although an upward force is generated at the moment when the opening/closing rope is pulled up to close the bucket, since a force generated in the opening/closing rope of the portion wound around the upper vibration damping sheave, and a force generated in the opening/closing rope of the portion wound around the lower vibration damping sheave cancel each other, almost no force is generated to shake the bucket 1 in the fore-and-aft direction at the beginning of closing the bucket 1. ...(remainder omitted)..."

F "[Brief description of drawings]

[FIG. 1] A side view of a grab bucket for dredging according to an embodiment of the present invention

[FIG. 2] A front view of a grab bucket for dredging according to an embodiment of the present invention.

... (omitted) ...

[FIG. 6] A side view of a conventional grab bucket

[FIG. 7] A front view of a conventional gram bucket"

Further, according to A to F above and the drawings, Evidence A No. 9 describes the following matters.

G According to the descriptions of FIG. 1 and FIG. 2, the pair of left and right shell portions 1A and 1B are journaled to the lower frame 2 so as to open and close at both side places in a side view.

H According to the descriptions FIG. 1 and FIG. 2, each shell portion 1A, 1B has a flat-bottomed structure without a claw.

I According to FIG. 1 and FIG. 2, both end portions of the shell portions1A

and 1B bulge outward from the lower frame 2.

Therefore, taken together the descriptions of A to I above and the drawings, it is recognized that Evidence A No. 9 describes the following invention (hereinafter, referred to as "Invention A-9").

"A flat-bottomed bucket for dredging, which journals an upper sheave 11 to an upper frame 5 suspended by a suspension rope 7, journals a lower sheave 12 to a lower frame 2 rotatably journaling a pair of left and right shell portions 1A and 1B so as to open and close at both side places in a side view, makes left and right connecting rods 4A and 4B connecting the pair of left and right shell portions 1A and 1B respectively connect the upper frame 5 and the pair of left and right shell portions 1A and 1B respectively, rotatably journals a lower end portion of one connecting rod 4A to the shell portion 1A and an upper end portion to the upper frame 5, rotatably journals a lower end portion of the other connecting rod 4B to the shell portion 1B, fixes an upper end portion of the other connecting rod 4B to the upper frame 5, winds the opening/closing rope 8 between the upper sheave 11 and the lower sheave 12, opens the shell portions 1A and 1B if the opening/closing rope 8 is unwound, and closes the shell portions 1A and 1B if the opening/closing rope 8 is pulled up,

wherein the shell portions 1A and 1B have a flat-bottomed structure without a claw, and both end portions of the shell portions 1A and 1B bulge outward from the lower frame 2 in a side view".

(4) Description of Evidence A No. 10, matters described in Evidence A No. 10 and Invention A-10

Evidence A No. 10 describes the following matters with drawings, concerning "Grab Bucket".

A "[Claim 1] <u>A grab bucket, characterized in that the mouth width of a shell is</u> formed larger than the opening width thereof."

B "[0001]

[Industrial Application Field]

The present device relates to a grab bucket, and particularly to a grab bucket for loading and unloading gravel and sand, improves stability by making the mouth width wider than the opening width, and enhances operability by reducing a volume-toweight ratio.

[0002]

[Conventional Art]

A grab bucket is used to land gravel or sand loaded on a carrier or the like. This grab bucket is suspended by connecting the grab bucket to a wire rope for lifting that is suspended from a cargo handling crane, and its bottom opens and closes into left and right pieces at the center to take in gravel, etc. in the grab bucket.

[0003]

This grab bucket is usually of a type called a latch arm type. As shown in FIGS. 7 and 8, four arms 23 are rotatably connected to shells 21 and 21 by a shaft 22, a suspension support 27 is supported on an upper end of the arm 23, and the arms 24 and 24 are connected to the shells 21 and 21. The arms 24 and 24 are connected so as to be opened and closed via a shaft 25. Further, one end portion of a latch arm 26 is connected to the shell 21, and is rotatably journaled to the shaft 25 to rotatably journal a pulley 30 to an upper end portion. The pulley 30 has an opening/closing wire rope 31 wound between the pulley 30 and a pulley 29 which is journaled to the suspension support 27. The suspension support 27 is lifted by a lifting wire rope 32".

C "[0005]

[Problem to be Solved by the Device]

However, in the conventional latch arm type grab bucket, a volume-to-weight ratio (weight/capacity) is limited to 2.0, and there are restrictions on the shape beyond this, and thus it is not possible to reduce the weight. Further, since the mouth width L is smaller than the opening width W of the shell and the height H is longer than those, the stability of the grab bucket is low and the grab bucket may fall during work. When the grab bucket falls, the amount of work per hour decreases, and work efficiency is deteriorated".

D "[0007]

Therefore, in view of the above circumstances, the present invention is to provide a grab bucket that enhances the stability by forming the mouth width wider than the opening width in the grab bucket for loading and unloading gravel and sand, and improves operability by decreasing the volume-to-weight ratio. It provides a grab bucket that is smaller and has improved operability.

[0008]

[Means for solving the problem]

In order to solve the above problems, the present invention first provides a configuration of a grab bucket in which the mouth width of the shell is formed to be larger than the opening width. Secondly, the configuration of a grab bucket is provided in which the mouth width of the shell is formed to be larger than the opening width and a ratio of capacity to weight is approximately 1.0. Thirdly, the configuration of a grab bucket is provided in which the mouth width of the shell is formed to be larger than the opening width, a upper frame and a lower frame are provided close to each other, a lower pulley is provided on an upper surface of the lower frame and an upper pulley is provided on a lower surface of the upper frame, and the shell can be opened/closed via these pulleys. Then, by integrating these configurations, the configuration of a gram bucket in which the mouth width of the shell is formed to be larger than the opening width, the ratio of capacity to weight is approximately 1.0, the upper frame and the lower frame are provided close to each other, the lower pulley is provided on the upper surface of the lower frame and the upper pulley is provided on the lower surface of the upper frame, and the shell can be opened/closed via these pulleys".

E "[0009]

[Operation]

According to the present invention having the first configuration, the grab bucket does not fall during work, and work efficiency is improved. ...(omitted)...

[0010]

[Examples]

An embodiment of the present invention will be described below with reference to the drawings. FIG. 1 is a perspective view showing an embodiment of the grab bucket according to the present invention with the shell closed, and FIG. 2 is a perspective view with the shell open. As shown in the figures, both end portions in the opening width direction of the pair of left and right shells 1 and 1 forming a bucket are rotatably journaled to the lower frame 2 by the main shafts 3, 3, and upper end portion of one of the rod arms 4, 4 is rotatably attached to the upper frame 5, and the upper end portion of the other is fixed and connected to the upper frame 5.

...(omitted)...

[0012]

The length L in the mouth width direction of the shell 1 is equal to or longer than

the length W in the opening width direction, and the mouth width is significantly larger than that of the conventional one in terms of dimensions. Therefore, since the mouth width is larger than the opening width, the stability is high, it does not fall during work, and the gripping amount is large".

F "[0016]

Further, as compared with the conventional grab bucket, since the mouth width is larger than the opening width, it is difficult to fall and the loss of cycle time is small, so that efficient work can be performed. ...(omitted)..."

G "[Brief description of drawings]

[FIG. 1] A perspective view showing an embodiment of a grab bucket according to the present invention

[FIG. 2] A perspective view showing a state in which the shell of FIG. 1 is opened

- [FIG. 3] A front view of FIG. 1
- [FIG. 4] A plan view of FIG. 3
- [FIG. 5] A side view of FIG. 3
- [FIG. 6] A side view showing a state in which the shell of FIG. 3 is opened
- [FIG. 7] A front view of a conventional example
- [FIG. 8] A side view of FIG. 7"

Further, according to the descriptions of A to G above and the drawings, Evidence A No. 10 describes the following matter.

H According to the descriptions of FIGS. 1 to 3, both end portions of the pair of left and right shells 1, 1 forming the bucket bulge outward from the rod arms 4, 4 in a side view.

I Concerning Evidence A No. 10, Evidence A No. 6(the Second court decision) describes the following.

"C Regarding the configuration disclosed in Cited Document 2 (Trial Decision's note: Evidence A No. 10 of the case)

(A) Concerning "a distance between axes of the tie rods journaling the shells in a front view" of the Invention, "a front view" refers to one viewed from an axial direction of a shaft journaling a shell and a lower frame ([Claim 1].) In Cited Invention 2, since the spindle 3 journals the shells 1, 1 to the lower frame 2 ([0010]), in [FIG. 1] and [FIG. 2], a distance between the axes of the arm 4 journaling the shell 1 which is viewed from the axial direction of the spindle 3 corresponds to "a distance between axes of the tie rods journaling the shells in a front view".

Further, the width inner dimension of the shell 1 viewed from the axial direction of the spindle 3 corresponds to "a width inner dimension of the shell in the side view" of the Invention, in [FIG. 3], [FIG. 1], and [FIG. 2].

