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(54) **SHEET FEED MECHANISM OF PRINTER, AND PRINTER**

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(57) **ABSTRACT**

A sheet feed mechanism of a printer includes a sheet feed roller arranged so as to be rotatable about an axis in a direction orthogonal to a sheet conveying direction in plan view such that its apex is made to face a sheet conveying path on the downstream side in the sheet conveying direction, a sheet pressure-contact member arranged to be capable of pressing a sheet against the sheet feed roller, and a sheet trailing end guide portion having a guide surface which gradually guides a trailing end of the sheet released from abutment on the sheet feed roller toward the downstream in the sheet conveying direction.

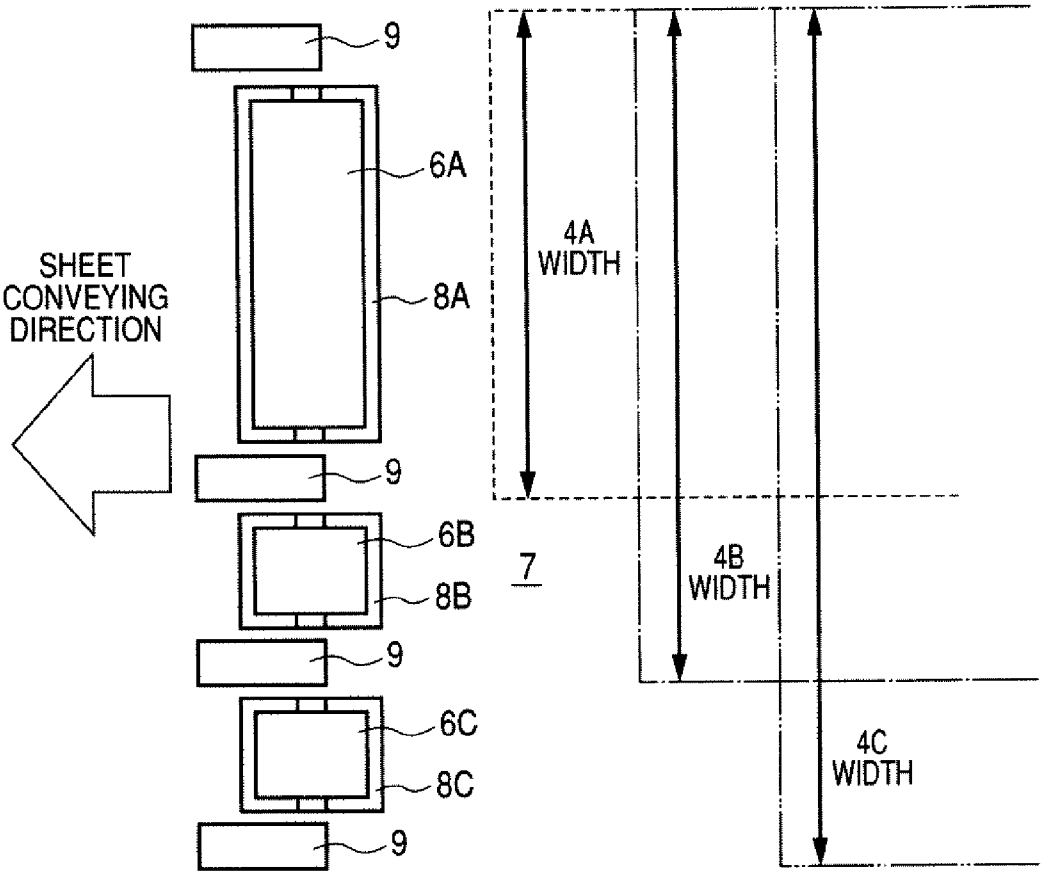


FIG. 1

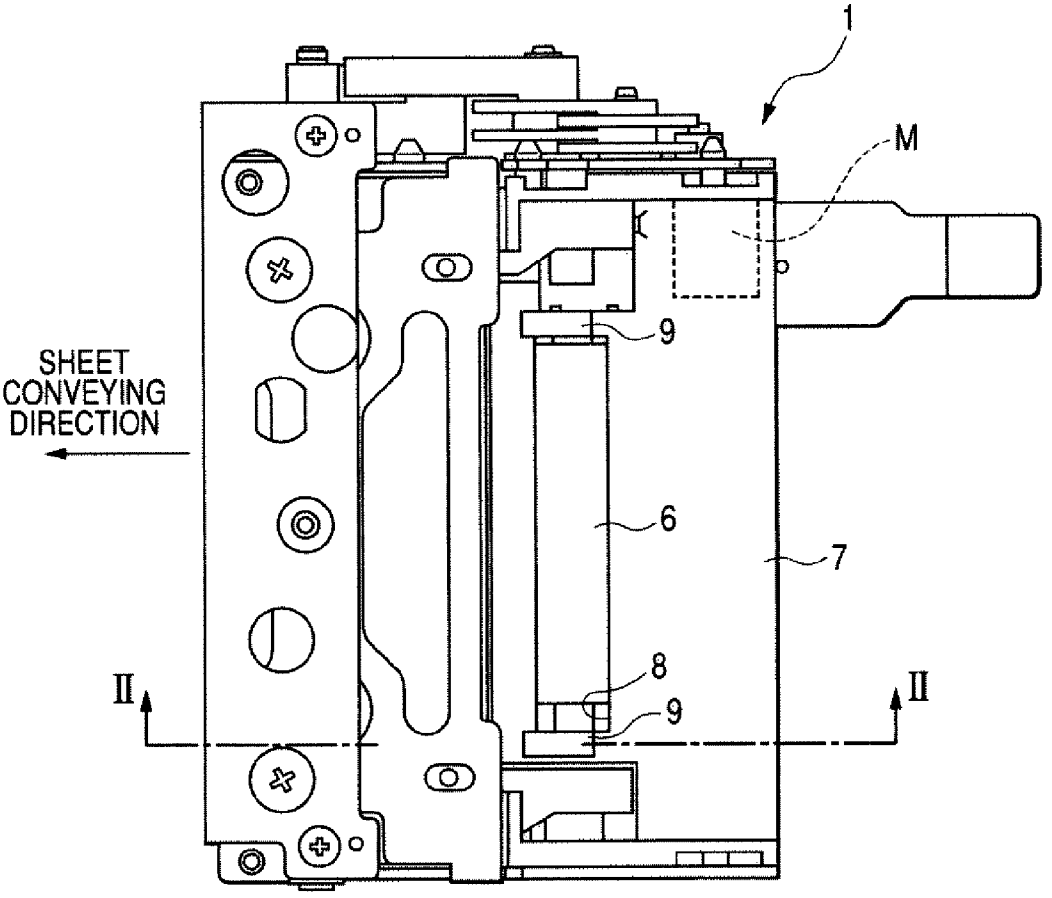


