

[54] **TRAVELING CYLINDER IMPRINTER
WITH OVER CENTER PLATEN
CYLINDER ACTIVATING MECHANISM**

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3,447,458	6/1969	Hu.....	101/269
3,309,987	3/1967	Pexton.....	101/269 X
3,056,347	10/1962	Dashen.....	101/269

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[57] **ABSTRACT**

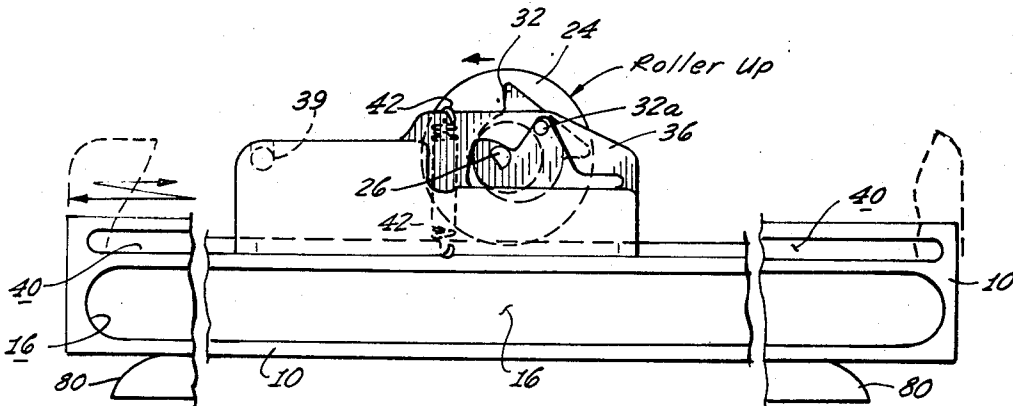
The present invention relates to hand-operated imprinting machines, of the type used in gasoline stations, for example, for completing invoices from credit cards. The imprinter of the present invention is of the type in which a roller is drawn over an invoice, which is placed in the machine over the credit card, and which includes carbon paper, or other means, so that the embossments on the credit card may be printed on the invoice. The imprinter of the present invention includes a simple mechanism whereby the roller is lowered down into an operating position for one direction of movement of the carriage of the imprinter across the base, and which is lifted up out of the plane of the invoice and credit card for the other direction of motion of the carriage.

