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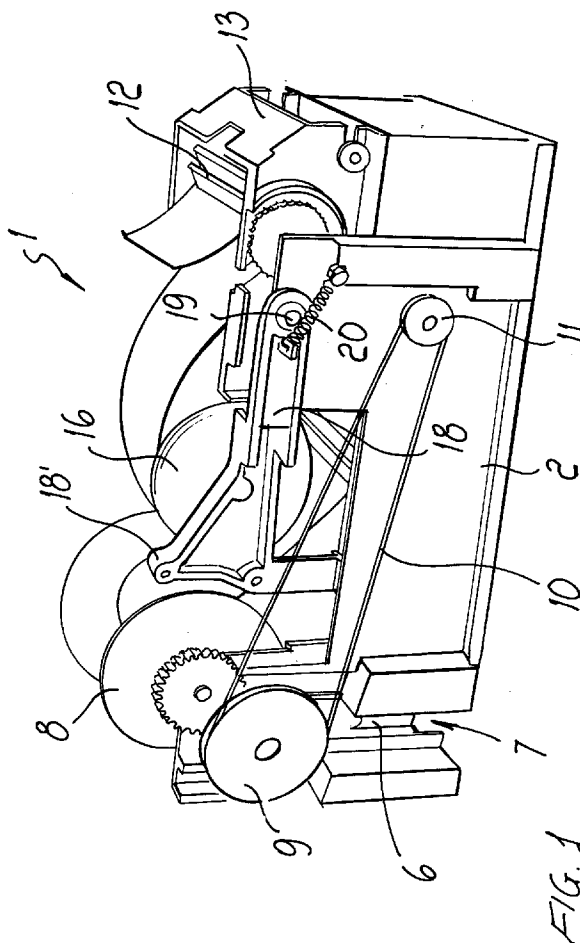
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(54) **Improved printing assembly for cash-registers.**

(57) An improved printing assembly for cash-registers designed for easy and quick assembling comprises a printing ribbon-printer assembly for winding the printing ribbon and print recording the overall daily transactions and a printing apparatus for printing and ejecting the individual tickets, the printing ribbon-printer assembly and ticket printing apparatus being mounted on a single supporting base, whereas the ticket paper roll is restrained on a small restraining shaft.



BACKGROUND OF THE INVENTION

The present invention relates to an improved printing assembly for cash-registers.

As is known, conventional cash-registers usually comprise a ribbon winding-printing assembly and a ticket printing and ejecting assembly, the latter also including printing means, which are individually mounted and restrained on a dedicated or individual base.

More specifically, in these prior apparatus, the paper rolls which paper supply the printing means are usually held within holding cup elements in which said paper rolls recover automatically after the pulling action exerted on the paper material by the dedicated printing means.

In this connection it should be pointed out that, for a proper operation of the printing means, the paper rolls must be precisely aligned with the corresponding printing heads.

Such a precise alignment, on the other hand, requires the operator of the cash-register to perform very accurate alignment operations which, frequently, must be carried out by specialized personnel.

Thus, in order to allow the cash register to properly operate, it must be subjected to frequent and expensive maintenance operations.

Moreover the prior systems restraining the ticket paper rolls can frequently lock or prevent a proper operation of the ticket printing means, so as to prevent the cash register from properly operating.

In fact, as the paper roll is nearly exhausted, and accordingly its weight is too small to allow the roll to properly fall into its holding cup, the paper material can be easily "sucked" by the ticket printing means, so as to cause the cash register to fail to properly operate.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks, by providing a printing assembly for cash registers which can properly operate without requiring any alignment or maintenance operations.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such a printing assembly for cash registers in which the ticket paper roll is always firmly restrained.

Another object of the present invention is to provide such a printing assembly for cash registers which is very simple construction wise and very reliable in operation.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by an improved printing assembly for cash registers comprising a first printing ribbon winding-printing assembly for recording daily transactions and a second ticket printing assembly-

, said first and second assemblies being counted on a single mounting base.