(B) Since the shell rotates around the spindle as a rotation axis and grabs and takes in gravel and sand, it can be said that the width of the opening (opening width W) of the grab bucket is wider than the distance between the two shafts rotatably connected with the shell and the arm (see [FIG. 2]). Then, the distance between the shafts corresponds to the distance between the axes of the arms 4.

Further, as described in B above, since Cited Document 2 discloses the configuration forming the mouth width L of the shell to be larger than the opening width, it can be said that the configuration in which the mouth width L of the shell is made larger than the distance between the axes of the arms 4 that is smaller than the opening width W is disclosed. That is, a configuration is disclosed in which if the distance between the axes of the arms 4 is assumed to be 100, the mouth width L of the shell is larger than 100.

It is obvious that the width inner dimension of the shell 1 viewed from the axial direction of the spindle 3 is smaller than the mouth width L of the shell by the thickness of the shell. However, as mentioned in B above, Cited Document 2 discloses the invention relating to a grab bucket for loading and unloading gravel and sand, and considering its use, as described above, assuming the distance between the axes of the arms 4 is 100, it is difficult to consider that the thickness of the shell will increase as the width inner dimension of the shell 1 obtained by subtracting the thickness of the shell from the mouth width L of the shell which is larger than 100, becomes less than 60.

According to the above, it is recognized that Cited Document 2 discloses 'a configuration in which assuming a distance between the axes of arms 4 corresponding to a distance between the axes between tie rods journaling a shell in a front view as 100, the width inner dimension of the shell in a side view is 60 or more' (Cited Invention 2-2)." (page 63, line 1 to page 64, line 4)

According to the descriptions of A to I above and the drawings, Evidence A No. 10 describes the following invention (hereinafter, referred to as "Invention A-10").

"A configuration in which assuming a distance between the axes of arms 4

corresponding to a distance between the axes between tie rods journaling a shell in a front view is 100, the width inner dimension of the shell in a side view is 60 or more."

(5) Description of Evidence A No. 11, matters described in Evidence A No. 11 and Invention A-11

Evidence A No. 11 describes the following matters with drawings and photographs, concerning "650m3 / h 6-unit tremie sandbox '18th Ryuomaru'".

A "2.1 Outline of the ship

This ship is a modified grab vessel used as a sandbox used for the construction of Phase II of Kansai International Airport." (page 10, line 9 to 7 from the bottom in the right column)

B "2.2 Grab for sand lifting

The grab for sand lifting (20m3) is wider than the conventional type to facilitate even supply to the hopper, and improves work efficiency (FIG. 2)." (page 11, lines 1 to 4 in the left column)

C In FIG. 2 (see, especially a right side view), the side view in the patent invention; that is, the shaft journaling the shell and the lower frame viewed from the side part in the axial direction corresponds to the drawing on the right side, and in the same drawing, both end portions of the shell bulge outward from the tie rods in a side view, and both end portions of the shell bulge outward from the lower frame and outward from the shaft journaling the lower frame and the shell. According to the descriptions of A to C above and the drawings, Evidence A No. 11 describes the following invention (hereinafter, referred to as "Invention A-11").

"A configuration in which both end portions of a shell bulge outward from tie rods in a side view, both end portions of the shell bulge outward from a lower frame in a side view, and further, both end portions of the shell bulge outward from a shaft journaling the lower frame and the shell in a side view."

(6) Description of Evidence A No. 12, matters described in Evidence A No. 12, Invention A-12 and Art A-12

Evidence A No. 12 describes the following matters with the drawings,

concerning "Grab Bucket".

A "A grab bucket having a pair of bucket shells for scraping seabed sediment, etc. by butting scraping ports against each other, and upper opening portions that are communicated with the scraping ports and are opened upward on upper portions of the bucket shells, wherein the bucket shells are provided with opening/closing means for closing the upper opening portion when the bucket shells are lifted upward from the sea or the like." (Specification, page 1, lines 5 to 12)

B "As shown in FIG. 1 and FIG. 2, a grab bucket 20 for dredging that scrapes seabed sediment, etc. has a pair of bucket shells 21 that can be opened and closed.

Scraping ports 22 for scraping seabed sediment, etc. by being butted with each other are formed at lower portions of the bucket shells 21, and upper opening portions 23 that are communicated with the scraping ports 22 are opened upward at the upper portions of the bucket shells 21.

Specifically, a base end of each bucket shell 21 is journaled to a lower frame and is openably and closably supported by an upper frame 26 via a rod 25.

A lower support frame 24 is provided with an opening/closing sheave 27 and an opening/closing rope 28 for opening/closing the bucket shell 21, and the upper support frame 26 is provided with a supporting rope 29 for supporting the bucket shell 21.

Especially in this device, the bucket shell 21 is provided with an opening/closing means for opening/closing the upper opening portions 23 formed at the upper portion of the bucket shell 21, and the opening/closing means is composed of an iron plate or a shell cover member 30 made of hard rubber in this embodiment." (Specification, page 6, line 9 to page 7, line 9)

C "Therefore, as described in FIG. 3, when the bucket grab 21 is wound upward in the sea while holding the load, the shell cover member 30 is pressed against the bucket shell 21 by its own weight and the resistance of water to close the upper opening portion 23. ...(omitted)...

Further, the upper opening portion 23 is closed by the shell cover member 30, the inside of the bucket shell 21 is sealed, and the seabed sediment is held in the bucket shell 21 without leaking to the outside. ...(omitted)...

On the other hand, when the grab bucket 21 is dropped in seawater in order to scrape off the seabed sediment, the shell cover member 30 receives the resistance of

water and opens the upper portion of the bucket shell 21. That is, as described in FIG. 5, the seawater that has entered from the scraping port 22 of the bucket shell 21 pushes the shell cover member 30 upward and flows out from the upper opening portion 23, and the seawater passes through the bucket shell 21 from the bottom to above." (Specification, page 7, line 18 to page 9, line 7)

D According to the description of FIG. 5, the shell cover member 30 opens upward when the grab bucket 21 is dropped in seawater while expanding to the left and right sides.

E Regarding Evidence A No. 12, Evidence A No. 6 (the Second court decision) describes the following matters.

(A) "D Cited Invention 3

A technology that, in a grab bucket for dredging, attaches lid bodies having opening/closing type rubber lids that open upward to drain water upward when descending underwater while expanding the shells to left and right sides, open upward as inner pressure rises also when the shells grip articles to be gripped above a predetermined capacity, and are closed by external pressure when the grab bucket moves underwater, to upper opening portions of the shells." (page 6, lines 12 to 17)

(B) "B Recognition of Cited Invention 3

(A) According to A above, a grab bucket 20 for dredging described in Cited Document 3 (Trial Decision's note: Evidence A No. 12 of the case) is provided with opening/closing means for opening/closing upper opening portions 23 formed on upper portions of bucket shells 21, and the opening/closing means are made from an iron plate or a shell cover member 30 made of hard rubber.

Then, when the grab bucket 20 is dropped in seawater in order to scrape off the seabed sediment, the shell cover members 30 receive the resistance of water and opens the upper opening portions 23, and the seawater escapes upward from the same place. Further, during the above-mentioned falling, the bucket shells 21 are expanded to the left and right sides. Therefore, it can be said that when the grab bucket 20 descends into the water with the bucket shells 21 expanded to the left and right sides, the shell cover members 30 receive water pressure and open upward, and water escapes upward from the same place. Further, although there is no description about the case where the shells grip articles to be gripped above a predetermined capacity in Cited Document 3, in view of its structure, it can be said that the shell cover members 30 open upward in response to an increase in the internal pressure of the bucket shells 21 even in the above case.

On the other hand, when winding the grab bucket 20 upward in the sea while holding the load, the shell cover members 30 receive their own weight and resistance of water and are pressed against the bucket shells 21 to close the upper opening portions 23 and seal the inside of the bucket shells 21. Therefore, it can be said that the shell cover members close the upper opening portions 23 by receiving water pressure when the grab bucket 20 moves in water.

(B) According to the above, it is recognized that Cited Document 3 describes Cited Invention 3 (No. 2-3 (2) D above) as the trial decision of the case recognized." (page 44, line 23 to page 45, line 18)

(C) "As described in B (A) above, certainly, although Cited Document 3 does not describe the case where the shells grip articles to be gripped above a predetermined capacity, in view of its structure, it can be said that the shell cover members 30 open upward in response to an increase in the internal pressure of the bucket shells 21 even in the above case." (page 46, lines 3 to 6)

According to the descriptions of A to E above and the drawings, Evidence A No. 12 describes the following invention (hereinafter, referred to as "Invention A-12").

