Trial decision

Invalidation No. 2013-800162

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The case of trial regarding the invalidation of Japanese Patent No. 3917590, entitled "Highly Compressed Filter Tow Bale and Method for Production thereof" between the parties above has resulted in the following trial decision:

Conclusion

The correction shall be approved.

The appeal of the case was groundless.

The costs in connection with the trial shall be borne by the demandant.

Reason

No. 1 History of the procedures

The application concerning the inventions according to claims 1 to 24 of the Japanese patent No. 3917590 of the case is a patent application submitted on April 22, 2003 as its international filing date (claiming priority under the Paris Convention based on an application received by the foreign receiving office (Germany) on April 22, 2002) and the establishment of patent right was registered on February 16, 2007 (the number of claims: 26).

A demand for invalidation trial has subsequently been submitted on May 23, 2007; a request for correction was submitted on January 29, 2010 (whose number of claims after the correction is 24); and a trial decision was rendered on May 31, 2010, concluding that the correction shall be approved and the appeal of the case was groundless, and this trial decision became final and binding.

The outline of the procedures thereafter of this case is as follows:

1. September 2, 2013:	A demand for invalidation trial
2. January 6, 2014:	Submission of a written reply
3. February 17, 2014:	Notification of matters to be examined (by the body)
4. April 4, 2014:	Submission of a statement brief (by the demandant)
5. April 4, 2014:	Submission of a statement brief (by the demandee)
6. April 15, 2014:	Submission of a written statement (by the demandant)
7. April 18, 2014:	First oral proceeding
8. May 23, 2014:	Advance notice of a trial decision
9. August 28, 2014:	Request for correction
10 August 28, 2014:	Submission of a written statement (by the demandee)
11. October 14, 2014:	Submission of a written refutation
12. January 5, 2015:	Submission of a written reply
13. February 26, 2015:	Decision on acceptance or non-acceptance of amendment (accepted)
14. February 26, 2015:	Invitation to reply (by the body)

15. March 31, 2015: Submission of a written reply

No. 2 Request for correction

1 Content of correction

The content of the written request for correction submitted on August 28, 2014 by the demandee, seeking correction to the effect that "the Description and the scope of claims of the Japanese Patent No. 3917590 should be corrected as stated in the corrected Description and the corrected scope of claims attached to the written request for correction" (hereinafter referred to as "the Correction of the case"), is to correct the scope of claims and the Description attached to the patent application for the Japanese Patent No. 3917590 as follows.

Meanwhile, claims 2 to 24 after the Correction of the case individually refer back to the recitations of claim 1 after the Correction of the case including the Corrections A and B, refer back to any other claim that refers back to the corrected claim 1, or repeatedly refer back to preceding claims until reaching the one that directly refers back to the corrected claim 1, and the claims 1 to 24 after the Correction of the case has the relationship as provided for in item (i) or (ii) of Article 46-2 of the Regulations under the Patent Act, and accordingly the Correction of the case is recognized as seeking correction for a group of claims.

(1) Correction A

The recitation "A bale of a filter tow baled and highly compressed into a block form, the bale having no expanded portion or constricted portion acting as hindrance on its top side portion and its bottom side portion" in the recitations of claim 1 of the scope of claims prior to the correction should be corrected to read as follows:

"A bale of a filter tow baled and highly compressed into a block form with a predetermined height by applying a pressure of at least 300 tons, the bale having no expanded portion or constricted portion acting as hindrance on its top side portion and its bottom side portion."

(2) Correction B

The recitation "(e) at least after the bale has been baled, the bale is acted upon by a negative pressure of at least 0.01 bar with respect to an external pressure" of claim 1 should be corrected to read as follows:

"(e) at least after the bale has been baled, the bale is acted upon by a negative pressure of at least 0.01 bar with respect to an external pressure and the pressure acting

upon the top side portion of the bale has a magnitude exceeding a limit of elastic deformation of the baled filter tow."

(3) Correction C

The phrase "equal to or less than 25 mm" and the term "preferably" should be deleted from the recitations of claim 8.

2 The demandant's allegation (Page 3, Fourth line from the bottom to Page 5, Line 5; Page 5, Fifth line from the bottom to Page 7, Line 5 of the written refutation)

The Correction A of "highly compressed into a block form with a predetermined height by applying a pressure of at least 300 tons" and the Correction B of "the pressure acting upon the top side portion of the bale has a magnitude exceeding a limit of elastic deformation of the baled filter tow" are not a matter that falls within the scope of the matters described in the Description attached to the application of the case and violate the provision of Article 126(5) of the Patent Act as applied mutatis mutandis under Article 134-2(9) of the Patent Act.

3 Entry/dismissal of correction

(1) Regarding Correction A

Since the Correction A intends to add a delimitation of "with a predetermined height by applying a pressure of at least 300 tons" to the recitation of "A bale of a filter tow baled and highly compressed into a block form" as recited in claim 1 prior to the correction, the Correction A has been presented for the purpose of restriction of the scope of claims in accordance with item (i) of the proviso to Article 134-2(1) of the Patent Act.

Also, it is understood that the "bale of a filter tow" according to claim 1 prior to the correction presupposes high compression applied such that the bale has "a baling density of at least 300 kg/m^3," in other words, compression under application of a high pressure. In addition, Paragraph [0044] of the Description states that "for example, in a press machine 3 that is capable of applying a pressure of about 300 to 400 tons, the bale is compressed so that it has a desired baling height," which is a statement on the use of a press machine having capability of "about 300 to 400 tons." In addition, Paragraph [0048] of the same document states that "a TYPE 3Y35 filter tow with a bale weight of 580 kg is processed with a pressure of 370 tons," which provides a specific exemplary process using a pressure of 370 tons.

As such, the "300 tons" as the lower limit of the pressure is not described in the

Description, etc. prior to the correction and the "300 tons" at issue cannot be regarded as a numerical value having a critical significance. Nevertheless, it is interpreted that the Correction A is merely directed to excluding the one that is not compressed with a high pressure in accordance with the above presupposition, for example, the one that is compressed with a pressure significantly smaller than "a pressure of 300 tons (24.5 bar; See "No. 8, Section 3 Regarding reason for invalidation 4")" such as the baling means described, for example, in Evidence A No. 1, and thus directed to clarification of the distinguishing feature over the prior art.

Accordingly, it is unreasonable to interpret that the Correction A introduces a new technical matter.

Hence, the Correction A is made within the range of the technical matters described in the Description, scope of claims, or drawings attached to the application and therefore is in compliance with the provision of Article 126(5) applied mutatis mutandis under Article 134-2(9) of the Patent Act.

Further, the Correction A does not substantially enlarge or alter the scope of claims, and complies with the provision of Article 126(6) applied mutatis mutandis under Article 134-2(9) of the Patent Act.

For reference, clarity of the "pressure of 300 tons" will be discussed in "No. 8, Section 3 Regarding reason for invalidation 4."

(2) Regarding Correction B

Since the Correction B seeks addition of a delimitation stating "the pressure acting upon the top side portion of the bale has a magnitude exceeding a limit of elastic deformation of the baled filter tow" to the pressure applied to the bale of the filter tow according to claim 1, the Correction B is intended for the purpose of restriction of the scope of claims as provided for in item (i) of the proviso to Article 134-2(1) of the Patent Act.

Also, as mentioned in the above "(1) Regarding the Correction A," it is understood that the "bale of a filter tow" according to claim 1 prior to the correction presupposes compression under application of a high pressure. In addition, it is an obvious matter that a filter tow having "multiple layers being stacked with each other and alternately stacked on the corresponding one of their top portions" (Paragraph [0002] of the Description of the case) does not have a large elastic restoring force against compression as in a porous body such as a sponge and that the filter tow that is compressed with a high pressure will not be elastically restored into its original state

after release of the pressure.

As such, it is an obvious matter that "the pressure acting upon the top side portion of the bale has a magnitude exceeding a limit of elastic deformation of the baled filter tow," which does not involve a noticeable technical significance in the context of baling of the filter tow. Meanwhile, it is also interpreted that the Correction B is merely directed to excluding a case where the pressure does not have "a magnitude exceeding a limit of elastic deformation of the baled filter tow," for example, a case of a "pressure less than the limit of elastic deformation of the product" such as the baling means described, for example, in Evidence A No. 1, and thus directed to clarification of the distinguishing feature over the prior art.

Accordingly, it is unreasonable to interpret that the Correction B introduces a new technical matter.

Hence, the Correction B is made within the range of the technical matters described in the Description, scope of claims, or drawings attached to the application and therefore is in compliance with the provision of Article 126(5) applied mutatis mutandis under Article 134-2(9) of the Patent Act.

Further, the Correction B does not substantially enlarge or alter the scope of claims, and complies with the provision of Article 126(6) applied mutatis mutandis under Article 134-2(9) of the Patent Act.

(3) Regarding Correction C

Since the Correction C relates to deletion of the wider one of the two numerical ranges recited in claim 8 prior to the correction, the Correction C is intended for the purpose of restriction of the scope of claims as provided for in item (i) of the proviso to Article 134-2(1) of the Patent Act.

Also, since the phrase "equal to or less than 10 mm" was described accompanied by "preferably" in claim 8 and Paragraph [0012] of the Description prior to the correction, the Correction C is made within the range of the technical matters described in the Description, scope of claims, or drawings attached to the application, and accordingly in compliance with Article 126(5) applied mutatis mutandis under Article 134-2(9) of the Patent Act.

Further, the Correction C does not substantially enlarge or alter the scope of claims, and complies with the provision of Article 126(6) applied mutatis mutandis under Article 134-2(9) of the Patent Act.

(4) In addition, claims 2 to 24 after the Correction of the case individually refer back to

the recitations of claim 1 after the Correction of the case including the Corrections A and B, refer back to any other claim that refers back to the corrected claim 1, or repeatedly refer back to preceding claims and the claims 1 to 24 after the Correction of the case constitute a group of claims having the relationship as provided for in item (i) or (ii) of Article 46-2 of the Regulations under the Patent Act.

(5) Accordingly, the Correction of the case is made for the purpose of the matters listed in the proviso to Article 134-2(1) of the Patent Act, and in compliance with the provisions of Article 126(5) and (6) applied mutatis mutandis under the provision of Article 134-2(9) of the Act. Hence, the Correction of the case is accepted as correction intended for a group of claims.

No. 3 The patent invention

In light of the recitations of the above corrected Description, scope of claims, and drawings, the invention according to claims 1 to 24 of the Patent (hereinafter referred to as "the Patent Inventions 1 to 24") are as follows, which are recited in claims 1 to 24 of the scope of claims.

"[Claim 1]

A bale of a filter tow baled and highly compressed into a block form with a predetermined height by applying a pressure of at least 300 tons, the bale having no expanded portion or constricted portion acting as hindrance on its top side portion and its bottom side portion, characterized by the fact that:

(a) the bale has a baling density of at least 300 kg/m^3;

(b) the bale is completely packed in a mechanically self-supporting elastic packing material, wherein the packing material includes one or more connection sections having airtightness with respect to convection flow, the packing material being a film whose gas permeability with respect to air at a temperature of 23°C and with a relative humidity of 75 percent is less than 10,000 $cm^3 / (m^2 \cdot d \cdot bar)$, the gas permeability being measured in accordance with DIN 53,380-V;

(c) when a flat plate is pressed on the top portion of the bale and brought into contact therewith and a force of 100 N is made to act upon the center of the bale in a vertical direction in a state where the bale that is yet to be unpacked is arranged on a horizontal plane, the top surface and the bottom surface of the bale is configured to be so flat that at least 90 percent of the portion residing within an inscribed rectangle on the top surface of the bale is spaced away from the flat plate by 40 mm or less within the range of the maximum rectangle inscribed in a vertical projection of the bale with

respect to the press contact plate;

(d) the bale has a height of at least 900 mm;

(e) at least after the bale has been baled, the bale is acted upon by a negative pressure of at least 0.01 bar with respect to an external pressure and

the pressure acting upon the top side portion of the bale has a magnitude exceeding a limit of elastic deformation of the baled filter tow.

[Claim 2]

The bale according to claim 1, characterized by the fact that the bale has a film having a tear strength of at least 10 N/15 mm (measured in accordance with DIN EN ISO 527-3).

[Claim 3]

The bale according to claim 1 or 2, characterized by the fact that the bale has a packing volume higher than 0.9 m^3 and/or a baling density higher than 350 kg/m^3 and in particular less than 800 kg/m^3.

[Claim 4]

The bale according to any one of claims 1 to 3, characterized by the fact that the bale has a height of at least 970 mm, in particular 970 to 1200 mm.

[Claim 5]

The bale according to any one of claims 1 to 4, characterized by the fact that the packing material is a plastic film.

[Claim 6]

The bale according to any one of claims 1 to 5, characterized by the fact that a connection section having airtightness with respect to convection flow is a seam that is impermeable to convection air.

