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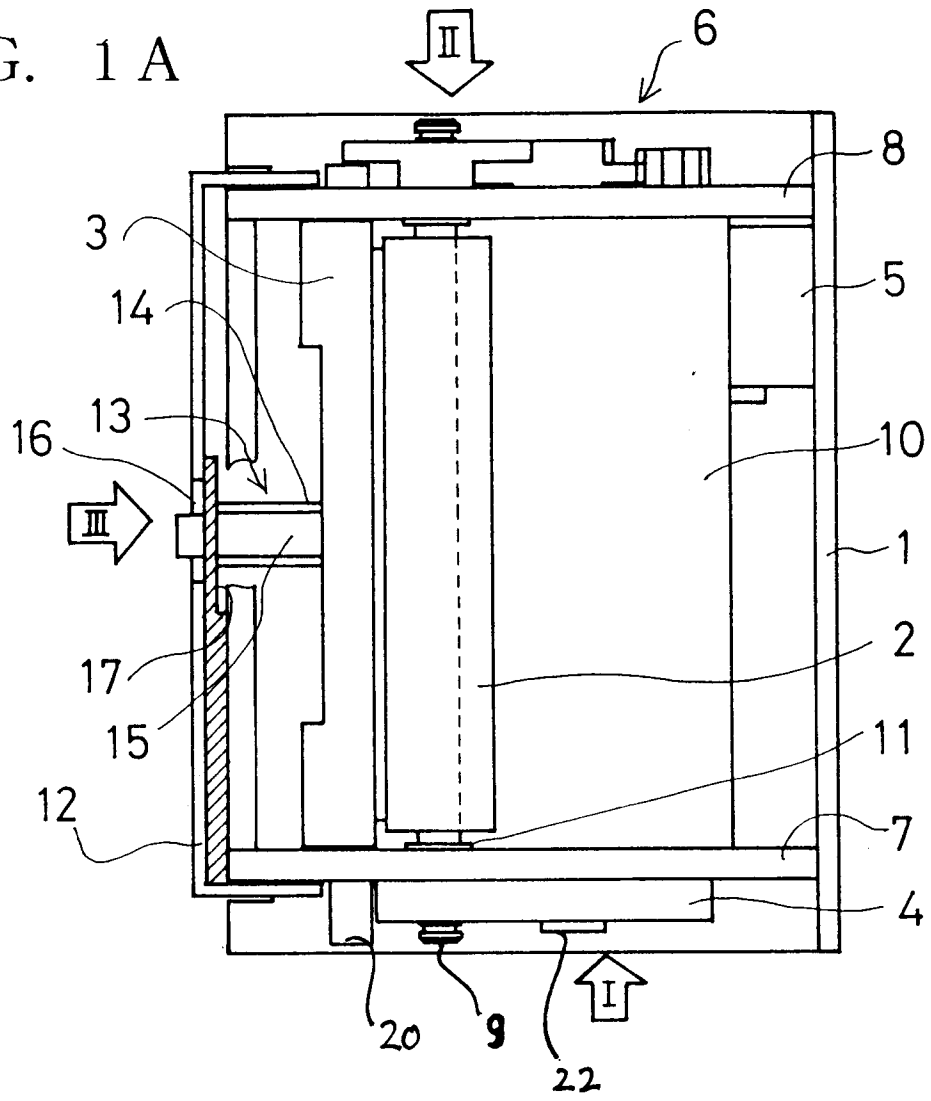
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Printer.

In a line printer, a rotation shaft (9) of a platen (2) is utilized as a fulcrum of a head-up lever (4). The head-up lever (4) and a bearing of the platen (2) are made in an integral form. As a result, the total number of parts of the line printer can be reduced and total number of assembling steps can also be reduced. Positioning of a print head (3) with respect to the platen (2) is achieved by establishing a precise engagement between a first pin (20) integrally formed on the edge portion of the print head (3) and a first guide groove (18) formed on a side wall (7,8) of a frame. As a consequence, the correct positioning of the print head can be performed with respect to the platen (2). On the other hand, a second pin (21) of the print head is journaled under a floating condition by a second guide groove (19) of the side (7,8) wall of the frame (1). This second pin (21) functions as a free fulcrum when the pressure contact of the print head (3) is released. As described above, play is formed at the free fulcrum of the head-up lever, so that distortion of parts and machining tolerance can be accommodated. Since the energizing force

given to the print head (3) is performed by employing only one elastic member (14) around a centre of the platen (2) in the lengthwise direction, a so-called floating effect may be produced and eccentric abutting of the print head (3) and platen (2) can be avoided. The print head (3) is detachably assembled to the frame (1). The assembled print head (3) is held by a rear plate (12) which is similarly detachably engaged with the frame (1). The elastic member (14) is integrally assembled into the print head (2) together with the lock lever (17). As a result, the print head (3) can be simply assembled and can be easily replaced. Since the lock lever (17) is provided in order that the rear plate (12) is not easily accidentally removed, it is more possible that the print head is prevented from being dismounted when this is not desired.

FIG. 1A



The present invention generally relates to a printer. More particularly, but not exclusively, the present invention is directed to an easily assembled/replaceable print head employed in a printer such as a line printer, and to an improved means for moving the print head relative to a platen in the printer.

Conventionally, a compact line printer is assembled by employing a frame having a pair of side walls which are spaced apart from each other. The platen is pivotally journaled on both the side walls. The print head, such as a thermal head or the like, used to print out recording data received from an external source on recording paper is provided in pressure contact with the platen in between both the side walls. Further, the head-up lever is mounted on one of side walls to move the print head in order to release the pressure contact with the platen. Printing is performed on the recording paper which is supplied between the platen and the print head under the pressure contact condition. The recording paper may be replaced after printing by releasing the pressure contact.

The head-up lever is pivotally operated so as to release the pressure contact of the print head against the platen. A conventional head-up lever is journaled to the pin extending from one of the side walls of the frame. The pin must be fixed to the side wall of the frame in order to mount the head-up lever. As a result, there is a drawback in that the total number of parts or components of the printer and also the number of assembling steps of the printer are increased.

Further, conventionally, the print head is constructed so that it is mounted on a shaft extending between the pair of side walls of the frame. As a consequence, assembling the printer is complex and the replacement of the print head cannot be easily performed during a repair operation.