"A technology that, in a grab bucket for dredging, attaches lid bodies having opening/closing type rubber lids that open upward to drain water upward when descending underwater while expanding the shells to left and right sides, open upward as inner pressure rises also when the shells grip articles to be gripped above a predetermined capacity, and are closed by external pressure when the grab bucket moves underwater, to upper opening portions of the shells."

Further, according to the descriptions of A to E above and the drawings, Evidence A No. 12 describes the following art (hereinafter, referred to as "Art A-12").

"In a grab bucket for dredging, shell cover members 30 that are opening/closing means for opening and closing upper opening portions 23 opened on upper portions of bucket shells 21 are made of hard rubber."

(7) Description of Evidence A No. 13

Evidence A No. 13 describes the following matters with the drawings, concerning "POWER BUCKET". The preliminary translations was made by the Demandant. The same shall apply hereinafter.

A "The present invention ... the top of the soil." (lines 9 to 27 in the first column)

(Preliminary translation: "The present invention relates to a power shovel bucket. For a power shovel used for dredging and excavating, there are many buckets that have been known for some time. Many of these known buckets are known as 'clam shell' buckets and consist of two bucket half portions that are pivotally fixed to each other. Each bucket half portion forms a scoop, and when the bucket half portions pivot together, these scoops approach each other to form a cargo transfer chamber. Then, the power shovel moves the closed bucket carrying the cargo to a desired dump site.")

B "The present invention provides ...through the mesh." (lines 3 to 32 in the second column)

(Provisional translation: "The present invention provides a power bucket that overcomes all of the above-mentioned drawbacks of conventionally known devices. Briefly, the bucket of the present invention comprises a first bucket half portion and a second bucket half portion, respectively, having spaced side walls and an end wall extending between the side walls. The side walls and end wall of each bucket half portion form a scoop. The bucket half portions are rotatably mounted together so that the bucket half portions are movable between open and close positions. In the open position, the bucket half portions are separated from each other and face each other or face downwards. In the closed position, the bucket half portions abut against each other, and form a substantially closed internal chamber. Furthermore, when the bucket half portions are closed, the side walls of the bucket preferably overlap to prevent spillage from the side portions of the bucket half portions. At least one, preferably both, bucket half portions comprise an open mesh formed along an upper wall. Then, an elastic flap is secured along one edge of the mesh and the flap covers the mesh. In fact, since the opened bucket descends into a channel, the flap moves away from a wire mesh, allowing both air and water to escape through the mesh, and movement of unwanted soil along the bottom of the channel can minimize the generation of a water flow that occurs when the bucket descends. Conversely, when the bucket is in the closed position and therefore contains cargo, the flap closes to prevent solids from escaping through the mesh.")

C "With reference now ... the bucket 10." (lines 20 to 25 in the third column) (Preliminary translation: "As shown in FIG. 1, the conventional pulley 24 and the closing line 26 are provided to move the bucket half portions 12 and 14 between the open position and the closed position. Since the operation of the pulley 24 and the closing line 26 pertains to a conventional structure, further explanation is unnecessary. Similarly, the bucket half portions 12 and 14 are preferably suspended from a head (not shown) raised by a suspension line 28. With this configuration, the bucket 10 can achieve a 'level cut' as schematically shown in FIG. 2. As shown in FIG. 1 and FIG. 5, in order to minimize the generation of water flow caused by dropping the bucket 10 into the channel, at least one metal mesh 30 is provided, preferably along the upper ends of both bucket half portions 12, 14. As shown in FIG. 1, a flap 32 made of an elastic material is fixed to the bucket half portion 14 along the upper end of the mesh so as to cover the mesh 30. During operation, the bucket descends into the channel while the bucket is in the open position (FIG. 3). However, air and water trapped in the bucket deflect the flap 32 from the metal mesh 30 so that the air and water pass upward through the mesh 30. The flap 32 and the mesh minimize the generation of water flow, while when the bucket is lifted with the cargo in its cargo chamber, the flap 32 is closed with respect to the mesh 30, and prevents the cargo contained in the load chamber of the bucket 10 from escaping to the outside through the bucket 10. The mesh 30 forms a valve with the flap 32 to allow air and water to escape through the valve, but closes to prevent soil from escaping the cargo chamber of the bucket 10.")

D Fig-1 discloses a bucket in an open state, Fig-2 discloses the bucket in a closed state, and Fig-5 discloses a flap 32 and a mesh 30 configuring a primary part of the bucket.

(8) Description of Evidence A No. 14-1

Evidence A No. 14-1 describes the following matters.

A In the column of "Creation," "February 18, 1999" and "KOEI IRON WORKS CO., LTD. " are described.

B In the column of "Construction number," "958-1" is described.

C In the column of "Orderer," "DAIGO KOUGYO (SHINSEI)" is described.

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D In the column of "Drawing name," "P.L.C12M3, S type, 36Ton shell cover external view" is described.

E In the column of "Figure number," "MS-31561" is described.

F In the column of "Design," the mark of "UEMURA" is stamped.

G On the right side of the figure, the mark of "Gijutsu '99.6. -4 UEMURA " is stamped.

H On the right side of the figure, the marks "KOEI IRON WORKS," " Koei tekkosho," "JUN.-4. 1999," "Sekkeibu," and "DESIGNING DEPARTMENT" are stamped.

I In the drawing, an article having a stepped appearance is described. According to the drawing name, it is an external view of a shell cover.

(9) Description of Evidence A No. 14-2Evidence A No. 14-2 describes the following matter.

A The drawing of "FIG. 3 of Evidence A No. 1" and the drawing of "Evidence A No. 14-1" are vertically described.

B In the drawing, the names of the members are described together with the drawing numbers.

(10) Description of Evidence A No. 14-3

Evidence A No. 14-3 describes the following matters.

A On the first page, together with the characters of "DAIGO KOUGYO," "List of owned vessels," "Crane vessel and dredger 'Nova'," "Pushing vessel 'Sakuramaru'," and "Transportation ship and work ship '5th Sakuramaru'," photographs are described.

B On the first page, "Update 2017. 09. 01" is described.

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C On the second page, together with the characters of "SHINSEI," "Grab capacity 15 to 20.3m3," "Crushed rock rod 35t," "Type steel non-navigation type," "Hull main dimensions," "Length 55m," "Width 21m," "Depth 4m," "Draft 2m," "Total number of tons 1630 t," "Dredging capacity 800m3/h," "Main engine horsepower 1600ps," "Dredging depth 40m," and "Winding swiveling 250 t," photographs are described.

(11) Description of Evidence A No. 15

Evidence A No. 15 describes the following matters with the drawings, concerning "Grab Bucket for Dredging".

A "[Claim 1] A grab bucket for dredging, comprising:

an upper frame 1;

a lower frame 4 suspended by the upper frame 1 via an opening/closing rope 2;

a pair of left and right bucket shells 6 which are journaled to a shell shaft 5 provided on the lower frame 4 so as to open and close; and

a pair of left and right arms 7 which are connected to the upper frame 1 and whose lower end sides are connected to the respective bucket shells 6 via a turning shaft 10,

wherein drain ports 11 are opened on shell upper walls 13 of the bucket shells 6, which are opposed to the lower frame 4 in a fully closed state, and

wherein the bucket shells 6 are provided with opening/closing bodies 12 for opening and closing the drain ports 11, and an operation mechanism opening and closing the opening/closing bodies 12."

B "[0002]

[Conventional Art]

For example, when dredging sludge such as slime, mud and muddy water that overflow from the grab bucket cause water pollution in the work area and its surrounding areas. In order to avoid such a situation as much as possible, a grab bucket having a semi-sealed structure has conventionally been used. As shown in FIG. 6, the conventional grab bucket has a pair of left and right arms 40 and a pair of bucket shells 42 supported by a lower frame 41, and duct-shaped drainage cylinders 43 are provided on the shell walls of the bucket shells 42.

[0003]

[Problem to be Solved by the Device]

According to such a grab bucket, the bucket shells 42 can be closed while draining the turbid water in the shells from the drainage cylinders 43 by gradually closing the bucket shells 42 in the fully open state that have bitten into the silt. Accordingly, it is possible to prevent the dissipation of sewage when the bucket is lifted. However, even when the bucket shells 42 are fully closed, the inside of the shells is communicated to the outside of the shells via the drainage cylinders 43. Therefore, it is unavoidable that turbid water and muddy soil flow out from the drainage cylinders 43 when the bucket is lifted, and water pollution cannot be sufficiently eliminated".

C "[0005]

[Means for solving the problem]

The grab bucket of the device, as shown in FIG. 2, includes an upper frame 1, a lower frame 4 suspended by the upper frame 1 via an opening/closing rope 2, a pair of left and right bucket shells 6 journaled to a shell shaft 5 provided on the lower frame 4 so as to open and close, and a pair of left and right arms 7 which are connected to the upper frame 1 and whose lower end sides are connected to the respective bucket shells 6 via a turning shaft 10. Drain ports 11 are opened on shell upper walls 13 of the bucket shells 6, which are opposed to the lower frame in a fully closed state. The bucket shells 6 are provided with opening/closing bodies 12 for opening and closing drain ports 11, and an operation mechanism opening and closing the opening/closing bodies 12. ... (omitted)...

