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[54] IMPRINTER INCLUDING TAPERED ROLLER TRAVELING IN AN ARCUATE PATH

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[51] **Int. Cl.** **B41f 3/20**

[58] **Field of Search** 101/23, 38, 39, 41, 56, 252, 101/256, 260, 261, 269–274, 277, 375, 264, 407, 354

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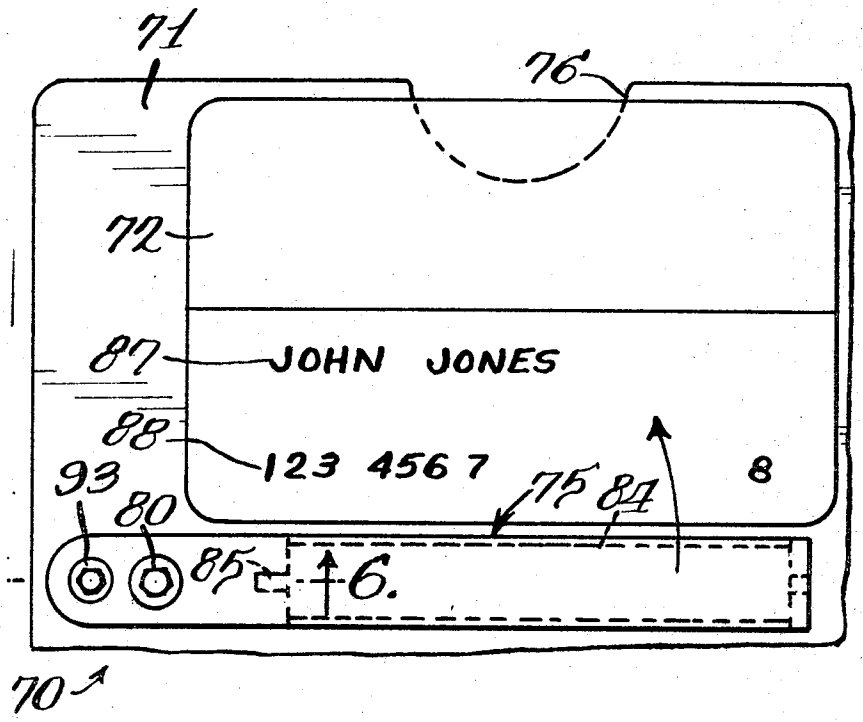
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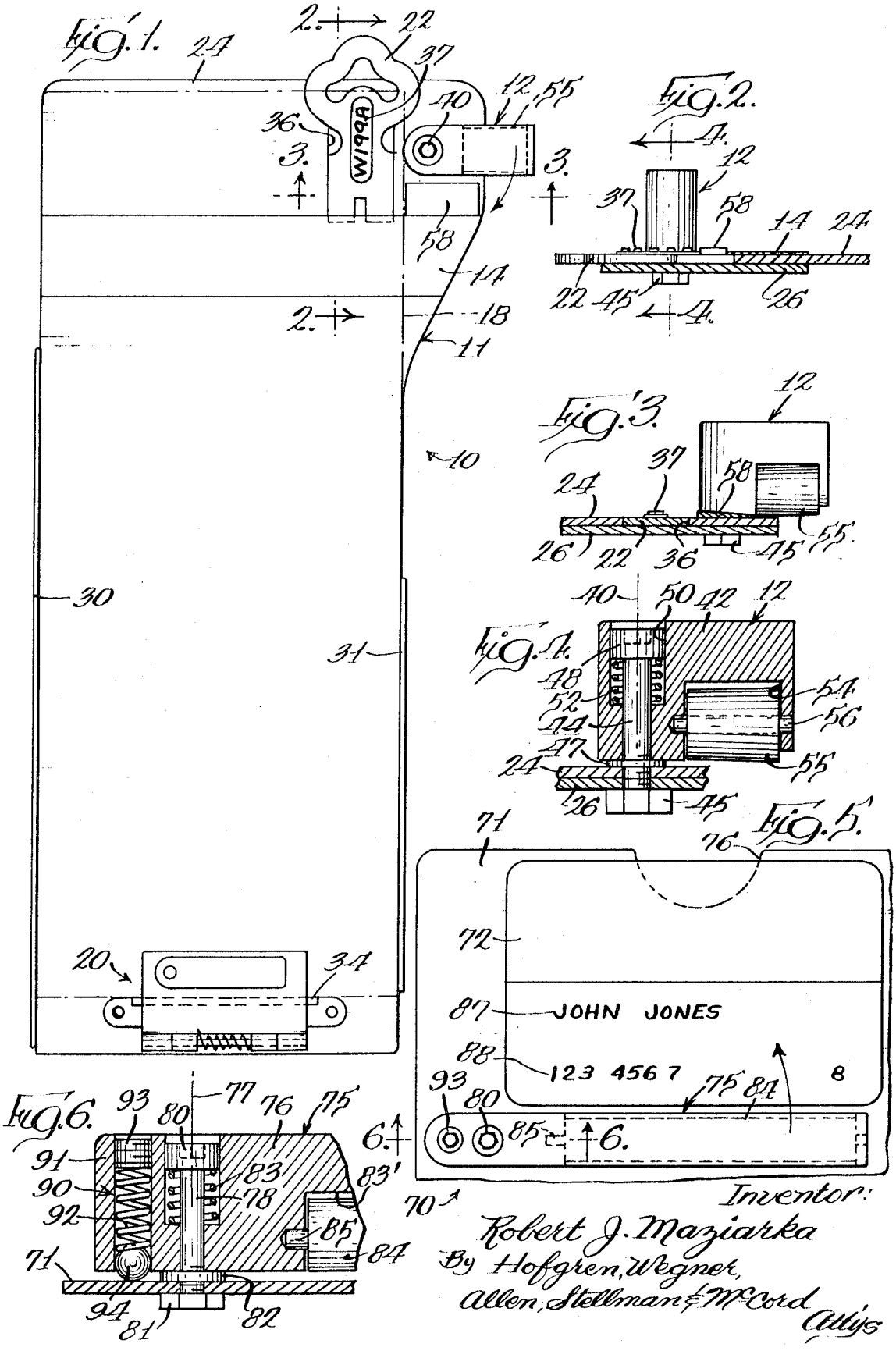
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[57] **ABSTRACT**

