

[54]	INDEPENDENTLY ADJUSTABLE MULTIPLE DATA RECORDER	3,274,931	9/1966	Patterson.....	101/269
		3,661,080	5/1972	Laws.....	101/282 X
[75]	Inventor: Albert C. Brown , Eastlake, Ohio	1,079,325	11/1913	Blue.....	101/269
		3,650,209	3/1972	Allport.....	101/269
[73]	Assignee: Addressograph-Multigraph Corporation , Cleveland, Ohio	3,272,120	9/1966	Johnson.....	101/56
		1,305,778	6/1919	Cushing et al.....	101/269

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[52] U.S. Cl. 101/269

[51] Int. Cl. B41f 3/20

[58] Field of Search..... 101/45, 56, 269,
101/270, 273-274

[56] References Cited

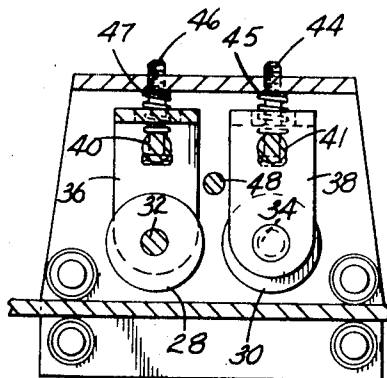
UNITED STATES PATENTS

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772,632	10/1904	Proctor.....	101/269
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[57] ABSTRACT

A data recorder having a carriage movable forwardly from a home position to an actuated position and return rearwardly to record data on a form from printing tokens. The carriage mounts two roller platen assemblies, each independently adjustable to adjust printing pressure, one platen to print on the forward movement and the other on the rearward movement.

5 Claims, 6 Drawing Figures



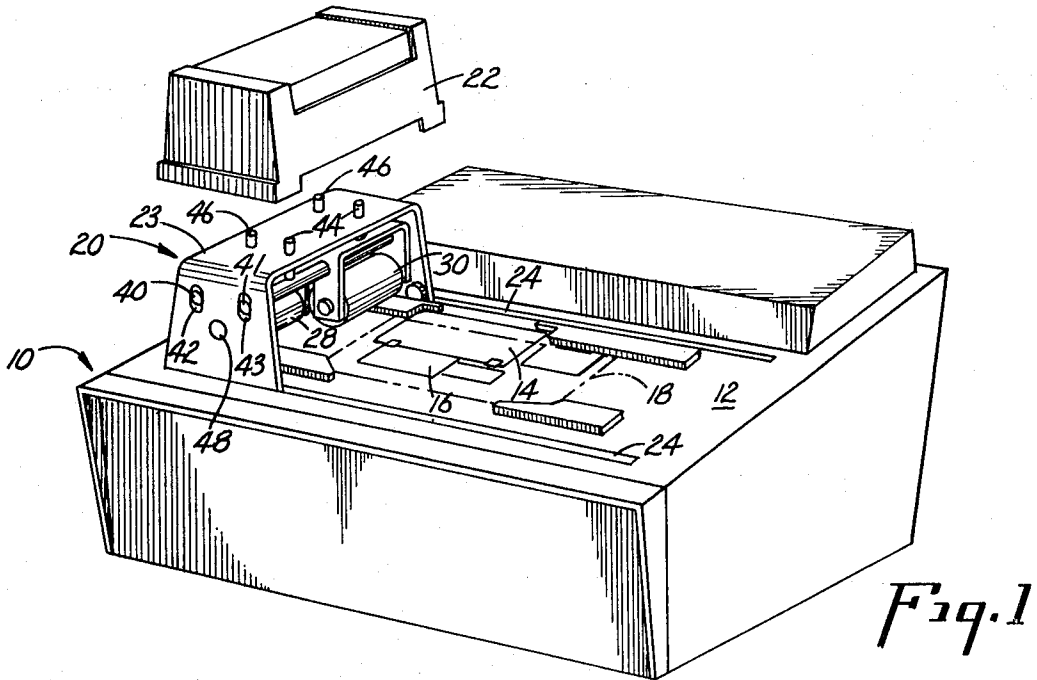
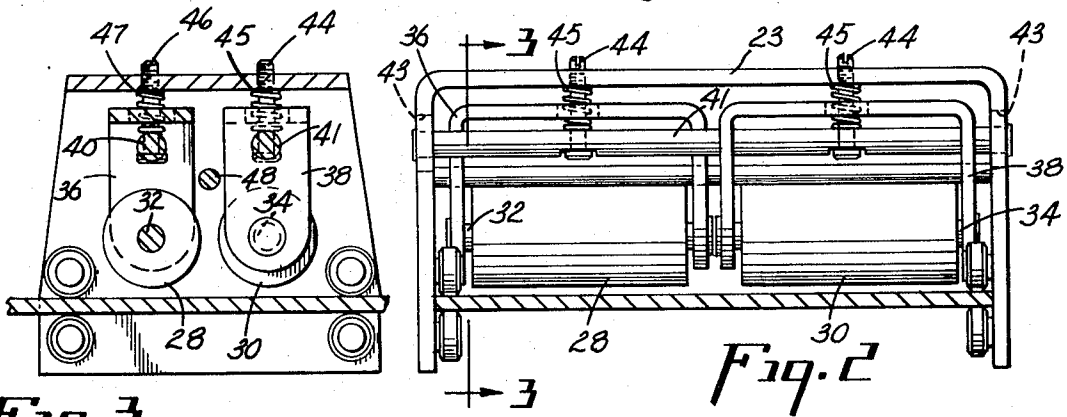
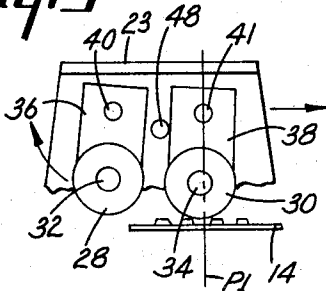
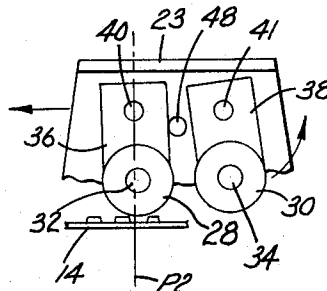