FIG. 2

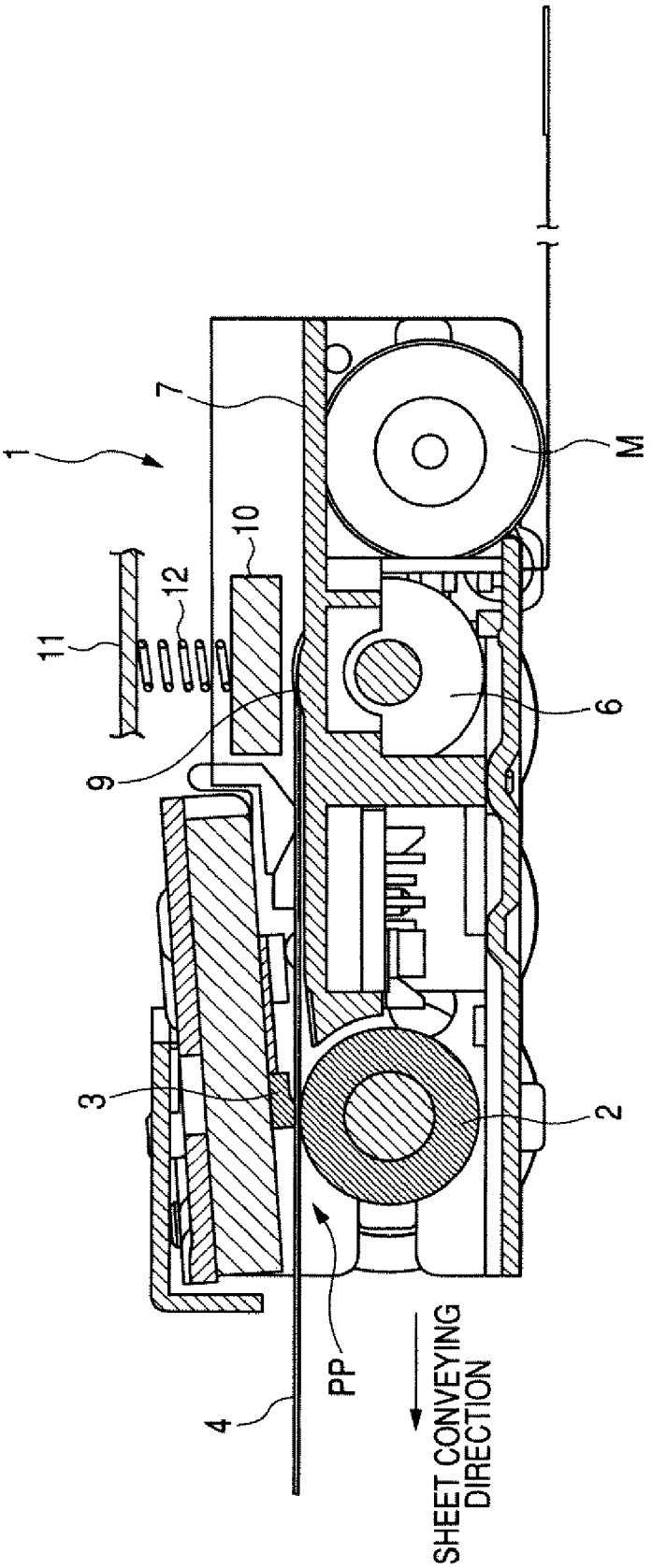


FIG. 3

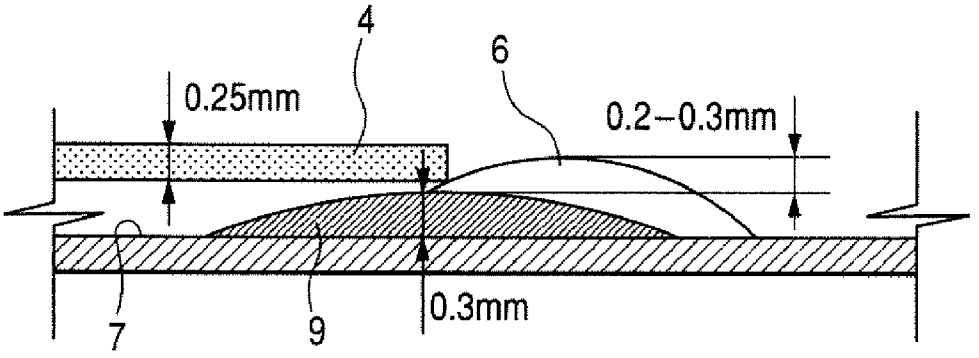

4
6
0.25mm
0.2–0.3mm
7
9
0.3mm

FIG. 4

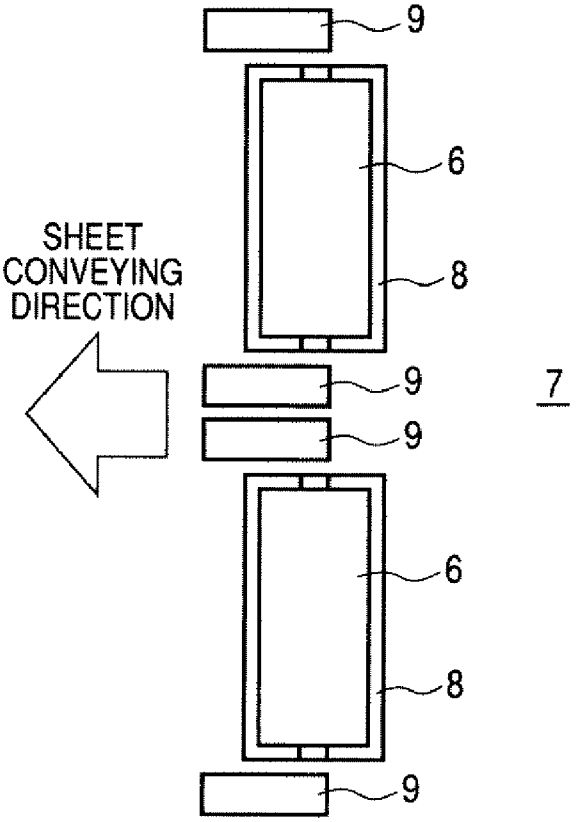
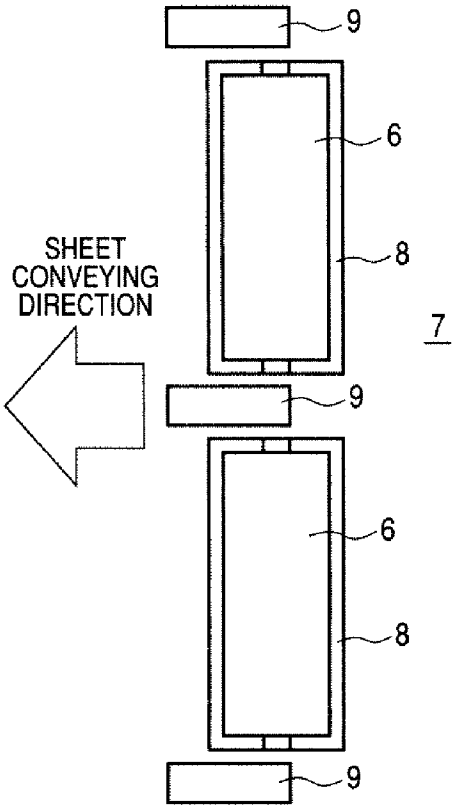

9
6
SHEET
CONVEYING
DIRECTION
8
9
7
9
6
8
9

FIG. 5


9
6
8
SHEET
CONVEYING
DIRECTION
7
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6
8
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FIG. 6

