

April 28, 1970

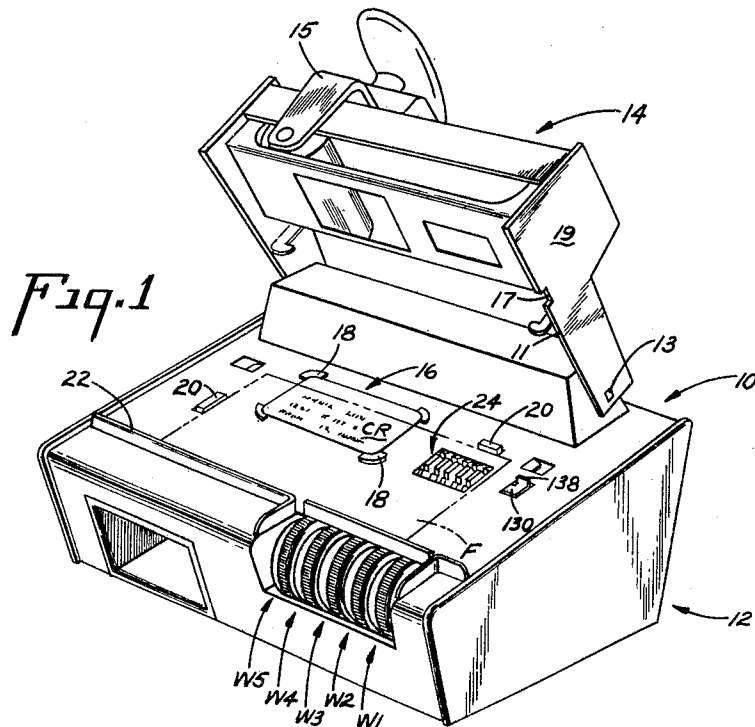
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3,508,488

PIVOTAL HEAD CARRYING A PLATEN ROLLER IN DATA RECORDERS

Filed Jan. 18, 1968

2 Sheets-Sheet 1



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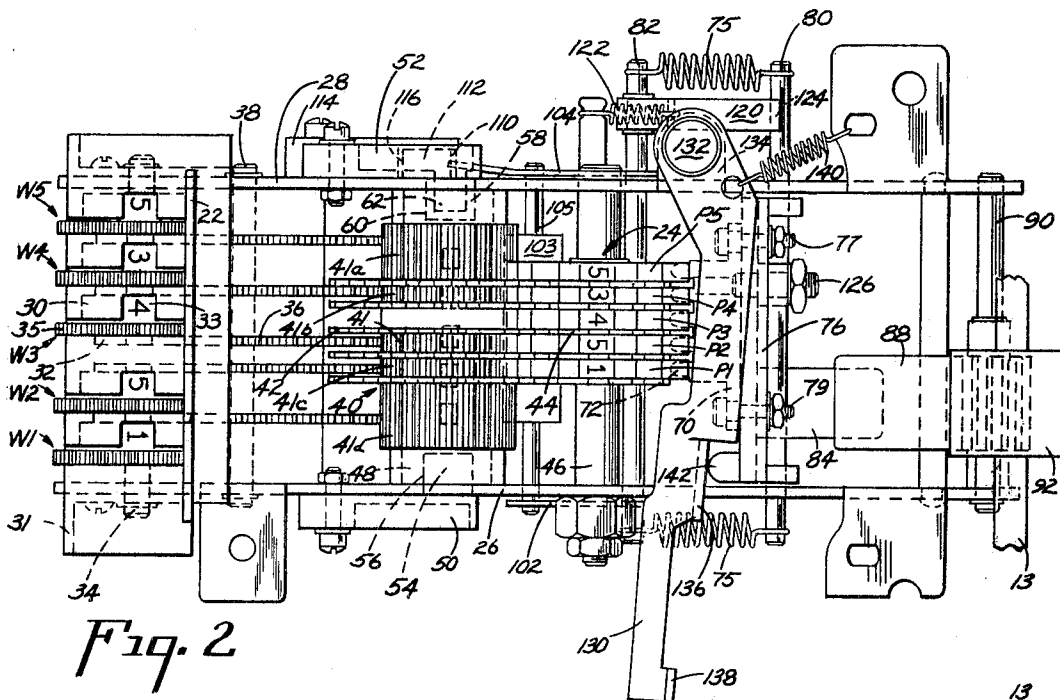