Fig. 3



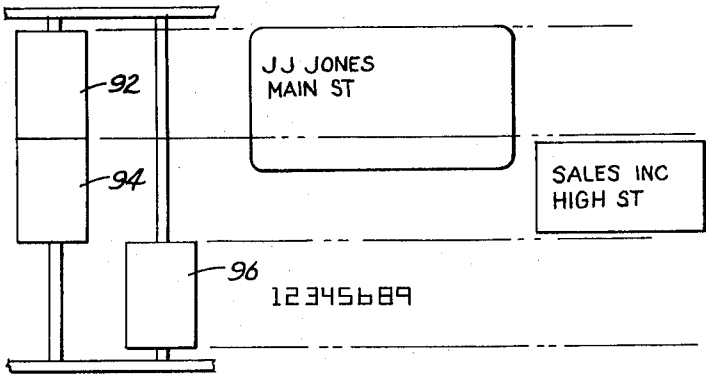


Fig. 6

INDEPENDENTLY ADJUSTABLE MULTIPLE DATA RECORDER

BACKGROUND OF THE INVENTION

The present invention relates to an imprinting machine, and relates more particularly to a data recorder for imprinting characters from printing tokens which have substantially different printing characteristics.

One very common form of data recorder is the type utilized by various merchants to record data from a customer's credit card. Conventionally the credit card is put into the data recorder and a form is superimposed thereon. A platen is rolled over the form pressing on the credit card using an impression on the form in either machine readable code or visual readable characters. Additionally it is often common to concomitantly record information concerning the merchant making the sale and this is most often done by incorporating an auxiliary plate carrying the requisite information which also will transfer the information to the form when the platen roller is actuated.