[Claim 7]

The bale according to claim 6, characterized by the fact that the air-impermeable seam is a stacked heat seal seam or a fin-like seam.

[Claim 8]

The bale according to any one of claims 1 to 7, characterized by the fact that 90 percent of the surface of the top portion of the bale residing within the inscribed rectangle is spaced away from the flat plate by a distance equal to or less than 10 mm.

[Claim 9]

The bale according to any one of claims 5 to 8, characterized by the fact that it has a packing material formed by polyethylene, in particular LDPE or improved polyethylene (LLDPE).

[Claim 10]

The bale according to at least one of claims 5 to 8, characterized by the fact that the packing material is a layered film formed by stacking a polyamide layer and a polyethylene layer.

[Claim 11]

The bale according to any one of claims 1 to 10, characterized by the fact that the packing material has a thickness of 100 to 400 μm.

[Claim 12]

The bale according to any one of claims 1 to 11, characterized by the fact that the bale comprises an additional packaging for use in transportation comprising a cardboard or synthetic fabric and is further packed with a strap.

[Claim 13]

A process of packing a bale of a filter tow in particular according to any one of claims 1 to 12, comprising the steps of

(a) preparing the filter tow in a compressed state;

(b) packing the compressed filter tow with a package packing material;

(c) sealing the package packing material into an airtight state;

(d) releasing a load acting upon the packed bale; and

(e) creating a negative pressure within the package packing material from which the load has been released, the negative pressure being at least 0.01 bar with respect to an external pressure.

[Claim 14]

The process according to claim 13, characterized by the fact that the negative pressure is created by natural expansion of the compressed filter tow.

[Claim 15]

The process according to claim 13 or 14, characterized by the fact that the negative pressure is created by discharging of air.

[Claim 16]

The process according to claim 15, characterized by the fact that the air is discharged with aid of a vacuum pump.

[Claim 17]

The process according to any one of claims 13 to 16, characterized by the fact that a negative pressure that is lower by 0.15 to 0.7 bar than the ambient pressure is created.

[Claim 18]

The process according to claim 17, characterized by the fact that a negative pressure that is lower by 0.2 to 0.40 bar than the ambient pressure is created.

[Claim 19]

The process according to any one of claims 13 to 18, characterized by the fact that the package packing material is sealed by a method such as welding or heat sealing, in particular by forming an overlapping seam or a fin-like seam.

[Claim 20]

The process according to any one of claims 13 to 19, characterized by the fact that a film whose water vapor permeability at a temperature of 23°C and with a relative humidity of 85 percent is less than 5 g / (m^2·d) or preferably less than 2 g / (m^2·d) is used as the package packing material, the water vapor permeability being measured in accordance with DIN 53,122.

[Claim 21]

The process according to any one of claims 13 to 20, characterized by the fact that a film whose gas permeability is less than 200 cm^3 / (m^2·d·bar) or preferably less than 20 cm^3 / (m^2·d·bar) is used as the package packing material.

[Claim 22]

The process according to any one of claims 13 to 21, characterized by the fact that a film whose tear strength (measured in accordance with DIN EN ISO 527-3) is at least 10 N/15 mm or in particular at least 100 N/15 mm is used as the package packing material.

[Claim 23]

The process according to claim 22, characterized by the fact that the tear strength is at least 200 N/15 mm (measured in accordance with DIN EN ISO 527-3).

[Claim 24]

The process according to any one of claims 13 to 23, characterized by the fact that the process is controlled such that a baling density of at least 300 kg/m^3 is obtained."

No. 4 The demandant's allegation

The demandant of the trial alleges that the Patent according to the Patent Inventions 1 to 24 should be invalidated and presented Evidence A Nos. 1 to 34 as means of proof. Also, the demandant identifies a series of grounds for invalidation, which are summarized below.

Evidence A No. 1: British Patent Application Publication No. 1156860 (1969)
Evidence A No. 2: British Patent Application Publication No. 1280932 (1972)
Evidence A No. 3: British Patent Application Publication No. 1310029 (1973)

Evidence A No. 4: U.S. Patent No. 4157754 (1979)
Evidence A No. 5-1: Japanese Unexamined Patent Application Publication No. S59-183685
Evidence A No. 5-2: Japanese Unexamined Patent Application Publication No. H11-235169
Evidence A No. 5-3: Japanese Unexamined Patent Application Publication No. 2001-95552
Evidence A No. 5-4: Japanese Patent Publication No. H4-18834
Evidence A No. 5-5: Japanese Unexamined Patent Application Publication No. H6-30752
Evidence A No. 5-6: Japanese Unexamined Patent Application Publication No. 2004-75851
Evidence A No. 6: "MEDIPACK AG," January 2003 (copy)
Evidence A No. 7: Yoshihiro Osu, "New Food Packaging Film - Flexible Packaging and Environmental Problems -" Third impression of the Revised Edition, Nippo Kikaku Hanbai Co., Ltd., October 1, 2000, pp. 148-153, pp. 206-213, and pp. 396-399 (copy)
Evidence A No. 8: Brochure titled "ACETATE TOW FOR CIGARETTE FILTERS cigatow" by DAICEL CHEMICAL INDUSTRIES, LTD. (copy)
Evidence A No. 9: "Handbook of Plastic Packaging Materials (revised and enlarged edition)" edited by Susumu Awara, Japan Society of Plastics Technology, April 17, 1967, pp. 28-31, pp. 66-73, and pp. 102-103 (copy)
Evidence A No. 10: Japanese Unexamined Patent Application Publication No. S53-21689
Evidence A No. 11: Japanese Unexamined Patent Application Publication No. H6-238839
Evidence A No. 12: Japanese Patent Publication No. H8-583
Evidence A No. 13: Japanese Unexamined Utility Model Application Publication No. H2-79265
Evidence A No. 14: "ISO 527-3," First Edition, August 1, 1995 (copy)
Evidence A No. 15: Japanese Unexamined Patent Application Publication No. H6-92331
Evidence A No. 16: Japanese Unexamined Patent Application Publication No. S63-248628
Evidence A No. 17: Japanese Unexamined Patent Application Publication No. S53-21685
Evidence A No. 18: Japanese Unexamined Patent Application Publication No.

2001-206322
Evidence A No. 19: U.S. Patent No. 3246443 (1966)
Evidence A No. 20: Japanese Unexamined Patent Application Publication No. 2000-128119
Evidence A No. 21: British Patent Application Publication No. 398144
Evidence A No. 22: German Utility Model Registration No. 29615598
Evidence A No. 23: Japanese Unexamined Patent Application Publication No. H3-124518
Evidence A No. 24: Printed "History" page from the website of Valvan Baling Systems (copy)
Evidence A No. 25: Japanese Unexamined Patent Application Publication No. S53-143491
Evidence A No. 26: Japanese Patent Publication No. H3-35176
Evidence A No. 27: Japanese Patent No. 2857400
Evidence A No. 28: Japanese Utility Model Registration No. 2516741
Evidence A No. 29: Certificate of experimentation (April 4, 2014, prepared by Masataka Mitsuida, Process Development Centre of Daicel Corporation Cellulose Company)
Evidence A No. 30: A web page titled "What is glass wool (glass fiber)?" on the website of Asahi Fiber Glass Co., Ltd. printed on April 1, 2014 (copy)
Evidence A No. 31: Certificate of experimentation (2) (April 10, 2014, prepared by Masataka Mitsuida, Process Development Centre of Daicel Corporation Cellulose Company)
Evidence A No. 32: "Certificate of experimentation (2) submitted by the demandant in the case of Intellectual Property High Court 2010 (Gyo-Ke) No. 10214 (August 26, 2010, prepared by Tomoharu Miyashita, Filter Development Centre, Planning and Development Section of Daicel Corporation Cellulose Company)" (copy)
Evidence A No. 33: "Iwanami's dictionary of physics and chemistry, Fourth Edition," Iwanami Shoten, Publishers, October 12, 1987 (copy)
Evidence A No. 34: Report (October 8, 2014, prepared by Masataka Mitsuida, Process Development Centre of Daicel Corporation Cellulose Company)
Reference Document 1: "Decision on opposition of European Patent No. 1497186," June 18, 2009 (copy)
Reference Document 2: "Trial decision concerning the decision on opposition of European Patent No. 1497186," July 12, 2011 (copy)

1 Reasons for invalidation 1

It is alleged as follows: Since the Patent Inventions 1 to 24 would have been easily made by a person skilled in the art prior to the priority date of the Patent on the basis of the invention described in Evidence A No. 1 and the well-known art, the Patent has been granted in violation of the provision of Article 29(2) of the Patent Act, the Patent falls under item (ii) of Article 123(1) of the Act, and therefore the Patent according to claims 1 to 24 should be invalidated.

2 Reasons for invalidation 2

Withdrawn

3 Reasons for invalidation 3

It is alleged as follows: Since the Patent Inventions 1 to 24 would have been easily made by a person skilled in the art prior to the priority date of the Patent on the basis of the invention described in Evidence A No. 1 and the invention described in Evidence A No. 4 as well as the well-known art, the Patent has been granted in violation of the provision of Article 29(2) of the Patent Act, the Patent falls under item (ii) of Article 123(1) of the Act, and therefore the Patent according to claims 1 to 24 should be invalidated.

4 Reasons for invalidation 4 (Page 5 of the written refutation dated October 14, 2014, which was introduced by the amendment to the reasons for request accepted on February 26, 2015)

The corrected recitation of "applying a pressure of at least 300 tons" in no way identifies the nature of the compression force at issue and renders indefinite the technical scope of claim 1 as corrected by the Correction of the case, and therefore claim 1 fails to comply with item (ii) of Article 36(6) of the Patent Act.

5 Reasons for invalidation 5 (Page 14 of the same written refutation, which was introduced by the amendment to the reasons for request accepted on February 26, 2015)

The demandee may allege that the Patent Invention 8 after the correction involves a certain special feature for achieving the configuration of "being spaced away from the flat plate by a distance of 10 mm or less," and this feature distinguishes the claimed invention over the Cited Invention. If, arguendo, the demandee's allegation is reasonable, then it should be further alleged by the demandant that the Description attached to the application fails to describe the technical matter for achieving the

configuration of "being spaced away from the flat plate by a distance of 10 mm or less" and therefore the Patent Invention 8 after the correction fails to comply with the requirement of item (i) of Article 36(6) of the Patent Act.

No. 5 The demandee's allegation

The demandee alleges as follows: the Patent Inventions 1 to 24 would not have been easily made by a person skilled in the art prior to the priority date of the Patent on the basis of the invention described in Evidence A No. 1 and the well-known art; the Patent Inventions 1 to 24 would not have been easily made by a person skilled in the art prior to the priority date of the Patent on the basis of the invention described in Evidence A No. 1 and the invention described in Evidence A No. 4 as well as the well-known art; accordingly the reasons for invalidation 1 and 3 do not exist; the recitation of claim 1 after the correction is clear and definite and thus the reason for invalidation 4 does not exist; and the Patent Invention 8 after the correction is described in the detailed description of the invention and thus the reason for invalidation 5 does not exist, either.

In addition, Evidence B Nos. 1 to 4 are presented as means of proof by the demandee.

Evidence B No. 1: "German Standard DIN 15 146" (copy)

Evidence B No. 2: Company's prospectus titled "Some Useful Information about the Reusable Packaging for Rhodia Filter Tow" (copy)

Evidence B No. 3: "ACETATE TOW FOR CIGARETTE FILTERS cigatow$_R$ CELLULOSICS" (copy)

Evidence B No. 4: A book titled "Cellulose Acetates: Properties and Applications" (2004) (excerpts) (copy)

No. 6 Respective items of Evidence A

1 Evidence A No. 1

Evidence A No. 1 describes the following matters:

(1) "This invention relates to porous panels of elastic fibrous or cellular material, particularly to panels of mineral fibre, for example a glass fibre, held together by a binder.

Such panels are particularly used as thermal and/or acoustical insulation and have a loose structure, the fibres occupying a small part of their volume. Thus the volume of the fibres may be of the order of 3% of the total volume of the panel. As a

result, such panels are of low density, and are cumbersome. This constitutes a serious drawback for their transport, which greatly increases their price at the place of use, and also for their storage, which requires considerable covered areas. On the other hand, if the panels are transported or stored without being protected, currents of air may circulate in them and these currents may cause convection or produce variations of atmospheric pressure. These currents are harmful to the insulating properties because of the humidity of the ambient air or the presence of dust in ambient air. They are particularly harmful in the case of salty air for example, when the panels are transported by sea, as they cause salt deposit on the fibres, which considerably reduces the insulating properties.

Another disadvantage is that such panels, the fibres of which are level with the surface, are relatively fragile and are easily damaged when stacked." (Page 1, Lines 9 to 42)

(2) "The process according to the invention comprises:- placing a porous panel or a stack of porous panels in a flexible envelope or constituent parts of an envelope, while leaving communication between the interior of the latter and atmosphere free; exerting compression perpendicular to the main faces of the panel or stack, so as to reduce the thickness thereof, which pressure is less than the elastic deformation limit of the product; and hermetically sealing the envelope while under compression.