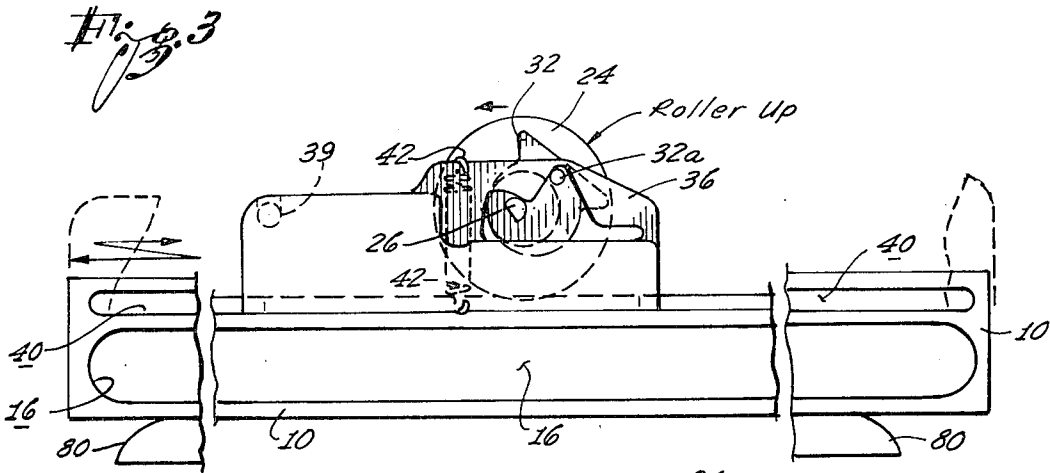
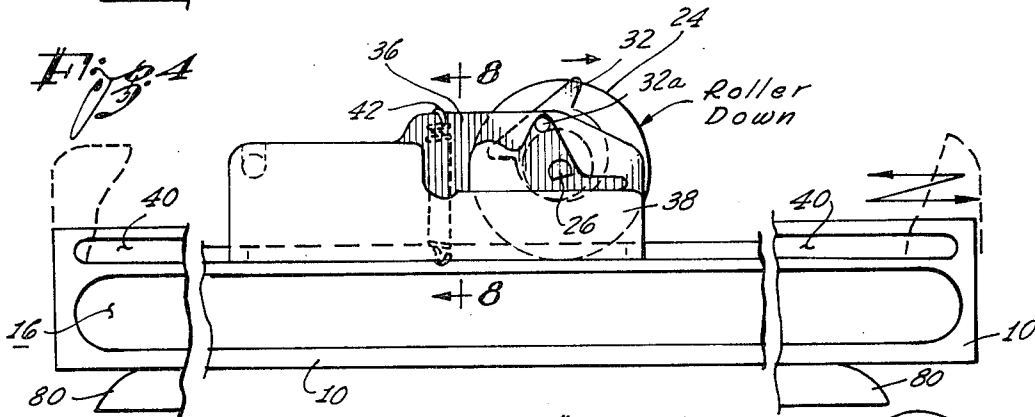
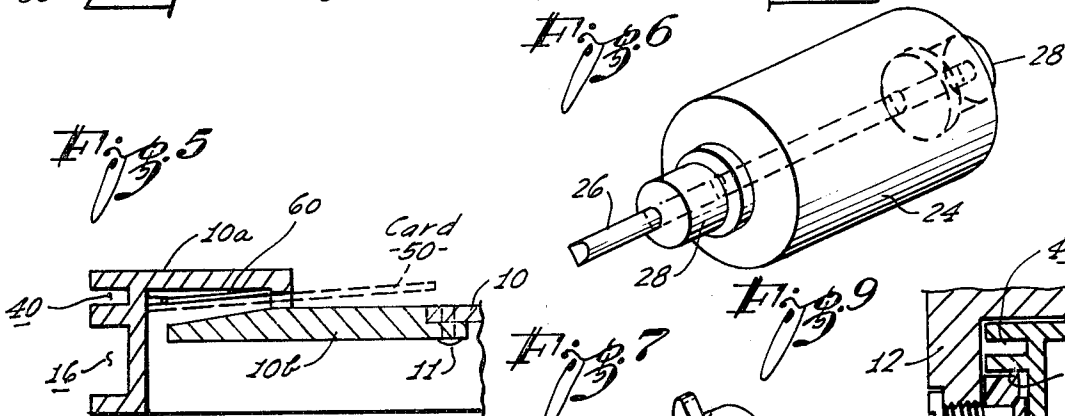
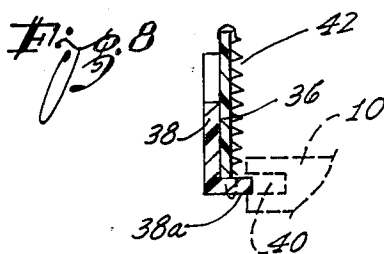
4 Claims, 9 Drawing Figures

[56] **References Cited**

UNITED STATES PATENTS

3,018,725	1/1962	Maul.....	101/269
3,260,199	7/1966	Huntley.....	101/269
3,388,660	6/1968	Wight.....	101/269
3,413,922	12/1968	Wike.....	101/269
3,446,144	5/1969	Frampton.....	101/269





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TRAVELING CYLINDER IMPRINTER WITH OVER CENTER PLATEN CYLINDER ACTIVATING MECHANISM

BACKGROUND OF THE INVENTION

The imprinter of the present invention finds particular utility in credit card checking systems of the type described in copending application Ser. No. 758,214 which was filed Sept. 9, 1968, in the name of the present inventor. However, it will become evident as the description proceeds, that the imprinter of the invention has general application wherever hand-operated imprinters are presently being used.

Hand-operated imprinters have a wide variety of uses at present in connection, for example, with gasoline stations, as mentioned above, in restaurants, and the like. Most of the imprinters of the prior art are equipped with appropriate printing means, such as a plate embossed with the address of the gasoline station, settable date wheels bearing raised numerals, etc.

It is necessary, of course, that the printing formed on the invoice be of good quality, and that the roller be moved accurately and in a constant plane during the printing operation. It is also essential that imprinters of this type be sturdily built and capable of withstanding relatively rough treatment, since the machines are used many times during the course of the day, and no particular care is taken during the operation thereof.