It is now common practice to form the customer credit cards out of a plastic material. However, because of the much more repeated use of the auxiliary plate, these plates have conventionally been formed out of metal which is much more resistant to deformation upon repeated usage. However, metal and plastic have different printing characteristics and each requires a different adjustment of the roller platen to obtain optimum ink release. The optimum ink release is especially critical in the case where machine readable characters are printed since a very precise outline within which uniform density printing must be maintained is necessary in order to get accurate machine reading. Also, the metal plate is normally thinner than the plastic card, thus requiring shims to raise them to the same printing height as the metal plate. These shims present a problem not only in initial adjustment, but also in their propensity to become lost in service. Hence the use of a single roller platen rolling over a form in printing engagement with both a plastic credit card and a metal auxiliary plate presents a very complex problem of trying to maintain the proper printing pressure on both the auxiliary plate and the plastic credit card in order to obtain the necessary print quality.

Such a relationship is further complicated by the fact that there usually is a substantial number of lines being printed at the same time which means a rather high force is generated which has to be contained by a platen carriage. All of these factors often make it technically impractical to utilize a single printing platen which will function effectively.

One prior art proposal for overcoming the difficulties encountered in a single platen printing operation is shown and described in U.S. Pat. No. 3,272,120, entitled "Address Printing Machines With Roller Platens" in the name of Johnson. Basically this invention provides a pair of roller platens which are disposed in end to end relationship and which are mounted as a unit on an eccentric shaft. Rotation of the shaft in one direction will bring one roller platen into printing contact with the printing elements while simultaneously raising the other roller out of printing contact. Rotation in the opposite direction will bring the other roller into printing contact while raising the first roller out of printing contact. During the forward stroke of the machine the first roller prints. At the end of the stroke the eccentric

shaft is rotated, and the other roller prints on return movement.

This apparatus has been rather successful for many applications. However, in some applications, especially where very precise printing of all characters is required, this device has not proved to be entirely satisfactory. The main drawback to this device is that the printing pressure cannot be adjusted on each of the two rolls independently since they are secured together in end to end relationship and rotate as a unit to their two respective positions. Thus adjustment of the eccentric shaft will affect the printing pressure on both rolls and not each of them independently. It has been found that in certain instances it is desirable and in fact satisfactory to have independent adjustment of the rolls for obtaining accurate printed characters.

SUMMARY OF THE INVENTION

A data recording device is provided which includes a bed for holding printing elements and the form to be imprinted. A platen carriage is provided which is movable forward across the bed from a home position to an actuated position and return to the home position in a printing cycle. First and second roller platens are provided, and mounting means mount the first and second roller platens on the platen carriage for rotation axially offset with respect to each other. The mounting means include actuating means to move the first platen into printing relationship and the second platen out of printing relationship with the elements on forward movement and the second platen into printing relationship and said first platen out of printing relationship with the elements on the return movement of the platen carriage. The mounting means also include means to adjust the printing pressure applied against the elements by each roller platen independently of the other roller platen.

DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective partially exposed view of a data recorder according to this invention;

FIG. 2 is a front elevational view of the platen carriage;

FIG. 3 is a sectional view taken substantially along the plane designated by the line 3—3 of FIG. 2;

FIGS. 4 and 5 are schematic representations of the action of the roller platens in the forward and reverse directions of travel and;

FIG. 6 is a plan view somewhat diagrammatic showing a three roller platen assembly.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing and for the present to FIGS. 1-5 one embodiment of a data recorder according to this invention is shown. As can best be seen in FIG. 1 the data recorder includes a base designated generally as 10 which is provided with a bed 12 on the upper side thereof which bed is adapted to support printing elements in the form of a credit card 14 and an auxiliary plate 16. The bed also includes means to hold a form, shown in broken outline and designated with a reference character 18, in superimposed relationship over the credit card 14 and auxiliary plate 16 to receive the printing. A platen carriage designated generally as 20 is provided which includes a cover 22 shown removed for clarity of illustration. The platen carriage 20

includes an inverted U frame 23 mounted to move in tracks 24 from the home position, shown in FIG. 1 at the extreme left hand of the bed, to an actuated position, at the right hand of the bed, and return to the home position or a printing cycle. The platen carriage 20 also includes a pair of roller platens 28 and 30 mounted on said frame 23.

