(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 975 097 A1

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 158(3) EPC

(43) Date of publication:
01.10.2008 Bulletin 2008/40

(21) Application number: **06843210.3**

(22) Date of filing: **26.12.2006**

(51) Int Cl.:
B65H 1/26 *(2006.01)* ***B65H 1/02*** *(2006.01)*

(86) International application number:
PCT/JP2006/325826

(87) International publication number:
WO 2007/074794 (05.07.2007 Gazette 2007/27)

(84) Designated Contracting States:
DE

(30) Priority: **26.12.2005 JP 2005372972**

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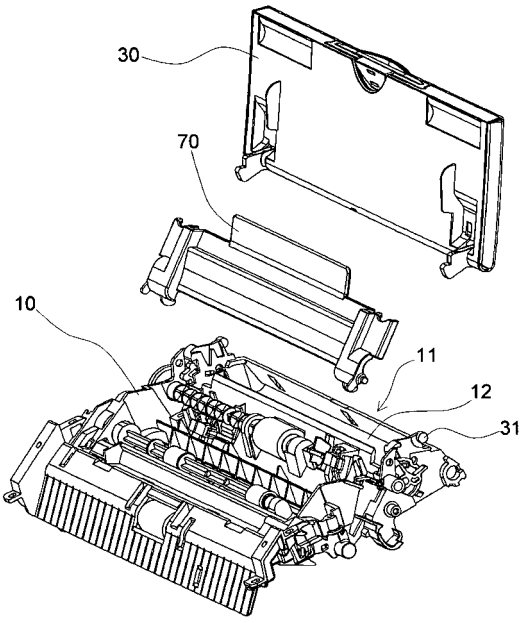
(54) FRAME STRUCTURE BODY FOR IMAGE-RECORDING DEVICE AND IMAGE- RECORDING DEVICE WITH THE SAME

(57) A frame structure (10) includes a first frame portion (11) and a first support portion (31). The first frame portion (11) defines a first space (12) for fittingly receiving therein a portion of a sheet feed cassette (35A) containing recording sheets. The first support portion (31) is configured to support a cover member (30) for pivotal movement for optionally closing the first space (12). The first support portion (31) is configured not to project into the first space (12).

FIG.7



EP 1 975 097 A1

Description

Technical Field

[0001] The present invention relates to a frame structure for use in an image recording apparatus configured to perform image recording on a recording sheet being fed on a sheet feed path, as well as an image recording apparatus incorporating the same.

Background Art

[0002] Sheet trays for use with a conventional image recording apparatus will be described with reference to FIGs. 1(A) and 1(B). Examples of such conventional image recording apparatus include a facsimile apparatus, an ink-jet printer, and the like. Here, description is directed to the configuration of a conventional facsimile apparatus. FIG. 1(A) shows a facsimile apparatus 200A having a sheet tray 201A fixed thereto. The sheet tray 201A is configured to be capable of stably holding recording sheets of a maximum size which can be used by the facsimile apparatus 200A. FIG. 1(B) shows a facsimile apparatus 200B on which a sheet tray 201B is removably placed. Like the sheet tray 201A, the sheet tray 201B is configured to be capable of stably holding recording sheets of a maximum size which can be used by the facsimile apparatus 200B. Thus, even when a large number of recording sheets are previously set on the sheet tray 201A or 201B, the image recording apparatus can be fed with recording sheets stably.

[0003] There exists increasing demand for more compact facsimile apparatus. In particular, a facsimile apparatus which performs image recording with a low frequency is requested to occupy a space as small as possible when not in use.

[0004] In order to meet this request, one conventional facsimile apparatus has appeared having a sheet tray which functions as a sheet rest when in an open position and as a cover covering a top portion of the main body of the apparatus when in a closed position (see patent document 1 for example). With such a configuration, the facsimile apparatus is rendered compact when not in use because the sheet tray fails to project exteriorly of the main body of the apparatus when the apparatus is not in use.

Patent document 1: Japanese Patent Laid-Open Publication No. 2001-97560

Disclosure of Invention

Problem to be Solved by Invention

[0005] A compact sheet tray, however, tends to have a low ability to stably hold recording sheets. For this reason, users who record images with a high frequency or who have many occasions to make a large number of records of images at a time, prefer a facsimile apparatus having a relatively large sheet tray as shown in FIG. 1 (A) or 1(B).

[0006] In view of the foregoing circumstances, manufacturers of facsimile apparatus have had to design and manufacture a frame structure suitable for the purpose of rendering facsimile apparatus compact and a frame structure suitable for placement of a relatively large sheet tray thereon, separately.

[0007] An object of the present invention is to provide: a frame structure which is suitable for the purpose of rendering image recording apparatus compact as well as for placement of a relatively large sheet tray thereon; and an image recording apparatus incorporating the same.

Means for Solving Problem

[0008] A frame structure according to the present invention is a frame structure for use in an image recording apparatus configured to perform image recording on a recording sheet being fed on a sheet feed path. Representatives of such image recording apparatus include a facsimile apparatus and an ink-jet printer.

[0009] The frame structure includes a first frame portion and a first support portion. The first frame portion defines a first space for fittingly receiving therein a portion of a sheet feed cassette containing recording sheets. The expression "fittingly receiving", as used herein, means a condition in which the sheet feed cassette received in the first space fails to rattle. In order for the first space to fittingly receive the portion of the sheet feed cassette therein, the first frame portion has to be designed so that the first space has a sectional size which is not far larger than the sectional size of the sheet feed cassette. The first space is configured to extend continuously with a sheet feed path and open upwardly. This configuration allows the sheet feed cassette to be inserted into the first space from above and enables each recording sheet to be fed from the sheet feed cassette thus inserted to the sheet feed path.

[0010] The first support portion is configured to support a cover member for pivotal movement for optionally closing the first space. An example of such a cover member is a top cover for covering the first space when the apparatus is not in use. The first support portion is connected to the first frame portion. The expression "be connected to", as used herein, is meant to include a case where the first support portion is connected directly to the first frame portion and a case where the first support portion is connected indirectly to the first frame portion via a separate member.

[0011] The first support portion is configured not to project into the first space. Therefore, the provision of the first support portion will not prevent the sheet feed cassette from being fitted into the first space.

[0012] With this construction, the first support portion fails to hinder the sheet feed cassette from being fitted

into the first space, while the first space fails to hinder the cover member from being mounted on the first support portion. For this reason, a desired one of the sheet feed cassette and the cover member can be used as fitted on the frame structure. As a result, there is no need to design and manufacture a frame structure suitable for the purpose of rendering image recording apparatus compact and a frame structure suitable for placement of a relatively large sheet tray thereon, separately.

[0013] It is possible that the first support portion comprises a bearing hole formed in the first frame portion which acts to engage the sheet feed cassette fitted in the first space. Such a feature makes it easy to reduce the number of constituent parts.

Advantage of Invention

[0014] The present invention makes it possible to realize a frame structure which is suitable for the purpose of rendering image recording apparatus compact as well as for placement of a relatively large sheet tray thereon.

Brief Description of Drawings

[0015]

FIG. 1 is a perspective view showing the configuration of a conventional image recording apparatus.
FIG. 2 is a perspective view showing an outward appearance of a facsimile apparatus according to an embodiment of the present invention.
FIG. 3 is a sectional side elevation showing the structure of the facsimile apparatus in a state in which its cover member assumes a first position.
FIG. 4 is a sectional side elevation showing the structure of the facsimile apparatus in a state in which its cover member assumes a second position.
FIG. 5 is a view schematically showing a link member.
FIG. 6 is a front elevational view schematically showing the configurations of cover member and partition plate.
FIG. 7 is a perspective view showing the structure of an upper portion of a frame structure.
FIG. 8 is a view showing the structure of a facsimile apparatus fitted with a sheet feed cassette.
FIG. 9 is a view schematically showing the configuration of the sheet feed cassette.
FIG. 10 is a perspective view showing the configuration of the frame structure.
FIG. 11 is an explanatory view illustrating a facsimile apparatus according to another embodiment of the present invention.
FIG. 12 is an explanatory view illustrating a facsimile apparatus according to another embodiment of the present invention.
FIG. 13 is an explanatory view illustrating a facsimile apparatus according to another embodiment of the present invention.

Description of Reference Numerals

[0016]

1...facsimile apparatus
10...frame structure
11...first frame portion
12...first space
20...main apparatus body
30...cover member
31...first support portion
40...image reading section
50...image recording section
70...partition plate

Best Mode for Carrying Out the Invention

[0017] Hereinafter, embodiments of the present invention will be described with reference to the drawings. FIGs. 2(A) and 2(B) are each a perspective view showing a facsimile apparatus 1 as an embodiment of an image recording apparatus according to the present invention. Here, description is directed to a case where a frame structure according to the present invention is used in the facsimile apparatus 1. However, the frame structure according to the present invention is applicable to other image recording apparatus including an ink-jet printer.

[0018] The facsimile apparatus 1 includes a main apparatus body 20, and a non-illustrated telephone section. The main apparatus body 20 includes a base cabinet 62, exterior member 61, frame structure 10, and cover member 30. The frame structure 10 is covered with the base cabinet 62, exterior member 61 and cover member 30. FIG. 2(A) shows the facsimile apparatus 1 with the cover member 30 in a closed position, while FIG. 2(B) shows the facsimile apparatus 1 with the cover member 30 in an open position.

