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(54) **SHEET FEEDING APPARUTUS AND IMAGE FORMING APPARATUS**

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(57) **ABSTRACT**

The present invention complies a side end regulating mechanism to regulate a side end position in the width direction of sheets supported by a cassette main body **3** is configured with a side end reference portion **5** which is to be a reference in the width direction for sheet feeding and side end regulating portion **6** which is arranged to be opposed to the side end reference portion **5** with a sheet pressing member **8** to which a force is applied so as to press the sheet elastically toward the side end reference portion **5**. Then, an angle adjusting member **14** arranged at the side end reference portion **5** changes an incline angle of a reference surface which is to be a reference in the sheet width direction for sheet feeding by inclining the side end reference portion **5** in the width direction.

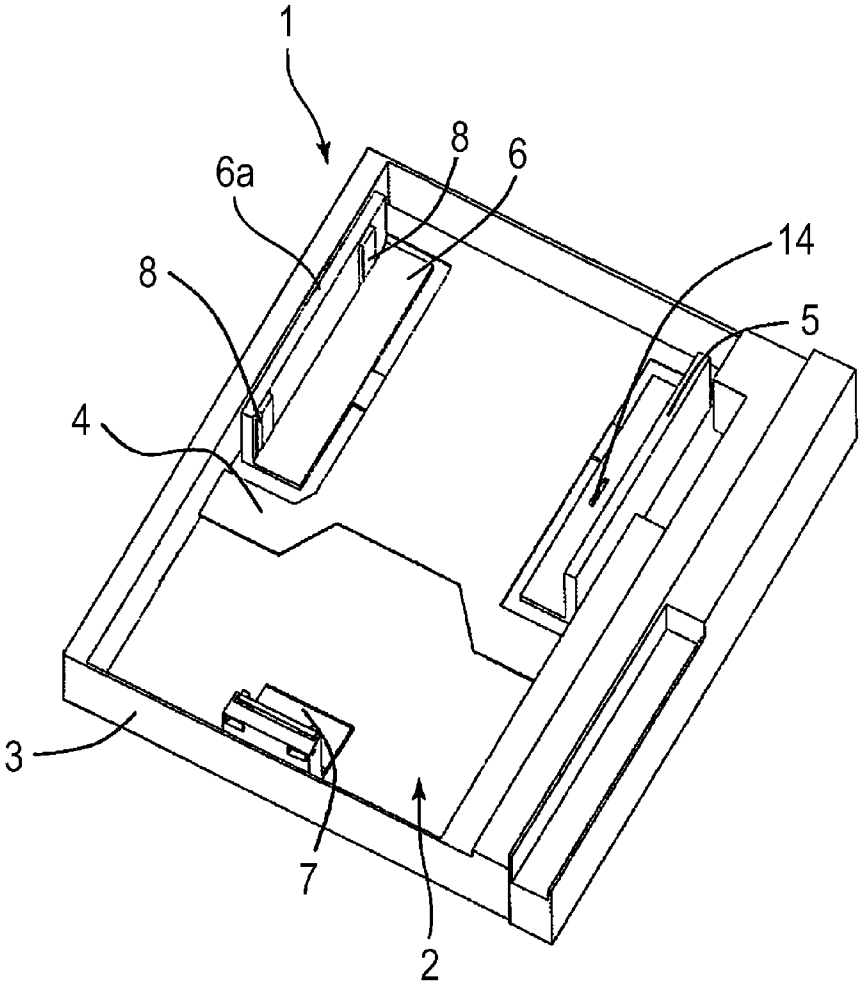