A portable imprinter that provides impressions on a pressure sensitive billing form from a credit card including a support for aligning the credit card in a predetermined direction and for holding the billing form in position, there being provided a pivotally mounted roller platen that rolls across the credit card indicia with a swinging action, with the roller having a taper thereon to minimize slippage, there being also provided a spring biased ball assembly for urging the free end of the platen downwardly toward the support and the credit card indicia to improve the imprinting quality.

1 Claim, 6 Drawing Figures




Fig. 1.
Fig. 2.
Fig. 3.
Fig. 4.
Fig. 5.
Fig. 6.
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IMPRINTER INCLUDING TAPERED ROLLER TRAVELING IN AN ARCUATE PATH

BACKGROUND OF THE PRESENT INVENTION

As is well known by the average layman, credit cards have reduced the flow of Federal monies between consumer and retailer. Credit cards are generally issued by private institutions and are embossed to contain identification and credit information relating to the individual card holder. The authorized embossing of a bill with the information on the card by a suitable imprinter constitutes a tentative or conditional payment of the bill upon which the authorized embossment is made.

There have been provided a great variety of imprinters for the purpose of impressing the raised indicia on the card onto a ticket or bill. One such device in common use today includes a table mountable unit with a heavy, rectangular stationary platen having two ways which slidably receive a bulky reciprocating platen for rectilinear movement over the credit card and the form to be imprinted. The movable platen carries a resiliently urged member that forces the form into embossing engagement with the raised indicia on the credit card.

Prior imprinters for this purpose have all had the disadvantage of being essentially non-portable because of their heavy, bulky construction and it is therefore a primary object of the present invention to provide an extremely light-weight, portable imprinter that may be carried about, without sacrificing imprinter quality.

SUMMARY OF THE PRESENT INVENTION

In accordance with the present invention a portable imprinter is provided that obviates the problems in prior known imprinters through the provision of a small pivotal platen that carries a roller having an axis extending through the pivotal axis of the platen so that the roller has a swinging action as it is manually moved across the credit card. The basic structure simplifies prior imprinting devices in several respects. Firstly, single pivotal mounting of the imprinter platen significantly reduces the frictional resistance of the movable platen and renders much simpler the manual imprinting action.

Secondly, the swinging action of the movable platen roller across the credit card indicia on a line generally diagonal with respect to the line of the indicia improves significantly the imprinting quality. This feature requires a brief further description. It should be understood that during the manufacture of credit cards, some of the individual indicia have a greater height than others, and in prior constructions, as the platen moves over the credit card the higher indicia tend to lift the platen over the lower indicia so that a good impression is not made with the lower indicia on the bill or ticket. The present diagonal swinging action of the pivotally mounted platen reduces this problem significantly since the roller effectively engages only one indicium at a time so that it can easily move upwardly and downwardly over the high and low indicia giving equally good imprinting with both, regardless of height, within, of course, certain limitations.