Fig. 2

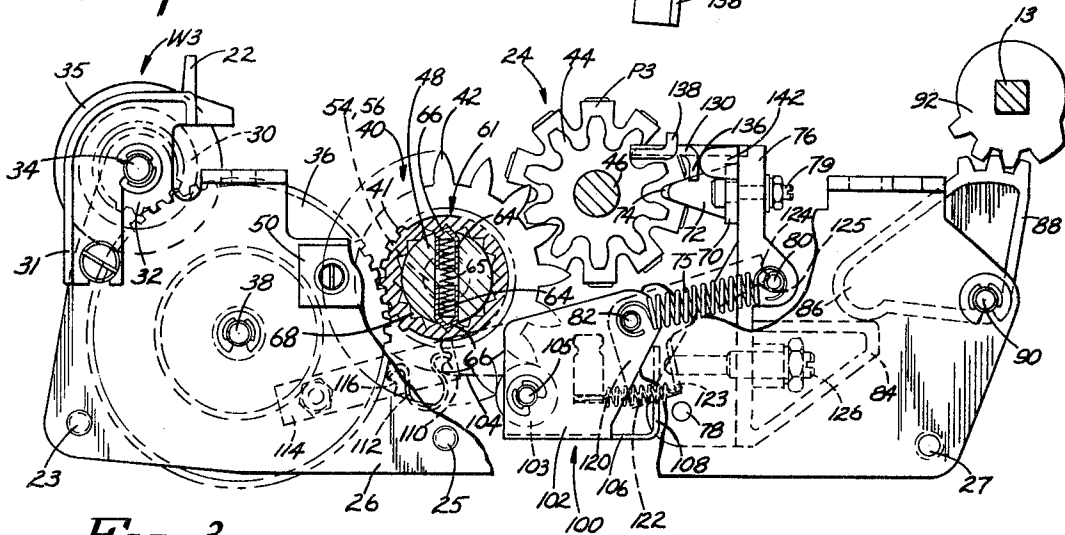


Fig. 3

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PIVOTAL HEAD CARRYING A PLATEN ROLLER IN DATA RECORDERS

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7 Claims

ABSTRACT OF THE DISCLOSURE

A data recorder which has a printing head pivotally mounted on a base and movable between an open inactive position and a closed printing position includes a roller platen supported on the printing head and adapted to be moved across the base to imprint a form from an embossed plate when the head is in closed position. Variable amount print wheels are rotatably mounted on the base and are selectively settable under control of thumb operated wheels for imprinting variable data on the form simultaneously with the imprinting of the fixed data from the embossed plate. A lock-out device associated with the variable print wheels prevents closing of the printing head in those instances wherein at least one of the print wheels is not reset.

Background of the invention

Sales slips were once entirely handwritten with a carbon copy being made for the customer. Then the advent of the embossed metal plates for department store charge purposes eventually led to the more complete embossed plastic credit cards so widely known and used currently. Such cards contain various information in addition to the customer's name, and are employed as source-data in a printing machine which causes a roller to press an interleaved carbon set against the surface of the plate. Other information is handwritten onto the form before the transaction is completed.

Machines have been developed, such as the one shown in U.S. Patent No. 3,138,091, wherein a series of wheels having a plurality of faces, each face carrying different indicia, are held in a group and aligned with the position in which the credit card is placed for printing. Thus, variable information, such as the dollar amount of the transaction, can be added at the end of the printing stroke and be imprinted onto the form along with the fixed information. Use of a variable printing device along with fixed printing devices enables the printing of this necessarily exact information, in order to avoid errors due to illegible handwriting.

This type of data recorder is commonly used in oil service stations or other retail outlets to record name, address and account number of the customer as well as the amount of the sale. The variable print wheels may be provided with stylized numerals, or they may be provided with codes associated with each of the different numerals provided on the print wheels, or both. Subsequently, the codes or stylized numerals imprinted on the forms are machine read with automatic data processing equipment. These same codes and/or stylized numerals are also provided on the embossed card, in association with the account number, and are accordingly also imprinted on the form for subsequent machine reading.

The present invention provides an improved variable print wheel setting mechanism and incorporates in cooperative relation therewith a platen structure such as that of said Patent No. 3,138,091, whereby to provide an improved data recorder capable of providing accurate im-

pressions both from tokens and from settable wheels by a compact machine of enhanced performance capable of being manufactured at significantly reduced cost.