Moreover, it is technically difficult to precisely maintain the parallel relationship between the platen and the print head. Therefore, there is another problem in that coasting and the like of the recording paper may occur during the printing operation.

The present invention has been made in an attempt to solve the above-described drawbacks of the conventional line printer, and in one aspect has an object to reduce the total number of components or parts provided around the print head of a line printer. Another object of an aspect of the present invention is to provide means to easily mount/dismount the print head on/from the frame, and also to readily replace this print head. Furthermore, an object of an aspect of the present invention is to increase the positioning precision of the print head with respect to the platen to avoid eccentric abutting.

According to a first aspect of the invention, there is provided a printer comprising a frame having two spaced apart side walls; a platen having a rotation shaft pivotally journaled to both of said side walls; a

print head interposed between said side walls and positionable in pressure contact with said platen; and a head-up lever for releasing said print head from pressure contact with said platen; characterised in that said head-up lever is pivotally engaged with the rotation shaft of said platen; a first guide groove is formed in at least one of said side walls of the frame; a second guide groove is formed in at least one of said side walls of the frame; a first pin removably engaged with said first guide groove and a second pin detachably engaged with said second guide groove are located on edge portions of said print head; and a plate is detachably engaged with at least one of said side walls to support said print head.

According to a second aspect of the printer of the present invention, there is provided a frame, a platen, a print head, and a head-up lever, in which the frame includes a pair of side walls separately located opposite to each other along the width direction thereof, and the platen includes a rotation shaft journaled to both of the side walls. The print head is interposed between the side walls and is located in pressure contact with the platen. The head-up lever is mounted on one of side walls to cause the print head to release the pressure contact thereof against the platen.

In the above-described structure, the head-up lever is characterized in that this head-up lever is rotatably engaged with the rotation shaft of the platen. The head-up lever may have a cylindrical projection fitted to the side wall of the frame, which functions as a bearing for the rotation shaft of the platen.

In accordance with a third aspect of the present invention, the printer basically comprises a frame, a platen, and a print head. The frame has a pair of side walls separately provided opposite to each other along the width direction, and the platen is rotatably journaled between both of the side walls. The print head is assembled between both of the side walls, and is provided in pressure contact with the platen.

With the above-described structure, a first guide groove and a second guide groove are formed on the respective side walls of the frame, near and far from the platen.

A first pin detachably engaged with the first guide groove, and a second pin detachably engaged with the second groove are integrally formed on the respective edge portions of the print head. Preferably, the positioning of the print head is performed with regard to the platen by engaging the first pin with the first guide groove. Also, preferably, the second pin of the print head is journaled by the second guide groove under a floating condition, and functions as a free fulcrum when the pressure contact of the print head against the platen is released, i.e. the position of the second pin can vary within the second guide groove. Further, the print head is positioned in pressure contact with the platen in the parallel manner by way of the energizing force applied to the centre point

thereof along the width direction.

In accordance with a fourth aspect of the present invention, a printer has a frame, a platen, a print head, and a rear plate. The frame has a pair of side walls separately positioned opposite to each other along the width direction thereof, and a platen is rotatably journaled between both of the side walls. The print head is detachably mounted between both side walls, and is in pressure contact to the platen in a parallel manner. The rear plate is detachably engaged with both of the side walls to hold the print head. Preferably, the print head is equipped with an elastic member abutting to the rear plate, and a lock lever is made in an integral form while a supporting centre shaft of this elastic member is used as a rotation centre. The print head is parallel-positioned in pressure contact with the platen by receiving the energizing force of the elastic member. The lock lever is rotatably provided in the space between the rear plate and the ridge of the frame, so that the rear plate can be prevented from being easily removed.

As a result, the total number of parts of the line printer may be reduced and the total number of assembling stages may also be reduced. Positioning of a print head with respect to the platen may be achieved by establishing a precise engagement between a first pin integrally formed on the edge portion of the print head and a first guide groove formed on a side wall of a frame. As a consequence, the correct positioning of the print head may be performed with respect to the platen.

On the other hand, a second pin of the print head is journaled under floating condition by a second guide groove of the side wall of the frame. This second pin functions as a free fulcrum when the pressure contact of the print head is released.

As described above, play is formed at the free fulcrum of the head-up lever, so that distortion of parts and machining tolerances can be absorbed. Since the energizing force given to the print head is performed by employing only one elastic member around a centre of the platen in the lengthwise direction, a so-called floating effect may be produced and eccentric abutting between the print head and platen can be avoided. The print head may be detachably assembled to the frame. The assembled print head is held by a rear plate which may be similarly, detachably engaged with the frame. The elastic member is integrally assembled with the print head together with the lock lever.

As a result of the above-described structure, the print head may be simply assembled and may be easily replaced. Since the lock lever is provided in order that the rear plate is not easily removed, the print head may be prevented from being dismounted when this is not desired.

The printer may be a line printer.

The invention also relates to a print head having

any of the features described or shown herein.

For a better understanding of the present invention, an embodiment will now be described by way of example, with reference to the accompanying drawings, in which:-

Figures 1A and 1B are a plan view and a side view representing a line printer according to an embodiment of the present invention;

Figure 2 is another side view for showing the line printer according to this embodiment of the present invention;

Figure 3 is a rear view for indicating the line printer of Figures 1A and 1B;

Figures 4A and 4B are illustrations for explaining head up operations of the line printer according to the embodiment of the present invention;

Figures 5A and 5B are illustrations for explaining moving condition of the print head of the line printer according to the embodiment of the present invention;

Figures 6A, 6B and 6C are illustrations for explaining replacement steps of the print head of the line printer according to the embodiment of the present invention; and

Figure 7 is a perspective view of some elements of the printer for showing the operation of the lock lever.

Figure 1A is a plan view representing a line printer according to an embodiment of the present invention. Figure 1B is a side view for showing the line printer, viewed from the direction of arrow "I" in Figure 1A.

As represented in Figure 1A, the line printer is equipped with a frame 1, a platen 2, a print head 3 and a head-up lever 4. Additionally, a motor 5 and a wheel gear 6 are provided with this line printer.

The frame 1 has a pair of side walls 7 and 8 which are positioned spaced apart from each other and running in a direction perpendicular to the platen 2. The platen 2 has a rotation shaft 9 rotatably supported by both of the side walls 7 and 8. The print head 3 is interposed between both of the side walls 7 and 8, and is provided in pressure contact with the platen 2. The head-up lever 4 is mounted on one of side walls 7 to act on the print head 3, so that the pressure contact with the platen 2 is released.