Still further advantages of the present pivotally mounted platen construction are that it reduces the cost in mounting the pivotal platen and also reduces the required platen weight, thereby rendering the entire imprinter considerably more portable than those heretofore known in the prior art.

A still further feature in the present invention resides in the outward tapering of the platen roller to reduce slippage of the roller across the indicia during the rolling action of the movable platen roller. It is quite common on credit cards, as well as embossed ticket writing plates, for there to be a plurality of lines of indicia. It is apparent that with the present pivotally mounted roller platen that some indicia will be passed over by the radially inward portion of the roller while others will be passed over by a radial portion of the roller significnatly further from the pivotal axis of the movable platen. Depending upon the extent of this radial displacement from the pivotal axis of the movable platen, there is a tendency for the radial

innermost portion of the roller to slip somewhat on the indicia adjacent thereto rather than having pure rolling motion with respect to these indicia. To obviate this problem and in accordance with the present invention, the roller is provided with a slight inward taper, i.e. decreasing toward the pivotal axis, to assure rolling motion across the indicia regardless of their radial displacement from the pivotal axis of the movable platen.

A still further feature of the present invention resides in the provision of a spring biasing assembly for urging the distal end of the platen roller downwardly to assure good imprinting near the radial outermost portions of the imprinter. It is apparent that with long imprinting rollers, and with the distal end of the roller frame being free from support, that the pressure exerted by the free end of the roller would be reduced as a function of roller length, and thus one would expect the imprinting quality to be less adjacent the distal portion of the roller. To eliminate or ameliorate this problem the frame supporting the pivotal platen roller is extended on the side of the pivotal axis opposite the roller and houses a ball-spring assembly that urges the overhanging portion of the platen arm upwardly away from the support which in turn urges the roller pivotally downwardly toward the credit card. Since this movement has the character of a pivotal action in a plane containing the pivotal axis of the movable platen, the distal end of the arm has a tendency to be urged downwardly with a greater force displacement than the radial innermost portions of the imprinter arm.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a plan view of a portable imprinter according to the present invention with a key-credit card shown in position on the imprinter;

FIG. 2 is a fragmentary section taken generally along line 2—2 of FIG. 1;

FIG. 3 is a fragmentary section taken generally along line 3—3 of FIG. 1 illustrating the movable platen in elevation;

FIG. 4 is a fragmentary section, enlarged, taken generally along line 4—4 of FIG. 2 illustrating the movable platen and its pivotal mounting;

FIG. 5 is a fragmentary plan view of a further embodiment of a modified imprinter according to the present invention; and

FIG. 6 is a fragmentary section taken generally along line 6—6 of FIG. 5 showing the pivotal platen mounting.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawing and particularly FIGS. 1 to 4, an imprinter 10 is illustrated consisting basically of a frame support 11, a pivotal platen 12 mounted on the frame support, and a card retainer 14. A bill 18 is shown in dotted lines and retained in position by spring clip retainer assembly 20 on the support 11. A credit card key 22 is placed on the support 11, the pressure sensitive bill 18 is placed under retainer 14 and over the credit card 22, and thereafter the operator swings the movable platen 12 in a clockwise direction over the top of the bill squeezing the bill against the indicia on the card 22 thereby embossing the card.

Turning in more detail to the construction of the imprinter 10, it is seen to include a generally rectangular upper plate 24 and a rectangular lower plate 26 that does not extend the full length of plate 24 as shown best in FIG. 2.

Formed on the upper plate 24 are upwardly extending portions 30 and 31 which serve to justify and align the bill 18 in position. For the purpose of longitudinally aligning the form an abutment 34 is provided on the lower portion of plate 24 as seen best in FIG. 1. The retainer 14 may be spaced sufficiently from the support plate 24 so that the bill 18 can fit underneath the retainer while still passing over the credit card 22.

As best seen in FIGS. 1, 2 and 3, the plate 24 has a rectangular recess 36 therein for aligning and supporting the credit

card 22. The plate 24 is approximately the thickness of the credit card, excluding the height of the raised indicia 37 on the credit card.

The slot 36 is positioned so that the indicia are significantly out of alignment with pivotal axis 40 of the pivotal plate 12. In this manner the platen 12 has a diagonal wiping action across most of the indicia 37 improving the imprinting quality, since the roller associated with platen 12 essentially engages only one of the indicia 37 at a time.