U.S. Patent No. 3,334,582 shows a lock-on device for a data recorder of the kind, for example, disclosed in said Patent No. 3,138,091, wherein the print wheels are settable through the facilities of a gear and rack means under control of key set levers, to prevent operation of the data recorder in the event that the operator forgets to reset the variable data print wheels after the previous printing operation. However, the lock-out device of the present invention differs from the patented device in that, although it comprises a stop member effective to prevent closing of the printing head in those instances wherein at least one of the print wheels is not reset, the setting mechanism of the print wheels does not include the gear and rack means controlled by levers. Rather, the present invention includes novel means for actuating the lock-out device and for selectively positioning the print wheels by means of manually operated indexing or thumb wheels. This arrangement not only provides for operator convenience of operation but, also, permits the construction of a relatively inexpensive, compact data recorder.

Further, the data recorder of the present invention includes an improved and simplified arrangement to prevent operation of the data recorder in those instances where the variable amount print wheels have not been repositioned from an immediately preceding printing operation. Movement of only a single print wheel is effective to displace the stop member to thereby permit operation of the machine.

The data recorder of the present invention provides for imprinting onto a form fixed data from a customer's credit card and variable data from selectively settable print wheels. The fixed data may include the name and address of the customer and an account number, and the variable data may pertain to, for example, the money amount of the transaction. Advantageously, the account number on the credit card and the numerals on the print wheels may be stylized characters of the kind used for optical character recognition or magnetic ink character recognition (MICR). In this way, the forms imprinted on the data recorder can be processed accurately and rapidly with automatic data processing equipment.

The data recorder of the present invention also includes a novel positioning means for setting the variable print wheels under control of thumb operated wheels. The positioning means provide for the construction of a compact machine wherein the thumb wheels are spaced only a short distance from the print wheels, even though the print wheels are nested in closely spaced printing relation and the thumb wheels must be spaced apart from each other to provide sufficient clearance to permit convenient manipulation thereof by the operator.

Other objects, features and advantages will appear hereinafter as the description proceeds.

In the drawings

FIG. 1 is a perspective view of a printing machine constructed in accordance with this invention, showing the printing head in an open, non-printing position;

FIG. 2 is a top plan view of a variable data printing unit; and

FIG. 3 is a side elevation, partially broken away, of the variable data printing unit showing in detail components thereof when the printing head is in a closed position, the view being taken as though seen from the bottom in FIG. 2.

Description of the preferred embodiment

As shown in FIG. 1, the printing machine is indicated generally by the reference numeral 10 and comprises a

base 12 and a printing head 14. The printing head 14 is pivotally mounted on a square-ended pivot rod 13 provided on the base, and is adapted for movement into and out of a printing position on the base. The printing head also includes a roller platen carriage 15 manually movable in a path across the base to effect an imprinting operation when the printing head is closed.

In FIG. 1 the printing head is shown in an elevated, non-printing position and in FIGS. 2 and 3 the parts may be considered to be in a printing position with the printing head closed or lowered.

With reference to FIG. 1, a bed or printing station, indicated generally by the reference numeral 16, is disposed generally medially between the sides of the base and somewhat above the central portion of the base. The bed is provided with corner guides 18 for retaining an embossed credit card CR, and side guides 20 are provided for retaining a carbon interleaved form F to be printed. The bottom edge of the form F is held and registered against a rail 22 provided at the front of the base 12.

Also included in the printing machine is a variable data print unit indicated generally at 24, comprising print wheels P1 to P5, and thumb or finger operated indexing wheels W1 to W5 for manually positioning the print wheels as will be further explained hereinafter.

Before proceeding with the description of the variable data print unit, it should be pointed out that while five variable print wheels are shown in the drawings of the present invention, the machine may be provided with any number of such wheels. Also, since the set of mechanism comprising an indexing wheel, corresponding print wheel and associated mechanism related to each digit are identical in operation with those related to other digits, only one set will be described hereinafter.

As shown in FIGS. 2 and 3, the variable data print unit is a self-contained assembly in which all of the mechanism is supported by a pair of side plates 26 and 28 which are rigidly held in spaced apart relation by tie rods such as 23, 25 and 27. The complete assembly is resiliently mounted to the underside of the bed 16 (not shown in the drawings) such that the character on the selected face of the print wheel extends upwardly through an opening in the bed 16 to lie in a printing plane as shown in FIG. 1.