Under these conditions, it is possible to reduce considerably the volume of a panel or stack of panels while making it possible for it or them to return sensibly to the original state when removed from the envelope.

It has been found that after the pressure exerted on the large faces of the panel or stack is released, the product swells again, because of its elasticity, inside the sealed envelope, so that the pressure inside the envelope becomes lower than atmospheric pressure. This swelling continues until there is equilibrium between, on the one hand, the sum of the elastic pressures directed towards the swelling of the product and the air pressure or gas pressure contained in the envelope which is below atmospheric pressure, and, on the other hand, the external pressure on the envelope, i.e. atmospheric pressure. Once this equilibrium has been reached, what may be termed the stable state of the panel or stack is obtained." (Page 1, Line 52 to Page 2, Line 7)

(3) "According to an optional feature of the invention, the volume of the envelope is greater than the volume which is capable of taking the panel or stack in its stable state, so that, under atmospheric pressure, the faces of the panel or stack remain flat. Moreover, it is desirable that the size of the flexible envelope, corresponding to the height of the panel or stack, should be capable of reaching a value which is at least

equal to that of the panel or stack when the stable state is achieved. It is even advantageous that the size of this envelope should be clearly greater, which avoids, should air re-enter, any great deformation of the main surfaces of the panel or stack.

The compression exerted can vary within wide limits, according to the characteristics of the panel (density, nature and diameter of the fibres, nature and density of the binder, etc.). As a general rule, in order to obtain a reduction of 50% of the initial thickness, it is sufficient to exert on the large faces of the panels a compression of the order of 0.1 to 0.2 bars." (Page 2, Lines 8 to 32)

(4) "The envelope can be any flexible impermeable material, for example polyethylene polyvinyl chloride or cellulose acetate.

The panel or stack can be placed in an already-adapted envelope, before or during compression, leaving free communication between the interior of the envelope and atmosphere.

One can also place on each of the main faces of the panel or stack, before compression, a sheet of the material of which the envelope is to be comprised, and, after compression, seal the envelope by joining hermetically the edges of the sheets.

The compression can be carried out by any suitable means, for example between rigid plates, the surfaces of which are greater than those of the main face of the panel or stack, or between convergent conveyor belts." (Page 2, Lines 43 to 62)

(5) "Before compression, this stack is placed in an envelope which can be in the form of a bag, and completely or partially open.

In the example shown, two sheets M^I and M^{II} of flexible material are used, which are applied onto the main faces of the stack, the dimensions of these sheets being greater than those of the main faces.

The stack of panels is then subjected to a compression which is uniform and perpendicular to these main faces. Compression is carried out by placing the stack between a fixed plate 11 and a pressure plate 10.

The pile P is compressed until its thickness is reduced to a value S^{II} which is a function of the different factors, to which further reference will be made.

While the stack of panels P is maintained at its reduced thickness S^{II}, the envelope is sealed by welding together the edges of the sheets M^I and M^{II}, for example by thermal welding.

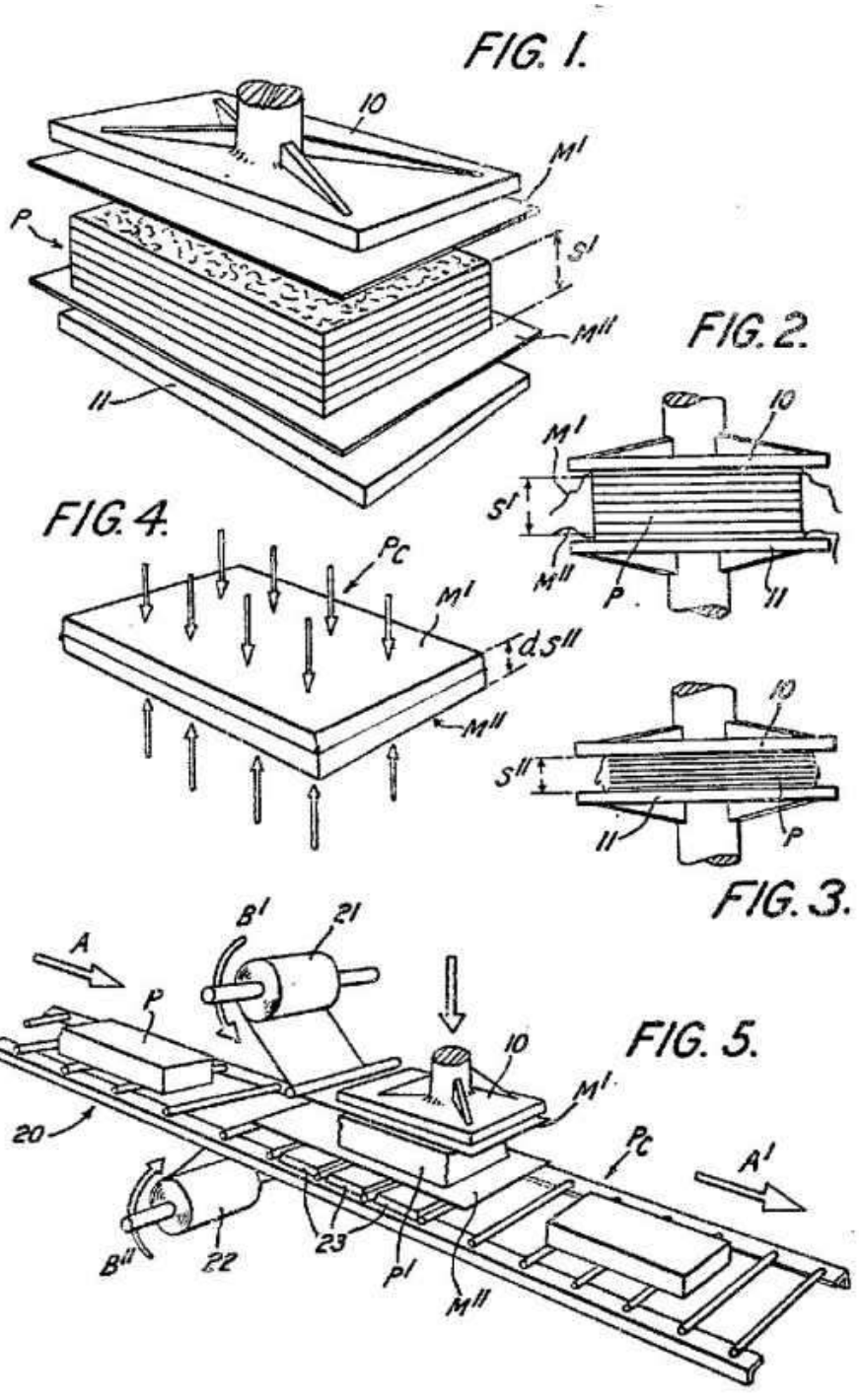
The welding of the envelop is realised in such a way that, taking into consideration the ultimate elastic swelling of the product, an envelope is obtained with a height that is at least equal to that of the stack of panels when the latter takes on its stable state.

Figure 4 shows a conditioned stack Pc. The thickness of this stack is dS^{II} which is slightly greater than the thickness S^{II} endowed on it during compression and which corresponds to the stable state, the sum of the elastic pressure exerted by the product and the interior pressure of the gas in the envelope being, therefore, equal to the atmospheric pressure shown by a series of arrows perpendicular to the large faces of the stack." (Page 2, Line 92 to Page 3, Line 2)

(6) "These curves make it possible to determine the degree of compression to be exerted on the panels or stacks of panels in order to return to the latter a given percentage of their original thickness after a certain length of time in storage. For example, if 50 days elapse between conditioning and removal from the package, and if the product is to regain 96% at least of its initial thickness, compression should not exceed 40% of this thickness. This compression can be higher if the product is not in its encased state for long, and if a lesser elastic return is tolerated." (Page 3, Lines 35 to 48)

(7) "The hermetic packaging of the products conditioned according to the invention makes it possible to ensure that the most favourable ambient conditions are maintained in the package." (Page 3, Lines 58 to 69)

(8) Figures 1 to 5



In the above FIG. 4, a stack Pc of panels P is illustrated that is vertically covered by two sheets M^{I} and M^{II} of flexible material placed on its main faces, wherein the stack Pc of panels P resides within the package and is in the shape of a rectangular parallelepiped having a thickness dS^{II}.

In light of the above descriptions, it is recognized that the following invention (hereinafter referred to as "the Cited Invention") is described in Evidence A No. 1.

Cited Invention

"A stack Pc of porous panels of elastic fibrous or cellular material, particularly panels P made of a glass fibre, held together by a binder, used as thermal and/or acoustical insulation, and having a loose structure, the fibres occupying a small part of their volume, wherein:

(a) two sheets M^{I} and M^{II} of flexible material, which are component parts of the flexible envelope, are placed on the top and bottom main faces of the stack Pc of panels P, the flexible material comprising flexible impermeable material such as polyethylene, etc.;

(b) compression perpendicular to the main faces of the stack Pc is exerted thereon by means of a fixed plate 11 and a pressure plate 10, which pressure is less than the elastic deformation limit of the product, so as to reduce the thickness of the stack Pc until it is reduced to a certain value S^{II};

(c) while the stack Pc of panels P is maintained at its reduced thickness S^{II}, the envelope is airtight-sealed by welding together the edges of the sheets M^{I} and M^{II}, wherein the welding of the envelop is realised in such a way that an envelope is obtained with a height that is at least equal to that of the stack Pc of panels P when the latter takes on its stable state;

(d) after the pressure exerted on the large faces of the stack Pc is released, the stack Pc swells again inside the sealed envelope, so that the pressure inside the envelope becomes lower than atmospheric pressure, where equilibrium is reached, as the result of the swelling, between, on the one hand, the sum of the elastic pressures directed towards the swelling and the air pressure or gas pressure contained in the envelope which is below atmospheric pressure, and, on the other hand, the atmospheric pressure, so that the stack Pc is made in the form of a rectangular parallelepiped with the thickness dS^{II}; and

(e) the compression exerted can vary within wide limits, according to the characteristics of the panel P (density, nature, and diameter of the fibres, nature and density of the binder, etc.) but as a general rule, in order to obtain a reduction of 50% of the initial thickness, it is sufficient to exert on the large faces of the panels P a compression of the order of about 0.1 to 0.2 bar."

2 Evidence A No. 2

Evidence A No. 2 describes the following matters as well as Figures 1 to 11:

(1) "In the baling and packaging under compression of materials which expand when the pressure is released, for example many fibrous materials, it is desirable to save labour and save time by making as many as possible of the individual operations

involved automatic." (Page 1, Lines 9 to 15)

(2) "The plastic skinned bale formed by the process of the present invention is insensitive to impacts because the skin is flexible. The package is unaffected by rain or moisture and the skin yields sufficiently to absorb the expansive pressure of the baled material. The packing material has a negligible weight compared with two or three layers of corrugated cardboard, and in the case of plastic bag parts, can be conveniently stored, stacked flat on top of each other. Each bag part can be easily opened out before use and the problem of supporting the walls of the second bag part as it is pushed into the first bag part is solved by inverting the bag and pushing it in base first. The walls of the bag-part are then supported by the sides of the end wall. As already mentioned the two bag parts are then welded together and on release of the baling pressure the second bag part is forced inside out to assume a normal cap shape by the expansive pressure of the baled material." (Page 2, Lines 66 to 89)

(3) "The packaged bale may be tied loosely around with cord or ribbon before the packaged material is allowed to expand by relatively moving the end walls apart, so that on expansion the volume of the bale increases and pulls the tying cord or ribbon tight. However, the packaged bale need not necessarily be tied, depending on the nature of the material being baled and on the length of the packing material used." (Page 2, Lines 103 to 112)

(4) "Each bagbase 8 and bag-cap 6 has a rectangular cross section corresponding to the cross section of the stationary press box 4. Each bagbase 8 and bag-cap 6 has a bottom, four side walls and an open mouth, and is made of a flexible, weldable synthetic plastics material." (Page 3, Lines 114 to 120)

(5) "For the subsequent welding process, i.e., the welding of the bag-cap part to the bagbase part after the bagbase has been filled with fibrous material, there are welding devices 31, as shown in figure 4, in the sidewalls of the stationary press box 4, with welding heads 32 which can be driven inwards for effecting the welding. The welding heads 32 are positioned above the level of the bagbase mouth, to give room below for the spreader fingers 21.

The process of forming, bagging and tying a bale of fibrous material is as follows." (Page 4, Lines 78 to 90)

(6) "In the next stage of the process, the retainer fingers 16 are swung outwards, releasing the partly compressed plug in the box 3b so that it expands rapidly upwards, propelling a blast of air which inflates the bag-base part 8 positioned above the box 3b in the stationary press box 4... (omitted)...