Furthermore, the above-described platen 2 is connected via the wheel gear 6 assembled in the other side wall 8 to the motor 5. The platen 2 is rotated by driving the motor 5, so that the recording paper (not shown) fed along a guide surface 10 of the frame 1 is supplied to the side of the print head 3.

The print head 3 performs the printing operation under such a condition that the print head 3 is in pressure contact to the platen 2, so that the input data is printed out on the surface of the fed recording paper.

Under such a condition that the head-up lever 4 is manipulated to release the pressure contact of the print head 3, a space is produced between the platen

2 and the print head 3 to replace the recording paper.

The head-up lever 4 is rotatably engaged with the rotation shaft 9 of the platen 2. That is, the rotation shaft 9 of the platen 2 is utilized as a fulcrum of the head-up lever 4, whereby the total number of printer components can be reduced. Furthermore, the head-up lever 4 has a cylindrical projection 11 fitted to the side wall 7 of the frame 1, and thus this projection 11 functions as a bearing with respect to the rotation axis 9 of the platen 2. As a consequence, the total number of printer components may be further reduced.

The print head 3 is detachably mounted on both of the side walls 7 and 8 of the frame 1, and further is in pressure contact with the platen 2 in parallel therewith. Furthermore, a rear plate 12 is detachably engaged with both of the side walls 7 and 8, so that the printer head 3 is held and fixed. The print head 3 is integrally equipped with an elastic member 13 abutting the rear plate 12. The print head 3 is moved into pressure contact with the platen 2 in parallel therewith upon receipt of the energizing force of this elastic member 13. In this embodiment, the elastic member 13 is made of a compression coil spring 14, and is mounted on a pin 15 located at a point half way along the length of the print head. A head portion of the pin 15 projects through a notch 16 formed in the rear plate 12. It should be noted that there is provided a lock lever 17 between the above-described notch 16 and compression coil spring 14.

In response to the energizing force exerted from the elastic member 13, having the above-described structure, to the print head 3, the print head 3 is in pressure contact with the platen 2 and parallel thereto. The print head 3 may follow any inclination of the platen 2, so that a so-called "floating effect" may occur to avoid eccentric abutting of the print head 3 and platen 2. Since the lock lever 17 is pivoted with respect to the rear plate 12 while the pin 15 for supporting the elastic member 13 is employed as a rotation centre, and thus is positioned between the frame 1 and the rear plate 12, it is possible to prevent the rear plate 12 from being released. Also, when the lock lever is pivoted to the locking release position, the rear plate 12 can be dismounted, or removed. As a result, the print head can be dismounted, or removed from the frame.

Next, a description will now be made of further features of the printer with reference to Figure 1B.

In the side wall 17 of the frame, there are formed a first guide groove 18 located near the platen 2 and a second guide groove 19 located further away from the platen 2. Both a first pin 20 detachably engaged with the first guide groove 18 and a second pin 21 detachably engaged with the second guide groove 19 are integrally formed on the edge portion of the print head 3. It should be noted that, although not shown in this drawing, a first guide groove and a second guide groove are similarly formed on the other side

wall 8 and a first pin and a second pin are integrally formed on another edge portion of the print head, and these first and second pins are detachably engaged with the corresponding first guide groove and second guide groove.

The print head 3 is positioned in relation to the platen by engaging the first guide groove 18 with the first pin 20 and the second guide groove 19 with the second pin 21. The second pin 21 of the print head 3 is floatingly-journalled by way of the second guide groove 19, and thus functions as a free fulcrum when the pressure contact of the print head 3 against the platen is released; in other words, play is provided between them.

As previously explained, the head-up lever 4 is pivotally journalled with respect to the rotation shaft 9 of the platen. Under the condition shown in the drawing, the head-up lever 4 abuts against a stopper 22, and therefore is located at the home position. At this time, a cam surface 23 of the head-up lever 4 is separated from the first pin 20, and the print head 3 is under the pressure contact condition. As previously explained, the cylindrical projection 11 integrally formed on the head-up lever 4 is engaged with the side wall 7, and thus functions as a bearing with regard to the rotation shaft 9 of the platen.

U-shaped notches 24 and 25 are formed on both an upper and a lower edge portion of the rear plate 12. On the other hand, projections 26 and 27 are formed on the side wall 7 of the frame. The rear plate 12 is detachably engaged with a pair of projections 26 and 27 formed on the frame 7 by way of the pair of upper/lower notches 24 and 25. When the rear plate 12 is separated from the frame, first of all, the lock lever 17 is pivoted up to such a position that the lock lever 17 is dismounted from the space defined between the rear plate 12 and the frame 1, namely the locking release position. Furthermore, the rear plate 12 is once moved downwardly along the lower U-shaped notch 25 to cause the upper U-shaped notch 24 to be dismounted from the projection 26. Subsequently, the notch 25 is dismounted from the other projection 27. When the rear plate 12 is mounted, the above-described dismounting procedure may be performed in the reverse direction.

Figure 2 is a side view of the line printer shown in Figure 1, as viewed from the direction of arrow II in Figure 1A.

A structure provided on the side of the side wall 8, shown in this drawing, is in principle identical to that provided on the side of the side wall 7 indicated in Figure 1B, and the same reference numerals are employed as those for denoting the corresponding components for the sake of easing understanding. Instead of the head-up lever 4, a gear wheel is assembled into the structure provided on the side of the side wall 8.

As illustrated in Figure 2, the motor 5 is fixed by

screws 28 and 29 inside the side wall 8. A pinion 30 is mounted on the rotation shaft of the motor 5. On the other hand, a drive gear 31 is fixed on the rotation shaft 9 of the platen. Then, the pinion 30 is coupled via an intermediate gear 32 with the drive gear 31, and then rotation torque of the motor 5 is transferred to the rotation shaft 9 of the platen at a preselected reduction ratio.

Figure 3 is a rear view of the line printer shown in Figure 1A, as viewed from the direction of arrow III in Figure 1A.