The indexing wheels W1-W5 are also a part of the variable data print unit assembly, and are positioned at the front of the unit so that they are within easy reach and the characters selected for printing are in full view to the machine operator.

For purposes of this disclosure, the set of mechanism associated with the indexing wheel W3 will be described, it being understood that the other sets are similar as mentioned above. The indexing wheel W3 is preferably made of molded plastic to provide an integral unit comprising a hub 30, a pinion 32 and a knurled actuating flange 35, and is rotatably supported on a shaft 34 provided in the side plates 26 and 28.

Digits 0 to 9 are provided on the periphery of the hub 30 and correspond to similar digits on the print wheel P3. A cover 31 encloses the indexing wheels such that only the knurled actuating flange of each wheel is exposed for manipulation by the machine operator. The cover 31 is also provided with suitable windows 33 to permit viewing of the digits on the hub 30 for selecting the characters to be printed by the print wheels.

The pinion 32 is in mesh with an idler gear 36, also preferably made of plastic, which is rotatably mounted on a shaft 38 supported in the side plates 26 and 28. The idler gear 36, in turn, is in mesh with a molded plastic detent gear unit indicated generally at 40 comprising an extension gear 41, a gear wheel 42 having sharp pointed ogival teeth, and a detenting means which affords an initial or coarse setting of the print wheels as will be further explained below.

Gear wheel 42 meshes with a pinion 44 provided inte-

gral with the print wheel P3 as shown in FIG. 3, and wheel P3 is rotatably mounted on a fixed shaft 46 provided in the side plates 26 and 28. The detent gear unit 40, on the other hand, is rotatably mounted on a shaft 48 which is non-rotatably supported between the side plates 26 and 28 as will now be described.

As shown in FIG. 2, the shaft 48 is supported by a pair of retainer members 50 and 52, the retainer member 50 being fastened to the outside face of side plate 26 and the retainer member 52 being fastened to the outside face of the side plate 28. The ends of the shaft 48 are each provided with a blind hole 56 and 60, and the retainer members are each provided with projections 54 and 58 which extend through suitable openings in the side plates and into the holes 56 and 60 respectively of the shaft 48. The projection 58 is provided with a flat 62, and the hole 60 is provided with a corresponding flat, to prevent the shaft from rotating and, also, to maintain proper positioning and alignment of a detenting means which serves to provide a positioning function for the print wheels as will presently appear.

The detenting means is best shown in FIG. 3 and comprises a square-shaped, spring loaded plunger indicated generally at 61 which is positioned within a correspondingly shaped opening provided in the shaft 48. The plunger is made up of two complementary cap members 64, 64 each provided with a sharp pointed nose 66, 66. The caps are hollowed out for the reception of a spring 65 which urges the cap members apart such that the pointed nose of each cap extends beyond the diameter of the shaft 48.

The surface of the bore of the detent gear unit 40 is provided with a plurality of equally spaced detent notches 68 conforming in shape to the nose 66, 66 of the cap members 64, 64. Thus, the detent gear unit 40 is rotatable on the fixed shaft 48 and the plunger 61, as a result of the noses 66, 66 at each end thereof engaging diametrically opposed notches 68, serves to yieldably arrest and position the gear unit 40 at predetermined rotary positions. Accordingly, as the indexing wheel W3 is rotated to position the print wheel P3 for a selected character to be printed, the detent gear unit is also rotated and the plunger 61 coacting with the notches 68 provides the machine operator with a positive indication for each digit position on the indexing wheel which, of course, corresponds to a similar digit on the variable print wheel P3.

Because the print wheels P1-P5 are positioned axially in such a compact array, the centerline spacing of adjacent print wheels is insufficient to provide for effective individual working contact by the operator's fingers. Although the setting of the print wheels is not intended to be made by finger contact and movement of the independent print wheels, the condition of close spacing would not be improved if the actuating flanges 35 and the related gears and pinions provided for setting the print wheels were positioned in lateral alignment with the centerline spacing of the print wheels. Accordingly, the present invention provides a novel arrangement in which the indexing wheels W1-W5 jointly occupy a total axial distance substantially in excess of that occupied jointly by the print wheels, to allow for operator finger contact with the actuating flanges individually to effect independent movement thereof.