In the next stage, the upwardly acting plunger 14 pushes the fibrous material up

into the bagbase part 8, compressing the material and pushing the bag-cap part 6 up into the mouth of the bag-base part 8, as represented in figure 8...(omitted)...

Also before this, the welding heads 32 are actuated, as represented in figure 9, squeezing the two overlapped layers of bag material against the sides of the tying plate 10, whereupon the weld is made. However, no weld is made at the locations of the tying grooves. These locations are subsequently covered over by the tying cords or ribbons 34 as represented in figure 10. The tying is done in the press in known way, but the tying cord or ribbon is not drawn tight. When the tie has been made, the plunger 14 travels downwards, taking the tying plate 10 down with it. As a result the fibrous material in the bag expands slightly and pushes the bag-cap part 6 inside out, as represented in figure l1. This brings the tying cord or ribbon up tight so that a tightly tied, bagged bale of fibrous material is formed.

However, it is not always necessary to tie the bagged bale. In some cases it is sufficient to leave the two bag parts merely welded together at their edges, in which case the weld is made continuous all the way round. To obtain a continuous weld, the tying plate 10 is advanced until the continuous edge of the tying plate, or the edge of the plunger 14 comes opposite the welding heads 32. As a further possibility, a continuous weld may be made, and the bagged bale then tied as well, the tying plate 10 being retracted after the welding until its tying grooves emerge, allowing the bagged bale to be tied.

... (omitted)...

The preferred example of the process in accordance with the invention, which has been described above, is for forming bagged bales of the highest quality, i.e. in which the bale material is completely enclosed .... (omitted)... The product is a packed bale, for example, of rags, cleaning wads and the like, which is not protected at the sides." (Page 5, Lines 8 to 102)

3 Evidence A No. 3

Evidence A No. 3 describes the following matters along with Figures 1 to 8:

(1) "This invention relates to packaging filamentary tows into boxes or other suitable containers in such manner that after storage or transport the tow may be continuously and evenly withdrawn for further processing for example into spun yarn." (Page 1, Lines 9 to 14)

(2) "The open topped container may be closable so as to form a transportable carton. Alternatively the compacted tow may be removed from the container and then packed in a carton; and it is possible for the liner merely to be strapped for instance with steel

bands for handling as a bale. The first two alternatives are preferred in order to prevent disturbance of the tow and promote evenness during withdrawal." (Page 1, Lines 51 to 60)

(3) "Referring to the drawings, Figure 1 shows an empty container (1) with an extension (2), clamped into position by wing nuts and bolts 2A and 2B and an air impermeable liner (3) folded into position. Figure 2 shows a sideways laying mechanism (4) for a filamentary tow (5). This is synchronised with slower back and forth movement mechanism indicated at (6) for the container (1) to ensure uniform laying of the tow in layers of over substantially the whole plan area of the container. When the liner (3) is filled with tow (5) feeding is interrupted, the tow is cut and a vacuum probe (7) is inserted into the liner, and laid on top of the two without disturbing the lay of the contents. Wings nuts and bolts (2A) and (2B) are unclamped so that extension (2) may telescope over the container (1), as shown in Figure 5. The liner is then made airtight around the probe and evacuation of the air from the liner is begun with the probe resting on the top layer of the tow, without burying it. The liner may be simply gathered up round the probe and tightened round the tube of the probe as shown in Figure 4. The liner with its content contracts, and as the liner bag wrinkles and shrinks it takes the extension (2) progressively down with it. On completion of evacuation to a pressure of 380 mm. of mercury, the extension (2) may be withdrawn. A hinged side door (9) is opened as shown in Figure 6 and the liner with its contents of filamentary tow is inserted into an open cardboard packing case (11) after rolling down the incline of the roller table container as shown in Figure 7,. In one form of the apparatus the packing case is steadied against a pivoted platform which can be tilted upright as shown in Figure 8. Lid side flaps (13) and (14) as well as back and front flaps (not shown) are closed and the packing box (11) is strapped, the probe withdrawn, the carton sealed, and made ready for dispatch." (Page 2, Lines 1 to 44)

4 Evidence A No. 4

Evidence A No. 4 describes the following matters along with Figure 1:

(1) "This invention relates to compressed fibers, filaments or cabled tows and more specifically it relates to a packing for compressed fibers, filaments or cabled tows which is subjected to an internal pressure of at least 0.2 daN/cm^2.

The invention relates in particular to a packing of compressed cabled tows intended for processing into tobacco smoke filter elements and subjected to an internal pressure of at least 0.2 daN/cm^2." (Column 1, Lines 5 to 13)

(2) "These known packagings have the disadvantage that straps made of steel, belts,

wires or the like in order to hold the individual parts of the packaging together and to withstand the high internal pressure, must be tied around the fiber or filament bales. This renders the packing considerably more expensive. Further the handling of the bales with these straps is not harmless because they have very sharp edges.

Another disadvantage of the known packings for compressed fibers, filaments or cabled tows is that in order to open the package, the straps or similar holding means must first be removed. Due to the high internal pressure of the package the ends of the holding means when cut snap apart, which in turn results in an increased risk of accident and injury.

Still another disadvantage is that the holding means cut into the packaging and particularly into the edges due to the high internal pressure, so that the possibility exists that the packaged material is damaged.

An object of the present invention is to provide a packing for compressed fibers, filaments or cabled tows which is subjected to high internal pressure and which permits to eliminate or substantially diminish the above mentioned disadvantages of the known packings while retaining as much as possible the features of conventional and proven packaging material.

High internal pressure is understood to be a pressure of at least 0.2 daN/cm^2.." (Column 1, Lines 36 to 63)

(3) "The following example and the drawing FIG. 1 illustrate the packaging of the present invention, but are not intended to limit the scope of the invention. By reference to FIG. 1, numerals 1, 2 and 3 designate the outer portions of the wrapping and numeral 4 designates the areas of overlapping.

EXAMPLE

A tow of endless cellulose acetate filaments of a total titer of 50,000 dtex whose individual filaments had a titer of 2.8 dtex and 19 to 20 crinkles per centimeter was compressed by means of a known machine into a bale of density 0.37 g/cm^3.

The bale weighed 320 kg and had the following dimensions:

Length: 1287 mm

Width: 737 mm

Height: 843 mm." (Column 2, Lines 11 to 28)

(4) "Accordingly, the new packing also withstands all the usual stresses to which it is subjected during storage, transport and all other handling of the bales packaged with it.

The advantages which may be achieved with the packing according to the present invention as compared with known packings are in particular the elimination of the holding straps, belts, wires or the like required for the known packings." (Column 2,

Lines 51 to 59)

5 Evidence A No. 5-1

Evidence A No. 5-1 describes the following matters.

(1) "Traditionally, various materials such as acetate, paper, rayon, and polypropylene, etc. are proposed as the base materials for cigarette filters, some of which have already been put to practical use." (Page 1, Left column, Lines 13 to 16)

(2) "In the context of the present invention, various materials including protein, polyamide, polyvinyl alcohol, silica gel, and polystyrene may be mentioned as the filter base material as well as traditionally known materials including acetate, cotton, paper, rayon, polypropylene, and water. They are used in the form of fibers, powders or grains, beads, solution, or the like." (Page 2, Upper left column, Line 1 to Upper right column, Line 3)

6 Evidence A No. 5-2

Evidence A No. 5-2 describes the following matters.

(1) "The cigarette smoke filter adapted to be attached to the lip-side of the leaf tobacco portion may be configured by commonly used filter materials, for example, fibers and powders or granular bodies such as cellulose (wood pulp, linter pulp, etc. which may be fibrillated), recycled cellulose (viscose rayon, cuproammonium rayon, etc.), cellulose ester, and synthetic polymer (polyester, polyurethane, polyamide, polyethylene, polypropylene, etc.). These fibers and powder or granular bodies may be independently used or may be used by combining two or more types thereof. The preferable filter materials include cellulose fibers and/or cellulose ester fibers, and tend to contain at least cellulose ester fiber to improve smoking taste. The following materials, by way for example, may be mentioned as the cellulose ester fibers: organic acid ester (e.g., those comprising ester and organic acid with the carbon number in the order of 2 to 4) such as cellulose acetate, cellulose propionate, cellulose butyrate; mixed acid ester such as cellulose acetatepropionate and cellulose acetatebutyrate; and cellulose ester derivative such as polycaprolactone grafted cellulose ester. These cellulose ester fibers can also be used independently or in the state of mixture of fibers of two or more types." (Paragraph [0012])

7 Evidence A No. 5-3

Evidence A No. 5-3 describes the following matters.

(1) "The aforementioned porous glass is not limited to any particular form as long as it

is contained in the cigarette smoke filter, so that porous glass processed into the form of fibers may be directly formed into a filter, or alternatively may be formed into a filter in combination with other filter materials. When it is used in combination with other materials, the state of distribution of the porous glass is not limited to any particular form, and the porous glass may be evenly distributed (scattered) in the entire product, or may reside unevenly or partly therein. Also, the aforementioned porous glass may be added to general cigarette smoke filters in various modes or forms depending on their structures (in the form of fibers, in a granular state, in a pulverized state, and the like). [Filter material] When a cigarette smoke filter is configured by combining the aforementioned porous glass and the filter material, the filter material may be configured, for example, by cellulose (wood pulp, linter pulp, etc. which may be fibrillated), recycled cellulose (viscose rayon , cuproammonium rayon, etc.), cellulose ester, and synthetic polymer (polyester, polyurethane, polyamide, polyethylene, polypropylene, etc.), and the form of the filter material may be fibers, a sheet, or paper (such as a sheet having a paper structure)." (Paragraph [0024])

8 Evidence A No. 5-4

Evidence A No. 5-4 describes the following matters.

(1) " A filter plug manufacturing machine is used for (producing) the cigarette filter plug. The filter material, for example, synthetic materials such as cellulose acetate, polyethylene, polypropylene, and polyvinyl alcohol; recycled materials such as pulp sheet, crepe paper, and glass fiber; or alternatively, natural materials such as cotton, wool, and the like, are ..." (Page 1, Left column, Lines 15 to 21)

9 Evidence A No. 5-5

Evidence A No. 5-5, which describes the invention titled "Cigarette with Improved Base Material," describes the following matters along with FIGS. 1 to 10.

(1) "FIGS. 1 and 2 illustrate by way of example a cigarette having a carbonaceous fuel element 10 surrounded by a heat insulating jacket. The above-described jacket includes layers of alternating glass fiber parts 30, 34 and tobacco paper parts 32 and 36, and a sleeve 12 is arranged in the longitudinal direction and rearward of the above-described fuel element ... (Omitted)... The portion to be put into the lip of the cigarette is constituted by two components, i.e., a tobacco paper part 20 and low-efficiency polypropylene filter material 22." (Paragraph [0025])

(2) "As illustrated in FIG. 6, the above-described jacket includes, in the radial direction away from fuel element, (a) a glass fiber mat 62; (b) a tobacco paper part 64; (c) a glass

fiber mat 66; and outer roll paper part 13 in this order, and thus includes multiple layers of alternating glass fiber layers and tobacco paper layers that are coaxially arranged in the form of a ring in the radial direction." (Paragraph [0033])

10 Evidence A No. 5-6

Evidence A No. 5-6 describes the following matters.

(1) "[Prior Art]

Cigarette filter plugs are manufactured by using a filter plug manufacturing machine; performing pre-treatment as required for a filter material, for example, synthetic materials such as cellulose acetate, polyethylene, polypropylene, and polyvinyl alcohol, recycled materials such as pulp sheet, crepe paper, and glass fiber, or alternatively, natural materials such as cotton, wool, and the like; further adding a binder that binds filaments of the filter material as well as additives for improvement of filter functionality or smoking taste; and then forming the filter material into a bar-like filter body and at the same time winding cigarette paper around this bar-like body; the overlapping sections (which is hereafter called wrap portion) at both ends of the cigarette paper are adhered to each other by an adhesive agent; and then cutting the filter-and-cigarette-paper body such that it has a predetermined length." (Paragraph [0002])

11 Evidence A No. 6

Evidence A No. 6 includes "Technisches Datenblatt" (technical datasheet) of "MEDIPACK AG," in which a list of "Gas-undWasserdampfdurchlaessigkeit verschiedener Kunststoffe" (gas permeability and water vapor permeability of different plastics" is included, according to which: referring to the first row of the list, with regard to "PE d = 0.918" identified in the field of "Kunststoff" (plastic), the values of "Gasdurchlaessigkeit nach DIN 53 380 (gas permeability according to DIN 53 380) cm^3 x 100/μm/m^2 x d x bar" are "2,100" for "O_2;" "400" for "N_2;" and "6,000" for "CO_2," respectively, and the values of "Wasserdampfdurchlaessigkeit nach DIN 53 122 0/85%r.F. (water vapor permeability according to DIN 53 1220/85%r.F.) g x 100/μm/m^2 x d" is "1.1."