[0007]

The opening/closing bodies 12 are arranged inside the bucket shells 6 and are rockably supported by shafts 19 provided inside the shells. The first arm 23, one end of which is rockably connected to the opening/closing body 12 and the other end of which protrudes to the outside of the bucket shell 6, and the second arm 25, one end of which is connected to the arm 7, are connected to each other so as to relatively refract, thereby configuring a refraction link 22.

[0008]

[Operation]

The opening/closing bodies 12 are opened/closed by the operation mechanism to open or close the drain ports 11. Thus, if the bucket shells 6 are operated with the drain ports 11 open, the muddy water in the shells can be discharged from the drain ports 11. When the bucket shells 6 are fully closed or immediately before that, the opening/closing bodies 12 are closed by the operation mechanism to completely close the drain ports 11, so that it is possible to prevent the mud inside from flowing out

through the drain ports 11 when lifting the bucket. [0009]

One of the reasons for opening the drain ports 11 on the shell upper walls 13 is that the mud inside the shells is less likely to flow out when lifting the bucket, as compared with the case where the drain ports 11 are opened on the other shell peripheral walls. Another reason is that the muddy water existing between the mud and the peripheral walls of the shells can be discharged from the drain ports 11 without any trouble, due to the fluid action of the mud when the mud is scooped up by the bucket shells 6, and the drainage can be conducted more reliably".

D "[0012]

[Examples]

FIG. 1 to FIG. 5 illustrate an embodiment of a grab bucket according to the device. In FIG. 2, the grab bucket is composed of the upper frame 1, a lower frame 4 suspended by the upper frame 1 via an opening/closing rope 2, the pair of left and right bucket shells 6 which are supported by the shell shaft 5 provided on the lower frame 4 so as to open and close, and the pair of left and right arms 7 which are provided between the upper frame 1 and the left and right bucket shells 6".

(12) Description of Evidence A No. 16

Evidence A No. 16 describes the following matters with the drawings and photographs, concerning "A super grab bucket dredging method is developed".

"A super grab bucket dredging method is developed

- Environmentally friendly high-precision dredging also supports contaminated bottom mud-

October 27, 2003

• High-precision horizontal excavation is realized by 'a thin-layer dredging support system'

• By adopting a drainage mechanism, dredging that suppresses the intake of excess water is possible

• By adopting a completely sealed mechanism, the occurrence of turbidity is suppressed

• By suppressing the intake of excess sediment and water, the total cost of contaminated sediment countermeasures is reduced

TOA CORPORATION, in collaboration with Fukumaru Kensetsu (President: Fukuichi

MASUDA, Headquarters: Sasebo City, Nagasaki Prefecture), developed the Super Grab Bucket Dredging Method as a dredging method that meets the needs for removal of bottom mud contaminated with heavy metals and dioxins in routes and harbors, which has become a problem in recent years.

This method uses 'the thin layer dredging support system' (patent pending) developed by our company utilizing its know-how in marine civil engineering work to realize horizontal digging in thin layers (thin and evenly dredging the bottom of the water).

Background

As a result of a survey on bottom mud dioxins in public water areas such as harbors, rivers, and lakes nationwide, sediment that exceeds environmental standards has been found in some rivers and harbors. As one of the measures against contaminated bottom mud, there is a method of thinly dredging a wide area. However, the conventional dredging with a closed grab bucket has the problems that the dredging is thicker than necessary, a large amount of excess water is generated, and the leakage of excess water causes the diffusion of turbidity during draining. The super grab bucket dredging method is an environment-friendly high-precision dredging method that overcomes these problems." (page 1, lines 6 to 24)

(13) Evidence A No. 17

Evidence A No. 17 describes the following matters with the drawings and photographs, concerning "Sealed Horizontal Excavating Grab Bucket".

A "Hazardous substances contained in sludge enter the human body through fish and shellfish and plants, such as Minamata disease caused by methylmercury compounds and Itai-itai disease caused by cadmium, and cause pollution-related diseases." (page 22, lines 8 to 11 in the left column)

B "The grab bucket is a sealed type shown in FIG. 2 ...(omitted) ...This sealed type grab bucket adopts a completely sealed structure in which the upper surface of the shell is sealed in the fully closed state, the gap between the left and right shell cutting edges is also sealed, and water does not leak, whereby pollution in the underwater hoisting process is prevented. In addition, the sludge layer disturbing action during the excavation process is less than that of the conventional grab bucket, due to the structure of the shell." (page 23, line 12 from the bottom of the left column to page 24, line 2 in the left column)

C "4. Horizontal excavation mechanism of grab bucket 1) Need for horizontal excavation mechanism

At present, it has been confirmed that sludge layers with a thickness of 0.3 m or 0.5 m are deposited on the conventional ground in places where sludge dredging treatment is planned in various places. If such a sludge layer is to be dredged by a pump dredger, the mud content will drop significantly, resulting in inefficient construction work, and large equipment will be required for the treatment of residual water. In addition, even if a grab dredger equipped with a sealed grab bucket is used for dredging, sludge will be left undug because a flat excavation trajectory cannot be obtained, or the conventional ground will also be dug, so that it will be necessary to significantly increase the volume of the treatment plant. For these reasons, horizontal excavation mechanisms for obtaining flat excavation marks have been required for a grab dredger.

In an excavation process when sludge layers and ooze are dredged by a general grab dredger, as shown in FIG. 6, the depth increases with the progress of excavation with respect to the initial biting depth, and the shell cutting edge draws a concave excavation trajectory. This is because excavation is performed with the support rope loosened, so the shell cutting edge is freely inserted in the vertical direction, and a flat excavation mark cannot be obtained.

So, at this time, if excavating with the support rope stretched, as shown in FIG. 7, a convex excavation trajectory is drawn with respect to the initial biting depth, and a flat excavation trajectory cannot be obtained.

Some recent grab dredgers using the diesel-electric system can electrically pull out the tensioned supporting rope during the excavation process to obtain a flat excavation mark. However, with many existing grab dredger vessels it is difficult to equip an electrically horizontal excavation mechanism. Therefore, it is necessary to mechanically obtain the horizontal excavation trajectory in the dredging machine, or to obtain the horizontal excavation trajectory by the mechanism of the grab bucket itself.

If the grab dredger is equipped with such a horizontal excavation mechanism, the amount of extra digging, which has been regarded as a drawback of the conventional grab dredger in general dredging work, is reduced, and it will be fully applicable to excavation work of underwater structure foundations, which was not expected in the past.

2) Horizontal excavation mechanism equipped on dredging machine

In order for the sealed grab bucket described in FIG. 2 to draw a horizontal excavation trajectory, it is sufficient to pull out an appropriate amount of the support

rope in a stretched state during the excavation process.

Therefore, focusing on the movements of the support drum and opening/closing drum of the dredging machine in FIG. 8, in the hoisting process and the unwinding process, the two drums rotate in the same way, and when the grab bucket is opened and closed, only the opening/closing drum rotates. Thus, by utilizing the operation of the drum, the supporting rope in a stretched state is pulled out so that an almost horizontal excavation trajectory can be drawn as shown below.

In FIG. 8 and FIG. 9, the rotation of the support and opening/closing drum gear is transmitted to a gear B in a sliding part of a shaft A and to a gear C in the threaded part of the shaft A. When only the opening/closing drum is rotating now, only the gear C is rotating, and by the action of the screw, the shaft A moves in a lateral direction with respect to the paper surface shown in FIG. 9 to move the hydraulic piston D, and this hydraulic pressure is transmitted to the cylinder E. The sheave F provided in the middle of the supporting rope moves to pull out and retract the supporting rope. The sheave F will be installed in the upper part of the dredging machine room or near the tip of the jib, but if it is installed near the drum, a parallel movement device that moves along the groove of the drum is required. Further, an appropriate amount of play is provided at the joint portion between the shaft A and the hydraulic piston D so that an excavation trajectory closer to horizontal can be obtained.

This method is favorable for use in combination with the closed grab bucket shown in Fig. 2, and is effective for construction that does not allow sludge containing a large amount of harmful substances to escape and requires dredging traces without leftovers of digging." (page 25, line 4 from the bottom in the left column to page 26, line 22 in the right column)

(14) Description of Evidence A No. 18

Evidence A No. 18 describes the following matters with the drawings, concerning "Clamshell Dredge".

A "This invention ... and river bottoms;" '(lines 1 to 5 in the first column) (Provisional translation: "The present invention relates to a clamshell dredging device that integrates a clamshell bucket, its operating means, and a prime mover, and is particularly intended to perform diving dredging to restore the value of coasts and riverbeds.")