As previously described, the notch 16 is formed at a centre of the rear plate 12, and may cause a top portion of the pin 15 formed on the print head 3 to be located thereby (escaped away). A compression coil spring constituting an elastic member is mounted on this pin 15. In this drawing, the compression coil spring is located at the rear portion of the lock lever 17. The lock lever 17 is journaled to the pin 15 in conjunction with the compression coil spring in such a manner that this lock lever 17 can be rotated around this pin 15 as a rotation centre. As previously stated, the rear plate 12 is engaged with the projections 26 and 27 formed on a pair of frame side walls 7 and 8. It should be noted that a connector 34 is mounted on the lower portion of the print head 3 so as to be electrically connected to an external power line.

Referring now to Figures 4 to 6 operations of the line printer will be described in detail.

First, Figure 4 represents operations of the head-up lever 4.

Figure 4A indicates the home position of the head-up lever 4.

Under this condition, the cam surface 23 of the head-up lever 4 is separated from the first pin 20 of the print head 3. As a consequence, the print head 3 is in pressure contact in parallel with the platen 2 by the energizing force of the compression coil spring 14. It should be noted that the print head 3 is constructed of a thermal head in this embodiment. The thermal head is made of an integral structure of a heat radiation plate 35, a heating member 36, and a cover member 37. Then, the first pin 20 and the second pin 21 is integrally formed with the head radiation plate 35 made of a metal.

Figure 4B illustrates the open position under which the head-up lever 4 is pivoted around the rotation shaft 9 of the platen in the counter-clockwise direction.

Under this open condition, the cam surface 23 of the head-up lever 4 abuts against the first pin 20 to cause the print head 3 to be separated from the platen 2 against the energizing force of the compression coil spring 14. At this time, the print head 3 is pivoted around the second pin 21 as the fulcrum in the counter-clockwise direction. Simultaneously, the top portion of the pin 15 attached to the print head 3 is projected through the notch formed in the back plate 12.

Next, Figure 5 represents such a condition that the first pin 20 and the second pin 21, which are integrally formed in the edge portion of the print head 3, are moved.

In Figure 5A, the print head 3 is in pressure contact with the platen 2. At this time, the first pin 20 is precisely positioned by the corresponding first guide groove 18, and the print head 3 is correctly positioned with respect to the platen 2.

On the other hand, the second pin 21 is engaged with the second guide groove 19 under floating condition, thereby producing play. This play is designed to be, for instance, of the order of 0.4mm. Distortion of the parts as well as the machining tolerance thereof may be absorbed by forming this play.

The formation of this play can also enable the print head 3 to be easily mounted/dismounted with respect to the side wall 7 of the frame 1 during replacement and assembling of the print head.

As illustrated in the drawing, the edge portions of the first guide groove 18 and the second guide groove 19 are opened, so that the first pin 20 and the second pin 21 can be readily engaged/disengaged with these first and second guide grooves 18 and 19 via the edge portions thereof.

Figure 5B indicates a condition under which the print head 3 is separated from the platen 2.

When the head-up lever 4 is pivoted in the counter-clockwise direction so as to release the pressure contact of the print head 3 against the platen 2, the first pin 20 is moved back along the first guide groove 18. The second pin 21 is stopped at the bottom portion of the second guide groove 19, and then is rotated under a floating condition. As a consequence, it is possible to realize a smooth operation for releasing the print head 3 which is in pressure contact with the platen 2.

In other words, at the initial stage of releasing the pressure contact of the print head, the second pin 21 is moved in parallel inside the second guide groove 19 by a distance equal to the play. Subsequently, when the second pin 21 abuts the edge portion of the second guide groove 19. The second pin 21 is moved in a circular motion. As a result, the smooth operation of the head-up lever 4 can be achieved.

Finally, Figure 6 represents mounting/dismounting operations of the print head 3.

Figure 6A illustrates the condition when the print head 3 is assembled in the line printer.

In this condition, the print head 3 is in pressure contact with the platen 2. The print head 3 is held by the rear plate 12 in a fixed condition.

Figure 6B represents the condition when the upper edge side of the rear plate 12 is separated from the side wall of the frame.

At this time, since the application of the energizing force produced by the elastic member 13 is released, the print head 3 is easily pivoted around the

second pin 21, as a rotation centre, in the counter-clockwise direction, so that the print head 3 is separated from the platen 2. Then, since the surface of the heating member 36 is exposed, such a process operation as cleaning can be performed very easily.

Figure 6C represents the condition when the rear plate 12 is completely dismounted from the frame.

At this time, the first pin 20 and the second pin 21 of the print head can be removed from the corresponding guide grooves, with the result that the print head 3 can be completely removed from the frame. As a consequence, the print head can be replaced very easily.

As previously described, both the head-up lever and the bearing of the platen are designed in an integral form. Positioning of the print head with regard to the platen is achieved by the establishment of engagement between the first pin integrally formed on the print head with the first guide groove formed on the side wall of the frame. The print head is energized against the platen by way of a single compression coil located at the near centre position of the platen. This compression coil spring is mounted on the side of the print head. The play is formed at the fulcrum of the head-up lever. The print head is held by a single sheet of the rear plate in the fixing condition. When this rear plate is removed, the print head may be dismounted. With this structure, there is an advantage in that the line printer can be simply assembled and also the print head can be easily replaced. Furthermore, the lock lever 17 is pivoted to be dismounted from the space defined between the rear plate 12 and the frame 1. As a result, the rear plate 12 is removed from the frame and thus the print head can be removed. There is another advantage that since the components or parts are commonly utilized and further are made in an integral form, the manufacturing cost of the line printer can be markedly reduced. There is a further merit that the line printer can be made compact in size. In addition, there are additionally provided such advantages that since the print head is in pressure contact with the platen under uniform pressure, the printing quality can be improved, and, further, since the mechanism for preventing the rear plate from being dismounted is employed, erroneous operations can be avoided, for instance, the accidental dismounting of the print head.

Figure 7 is a perspective view illustrating one possible arrangement and mode of operation of the lock lever 17. For the sake of clarity, only selected elements of the printer are shown in this Figure.

In Figure 7 the lock lever 17 is shown in the position for locking the rear plate 12 of the printer to the frame 1. In this position wedge portion 100 of the lock lever 17 is located between projection 26 which extends from the side wall 7 of the frame 1 (not shown in this Figure) and side portion 102 of notch 24 formed in the rear plate 12. Relative movement between the

rear plate 12 and the projections 26 and 27 in the direction of arrow A is prevented by the action of the wedge portion 100 of the lock lever 17 between the projection 26 and the side portion 102 of the notch 24. Movement of the rear plate 12 relative to the projections 26 and 27 in the direction of arrow B is prevented by projecting portion 104 of the notch 24.