12 Evidence A No. 7

Evidence A No. 7 describes the following matters.

(1) The table titled "Table 8-1 Oxygen/Water Vapor Permeability of Various Plastic Films" (Page 207) indicates as follows: the film labeled as "flexible polyvinyl chloride

PVC" with the thickness of "30 (μm)" has the "oxygen transmission rate (25°C, 90%RH) cc/m^2·24hr·atm" being " 10, 000: major change" and "water vapor permeability (25°C, 90%RH) g/m^2·24hr" being "80 to 1,100." Likewise, the filter labeled as "low density polyethylene LDPE" with the thickness of "30 (μm)" has the oxygen transmission rate of "6,000" and the water vapor permeability of "18," respectively; the filter labeled as "low density polyethylene HDPE" with the thickness of "30 (μm)" has the oxygen transmission rate of "4,000" and the water vapor permeability of "7," respectively; the filter labeled as "unstretched polypropylene CPP" with the thickness of "30 (μm)" has the oxygen transmission rate of "4,000" and the water vapor permeability of "8," respectively; the filter labeled as "stretched polypropylene CPP" with the thickness of "20 (μm)" has the oxygen transmission rate of "2,200" and the water vapor permeability of "5," respectively; the filter labeled as "polyethylene terephthalate (polyester) PET" with the thickness of "12 (μm)" has the oxygen transmission rate of "120" and the water vapor permeability of "25," respectively; and the filter labeled as "stretched nylon (polyamide) ON" with the thickness of "15 (μm)" has the oxygen transmission rate of "75 (significant impact of humidity)" and the water vapor permeability of "134," respectively.

(2) The graph in "Table 8-8 Thickness and Oxygen Gas Permeability of Various Films" (Page 210) illustrates the following facts: When the thickness of the low density polyethylene is 30 μm, then the oxygen transmission rate (ml/m^2·24hr·atm) is about 6000. The oxygen transmission rate is decreased as the thickness becomes larger. Further, stretched polypropylene, polyvinyl chloride (rigid), polyester and polyamide have their oxygen transmission rates lower than that of low density polyethylene, and the oxygen transmission rate is decreased as their thicknesses becomes larger in the same manner as the low density polyethylene.

(3) The table of the "Base Film (created based on Manual of Plastic Films and Resin Materials '93 in January 1994 by Osuga)" (Page 396) indicates as follows: With regard to the "tensile strengths MD/TD" in units of "kg/mm^2" measured in accordance with "JIS K 7127," the "biaxially-oriented polypropylene film of Company A" with the thickness of "20 μ" has the tensile strengths of "14/30," the "biaxially-oriented polyester film of Company A" with the thickness of "12 μ" has the tensile strengths of "23/20," the "biaxially-oriented nylon film of Company A" with the thickness of "15 μ" has the tensile strengths of "20 to 25," and the "biaxially-oriented PVA FILM" with the thickness of "14 μ" has the tensile strengths of "21/21."

(4) The table of the "coextrusion film (created based on Manual of Plastic Films and Resin Materials '93, in January 1994 by Osuga)" (Page 398) indicates as follows: with

regard to "tensile strengths MD/TD" in units of "kg/mm^2" measured in accordance with "JIS K 7127, "Emblon M" with the thickness of "15" μ, "Emblon E" with the thickness of "15 μ," "Multi Exceed E" with the thickness of "60 μ," "Bariller film RNL" with the thickness of "25μ" in "nylon-based coextrusion biaxially-oriented films" have the tensile strengths of "27/30," "22/23," "9/9.4," and "13/4," respectively, and likewise "Bariller film RPP" with the thickness of "25 μ" and "Bariller film RHH" with the thickness of "25 μ" in the "olefin-based coextrusion stretched films" have the tensile strengths of "22/3.5" and "11/3.5," respectively, and "Barrialon C x 26" with the thickness of "64 μ," "Unimarv SW300" with the thickness of "50 μ," and "DIFAREN L3300T" with the thickness of "40 μ" in the "olefin-based coextrusion sealants" have the tensile strengths of "2.2/1.7," "3.7/3.1," and "3.5/2.5," respectively.

13 Evidence A No. 8

Evidence A No. 8 is a brochure that relates to "ACETATE TOW FOR CIGARETTE FILTERS cigatow$_R$," which contains the following pictures of a rectangular parallelepiped with a strap along with the following descriptions.
(1) "CIGATOW A Major Improvement in Filter Material CIGATOW, Cellulose Acetate Tow produced from acetate fiber for use in cigarette filters, was first introduced into the market in 1956 by DAICEL Chemical Industries, Ltd....(omitted)... DAICEL is a major supplier of Acetate Tow as well as the Acetate Flake that is used as the basic material for CIGATOW. CIGATOW is now used extensively by leading manufacturers of cigarettes and cigarette fitters." (Page 1, Lines 12 to 21)
(2) "Packaging Specifications CIGATOW is packed in 1.0 to 1.2 cubic meter (approximate size) bales which contain approximately 360 kg to 500 kg of product. The standard packaging specifications are as follows:" (Page 5, Lines 1 to 4)
(3) "The weight and size of CIGATOW, when packaged in bales, are shown in the following table.
Net Weight (kg): Dimension (mm); length, width, height: Size (cubic meters)
360: 1050, 780, 1100: 0.9
420: 1050, 910, 1100: 1.1
500: 1140, 980, 1100: 1.3" (Page 5, Line 14 to Last line)

14 Evidence A No. 9

Evidence A No. 9 is a handbook titled "Handbook of Plastic Packaging Materials," in which "the nature of the film made, for example, from HI-ZEX" is indicated in <Table 2> in the section "III Nature of Low-Pressure Method Polyethylene

Films" on Page 67, in which values of 40 to 600 and 40 to 800 kg/cm^2 are indicated as the (Elmendorf) tear strengths according to the ASTM testing method.

15 Evidence A No. 10

Evidence A No. 10, which describes the invention titled "Storage Bag for Comforter-Type Item," describes the following matters.

(1) "A storage bag for a comforter-type item comprising a multilayer resin sheet is formed by a resin sheet with excellent airtightness on the front surface, a resin sheet with excellent adherence property on the rear surface, and an intermediate resin sheet with excellent mutual adhesion property that is placed between the two resin sheets so that they are adhered via the intermediate sheet to each other, wherein this multilayer resin sheet is subjected to a heat welding process, the storage bag being adapted to pack the comforter-type item therein." (Scope of claims)

(2) "FIG. 1 depicts a multilayer sheet 1 adapted for use in storing a comforter and the multilayer sheet 1 is formed by placing a nylon sheet 2 having excellent airtightness on its front surface, placing an EVA (ethylene-vinyl acetate resin) sheet 3 having excellent adhesive property on the rear surface, placing a polyethylene seat 4 having excellent mutual adhesive property between these sheets 2, 3, and subjecting these three sheets to a heat welding process.

It should be noted that the thickness of the nylon sheet 2 is 15 μ, the thickness of the EVA seat 3 is 20 μ, and the thickness of the polyethylene seat 4 is 30 μ, so that the multilayer sheet 1 is formed so that it has the thickness of 65 μ." (Page 2, Upper left column, Line 14 to Upper right column, Line 5)

(3) "Referring to FIG. 2(D), the press ram 7 is moved downward so that the comforter 6 is pressed thereby, and the air contained in this comforter is discharged, and at the same time the multilayer sheets 1, 1 surrounding the comforter 6 are heat-welded to each other by a heat sealer 8. At this point, the heat welding is possible as the EVA seats 3, 3 of the multilayer sheets 1, 1 face each other.

After that, the press ram 7 is moved upward and the packed comforter 6 is taken out. As illustrated in FIG. 3, a suction section 9 is left as part of the heat welded portion, and an appropriate suction pump 10 is inserted via this suction section 9 into the storage bag, and the air within the storage bag is further sucked and discharged therefrom.

After that, the suction section 9 is sealed by an appropriate manual heat sealer.

In this manner, the packaged comforter 6 that is put in the storage bag is packaged in a compact manner by virtue of the front surface of the multilayer sheet 1

being formed by the nylon sheet 2 so that it has excellent airtightness." (Page 2, Lower left column, Lines 2 to 18)

16 Evidence A No. 11

Evidence A No. 11, which describes the invention titled "Composite Film for Compression and Packing of Comforter," describes the following matters.

(1) "A composite film for compression and packing of a comforter characterized by the fact that it comprises, as its innermost layer, a seal-peel layer having a primary component of ethylene-vinyl acetate copolymer and having cohesive failure property with cohesion force of 200 to 600 gF/width of 15 mm; and, as its outermost layer, a polyamide resin layer." (Claim 1)

(2) "[Embodiment] There are provided five-layered articles having the following composite film layer structure: [nylon 6/adhesive resin/nylon 6/EVA/seal-peel layer]" (Paragraph [0008])

17 Evidence A No. 12

Evidence A No. 12 describes the following matters along with FIGS. 1 to 9.

(1) "The bag F for use in packaging has to have impermeability and it is preferable, for example, that the bag is formed by stacking a plurality of composite materials comprising nylon and polyethylene, or materials obtained by aluminum vapor deposited nylon of several layers (for example, 5 to 6 layers) and having thickness in the order of 80 to 120 μm." (Paragraph [0026])

(2) "In accordance with the present invention, it is made possible to store a fiber product in a compressed state within the impermeable bag and to readily make it into a compact shape. Also, since the fiber product is stored within the impermeable bag, it is protected against worm holes or exposure to humidity, so that it is made possible to keep the product in this state for a long period of time without degrading its quality, and, for example, it can be stored in the water or the ground for as long as ten years without the need of particular maintenance." (Paragraph [0039])

18 Evidence A No. 13

Evidence A No. 13 describes, along with FIGS. 1 to 7, a "compressed packaging sack characterized by the fact that a reinforcing material is arranged between an outer portion of a package material and a binding belt, the reinforcing material being configured to prevent the binding belt from biting into the packaging sack." (Scope of claims)

19 Evidence A No. 14

Evidence A No. 14, which describes the "ISO 527-3" standard, describes "Plastics -Determination of Tensile Properties - Part 3: Test condition for films and sheets."

20 Evidence A No. 15

Evidence A No. 15 describes the following matters along with FIGS. 1 to 4.
(1) "Articles that are expanded with a large amount of air contained therein such as cushions, comforters, and the like are expanded in their natural state and accordingly very bulky. In view of this, vacuum packaging is widely used to reduce the bulkiness. According to this mode of technique, cushions or the like items are subjected to vacuum packaging with a first airtight bag to make them in a flat state and thus they may be stored, transported, or displayed." (Paragraph [0002])
(2) "First, the cushion 1 is placed in the inner bag 2 and compressed by the press 3, and then the air inside of the bag is sucked and the vacuum packaging is realised. At this point, it should be ensured that the above-described inner bag 2 is larger than the cross section of the above-described cushions 1.

According to the above-described step, the cushion 1 is placed in a compressed state with a flat shape." (Paragraphs [0010] to [0011])

21 Evidence A No. 16

Evidence A No. 16 describes the following matters.
(1) "A method of compressing and packing a glass fiber bundle mat characterized by the fact that it comprises winding a mat around a cylindrical body having an outer diameter of 5 to 20 cm, the mat being formed by providing elongated glass fiber bundles in a bent shape and stacking the bent bundles; covering the bundles thus wound by a bag-like material comprising a synthetic resin film; expelling air from the inside of the bag-like material and thereby decreasing the pressure therein; compressing the mat by the atmospheric pressure; subsequently inserting a large-diameter sleeve having sufficient strength and bringing it into fitment with the bag-like material and thus taking it out of the decompressed state and causing the mat to be swollen by virtue of an elastically repulsive force; and causing the bulk density to be 140 to 300 kg/m^3." (Scope of claims)
(2) "It is made possible to reduce the space necessary for packaging and transportation as well as storage of the mat and to prevent any bent portion from being created in the mat that is unpacked and placed in condition for use." (Page 3, Lower left column,

Lines 6 to 8)

22 Evidence A No. 17

Evidence A No. 17 describes the following matters along with FIGS. 1 to 5.

(1) "Thus the air cylinder 12 is actuated to move the ram 13 downward, and the upper template 16 evenly presses the entire surface of the comforter 29 and discharge the air contained inside of the comforter ... (Omitted)... when the heat sealer 17 is brought into abutment on the die 6, then the heat sealer 17 heat-seals the upper and lower sheets 1a, 1b.

... (Omitted)... As the above-described heat sealer 17 is heat-sealed except for part of it, a portion that is not sealed is created on the seal section 30, and this unsealed portion is used as an evacuation hole 31.

Specifically, a suction pipe 32 connected to an appropriate suction device is inserted into the evacuation hole 31 and the air that is yet exist within the packed comforter 29 is discharged in an auxiliary manner.

... (Omitted)...

After that, the evacuation hole 31 is heat-sealed, for example, by a hand-held heat sealer and thus the vacuum packaging is completed.