B "The clam shell ... on its seat." (lines 40 in the second column to line 10 in

the third column)

(Preliminary translation: A clam shell bucket consists of two shells or two buckets 10 and 11, each of which has an end portion 12, a bottom portion 13, and a top portion 14. The two buckets are connected by a hinge indicated by reference numeral 15, and an excavation tooth 16 is integrated or fixed to the edge or the lower end side.

On the side and bottom edges of the shells or buckets, as indicated by reference numeral 5, cooperative sealing means are provided, each sealing member is indicated by reference numeral 17 and reference numeral 18, and these extend over the entire length of the side edge and the bottom edges. This sealing member is shown in detail in FIG. 5 and is fully described in connection with that figure.

Water needs to escape from the top portion of the bucket during dredging, or while the bucket is excavating filth or mud, and it is also necessary to prevent all water from entering the inside of the bucket while the bucket is being lifted toward the surface of the water. A flap valve 19 is provided for this purpose, allows water to pass from inside the bucket when the bucket is closed and during drilling, and seals the bucket against flooding when the bucket is raised towards the surface of the water, since large pressure pushes the valve against the valve seat."

(15) Description of Evidence A No. 19

Evidence A No. 19 describes the following matters with the drawings, concerning "Slime Collection Bucket".

A "A slime collection bucket that is attached with a hose (11) communicating with a bucket chamber on an upper portion of a sealed bucket, and is provided with a bucket indoor pressure adjusting valve (12) in the hose." (Specification, page 1, lines 4 to 6)

B "Then, this rope (4) is loosened to seal the inside of the bucket. At this time, the pressure in the bucket tries to increase, but because of the pressure adjusting valve (12), this valve opens to guide the seawater, air, etc. in the room into the hose (11), prevent the pressure rise in the bucket space, and prevent the release of seawater, slime, etc. from the bucket chamber into the sea." (Specification, page 3, lines 12 to 18)

C "As described above, when the bucket according to the present device is used, the slime stored in the bucket is not released into the sea or the air because it is a sealed type, and slime can be collected efficiently. Further, although since the bucket is sealed during the operation, the pressure inside the bucket tends to increase when slime is stored, this pressure rise can be eliminated by the pressure adjusting valve in the hose, and it can be used safely without any danger and without slime due to pressure." (Specification, page 4, lines 2 to 11)

(16) Description of Evidence A No. 20

Evidence A No. 20 is the written statement of Mr. Kenzo UEMURA, who is an advisor of MINOTSU IRON WORKS Co. Ltd.

(17) Descriptions of Evidence A No. 21-1 to Evidence A No. 21-6

Evidence A No. 21-1 is the homepage of Keihin Kowan Koji CO. LTD. Evidence A No. 21-2 to A No. 21-6 describe the drawings of a grab bucket.

(18) Descriptions of Evidence A No. 22-1 to Evidence A No. 22-6

Evidence A No. 22-1 is the homepage of SHIRAKAI, and describes a photograph of a dredger along with the characters "Large-sized grab type dredger KEISHU".

Evidence A No. 22-2 describes the drawing of a dredger and its specifications. Evidence A No. 22-3 to Evidence A No. 22-5 describe the drawing of a grab

bucket.

Evidence A No. 22-6 describes the drawing of a contamination preventive frame.

(19) Description of Evidence A No. 23-1 to Evidence A No. 23-18

Evidence A No. 23-1 to Evidence A No. 23-18 describe the photographs of a grab bucket that was cut off.

(20) Description of Evidence A No. 24

Evidence A No. 24 describes the drawings and photographs of a grab bucket.

(21) Description of Evidence A No. 25-1

Evidence A No. 25-1 describes the instruction of a take-up bucket.

(22) Description of Evidence A No. 25-2

Evidence A No. 25-2 is a receipt for "one 12.0m3 dredger bucket" and "one bucket stand".

2 Regarding Patent Invention 1

(1) Invention A-7

Evidence A No. 7 describes the invention as described in 1 (1) above.

(2) Comparison

In comparison of Patent Invention 1 and Invention A-7, as viewed from their functions, structures, or technical significance, "a supporting wire 14" in Invention A-7 corresponds to "a handing rope" in Patent Invention 1. In a similar fashion, "an upper sheave box 7" corresponds to "an upper frame," "an upper sheave 10" corresponds to "a nupper sheave," "a shell 1" corresponds to "a shell," "a weight 1a" corresponds to "a lower frame," "a spindle 3" corresponds to "a shaft," "a lower sheave 11" corresponds to "a lower sheave," "an opening/closing wire 15" corresponds to "an opening/closing rope," "arms 7a and 8" correspond to "tie rods," and "openings for venting air" correspond to "air vent holes."

Further, "a weight 1a rotatably journaling a pair of left and right shells 1 at both side places in a side view" in Invention A-7 corresponds to "a lower frame rotatably journaling a pair of left and right shells at both side places in a side view" in Patent Invention 1, and "a bucket which winds an opening/closing wire 15 between the upper sheave 10 and the lower sheave 11 to allow the shells 1 to open and close" in Invention A-7 corresponds to "a grab bucket which winds an opening/closing rope between the upper sheave and the lower sheave to allow the shells to open and close" in Patent Invention 1.

Further, "rotatably journals a lower end portion of one arm 8 of left and right two arms 7a and 8 to the shell 1, rotatably journals an upper end portion to the upper sheave box 7, rotatably journals a lower end portion of the other arm 7a to the shell, and fixes an upper end portion to the upper sheave box 7" in Invention A-7 and "rotatably journals lower end portions of left and right tie rods to the shells and upper end portions to the upper frame respectively" in Patent Invention 1 are common in the point that "rotatably journals a lower end portion of one tie rod of left and right tie rods to the shell, rotatably journals an upper end portion to the upper frame, and rotatably journals a lower end portion of the other tie rod to the shell".

Similarly, "a flat-bottomed bucket for dredging" in Invention A-7 and "a wide and flat-bottomed bucket for dredging" in Patent Invention 1 are common in the point of "a flat-bottomed grab bucket for dredging".

"A cover lid 2" in Invention A-7 corresponds to "a shell cover" in Patent

Invention 1.

"Cover lids 2 are provided at an upper end portions of a shell 1" in Invention A-7 and "shell covers are closely contacted on the upper parts of the shells" in Patent Invention 1 are common in the point that "shell covers are provided on the upper parts of the shells."

"Opening/closing type check valves 5" in Invention A-7 and "lid bodies having opening/closing type rubber lids" in Patent Invention 1 are common in the point of "opening/closing type lids". "Openings for venting air are formed on a part of the cover lids 2, the openings attached with opening/closing type check valves 5 that open upward to drain air upward when descending underwater while expanding the shells to left and right sides, and are closed when the bucket is pulled up to the sea" of Invention A-7 and "air vent holes are formed on a part of the shell covers, the air vent holes attached with lid bodies having opening/closing type rubber lids that open upward to drain water upward when descending underwater while expanding the shells to left and right sides, open upward as inner pressure rises also when the shells grip articles to be gripped above a predetermined capacity, and are closed by external pressure when the grab bucket moves underwater" of Patent Invention 1 are common in the point that "air vent holes are formed on a part of the shell covers, the air vent holes attached with" "opening/closing type" "lids that open upward to drain water upward when descending underwater while expanding the shells attached with" "opening/closing type" "lids that open upward to drain water upward when descending upward to drain water upward when descending upward to drain water upward when the shell covers, the air vent holes attached with"

"Both end portions of the shells 1 bulge outward from the arms 7a and 8 in a side view" in Invention A-7 corresponds to "both end portions of the shells bulge outward from the tie rods in the side view" in Patent Invention 1.

"Used for dredging construction" in Invention A-7 and "used for thin layer slime dredging construction" in Patent Invention 1 are common in the point of "used for dredging construction".

"(Also, a front view is viewed from the axial direction of a spindle 3 journaling the shells 1 and the weight 1a, and the side view is a view of the spindle 3 journaling the shells 1 and the weight 1a from the side part of the axial direction)" in Invention A-7 corresponds to "(also, the front view is viewed from the axial direction of the shaft journaling the shells and the lower frame, and the side view is a view of the shaft journaling the shells and the lower frame from the side part of the axial direction)" in Patent Invention 1.

Therefore, in comparison of Patent Invention 1 and Invention A-7, both are identical in the point that

"A flat-bottomed grab bucket for dredging used for dredging construction, which journals an upper sheave on an upper frame coupling a handing rope, journals a lower sheave on a lower frame rotatably journaling a pair of left and right shells at both side places in a side view, rotatably journals a lower end portion of one tie rod of left and right tie rods to the shell and an upper end portion to the upper frame, rotatably journals a lower end portion of the other tie rod to the shell, and winds an opening/closing rope between the upper sheave and the lower sheave to allow the shells to open and close, wherein the shells have a wide flat-bottomed structure; shell covers are provided on the upper parts of the shells; air vent holes are formed on a part of the shell covers, the air vent holes attached with opening/closing type lids that open upward to drain a fluid upward when descending underwater while expanding the shells to left and right sides; and both end portions of the shells bulge outward from the tie rods in the side view (also, a front view is viewed from the axial direction)," and are different in the following points.