In order to unlock the rear plate 12 from the frame 1 of the printer the lock lever 17 is pivoted about pin 15 in the direction of arrow C. For ease of operation of the lock lever 17 a flange portion 106 may be provided for the operator of the printer to hold. When the lock lever is in the unlocked position, the wedge portion 100 is positioned away from the notch 24. Thus, the projection 26 is free to move towards side portion 102 of notch 24 in the direction of arrow A. Further, projection 26 may then be removed completely from notch 24 by movement in the direction of arrow B. Further movement of the rear plate 12 in the direction of arrow B causes projection 27 to abut the top portion 108 of the notch 25. The rear plate 12 is then rotated about projection 27 in a counter-clockwise direction away from the projection 26. The rear plate 12 may then be lifted off the projection 27 (and therefore the frame 1) by means of the open-ended portion 110 of the notch 25.

To replace the rear plate 12 the above operations are performed in reverse.

Claims

1. A printer comprising a frame (1) having two spaced apart side walls (7,8); a platen (2) having a rotation shaft pivotally journaled to both of said side walls (7,8); a print head (3) interposed between said side walls (7,8) and positionable in pressure contact with said platen (2); and a head-up lever (4) for releasing said print head (3) from pressure contact with said platen (2); characterised in that said head-up lever (4) is pivotally engaged with the rotation shaft (9) of said platen (2); a first guide groove (18) is formed in at least one of said side walls (7,8) of the frame (1); a second guide groove (19) is formed in at least one of said side walls (7,8) of the frame (1); a first pin (20) removably engaged with said first guide groove (18) and a second pin (21) detachably engaged with said second guide groove (19) are located on edge portions of said print head (3); and a plate (12) is detachably engaged with at least one of said side walls (7,8) to support said print head (3).
2. A printer comprising a frame (1) having two spaced apart walls (7,8); a platen (2) having a rotation shaft (9) pivotally journaled to both of said side walls (7,8); a print head (3) interposed between both of said side walls (7,8) and position-

able in pressure contact with said platen (2); and a head-up lever (4) for releasing said print head (3) from pressure contact with said platen;

characterised in that said head-up lever (4) is pivotally engaged with the rotation shaft (9) of said platen (2).

3. A printer as claimed in claim 1 or 2, wherein said head-up lever (4) includes a projection, said projection functioning as a bearing of the rotation shaft (9) of said platen (2).

4. A printer comprising a frame (1) having two spaced apart side walls (7,8); a platen (2) pivotally journaled between said both side walls (7,8); and a print head (3) assembled between both of said side walls (7,8) and positionable in pressure contact with said platen (2);

characterised in that a first guide groove (18) is formed in at least one of said side walls (7,8) of the frame (1), and a second guide groove (19) is formed in at least one of said side walls (7,8) of the frame (1); and

a first pin (20) removably engaged with said first guide groove (18) and a second pin (21) detachably engaged with said second guide groove (19) are located on edge portions of said print head (3).

5. A printer as claimed in claim 1 or 4, wherein said print head (3) is positioned with respect to said platen (2) by establishing the engagement with the first guide groove (18) and the second guide groove (19).

6. A printer as claimed in claim 1, 4 or 5, wherein said second pin (21) of the print head (3) is journaled by said second guide groove (19) under a floating condition, and functions as a free fulcrum when the pressure contact of said print head (3) against the platen (2) is released.

7. A printer as claimed in claim 1, 4, 5 or 6, wherein said print head (3) is provided in pressure contact with said platen (2) by force exerted to a location substantially half way along the length of the head (3).

8. A printer comprising:

a frame (1) having two spaced apart side walls (7,8);

a platen (2) rotatably journaled between said side walls (7,8); and

a print head (3) detachably mounted on both side walls (7,8) and positioned in pressure contact with said platen (2);

characterised by a plate (12) detachably engaged with at least one of said side walls (7,8)

to support said print head (3).

9. A printer as claimed in claim 1 or 8, wherein said print head (3) is equipped with an elastic member (14) abutting against said plate (12).

10. A printer as claimed in claim 9, wherein a lock lever (17) is mounted for rotation relative to said plate (12), the arrangement being such that the lever (17) is operable to prevent the plate (12) from being disconnected from the side walls (7,8)..