It is to be understood that each of the print wheels P1-P5, and related indexing wheels W1-W5, is associated with a detent gear unit such as the gear unit 40, and each gear unit includes an extension gear indicated at 41a, 41b, 41c and 41d similar to the extension gear 41 of the gear unit 40. Also, the detent gear units are not all of the same width i.e., and as shown in FIG. 2, the extension gears 41a and 41d at the ends of the shaft 48 are the same and have an axial length substantially greater than the centerline spacing of the print wheels, and the other extension gears 41, 41b and 41c are of a different width. This arrangement provides the required lateral spacing of the detent gear units so as to provide for driving the

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closely positioned print wheels P1-P5 and, at the same time, to accommodate the wider spread of the indexing wheels W1-W5 required to obtain a workable spacing between each of the actuating flanges 35.

This novel arrangement of laterally spreading out the rotary gear train, from the closely positioned print wheels P1-P5 to the spread apart actuating flanges of the indexing wheels W1-W5, is afforded by the extension gears 41, 41a, 41b, 41c and 41d. Thus, and as viewed from the left in FIG. 2, each of the pinions such as 44 on the print wheels is positioned to the right side of its corresponding print wheel, and the gear extensions 41d, 41c and 41a associated with the print wheels P1, P2 and P3 respectively are similarly positioned on the right sides of their corresponding integral gear wheels 42. However, the gear extensions 41b and 41a associated with the print wheels P4 and P5 respectively are positioned on the opposite or left sides of their integral gear wheels 42.

Additionally, the pinion 32 on the indexing wheel W3 is positioned on the side of the wheel opposite the hub 30, as are the pinions on the indexing wheels W4 and W5, while the pinions on the indexing wheels W1 and W2 are positioned on the same side of the wheel as the hub.

In this way, the extension gears 41-41d afford wide lateral spacing to accommodate the wide spacing between the idler gears, such as 36, corresponding to the spacing between the pinions on the indexing wheels and, also, permit close together positioning of the gears such as 42 which mesh with pinions on the corresponding print wheels.

Further, see FIG. 2, the spacing arrangement of the indexing wheels provides a wider space between the wheels W2 and W3 than between any other adjacent pair of wheels, thereby affording a distinct separation between the dollar amount and the cents amount to facilitate setting of the variable data printing wheels by the operator.

In order to accurately position the print wheels P1-P5 and to hold them against movement during an imprinting operation, the machine is provided with a pawl member 70 comprising a plurality of teeth 72, one for each print wheel, adapted to engage and align notches such as 74 in the peripheries of the print wheels. The pawl member 70 is mounted on a shuttle 76 by screws 77 and 79, and the shuttle is pivotally mounted on a rod 78 supported in the side plates 26 and 28.

A pair of springs 75, 75 are provided to bias the shuttle 76 in an anticlockwise direction as viewed in FIG. 3, to thereby urge the teeth 72 into engagement with the notches 74 in the print wheels. These springs are connected at one end to a pin 80 provided in the shuttle, and at their other ends to a pin 82 supported in the side plates 26 and 28.

The shuttle 76 is also provided with an extension or arm 84 adapted to be engaged by a cam portion 86 of a gear sector 88. The gear sector is rotatably mounted on a shaft 90 provided in the side plates 26 and 28, and is in mesh with a gear segment 92 fixed on the rod 13 such that it is rotated in either direction in response to opening and closing of the printing head 14. Thus, when the printing head is moved to open position, the gear segment 92 is rotated in a clockwise direction as viewed in FIG. 3 and the gear sector 88 is rotated in a counterclockwise direction. This rotation causes the cam portion 86 of the gear sector to act against the extension 84, and pivots the shuttle 76 in a clockwise direction about the rod 78 and against the bias of the springs 75, 75 to effectively withdraw the teeth 72 out of engagement with the notches 74 in the print wheels. It is to be understood that when the printing head 14 is moved to the closed position, reverse movement of the parts takes place such that the teeth 72 are urged into engagement with the notches 74 as the shuttle 76 is pivoted by the action of the springs 75, 75.

The lock-out device mentioned earlier to prevent closing of the printing head in those instances wherein at least one of the variable data print wheels is not reset following

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a printing cycle, will now be described with reference to FIGS. 2 and 3. As shown therein, a sensing cradle indicated generally at 100 straddles the side plates 26 and 28 and is pivotally supported on the pin 82. The cradle 100 comprises end walls 102 and 104 which rotatably support a sensing roller 103 on a shaft 105, and a bottom 106 from which is formed an upstanding ear 108. The end wall 104 is provided with a notch 110 which receives one end of a U-shaped over-center spring 112 to retain the sensing cradle 100 in a first or a second position as will be further explained below. The spring 112 is held in place against the side plate 28 by a holder 114 fastened to the outside face of the side plate, and the holder is also provided with a notch 116 which receives the other end of the spring 112 as shown in FIG. 3.

