Appeal decision

Appeal No. 2016-3121

Aichi, Japan Appellant

BROTHER KOGYO KABUSHIKI KAISHA

The case of appeal against the Examiner's Decision of refusal of Japanese Patent Application No. 2011-216226, entitled "SHEET FEEDER AND IMAGE FORMING APPARATUS" (the application published on April 25, 2013, Japanese Unexamined Patent Application Publication No. 2013-75740) has resulted in the following appeal decision:

Conclusion

The appeal of the case was groundless.

Reason

1. History of the procedures

The application was filed on September 30, 2011, a written amendment was submitted on September 9, 2015, an examiner's decision of refusal was issued on November 30 of the same year (the original of the examiner's decision was delivered (dispatched) on December 22 of the same year), an appeal against the examiner's decision of refusal was requested on March 1, 2016, the body issued the reason for refusal on September 12 of the same year, and a written opinion and a written amendment were submitted on October 6 of the same year.

2. Invention of the present application

In view of the description of the scope of claims amended by the written amendment dated October 6, 2016 described above, the invention according to Claim 1 of the present application is recognized as follows as described in Claim 1 of the scope of the claims (hereinafter referred to as the "Invention").

"Claim 1

A sheet feeder configured to feed a sheet comprising

a guide portion provided in a sheet-feeding path and configured to turn a feeding direction of a sheet fed, the guide portion being bent in a shape of relaxation curve, all the centers of curvature of which are positioned on the same side with respect to the guide portion,

wherein the relaxation curve is a clothoid curve in which the acceleration change of the sheet fed is substantially constant."

3. Outline of the reasons for refusal pointed out by the body

The outline of Reason 2 of the reasons for refusal noticed on September 12, 2016 by the body (hereinafter referred to as the "Reasons for refusal by the body") is as follows.

"2. Since the inventions according to the following claims of this application could have been easily made by a person ordinarily skilled in the art based on the inventions described in the publications described below that had been distributed in Japan or a foreign country or the inventions that had become available to the public through electric communication lines prior to the filing of the Application, the appellant should not be granted a patent for it under the provisions of Article 29(2) of the Patent Act.

Note (See below regarding Cited Documents, etc.)

- Claims 1, 4, 6, 7
- Cited Document 1
- Remarks

Refer to the reasons described above.

- Claims 2, 3
- Cited Documents 1 to 4
- Remarks

The use of the clothoid curve as the shape of the guide portion of the feeder was, as shown, for example, in the Cited Document 2 (refer to page 2, lower left column, line 15 to page 3, lower right column, line 14 and FIGS. 1 and 2), in the Cited Document 3 (refer to paragraph [0016] and FIG. 1), and in the Cited Document 4 (refer to paragraphs [0033], [0051] and FIGS. 7 and 9), a well-known technique prior to the filing of this application, and the clothoid curve is known as one of relaxation curves that change their curvatures gradually, and thus there is no difficulty in adopting the well-known technique for a shape of the 'curved guide portion 55' in the invention described in the Cited Document 1.

In addition, the mathematical formula (2) described in Claim 3 is general as a mathematical formula expressing a clothoid curve.

(Omitted)

List of Cited Documents, etc.

1. Japanese Unexamined Patent Application Publication No. 2008-201555

2. Japanese Unexamined Patent Application Publication No. H04-38263

3. Japanese Unexamined Patent Application Publication No. 2006-224884

4. National Publication of International Patent Application No. 2010-501299

5. Japanese Unexamined Patent Application Publication No. 2004-347927"

4. Cited Document

In Japanese Unexamined Patent Application Publication No. 2008-201555 (hereinafter, referred to as the "Cited Example 1") distributed before the filling date of the Application and cited as Cited Document 1 for the reason for refusal by the body, the following matters are described along with drawings (underlines are given by the body; the same shall apply hereinafter).

A. "[0018]

A printer mechanism unit (not shown) is built in the printer casing 20. The printer mechanism unit includes, for example, <u>a printing paper feeding mechanism that</u> <u>feeds a printing paper along a predetermined path</u>, a print head that executes a printing operation on the fed printing paper; an ink ribbon that is so installed as to be adjacent to the print head and feeds the contained color ink to the printing paper by the function of the printing head; and a control device that drives and controls the print head, the printing paper feeding mechanism, and other mechanisms and devices."

B. "[0038]

The curved guide portion 55 guides the leading end portion of the printing paper 30 that jumps out to the back side of the printer casing 20 during printing and smoothly leads it upward. As long as the shape is capable of exerting such a function, various shapes may be applied. For the curved shape of the curved guide portion 55, for example, a quadratic curve, a parabola, a cubic curve, a linear curve, and the like in which the upper surface is concave, can be cited." In summary of the above description, it is recognized that the following invention (hereinafter referred to as the "Cited Invention") is described in Cited Example 1.