[Different Feature 1]

In Patent Invention 1 "rotatably journals lower end portions of left and right tie rods to the shells and upper end portions to the upper frame respectively," whereas, in Invention A-7 "rotatably journals a lower end portion of one arm 8 of left and right arms 7a and 8 to the shell 1, rotatably journals an upper end portion to the upper sheave box 7, rotatably journals a lower end portion of the other arm 7a to the shell, and fixes an upper end portion to the upper sheave box 7".

[Different Feature 2]

In Patent Invention 1, "the shells have a wide flat-bottomed structure without a claw," whereas, in Invention A-7, the shells 1 have "a flat-bottomed structure with a claw".

[Different Feature 3]

In Patent Invention 1, "shell covers are closely contacted on the upper parts of the shells," whereas, in Invention A-7, "cover lids 2 are provided at the upper end portions of the shells 1".

[Different Feature 4]

In Patent Invention 1, there are "lid bodies having opening/closing type rubber

lids," whereas, in Invention A-7, there are "opening/closing type check valves 5".

[Different Feature 5]

In Patent Invention 1, rubber lids "open upward to drain water upward when descending underwater while expanding the shells to left and right sides," "and are closed by external pressure when the grab bucket moves underwater," whereas, in Invention A-7, check valves 5 "open upward to drain air upward when descending underwater while expanding the shells to left and right sides, and are closed when the bucket is pulled up to the sea".

[Different Feature 6]

In Patent Invention 1, rubber lids "open upward as inner pressure rises also when the shells grip articles to be gripped above a predetermined capacity," whereas, in Invention A-7, it is not clear whether or not check valves 5 "open upward as inner pressure rises also when the shells grip articles to be gripped above a predetermined capacity".

[Different Feature 7]

In Patent Invention 1, "if a distance between axes of the tie rods journaling the shells in a front view is assumed to be 100, a width inner dimension of the shell in the side view is made 60 or more," whereas, in Invention A-7, the relationship between "a distance between axes of the tie rods journaling the shells in a front view" and "a width inner dimension of the shell in the side view" is not clear.

[Different Feature 8]

In Patent Invention 1, both end portions of the shells bulge outward from the tie rods in the side view, "both end portions of the shells bulge outward from the lower frame in the side view, and both end portions of the shells bulge outward from shafts journaling the lower frame and the shells in the side view," whereas, in Invention A-7, it is not clear whether or not "both end portions of the shells bulge outward from the lower frame in the side view, and both end portions of the shells bulge outward from the lower frame in the side view, and both end portions of the shells bulge outward from the lower frame in the side view, and both end portions of the shells bulge outward from shafts journaling the lower frame and the shells in the side view".

[Different Feature 9]

Patent Invention 1 is used for "thin layer slime" dredging construction, whereas, although Invention A-7 is used for dredging construction, it is not clear

whether or not Invention A-7 is used for "thin layer slime" dredging construction.

[Different Feature 10]

Patent Invention 1 is "a wide flat-bottomed grab bucket for dredging" in which the shells have a wide flat-bottomed structure, whereas Invention A-7 is "a flat-bottomed bucket for dredging" in which the shells 1 have a flat-bottomed structure.

(3) Judgment on the different features

A Regarding Different Feature 1

According to 1 (2) above, Evidence A No. 8 describes that in a clamshell bucket for dredging, lower end portions of a left arm 2 and a right arm 3 are rotatably journaled to a left bucket 4 and a right bucket 5 respectively, and upper end portions are rotatably journaled to a machine body 1; according to 1 (5) above, Evidence A No. 11 describes that in a grab for sand lifting, lower end portions of left and right rod-shaped members are rotatably journaled to shell-shaped members respectively, and upper end portions are rotatably journaled to an upper frame-shaped member; according to 1 (6) above, Evidence A No. 12 describes that in a grab bucket for dredging, lower end portions of left and right rods 25 are rotatably journaled to an upper frame 26 respectively; and according to 1 (11) above, Evidence A No. 15 describes that in a grab bucket for dredging, lower end portions of a pair of left and right arms 7 are rotatably journaled to bucket shells 6, and upper end portions are rotatably journaled to an upper frame 1 respectively.

Accordingly, in a grab bucket, it is well-known that lower end portion of left and right tie rods are rotatably journaled to shells respectively, and upper end portions are rotatably journaled to an upper frame respectively (hereinafter, referred to as "Wellknown art 1").

Therefore, in Invention A-7 that is an invention relating to a grab bucket, it could be easily conceived by a person skilled in the art to make matters specifying Patent Invention 1 relating to Different Feature 1 by applying Well-known art 1.

B Regarding Different Feature 2

According to 1 (2) above, Evidence A No. 8 describes that in a clamshell bucket for dredging, buckets 4 and 5 having a flat-bottomed structure without a claw are provided; and according to 1 (3) above, Evidence A No. 9 describes that in a clamshell bucket for dredging, shell portions 1A and 1B having a flat-bottomed structure without

a claw are provided.

Accordingly, it is well-known that in a grab bucket for dredging, buckets having a flat-bottomed structure without a claw are provided (hereinafter, referred to as "Well-known art 2").

Therefore, in Invention A-7 that is an invention relating to a grab bucket, it could be easily conceived by a person skilled in the art to make matters specifying Patent Invention 1 relating to Different Feature 2 by applying Well-known art 2.

C Regarding Different Feature 3

According to 1 (1) above, cover lids 2 are provided on upper at the upper end portions of the shells 1 of the bucket of Invention A-7.

Then, as can be seen from the description "in this case, since the check valve 5 is closed to the cover lid 2 of the shell 1, <u>the excavated earth and sand are completely</u> <u>confined</u> in the shell 1 passing though the sea surface (water surface), and the outflow of earth and sand does not occur" (Specification, page 4, lines 13 to 16) and the description "in this device, since the shell is provided with the cover lid equipped with the check valve that can be opened and closed, as described above, the check valve automatically acts to discharge air and close the cover lid, and <u>the excavated earth and sand are stored</u> <u>in a sealed state in the shell closed with the cover lid with the check valve</u>, so that the outflow of earth and sand does not occur also when the bucket is pulled up" (Specification, page 4, line 17 to page 5, line 4) of Evidence A No. 7, when the check valves 5 of the cover lids 2 of the shells 1 are closed, the shells are completely sealed, so that it is obvious that there is no gap between the shells 1 and the cover lids 2 of the buckets.

That is, it can be said that the bucket for dredging described in Evidence A No. 7 is provided with the configuration in which "the cover lids 2 are closely contacted on the upper end parts of the shells 1".

Therefore, Different Feature 3 is not a substantial difference.

D Regarding Different Feature 4

According to 1 (6) above, Art A-12 is that "in a grab bucket for dredging, shell cover members 30 that are opening/closing means for opening and closing upper opening portions 23 opened on upper portions of bucket shells 21 are made of hard rubber".

Therefore, in Invention A-7 that is an invention relating to a grab bucket for dredging, it could be easily conceived by a person skilled in the art to make matters

specifying Patent Invention 1 relating to Different Feature 4 by applying Art A-12.

E Regarding Different Feature 5

According to 1 (1) above, the check valve 5 in Invention A-7 is configured to open and close with the shaft 4 as a fulcrum between a closed state along the upper surface of the cover lid 2 (see FIGS. 2 and 2 of Evidence A No. 7) and an open state separated from the upper surface of the cover lid 2 (see FIG. 1 of Evidence A No. 7).

Then, from the description "The shell 1 is lowered into the water in an open state, and at that time, as illustrated in FIG. 1, the check valve 5 is pushed up by pressure with the shaft 4 as a fulcrum, and the bucket is landed on the excavation surface 16 (sea bottom surface, river bottom surface, etc.) while removing air remaining in the shell 1" (Specification, page 3, line 20 to page 4, line 5), it can be said that in Invention A-7, if lowering the bucket underwater, the buoyancy of the air remaining in the shell 1 and the fluid pressure acting from the inside (primary side) of the shell 1 become higher than the fluid pressure acting from the outside (secondary side) of the shell 1, thereby opening the check valve 5. Since Evidence A No. 7 does not describe a function that the check valve 5 distinguishes between water and air and eliminates them, when lowering the bucket underwater, along with the air remaining in the shell 1 also escapes from the bottom to the top.