[0019] Referring to FIG. 3, description will be made of an internal structure of the main apparatus body 20. The frame structure 10 is disposed inside the main apparatus body 20. The frame structure 10 includes a first frame portion 11 defining a first space 12 for fittingly receiving and supporting a lower end portion of a sheet feed cassette containing recording sheets therein. The frame structure 10 also includes a second frame portion 13 defining a sheet feed path 14 extending in a substantially U-shaped fashion between the first space 12 and a sheet ejection exit 53. In the vicinity of the first space 12, a separation pad 54 and a sheet feed roller 55 are mounted on the second frame portion 13 so as to contact each other.

[0020] The first space 12 is configured to extend continuously with the sheet feed path 14. Also, the first space 12 is configured to open upwardly.

[0021] A first support portion 31 is disposed adjacent the first frame portion 11 so as to support the cover mem-

ber 30 for pivotal movement. The first support portion 31 is configured not to project into the first space 12. The first support portion 31 is imparted with this feature for convenience in inserting the sheet feed cassette into the first space 12.

[0022] The frame structure 10 includes a second support portion 71 located between the first space 12 and the sheet ejection exit 53. The second support portion 71 is configured to support a partition member 70 for pivotal movement. The partition member 70 functions to separate a recording sheet to be fed to the sheet feed path 14 from a recording sheet ejected from the sheet ejection exit 53.

[0023] The frame structure 10 further includes a third frame portion 15 defining a document feed path 16 for guiding document sheets. A document feed roller 44 is rotatably mounted on the third frame portion 15. The document feed roller 44 feeds each document sheet on the document feed path 16 toward the downstream side. Further, a separation rubber plate 45 is mounted on the third frame portion 15 so as to face the document feed roller 44. The separation rubber plate 45 is positioned to contact the document feed roller 44 in order to prevent plural document sheets from being fed at a time. The document feed path 16 extends from a document insertion opening 42 located in an upper portion of the main apparatus body 20 to a document ejection exit 43 located in a lower front portion of the main apparatus body 20.

[0024] The main apparatus body 20 incorporates therein an image reading section 40 and an image recording section 50. The image reading section 40, which is disposed to extend along the document feed path 16, includes an image sensor 46 and a rear roller 47. The image sensor 46 reads an image on each document sheet being fed on the document feed path 16. The rear roller 47 feeds each document sheet being fed on the document feed path 16 while pressing the document sheet against the image sensor 46. The image recording section 50 performs image recording on a sheet being fed on the sheet feed path 14, such as a recording sheet. The image recording section 50 includes a platen roller 56 and a thermal head 57 which are disposed to face each other across the sheet feed path 14. The image recording section 50 also includes an ink film 58 which is positioned so that a portion thereof is interposed between the platen roller 56 and the thermal head 57. The ink film 58 is fed from a feed roll to a take-up roll at a speed equal to the recording sheet feeding speed.

[0025] A sheet ejection roller 59 is disposed on the sheet feed path 14 at a location downstream of the image recording section 50. The sheet ejection roller 59 ejects each recording sheet upwardly from the sheet ejection exit 53.

[0026] The exterior member 61 is disposed so as to cover a front side of the frame structure 10. The cover member 30 optionally covers a rear side of the frame structure 10 which is not covered with the exterior member 61. The cover member 30 is pivotally movable about the first support portion 31 serving as a fulcrum between a first position in which the cover member 30 covers the rear side of the frame structure 10 (see FIG. 3) and a second position in which the first space 12 is exposed (see FIG. 4). In the present embodiment, the first support portion 31 is formed with a shaft portion, while the cover member 30 formed with recesses serving as bearings. However, there is no limitation to this arrangement. For example, it is possible that the cover member 30 is formed with a shaft portion while the first support portion 31 formed with recesses serving as bearings.

[0027] Brief description will be made of the structure of an upper portion of the frame structure 10. In the upper portion of the frame structure 10, the first space 12, sheet ejection exit 53 and document insertion opening 42 are arranged in this order from the rear side toward the front side. The cover member 30 is configured to cover at least the first space 12. Preferably, the cover member 30 is capable of covering the first space 12 and the sheet ejection exit 53. More preferably, the cover member 30 is capable of covering all of the first space 12, sheet ejection exit 53 and document insertion opening 42. In the present embodiment, the cover member 30 is configured to cover all of the first space 12, sheet ejection exit 53 and document insertion opening 42. Further, the cover member 30 has an outside surface formed so as to become contiguous with an outside surface of the exterior member 61 when the cover member 30 assumes the first position.

[0028] The cover member 30 and the partition plate 70 are configured to operate in a geared manner. The partition plate 70 is pivotally movable about a pivot shaft forming the second support portion 71 between a closed position in which the partition plate 70 covers the sheet ejection exit 53 and a use position in which the partition plate 70 functions as a partition member. In the closed position, the partition plate 70 is accommodated within the frame structure 10.

[0029] The partition plate 70 is linked to the cover member 30 via a link member 80. FIG. 5 is a view schematically showing the link member 80. The link member 80 includes a pivot portion 81 pivotally supported on the partition plate 70, and a slot 82 extending longitudinally. On the side opposite away from the pivot portion 81, the slot 82 is formed with a dent 83. A projecting portion 33 projecting from the cover member 30 is inserted into the slot 82 for sliding movement.

[0030] As shown in FIG. 3, when the cover member 30 is in the first position, the partition plate 70 is positioned under the cover member 30 and accommodated within the frame structure 10. As the cover member 30 pivots toward the second position, the cover member 30 exerts a force on the partition plate 70 via the link member 80 to move the partition plate 70 into the use position, as shown in FIG. 4. When the cover member 30 and the partition plate 70 assume the second position and the use position, respectively, the projecting portion 33 of the cover member 30 becomes fitted into the dent 83 of the link member 80, so that the cover member 30 and the

partition plate 70 are kept apart from each other by predetermined spacing. In closing the cover member 30, the cover member 30 pushes the partition plate 70 to cause the partition plate 70 to pivot in the same direction as the cover member 30 into the closed position.

[0031] When in the second position, the cover member 30 supports document sheets to be inserted into the document insertion opening 42, recording sheets to be inserted into the first space 12, and recording sheets ejected from the sheet ejection exit 53, from below.

[0032] FIG. 6 is a front elevational view schematically showing the configurations of the cover member 30 and partition plate 70. The cover member 30 has an extension tray 32. When the cover member 30 is in the second position, the extension tray 32 is expandable toward the upstream side in the direction in which recording sheets in an unrecorded state are fed. The extension tray 32 comprises three members for example and is expandable to three lengths stepwise.

[0033] The partition plate 70 preferably has a sheet collapse preventing plate 72. The sheet collapse preventing plate 72 has a first end portion 73 pivoted to one end of the partition plate 70 which is situated in directions perpendicular to the sheet feed direction (i.e., in directions widthwise of sheet). The sheet collapse preventing plate 72 is supported on the partition plate 70 for pivotal movement about the first end portion 73 as a fulcrum within a range of 0° to 90°. When in use, the sheet collapse preventing plate 72 is positioned 90° relative to the partition plate 70 to prevent a stack of recording sheets supported on the cover member 30 from collapsing forwardly prior to feeding. While the present embodiment has the sheet collapse preventing plate 72 provided at one end of the partition plate 70, such a sheet collapse preventing plate 72 may be provided at each of opposite ends of the partition plate 70.

[0034] Referring again to FIG. 4, brief description will be made of operation of the facsimile apparatus 1. A stack of recording sheets is inserted into the first space 12 and held therein with its leading edge abutting the separation pad 54. As the sheet feed roller 55 rotates, only one recording sheet which is located closest to the sheet feed roller 55 is fed toward the sheet feed path 14 by the sheet feed roller 55 and the separation pad 54. The sheet feed roller 55 and separation pad 54 used in the present embodiment form a sheet feeding mechanism defined by the present invention.

[0035] The recording sheet is fed to between the platen roller 56 and the ink film 58 and subjected to heat transfer of ink from the ink film 58 by the thermal head 57. Thus, an image is formed on the recording sheet.

[0036] In cases where the cover member 30 and the partition plate 70 are mounted on the frame structure 10 of the facsimile apparatus 1, there is no need to remove the cover member 30 and the partition plate 70 even when the facsimile apparatus 1 is not in use. Also, when not in use, the facsimile apparatus 1 can be rendered compact. Further, during non-use of the facsimile apparatus 1, the cover member 30 covers all of the document insertion opening 42, first space 12 and sheet ejection exit 53, thereby preventing dust from entering the frame structure 10.