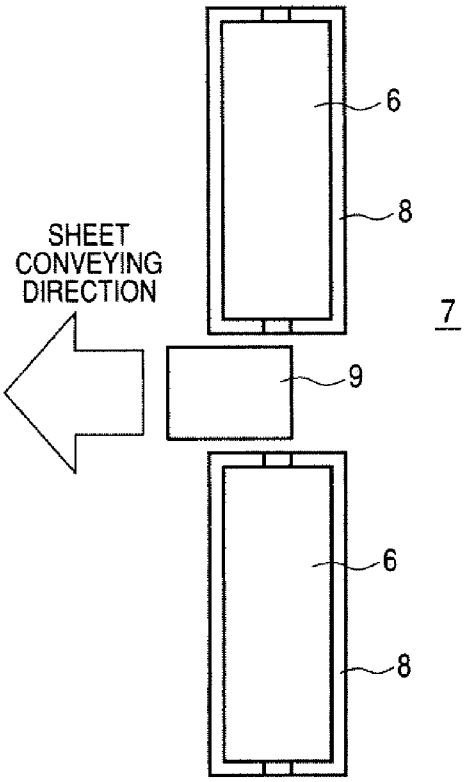

6
8
SHEET
CONVEYING
DIRECTION
7
9
6
8

FIG. 7

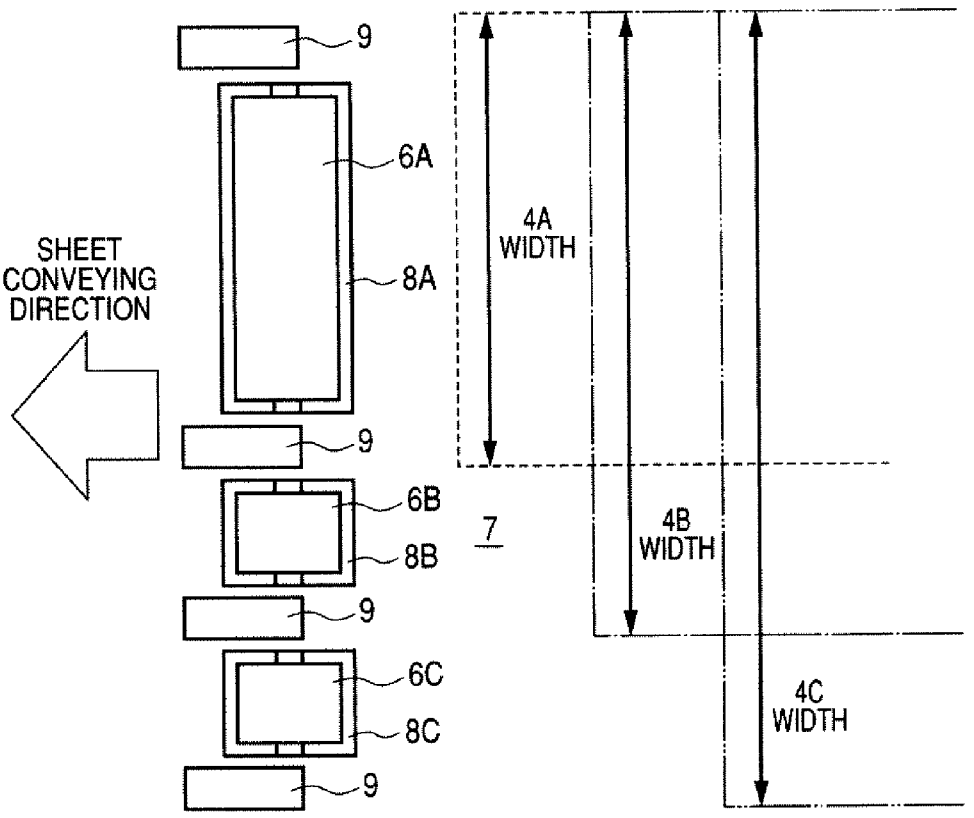
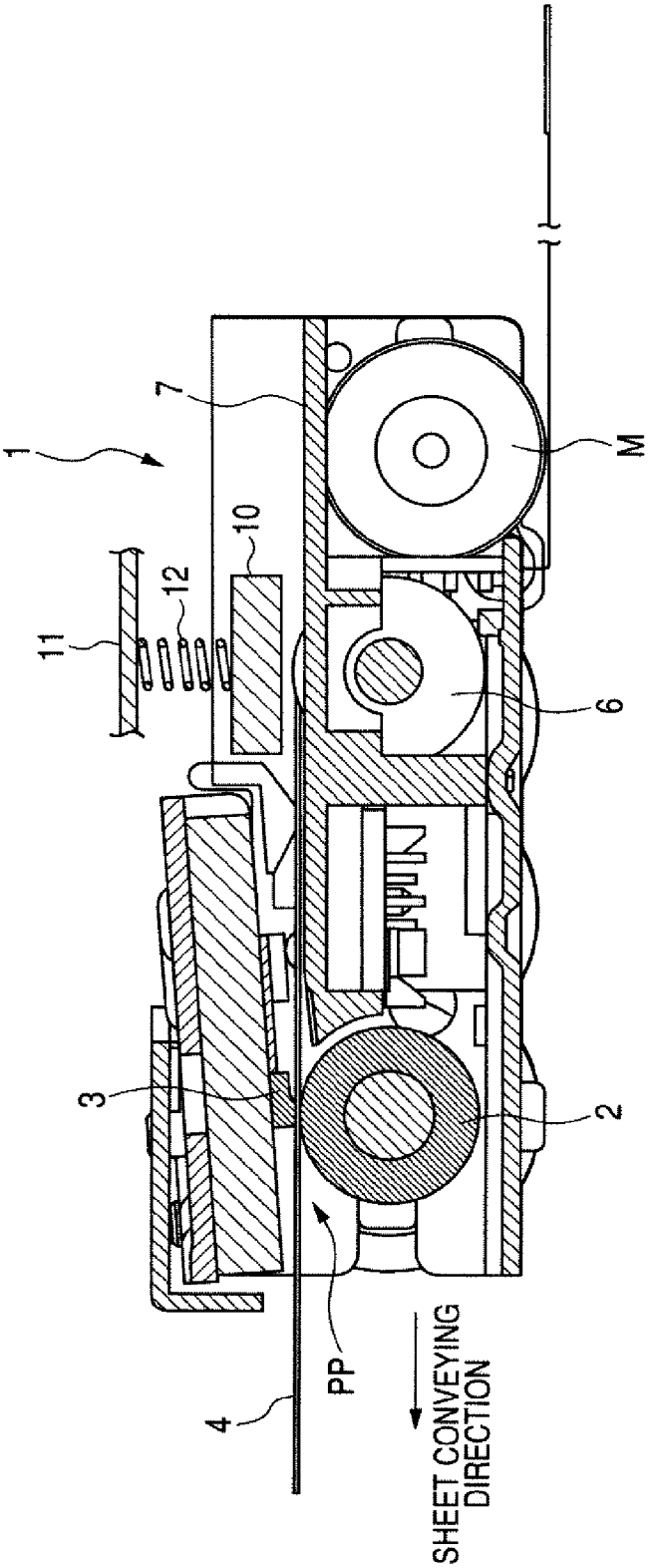

9
6A
8A
SHEET
CONVEYING
DIRECTION
9
6B
8B
9
6C
8C
9
7
4A
WIDTH
4B
WIDTH
4C
WIDTH

FIG. 8
PRIOR ART



SHEET FEED MECHANISM OF PRINTER, AND PRINTER

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present application contains subject matter related to and claims the benefit of Japanese Patent Application JP2007-296699 filed in the Japanese Patent Office on Nov. 15, 2007, the entire contents of which is incorporated herein by reference.

BACKGROUND OF THE DISCLOSURE

[0002] 1. Technical Field

[0003] The present invention relates to a sheet feed mechanism of a printer constructed such that a sheet may be conveyed by rotating a sheet feed roller while the sheet is sandwiched between the sheet feed roller and a sheet pressure-contact member, and a printer including the sheet feed mechanism.

[0004] 2. Related Art

[0005] Thermal printers that make a plurality of heat-generating elements of a thermal head generate heat selectively on the basis of recording information, thereby performing recording on a recording medium, are widely utilized.

[0006] A sectional view of major portions in a related-art printer which performs desired recording using a thermosensitive recording medium is shown in FIG. **8**.