FIG. 1

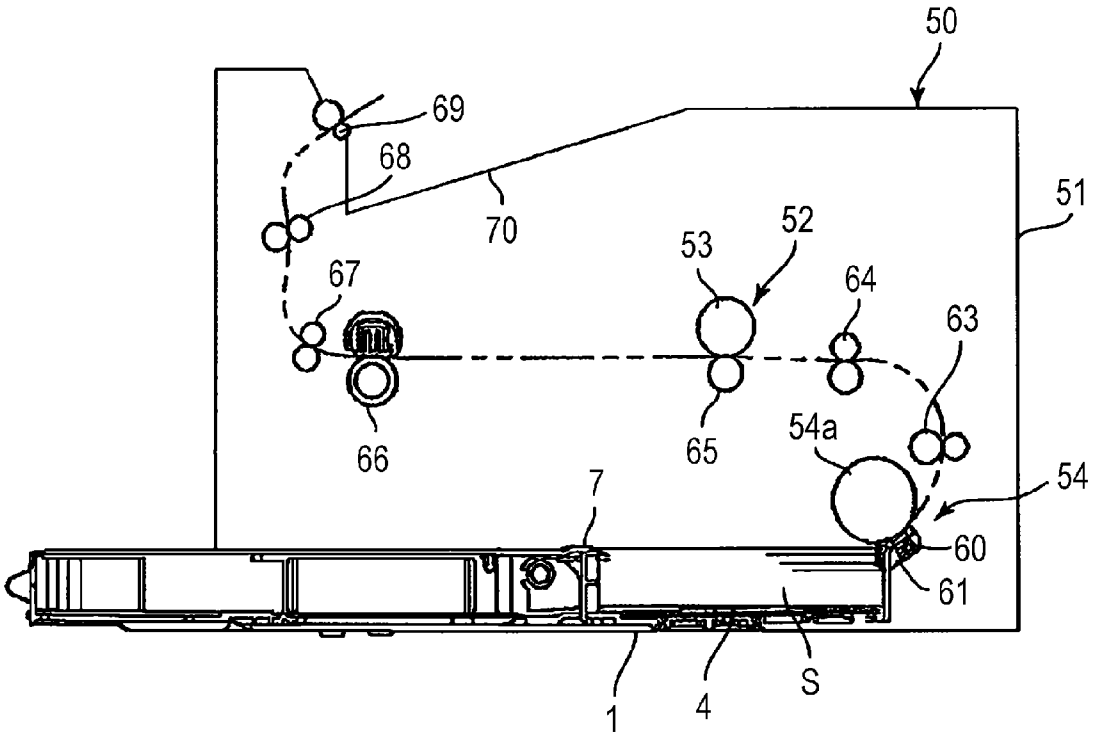


FIG. 2

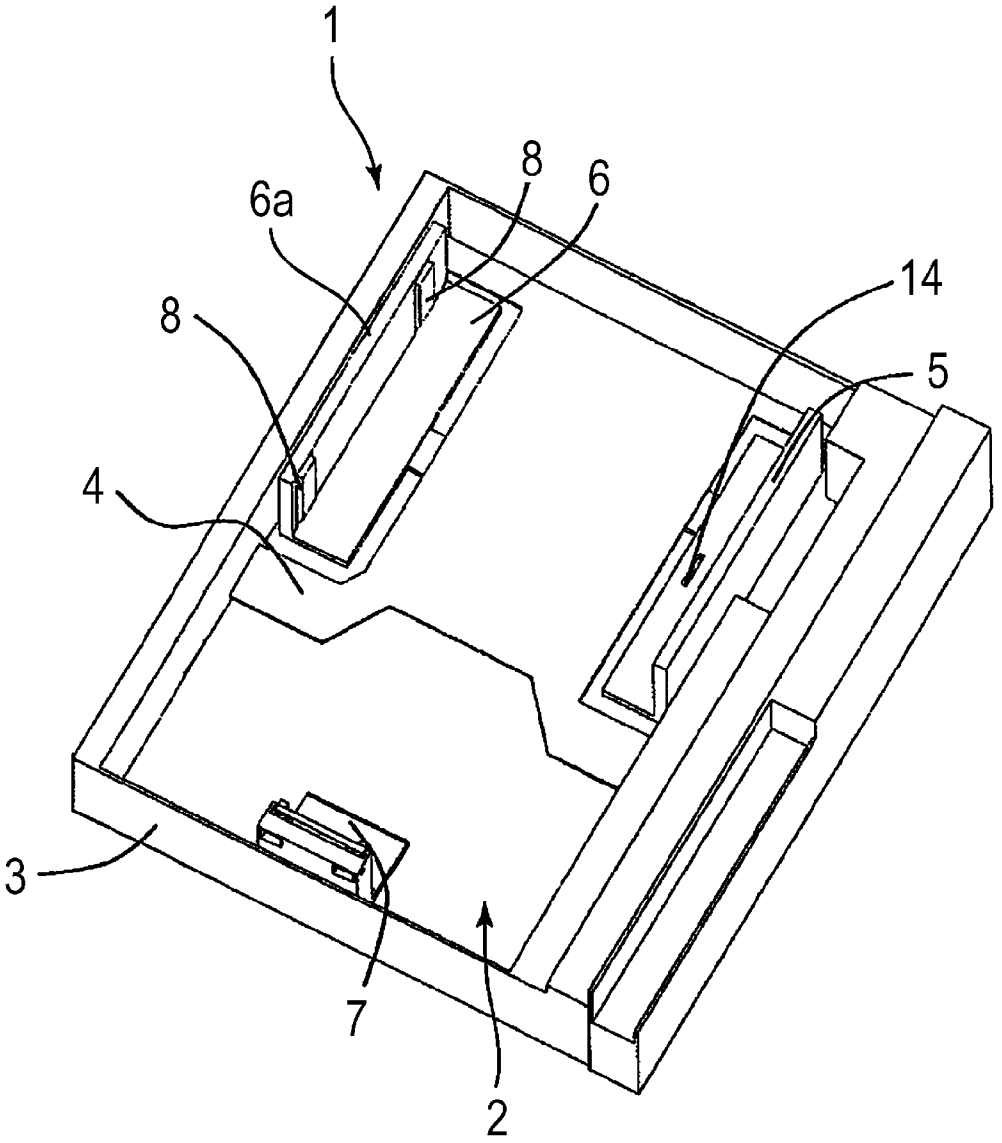


FIG. 3A

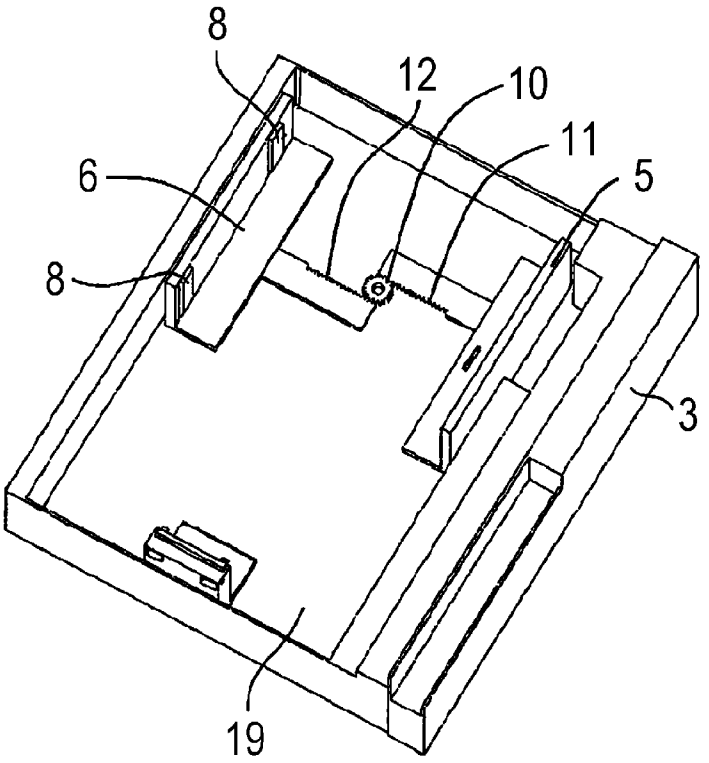


FIG. 3B

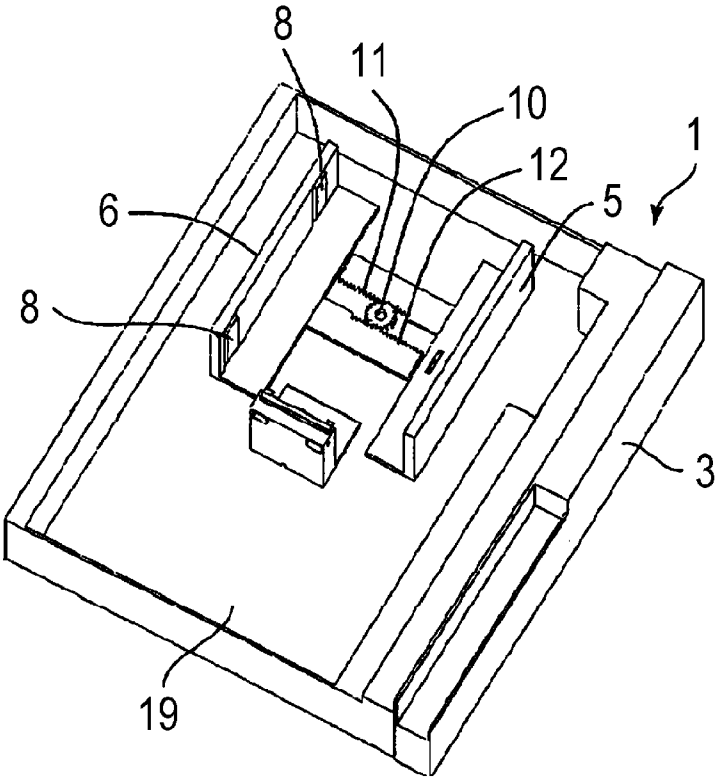


FIG. 4A

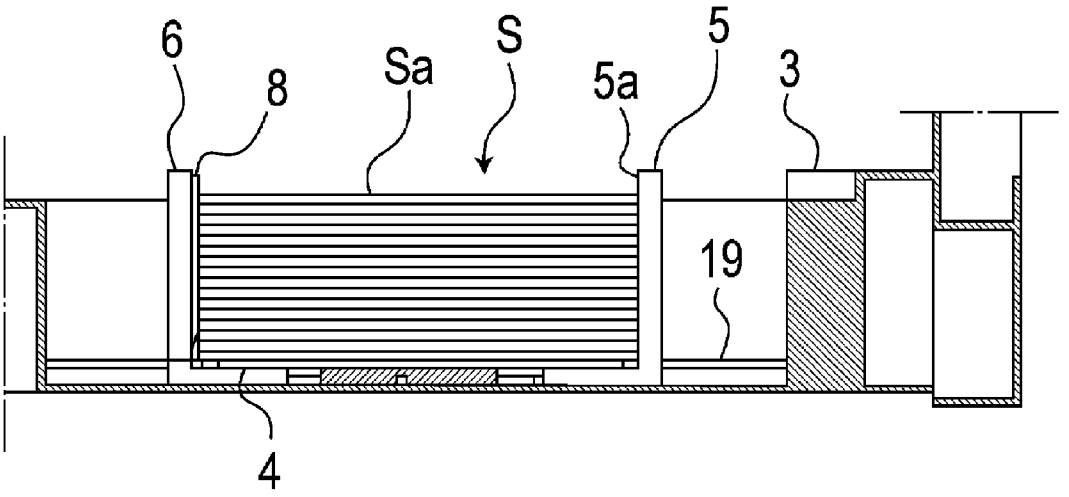


FIG. 4B

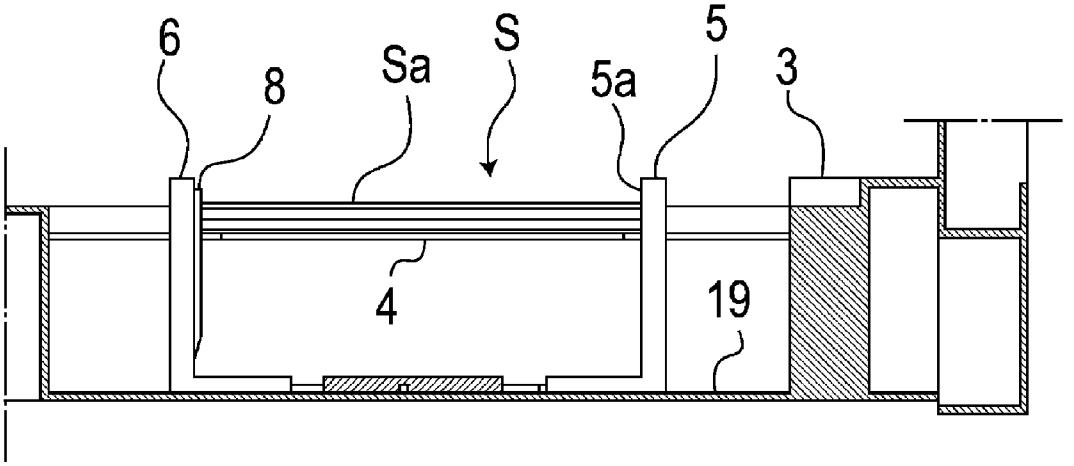


FIG. 5

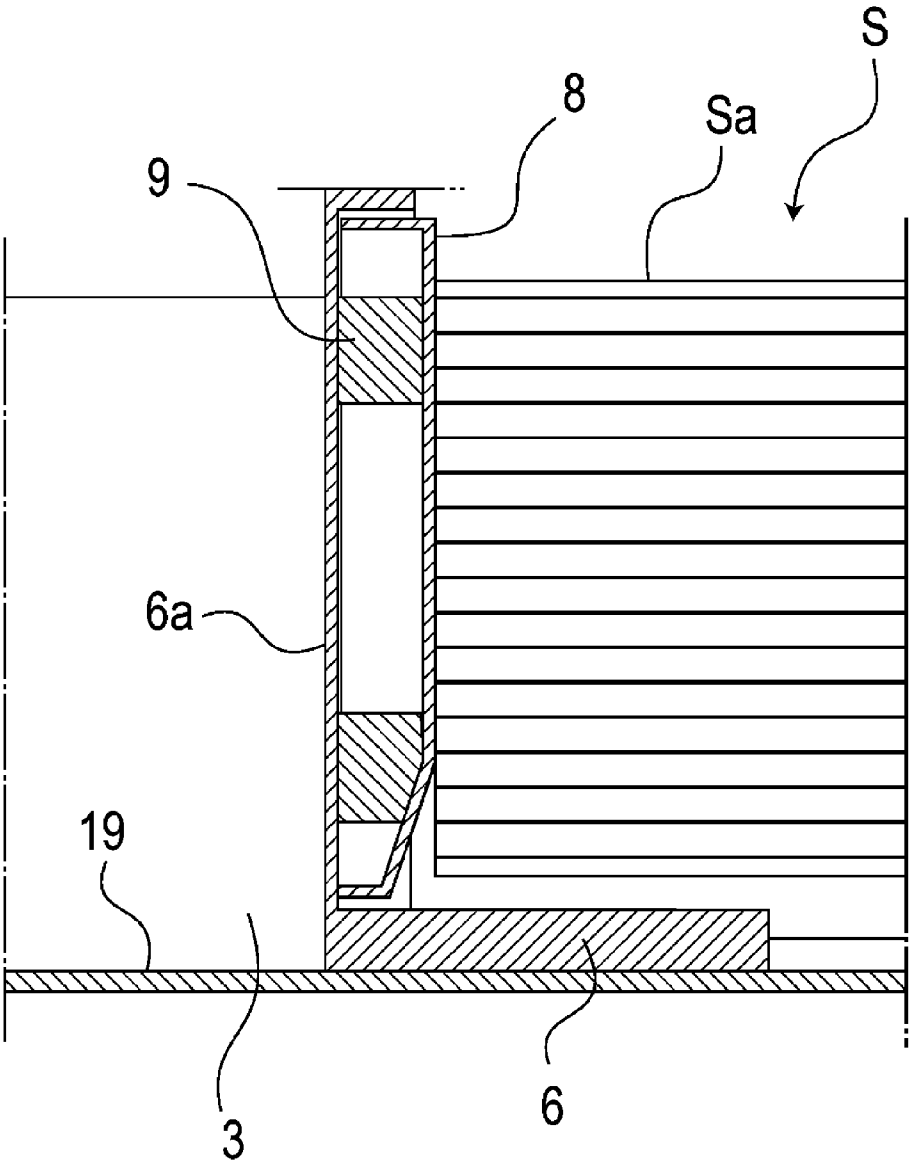


FIG. 6

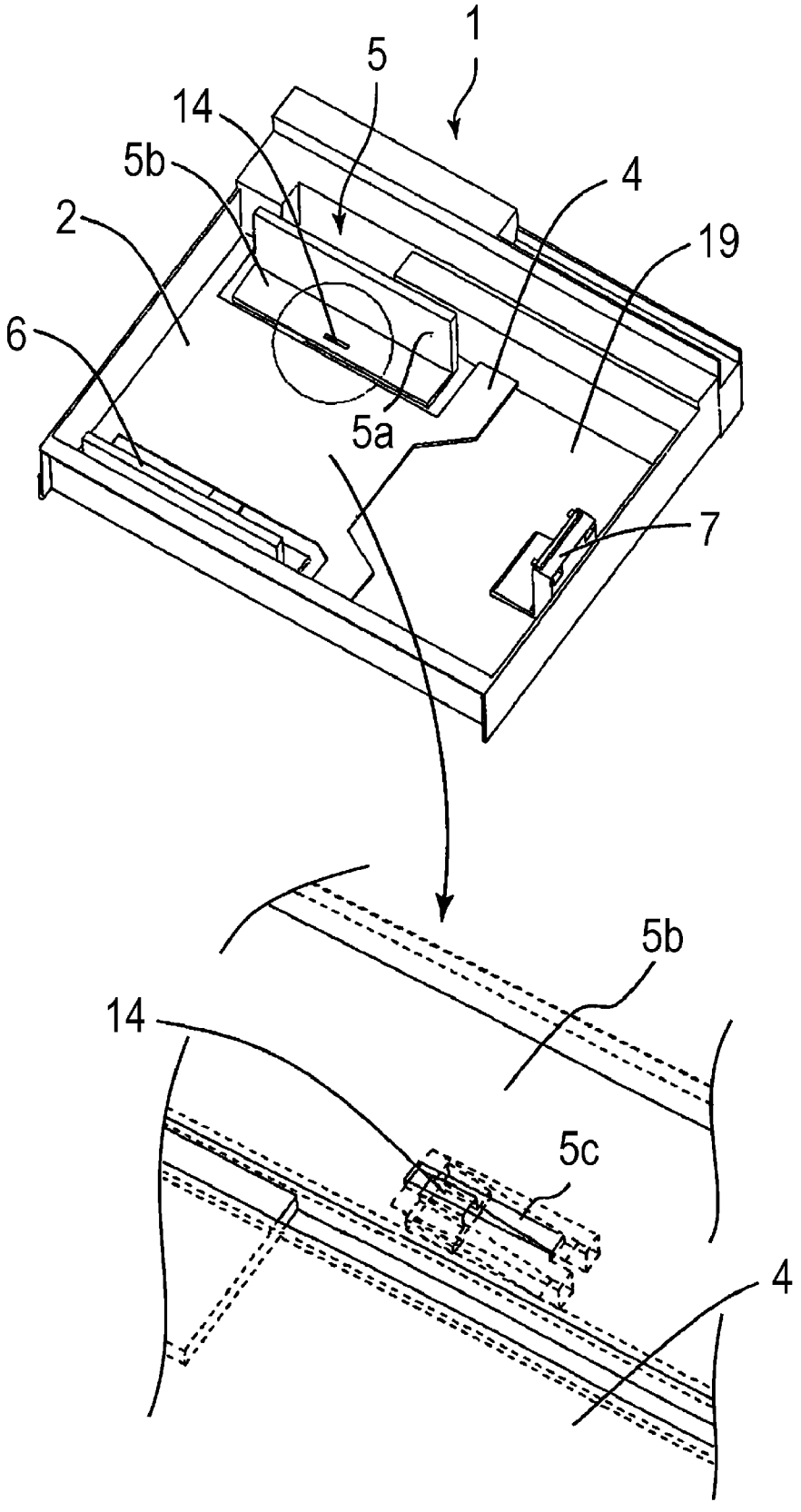


FIG. 7A

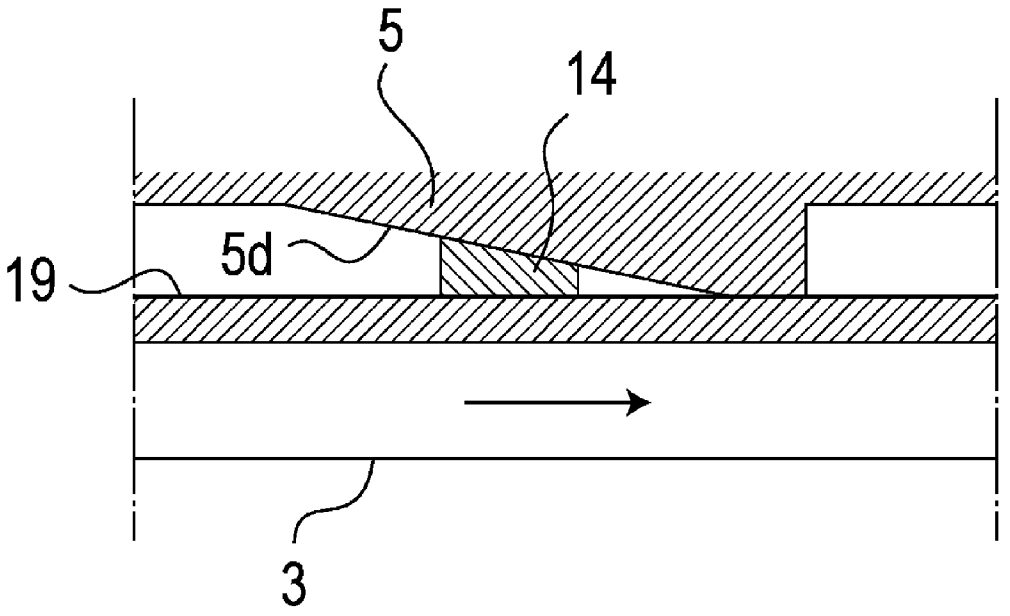
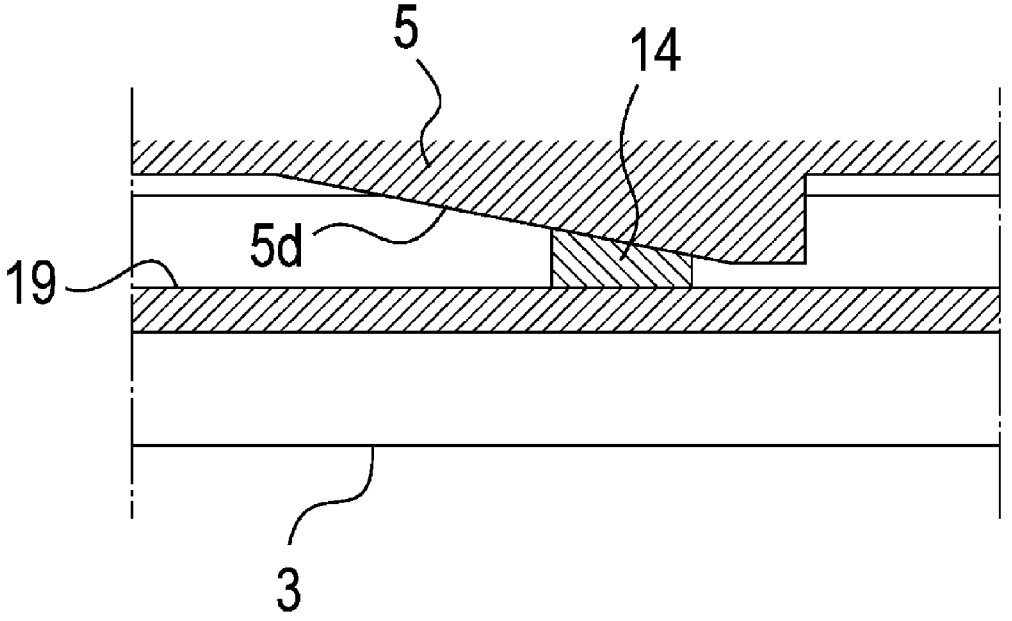