The prior art imprinters, of the general type with which the present invention is concerned, achieve the requirements of acceptable quality printing, as well as sturdy construction, only by means of high production costs, and resulting relatively high prices charged for the machines. This is because the construction of the prior art imprinter usually entails expensive castings, as well as precision machined movable parts.

The imprinter of the present invention is, likewise, highly accurate and precise in its operation, and it also is extremely sturdy in its construction. However, the machine of the invention, as will be described, is inexpensively constructed and uses a minimum of component parts which may be formed in a relatively simple manner, and the base and carriage thereof are formed, for example, of lightweight but sturdy die castings.

Despite its relatively inexpensive construction, the machine of the present invention operates in an improved manner for smooth and efficient printing movement as the roller of the carriage is drawn across the invoice and credit card on the base, and for high efficiency printing. Moreover, the imprinter of the invention is constructed so as to be operable for long periods of time without replacement or servicing being required even though the machine is subjected to rough and careless usage.

The imprinters of the prior art of the general type with which the present invention is concerned use either carbon sheets, as mentioned above, or an ink impregnated roller in order to achieve the desired printing of the invoice. When a carbon sheet was used, it is disposed in the prior art machine to have its active surface facing towards the side of the invoice to be printed. It is then usual in the art, for the embossed characters on the credit card, and for the embossed characters on the plate bearing other information and which is permanently installed in the machine, to underlie the invoice, so that a directly readable image may be imprinted on the invoice when the roller of the carriage is moved across the base and over the invoice.

The roller in the prior art machine, therefore, provides an imprint on the invoice of the embossed characters of the credit card and imprinter plate, this being derived from a carbon sheet or inked roller. The roller is carried by the carriage of the imprinter, and it is important to avoid superfluous overprinting that might be caused by the roller during the return stroke of the carriage. Accordingly, in the general type of imprinters with which the invention is concerned, a mechanism is associated with the roller and the carriage which is effective on the back stroke of the carriage to maintain the roller free of

the sheet which was printed during the forward stroke, or vice versa.

An important object of the present invention is to provide such an imprinter, and which includes a simple yet effective toggle mechanism, by which the roller is held down and into firm contact with the invoice and credit card during the forward stroke of the carriage across the base, for example, and which is shifted to an up position at the end of the forward stroke, so that the roller is maintained out of contact with the invoice and credit card during the return stroke of the carriage. This movement of the roller between its operative and inoperative positions during the forward and return stroke of the carriage is achieved in a fully automatic manner in the mechanism of the invention, and by a minimum of operating parts.

Specifically, the invention provides an improved hand operated imprinter mechanism, whereby the roller carriage of the mechanism is guided smoothly on the base of the mechanism, so that a smooth riding action of the carriage is assured, as it is moved reciprocally across the base. The mechanism also includes an improved and simple mechanism for adjusting the roller, so as to move the roller down to an operative position during the forward stroke of the carriage, and up to an inoperative position out of contact with the invoice and credit card during the return stroke of the carriage, or vice versa, this latter function being achieved by a minimum of components.

As mentioned above, the improved hand-operated imprinter of the present invention has particular application in conjunction with the system described in copending application Ser. No. 758,214. The system described in the copending application provides an improved and simplified matching identification means for automatically checking the validity and status of credit cards, or the like. The described system includes a fluidic computer which is attached to a hand-operated imprinter, and the imprinter may be constructed in accordance with the concepts of the present invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a hand-operated imprinting mechanism which may be constructed to incorporate the concepts of the present invention;

FIG. 2 is a top plan view of the mechanism of FIG. 1, with part of the carriage removed, so as to expose certain of the operating components of the imprinting mechanism;

FIG. 3 is a side elevation of the imprinting mechanism, taken substantially along the line 3—3 of FIG. 2, and showing the roller component of the mechanism in its inoperative "up" position;

FIG. 4 is a view like FIG. 3, but with the roller in its operative "down" position;

FIG. 5 is a sectional view of a portion of the mechanism, taken essentially along the line 5—5 of FIG. 2, and showing details of a card sensor housing which is incorporated into the base of the mechanism;

FIG. 6 is a perspective representation of the roller component of the imprinting mechanism, and certain eccentric bearings in which the roller is supported;

FIG. 7 is a perspective representation of an actuating member which is keyed to the shaft of the roller, and which is included in a toggle mechanism for actuating the roller between its operative and inoperative position;