As seen best in FIG. 4, which is an enlarged view, the pivotal platen 12 incluces a generally rectangular platen frame 42 mounted for pivotal movement on a post 44 fixed to the plates 24, 26 by a fastener 45, threaded to post 44. A suitable washer spacer 47 is provided between plate 24 and the frame 42 for the purpose of adjusting the height of the frame 42 depending on the thickness plate 24 to achieve good imprinting action. The post 44 has a head 48 slidable in a bore 50 in one end of the frame 42 which receives a coiled compression spring 52 acting between the head and the bottom of bore 50 for resiliently urging the entire frame 42 downwardly along axis 40 toward the plate 24.

The frame 42 has a rectangular cutout portion 54 which receives a short tapered roller 55 rotatably mounted on a pin 56 fixed within the cutout portion 54. The roller 55 defines the movable platen of the imprinter and is constructed to have rolling motion across the imprinting surface during imprinting.

Roller 55 has approximately one-half degree taper on each side thereof, i.e. one degree conical apex angle, with the narrow portion, or smaller diameter of the roller, closer to the axis 40. The purpose of this is to assure rolling engagement between the platen roller 55 and the bill 18 across indicia 37, and it has particular advantage in the longer roller embodiment of FIGS. 5 and 6.

For the purpose of raising the platen 12 slightly just prior to engagement with indicia 37, the plate 24 is provided with an inclined cam 58 over which roller 55 passes just prior to engagement with the indicia. This reduces the operator effort required in rotating the movable platen 12 since the platen is raised over the indicia gradually rather than abruptly. Cam 58, however, is constructed to release the roller 55 prior to engagement with the indicia on the credit card.

A somewhat modified form of the present invention is illustrated in FIGS. 5 and 6. The primary differences between the FIGS. 5 and 6 embodiment and the FIGS. 1 to 4 embodiment reside in the provision of an elongated movable platen and the lack of a recess for holding the credit card in position.

As seen in FIGS. 5 and 6 an imprinter 70 is provided having a generally rectangular support 71 for supporting a credit card 72 thereon, and a pivotal roller platen 75. The support 71 may be a generally rectangular plate, which supports the credit card 72 on the top thereof rather than in a recess. A suitable cutout portion 76 may be provided to facilitate removal of the card 72 from the support, and if desired, a clip such as shown at 20 in FIG. 1 may be provided for retaining the card 72 in position.

As seen best in FIG. 6, the roller platen 75 is seen to include an elongated rectangular frame 76 pivotally mounted about axis 77 by a post 78 having the same construction as post 44 including head 80, fastener 81 and spacer 82. The spacer 82 is of greater thickness than spacer 47 for the purpose of compensating for the height of the credit card 72 above the support 71. Spring 83 biases the frame 76 downwardly toward the support in the same manner as spring 52 in the FIGS. 1 to 4 embodiment.

The frame 76 has a rectangular cutout portion 83' that receives a long roller 84 rotatably mounted on pin 85, in turn mounted in the cutout portion 83'. Roller 84 has considerable length to roll across a plurality of rows of indicia such as shown at 87 and 88 in FIG. 5. Roller 84 also has a one-half degree taper on each side thereof, to minimize the tendency for the roller to slide on the indicia closest to the axis of post 78, i.e., indicia 88, as described above.

The spring assembly 90 as shown in FIG. 6, is provided for the purpose of pivotally biasing the frame 76 about the post 78, about an axis perpendicular to the axis of the post, to urge the free end of the roller 84 downwardly with greater pressure than is applied with spring 83 alone. Toward this end the frame 76 has a portion 91 on the side of the pivot post 78 opposite the roller 84. Seated within a bore in portion 91 is a spring 92 adjustably biased by set screw 93 accessible from the top of the frame, which urges a ball 94 into contact with support plate 71. Thus, the spring assembly 90 urges the frame portion 91 upwardly away from the plate 71 and tends to pivot the frame about the post 78 so that the opposite end of the frame 76, along with the roller 84 are urged downwardly toward the plate 71. Ball 94 permits the resilient assembly 90 to be active throughout the stroke of the platen 75 since it rides on the top of plate 71 throughout such stroke.

I claim

1. A portable imprinter, comprising: a generally flat support member, means for aligning a credit card on said support member, a post extending upwardly on said support member, a platen frame pivotally mounted on said post for wiping movement across said credit card, an elongated tapered roller on said frame, said roller being mounted for rotation about an axis extending through the axis of said post, said frame having a portion thereof extending on the side of the port axis opposite said roller, a spring biased ball supported on said frame and engaging said support to urge said portion of said frame away from the support and thus urge the free end of the frame and the distal end of the roller downwardly toward the frame, and spring means on said post urging said frame means toward the support.

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