"A printing paper feeding mechanism that feeds printing paper along a predetermined path and guides the leading end portion of the printing paper 30 that jumps out to the back side of the printer casing 20 during printing and smoothly leads it upward, includes a curved guide portion 55 to which various shapes may be applied as long as the shape is capable of exerting such a function, the curved guide portion 55 being a curved shape such as a quadratic curve in which the upper surface is concave, a parabola, a cubic curve, a linear curve, and the like."

5. Comparison

The Invention is compared with the Cited Invention.

"The printing paper 30" and "the printing paper feeding mechanism" of the Cited Invention respectively correspond to "the sheet" and "the sheet feeder" of the Invention, and "a printing paper feeding mechanism that feeds printing paper along a predetermined path" of the Cited Invention corresponds to "a sheet feeder configured to feed a sheet" of the Invention.

"The curved guide portion 55" of the Cited Invention corresponds to the "guide portion" of the Invention. Also, "a parabola and a cubic curve" can be said to be "a relaxation curve," since their curvatures gradually change, and it is clear that all the centers of curvature of this curve are positioned on the same side of "the curved guide portion 55" in "the curved guide portion 55" in which "the upper surface is concave."

Then, "the curved guide portion 55 guiding the leading end portion of the printing paper 30 that jumps out to the back side of the printer casing 20 during printing and smoothly leading it upward, the curved guide portion 55 being a curved shape such as a quadratic curve in which the upper surface is concave, a parabola, a cubic curve, a linear curve" of the Cited Invention corresponds to "the guide portion bent in a relaxation curve shape, all the centers of curvature of which are positioned on the same side with respect to the guide portion, the guide portion provided in the sheet feeding path and configured to turn a feeding direction of a sheet fed" of the Invention.

Therefore, the two coincide in a point that

"a sheet feeder configured to feed a sheet, comprising

a guide portion provided in a sheet-feeding path and configured to turn a sheetfeeding direction of a sheet fed, the guide portion being bent in a relaxation curve shape, all the centers of curvature of which are positioned on the same side with respect to the guide portion"

and differ in the following points.

[The different feature]

While "the relaxation curve" of "the guide portion bent in a relaxation curve shape" of the former is "a clothoid curve such that the acceleration change of the fed sheet becomes substantially constant," "the relaxation curve" of "the guide portion" of the latter is not specified as "a clothoid curve."

6. Judgment

The aforementioned different features will now be discussed below.

In Japanese Unexamined Patent Application Publication No. H04-38263 cited as Cited Document 2 for the reason for refusal by the body (hereinafter, referred to as the "Cited Example 2"), it is described that, in lines 4 to 19 of the lower right column of page 2, "a clothoid curve is adopted as the shape of the vertical R-shaped portions 1 b, 1 d of the rails of the feeder," in lines 13 to 17 of the upper right column of the same page, "The objective is to provide a feeder capable of realizing smooth run of a running carriage by minimizing vibration of the running carriage in the curved portion of the rail," and, in lines 11 to 15 of the lower left column of page 3, "in the present embodiment, the acceleration acting on the running carriage 2 in the vertical R-shaped portion 1b does not abruptly change as in the conventional case but gradually increases or decreases." In Japanese Unexamined Patent Application Publication No. 2006-224884 cited as Cited Document 3 (hereinafter, referred to as the "Cited Example 3"), it is described that, in paragraph [0016], a relaxation curve is configured by sections A and C of a cable shoe 13 of the cableway and "For the relaxation curve, a clothoid curve whose curvature is proportional to the curve length, a lemniscate curve proportional to the chord length, and a cubic parabola and the like may be applied," and "centripetal acceleration acting on the carriage 6 passing through here and the speed change in the horizontal direction are not caused abruptly." In National Publication of International Patent Application No. 2010-501299 cited as Cited Document 4 (hereinafter, referred to as the "Cited Example 4"), it is described that, in paragraph [0033], the guide surface of the feeding means comprises "two segments, preferably clothoids, each having a slope or gradient that varies with constant curvature." As shown in these Cited Examples, it was a well-known technique prior to the filling of the Application that, by adopting the clothoid curve in the shape of the guide portion in the feeder, the change in acceleration becomes substantially constant and an object to be guided may be smoothly guided.

As described above, it was well known prior to the filling of the Application that, by adopting the clothoid curve in the shape of the guide portion in the feeder, the change in acceleration becomes substantially constant and an object to be guided may be smoothly guided, and, since various shapes capable of smoothly leading a sheet may be applied to the guide portion of the Cited Invention, it would have been easily arrived for a person ordinarily skilled in the art to make a configuration of the Invention related to the above-described different features by adopting the clothoid curve in the shape of the guide portion in the Cited Invention.

In addition, the effect produced by the whole matters specifying the invention falls within a scope that can be predicted by a person skilled in the art based on Cited Invention and the well-known arts.

7. Closing

As described above, since the Invention could have been invented by a person skilled in the art based on the Cited Invention and the well-known technical matters, the appellant should not be granted a patent under the provisions of Article 29(2) of the Patent Act.

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

November 28, 2016

Chief administrative judge: KUROSE, Masakazu Administrative judge: MORITSUGU, Ken Administrative judge: UETA, Takamori