FIG. 1A

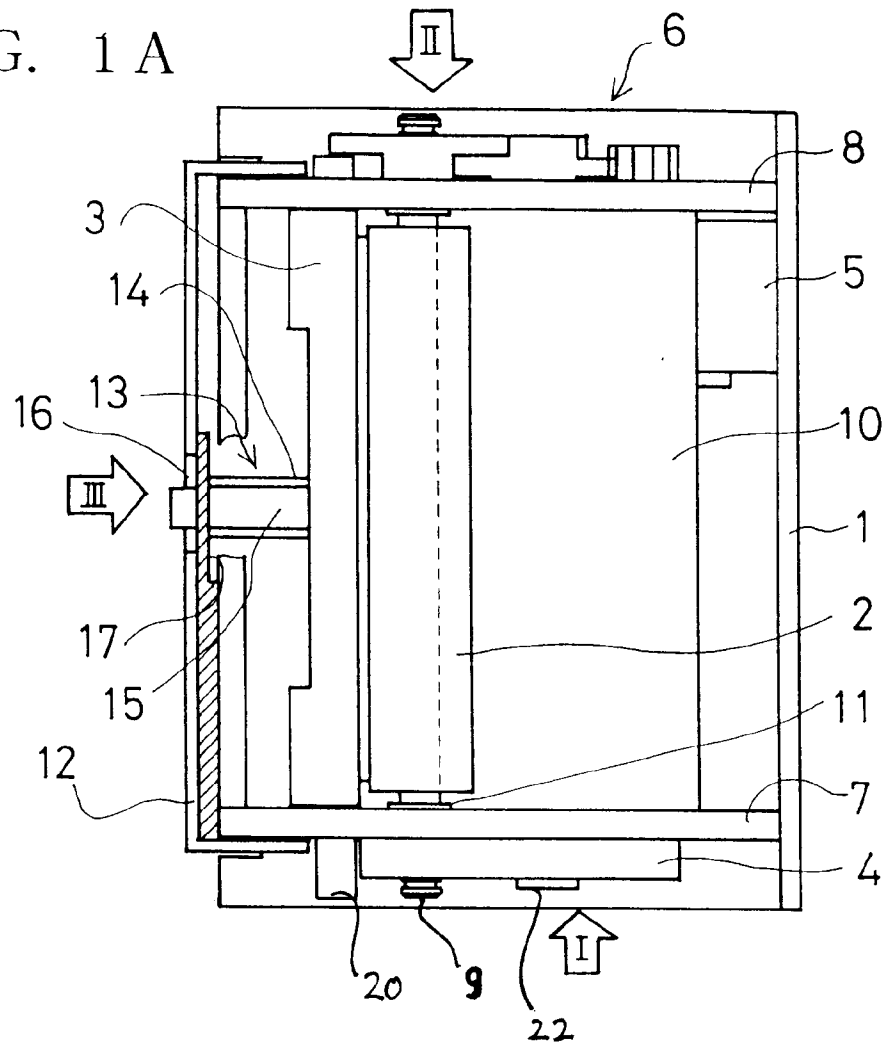


FIG. 1B

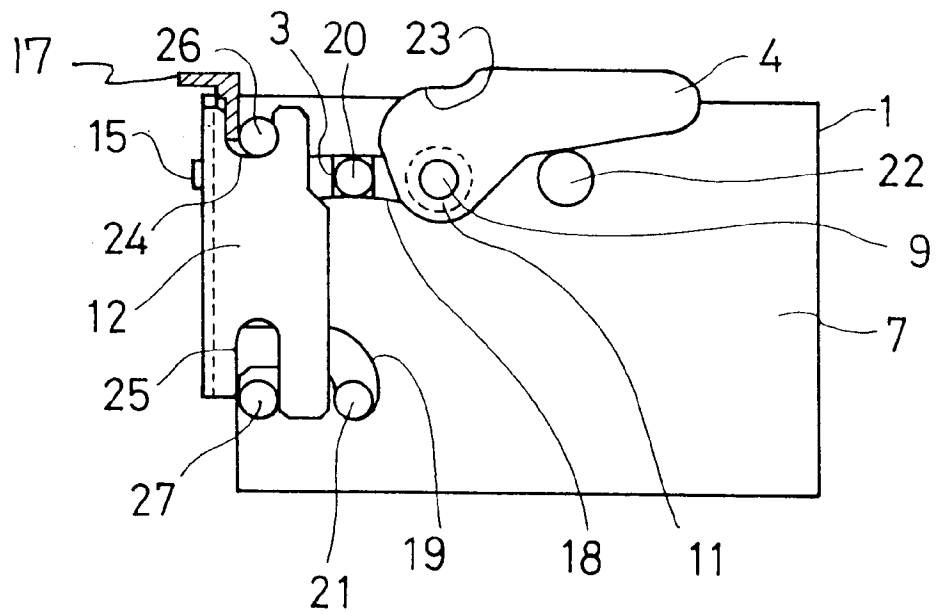


FIG. 2

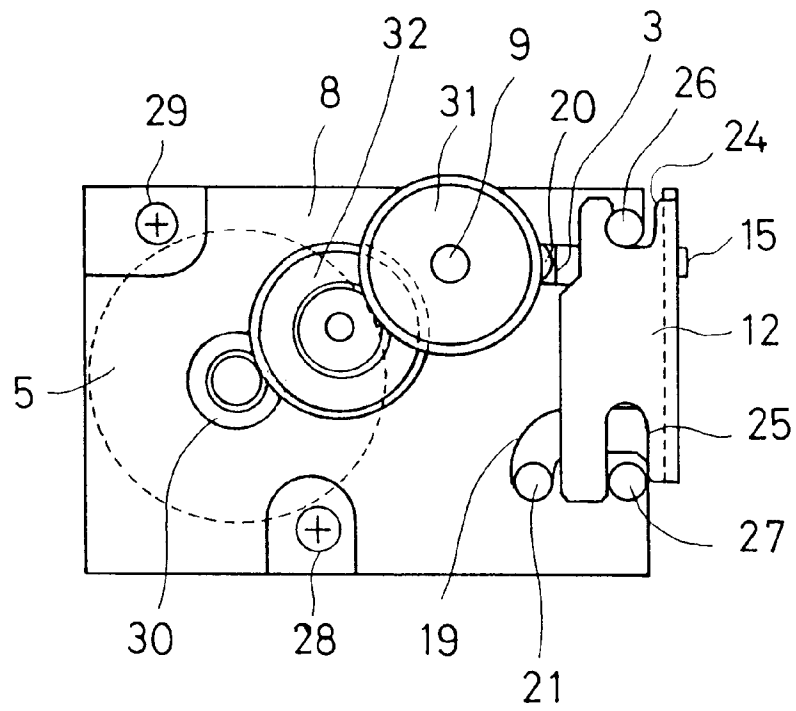
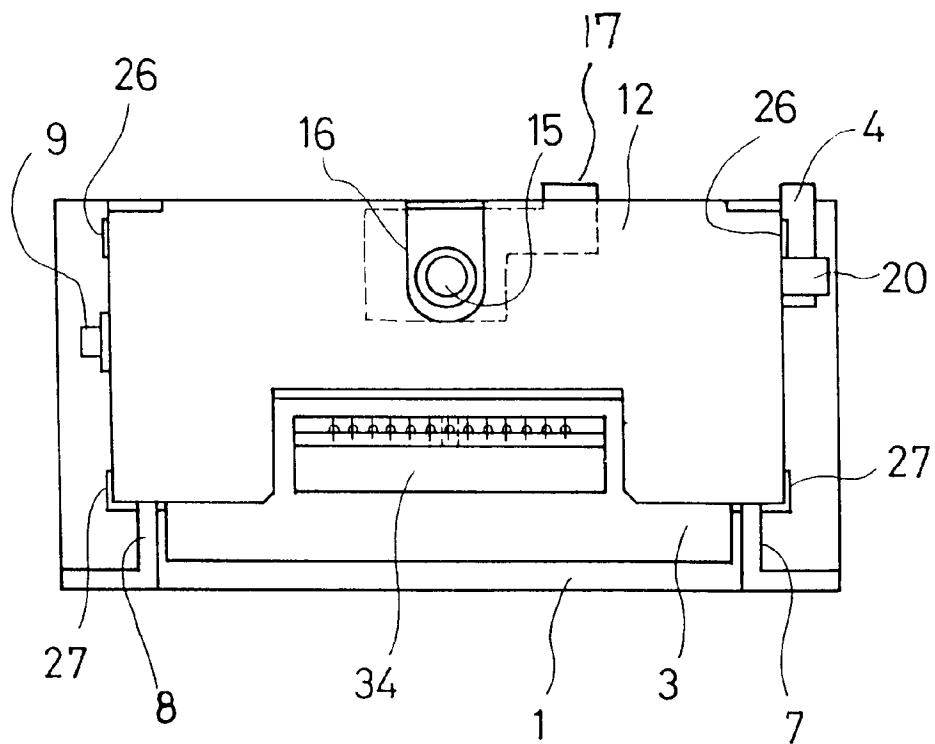