FIG. 8 is a section essentially along the line 8—8 of FIG. 4, and showing a part of a slide mechanism which, likewise, is included in the toggle mechanism; and

FIG. 9 is a sectional view showing one of the four wheels which are mounted on the carriage, whereby the carriage may be reciprocally rolled across the base portion of the imprinting mechanism from one end to another.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENT

The hand-operated imprinting mechanism shown in the drawings includes, for example, a base 10 and a carriage 12. The carriage is reciprocally movable along the base from one end to the other by means, for example, of a handle 14 which is grasped by the palm of the operator. The base 10, as well as the carriage 12, may each be made, for example, of a simple single diecasting which may be composed, for example, of aluminum alloy, or other appropriate material.

The base 10 has side portions which extend down from the base, as shown in the drawing, and which have grooves therein designated 16 defining tracks. The carriage 12, for example, has four wheels such as the wheel 18 in FIG. 9, and which are mounted on respective shafts 20. The shafts have a screw head and are threaded through a skirt section of the carriage 12, so that the wheels 18 may be held on the tracks within the respective grooves 16. In this way, the carriage 12 is reciprocally movable from one end of the base 10 to the other, with the wheels limiting the movement at each end as they engage the end of the tracks formed by the respective grooves 16 in the side portions of the base.

A roller 24 is rotatably supported on the underside of the carriage 12 on a shaft 26 which extends across the carriage. The shaft 26 is supported in an eccentric relationship in a pair of journal bearings 28, the bearings 28 being journaled in appropriate pillow blocks 30 mounted on the underside of the carriage.

The relationship between the roller 24 and the bearings 28 is best illustrated in the perspective representation of FIG. 6. The shaft 26 extends through the roller 24, so that the roller is rotatably mounted on the shaft, as mentioned above, and through the bearings 28. The bearings 28 have a flattened bore, as shown in FIG. 6, and the flattened bore of each of the bearings engages a flattened portion of the shaft 26, so that rotation of the shaft causes the bearings 28 to turn in the pillow blocks 30. As mentioned above, the shaft is eccentric with respect to the bearings 28, so that when the shaft is turned from one angular position to another, the resulting rotation of the bearings 28 in the pillow blocks 30, causes the roller 24 to move between an "up" position shown in FIG. 3 and a "down" position shown in FIG. 4.

A shaft actuator member 32, as shown in FIGS. 3 and 4, and shown in perspective in FIG. 7, is likewise keyed to a flat portion of the shaft 26, so that when the shaft actuator 32 is turned from one angular position to another, the shaft 26 likewise is turned so as to bring the roller to its "up" or "down" position.

The shaft actuator 32 includes an axially projecting portion 32a which is engaged by a first spring-loaded vertical flat slide member 36 forming part of the toggle mechanism for the roller 24. The first spring-loaded slide member 36 is pivotally mounted on a second vertical flat slide member 38 by means, for example, of a pivot pin 39. The slide members 36 and 38 may be formed of a plastic material, and the pin 39 may be integral with one of the slide members and extend into the other. As shown in FIG. 8, for example, the slide member 38 includes a portion 38a which extends into a slot 40 in the side of the base 10 illustrated in FIGS. 3 and 4. The slide member 36 is held resiliently down against the projection 32a of the shaft actuator 32 by means of a spring 42 extending between the slide members 36 and 38.

It will be appreciated that as the carriage 12 is moved to the left in FIG. 3, for example, the roller 24 is in its "up" position, and is held in that position by virtue of the spring 42 holding the two slide members 36 and 38 resiliently together in a scissors relationship. This causes the member 36 to engage the projecting portion 32a of the shaft actuator 32, so as to hold the shaft actuator in the first of its two angular positions. The shaft actuator is shaped, as shown in FIGS. 3 and 7, so that one end engages the projecting edge of the slide 36 to limit the clockwise angular movement of the actuator 32 under the

force of the spring 42. This establishes a first angular position of the bearings 28, which, in turn, sets the roller in its "up" position.

The mechanism remains in the condition shown in FIG. 3 as the carriage 12 is moved across the base from one end to the other and to the left in FIG. 3. However, when the carriage arrives at its limiting position at the left in FIG. 3, the projecting portion 38a of the slide member 38 engages the end of the slot 40, and moves the slide member over to the position shown in FIG. 4, so that the shaft actuator 32 is tilted to its second angular position, at which it is limited by the engagement of its other edge with the projecting edge of the plate 36, so that the bearings 28 are turned to a position such that the roller is moved down into its operative position.