FIG. 7B



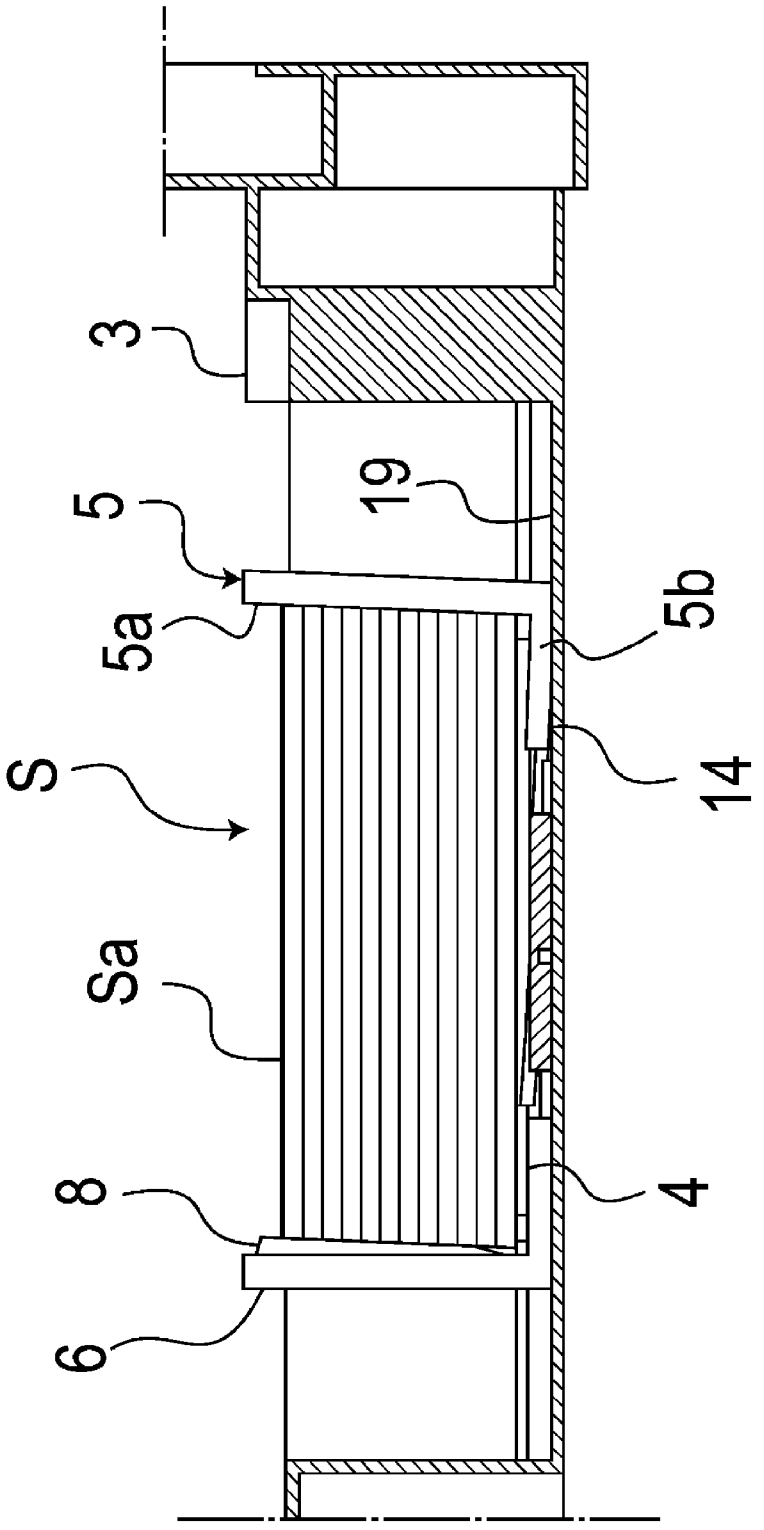


FIG. 8

FIG. 9A

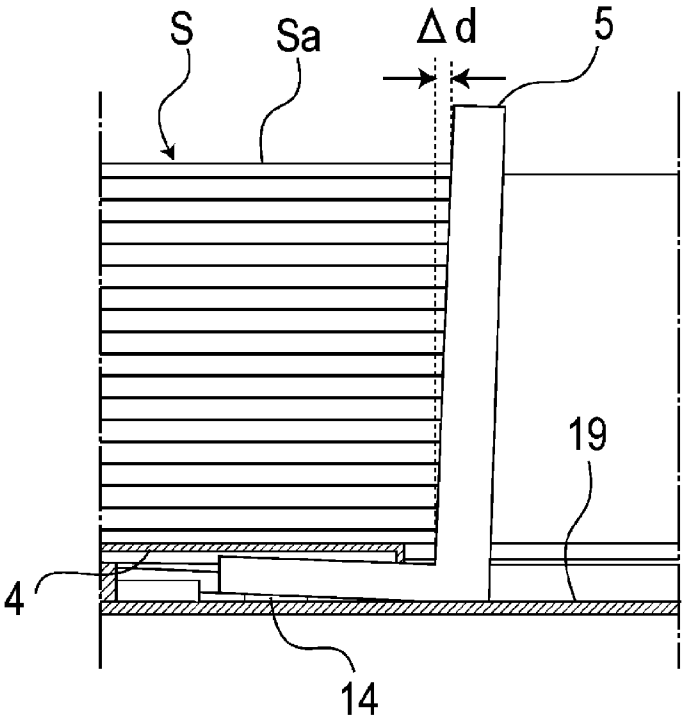


FIG. 9B

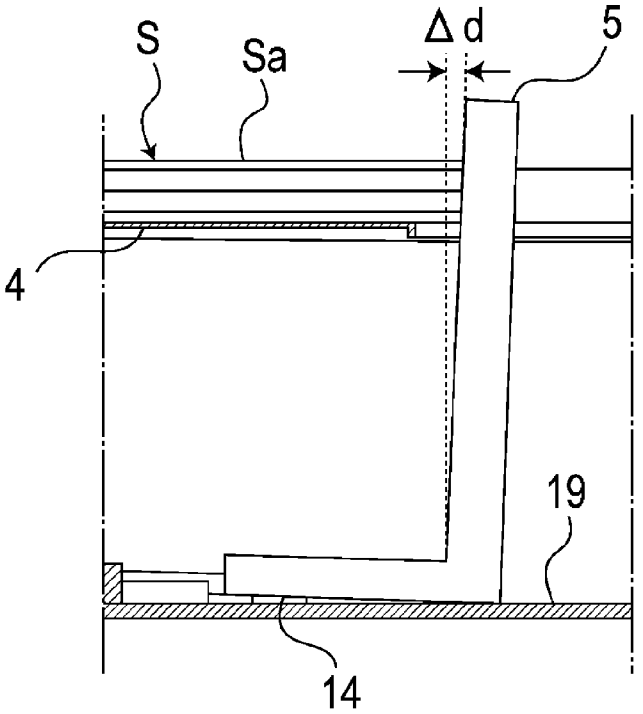


FIG. 10A

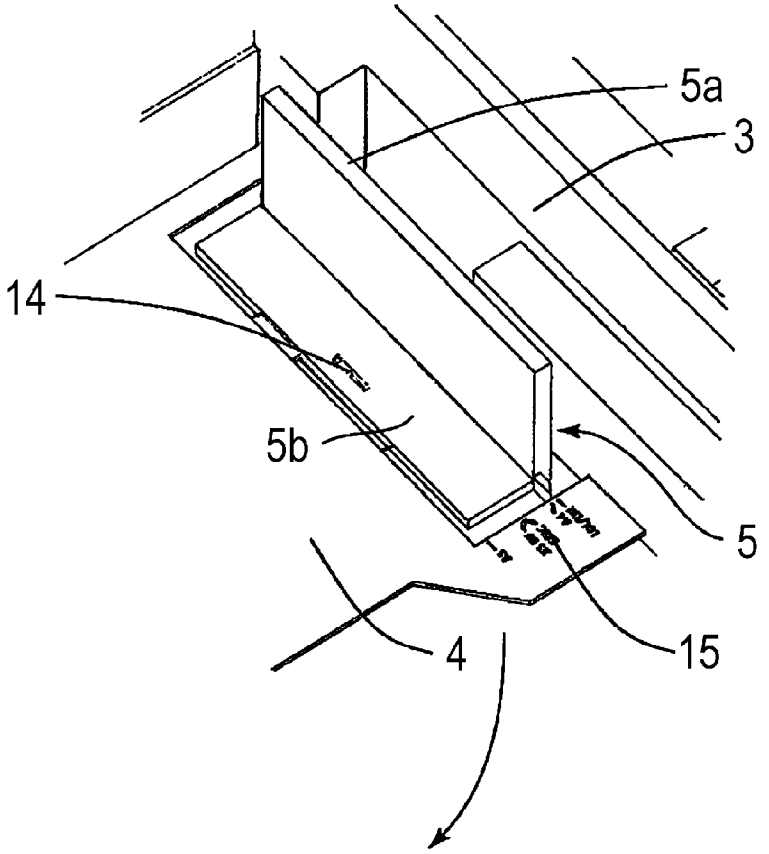


FIG. 10B

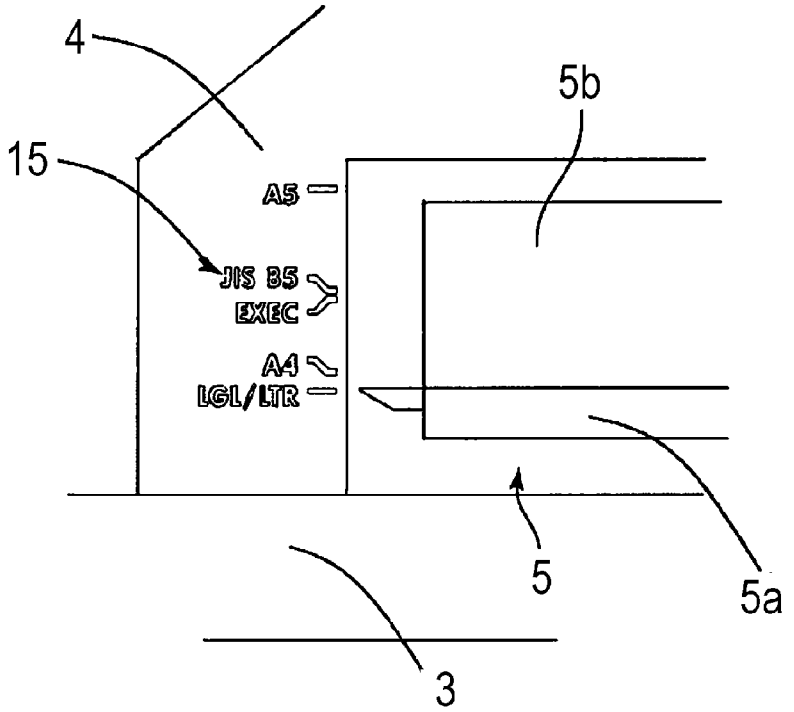


FIG. 11

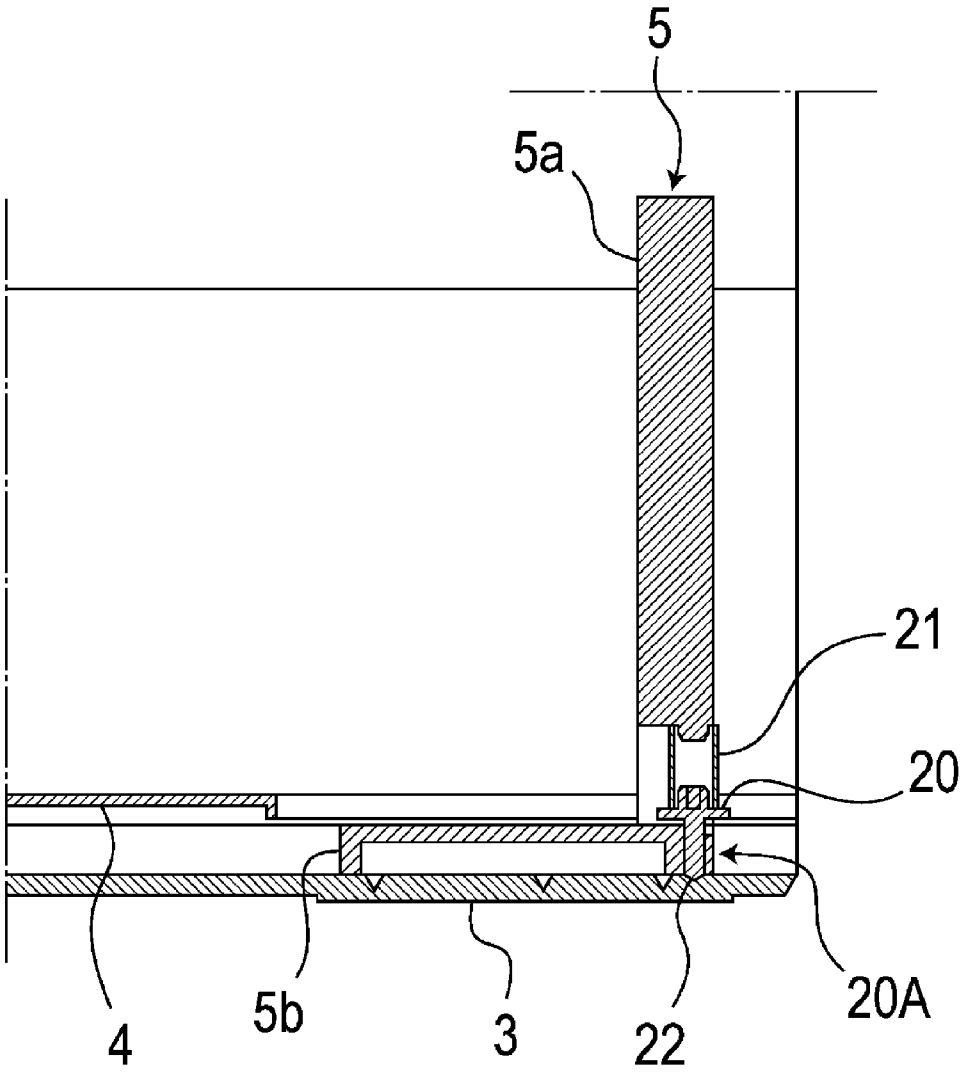


FIG. 12A

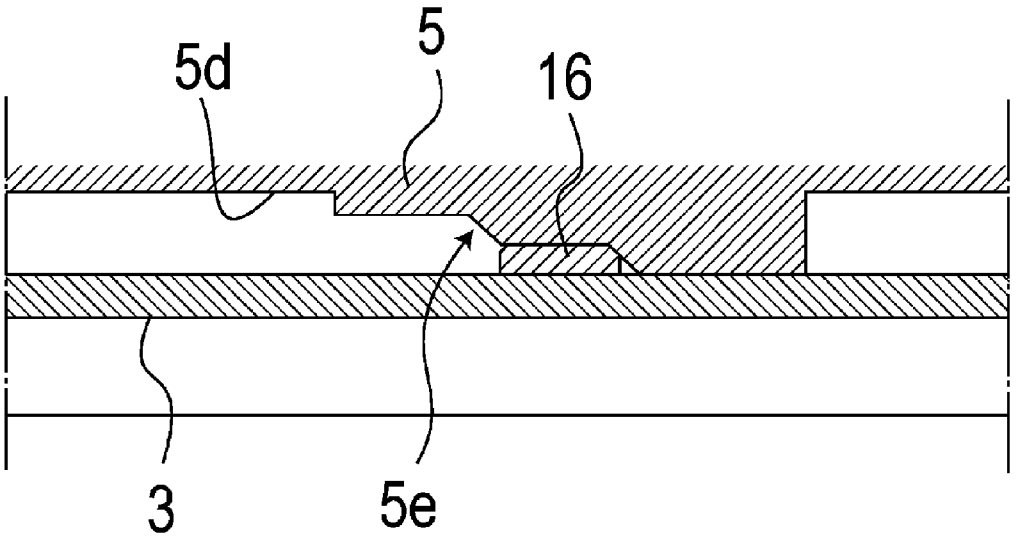


FIG. 12B

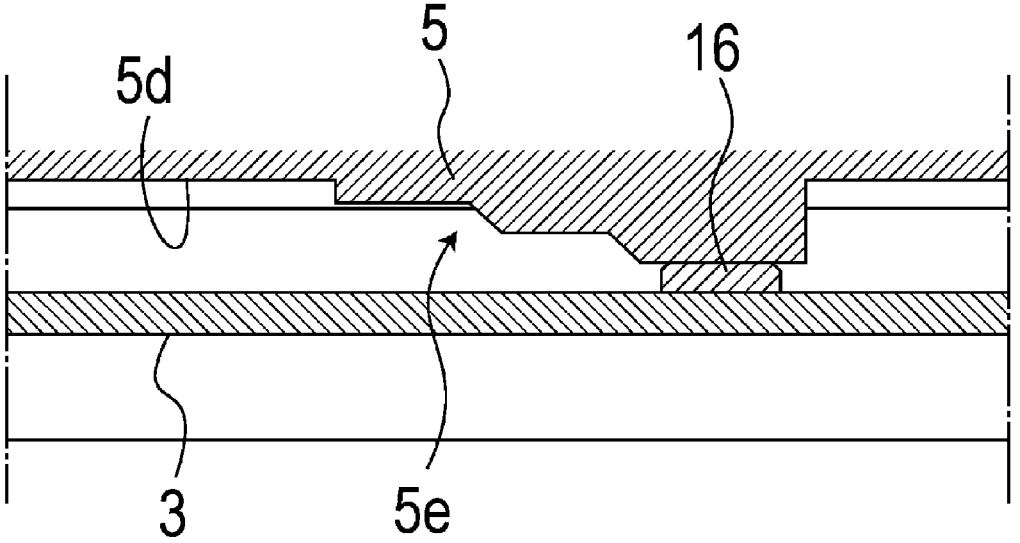


FIG. 13

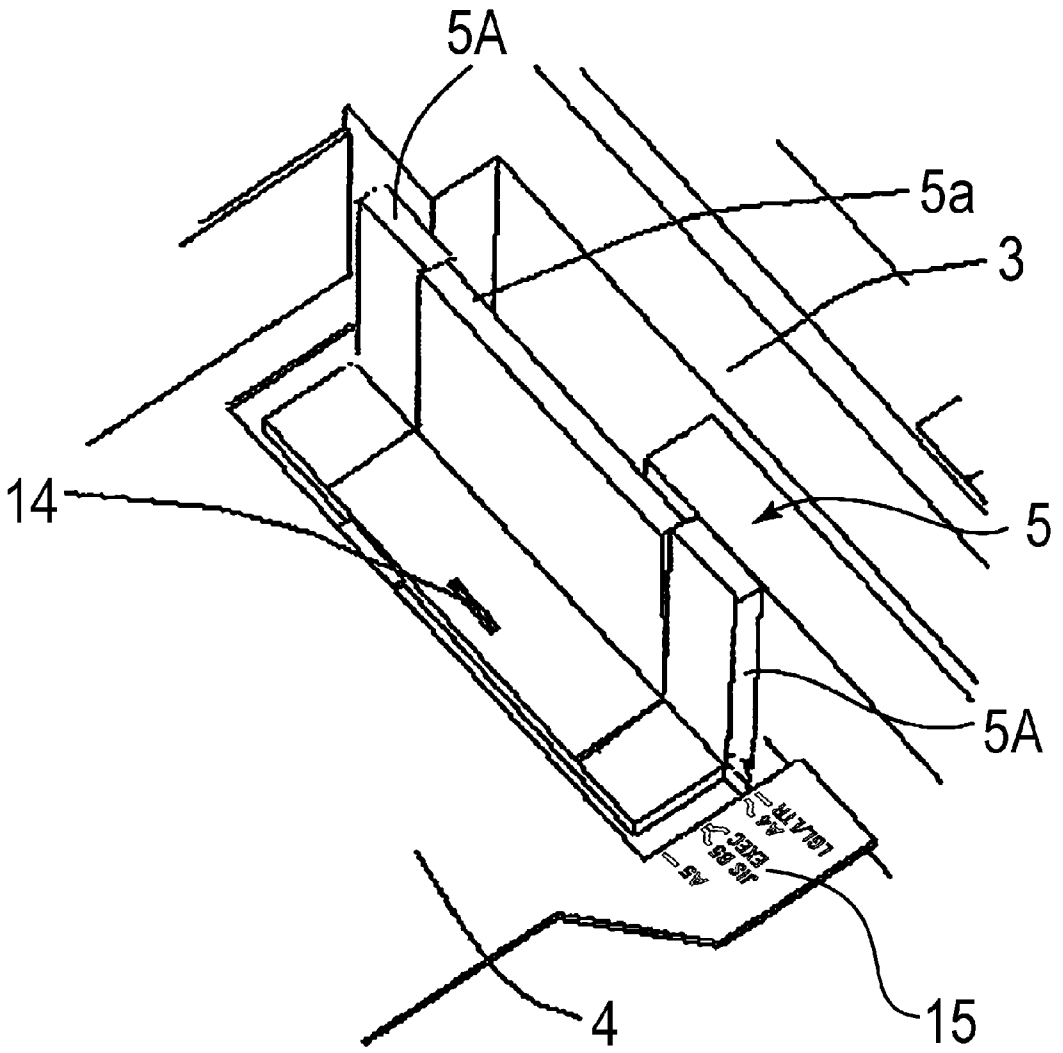
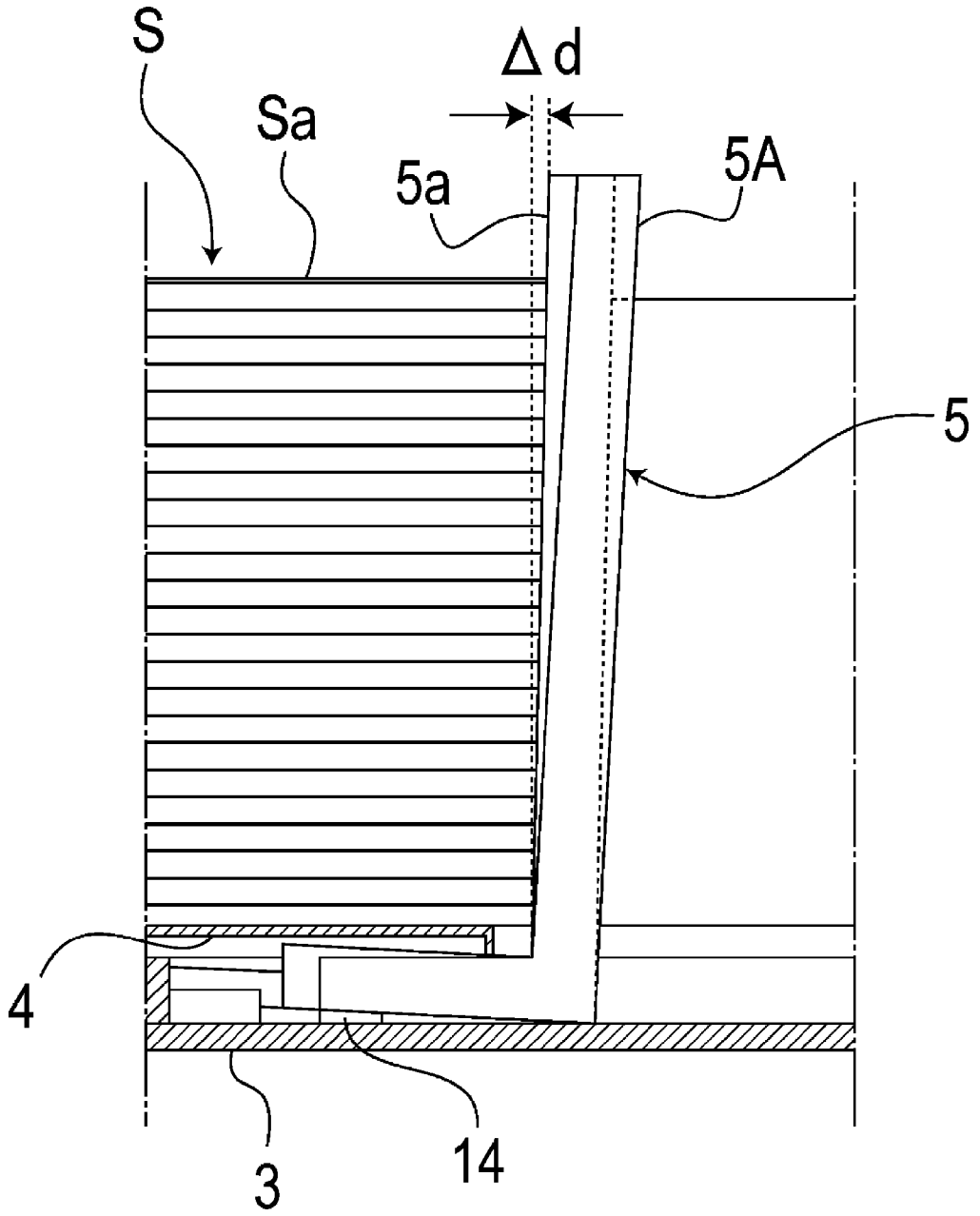


FIG. 14



SHEET FEEDING APPARUTUS AND IMAGE FORMING APPARATUS

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a sheet feeding apparatus and an image forming apparatus, and in particular, relates to a configuration of a side end regulating mechanism to regulate a side end position in the width direction of sheets supported by a sheet supporting portion.

[0003] 2. Description of the Related Art

[0004] Recently, an image forming apparatus, such as a copying machine, a printer and a facsimile machine, which forms an image while feeding a sheet to an image forming portion from a sheet feeding apparatus is widely used. Then, it is common for such a sheet feeding apparatus that a sheet cassette as a sheet supporting portion is detachably attached to an apparatus main body and the sheet accommodated and supported by the sheet cassette is automatically fed to the image forming portion.

[0005] For example, the sheet cassette provided with an intermediate plate capable of being lifted and lowered so that the sheets are piled thereon and pressed to a sheet feeding roller is utilized for such a sheet feeding apparatus. Then, the sheet cassette having the intermediate plate is provided with a rear end regulating member to regulate a rear end position in the sheet feeding direction (hereinafter, referred to as the rear end) of the sheets which are piled and accommodated on the intermediate plate so that the sheets of various sizes can be accommodated. Further, the sheet cassette is provided with a side end regulating member to regulate a side end position of the sheet in the direction perpendicular to the sheet feeding direction (hereinafter, referred to as the width direction).