In particular the ticket paper web roll is mounted on a respective mounting small shaft or mandrel.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the printing assembly for cash registers according to the present invention will become more apparent hereinafter from the following detailed description of a preferred, though not exclusive, embodiment thereof which is illustrated, by way of an indicative but not limitative example, in the figures of the accompanying drawings, where:

figure 1 is a schematic perspective view illustrating the printing assembly according to the present invention, seen from the side of the return mechanism of the roller bearing the paper web roll provided for remaining in the cash register; figure 2 is another perspective schematic view of the printing assembly shown in figure 1, taken from the opposite side;

figure 3 is a detail view of an articulated arm which supports the restraining spindle of the ticket paper web roll, as well as a stretching bar for stretching the daily transaction paper web material;

figure 4 shows the articulated arm of figure 3 in an upwardly tilted condition;

figure 5 is a schematic view illustrating a mechanical sensing device for sensing the "consumed" paper web material;

and figure 6 schematically illustrates an electronic device for sensing the remaining paper web material.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the figures of the accompanying drawings, the printing assembly for cash registers according to the present invention, which has been generally indicated at the reference number 1, comprises a supporting base 2, provided with a box-like portion 3 in which is firmly restrained the printer 4 for printing on a first paper web material 5 the daily transaction of the cash-register.

This printer 4 is supplied with paper web material, in a conventional way, from a paper roll 6 which is housed in a cup element 7 and is urged by a flanged roller 8 which is driven by a pair of gear wheels.

More specifically, one of the mentioned gear wheels is rigid with a grooved pulley 9 which in turn is rotatively driven through a belt 10 by another driving pulley 11, in turn driven by an independent electric motor.

The ticket printer, in turn, is firmly housed in a box-like body 13, which can be locked on the mounting base 2 by any known locking means.

By way of example, the mounting base portion provided for supporting said printer can be provided with side projecting lugs 14 adapted to restrain a corresponding projecting rim of the box like body and, said mounting base portion can be further provided, on the opposite side thereof, with throughgoing holes 15 registering with like throughgoing holes provided through the corresponding edge portion of said body.

In this connection it should be pointed out that the ticket paper roll 16 is supported and restrained by a small shaft or mandrel 17 which is mounted on an arm 18 pivoted at 19 and which can be upwardly tilted, by suitably engaging or gripping a shaped lug 18'.

Said arms 18, which is resiliently connected to the supporting or mounting base through a spring 20, further supports a second small shaft 21 which is so arranged as to operate as a stretching element for that portion 22 of the daily transaction paper material which is taken up by the winding flanged roller 8.

Thus, owing to the above disclosed construction, the daily transaction paper material roll can be perfectly aligned with its related printer.

Moreover, the ticket paper material roll does not interfere with the printer, since it is always restrained by the shaft 17.

At 23 lever devices have been shown, which are mounted on the printers in order to control respective microswitches 24 and unlock the small rollers entraining the paper web.

Another important feature of the present invention is that the cash register further comprises a device for detecting, or sensing the paper web consumed amount or the paper web remaining amount, in order to constantly provide an operator of the cash register with this data.

This "counter" device can be made in any known ways.

Thus, for example, figure 5 illustrates a mechanical type of sensing device for sensing the consumed paper web material.

This mechanical device, in particular, comprises a pair of opposite rollers 30 therebetween the web is caused to slide.

As shown, the rollers 30 are advantageously coupled to one another by gears 31 and the spindle 32 of a roller is connected to a counting unit, indicated at 33.

As shown in figure 6, an electronic sensing unit for sensing the remaining web material comprises a plurality of light emitting diodes or LEDs 40, which are arranged opposite to corresponding light receiving elements or LED's.

These light responsive elements, in particular, are radially aligned and the web passing therebetween will provide a web present signal which will be indica-

tive of the web material still remaining on the web roll.

From the above disclosure it should be apparent that the invention fully achieves the intended aim and objects.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment should be susceptible to several modifications and variations, all of which will come within the spirit and scope of the appended claims.

Claims

1- An improved printing apparatus for cash registers comprising a first printing ribbon winding-printing assembly for recording daily transactions and a second ticket printing and ejecting assembly, said first and second assemblies being mounted on a single mounting base, said printing apparatus further comprising a supporting shaft thereon a ticket paper web roll is mounted.