Further, considering the description "Next, the supporting wire 14 is stopped at that position, ...After the excavation is finished and the shell 1 (see FIG. 3) closes, while slightly loosening the supporting wire 14, the tension of the opening/closing wire 15 pulls the bucket up to the sea (water) ...In this case, since the check valve 5 is closed to the cover lid 2 of the shell 1, the excavated earth and sand are completely confined in the shell 1 passing though the sea surface (water surface), and the outflow of earth and sand does not occur" (Specification, page 4, lines 5 to 16), and the description of FIG. 3, it can be said that in Invention A-7, in a state where the excavation is finished and the shell 1 is closed (see FIG. 3), the check valve 5 is closed, and when pulling the bucket up from the water to the sea, a fluid pressure acts on the outside (secondary side) of the shell 1 to keep the check valve 5 closed, and the check valve 5 is also closed when the shell 1 passes the sea surface.

From the above, it can be said that Invention A-7 is substantially provided with the matters that the check valve 5 opens upward when descending underwater with the shell 1 open and the water escapes upward, and when the shell 1 is pulled from the water to the sea, it is closed by the fluid pressure outside the shell 1 (hereinafter, referred to as "Described matters A-7").

Here, "when descending underwater with the shell 1 open" of Described matters A-7 corresponds to "when descending underwater while expanding the shells to left and right sides" of Patent Invention 1, "when the shell 1 is pulled from the water to the sea" of Described matters A-7 corresponds to "when the grab bucket moves underwater" of Patent Invention 1, and "the fluid pressure outside the shell 1" of Described matters A-7 corresponds to "external pressure" of Patent Invention 1.

Then, it can be said that the check valve 5 of Invention A-7 acts "opens upward when descending underwater while expanding the shells to left and right sides and the water escapes upward, and when the grab bucket moves underwater, it is closed by external pressure".

Therefore, Different Feature 5 is not a substantial difference.

F Regarding Different Feature 6

According to the description of 1 (1) above, Invention A-7 is for excavating earth and sand such as the bottom of the sea and the bottom of a river, and does not assume that the earth and sand to be gripped above the capacity of the shells 1.

Further, referring the drawings of Evidence A No. 7, in Invention A-7, until the shells 1 close, there are gaps on the side part of the left and right shells 1, so that excess water or the like can flow out from the gaps on the side parts of the left and right shells 1, and thus the check valves 5 will not be opened by the excess water or the like.

In the drawings of Evidence A No. 7, the check valves 5 are closed in a state of FIG. 2 in which earth and sand are excavated with the claws of the shells 1, and then, the check valve 5 is closed even in the state of FIG. 3 in which the excavation is finished and the shell 1 is closed. That is, the check valves 5 remain closed during excavation.

As described above, in Invention A-7, since there is no description or suggestion about the case where earth and sand that are articles to be gripped are gripped above a predetermined capacity, it cannot be said that it is easy to conceive the matters specifying Patent invention 1 relating to Different Feature 6, in Invention A-7.

Further, Evidence A No. 12 describes that "a technology that, in a grab bucket for dredging, attaches lid bodies having opening/closing type rubber lids that open upward to drain water upward when descending underwater while expanding the shells to left and right sides, open upward as inner pressure rises also when the shells grip articles to be gripped above a predetermined capacity, and are closed by external pressure when the grab bucket moves underwater, to upper opening portions of the shells" as Invention A-12. Concerning this point, although it is recognized that "further, although there is no description about the case where the shells grip articles to be gripped above a predetermined capacity in Cited Document 3 (Trial decision's note: Evidence A No. 12 of the case), in view of its structure, it can be said that the shell cover members 30 open upward in response to an increase in the internal pressure of the bucket shells 21 even in the above case" on page 45, lines 8 to 11 of Evidence A No. 6, it is also explained that "however, in Cited Document 5 (Trial decision's note: Evidence A No. 8 of the case), there is no description about the resistance of the water or the case where the shells grip articles to be gripped above a predetermined capacity, and on the evidence of the case, it is not enough to admit that it is an obvious problem of a grab bucket. According to the above, it should be unacceptable to a person skilled in the art that there is a motivation to apply Cited Invention 3 to Cited Invention 5" on page 73, lines 20 to 24 of Evidence A No. 6, and similarly, also in Evidence A No. 7 of the case, there is no description about the case where the shells grip the earth and sand to be gripped above a predetermined capacity, and it is not recognized as an obvious problem of a grab bucket from Respective items of Evidence A, so that there is no motivation to apply Invention A-12 in Invention A-7, and it cannot be said a person skilled in the art easily conceive the matters specifying Patent Invention 1 relating to Different Feature 6, in Invention A-7.

Further, in Evidence A No. 18 and Evidence A No. 19, there is no description about the case where the shells grip the earth and sand to be gripped above a predetermined capacity, so that similarly, there is no motivation to combine Evidence A No. 18 and Evidence A No. 19, in Invention A-7, and it cannot be said that it is easy for a person skilled in the art to conceive the matters specifying Patent Invention 1 relating to Different Feature 6, in Invention A-7

Therefore, in Invention A-7, it cannot be said that it is easy for a person skilled in the art to conceive the matters specifying Patent Invention 1 relating to Different Feature 6 from the description of Evidence A No. 7, Invention A-12, Evidence A No. 18, or Evidence A No. 19.

Further, although the Demandant, in an oral proceedings statement brief, alleges that "the meaning and scope of the term 'above a predetermined capacity' in 'the case where the shells grip articles to be gripped above a predetermined capacity' in the Patent Invention is not clear, but as a general rule, in a sealed grab bucket for dredging with check valves, water is always drained from openings regardless of the capacity of articles to be gripped that are gripped by shells, and the check valves are always opened

when the water is discharged" (page 14, lines 7 to 11), the term "openings" as referred to by the Demandant includes the space between the open edges of the shells facing each other (see the description "in reality, a part of water is also discharged from the opening edges of the shells facing each other. Therefore, in the following description, the term 'opening or the like' including the opening edges of the shells is used." (Oral proceedings statement brief, page 9, lines 13 to 15)), and does not necessarily mean the opening of the check valves.

Further, the Demandant's allegation is nothing to do with "the capacity of article to be gripped," so that it is different from "the case where the shells grip articles to be gripped above a predetermined capacity".

Therefore, the allegation of the Demandant is improper.

G Regarding Different Feature 7

According to the description of 1 (4) above, Evidence A No. 10 describes "a configuration in which assuming a distance between the axes of arms 4 corresponding to a distance between the axes between tie rods journaling a shell in a front view is 100, the width inner dimension of the shell in a side view is 60 or more" as Invention A-10.

Although Invention A-7 is a grab bucket for dredging, and Invention A-10 is related to a grab bucket for cargo handling for loading and unloading gravel and sand, both grab buckets are common in the purpose of scooping and moving objects, and it can be said that increasing the gripping amount to improve work efficiency is an obvious problem.

Then, the configuration of Invention A-10; that is, a configuration in which assuming a distance between the axes of arms 4 corresponding to a distance between the axes between tie rods journaling a shell in a front view is 100, the width inner dimension of the shell in a side view is 60 or more, is caused by the configuration in which the mouth width L of the shell is formed to be larger than the opening width W, and in Evidence A No. 10, it is clearly stated that the same configuration will increase the gripping amount ([0012]). Therefore, it can be said that Invention A-10 exerts the effect of increasing the gripping amount.

According to the above, it can be said that a person skilled in the art could have easily conceived to make the matters specifying Patent Invention 1 relating to Different Feature 7 by applying Invention A-10 exerting the effect of increasing the gripping amount in a cargo handling grab bucket that has a common purpose of scooping and moving an object as described above, concerning the obvious problem for increasing the gripping amount to improve work efficiency, in Invention A-7.

H Regarding Different Feature 8

According to 1 (5) above, Evidence A No. 11 describes "a configuration in which both end portions of a shell bulge outward from tie rods in a side view, both end portions of the shell bulge outward from a lower frame in a side view, and further, both end portions of the shell bulge outward from a shaft journaling the lower frame and the shell in a side view" as Invention A-11.

Also, in a grab bucket that has the purpose of scooping and moving objects, it can be said that increasing the cutting area of articles to be gripped to increase the gripping amount is an obvious problem.

Since Invention A-11 is also a grab bucket that has the above-mentioned purpose, and the part of the shell that bites into the object to scoop up the articles to be gripped becomes longer, it can be obvious that the configuration of Invention A-11 increases the cutting area of articles to be gripped to increase the gripping amount.

As described above, it should be said that a person skilled in the art could have easily conceived the matters specifying Patent Invention 1 relating to Different Feature 8 by applying Invention A-11 relating to a grab bucket for scooping and moving objects as a means for solving the obvious problems, in Invention A-7.