It should be noted that the evacuation hole 31 remains in an unsealed state until evacuation takes place using the suction pipe 32, but the atmospheric pressure is already lowered inside of the package, creating check valve effect at the region of the evacuation hole 31 and thus preventing air from entering the inside.

In the above-described embodiment, the suction pipe 32 is provided that is adapted to perform auxiliary evacuation. However, it is also possible to omit the auxiliary evacuation by making the press for the comforter 29 lowered relative to the heat seal position." (Page 3, Lower right column, Line 2 to Page 4, Upper left column, Line 17)

23 Evidence A No. 18

Evidence A No. 18 describes the following matters along with FIGS. 1 to 6.

(1) "[Claim 1] A method of compressing and packing a foam product characterized by the fact that it comprises: pressing and compressing, by a pressing member, the foam product placed on a stage, wherein the foam product is sandwiched via its upper and lower portions between film-like objects; and, in a state where the foam product is compressed until it is placed in a predetermined state of compression, fixing the upper and lower film-like objects to the foam product; and thus sealing the compressed foam

product by the film-like objects.

... (Omitted)...

[Claim 3] The method of compressing and packing the foam product as set forth in claim 1 or 2, characterized by the fact that the upper and lower film-like objects each comprise a film that is excellent in airtightness, fixation of the upper and lower films is performed while leaving part of the periphery of the compressed foam product unfixed; and air inside of the package body is sucked and removed therefrom via the unfixed part and then the unfixed part is fixed and sealed." (Scope of claims)

(2) "Numerous products may be mentioned as products comprising such a foam, among which sponge cleaners may be mentioned as an example of small products, or as examples of relatively large or big products, the following and other items may be mentioned: mats that serves as cushions and are placed on the seat of a chair or on a floor when a user wants to sit on a chair or floors, back supporting mats, bedclothes, mats placed on a floor such as carpets, gymnastic mats, vaulting horses, recreation mats, soundproof materials used in walls and the like, mannequins, stuffed animals, foam items (dolls) shaping humans, animals, monsters and the like, foam products on which a character is provided, large dices, various play tools including soccer balls, amusement tools, and toys, beds for hydroculture, water-sealing materials, construction materials, packing materials, wrapping materials, and fillers for packaging. These foam products are ... (Omitted)... bulky, suppressing the number of products that can be accommodated within a packaging case on the distribution channels, deteriorating the transportation efficiency, which is the drawback found in the prior art. Also, they need large storage sites in order to be securely stored, in addition to which it is not possible to display a large number of them in a store or shop due to their bulky nature. Furthermore, inconveniently, it is not easy for users to carry these products with them. The inconvenience in handling these foam products becomes more serious when their sizes are large.

[Problem to be Solved by Invention] In the case of small foam products, for example, a sponge cleaner, there are products whose sponge cleaners are compressed and packed in a highly airtight plastic bag. However, as far as relatively large or big products are concerned, such compressed packaged products are not found. This is because it becomes more difficult to realize compressed packaging of the foam products as their sizes becomes larger.

... (Omitted)... An object of the present invention is to provide a method for compression packaging of a foam product that facilitates compression packaging of relatively large or big foam products in a simple manner. Also, another object of the

present invention is to provide a foam product that is excellent in its user-friendliness in terms of storage and handling management and user-friendliness in terms of portability and ease of transportation." (Paragraphs [0002] to [0005])

24 Evidence A No. 19

Evidence A No. 19, which describes the invention titled "FOAM CUSHION MATERIAL PACKAGING"), describes the following matters along with FIGS. 1 to 3.
(1) "During recent years, foam materials of the type aforementioned have met with an ever-increasing demand by furniture manufacturers and other industries for use as cushioning elements and the like. Due to the relatively large ratio of volume to weight of these materials, however, most commercial carriers have modified their freight rates so that their shipping charge is currently on a volume basis rather than a weight basis for these materials. This factor, along with the remoteness of points of use from the location of suppliers, has resulted in considerable shipping expenses, thereby increasing costs to the consumer. Suppliers of foam cushioning materials have, therefore, attempted to solve this problem by packaging the foam material in a compressed state to reduce the volume thereof prior to shipment so that on arrival at the point of use, the foam cushion material is removed from the package and permitted to restore itself to its initial, expanded condition." (Column 1, Lines 17 to 34)
(2) "In general, the aforementioned objects may be accomplished by placing a cushion of foam material between a pair of sheets of heat sealable, air impervious material and compressing the assembly until the cushion assumes a volume approximating 30 percent of the original volume with the result that a substantial amount of air is expelled from the cushion. While so compressed, the sheets are hermetically sealed about the cushion to prevent the re-entry of air into the foam material. As a result, the cushion is retained at the substantially reduced volume under the combined effects of the mechanical covering thus formed and atmospheric pressure since absence of air in the foam retards self-restoration thereof to its normal volume." (Column 2, Lines 28 to 41)
(3) "After so arranging the cushion 10 and the sheets 12 and 14 in the press, the cushion is compressed by moving the platen 18 downwardly toward the bed 16. When the platen has descended sufficiently to compress the cushion the desired amount, the rails 22 and 26 engage and bring into contact the edges of the sheets 12 and 14 around the periphery of the cushion 10 as shown in FIGURE 2 of the drawings. While in this position, the heating element 30 is actuated to heat seal the sheets together thereby hermetically sealing the compressed cushion 10 within the covering formed by the sealed, air impervious sheets 12 and 14." (Column 3, Lines 22 to 33)

(4) "1. A method of packaging a self-restoring compressible, foam cushion comprising the steps of: positioning the cushion between sheets of air impervious material to form a sandwich with the edges of said sheets extending laterally of the cushion; compressing said sandwich to reduce the volume of the cushion approximately 70 percent and to expel air from the cushion; and heat sealing the edge portions of said sheets about the cushion to effect a hermetic seal between said sheets." (Column 4, Lines 38 to 45)
(5) FIG. 2 illustrates a state where sheets 12 and 14 that extend in the width direction in a flange-like manner are overlapped with each other and thus they are heat-sealed from above and below by the rails 22 and 26.

25 Evidence A No. 20

Evidence A No. 20 describes the following matters along with FIGS. 1 to 12.
(1) "[Technical Problem] The conventional multilayer packaging body that includes a multilayer sheets and a cylindrical bag packing the sheets does not have a good shape retention property due to creation of hollow spaces within the cylindrical bag and is susceptible to variation in the restoring forces of the multilayer sheets depending on the seasons or due to change in the humidity, which makes it difficult for the multilayer sheet packaging bodies to have the same and uniform height.
[Solution to Problem] Provided is a multilayer sheet packaging apparatus that is configured to seal an upper opening of a multilayer-sheet-containing bag C containing a multilayer sheet A in a cylindrical bag B, the apparatus comprising a table 1 on which the multilayer-sheet-containing bag C is placed; a compression device 2 adapted to compress the multilayer sheet A within the cylindrical bag B; a provisional holding device 3 adapted to provisionally hold the edge of the upper surface of the multilayer sheet A in a compressed state; a gusset forming device 4 adapted to form a gusset in a cylindrical bag at a position near the upper surface of the multilayer sheet held by the provisional holding device; and a seal device 5 adapted to seal an opening of the cylindrical bag near the upper portion of the location at which the gusset is formed, the apparatus being configured to package the multilayer sheet in the cylindrical bag in the compressed state." (Page 1, Left column, the [Summary] section)

26 Evidence A No. 21

Evidence A No. 21, which describes the invention titled "Improvements in or relating to Baling Presses," describes the following matters along with FIGS. 1 to 4.
(1) "This invention relates to baling presses, particularly for baling fibrous materials.

In dealing with many Colonial products, particularly those obtained from plants,

such for example as cotton, jute, sisal, hemp and the like, the costs of overseas freight are considerable. As in the case of bulky goods the freight is reckoned according to the cubic capacity, endeavours are made to reduce the export of raw materials to the smallest possible volume. With this object the fibrous material is compressed into bales, stitched into jute, according to the nature of the material, and then bound with cords or bands. The pressing of the bales is effected between so-called binding plates, which are provided with openings or grooves on the side turned towards the bale, to enable the fastening bands to be drawn through after the bale of fibre has been compressed.

It is well known that when plane pressure plates are used the bale has a considerable upward expansion after the pressure has been removed, as the bands draw in the rectangular edges of the bale so that the surfaces of the bale lying between them bulge out considerably, thereby increasing the height of the bale. In order to avoid this attempts have been made to use pressure plates having arched surfaces, but the above mentioned defect has not been overcome by this means.

According to the invention it is now proposed to avoid the bulging out of the bales, which increases their cubic measurements, by making the binding plates arched transversely to the longitudinal direction of the plates between the binding grooves. By means of this inward arching of the bale surface the tightening of the bands is made easier. On account of the greater tightening thus made possible, the drawback may occur that a considerable bulging out of the bale between the fastening bands takes place. For this reason the binding plates are at the same time rounded on the edges in such a way that the projecting rounding of the plates corresponds to the rounding of the bale edges formed by the tightening of the bands. In this way bales are pressed, having edges already rounded. The bands then lie round the rounded edges of the bale when being fastened. When the bales are taken out of the press they still certainly expand upwards to some extent, but this expansion does not then exceed the depth of the hollows impressed in the bales above and below by the arched binding plates, so that the upper and lower surfaces of the bale then lie in practically the same plane as the fastening bands. Bulging of the bales is thus prevented by the invention, which offers a considerable advantage in packing and shipping." (Page 1, Left column, Line 10 to Right column, Line 77)

27 Evidence A No. 22

Evidence A No. 22 describes the following matters along with figures.

(1) "Solche Ballenpressen sind seit langem bekannt. Die Befu:llung dieser

Ballenpressen erfolgt bei hochgefahrenem Pressschild durch eine in der Fronttu:r befindliche Einwurfo:ffnung. Beim Befu:llen solcher Ballenpressen wird zwangsla:ufig mehr Material in der Mitte des Pressraumes als direkt an den Seitenwa:nden anfallen. Dies fu:hrt dazu, das die Ballen im allgemeinen an der Seite, die beim Vorgang des Pressens vom Pressenboden bzw. vom Pressschild begrenzt wurden, nach Auswurf des Ballens eine ballige Form aufweisen. Aus diesem Grunde sind diese Ballen schlechter und nur mit einem gro:sseren Platzaufwand zu stapeln als exakt rechteckige Ballen.

Der vorliegenden Gebrauchsmusteranmeldung liegt die Aufgabe zugrunde, durch geeignete Gestaltung des Pressschildes und des Pressenboden bzw. des Auswerfers die Herstellung rechteckiger Ballen zu gewa:hrleisten, die sich auch nach der Entnahme aus dem Pressraumnicht verformen, insbesondere nicht ballig werden." (Page 1, Lines 7 to 18; Umlaut, etc. is replaced by a reference symbol.) Translation: Packaging presses of this type have been known for a long time. Filling of these packaging presses is realized via an introduction opening residing at the front door in a state where its press plate is elevated. In the course of the filling of the packaging press of this type, the material as a matter of course is accumulated not directly on the side wall but at the center of the packaging chamber where the amount of accumulation of the material is larger. As a result, the bale, after being expelled, generally during the press process, has a convex shape on the side defined by the press floor or the press plate. For this reason, these bales are not easy to be stacked, necessitating more space than accurately rectangular bales.

The present utility model registration application is based on the object of manufacturing a rectangular bale that is not deformed and in particular does not take a convex shape when being taken out of the packaging chamber by virtue of appropriate configuration of the press plate and the press floor or the discharger.)

28 Evidence A No. 23

Evidence A No. 23 describes the following matters along with figures 1 to 11.
(1) "The present invention relates to a method of compression packaging that adds a series of functions to a compression packaging device, and continuously and automatically pack products to be packed, such as tobacco filter tows and sanitary cottons, which should eliminate contamination by foreign substances, pollution, and biting by a binding belt.
(Prior Art)

In packaging and baling of a compression packaged item having a small bulk

density and a large repulsive force such as synthetic fibers and natural fibers, etc., in order to prevent biting of a binding belt into the item due to the repulsive force after the compression packaging, pollution of the packaged item due to damage during transportation or handling, contamination by foreign substances, and the like, methodology has been traditionally used that packs the item to be packed with a sheet of bonded or laminated type comprising a polypropylene hessian cloth and a polyethylene seat, and optionally with a craft paper, etc. in which a polyethylene film is provided, and then protects its outer side with a support material having excellent stiffness and strength such as a cardboard sheet and a plastic sheet, and binds the item with a band or wire. Such methodology has been traditionally performed by manual operations.