[0037] Description will be made of a method of fitting on the frame structure 10 a sheet feed cassette that is capable of containing a relatively large number of recording sheets. The frame structure 10 is configured to allow a sheet feed cassette other than the cover member 30 to be fitted thereon. The first space 12 defined by the frame structure 10 is configured to fittingly receive a lower portion of such a sheet feed cassette. In the present embodiment, it is preferable to remove the cover member 30 and the partition plate 70 from the frame structure 10 as shown in FIG. 7 prior to the insertion of the sheet feed cassette into the first space 12. In the present embodiment, the frame structure 10 is formed from an elastic material for convenience of the removing operation. For this reason, the cover member 30 and the partition plate 70 can be removed easily when the frame structure 10 is elastically deformed by applying a force thereto. In cases where the presence of the cover member 30 and partition plate 70 does not hinder the operation of fitting the sheet feed cassette on the frame structure 10, there is no need to remove the cover member 30 and the partition plate 70 from the frame structure 10.

[0038] FIG. 8 shows a state in which a sheet feed cassette 35A is fitted on the frame structure 10. The sheet feed cassette 35A is designed to stably hold recording sheets in an amount two to three times as large as the amount of recording sheets that can be stably held by the cover member 30. The sheet feed cassette 35A is supported at its lower end portion by the first frame portion 11. Preferably, the sheet feed cassette 35A and the first frame portion 11 are provided with respective engaging portions to allow the outer periphery of the lower end portion of the sheet feed cassette 35A and the inner periphery of the first frame portion 11 to engage each other. The provision of the engaging portions makes it possible to place the sheet feed cassette 35A on the frame structure 10 stably.

[0039] FIG. 9(A) shows the configuration of the sheet feed cassette 35A. The sheet feed cassette 35A includes a positioning piece 36A and a come-off preventive click 37A. The positioning piece 36A engages the first frame portion 11 to position the sheet feed cassette 35A in the first space 12. The come-off preventive click 37A engages the first frame portion 11 to prevent the sheet feed cassette 35A from easily coming off the first space 12.

[0040] FIG. 9(B) shows the configuration of a sheet feed cassette 35B. The basic structure of the sheet feed cassette 35B is the same as that of the sheet feed cassette 35A. However, the sheet feed cassette 35B is different from the sheet feed cassette 35A in that the sheet feed cassette 35B is provided with an automatic sheet feeding mechanism 38. The automatic sheet feeding mechanism 38 is a mechanism for automatically feeding each recording sheet from the sheet feed cassette 35B

to the sheet feed path 14. In fitting the sheet feed cassette 35B on the frame structure 10, it is required, as a rule, that an automatic sheet feeding pad mounting frame 17 be removed from the frame structure 10. This is because the automatic sheet feeding pad of the automatic sheet feeding pad mounting frame 17 interferes with that of the automatic sheet feeding mechanism 38. As shown in FIG. 10, the removing operation is performed in such a manner that projections 17A of the automatic sheet feeding pad mounting frame 17 are withdrawn from respective holes 18 of the frame structure 10.

[0041] It is preferable to employ such a mechanism as to cause a part of the automatic sheet feeding pad mounting frame 17 to escape automatically so as not to interfere with the automatic sheet feeding mechanism 38 when the sheet feed cassette 35B is inserted into the first space 12. Use of such a mechanism allows the sheet feed cassette 35B to be fitted on the frame structure 10 without the need to remove the automatic sheet feeding pad mounting frame 17 from the frame structure 10.

[0042] Thus, the use of the frame structure 10 according to the present embodiment makes it possible to realize the compact facsimile apparatus 1 as well as to place the sheet feed cassette 35A or 35B having a relatively high sheet capacity on the facsimile apparatus 1 when necessary.

[0043] Description will be made of another mechanism for operating the cover member 30 and the partition plate 70 in a geared manner. FIGs. 11 to 13 are each an enlarged fragmentary sectional side elevation illustrating a facsimile apparatus 1A according to another embodiment. The configuration of the facsimile apparatus 1A is the same as that of the facsimile apparatus 1 except the mechanism for operating the cover member 30 and the partition plate 70 in a geared manner.

[0044] As shown in FIG. 11, the facsimile apparatus 1A includes a cover member 30A provided with a lever 34. The lever 34 has a substantially L-shaped form with its top at the first support portion 31. The lever 34 is configured to project forwardly from a location adjacent the first support portion 31 when the cover member 30A assumes in the second position.

[0045] A partition plate 70A is provided with a first lever 74 and a second lever 75. The first lever 74 is configured to project toward the side opposite away from the sheet collapse preventing plate 72 with respect to the second support portion 71. The second lever 75 is configured to project substantially perpendicularly to the first lever 74 on the rear side of the first lever 74.

[0046] The facsimile apparatus 1A further includes a release lever 90. The release lever 90 is located below the cover member 30A and partition plate 70A. The release lever 90 is pivotally movable about a pivot shaft 91 serving as a fulcrum. The release lever 90 has an upper end portion 92 interposed between the lever 34 of the cover member 30A and the first lever 74 of the partition plate 70A.

[0047] As the cover member 30A pivots clockwise about the first support portion 31 serving as a fulcrum from the first position toward the second position, the lever 34 pushes the upper end portion 92 of the release lever 90 forwardly. Thus, the release lever 90 pivots counterclockwise about the pivot shaft 91 serving as a fulcrum. Accordingly, the upper end portion 92 of the release lever 90 is applied with a forwardly displacing force, so that the first lever 74 of the partition plate 70A is pushed forwardly by the upper end portion 92. Thus, the partition plate 70A pivots clockwise about the second support portion 71 serving as a fulcrum from the closed position toward the use position.

[0048] As shown in FIG. 12, the facsimile apparatus 1A further includes a rotating member 100. The rotating member 100 is pivotally movable about a rotating shaft 101 serving as a fulcrum. Also, the rotating member 100 is constantly biased by a spring 110 in the clockwise direction (indicated by arrow P) in FIG. 12.

[0049] The rotating member 100 pushes the second lever 75 of the partition plate 70A forwardly, so that the partition plate 70A is biased to pivot in the clockwise direction in FIG. 12. For this reason, when in the use position, the partition plate 70A presses a stack of unrecorded recording sheets held on the cover member 30A against the cover member 30A with a predetermined force. Thus, the stack of unrecorded recording sheets can be prevented from collapsing forwardly.

[0050] In replenishment with unrecorded recording sheets, the partition plate 70A is manually turned in the counterclockwise direction (indicated by arrow Q) in FIG. 12 against the force of the spring 110. After completion of the replenishment, when the hand is moved off the partition plate 70A or the hand on the partition plate 70A is loosened, the partition plate 70A is cause to pivot in the clockwise direction (indicated by arrow R) in FIG. 12 by the force of the spring 110, thereby pressing unrecorded recording sheets against the cover member 30A.

[0051] As shown in FIG. 13, as the cover member 30A pivots from the second position toward the first position, the top portion of the partition plate 70A is pushed by the cover member 30A, so that the partition plate 70A pivots from the use position toward the closed position in a manner geared to the cover member 30A.

[0052] The facsimile apparatus 1A is capable of causing the partition plate 70A to pivot in the manner geared to the cover member 30A. Therefore, the partition plate 70A can be opened/closed by merely opening/closing the cover member 30A when the facsimile apparatus 1A is to be used or to rest. Thus, the facsimile apparatus 1A offers improved operability.

[0053] It should be noted that the facsimile apparatus 1 as the image recording apparatus of the present invention is capable of forming images on other type of sheets, such as OHP film, as well as on recording sheets.

The foregoing embodiments are illustrative in all points and should not be construed to limit the present invention. The scope of the present invention is defined not by the foregoing embodiments but by the following claims. Fur-

ther, the scope of the present invention is intended to include all modifications within the meanings and scopes of claims and equivalents.

Claims

1. A frame structure for use in an image recording apparatus configured to perform image recording on a recording sheet being fed on a sheet feed path, the frame structure comprising:

   a first frame portion defining a first space for fittingly receiving therein a portion of a sheet feed cassette containing recording sheets, the first space extending continuously with the sheet feed path and opening upwardly; and
   a first support portion configured to support a cover member for pivotal movement for optionally closing the first space, the first support portion being connected to the first frame portion, wherein
   the first support portion is configured not to project into the first space.

2. The frame structure according to claim 1, further comprising:

   a second frame portion defining the sheet feed path extending in a substantially U-shaped fashion from the first space to an ejection exit located in an upper portion of the image recording apparatus; and
   a second support portion located between the first space and the ejection exit and configured to support a partition member for pivotal movement for separating a recording sheet to be fed from a recording sheet ejected.

3. An image recording apparatus for image recording on a recording sheet being fed on a sheet feed path, comprising:

   the frame structure according to claim 2;
   a cover member pivotally supported by the first support portion and capable of moving between a first position in which the cover member closes the first space and a second position in which the cover member supports a recording sheet placed in the first space from below while opening the first space; and
   a sheet feeding mechanism for feeding on the sheet feed path the recording sheet placed on the cover member in the second position.

4. The image recording apparatus according to claim 3, wherein the frame structure is formed from an elastic material to allow the cover member and the partition member to be removably mounted thereon.

5. The image recording apparatus according to claim 4, wherein:

   the frame structure further comprises a third frame portion defining a document feed path, a starting point of which is a document insertion opening located in an upper portion of the image recording apparatus; and
   when in the first position, the cover member covers both of the first space and the document insertion opening.