2- A printing apparatus according to claim 1, wherein said mounting base is provided with a box-like portion in which is restrained a printer for printing a daily transaction paper web roll, said printer being paper supplied by a daily transaction paper web roll housed in a cup element and urged by a flanged roller driven by a pair of gear wheels.

3- A printing apparatus according to claim 2, wherein one of said gear wheels is rigid with a grooved pulley which is rotatively driven, through a belt, by a further driving pulley in turn driven by an electric motor, said apparatus further comprising a ticket printer which is housed in a box-like body to be locked on said mounting base by locking means.

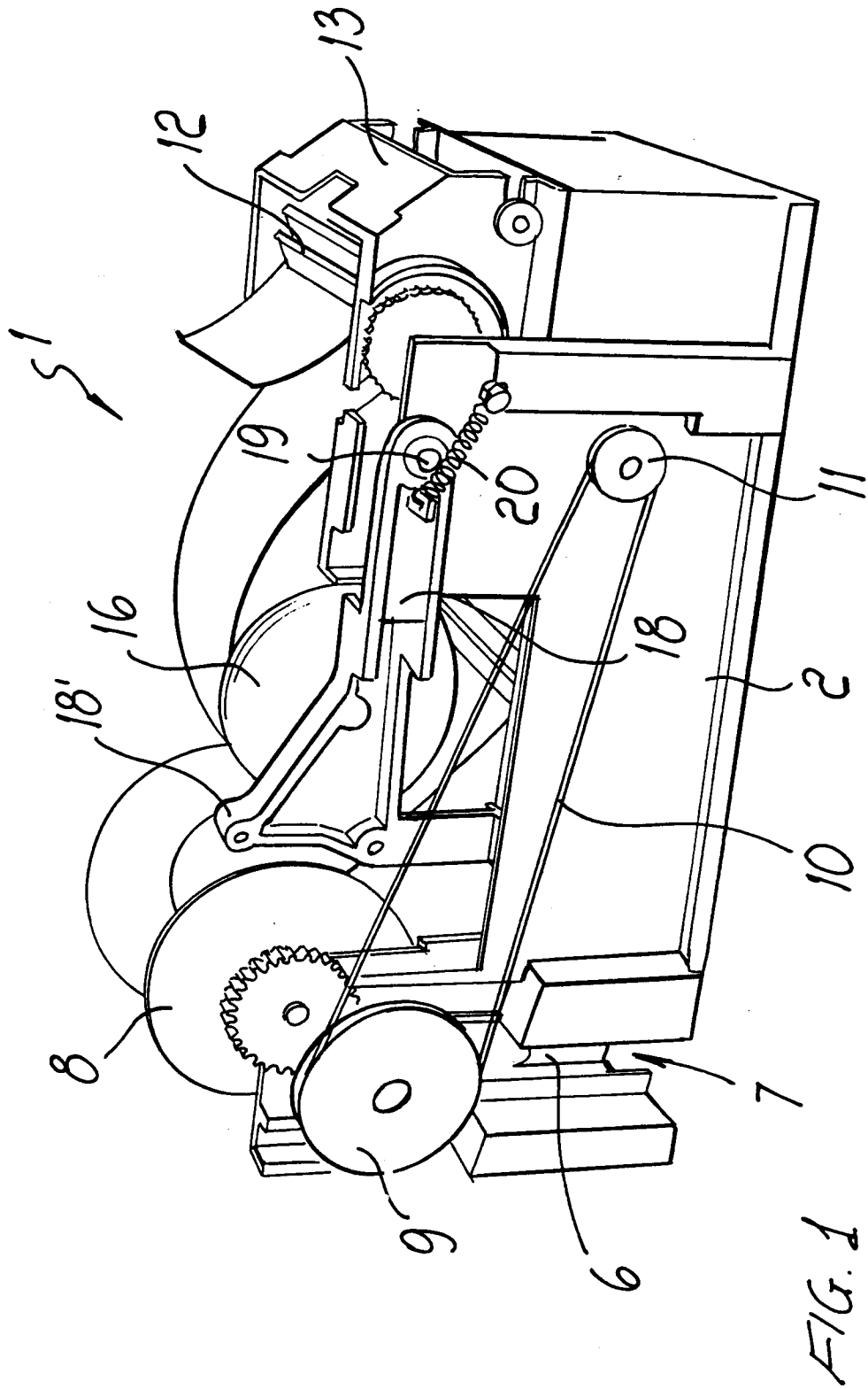
4- A printing apparatus according to claim 1, wherein said supporting shaft supporting said ticket paper web roll is mounted on an articulated arm which is pivoted at one end thereof and can be upwardly tilted by a gripping lug.