FIG. 3



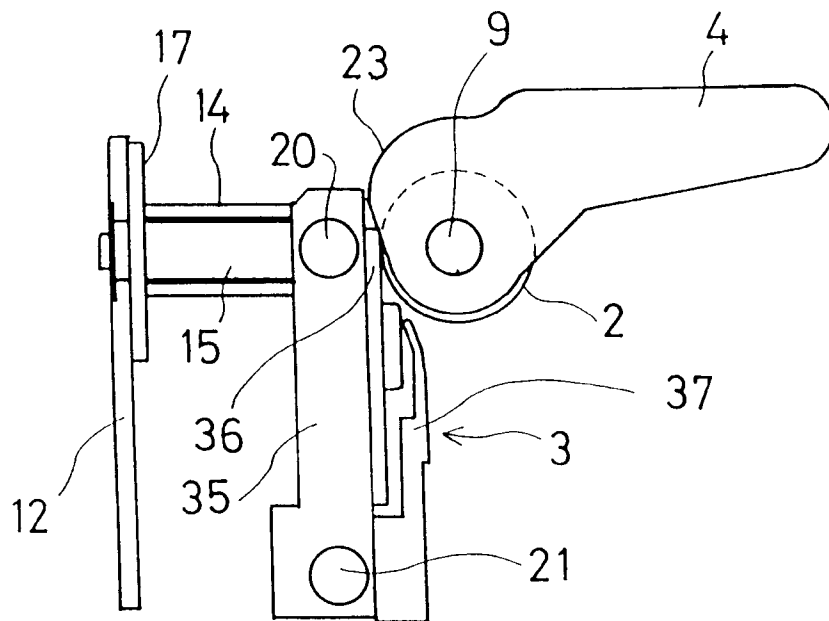


FIG. 4A

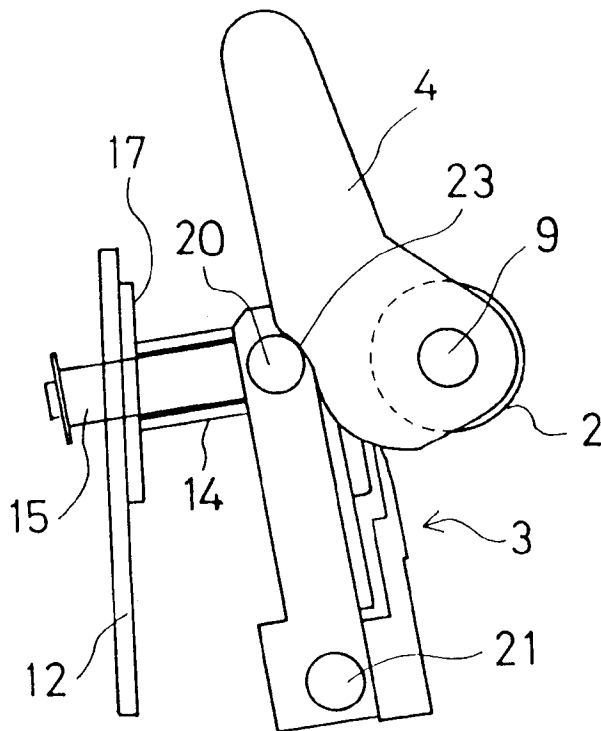


FIG. 4B

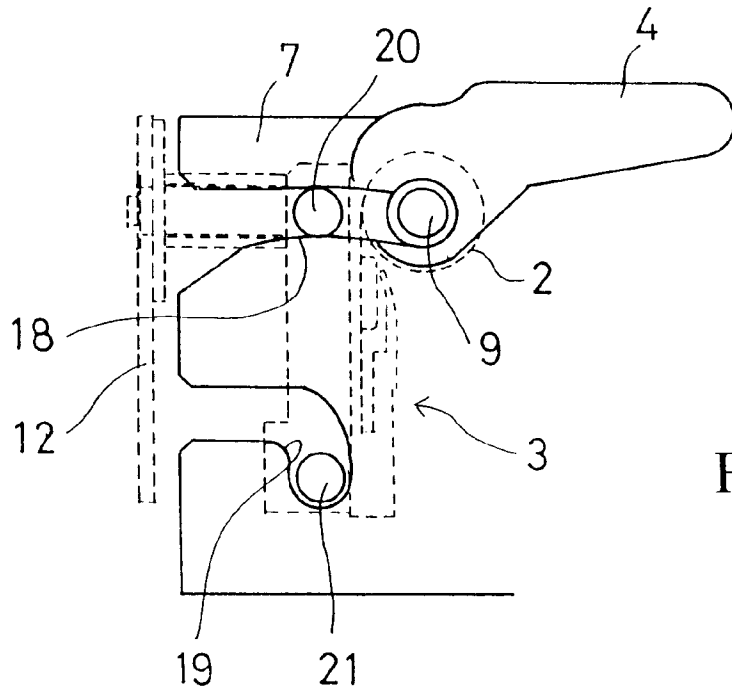


FIG. 5A

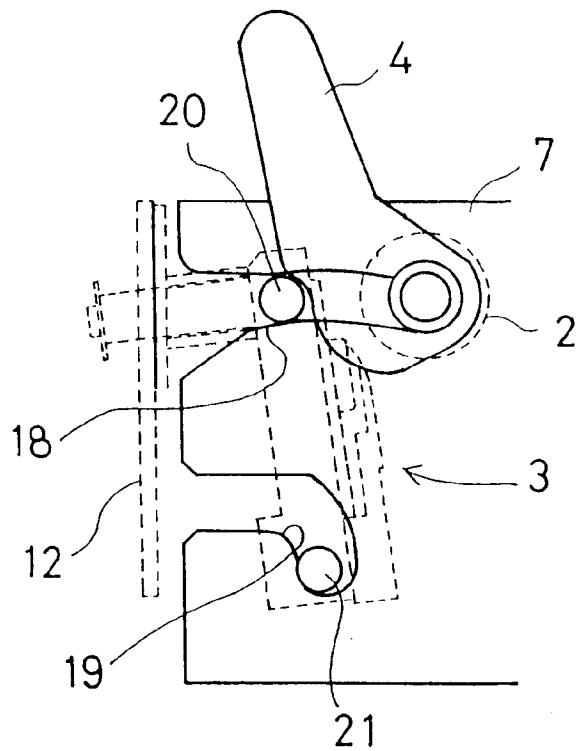