FIG.1(A)

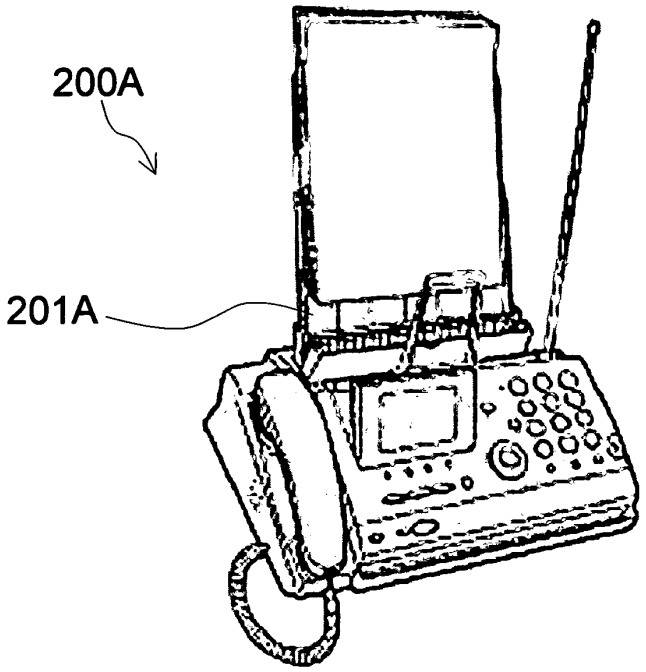


FIG.1(B)

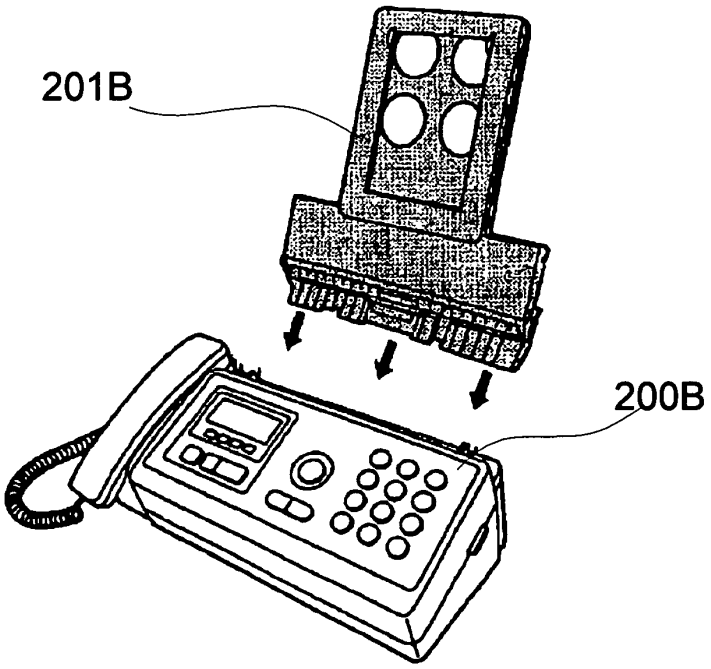


FIG.2(A)

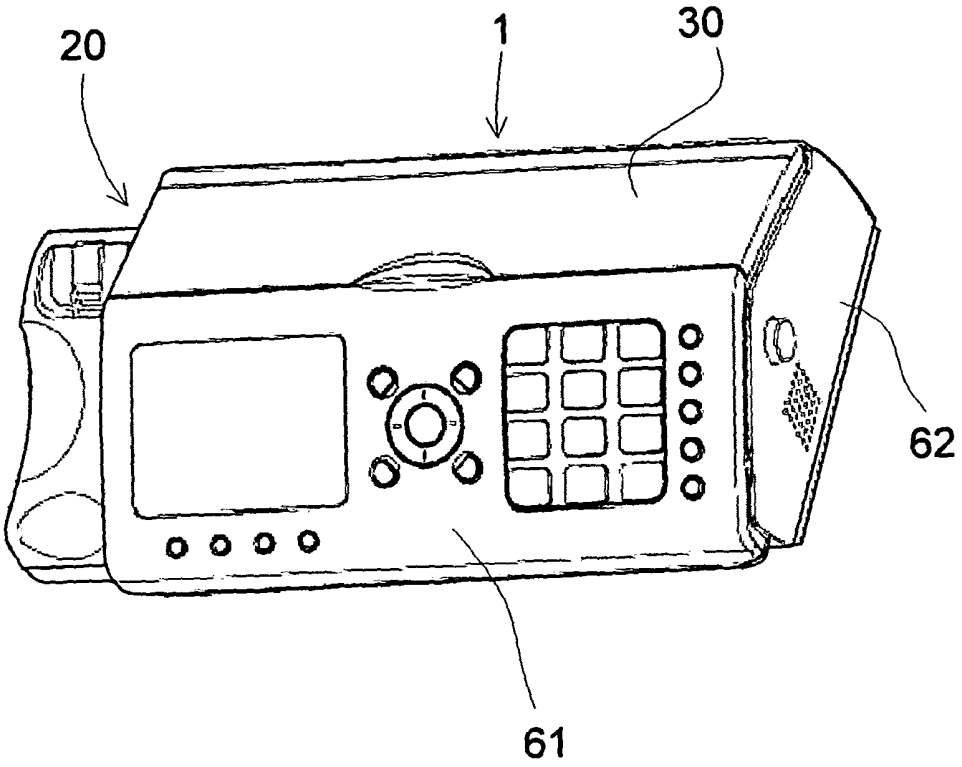


FIG.2(B)