[0006] With the sheet cassette, the sheet side end is regulated by the side end regulating member and the sheet rear end is regulated by the rear end regulating member so that the front end of the sheet is always maintained at a predetermined position. In this manner, stable feeding of the sheets can be performed regardless of the sheet sizes when the sheet cassette is attached to the apparatus main body.

[0007] Recently, there has been an image forming apparatus such as a laser beam printer which aligns positions in the width direction between the sheets in the sheet cassette and an image forming position of the image forming apparatus in order to equalize margins in the sheet width direction. Here, since the position alignment in the width direction is affected by machining accuracy and assembling accuracy of parts, it is difficult to perfectly align the both positions in the width direction.

[0008] In order to align the sheets in the sheet cassette and the image forming position, for example, there has been a sheet feeding apparatus which performs the alignment by moving, in the width direction, an entire side end regulating member arranged in an opposed manner and movable in the width direction (see Japanese Patent Application Laid-Open No. 2004-323126). Here, in order to enable to adjust the side end regulating member, there is provided space at the opposite side (hereinafter, the outer side) of a surface of the side end regulating member which performs the sheet regulation.

[0009] With such a sheet feeding apparatus and an image forming apparatus provided with such a sheet feeding apparatus in the related art, when the entire side end regulating member is configured to be movable in the width direction, a movement mechanism is required for shifting the entire side end regulating member to the outer side and the configuration becomes complicated. Further, since space is required to be arranged at the outer side of the entire side end regulating member as an adjustment margin, the entire apparatus becomes large and the cost is increased.