[0007] The printer **1** is disposed in a desired position of a frame, and has a platen roller **2** which is rotationally driven under the transmission of the driving force of a driving motor M. A thermal head **3** is arranged above this platen roller **2**. The thermal printer **1** is a line-type printer in which a plurality of heater elements are aligned and arranged on a metallic substrate in a direction orthogonal in plan view to a conveying direction of a thermosensitive recording medium (hereinafter simply referred to as "sheet") as a sheet provided for recording is used as this thermal head. At least during recording, the thermal head abuts on the platen roller **2** via the sheet **4**. Also, during recording, a color is developed in a predetermined position of the sheet **4** to perform recording, by making each of the heat-generating elements of the thermal head **3** generate heat selectively on the basis of recording information (recording data). Also, during recording, the abutment position where the thermal head **3** abuts on the platen roller **2** via the sheet **4** becomes a recording position PP.

[0008] Also, the sheet feed roller **6** which is rotationally driven at the same rotating speed as the platen roller **2** under the transmission of the driving force of the driving motor M is arranged on the downstream side (right in FIG. **8**) in the conveying direction of the recording position PP. A sheet pressure-contact member **10** is arranged above the sheet feed roller **6** via a spring member **12** within the housing **11** for assembling of a printer such that it can press the sheet along with the sheet feed roller **6**, and the sheet **4** pressed by the sheet feed roller **6** by the sheet pressure-contact member **10** is conveyed to the recording position PP along a sheet conveying path with the rotation of the sheet feed roller **6**.

[0009] Meanwhile, in the printer **1** constructed in this way, when the trailing end of the sheet **4** conveyed is released from the pressure contact between the sheet feed roller **6** and the sheet pressure-contact member **10** (an event that pressing against the sheet **4** is released by conveyance hereinafter referred to as "roller slip-out"), the load to the sheet **4** changes abruptly, and sheet conveyance becomes uneven. Under the influence of these, there is a problem in that white lines are formed in recording results in recording positions. The load change which causes such a problem becomes large as sheet thickness becomes large. Thus, the conveyance of a sheet becomes poor under the influence of the load change. As a result, the possibility that white lines or the like are formed also becomes high.

[0010] As measures for solving such a problem, for example, it is considered that the number of steps of a motor which rotationally drive a sheet feed roller is changed by detecting roller slip-out timing by a sensor (Japanese Unexamined Patent Application Publication No. 2005-8343), and that selective application of an electric current to each of the heat-generating elements of a thermal head at the time of roller slip-out (Japanese Unexamined Patent Application Publication No. 2007-83500) is corrected.

[0011] However, in the related art disclosed in Japanese Unexamined Patent Application Publication Nos. 2005-8343 and 2007-83500, the control for which even a difference in the load change which changes depending on the thickness of sheets to be used is taken into consideration is difficult, and the positive effect that conveyance is stabilized cannot be expected.

[0012] Moreover, a method of making the leading end of a sheet sandwiched between a pair of conveying rollers which are arranged to face the downstream in a sheet conveying direction from a recording position, and performing recording in a state where the pressure contact between a sheet feed roller and a sheet pressure-contact member at the trailing end of the sheet is released to remove the load to the sheet is also considered. However, according to the method, a margin equivalent to the distance of a sheet conveyed toward the downstream in the sheet conveying direction from the recording position before the start of recording is formed at the leading end of the sheet on which recording results are formed. Therefore, this method cannot be adopted in a case where recording results in which a margin is not formed are desired. Further, in connection with the sandwiching of a sheet by the conveying roller, a release mechanism which releases the pressing of the sheet pressure-contact member against the sheet feed roller becomes necessary, and the construction of the printer becomes complicated.

[0013] These and other drawbacks exist.

SUMMARY OF THE DISCLOSURE

[0014] It is desirable to provide a sheet feed mechanism capable of preventing conveyance unevenness resulting from a change in load to a sheet at the time of roller slip-out, and a printer including the sheet feed mechanism, capable of obtaining excellent recording results.

[0015] An aspect of embodiments of the invention provides a sheet feed mechanism of a printer including a sheet feed roller arranged so as to be rotatable about an axis in a direction orthogonal to a sheet conveying direction in plan view such that its apex is made to face a sheet conveying path on the downstream side in the sheet conveying direction. A sheet pressure-contact member may be arranged to be capable of pressing a sheet against the sheet feed roller. The sheet feed mechanism may also include a sheet trailing end guide portion having a guide surface which gradually guides a trailing end of the sheet released from abutment on the sheet feed roller toward the downstream in the sheet conveying direction.

[0016] According to exemplary sheet feed mechanisms, the sheet trailing end guide portion may gradually guide the trailing end of the sheet released from pressure contact with the sheet feed roller, along the guide surface toward the downstream in the sheet conveying direction. Thereby, an abrupt change in the load applied to a sheet can be suppressed and sheet conveyance unevenness can be reduced. Therefore, generation of poor recording results resulting from an abrupt load change at the time of roller slip-out of the trailing end of a sheet can be prevented. In that case, the sheet trailing end guide portion may act uniformly irrespective of the thickness of the sheet. In addition, in the embodiments of the invention having a construction in which the sheet is conveyed by the sheet feed roller, and by the sheet pressure-contact member which makes pressure contact with the sheet feed roller via the sheet, it may be possible to form desired recording, without providing a margin at the leading end of the sheet.

[0017] Further, according to exemplary sheet feed mechanisms the sheet trailing end guide portion may be formed at least at one of both axial ends of the sheet feed roller so as to project a sheet guide surface constituting the sheet conveying path to be lower than the apex of the sheet feed roller, and so as to project toward the downstream in the sheet conveying direction farther than a downstream end of the sheet feed roller in the sheet conveying direction.

[0018] Also, the sheet trailing end guide portion may catch the trailing end of the sheet released from pressure contact with the sheet feed roller, in a position which is higher than the sheet guide surface and lower than the apex of the sheet feed roller, and gradually guide it along the guide surface toward the downstream in the sheet conveying direction. Thereby, an abrupt change in the load applied to a sheet can be suppressed and sheet conveyance unevenness can be reduced.