The details of the mounting of the roller platens 28 and 30 are best shown in FIGS. 1-5 to which Figures reference is now made. The roller plates 28 and 30 are mounted on shafts 32 and 34 respectively which shafts in turn are rotatably mounted on yokes 36 and 38 respectively. The yoke 36 is mounted on a pivot rod 40 extending between the legs of the frame 23 and the yoke 38 is similarly mounted on a similar pivot rod 41, also extending between the legs of the U frame 23. The rod 40 is movable vertically by being mounted in elongated slots 42 in opposite legs of the frame 23. Also, similarly, the rod 41 is movable vertically by being mounted in elongated slots 43 in opposite legs of the frame 23. Also, the pivot rods 40 and 41 are laterally spaced thus laterally spacing the two roller platens 28 and 30. Further, the yokes 36 and 38 are so mounted on the pivot rods 40 and 41 respectively that the roller platens 28 and 30 are longitudinally spaced with respect to each other, so that the platen 30 is positioned to coact with the credit card 14 to cause the printing therefrom whereas the platen 28 is positioned to coact with the auxiliary plate 16 to perform the printing therefrom. Thus the mounting of the roller platens 28 and 30 is such that they are spaced laterally and longitudinally with respect to each other.

In order to adjust the height of the roller platen 30, and thereby adjust the printing pressure thereof, a pair of screws 44 are provided which are threadably engaged through the top of the U frame 23, and pivotally secured to the pivot rod 41. A pair of springs 45, under tension extend between the top of rod 41 and the underside of the frame 23, surrounding the screws 44. Hence the coaction of the screws 44 and springs 45 will raise or lower rod 41, thus changing the printing pressure generated by roller platen 30. A similar arrangement of screws 46 and springs 47 cooperating with rod 40 provide for independent adjustment of the pressure generated by roller platen 28.

The platen carriage 20 is also provided with a stop bar 48 extending between the legs of the U frame 23 and positioned between the yokes 36 and 38 as can be seen in FIG. 3. This will positively define a printing position of the platens.

FIGS. 4 and 5 show diagrammatically the printing function of the two platens upon movement of the carriage from its left or home position shown in FIG. 1 to its actuated position at the extreme right of FIG. 1 and then return from the actuated position to its home position. Referring now to FIG. 4 which shows the carriage movement from the home position to the actuated position; i.e., from the left to the right, the weight of the platen 30 and the mounting of its yoke 38 on the pivot rod 41 causes the platen to normally pivot down and rest on the form on the bed. Upon movement to the right the pressure on the platen 30 caused by the interference of the form on the printing plates will cause the yoke 38 to pivot against the stop bar 48 which will hold the platen in position to apply sufficient pressure to the form to generate a printing function.

Similarly, in FIG. 5 wherein the carriage is being moved right to left, the force generated will cause the platen 28 to be forced into printing engagement rolling over the auxiliary plate 16 with its yoke 36 in engagement with stop bar 48 whereas the platen 30 will be pivoted out of printing engagement and will ride lightly over the credit card 14 without additionally printing.

Thus it can be seen that inherent in the suspension of the printing device is the printing action of one platen upon movement in one direction while the other platen idles whereas movement in the opposite direction causes the other platen to print while the first one idles.

It is desirable in performing the printing function that each of the platens pivot to an over center position; i.e., that the axis of the shaft on which the roller platen is mounted pivot past a plane normal to the bed 12 and passing through the pivot rod (40 or 41) mounting the roller platen. This plane for the platen 30 is designated as P1 and for platen 28 is designated as P2. As can be seen in FIG. 4 the center of the shaft 34 mounting the platen 30 is pivoted past plane P1 on the side of plane P1 opposite the direction of travel. The same thing is true of the platen 28 with respect to plane P2 when the path of travel is in the opposite direction. This configuration is very desirable since it will tend to maintain printing pressure even if there is a non-uniform movement of the carriage in either direction.