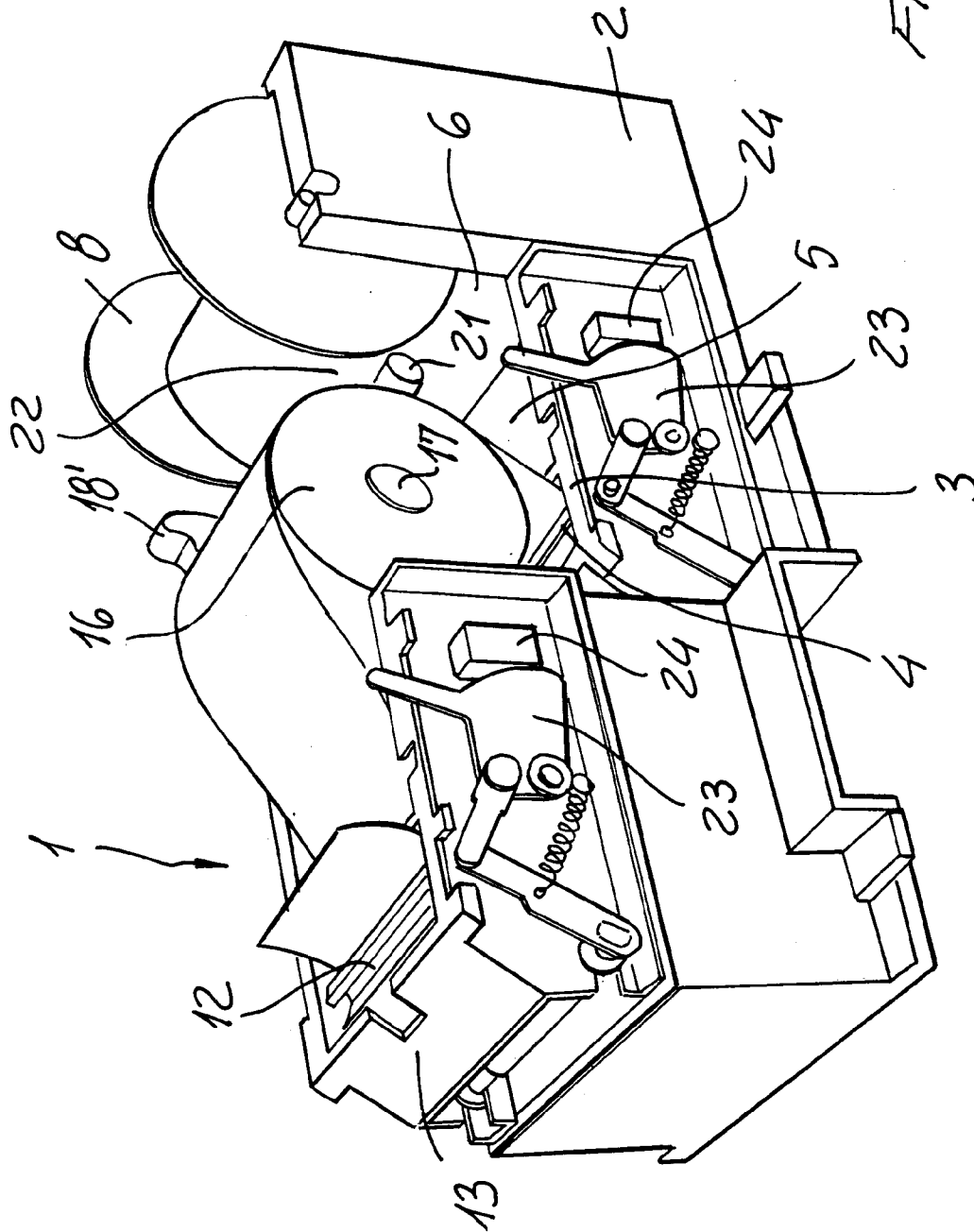
5- A printing apparatus according to claim 4, wherein said articulated arm is resiliently connected to said mounting base and supports a further shaft, which is so arranged as to stretch said daily transaction paper web.