[0019] Further, according to various exemplary sheet feed mechanisms, a plurality of the sheet feed rollers may be arranged in series in the direction orthogonal to the sheet conveying direction, and one or a plurality of sheet feed rollers corresponding to the width dimensions of sheets are used to convey the sheets, and the sheet trailing end guide portion may be formed at least at one of both axial ends of each of the sheet feed rollers so as to project a sheet guide surface constituting the sheet conveying path to be lower than the apex of each of the sheet feed rollers, and so as to project toward the downstream in the sheet conveying direction farther than a downstream end of each of the sheet feed rollers in the sheet conveying direction.

[0020] For example, in a case where the sheet feed mechanism is adopted in a printer which enables recording on a plurality of kinds of sheets having dimensions, i.e., width dimensions, which are made different in the direction orthogonal to the sheet conveying direction, it may be considered that a plurality of sheet feed rollers may be arranged in series in order to correspond to the width dimension of each sheet. Even in this case, the aforementioned operational effects can be obtained by forming a sheet trailing end guide portion at least at one side of both axial ends of each sheet feed roller corresponding to the width dimension of each sheet.

[0021] Also, the sheet trailing end guide portion may be formed as a circular-arc convex portion in a section in the sheet conveying direction.

[0022] In various embodiments, the trailing end of a sheet can be gradually guided toward the downstream in the sheet conveying direction along the guide surface which inclines substantially obliquely downward in a circular-arc shape in section in the sheet conveying direction, which constitutes the convex portion.

[0023] Moreover, according to another aspect of the invention, a printer may include the sheet feed mechanism having any one of the aforementioned constructions.

[0024] The sheet feed mechanism can reduce a change in the load to a sheet at the time of roller slip-out, thereby preventing conveyance unevenness of the sheet. Thus, excellent recording can be obtained.

[0025] As mentioned above, according to various exemplary embodiments, a change in the load to a sheet at the time of roller slip-out can be reduced, thereby preventing conveyance unevenness of the sheet, and excellent recording can be obtained. Moreover, by including such a sheet feed mechanism, it may be possible to exhibit an excellent effect that the printer is suitable as a printer which obtains recording results in which a margin is not formed at the leading end of the sheet in the sheet conveying direction.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] FIG. **1** is a plan view of major portions in a sheet feed mechanism and a printer according to an embodiment of the invention;

[0027] FIG. **2** is a sectional view of exemplary portions in the sheet feed mechanism and the printer according to an embodiment of the invention (a sectional view of the printer taken along a line II-II of FIG. **1**);

[0028] FIG. **3** is an enlarged explanatory view (a dimensional view) of exemplary portions in the sheet feed mechanism and the printer according to an embodiment of the invention;

[0029] FIG. **4** shows an exemplary arrangement position relationship between a sheet feed roller and sheet trailing end guide portions in the sheet feed mechanism according to an exemplary embodiment;

[0030] FIG. **5** shows an exemplary arrangement position relationship between the sheet feed roller and the sheet trailing end guide portions in the sheet feed mechanism according to an exemplary embodiment;

[0031] FIG. **6** shows an exemplary arrangement position relationship between the sheet feed roller and the sheet trailing end guide portions in the sheet feed mechanism according to an exemplary embodiment;

[0032] FIG. **7** shows an exemplary arrangement position relationship between the sheet feed roller and the sheet trailing end guide portions in the sheet feed mechanism according to an exemplary embodiment; and

[0033] FIG. **8** is a sectional view of a sheet feed mechanism and a printer in the related art.

DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0034] The following description is intended to convey a thorough understanding of the embodiments described by providing a number of specific embodiments and details involving sheet feed mechanisms in thermal printers. It should be appreciated, however, that the present invention is not limited to these specific embodiments and details, which are exemplary only. It is further understood that one possessing ordinary skill in the art, in light of known systems and methods, would appreciate the use of the invention for its

intended purposes and benefits in any number of alternative embodiments, depending on specific design and other needs.

[0035] A printer including a sheet feed mechanism according to embodiments of the invention will be explained with reference to FIGS. **1** to **7**. In addition, embodiments of the sheet feed mechanism which become a characterizing portion of the printer will be explained below. Other components of the printer which are not mentioned may be constructed and act similarly to the aforementioned related-art printer.

[0036] According to various embodiments, a printer may be a printer which makes an electrical current applied to heat-generating elements of a thermal head made to abut on a thermosensitive recording sheet (hereinafter referred to as a "sheet") with a single width dimension, thereby performing desired recording.

[0037] In the printer **1**, as shown in the plan view of FIG. **1**, and in a sectional view (sectional view taken along the line II-II of FIG. **1**) of FIG. **2**, one rectangular opening **8** for arrangement of a sheet feed roller extending in a direction (this direction is hereinafter referred to as a "width direction") orthogonal to a sheet conveying direction may be formed in a central portion in the width direction in a sheet guide surface **7** which constitutes a sheet conveying path on the downstream side in the sheet conveying direction in the recording position PP, and also serves as a sheet placement base. Also, the sheet feed roller **6** may be arranged so as to be rotatable about an axis in the direction orthogonal to the sheet conveying direction in plan view such that its apex may be made to project from the opening **8** for arrangement of a sheet feed roller to the sheet guide surface **7**, and may be made to face the sheet conveying path.