A blocking member 120 is also pivotally mounted on the pin 82, adjacent the outer face of the end wall 104, and is lightly biased by a spring 122 in a clockwise direction as viewed in FIG. 3. The blocking member extends rearwardly from the pin 82 (to the right as seen in FIGS. 2 and 3) and terminates in a recessed nose 124 adjacent the pin 80. It also carries a flange 123 for driven contact with the sensing cradle in one direction of motion.

Turning now to the actual stop means or lock-out device for preventing closing of the printing head 14, there is provided a link 130 mounted transversely of the variable data print unit assembly. The link is pivotally mounted at 132 on a flange 134 formed from the side plate 28, and comprises a depending ear 136 and an upwardly formed ear 138. As shown in FIGS. 2 and 3, the link 130 is biased in a counterclockwise direction by a spring 140.

The ear 138 of the link 130 extends upwardly through an opening in the bed 16 as seen in FIG. 1, and is adapted to be moved between a blocking position in which an edge 11 of a side plate 19 of the printing head 14 strikes the ear 138 and prevents closing of the head, and an unblocking position in which the ear is in the path of a clearance notch 17 in the side plate 19 to permit closing the head, as will be further explained below.

Still referring to FIGS. 2 and 3, it will be seen that the shuttle 76 is also provided with a projection 142 adapted to coact with the ear 136 of the link 130, and an adjustable push rod in the form of a screw 126 having a rounded end portion extending towards the ear 108 of the sensing cradle 100. Assuming the parts to be in an unblocking position with the sensing cradle 100 swung to its counterclockwise limit and the nose 124 of the blocking member 120 accordingly raised slightly above the path of the pin 80) through the offices of the flange 123), as the printing head 14 is moved to the closed position, the shuttle 76 is caused to pivot in an anticlockwise direction, and the rounded end portion of the screw 126 contacts the ear 108 of the sensing cradle and pushes the same, in a clockwise direction, to position the sensing roller 103 to a first or sensing position against a pair of teeth of each of the gear wheels 42 of the detent gear units. This pivotal movement of the sensing cradle 100 also shifts the position of the overcenter spring 112 such that the end of the spring engaged with the notch 110 in the sensing cradle is acting upwardly to maintain the sensing cradle in a set position wherein the sensing roller 103 is engaged with the gear wheels. Also, the pivotal movement of the shuttle 76 moves the teeth 72 of the pawl 70 into engagement with the notches 74 of the print wheels, and causes the projection 142 on the shuttle to contact the ear 136 of the link 130, thereby urging the link in a clockwise direction as viewed in FIG. 2, and moving the ear 138 of the link to an unblocking position into line with the notch 17 (FIG. 1) in the side plate 19 of the printing head.

By this same time, the pin 80 in the shuttle 76 has already moved somewhat under a lower surface 125 of the blocking member 120 thereby preventing the blocking member from following the motion of the sensing cradle 100 and slightly stretching the spring 122. After an impression is made, and in response to movement of the

printing head to the open position, the shuttle 76 is pivoted in the opposite direction withdrawing the pawl 70 from engagement with the print wheels and withdrawing the pin 80 from beneath the blocking member so that the latter is drawn into an effective blocking position. Also, the projection 142 is withdrawn from contact with the ear 136 so that the link 130 is urged by the spring 140 to a position wherein the ear 138 is in blocking relation to the side plate 19 of the printing head.

The sensing cradle 100 and the sensing roller 103, of course, remain in the set sensing position described above as a result of the spring 112 biasing the sensing cradle 100 in a clockwise direction as viewed in FIG. 3 so that no interference to return of the blocking member to blocking position is occasioned thereby.

Until such time as at least one of the indexing wheels W1-W5 is reset, the sensing cradle 100 will remain in the sensing position. Therefore, if an attempt is made to close the printing head to perform another printing stroke without resetting a print wheel P1-P5, the pin 80 in the shuttle 76 will strike the recessed nose 124 of the blocking member and prevent normal pivotal movement of the shuttle. The shuttle 76 and the projection 142 thereon will, therefore, fail to drive the link 130 through its full normal angle and hence it will fail to move the ear 138 out of blocking position.