[0010] Further, for moving the side end regulating member in the width direction corresponding to the sheet size, there is a case that mark is formed at or around the sheet cassette as a guide of the position of the side end regulating member corresponding to the sheet size. In this case, when only the side end regulating member is adjusted in the sheet width direction, there arises position deviation between the mark as the guide and the side end regulating member. Consequently, the side end regulating member may not be set at the position corresponding to the sheet size. Accordingly, the configuration becomes complicated since the mark as the guide is also required to be moved for adjustment when the side end regulating member is moved in the width direction.

[0011] To address this issue, the present invention provides a sheet feeding apparatus and an image forming apparatus capable of performing position alignment between sheets supported by a sheet supporting portion and an image forming position of the sheet with a simple configuration and at low cost.

SUMMARY OF THE INVENTION

[0012] The present invention provides a sheet feeding apparatus including a sheet supporting portion which supports a plurality of sheets, a side end regulating mechanism which is arranged in a width direction perpendicular to a sheet feeding direction and regulates a position of the sheets supported by the sheet supporting portion by contacting an end part of the sheets in the width direction, and a sheet feeding portion which feeds the top sheet of the sheets supported by the sheet supporting portion and regulated by the side end regulating mechanism. The side end regulating mechanism includes a reference side regulating portion having a reference surface to be a reference in the sheet width direction for sheet feeding, a side end regulating portion which is arranged to be opposed to the reference side regulating portion with a sheet pressing member to apply a force to the sheets toward the reference surface, and an adjusting portion which changes an incline angle of the reference surface which is supported to be capable of inclining having the lower side of the reference surface as a fulcrum.

[0013] With the present invention, by changing the incline angle of the reference surface which is to be the reference in the sheet width direction for sheet feeding with the adjusting portion, position alignment between the sheets supported by the sheet supporting portion and an image forming position of the sheet can be performed with a simple configuration and at low cost.