I Regarding Different Feature 9

In Paragraph [0006] of the specification, as problem to be solved by the invention, describes "however, the dredging work using the conventional grab bucket with a round bottom claw has a problem that it is inefficient and slime, earth, sand, etc. cannot be completely dredged because the groove is formed after digging. Especially in recent years, slime dredging work with a soil thickness of 20 cm to 1 meter or less is increasing, but slime and water that are grasped are water except for the portion grabbed by the grab bucket, and it is necessary to pull up the slime and water to separate them. Therefore, it is required to reduce the content of water in the grip. However, in the conventional grab bucket with a round bottom claw, the cut area of the gripped object is small, so that the water content cannot be reduced," the dredging work using the conventional grab bucket with a round bottom claw is inefficient because it becomes groove-shaped after digging, and there is a problem that slime, earth and sand, etc. cannot be completely dredged. According to the description above, it is understood that "thin-layer slime dredging construction" means "slime dredging work with a soil thickness of 20 cm to 1 meter or less".

On the other hand, according to 1 (1) above, Invention A-7 is a grab bucket

with a claw, so that since "it becomes groove-shaped after digging," "slime, earth, sand, etc. cannot be completely dredged" which is different from Patent Invention 1. Referring to FIG. 3 of Evidence A No. 7, since Invention A-7 is for excavating earth and sand in an arc shape, when applied to thin-layer slime, there is a high possibility that slime will be left behind or even the conventional ground will be excavated, and it is difficult to obtain a flat excavation mark.

Accordingly, it is difficult to apply Invention A-7 that is a grab bucket with a claw to thin-layer slime dredging construction.

Therefore, it cannot be said that could be easily conceived by a person skilled in the art to make the matters specifying Patent Invention 1 relating Different Feature 9, in Invention A-7.

Further, although the Demandant alleges that it is well known to apply a grab bucket for dredging to thin-layer slime dredging construction, from Evidence A No. 8, Evidence A No. 15, Evidence A No. 16, and Evidence A No. 17, since those described in Evidence A No. 8, Evidence A No. 16, and Evidence A No. 17 are grab buckets without a claw, it is possible to apply them to thin-layer slime dredging construction, but since Evidence A No. 7 is a grab bucket with a claw, it is difficult to apply it to thinlayer slime dredging construction.

Also, the one described in Evidence A No. 15 is a grab bucket with a claw, although it is described that "the present device relates to a grab bucket for dredging, which is used when dredging or excavating silt and sediment deposited on the seabed" (Paragraph [0001]), it does not describe applying it to thin-layer slime dredging construction.

Therefore, even considering the Demandant's allegation, it cannot be said that it is easy to apply Invention A-7 that is a grab bucket with a claw to thin-layer slime dredging construction.

J Regarding Different Feature 10

As examined in "G Regarding Different Feature 7," in Invention A-7, if applying Invention A-10 to make the matters specifying the Patent Invention relating to Different Feature 7, since the distance between width inner dimensions of the shells is 60 or more, and it is wider than a conventional grab bucket in which the distance between width inner dimensions of the shells is 50, the matters specifying Patent Invention 1 relating to Different Feature 10 could have been easily conceived by a person skilled in the art by applying Invention A-10, in Invention A-7.

(4) Summary

As described above, it can be said that the matters specifying the invention relating to Different Features 1, 2, 4, 7, 8, and 10 could have been easily conceived by a person skilled in the art, and although it cannot be said that the matters specifying the invention relating to Different Features 3 and 5 are substantial differences, it cannot be said that the matters specifying the invention relating to Different Features 6 and 9 could have been easily conceived by a person skilled in the art.

Therefore, it cannot be said that Patent Invention 1 could have been easily invented by a person skilled in the art, based on Invention A-7, the configurations disclosed in Evidence A No. 8 to Evidence A No. 25-2, and Well-known arts 1 and 2.

3 Regarding Patent Invention 2

(1) Invention A-7

Evidence A No. 7 describes Invention A-7 as described in 1 (1) above.

(2) Comparison

Patent Invention 2 and Invention A-7 further have the following Different Feature 11, in addition to Different Feature 1 to Different Feature 10 above,

[Different Feature 11]

In Patent Invention 2, "the shell covers are composed of shell cover upper stages, shell cover middle stages, and shell cover lower stages which are symmetrical, and a plurality of lid bodies are arranged between the shell cover upper stages and the shell cover middle stages," whereas, Invention A-7 does not have such a configuration.

(3) Judgment

Since the Demandant alleges the configuration relating to Different Feature 11 is described in Evidence A No. 14-1, it will be examined below.

A In an oral proceeding statement, although the body requested the Demandant to submit the original of Evidence A No. 14-1, the Demandant could not submit the original of Evidence A No. 14-1. Therefore, Evidence A No. 14-1 cannot be easily obtained.

B Although the Demandant submitted Evidence A No. 20 and alleges that

Evidence A No. 14-1 was issued to DAIGO KOUGYO and was publicly known on June 4, 1999, since Evidence A No. 20 is a written statement of the advisor of the Demandant, considering his position as the advisor of the Demandant, it is not credible.

C Even if Evidence A No. 14-1 was issued to DAIGO KOUGYO on June 4, 1999, as stated by the advisor of the Demandant, since usually, there is a non-disclosure agreement between the parties when submitting drawings, it cannot be said that the shell cover of Evidence A No. 14-1 was publicly known prior to the filing of the application of the patent.

D In Evidence A No. 20, the advisor of the Demandant alleges that when the orderer participates in the bid for the dredging construction of the port, which is a public work, the orderer is requested by the government agency to disclose information about the grab bucket and present it. However, since the government office has a duty of confidentiality, even if the design drawing of the grab bucket was presented to the government office, it cannot be said that it has become publicly known.

E In Evidence A No. 20, although the advisor of the Demandant has stated that "since March 1999, DAIGO KOUGYO has used a grab bucket with a shell cover after improvement work for dredging work at Komatsushima Port in Tokushima," evidence has not been submitted and cannot be trusted immediately. Further, it is unnatural that the construction would be carried out before the drawing of Evidence A No. 14-1 is submitted to DAIGO KOUGYO.

F The Demandant, in the oral proceedings statement brief (page 17, line 35 to page 18, line 9), alleges that the contractor who purchased the grab bucket from the bucket maker published the design drawing of the grab bucket on the Internet, so that the design drawing of the grab bucket does not become "a business secret" or "a technical secret".

However, the drawings of Evidence A No. 14-1 is not disclosed on the homepage of Evidence A No. 14-3/

Further, concerning the drawings of the Demandee which were submitted by the Demandant, Evidence A No. 21-2 is a utility model that has been registered, Evidence A No. 21-5 is a design application and a utility model application, Evidence A No. 21-6 is a patent that has been registered, Evidence A No. 22-4 is a utility model that has been registered, and Evidence A No. 21-3 and A No. 23-4 are application drawings for approval that have been already applied, so that it is considered that there is no problem even if all of them are disclosed.

Against this, since the drawings of Evidence A No. 14-1 are not disclosed on the Internet (the homepage of Evidence A No. 14-3), on the contrary, it is possible that confidentiality was imposed.

Further, Evidence A No. 14-2 was created by the Demandant and was not publicly known before the filing of the patent application, and since Evidence A No. 14-3 is described as "Update 2017. 09. 01," it cannot be said that it was publicly known before the filing of the patent application.

G Comprehensively considering A to F above, it cannot be said that the shell cover of Evidence A No. 14-1 was publicly known before the filing of the patent application.

H From Evidence A No. 14-1, it is unclear which part is the lid body, and it is also unclear whether or not the lid body has a rubber lid, so that it cannot be said that Evidence A No. 14-1 describes the matters specifying Patent Invention 2 relating to Different Feature 11.

Accordingly, it cannot be said that the matters specifying Patent Invention 2 relating to Different Feature 11 could have been easily conceived by a person skilled in the art even by applying the shell cover of Evidence A No. 14-1, in Invention A-7.

(4) Summary

Thus, Patent Invention 2 and Invention A-7 have Different Features 1 to 11, and it cannot be said that the matters specifying the invention relating to Different Features 6, 9 and 11 could have been easily conceived by a person skilled in the art.

Therefore, it cannot be said that Patent Invention 2 could have been easily invented by a person skilled in the art based on Invention A-7, the configurations disclosed in Evidence A No. 8 to Evidence A No. 25-2, and Well-known arts 1 and 2.

No. 6 Closing

As described above, the request for trial of the case does not violate the provisions of Article 167 of the Patent Act.

Further, the reasons alleged by the Demandant and the means of proof by the Demandant cannot invalidate the patent according to Patent Invention 1 and Patent Invention 2.

The costs in connection with the trial shall be borne by the Demandant under the provisions of Article 61 of the Code of Civil Procedure which is applied mutatis mutandis in the provisions of Article 169(2) of the Patent Act.

Therefore, the trial decision shall be made as described in the conclusion.

April 12, 2019

Chief administrative judge:TOMIOKA, KazuhitoAdministrative judge:KANAZAWA, ToshioAdministrative judge:AWAKURA, Yuji