[0038] Also, convex sheet trailing end guide portions **9** which may project lower than the apex of the sheet feed roller **6** from the sheet guide surface **7**, which may project toward the lower end in the sheet conveying direction farther than the downstream end of the sheet feed roller **6** in the sheet conveying direction, and which may have guide surfaces which gradually guide the trailing end of a sheet released from abutment on the sheet feed roller **6**, toward the downstream in the sheet conveying direction from the sheet feed roller **6** may be respectively formed at both ends of the opening **8** for arrangement of a sheet feed roller in the sheet guide surface **7** which become both end sides in the axial direction of the sheet feed roller **6**. In detail, the sheet trailing end guide portions **9** may be formed in a circular-arc semi-cylindrical shape in a section in the sheet conveying direction, and may be integrally formed with the sheet guide surface **7** from a resin material in substantially symmetrical positions in the conveying path from the center in the width direction in the conveying path of a sheet **4**. Also, the sheet feed mechanism may be constituted by the sheet feed roller **6**, the sheet trailing end guide portions **9**, and a sheet pressure-contact member **10** arranged via a spring member **12** within the housing **11** for assembling of a printer.

[0039] In addition, as the concrete dimensions of the sheet feed mechanism, as shown in FIG. **3**, in a case where sheet thickness may be set to 0.25 mm, the projecting dimension of the sheet trailing end guide portions **9** which projects from the sheet guide surface **7** may be set to 0.3 mm which is large than the sheet thickness, and the projecting dimension of the sheet feed roller **6** which projects from the sheet guide surface **7** may have almost the same dimension as a sum of the projecting dimension of the sheet trailing end guide portions **9**, and the sheet thickness. In this embodiment, the projecting dimension may be set to 0.5 to 0.6 mm.

[0040] In the printer **1** including the sheet feed mechanism in which such sheet trailing end guide portions **9** are formed, a single-cut sheet **4** which may be paid out one by one from the sheet placement portion is brought into pressure contact with the sheet feed roller **6** by the sheet pressure-contact member **10**. The sheet **4** brought into pressure contact with the sheet feed roller **6** by the sheet pressure-contact member may be conveyed toward the downstream in the sheet conveying direction by the frictional force with the sheet feed roller **6** and supplied to a printing position PP, with the rotational driving of the sheet feed roller **6** which may receive the transmission of the driving force of a driving motor M. As such, where the sheet **4** is conveyed by the sheet feed roller **6**, and by the sheet pressure-contact member **10** which makes pressure contact with the sheet feed roller **6** via the sheet **4**, it may be possible to form desired recording, without providing a margin at the leading end of the sheet **4**. That is, in the printing position PP, the leading end of the sheet **4** may be sandwiched between the platen roller **2** and the thermal head **3**, and an electric current may be selectively applied to the heat-generating elements of the thermal head **3** made to abut on the sheet **4**, in accordance with the conveyance of the sheet **4** by the rotative force of the sheet feed roller **6**, thereby performing desired recording from the leading end of the sheet. Simultaneously with this, the sheet may be conveyed toward the downstream in the sheet conveying direction by the rotation of the platen roller **2** which is rotationally driven in synchronization with the sheet feed roller **6** under the transmission of the driving force of the driving motor M.

[0041] When the desired recording progresses, and the trailing end of the sheet is released from the pressure contact between the sheet feed roller **6** and the sheet pressure-contact member **10**, i.e., at the time of roller slip-out-out of the trailing end of the sheet, in the printer **1**, the pair of sheet trailing end guide portions **9** may catch the trailing end of the sheet released from the pressure contact with the sheet feed roller **6** in a position which may be higher than the sheet guide surface **7** and lower than the apex of the sheet feed roller **6**, and then gradually may guide the trailing end of the sheet **4** conveyed by the rotational driving of the platen roller **2**, along the circular-arc guide surface toward the downstream in the sheet conveying direction. Thereafter, the sheet **4** conveyed by the rotational driving of the platen roller **2** may be subjected to desired recording in the recording position PP, and may be ejected from the sheet conveying path.

[0042] As such, in exemplary sheet feed mechanisms and printers an abrupt change in the load to be applied to the sheet **4** at the time of roller slip-out-out can be reduced by the sheet trailing end guide portions **9**. Therefore, even at the time of roller slip-out-out, the abrupt load change does not affect a recorded state in the recording position PP, but sheet conveyance unevenness can be suppressed to prevent generation of poor recording results. In that case, the sheet trailing end guide portions **9** may act uniformly irrespective of the thickness of the sheet **4**.

[0043] Further, in an exemplary sheet feed mechanism, the sheet trailing end guide portions **9** may be formed in the substantially symmetrical positions within the conveying path from the center in the width direction in the conveying path of the sheet **4**. Thus, after the trailing end of the sheet has slipped out of the roller, the sheet maybe caught by the sheet trailing end guide portions **9** in the symmetrical positions

from the center in the width direction of the sheet **4**. Therefore, an abrupt load change can be reduced substantially uniformly and surely in the width direction of the sheet **4**. That is, an abrupt load change can be reduced more substantially uniformly and surely in the width direction of the sheet **4** than the end of the sheet is caught in a cantilevered shape on one side of the sheet **4**, by the sheet trailing end guide portions **9**.

[0044] In addition, in an exemplary sheet feed mechanism, as shown in FIG. **4**, the sheet feed roller **6** may be arranged so as to be split into a plurality of pieces in the width direction, and the sheet trailing end guide portions **9** may be arranged on both sides of each sheet feed roller **6**.

[0045] Also, one sheet trailing end guide portion **9** may be arranged between two adjacent sheet feed rollers **6**, as shown in FIG. **5**.

[0046] Moreover, as shown in FIG. **6**, the trailing end guide portions **9** may not be formed on both sides of the sheet feed roller **6**, respectively, but only one trailing end guide portion may be arranged between two adjacent rollers **6** (fourth embodiment). However, like FIG. **6**, a plurality of sheet trailing end guide portions **9** may be formed in the width direction of the sheet **4** rather than forming one sheet trailing end guide portion. Also, the plurality of sheet trailing end guide portions **9** may be arranged with the same dimension and at equal intervals in the width direction of the sheet **4**. This is because an abrupt load change can be reduced substantially uniformly and surely in the width direction of the sheet **4**.