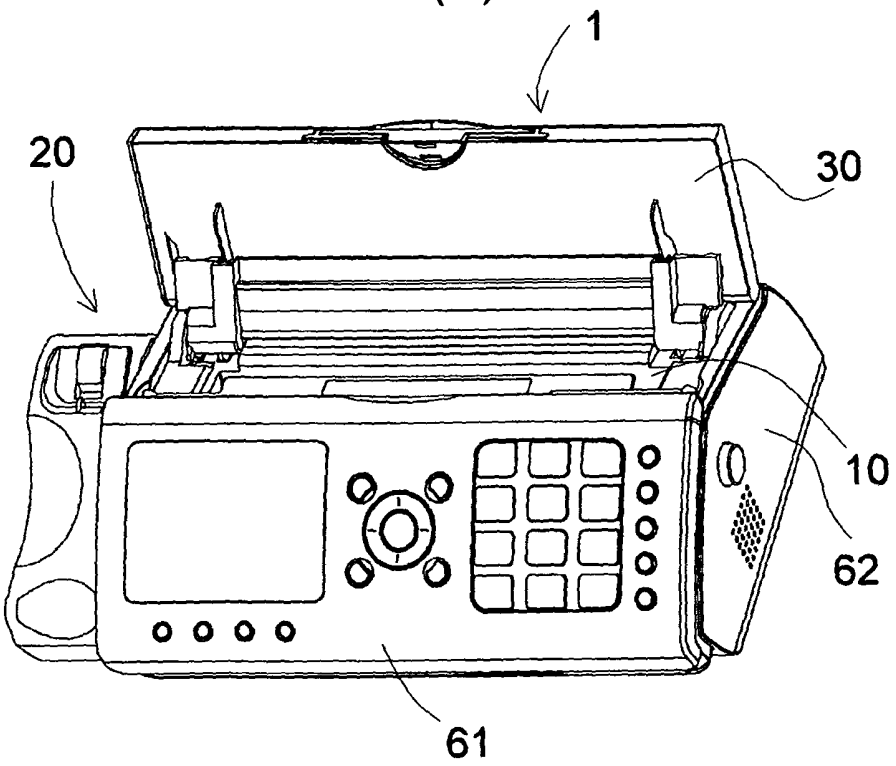


FIG.3

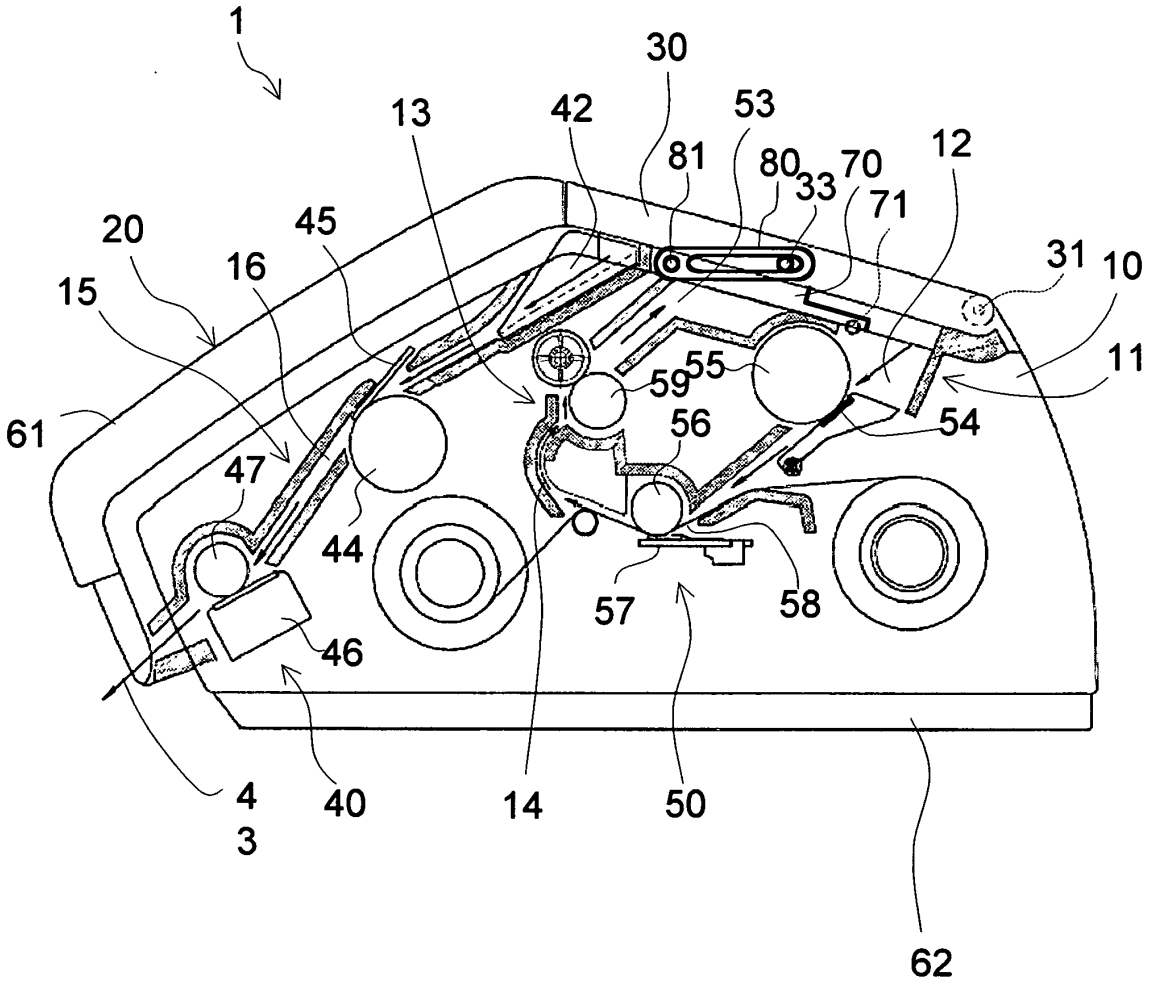

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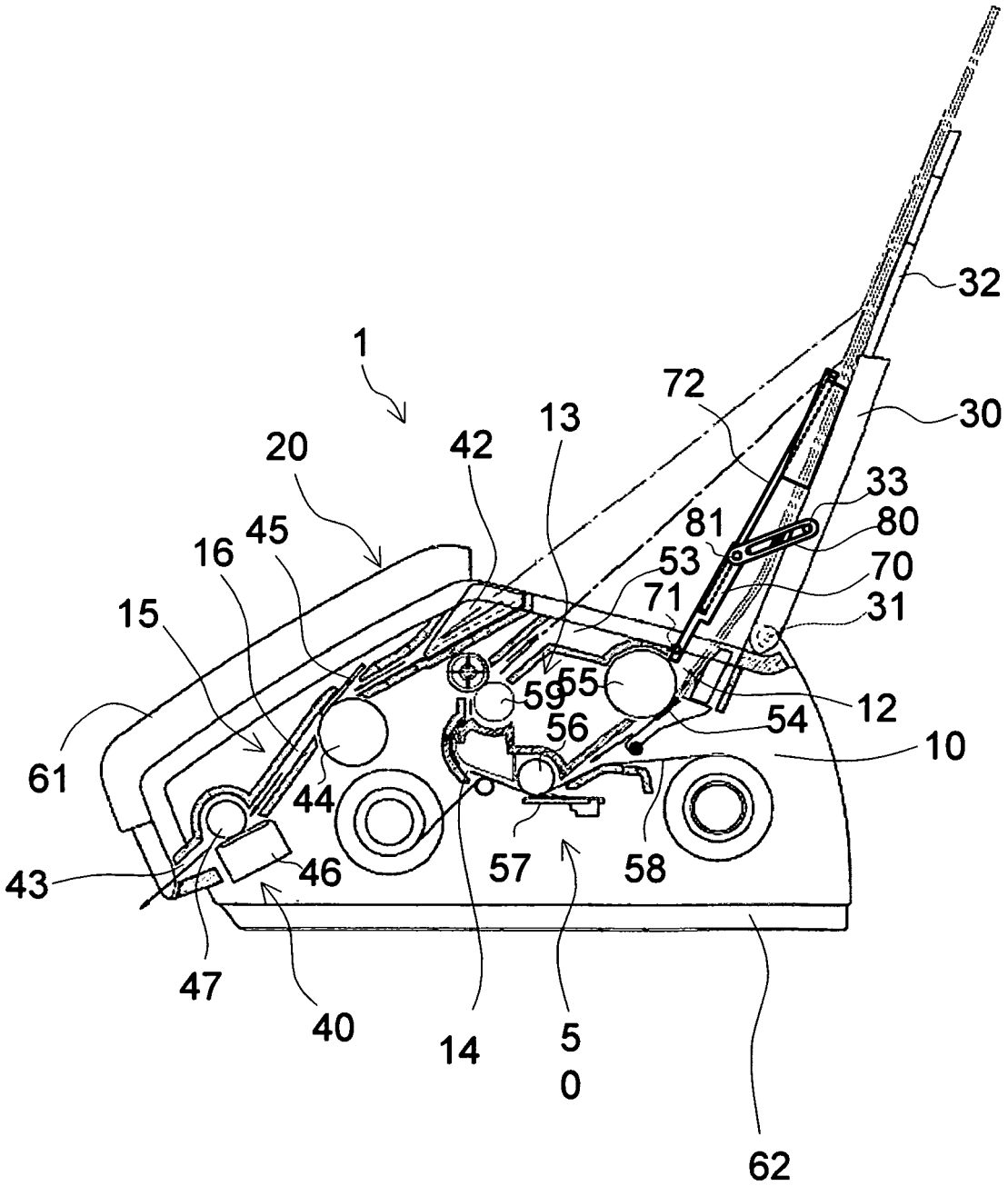
FIG.4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44
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14
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62