As shown in FIG. 1, for example, a credit card 50 may be placed on the top surface of the base 10, and a portion may extend under a housing 10a, as shown in FIG. 5. In the manner described in the aforesaid copending application Ser. No. 758,214, the card may be provided with certain embossments, which operate a fluidic control associated with the housing 10a. A separate deck 10b is provided with an inclined surface under the housing, as shown in FIG. 4, and which is attached to the base 10 by a screw 11.

However, such an application of the imprinter of the present invention is not essential for its utility. The imprinter may be used, for example, in conjunction with the imprinting of embossments on the card 50 on a charge slip or invoice 52. For that purpose, the invoice, as shown in FIG. 1, is laid over a part of the card 50 in a position established, for example, by a bracket 54 on the top surface of the base 10. Then, as the carriage 12 is moved across the base, the roller is operated in the manner described so that on the forward stroke, the roller is moved down over the invoice so that the embossments on the credit card may be clearly imprinted on the invoice, with the invoice being held securely by means of the bracket 54. Then, and in order to prevent a blurring over-printing on the invoice, the mechanism is triggered so that during the return stroke, and in the manner described, the roller is moved up to an inoperative position so that it does not engage the invoice.

A spring 60 may be provided within the housing 10a, and which bears against the side of the card 50, so that the card is normally biased to an inclined position, such as shown in FIG. 5, so as to facilitate its removal from the housing and from the base after the invoice has been removed at the end of the operation.

The base 10 may be equipped, for example, with pedestals 80 formed, for example, of rubber or other appropriate material, and mounted on the other side of the base at each corner.

The invention provides, therefore, a simple and sturdy hand-operated imprinting mechanism which has general application for transferring information from credit cards, or other devices, onto a sales slip or invoice, and which may be operated simply and expeditiously to produce sharp and clean imprints.

What is claimed is:

1. In a hand-operated imprinting mechanism for causing impressions to be made on a sheet held over appropriate printing means, such as a credit card or the like, and which includes a base defining supporting top surface for said sheet and said printing means, and having elongated side portions extending downwardly from said top surface, one of said side portions having a slot therein extending from one end of the base to the other; and a carriage reciprocally movable along the top surface of said base; the combination of: a shaft, bearing means mounted on the underside of said carriage and eccentrically supporting said shaft in a transverse position with respect to said base; roller means rotatably mounted on said shaft; and overcenter operating means coupled to said shaft effectively to turn said shaft in said bearing means between first and second angular positions so as to move said roller means between an operative position with respect to said top surface of said base as said carriage is moved in one direction along

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said base, and to an inoperative position displaced up from said top surface as said carriage is moved in the opposite direction along said base, said overcenter operating means including a shaft actuator member mounted on said shaft and keyed thereto and having a projection extending axially therefrom, and a pair of pivotally mounted spring-biased slide members, one of said slide members having an opening therein for receiving said projection of said actuator and said opening having oppositely inclined edges meeting at an apex and engaging said projection at said apex, and said slide members being slidable with said carriage along said base, the other of said slide members having a projection extending into the aforesaid slot in said one of said side portions of said base and engaging the respective ends of said slot to stop the sliding movement of said slide members and to produce relative movement between said slide members and said carriage so as to cause said actuator to turn said shaft between said first and second angular positions each time the carriage is moved across the top surface of said base to a limiting position at each end thereof.

2. The combination defined in claim 1, in which said elongated side portions of said base are integral with said support-

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ing top surface of said base, in which said side portions define grooves to provide rail surfaces, and in which said carriage includes wheel means engaging the aforesaid rail surface.

3. The combination defined in claim 1, and which includes a housing having a top extending over part of the aforesaid top supporting surface of said base and in spaced relationship therewith, said top defining a slotlike opening extending across said base for receiving a portion of a credit card on said surface so that predetermined sensing functions may be performed on said portion of said card.

4. The combination defined in claim 3, in which the portion of said top supporting surface extending under the top of said housing is inclined downwardly with respect to the plane of the remainder of said top supporting surface, and which includes resilient means in said housing normally bearing down on said portion of said card extending into said housing to bias said portion of the card against said inclined portion so as to displace the remaining portion of the card up from said top supporting surface in order to facilitate its removal from the housing.

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