[0014] Further features of the present invention will become apparent from the following description of exemplary embodiments with reference to the attached drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] FIG. **1** is a view which schematically illustrates a printer as an example of an image forming apparatus including a sheet feeding apparatus according to an embodiment of the present invention;

[0016] FIG. **2** is a perspective view of a sheet cassette arranged at the sheet feeding apparatus;

[0017] FIGS. **3**A and **3**B are explanatory views which illustrate a configuration for moving a side end reference member and a side end regulating member arranged at the sheet cassette in the width direction;

[0018] FIGS. **4**A and **4**B are explanatory views which illustrate movement of an intermediate plate arranged at the sheet cassette;

[0019] FIG. **5** is an explanatory view which illustrates a configuration of a sheet pressing member arranged at the side end regulating member;

[0020] FIG. **6** is an explanatory view which illustrates an angle adjusting member arranged at the side end reference member;

[0021] FIGS. **7**A and **7**B are views which illustrate inclining motion of a side end reference portion by operation of the angle adjusting member;

[0022] FIG. **8** is a view which illustrates an inclined state of the side end reference portion by the operation of the angle adjusting member;

[0023] FIGS. **9**A and **9**B are enlarged views of a main part of the side end reference portion inclined by the operation of the angle adjusting member;

[0024] FIGS. **10**A and **10**B are views which illustrate a mark indicating a sheet size formed at the sheet cassette;

[0025] FIG. **11** is an explanatory view which illustrates a configuration of a positioning mechanism to perform positioning of the side end reference member arranged at the sheet cassette;

[0026] FIGS. **12**A and **12**B are explanatory views which illustrate another configuration to incline the side end reference portion;

[0027] FIG. **13** is a view which illustrates another configuration of the side end reference portion; and

[0028] FIG. **14** is a view which illustrates an inclined state of a side wall portion of the side end reference portion arranged separately from the side end reference portion by the operation of the angle adjusting member.

DESCRIPTION OF THE EMBODIMENTS

[0029] In the following, an exemplary embodiment of the present invention will be described in detail with reference to the drawings.

[0030] FIG. **1** is a view which schematically illustrates a printer as an example of an image forming apparatus including a sheet feeding apparatus according to an embodiment of the present invention.

[0031] FIG. **1** shows a printer **50**, a printer main body **51** as an apparatus main body, an image forming portion **52** which is arranged at the printer main body **51** and performs image forming of an electrophotographic system, and a sheet feeding apparatus **54** which feeds a sheet S to the image forming portion **52**.

[0032] Here, the image forming portion **52** is provided with a photosensitive drum **53** which forms a toner image and a transfer roller **65** which transfers the toner image formed at the photosensitive drum **53** to the sheet S. At the image forming portion **52** having such a configuration, first, light corresponding to an image signal is irradiated to the photosensitive drum **53** from a laser light exposure device (not illustrated) when image forming operation is started. Then, due to the irradiation of light corresponding to the image signal, a latent image is formed on the photosensitive drum **53**. Consequently, the latent image on the photosensitive drum **53** is developed with toner supplied by developing unit and visualized as a toner image.

[0033] The sheet feeding apparatus **54** is detachably attached to the printer main body **51** and is provided with a sheet cassette **1** as a sheet piling portion to support a pile of the sheets S and a sheet feeding roller **54***a* which constitutes a sheet feeding portion to feed the sheets S accommodated in the sheet cassette **1**. Here, the sheet cassette **1** is provided with an intermediate plate **4** which is movable in the vertical direction to support the pile of the sheet S, a later-mentioned side end regulating member in FIG. **2** to regulate positions of both ends in the width direction perpendicular to the sheet feeding direction of the sheets S, and a rear end regulating member **7** to regulate the rear end of the sheets S.

[0034] Further, a separation pad **60** which is press-contacted to the sheet feeding roller **54***a* is arranged at the downstream side in the sheet feeding direction of the sheet cassette **1**. The separation pad **60** is press-contacted to the sheet feeding roller **54***a* by a separation pad spring **61**. In the sheet feeding apparatus **54**, the sheets S are carried from the sheet cassette **1** by the sheet feeding roller **54***a* at the time of image forming, and then, the sheets S are separated one by one by the separation pad **60** which is press-contacted to the sheet feeding roller **54***a*.

[0035] Next, image forming operation at the printer **50** having the abovementioned configuration will be described.

[0036] When a print start signal is input, the sheets S piled at the sheet cassette **1** are carried by friction with the sheet feeding roller **54***a*. Then, the sheets S are separated and fed one by one by the separation pad **60** which is press-contacted to the sheet feeding roller **54***a* as being applied a force by the separation pad spring **61**.

[0037] Next, the sheet S is conveyed by a conveying roller **63** and arrives at a pair of registration rollers **64**. Then, the front end of the sheet S is aligned by the pair of registration rollers **64**. Here, when a photo-sensor (not illustrated) detects passing of the sheet S before arriving at the pair of registration rollers **64**, the laser light exposure device (not illustrated) irradiates laser light to the photosensitive drum **53**.

[0038] Thus, the electrostatic latent image is formed on the photosensitive drum **53**. By developing the electrostatic latent image with toner, the electrostatic latent image is visualized. Subsequently, by applying a voltage of the opposite polarity against the toner image formed on the photosensitive drum **53** to the transfer roller **65** which constitutes a transfer portion, the visualized toner image on the photosensitive drum **53** is transferred to the sheet S.

[0039] Next, the sheet S on which the toner image is transferred is conveyed to a fixing portion **66**. The sheet S is pressurized and heated when passing through the fixing portion **66** and the toner image is permanently fixed on the sheet S. Then, the sheet S on which the toner image has been fixed is piled on a discharge cassette **70** by pairs of discharge rollers **67** to **69**.

[0040] Here, as illustrated in FIG. **2**, the sheet cassette **1** is provided with a cassette main body **3** having a sheet accommodating space **2** to accommodate and support the sheets of various sizes and the intermediate plate **4** arranged at the cassette main body **3** which is a sheet supporting portion to support sheets to be capable of being lifted and lowered to support the pile of the sheets. Further, the sheet cassette **1** is provided with the rear end regulating member **7** to regulate the rear end of the sheets.

[0041] In addition, the sheet cassette **1** is provided with a side end reference portion **5** as a reference side regulating portion which regulates one side end position in the width direction perpendicular to the sheet feeding direction of the sheets and a side end regulating portion **6** which is arranged to be opposed to the side end reference portion **5** and regulates the other side end position in the width direction of the sheets. The side end reference portion **5** and the side end regulating portion **6** constitute the side end regulating mechanism which regulates the side end positions in the width direction of the sheets supported by the sheet cassette **1**.

[0042] The side end reference portion **5**, the side end regulating portion **6** and the rear end regulating member **7** are configured to be movable corresponding to various sheet sizes. As illustrated in FIGS. **3**A and **3**B, the side end reference portion **5** and the side end regulating portion **6** respectively include racks **11**, **12** mated with a pinion **10** which is arranged at a bottom surface **19** of the cassette main body **3**. Due to the racks **11**, **12** and the pinion **10**, the side end reference portion **5** and the side end regulating portion **6** are moved in the opposite direction to each other by the same distance. Here, FIG. **3**A indicates positions of the side end reference portion **5**, the side end regulating portion **6** and the rear end regulating member **7** for accommodating the sheets of the A3 size. FIG. **3**B indicates positions of the side end reference portion **5**, the side end regulating portion **6** and the rear end regulating member **7** for accommodating the sheets of the A4 size (smaller than A3 size).

[0043] As illustrated in FIGS. **4**A and **4**B, the intermediate plate **4** which supports the pile of the sheets is arranged to be capable of being lifted and lowered in parallel with the bottom surface **19** of the sheet cassette **1** with a lifting and lowing mechanism (not illustrated). Then, the sheets are fed sequentially. When a sheet upper surface sensor (not illustrated) detects that the position of the top sheet Sa of the sheets S is equal to or lower than a predetermined height, the intermediate plate **4** is lifted as illustrated in FIG. **4**B. In this manner, the position of the top sheet Sa is maintained within a predetermined height range.

[0044] As illustrated in FIG. **2**, the side end regulating portion **6** is provided with two (i.e., a plurality of) sheet pressing members **8** along the sheet feeding direction as pressing members which are press-contacted to the side end (i.e., the end part) of the sheets and applies a force and presses the sheets to be contacted to the side end reference portion **5** as being movable in the width direction. Further, between the sheet pressing member **8** and a side wall portion **6***a* of the side end regulating portion **6**, regulation springs **9** are arranged at the upper and lower sides as biasing member to apply a force to the sheet pressing member **8** toward the side end reference member side, as illustrated in FIG. **5**.

[0045] Then, when the sheets S are accommodated in the cassette main body **3**, the sheets S are press-contacted by the sheet pressing member **8** to which a force is applied by the regulation springs **9** which are arranged at the upper and lower sides. Accordingly, as illustrated in FIGS. **4**A and **4**B, the sheets S are elastically pressed to a side wall portion **5***a* of the side end reference portion **5** having a sheet contact surface as a reference surface which is the reference of the sheet width direction for the sheet feeding while being contacted with the sheets S. As a result, one side end position in the width direction of the sheets S, namely, one side end position of the sheets S to be the reference for the position alignment with the image forming position of the sheet, follows to the position of the side end reference portion **5**.

[0046] Since the side end position in the width direction of the sheets S follows to the position of the side end reference portion **5**, the sheet is fed on a side end basis as the side end reference portion **5** being the reference for the sheet feeding. Thus, by feeding the sheet as the side end reference portion **5** being the reference, the position alignment between the sheets and the position of image forming (i.e., image transferring) at the transfer portion in the printer can be performed.

[0047] Further, as illustrated in FIG. **6**, the side end reference portion **5** is provided with an angle adjusting member **14** capable of operating sliding to adjust the angle of the side wall portion **5***a* against the bottom surface **19** of the sheet cassette **1**. The angle adjusting member **14** is capable of being operated from the upper side of the bottom plate **5***b* of the side end reference portion **5** which is parallel to the bottom surface **19** of the sheet cassette **1**.