FIG.5

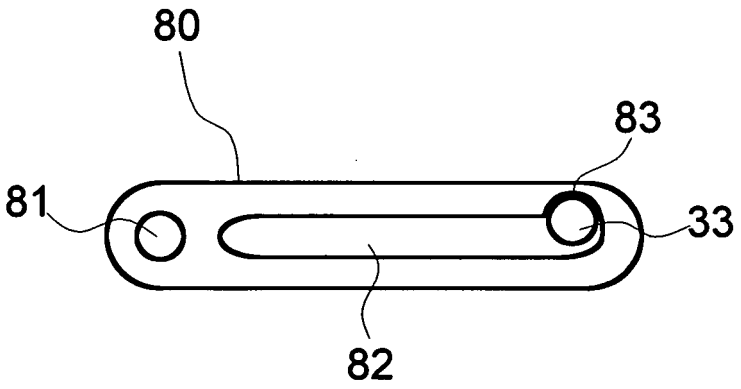


FIG.6

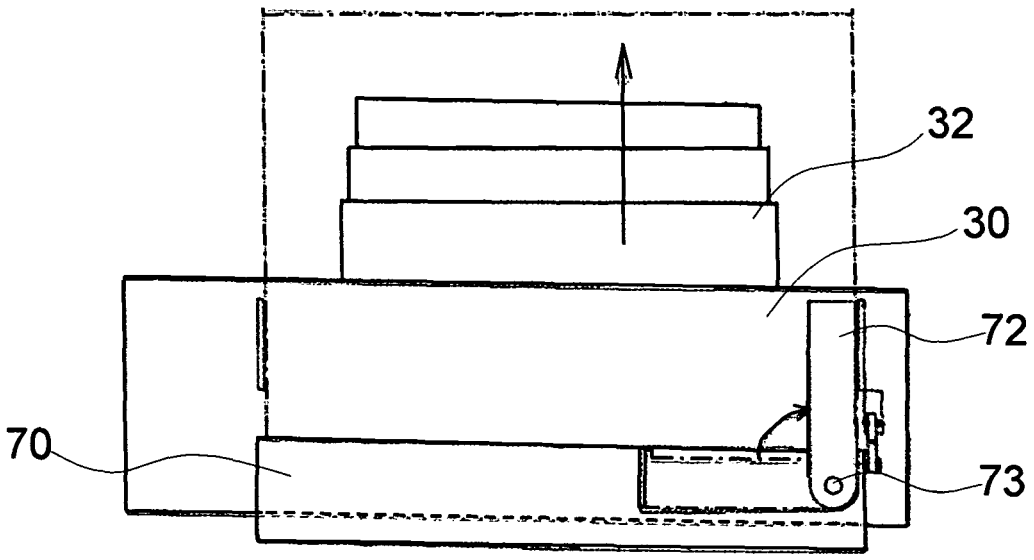


FIG.7

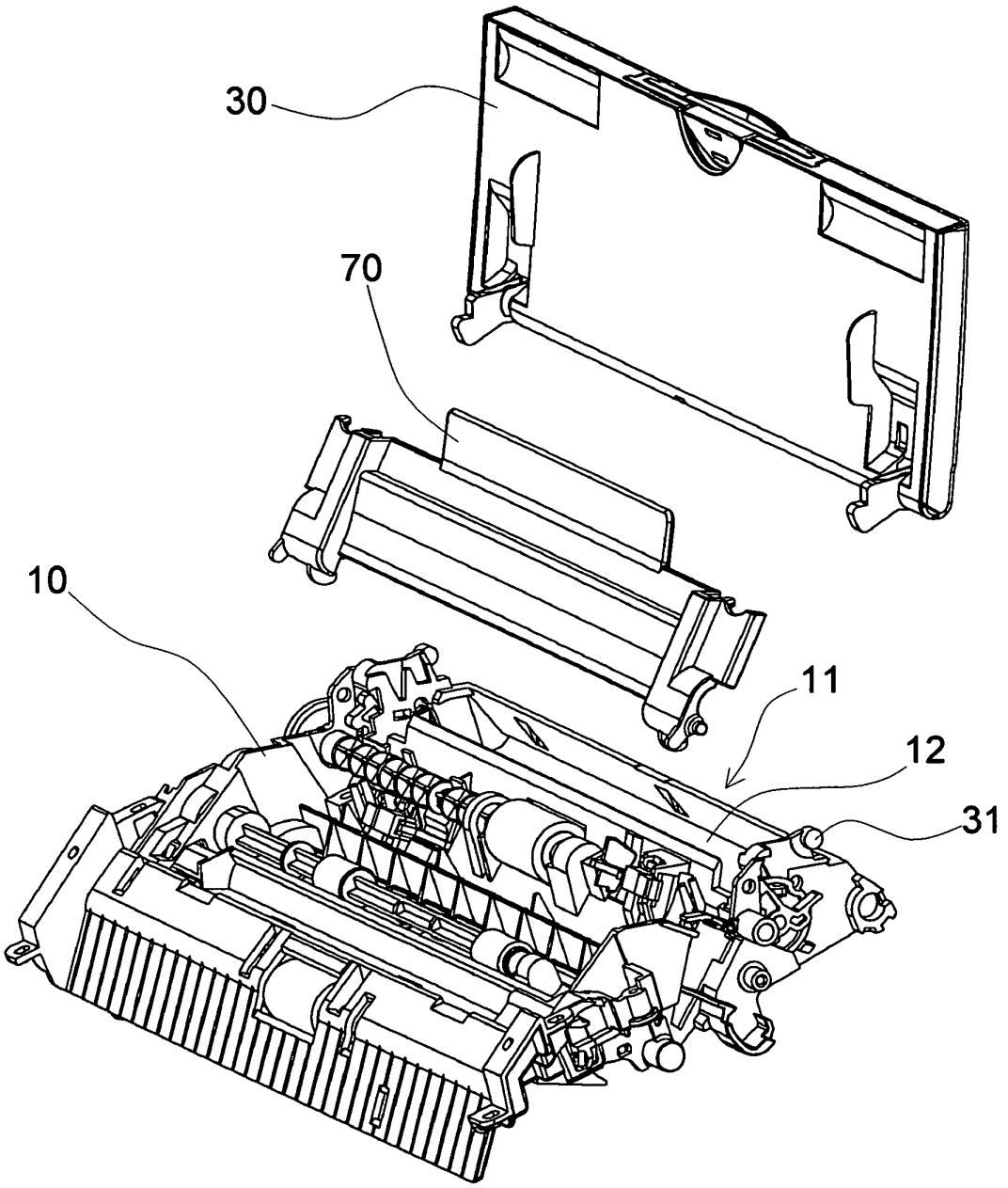


FIG.8

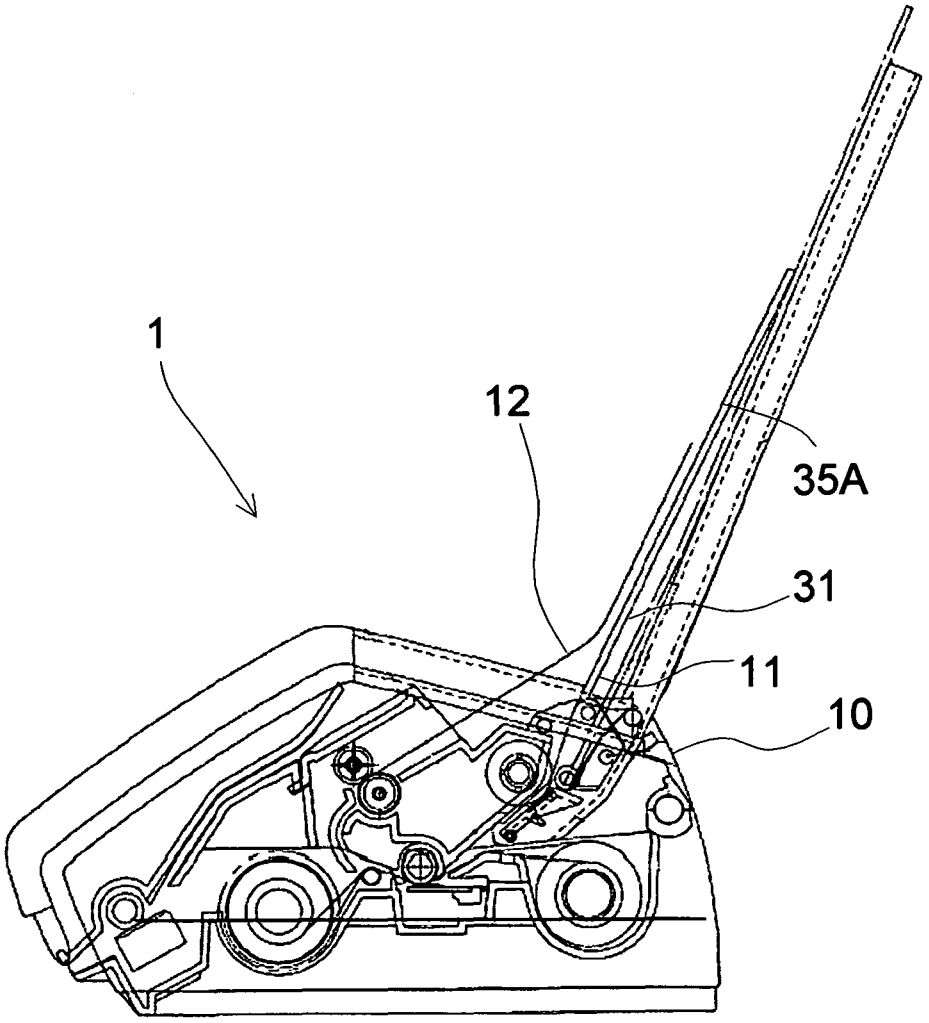


FIG.9(A)

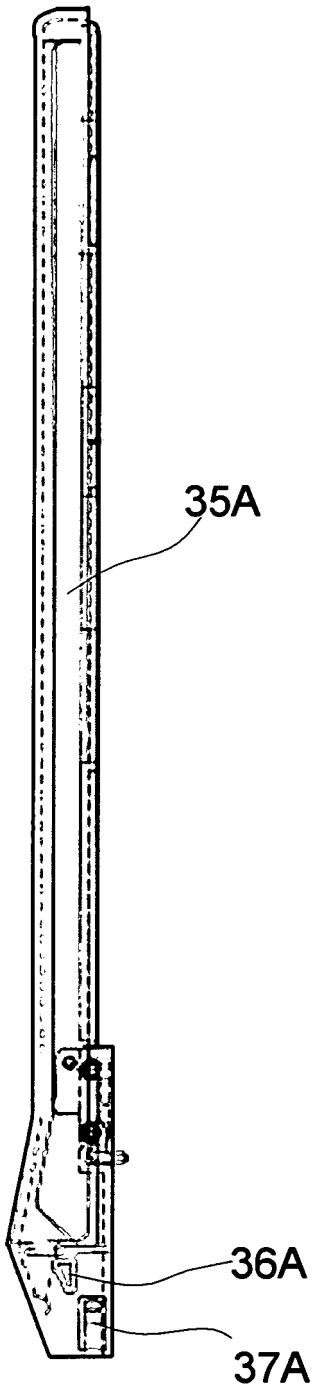


FIG.9(B)