FIG. 6 shows another embodiment of the invention wherein a plurality of three roller platens instead of two is shown but utilizing two shafts. The three roller platens 92, 94 and 96 allow for a selection of different material consistency roller platens and also provide different printing functions in opposite directions. The mounting of the platens may be as in the previously described embodiment. This particular arrangement is especially useful where there is large number of lines to be printed which would cause extremely high or excessive forces and where different printing characteristics are required.

What is claimed is:

1. A data recording device for effecting the transmittal of data from a plurality of printing elements to a form, said device comprising:

a bed for holding the plurality of printing elements and the form;

a platen carriage connected with said bed and movable back and forth relative to said bed along a path extending over the plurality of printing elements;

a first roller platen connected with said platen carriage and rotatable about a first axis extending transversely to the path, said first roller platen being movable between a printing position in which said first roller platen is effective to effect the transmittal of data from a first one of the plurality of printing elements to the form during movement of said platen carriage in a first direction along the path and a nonprinting position in which said first roller platen is ineffective to effect the transmittal of data from the first one of the plurality of printing elements to the form during movement of said platen carriage in a second direction along the path;

a second roller platen connected with said platen carriage in a transversely spaced-apart relationship with said first roller platen and rotatable about a second axis extending generally parallel to and

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transversely spaced apart from said first axis, said second roller platen being movable between a printing position in which said second roller platen is effective to effect the transmittal of data from a second one of the plurality of printing elements to the form during movement of said platen carriage in the second direction along the path and a non-printing position in which said second roller platen is ineffective to effect the transmittal of data from the second one of the printing elements to the form during movement of said platen carriage in the first direction along the path, said first and second roller platens being disposed in a spaced-apart relationship along the path of movement of said platen carriage with one of said roller platens leading the other of said roller platens during movement of said platen carriage in the first direction along the path and with said other roller platen leading said one roller platen during movement of said platen carriage in the second direction along the path; means for supporting said first roller platen in its non-printing position during movement of said platen carriage in the second direction across the first one of the plurality of printing elements and for subsequently enabling said first roller platen to move to its nonprinting position, said means for supporting said first roller platen including a first longitudinally extending support element connected with said first roller platen and said platen carriage and having a longitudinal axis extending parallel to said first and second axes, means for maintaining said first roller platen in its printing position during movement of said platen carriage in the first direction across the first one of the plurality of printing elements; means for supporting said second roller platen in its nonprinting position during movement of said platen carriage in the first direction across the second one of the plurality of printing elements and for subsequently enabling said second roller platen to move to its nonprinting position, said means for supporting said second roller platen including a second longitudinally extending support element spaced transversely apart from said first longitudinally extending support element and connected with said second roller platen and said platen carriage, said second longitudinally extending support element having a longitudinal axis extending paral-

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lel to said first and second axes; and means for maintaining said second roller platen in its printing position during movement of said platen carriage in the second direction across the second one of the printing elements.

2. A data recording device as set forth in claim 1 wherein said means for supporting said first roller platen in its nonprinting position and for enabling said first roller platen to move to its printing position includes means for enabling said first roller platen to move from its nonprinting position to its printing position under the influence of forces transmitted to said first roller platen from the first printing element and wherein said means for supporting said second roller platen in its nonprinting position and for enabling said second roller platen to move to its printing position includes means for enabling said second roller platen to move from its nonprinting position to its printing position under the influence of forces transmitted to said second roller platen from the second printing element.

3. A printing device as set forth in claim 1 further including first means for adjusting the pressure applied by said first roller platen against the first printing element during movement of said platen carriage in the first direction across the first printing element; and second means for adjusting the pressure applied by said second roller platen against the second printing element during movement of said platen carriage in the second direction across the second printing element.

4. A data recording device as set forth in claim 1 wherein said means for supporting said first roller platen in its nonprinting position and for enabling said first roller platen to move to its printing position includes first drive means for moving said first roller platen from its nonprinting position to its printing position, and wherein said means for supporting said second roller platen in its nonprinting position and for enabling said second roller platen to move to its printing position includes second drive means for moving said second roller platen from its nonprinting position to its printing position.

5. A data recording device as set forth in claim 4 wherein said first drive means includes a first eccentric connected with said first roller platen and said second drive means includes a second eccentric connected with said second roller platen.

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