Traditionally, packaging operation of products to be packed, such as tobacco filter tows (synthetic fibers) and sanitary cottons, which have a small bulk density and should eliminate contamination by foreign substances and pollution, etc. has been ..." (Page 1, Left column, Line 14 to Right column, Line 17)

(2) "Meanwhile, the upper press seat 3 is moved downward by a hydraulic cylinder 18, etc. along with support material 5a and the packaging material 6a, the two 15 within the surrounding box 1 and the compression box 9 is compressed and shaped by a predetermined compression force into the compression box 9 until it takes a predetermined height." (Page 2, Lower left column, Lines 13 to 16)

29 Evidence A No. 24

Evidence A No. 24 describes the following matters along with photographs of equipment for producing a bale.

(1) "Valvan continued to innovate in the field of bale presses...(omitted)...Valvan Baling Systems specialised in the construction of vertical machines for several applications:

- Textile fiber (natural: cotton -wool -flax -...and synthetic: PP-staple fiber -PES Staple fiber -Viscose -Acrylic Staple fiber...)
- Second hand clothing
- Wood shives and Flax shives
- Foam: PU -Latex...
- Special applications: glass fiber -tobacco..."

30 Evidence A No. 25

Evidence A No. 25 describes the following matters along with figures 1 to 24.

(1) "The present invention relates to a method and an apparatus for deforming a bulky substance, in particular a fiber woven fabric by compression into a bale." (Page 3,

Lower left column, Lines 9 to 11)
(2) "The bale compression machine according to the present invention can be designed to be suited for a wide range of bales with different. The preferable dimensions of the bale containing the fiber woven fabric are about 1050 mm (length), 550 mm (width), and 900 to 1000 mm (height). The density may be changed to be 125 to 350 kg per 1 m^3. The density of the fiber substance when it is fed to the compression machine takes a low value in the order of 10 kg per 1 m^3.

Significant change in the density is caused, for example, by the different natures of the fibers such as rayon, Dacron, Trevira, Perlon, Dralon, etc." (Page 7, Lower left column, Line 10 to Last line)

31 Evidence A No. 26

Evidence A No. 26, which describes the invention of "a method and an apparatus for pressing a fibrous substance into a shape of a bale, packaging the pressed fibrous substance, and binding the same substance by a belt," describes the following matters along with FIGS. 1 to 5.
(1) "The present invention relates a to a method and an apparatus for baling a fibrous substance and binding the fibrous substance with a belt, according to which the fibrous substance is pressed into a shape of a bale using a press device, the press device comprising a releasable end piece of a press ram, movable bottom plate, and movable side walls, and then the pressed fibrous substance is baled." (Page 2, Right column, Line 40 to Page 3, Left column, Line 1)

32 Evidence A No. 27

Evidence A No. 27, which describes the invention of "a method for packing a compressed bale," describes the following matters along with FIGS. 1 to 21.
(1) "The present invention relates to a method of packaging a compression bale, in particular a fiber bale having the features described in the generic concept according to claim 1 of the scope of claims." (Page 2, Left column, Lines 10 to 12)
(2) "Preliminary compression is performed with a relatively small compression force of about 25 T ... (Omitted)... the finish compression is performed with a high pressure after it has been taken out of the press box." (Page 3, Right column, Lines 31 to 37)
(3) "In this case, the press rams 6, 7 press with a high pressure the bale 14 between them and below the intermediate position of the overlapped sheets 16, 17." (Page 4, Left column, Lines 35 to 37)

33 Evidence A No. 28

Evidence A No. 28, which describes the invention of "an apparatus for binding an item to be baled," describes the following matters along with FIGS. 1 to 9.

(1) "Traditionally, in (the field of) a compression baled sack, an item to be baled such as natural fibers and synthetic fibers, etc., having a small bulk density and a large repulsive force, is baled with a soft packing material such as a bonded material comprising a polypropylene hessian cloth and a polyethylene seat or laminated material comprising them or similar materials, and bound manually or automatically using a binding belt. When the compression force is released and the baled sack is again placed in its original state, the binding belt bites into the baled sack due to the repulsive force, which may further causes damages to the packing material and pollution of the item to be packaged, or contamination by foreign substances, which is the drawback found in the state of the art baled sack. Also, when it is unpacked in the subsequent process and placed in condition for use by continuously pulling it again, biting of the fibrous binding belt may cause entangling, twining, etc., (of the belt), which is another drawback found in the state of the art baled sack. As a result, a support material such as cardboard is placed in contact with the outer side of the wrapping sheet, and binding is performed using the binding belt." (Page 2, Left column, Lines 31 to 43)

(2) "The reference numeral 33 indicates a baling machine body, and the tow, etc. is compressed in the baling machine body by the cylinder 34 via the upper press pedestal 22a and the lower press pedestal 22b and is formed into the product 23 to be baled." (Page 2, Right column, Lines 47 to 50)

34 Evidence A No. 29

Evidence A No. 29 is a certificate of experimentation reporting that a bale was created that is constituted by binding the standard-type filter tow manufactured by the demandant into the shape of an unsealed strap using a conventional packing material under normal packaging conditions, and measurement was conducted for the top face of the bale, and concluding that the bale of the filter tow packaged in an unsealed state with the conventional packing material had the degree of flatness that falls within that according to the scope of the Invention of the case.

According to the certificate of experimentation, cross-sectionally Y-shaped tows with filament denier of 2.1, and the total denier of 31000 were continuously deposited in the compression can of the tow baling compressor until reaching 618 kilograms, and compressed with a pressure of 400 tons, and the six sides of the bale is wrapped by interleaving paper, cardboard, PE cloth, and PE sheet, and the bale is bound by a PET

band, and then the pressure of the compression device was released.

It was ensured that the dimensions of the released bale were 1250 mm (long side), 980 mm (short side), and 1050 mm (height), and had the total weight of 10.2 Kg including 48-sized (4 x 8) lauan plywood with the thickness of 12 mm and a zinc plate. The distances between the corners of the bale and the plate were measured in a state where the above plate is kept horizontal, and the separation distances were 28 mm, 29 mm, 31 mm, and 30 mm, respectively.

35 Evidence A No. 30

Evidence A No. 30 describes the following matters along with the pictures of glass wool: "Glass wool is a high-performance material that has the strength of glass and flexibility of fiber.

Glass wool is created by melting glass at a high temperature and thus forming the molten glass into fine fibers in the order of several microns (one thousandth of a millimeter) and thus formed into a cotton-like state, which is a rough sketch of how the glass wool can be formed.

Glass wool has been expanding its scope of fields and applications as it has both good properties that inorganic glass exhibits such as heat resistance, nonflammability, and durability, as well as flexibly of fibers." It is also described therein that "glass melted at a high temperature is blown under the centrifugal force and thus the molten glass is formed into fluffy cotton-like fibers (short fibers)."

In addition, the following description is included under the heading of "Production Process of Glass Wool," which reads as follows: "Various types of glass wool products are produced by "preparation," and "dissolution" steps for "glass material" and processing the glass material into the plate-like or cylindrical shape." Following this description, steps are illustrated that includes "glass fiber forming step (based on a centrifugal method)" and "binder" steps, which are further followed by branching steps of a "plate shape forming" or "cylindrical shape forming" step and a "small bulk forming" step.

36 Evidence A No. 31

Evidence A No. 31 is a certificate of experimentation which demonstrates the following facts: Twelve sheets of glass fiber obtained by cutting Glasslon Wool (thickness: 100 mm) of Asahi Fiber Glass Co., Ltd. are stacked so that they have the overall height of 1120 mm, and then the stack of glass fiber sheets are compressed to have about 40 percent of the original height, i.e., 430 mm, packaging film PE

(polybutene added by 10 percent; thickness of 150 μm) is heat-sealed on the stack into a sealed state, and, when the compression pressure is released, the height expands from 430 mm to 470 mm and a negative pressure of 5 hPa (0.05 bar) is created inside, as a result of which the top face of the package body is made flat to the degree equivalent to the flatness within the range of the Invention of the case; further, experimentation was conducted to confirm that the top face took a crown shape by making holes in the packing material, and application of Evidence A No. 1 resulted in the degree of flatness according to the Invention of the case, and the crown shape resulted in the absence of the negative pressure.

37 Evidence A No. 32

Evidence A No. 32 is a certificate of experimentation reporting that the invention of Evidence A No. 2 whose bag portion was continuously welded was experimentally implemented and concluding that the implementation resulted in creation of a negative pressure that is equivalent to that of the Invention of the case and further resulted in the top face and the bottom face of the bale having flatness that is equivalent to the degree of flatness of the Invention of the case.

38 Evidence A No. 33

Evidence A No. 33 describes the following matters: Regarding the term "elastic limit," "when a force is exerted on solid material to deform it, the object resumes its original shape in response to release of the force as long as the stress is small. However, when the magnitude of the stress exceeds a certain threshold, the deformation remains to exist permanently regardless of elimination of the external force. The stress on this boundary is referred to as the limit of perfect elasticity or simply as elastic limit."

39 Evidence A No. 34

Evidence A No. 34 is a technical report reporting that the glass fiber panel of Evidence A No. 1 was compressed and packaged in accordance with the descriptions of Evidence A No. 1 and the degree of flatness of the glass fiber panel baling body when it is compressed and baled was measured in accordance with the method of the Patent Invention 1 and concluding that the resultant degree of flatness of the glass fiber panel of Evidence A No. 1 obviously satisfies the condition recited in the amended claim 8 of the Invention of the case that "90 percent of the surface of the top portion of the bale residing within the inscribed rectangle is spaced away from the flat plate by a distance

equal to or less than 10 mm."

No. 7 Respective items of Evidence B

1 Evidence B No. 1

Evidence B No. 1 describes "wooden four-way flat pallet 1000 mm x 1200 mm" according to the German Industrial Standard (DIN 15 146).

2 Evidence B No. 2

Evidence B No. 2 is a publication titled "Some Useful Information about the Reusable Packaging for Rhodia Filter Tow" published by RHODIA Acetow GmbH. Pages 9 and 16 of this publication depicts a "reusable package for filter tow" that is placed on a wooden pallet, the package is transported or handled as required in this state, and this pallet has exactly the same length and the same width as those of the tow bale.

3 Evidence B No. 3

Evidence B No. 3 is a publication titled "ACETATE TOW FOR CIGARETTE FILTERS cigatow $_{R}$ CELLULOSICS" published by DAISEL CHEMICAL INDUSTRIES, LTD. which includes a table showing weights and sizes of three types of CIGATOWs packed into bales (the page on which this table appears is unidentified).

4 Evidence B No. 4

Evidence B No. 4 is a publication titled "Cellulose Acetates: Properties and Applications" published by WILEY-VCH Verlag GmbH & KGaA, which describes physical properties of cellulose acetate on Page 119, second line from the bottom to Page 120, Line 7, and the "typical stress-strain curve that identifies elastic elongation and plastic elongation" is shown in FIG. 36.

No. 8 Judgment of the grounds for invalidation

1 Regarding the ground for invalidation 1

(1) Regarding the Patent Invention 1

Turning now to comparison of the Patent Invention 1 of the case with the Cited Invention, "the stack Pc of the Cited Invention is configured as a package of rectangular parallelepiped with the thickness dS^{II} and the "envelope" thereof is made from a "flexible impermeable material such as polyethylene," and accordingly they correspond to the "elastic packing material" and the "film" of the Patent Invention 1, respectively.

As the "stack Pc of panels P" of the Cited Invention is compressed until its thickness is reduced to a value S^{II} and formed into a package of a rectangular parallelepiped having a thickness dS^{II}, it corresponds, in its form after the baling, to the "bale of highly compressed filter tow that is baled and highly compressed into a block form with a predetermined height by applying a pressure of at least 300 tons" of the Patent Invention 1 as long as it is a "bale that is baled and compressed into a block form until its height becomes a predetermined height."

The fact concerning the Cited Invention that "while the stack Pc of panels P is maintained at its reduced thickness S^{II}, the envelope is sealed by welding together the edges of the sheets M^{I} and M^{II}" corresponds to the fact concerning the Patent Invention 1 that the bale is "completely packed in an elastic packing material," wherein "the packing material includes one or more connection sections having airtightness with respect to convection flow."

The "envelope" of the Cited Invention is configured such that the "welding of the envelop is realised in such a way that an envelope is obtained with a height that is at least equal to that of the stack Pc of panels P when the latter takes on its stable state" and accordingly it can be understood that the envelope at issue has the functionality of "mechanically self-supporting" in the context of the Patent Invention 1.

The "stack Pc of panels P" of the Cited Invention is configured such that "after the pressure exerted on the large faces of the stack Pc is released, the product swells again inside the sealed envelope, so that the pressure inside the envelope becomes lower than atmospheric pressure, and (this swelling continues until) there is equilibrium between, on the one hand, the sum of the elastic pressures directed towards the swelling of the product and the air pressure or gas pressure contained in the envelope which is below atmospheric pressure, and, on the other hand, the atmospheric pressure. Once this equilibrium has been reached, what may be termed the stable state of the panel or stack is obtained," so that it can be understood that the stack Pc has a feature corresponding to the feature of "at least after the bale has been baled, the bale is acted upon by a negative pressure" "with respect to an external pressure" of the Patent Invention 1.