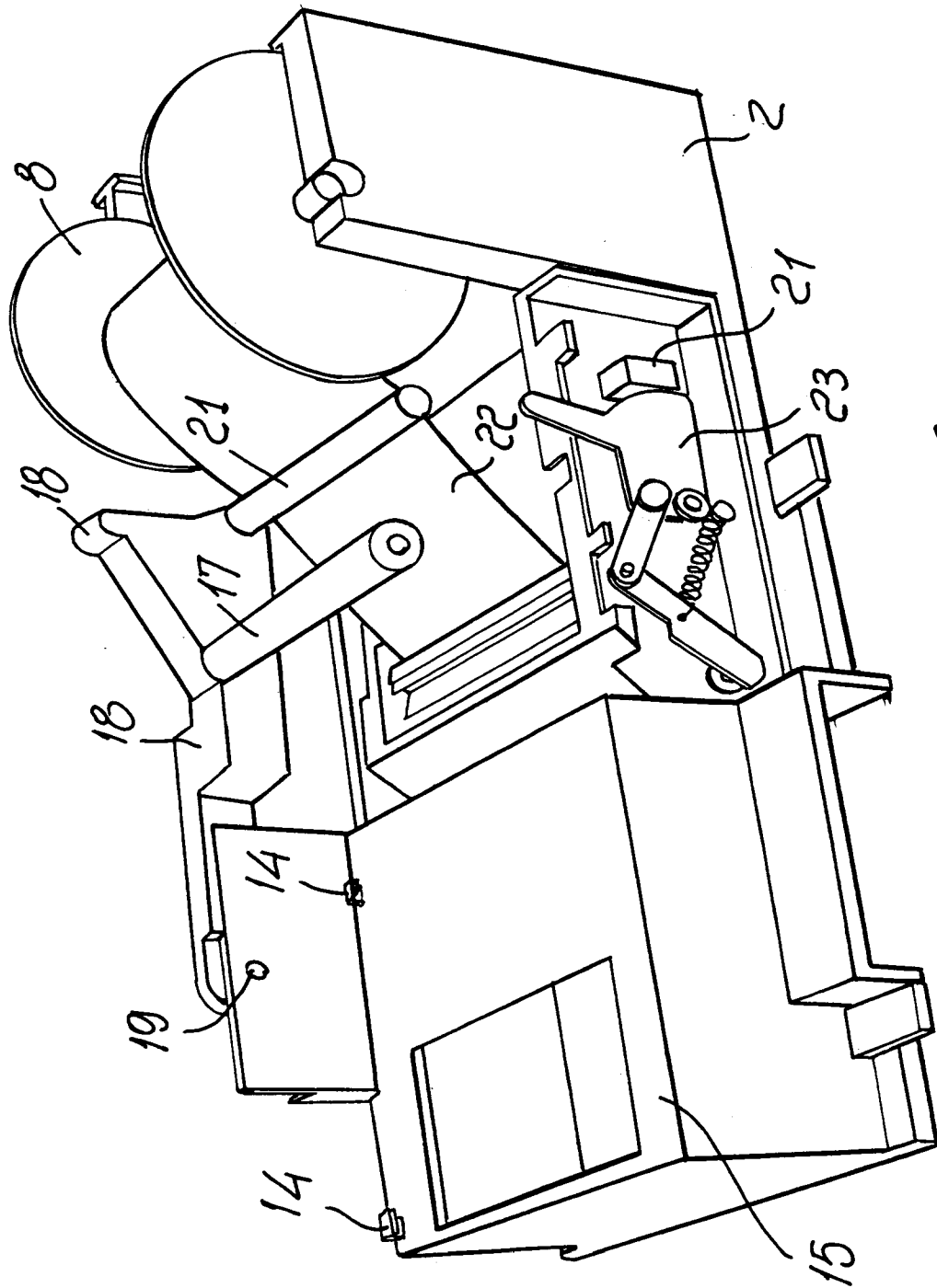
6- A printing apparatus according to claim 1, wherein said apparatus further comprises a sensing unit for sensing a consumed paper web amount.