FIG. 5B

FIG. 6A

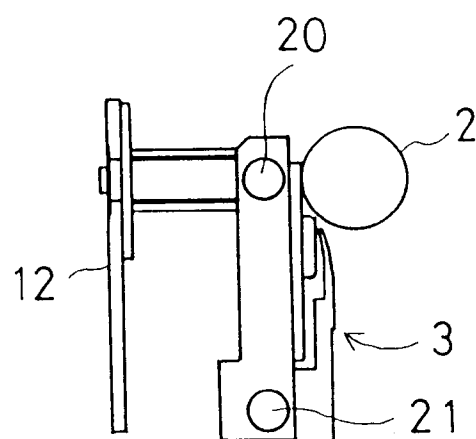


FIG. 6B

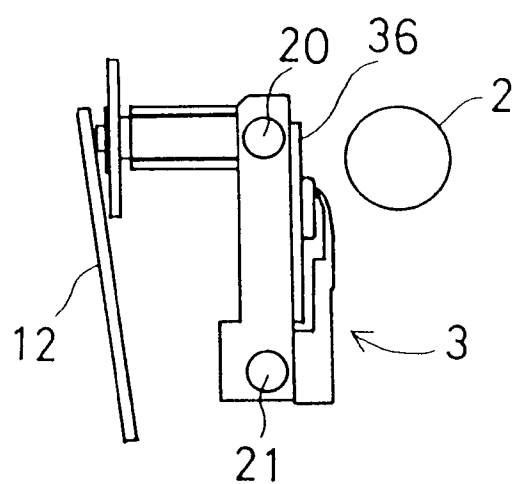
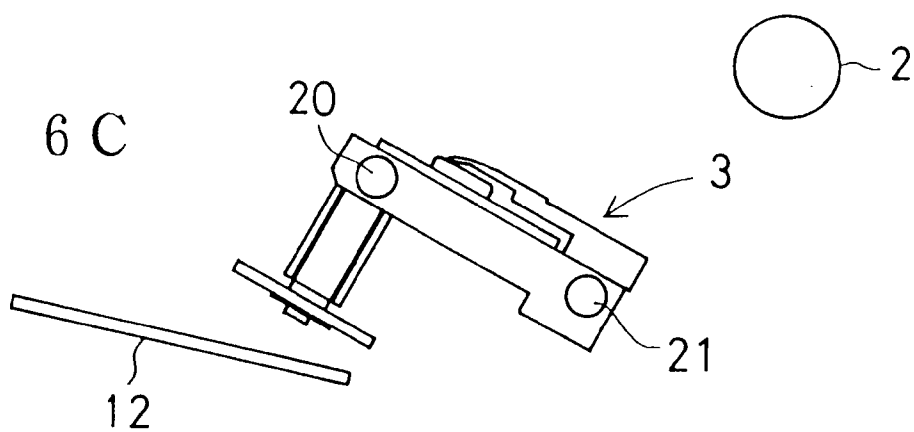


FIG. 6C



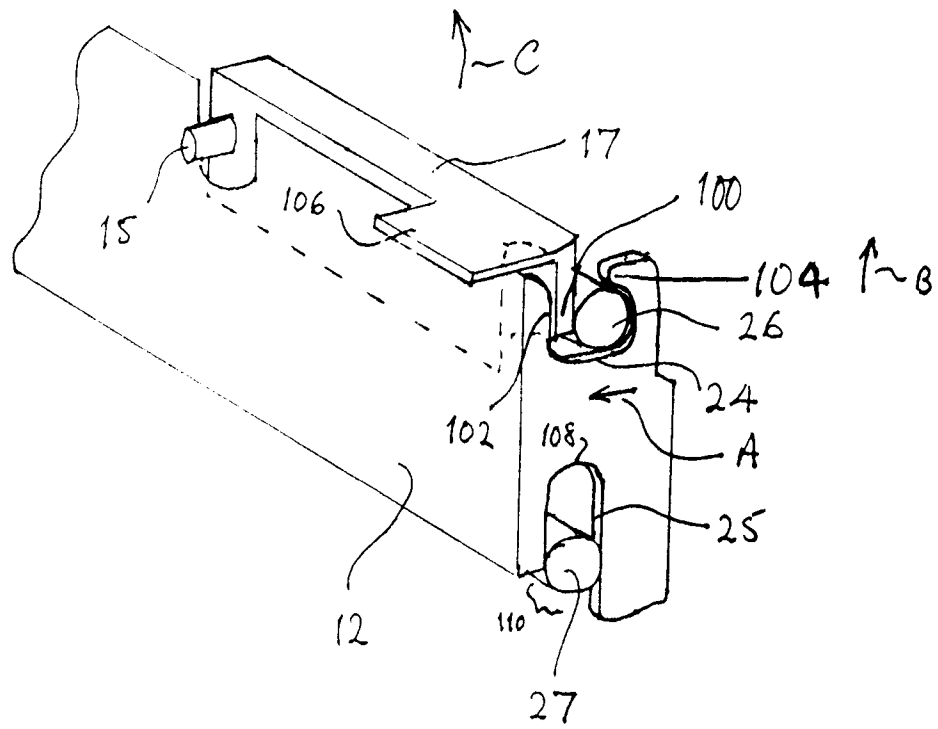


FIG. 7