As such, the Patent Invention 1 and the Cited Invention correspond to each other in that they are

"a bale of a filter tow that is baled and highly compressed into a block form until it has a predetermined height,

the bale being completely packed in a mechanically self-supporting elastic

packing material, wherein the packing material includes one or more connection sections having airtightness with respect to convection flow, the packing material being a film;

wherein at least after the bale has been baled, the bale is acted upon by a negative pressure with respect to an external pressure" whilst they differ from each other in the following features.

Different Feature A: With regard to the bale, the bale of the Patent Invention 1 is a "bale of a filter tow highly compressed" exerted on by "a pressure of at least 300 tons" in which " the bale has a baling density of at least 300 kg/m^3," "the bale has a height of at least 900 mm," and "the pressure acting upon the top side portion of the bale has a magnitude exceeding a limit of elastic deformation of the baled filter tow."

In contrast, the bale of the Cited Invention is "porous panels of elastic fibrous or cellular material, particularly a stack Pc of panels P of glass fiber particularly used as thermal and/or acoustical insulation and have a loose structure, the fibres occupying a small part of their volume, held together by a binder," in which "compression perpendicular to the main faces of the stack Pc, which pressure is less than the elastic deformation limit of the product," is exerted "by a fixed plate 11 and a pressure plate 10," and "the compression exerted can vary within wide limits, according to the characteristics of the panel P (density, nature and diameter of the fibres, nature and density of the binder, etc.) and, in order to obtain a reduction of 50% of the initial thickness, it is sufficient to exert on the large faces of the panels P a compression of the order of 0.1 to 0.2 bar" and accordingly the baling density and the height thereof are unspecified.

Different Feature B: With regard to the elastic packing material, the packing material of the Patent Invention 1 is "a film whose gas permeability with respect to air at a temperature of 23°C, and with a relative humidity of 75 percent is less than 10,000 $cm^3/(m^2 \cdot d \cdot bar)$, the gas permeability being measured in accordance with DIN53,380-V." In contrast, although the packing material of the Cited Invention is a "flexible impermeable material such as polyethylene, etc.," it is unspecified whether or not its gas permeability corresponds to that of the Patent Invention 1.

Different Feature C: With regard to the top face and the bottom face of the yet-to-be-unpacked bale, in the Patent Invention 1, "the bale having no expanded portion or constricted portion acting as hindrance on its top side portion and its bottom

side portion" "when a flat plate is pressed on the top portion of the bale and brought into contact therewith and a force of 100 N is made to act upon the center of the bale in a vertical direction in a state where the bale that is yet to be unpacked is arranged on a horizontal plane, the top surface and the bottom surface of the bale is configured to be so flat that extent that at least 90 percent of the portion residing within an inscribed rectangle on the top surface of the bale is spaced away from the flat plate by 40 mm or less within the range of the maximum rectangle inscribed in a vertical projection of the bale with respect to the press contact plate." In contrast, in the Cited Invention, "the stack Pc is a rectangular parallelepiped with the thickness dS^{II}," which means that the top face and the bottom face thereof are flat. However, the specific degree of flatness of them is unspecified.

Different Feature D: With regard to the negative pressure exerted on the bale, negative pressure of the Patent Invention 1 is "at least 0.01 bar," in contrast to which the specific negative pressure of the Cited Invention is unspecified.

Accordingly, the above identified Different Features have to be individually examined.

A. Regarding the Different Features B to D

(A) With regard to the Different Feature B, the envelope of the Cited Invention requires impermeability in light of the problems and the like described in Evidence A No. 1 (see Subsection 1 (1) of Section No. 6), and the "flexible impermeable material such as polyethylene, etc." is used for that purpose. Also, as described in Evidence A No. 7, the feature identified in the Patent Invention 1, i.e., "gas permeability with respect to air at a temperature of 23°C, and with a relative humidity of 75 percent is less than 10, 000 $cm^3/(m^2 \cdot d \cdot bar)$, the gas permeability being measured in accordance with DIN53,380-V," is a well-known value in the field of polyethylene films, and accordingly it would have been easily made by a person skilled in the art to use, as the envelope of the Cited Invention, the impermeable material having the gas permeability that falls within the above range identified by the Patent Invention 1.

(B) With regard to the Different Feature C, since the "stack Pc" of the Cited Invention is the "stack Pc of glass fiber panels P held together by a binder," in other words, a stack constructed by stacking panels that are originally flat, so that it would have been easily made by a person skilled in the art to modify the Cited Invention to realize the degree of flatness that allows a bale of filter tow with an undefined shape as in the Patent

Invention 1 to be obtained (the fact that the filter tow has an undefined shape will also be discussed in the following section "B. Regarding the Different Feature A").

(C) With regard to the Different Feature D, the Cited Invention is configured such that "after the pressure exerted on the large faces of the stack Pc is released, the product swells again inside the sealed envelope, so that the pressure inside the envelope becomes lower than atmospheric pressure," and the pressure exerted is lower than the limit of elastic deformation of the product, so that it would have been easily made by a person skilled in the art to modify the Cited Invention so that "stack Pc" is caused to be swollen again within the envelope to the extent that the negative pressure of 0.01 bar (in the order of one hundredth of the atmospheric pressure) is created.

(D) It is therefore reasonable to recognize that it would have been easily made by a person skilled in the art to modify the Cited Invention so that it has the features corresponding to the above Different Features B to D of the Patent Invention 1.

B. Regarding the Different Feature A

It is recognized that the height of the bale in the Different Feature A is a design matter that can be appropriately defined as appropriate by a person skilled in the art.

However, the object to be baled of the Patent Invention 1 is a "filter tow" whose shape is undefined (see Page 6, FIGS. 2 and 3 of the written reply dated January 6, 2014). Also, the filter tow bale includes the baled filter tow that is highly compressed into a block form until it has a predetermined height by being exerted on by a pressure of at least 300 tons, wherein the bale has a baling density of at least 300 kg/m^3, and the pressure acting upon the top side portion of the bale has a magnitude exceeding a limit of elastic deformation of the baled filter tow.

In contrast, the object to be baled of the Cited Invention is "porous panels of elastic fibrous or cellular material, particularly the panels P of glass fiber particularly used as thermal and/or acoustical insulation and have a loose structure, the fibres occupying a small part of their volume, held together by a binder," in other words, the objects to be baled in the context of the Cited Invention are nothing but panels that are held together by a binder and have originally a flat shape. Also, the compression applied to the stack Pc of panels P can vary within wide limits, according to the characteristics of the panel P (density, nature and diameter of the fibres, nature and density of the binder, etc.) and, in order to obtain a reduction of 50% of the initial thickness, it is sufficient to exert on the large faces of the panels P a compression of the

order of 0.1 to 0.2 bar, in which compression perpendicular to the main faces of the stack Pc, which pressure is less than the elastic deformation limit of the product, is exerted thereon.

As such, these two inventions significantly differ from each other in their objects to be baled and the pressures exerted in the course of baling, so that it necessitates considerable modifications to the matters defining the invention to change the object to be baled in the Cited Invention from "panels held together by a binder and having an originally flat shape" to "filter tow with an undefined shape" and to change the pressure exerted in the course of baling from "less than the limit of elastic deformation of the product" to "the magnitude exceeding the limit of elastic deformation," which modification cannot be readily conceived of by a person skilled in the art even in light of the well-known arts.

Accordingly, it cannot be concluded that it would have been easily made by a person skilled in the art to modify the Cited Invention so that it has the feature corresponding to the above Different Feature A of the Patent Invention 1 of the case.

C Summary

Accordingly, it cannot be concluded that the Patent Invention 1 would have been easily made by a person skilled in the art on the basis of the invention described in Evidence A No. 1 and the well-known arts prior to the priority date of the Patent of the case.

(2) Regarding the Patent Inventions 2 to 24

Turning next to comparison of the Patent Invention of claims 2 to 24, each of which refers back to the recitations of claim 1, with the Cited Invention, the Patent Inventions 2 to 24 and the Cited Invention at least differ from each other in the above Different Feature A and it cannot be said, as discussed in the foregoing, that the Different Feature A would have been easily made by a person skilled in the art. Hence, it cannot be concluded either, with regard to the Patent Inventions of claims 2 to 24, that the Patent Inventions would have been easily made by a person skilled in the art on the basis of the invention described in Evidence A No. 1 and the well-known arts prior to the priority date of the Patent of the case.

(3) Summary

As has been discussed in the above subsections (1) and (2), it cannot be concluded that the Patent Inventions 1 to 24 would have been easily made by a person

skilled in the art on the basis of the invention described in Evidence A No. 1 and the well-known arts prior to the priority date of the Patent of the case.

2 Regarding the ground for invalidation 3

The demandant alleges that the Patent Inventions according to claims 1 to 24 would have been easily made by a person skilled in the art on the basis of the invention described in Evidence A No. 1, the invention described in Evidence A No. 4, and the well-known arts prior to the priority date of the Patent of the case.

However, Evidence A No. 4 describes a packaging of cabled tow (filter tow) which is subjected to an internal pressure of at least 0.2 daN/cm^2 and compressed into a bale of density 0.37 g/cm^3 and processed into a tobacco smoke filter element, which achieves the elimination of the holding straps, belts, wires or the like and weighs 320 kg with the dimensions of 1287 mm (length), 737 mm (width), and 843 mm (height).

However, it fails to describe creating a negative pressure within the packaging and flattening the top face and the bottom face.

Also, the cabled tow (filter tow) described in Evidence A No. 4 has an undefined shape and is highly compressed as in the case of the Patent Inventions 1 to 24.

As such, the same or similar reasoning may be relied on as stated in the subsequent Section "1 Regarding Reasons for invalidation 1," and the baling of the cabled tow (filter tow) described in Evidence A No. 4 and the baling of the "stack Pc of panels P" described in Evidence A No. 1 significantly differ from each other in their objects to be baled and the pressure exerted at the time of baling, and it cannot be said that it would have been easily made to apply the baling methodology of the "stack Pc of panels P" described in Evidence A No. 1 to the bale of the cabled tow (filter tow) described in Evidence A No. 4.

Accordingly, it cannot be concluded that the Patent Inventions 1 to 24 would have been easily made by a person skilled in the art on the basis of the invention described in Evidence A No. 1, the invention described in Evidence A No. 4, and the well-known arts prior to the priority date of the Patent of the case.

3 Regarding the reason for invalidation 4

Paragraph [0044] of the Description of the case states that "the bale is compressed inside of a press device 3 that is capable of applying, for example, about 300 to 400 tons of pressure so that it becomes a bale with a desired height." Also, Paragraph [0048] of the Description states "Type 3Y35 filter tow with a bale weight of 580 kg was processed with the pressure of 370 tons." In this context, it is clear that the

"pressure of about 300 to 400 tons" and the "pressure of 370 tons" are, though not explicitly mentioned, stated on the premise that the pressure is exerted on a predetermined area. Further, it is reasonable to interpret that the presupposed area at issue is the surface areas of the top and bottom faces of commonly used typical bales.

In view of the above, the surface areas of the upper and lower faces of the above typical bale should be examined. As described in Evidence B No. 2 to which reference is made as the background art in Paragraph [0003] of the Description, it is recognized that bales of filter tows are generally transported or handled as needed in a state where it is placed on a wooden pallet having the same length and the same width as those of the bale placed thereon. In addition, it is reasonable to interpret that the pallet used along with the bale in the Description is the "wooden four-way flat pallet 1000 mm x 1200 mm" described in Evidence B No. 1 as found in the standards of Germany, which is the country relevant to the priority claim of the application of the Patent of the case.

As such, it is reasonable to interpret that the bale in the Description is a bale that has the surface areas of the top and bottom faces that correspond to those of the above "wooden four-way flat pallet 1000 mm x 1200 mm," i.e., the one that has the top and bottom surface areas of 1.2 m^2 and that the "pressure of 300 tons" as specified in claim 1 after the correction is the one that is exerted on the surface area of 1.2 m^2, i.e., the pressure of $[(300 \times 10^3) / (1.2 \times 10^4)] \times 0.98$ = "24.5 bars." Hence, it is unreasonable to interpret that the recitation of claim 1 after correction is not clear.

4 Regarding the reason for invalidation 5

The demandee does not allege that the Invention of claim 8 after the correction involves a certain special feature for achieving "being spaced away from the flat plate by a distance of 10 mm or less," and this feature distinguishes the claimed invention over the Cited Invention (see the written reply dated March 31, 2015). The reason for invalidation 5 does not need to be addressed.

No. 9 Conclusion

Accordingly, the Patent Inventions 1 to 24 cannot be invalidated based on the reasons alleged by the demandant and the means of proof.

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.

June 30, 2015

Chief administrative judge:	SENJU, Akio
Administrative judge:	TORII, Minoru
Administrative judge:	YAMAZAKI, Katsushi