7- A printing apparatus according to claim 6, wherein said sensing unit comprises a pair of opposite rollers therebetween said paper web is caused to slide, at least one of said rollers being coupled to a counter unit.

8- A printing apparatus according to claim 6, wherein said sensing unit comprises light emitting elements and light receiving elements for detecting said remaining amount of said paper web.







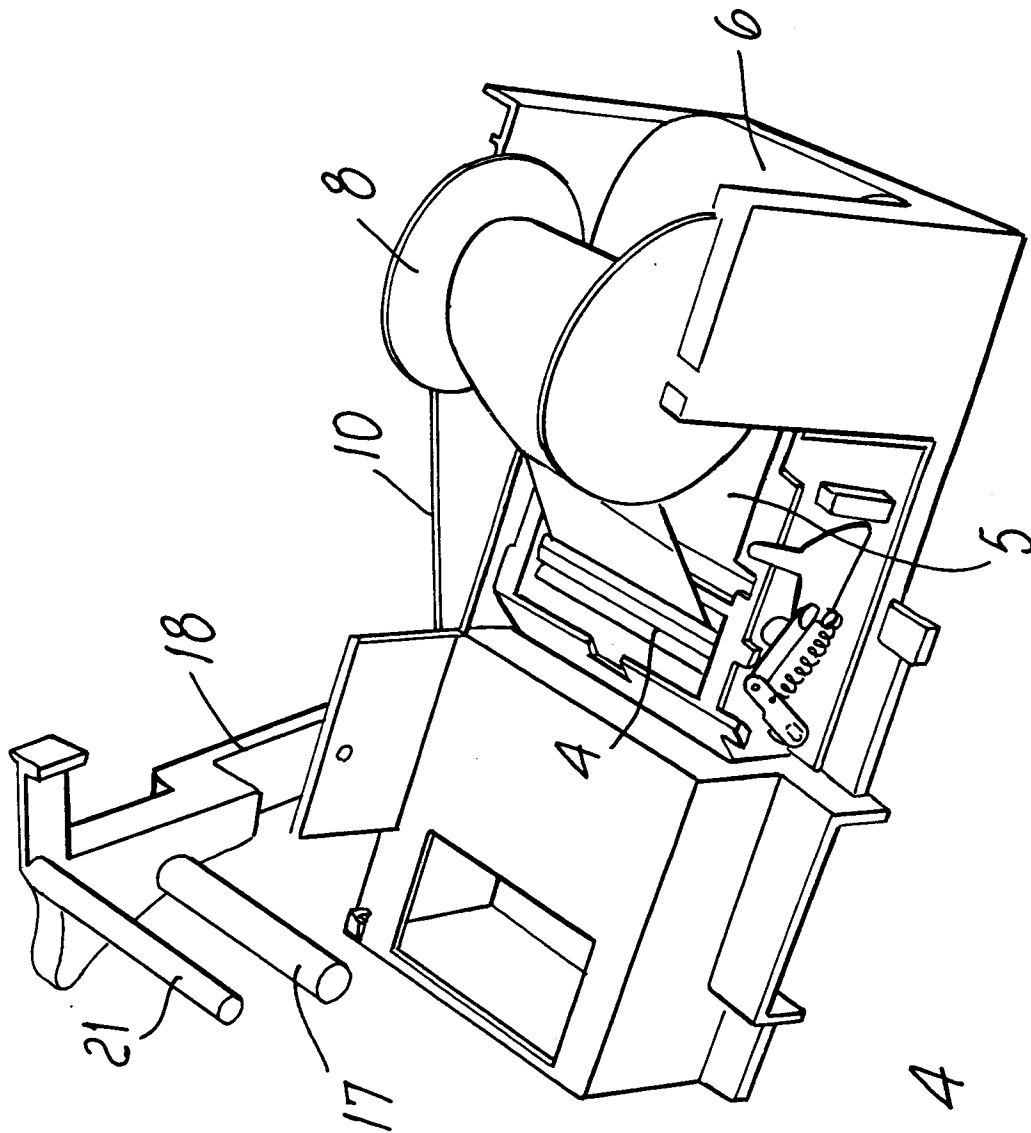


FIG. 4