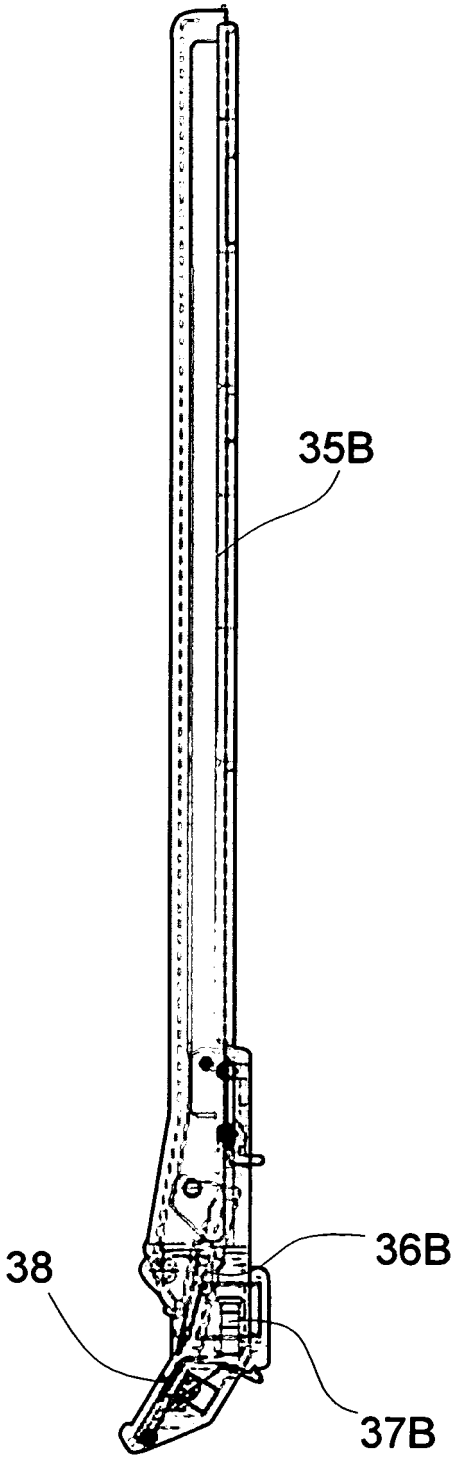


FIG.10

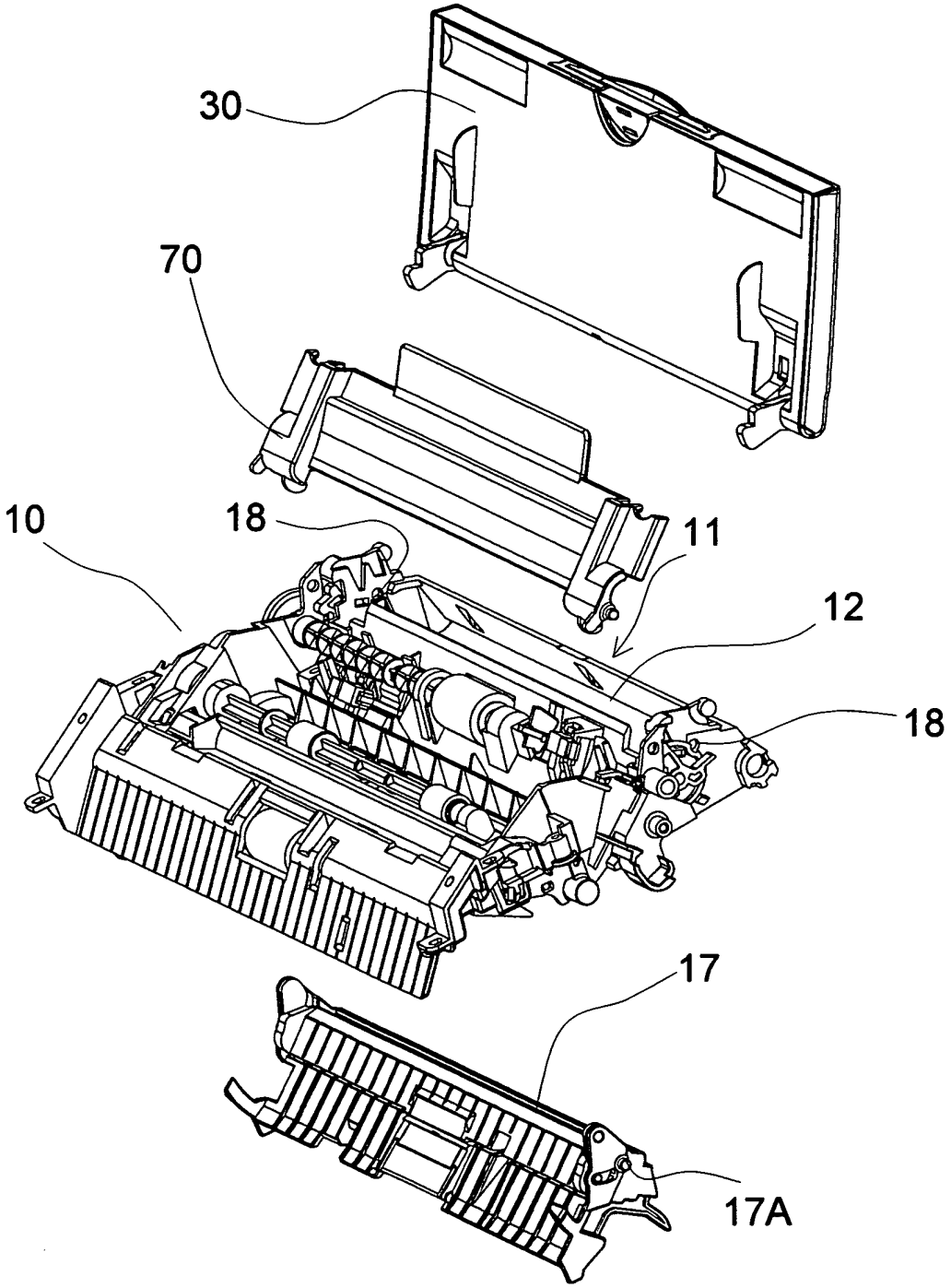


FIG.11

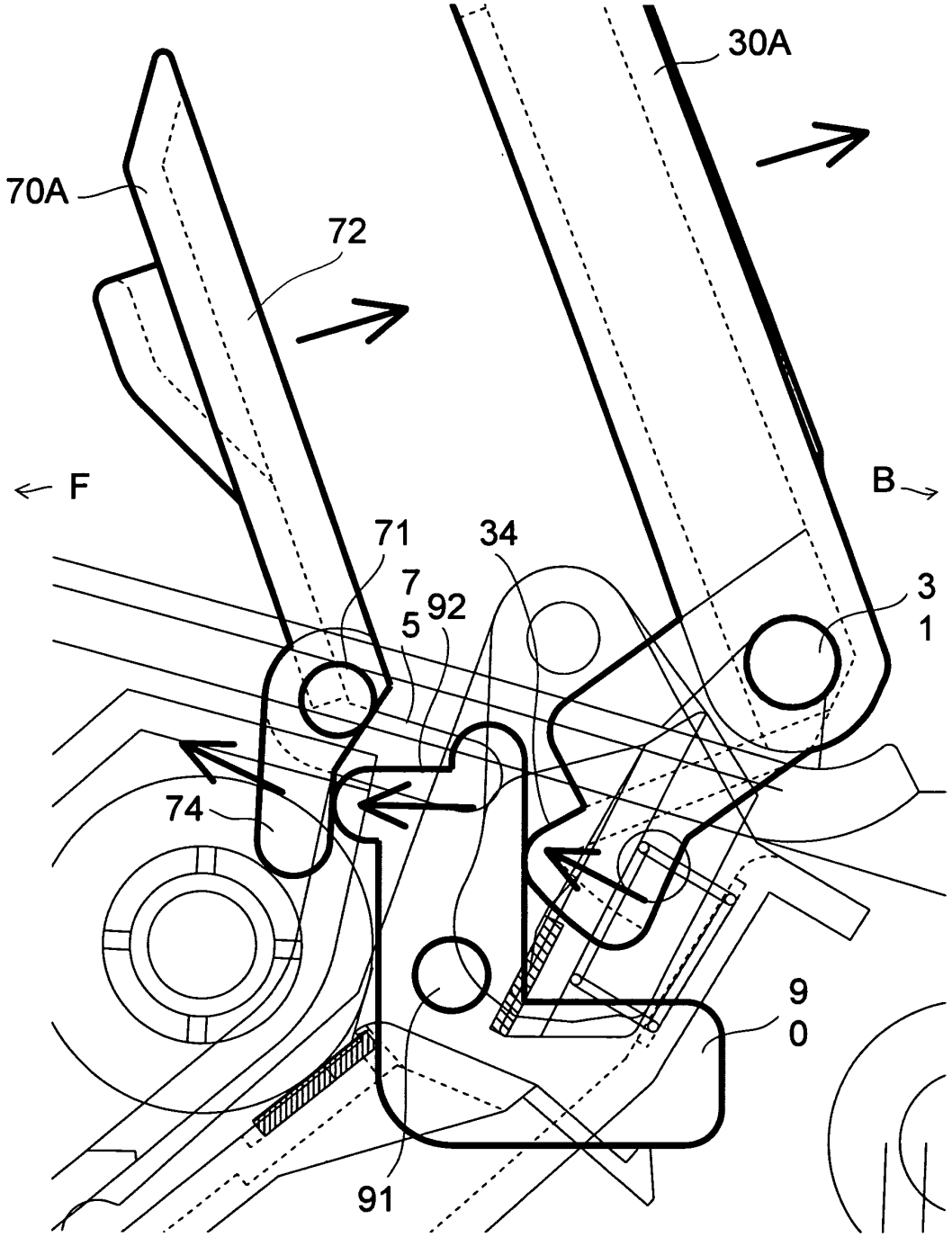


FIG.12

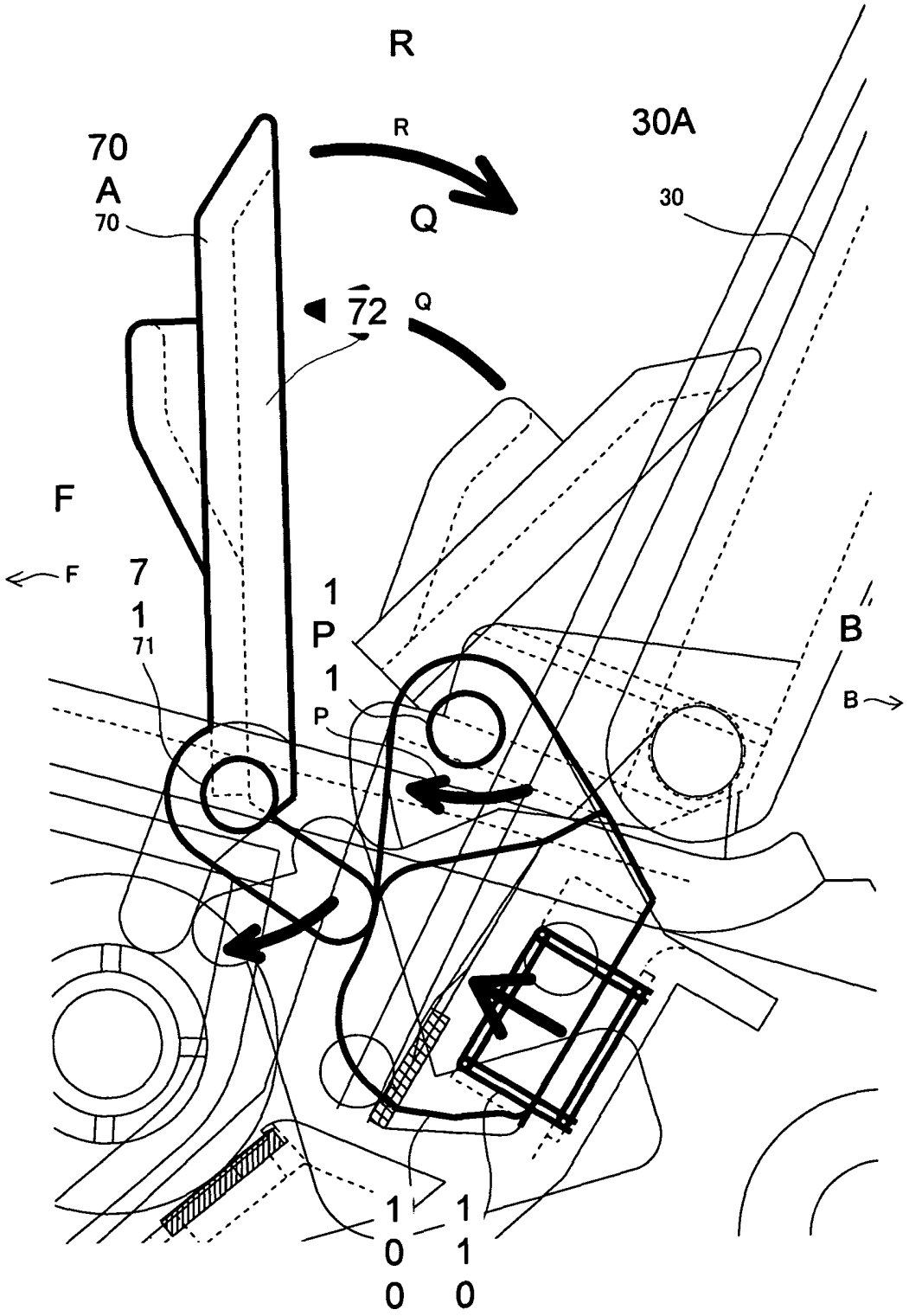
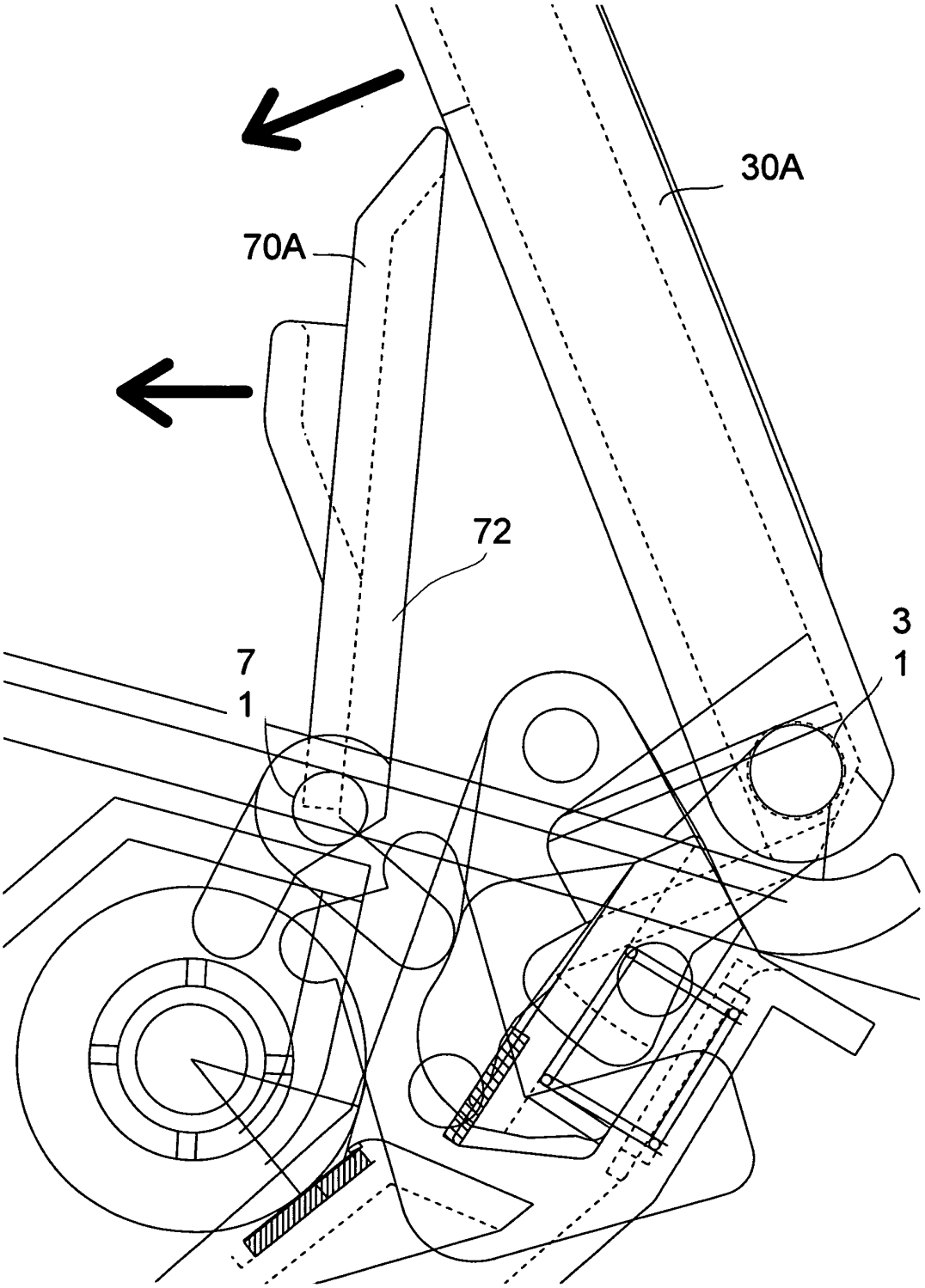


FIG.13



INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2006/325826

A. CLASSIFICATION OF SUBJECT MATTER
B65H1/26(2006.01)i, *B65H1/02*(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65H1/00-3/68, B41J11/00-13/32, H04N1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2007
Kokai Jitsuyo Shinan Koho 1971-2007 Toroku Jitsuyo Shinan Koho 1994-2007

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2005-28621 A (Brother Industries, Ltd.), 03 February, 2005 (03.02.05), Par. Nos. [0011] to [0012]; Figs. 1 to 5 (Family: none)	1
A	JP 9-235029 A (Canon Inc.), 09 September, 1997 (09.09.97), Full text; Figs. 1 to 17 (Family: none)	1-5
A	JP 2005-1792 A (Brother Industries, Ltd.), 06 January, 2005 (06.01.05), Full text; Figs. 1 to 7 (Family: none)	1-5

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
22 January, 2007 (22.01.07)	06 February, 2007 (06.02.07)
Name and mailing address of the ISA/ Japanese Patent Office Facsimile No.	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/JP2006/325826

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2002-249240 A (Brother Industries, Ltd.), 03 September, 2002 (03.09.02), Full text; Figs. 1 to 5 (Family: none)	1-5
A	JP 2001-213532 A (Canon Inc.), 07 August, 2001 (07.08.01), Par. Nos. [0086] to [0093]; Figs. 10 to 12 & US 2001/0033314 A1	1-5
A	JP 2001-102771 A (Brother Industries, Ltd.), 13 April, 2001 (13.04.01), Full text; Figs. 1 to 6 (Family: none)	1-5
A	JP 2000-85983 A (Sharp Corp.), 28 March, 2000 (28.03.00), Full text; Figs. 1 to 9 & US 6264386 B1	1-5

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2001097560 A **[0004]**