[0048] In the present embodiment, the angle adjusting member **14** is arranged inside an operation opening portion **5***c* formed at the bottom plate **5***b* of the side end reference portion **5** so as not to disturb the sheet piling. Further, in the present embodiment, as illustrated in FIGS. **7**A and **7**B, the upper surface of the angle adjusting member **14** is inclined and an inclination surface is formed at a bottom surface **5***d* of the bottom plate **5***b* to be contacted (i.e., engaged) to the upper surface of the angle adjusting member **14**.

[0049] Accordingly, when the angle adjusting member **14** located as illustrated in FIG. **7**A is operated to move in the arrow direction, the angle adjusting member **14** proceeds between the bottom surface **5***d* of the side end reference portion **5** and the bottom surface **19** of the cassette main body **3** as illustrated in FIG. **7**B. As a result, the side end reference portion **5** is swung having an edge part, on which the side wall portion **5***a* is vertically formed, of the bottom plate **5***b* of the side end reference portion **5** as a fulcrum. Then, as illustrated in FIG. **8**, the side wall portion **5***a* of the side end reference portion **5** is inclined against the bottom surface **19** of the cassette main body **3**.

[0050] In the case that the side wall portion **5***a* of the side end reference portion **5** which is capable of inclining is inclined against the bottom surface **19** of the sheet cassette **1** as described above, the side end position in the width direction of the top sheet Sa to be fed is moved by Δd when a force is applied to the sheets S in the width direction by the sheet pressing member **8**, as illustrated in FIG. **9**A. Due to the movement of the sheets S as described above, the printing position against the fed sheet Sa is also moved by Δd.

[0051] Namely, the reference position in the sheet width direction can be adjusted (i.e., changed) by inclining the side end reference portion **5** with the operation of the angle adjusting member **14**. Here, even in the case that the side end reference portion **5** is inclined, the rack **11** of the side end reference portion **5** of FIG. **3** is not to be apart from the pinion **10**. Therefore, even when the sheets are pressed to the side wall portion **5***a* of the side end reference portion **5**, the side end reference portion **5** is not moved in the width direction.

[0052] Further, since the position of the top sheet Sa is maintained invariable due to the lifting of the intermediate plate **4**, the side end position in the width direction of the sheets S are maintained invariable as well despite of the number of the piled sheets as illustrated in FIGS. **9**A and **9**B as long as the inclined angle (i.e., the swung angle) of the side end reference portion **5** is constant.

[0053] By the way, as illustrated in FIG. **10**, there is a case that a mark **15** indicating a sheet size is formed at the cassette main body **3**, namely, at the intermediate plate **4** in the present embodiment. Further, as illustrated in FIG. **11**, there is a case that a positioning mechanism **20**A which performs positioning of the side end reference portion **5** corresponding to the size is arranged between the cassette main body **3** and the side end reference portion **5**. The positioning mechanism **20**A is configured with a positioning member **20** arranged at the side end reference portion **5**, a positioning spring **21** and a groove **22** arranged at the cassette main body **3**.

[0054] Meanwhile, in the present embodiment, the reference position in the sheet width direction is adjusted by inclining the side end reference portion **5**. Here, as described above, since the side end reference portion **5** supported to be capable of inclining at the lower side (i.e., the edge part) being the fulcrum is inclined, the position of the side end reference portion **5** is not varied even in the case that the angle adjusting member **14** is inclined.

[0055] Therefore, in the case that the mark **15** is formed at the intermediate plate **4** or in the case that the positioning mechanism **20**A is provided, even if the side end reference portion **5** is inclined, the mark **15** or the positioning mechanism **20**A is not necessarily moved in accordance with the angle adjustment of the side end reference portion **5**. Thus, since the positioning adjustment of the positioning mechanism **20**A or the mark **15** is unnecessary, the positioning adjustment in the width direction of the sheets S can be performed with less influence to others.

[0056] As described above, by inclining the side end reference portion **5** and adjusting (i.e., changing) the angle of the side wall portion **5***a* of the side end reference portion **5**, the position alignment between the sheets supported by the sheet cassette **1** and the image forming position of the sheet can be performed with a simple configuration at low cost.

[0057] In the description above, the inclined surface is formed at the bottom surface **5***d* of the bottom plate **5***b* while inclining the upper surface of the angle adjusting member **14** so that the angle adjustment of the side end reference portion **5** can be gently performed, as illustrated in FIG. **7**. However, not limited to this, the angle adjustment of the side end reference portion **5** may be performed stepwise.

[0058] In the case that the angle adjustment of the side end reference portion **5** is performed stepwise, a stepped portion is arranged at the bottom surface **5***d* of the bottom plate **5***b* of the side end reference portion **5** which is engaged with the angle adjusting member **14** and the angle adjusting member **16** having a flat upper surface is slid along the stepped portion, as illustrated in FIG. **12**. Thus, the stepwise angle adjustment of the side end reference portion **5** can be performed.

[0059] In the description above, the side wall portion **5***a* having the sheet contact surface is arranged integrally with the side end reference portion **5**. However, the present invention is not limited to this. For example, as illustrated in FIG. **13**, the side wall portion **5***a* may be arranged separately from the side end reference portion **5**. In this case, normally, the side wall portion **5***a* is projected from a side wall main body **5**A of the side end reference portion **5** toward the sheet side as illustrated in FIG. **13**.

[0060] Then, in order to perform the position alignment with the image forming position of the sheet, the side wall portion **5***a* is inclined toward the side wall main body **5**A as illustrated in FIG. **14** by operating the angle adjusting member **14**. Here, when the side wall portion **5***a* is inclined as described above, the side wall portion **5***a* may be on the same plane as the side wall main body **5**A.

[0061] By arranging the side wall portion **5***a* separately from the side end reference portion **5**, less force is required for operating the angle adjusting member **14**. Further, the operation becomes simple since the angle adjusting member **14** can be operated while holding the side wall main body **5**A.

[0062] Further, in the description above, the side end reference portion **5** is inclined by the angle adjusting member in the width widening direction. However, the present invention is not limited to this. For example, the side end reference portion **5** may be inclined corresponding to the operation of the angle adjusting member in the width narrowing direction by arranging the bottom surface of the bottom plate of the side end reference portion **5** to incline in the reverse direction to the shape in FIG. **7**.

[0063] Furthermore, in the embodiment, the side end regulating mechanism of the present invention is adopted to a sheet cassette. However, the side end regulating mechanism of the present invention may be adopted to a manual sheet feeding portion (i.e., a multipurpose sheet feeding mechanism).

[0064] While the present invention has been described with reference to exemplary embodiments, it is to be understood that the invention is not limited to the disclosed exemplary embodiments. The scope of the following claims is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures and functions.

[0065] This application claims the benefit of Japanese Patent Application No. 2008-303390, filed Nov. 28, 2008, which is hereby incorporated by reference herein in its entirety.

What is claimed is:

1. A sheet feeding apparatus, comprising:

a sheet supporting portion which supports a plurality of sheets;

a side end regulating mechanism which is arranged in a width direction perpendicular to a sheet feeding direction and regulates a position of the sheets supported by the sheet supporting portion by contacting an end part of the sheets in the width direction; and

a sheet feeding portion which feeds the top sheet of the sheets supported by the sheet supporting portion and regulated by the side end regulating mechanism,

wherein the side end regulating mechanism includes a reference side regulating portion having a reference surface to be a reference in the sheet width direction for sheet feeding, a side end regulating portion which is arranged to be opposed to the reference side regulating portion with a sheet pressing member to apply a force to the sheets toward the reference surface, and

an adjusting portion which changes an incline angle of the reference surface which is supported to be capable of inclining at the lower side of the reference surface as a fulcrum.

2. The sheet feeding apparatus according to claim **1**,

wherein the reference surface and the reference side regulating portion are integrally arranged; and

the adjusting portion changes the angle of the reference surface by inclining the reference side regulating portion while an angle adjusting member proceeds between the reference side regulating portion and the sheet supporting portion.

3. The sheet feeding apparatus according to claim 2,
wherein a stepped portion which changes the angle of the reference surface by inclining the reference side regulating portion stepwise is provided at the reference side regulating portion engaged with the angle adjusting member.

4. The sheet feeding apparatus according to claim 1,
wherein the reference surface is arranged to be projected toward the sheets which are supported by the sheet supporting portion.

5. An image forming apparatus, comprising:
a sheet supporting portion which supports a plurality of sheets;
a side end regulating mechanism which is arranged in a width direction perpendicular to a sheet feeding direction and regulates a position of the sheets supported by the sheet supporting portion by contacting an end part of the sheets in the width direction;
a sheet feeding portion which feeds the top sheet of the sheets supported by the sheet supporting portion and regulated by the side end regulating mechanism,
wherein the side end regulating mechanism includes a reference side regulating portion having a reference surface to be a reference in the sheet width direction for sheet feeding, a side end regulating portion which is arranged to be opposed to the reference side regulating portion with a sheet pressing member to apply a force to the sheets toward the reference surface,
an image forming portion which forms an image on the sheet fed from the sheet feeding portion; and
an adjusting portion which changes an incline angle of the reference surface which is supported to be capable of inclining at the lower side of the reference surface as a fulcrum.

6. The image forming apparatus according to claim 5,
wherein the reference surface and the reference side regulating portion are integrally arranged; and
the adjusting portion changes the angle of the reference surface by inclining the reference side regulating portion while an angle adjusting member proceeds between the reference side regulating portion and the sheet supporting portion.

7. The image forming apparatus according to claim 6,
wherein a stepped portion which changes the angle of the reference surface by inclining the reference side regulating portion stepwise is provided at the reference side regulating portion engaged with the angle adjusting member.

8. The image forming apparatus according to claim 5,
wherein the reference surface is arranged to be projected toward the sheets which are supported by the sheet supporting portion.

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