[0047] Moreover, in the printer **1** in which sheets **4** with a plurality of width dimensions can be provided for recording, a plurality of the sheet feed rollers **6** which vary in axial dimension may be arranged in series in a direction orthogonal to the sheet conveying direction in order to correspond to the width dimensions of sheets **4** expected to be used, and one or a plurality of sheet feed rollers **6** corresponding to the width dimensions of the sheets **4** may be used to convey the sheets **4**. Specifically, as shown in FIG. **7**, in the case of the printer **1** which may use three kinds of sheets including a sheet **4**A having "A" as its width dimension, a sheet **4**B having "B" as its the width dimension, and a sheet **4**C having "C" as its width dimension (the width dimensions are A<B<C), three sheet feed rollers **6** including a sheet feed roller **6**A made to correspond to a sheet **4**A, a sheet feed roller **6**B used simultaneously with the sheet feed roller **6**A and made to correspond to the sheet **4**E, and a sheet feed roller **6**C used simultaneously with the sheet feed rollers **6**A and **6**B, and made to correspond to the sheet **4**C may be arranged in series in the direction orthogonal to the sheet conveying direction. In that case, the sheet feed roller **6**A may be located within the sheet conveying paths of the sheet **4**A, the sheet **4**E, and the sheet **4**C, the sheet feed roller **6**B may be located within the sheet conveying paths of the sheet **4**B and the sheet **4**C, and the sheet feed roller **6**C may be located only within the sheet conveying path of the sheet **4**C. In addition, this embodiment is similar to the aforementioned embodiments in that the sheet feed rollers **6**A, **6**B, and **6**C may be arranged such that their apexes may be made to project from openings **8**A, **8**B, and **8**C for arrangement of sheet feed rollers, which may be formed in the sheet guide surface **7**, corresponding to the sheet feed rollers, respectively, and the sheet end guide portions **9** may be arranged aside the sheet feed rollers **6**A, **6**B, and **6**C in the width direction.

[0048] Even in this case, as mentioned above, an abrupt change in the load applied to the sheet **4** can be reduced and sheet conveyance unevenness can be suppressed to obtain excellent recording results, by the sheet trailing end guide portions **9** formed aside the sheet feed roller **6** in the direction orthogonal to the sheet conveying direction of the sheet feed roller corresponding to the width of each sheet **4**.

[0049] In addition, the invention is not limited to the aforementioned embodiments, and various changes thereof can be made if necessary.

[0050] For example, the printer has been described using a printer which performs desired recording on a thermosensitive recording medium. However, the sheet feed mechanism of the embodiments of the invention can be applied to a thermal printer using ink sheets, etc. Furthermore, the shape of the sheet trailing end guide portions is not limited to the circular-arc semi-cylindrical shape in a section in the sheet conveying direction like the aforementioned embodiment. The guide surface may be an inclined surface which is not circular-arc but flat.

[0051] It should be understood by those skilled in the art that various modifications, combinations, sub-combinations and alternations may occur depending on design requirements and other factors insofar as they are within the scope of the appended claims of the equivalents thereof. Accordingly, the embodiments of the present inventions are not to be limited in scope by the specific embodiments described herein. Further, although some of the embodiments of the present invention have been described herein in the context of a particular implementation in a particular environment for a particular purpose, those of ordinary skill in the art should recognize that its usefulness is not limited thereto and that the embodiments of the present inventions can be beneficially implemented in any number of environments for any number of purposes. Accordingly, the claims set forth below should be construed in view of the full breadth and spirit of the embodiments of the present inventions as disclosed herein. While the foregoing description includes many details and specificities, it is to be understood that these have been included for purposes of explanation only, and are not to be interpreted as limitations of the invention. Many modifications to the embodiments described above can be made without departing from the spirit and scope of the invention.

1. A sheet feed mechanism of a printer comprising:

a sheet feed roller arranged so as to be rotatable about an axis in a direction orthogonal to a sheet conveying direction such that an apex of the sheet fee roller is made to face a sheet conveying path on a downstream side in the sheet conveying direction;

a sheet pressure-contact member arranged to be capable of pressing a sheet against the sheet feed roller; and

a sheet trailing end guide portion having a guide surface which gradually guides a trailing end of the sheet released from abutment on the sheet feed roller toward the downstream in the sheet conveying direction.

2. The sheet feed mechanism of a printer according to claim **1**,

wherein the sheet trailing end guide portion is formed at least at one of both axial ends of the sheet feed roller so as to project a sheet guide surface constituting the sheet conveying path to be lower than the apex of the sheet feed roller, and so as to project toward the downstream in the sheet conveying direction farther than a downstream end of the sheet feed roller in the sheet conveying direction.

3. The sheet feed mechanism of a printer according to claim 1,

wherein a plurality of the sheet feed rollers are arranged in series in the direction orthogonal to the sheet conveying direction, and one or a plurality of sheet feed rollers corresponding to the width dimensions of sheets are used to convey the sheets, and

wherein the sheet trailing end guide portion is formed at least at one of both axial ends of each of the sheet feed rollers so as to project a sheet guide surface constituting the sheet conveying path to be lower than the apex of each of the sheet feed rollers, and so as to project toward the downstream in the sheet conveying direction farther than a downstream end of each of the sheet feed rollers in the sheet conveying direction.

4. The sheet feed mechanism according to claim 2, wherein the sheet trailing end guide portion is formed as a circular-arc convex portion in a section in the sheet conveying direction.

5. The sheet feed mechanism according to claim 3,

wherein the sheet trailing end guide portion is formed as a circular-arc convex portion in a section in the sheet conveying direction.

6. A printer comprising the sheet feed mechanism according to claim 1.

7. A printer comprising the sheet feed mechanism according to claim 2.

8. A printer comprising the sheet feed mechanism according to claim 3.

* * * * *