To free the machine for a printing operation, movement of any one of the indexing wheels W1-W5 is effective to impart rotative motion to a corresponding gear wheel such as 42, and this motion is enough to cause the teeth of the gear wheel that are engaged by the sensing roller 103 to nudge the roller and the sensing cradle 100 over center to its second position out of engagement with the gear teeth. As the sensing cradle is moved, the blocking member 120 is also rocked slightly upwardly. In this position the spring 112 is effective to retain the sensing roller 103 out of contact with the gear wheel, and the nose 124 of the blocking member out of the path of the pin 80. The pin 80 is thus free to swing, and the shuttle 76 is accordingly allowed to complete its pivotal movement as the printing head is closed, thereby allowing the projection 142 on the shuttle to move the link 130 and the ear 138 far enough to line up with the notch 17 and thus clear the path of the side plate 19 of the printing head.

It will be seen that the machine is conditioned to permit or to prevent a printing operation and the making of a printed impression from the print wheels and an embossed card depending on the position of the sensing roller 103. Thus, as long as the sensing roller is in contact with the gear wheels the printing head 14 cannot be closed and a is effective to actuate the sensing roller and move it out printing operation is prevented. However, movement of any one of the gear wheels, through the indexing wheels, is effective to actuate the sensing roller and move it out of contact with the gear wheels thereby actuating the conditioning means (i.e., the members 76, 126, 130 and 138) permitting closing of the printing head and the making of a printed impression on a form.

A brief description will now be given of the overall operation of the data recorder of the present invention. As shown in FIG. 1, an embossed token or credit card CR is positioned on the bed 16 of the machine and the form F to be imprinted is placed thereover. Next, the variable print wheels P1-P5 are set through the facilities of the thumb wheels W1-W5, to record data such as the money amount of the sale.

The operator then lowers the printing head 14 to closed position against the base. In response to closing of the head, the shuttle 76 is pivoted causing the sensing roller 103 to be moved to a sensing position against a pair of teeth of each of the gear wheels such as 42, where it is held by the spring 112, and the link 130 to be moved to an unblocking position with respect to the side plate 19 of the printing head. Continued pivoting of the shuttle

76 brings about movement of the pawl 70 into engagement with the substantially aligned notches 74 in the print wheels. Thereafter, movement of the carriage 15 across the bed imprints the form from all of the printing devices provided on the bed of the machine.

When the carriage reaches the end of the printing stroke, the printing head is caused to open and is raised to its inactive position. As the head is being raised, the shuttle 76 is pivoted in the opposite direction to thereby withdraw the pawl 70 from engagement with the print wheels, and to allow movement of the link 130 to a blocking position with respect to the printing head side plate 19. At the same time, the blocking member 120 is allowed to pivot so that the nose 124 thereof is adjacent the pin 80 in the shuttle. The sensing roller, however, continues to be held in engagement with the teeth of the gear wheels.

On removal of the imprinted form and the credit card, the machine is in condition to receive a new credit card and a blank form for another printing operation. However, if the operator fails to perform the operation of setting the variable data print wheels, the printing head will be prevented from being closed by the ear 138 of the link 130.

Movement of any of the thumb wheels is effective, through the gear wheels, to disengage the sensing roller 103 from the teeth of the gear wheels and restore the blocking member 120 to the ineffective position out of the path of travel of the pin 80 in the shuttle 76. The sensing roller continues to be held out of engagement with the teeth of the gear wheels by the spring 112 until such time as another printing operation is performed, the completion of which resets the sensing roller in response to opening of the printing head.

From the foregoing, it will be seen that the present invention provides a data recorder which is admirably suited to imprinting form sets with fixed data from an embossed credit card and variable data from selectively positionable print wheels. It also provides novel means to prevent operation of the machine, by preventing the closing of the printing head, in those instances where the machine operator fails to set the print wheels for imprinting the variable data on the form. These combined features, plus the easy manipulation and the positive detenting means provided by the indexing wheels for accurately positioning the print wheels, result in a data recorder that is reliable in operation, versatile in its use and relatively inexpensive to manufacture.

While the preferred embodiment of the invention has been described and illustrated, it is to be understood that this is capable of variation and modification. Accordingly, the aim in the appended claims is to cover all such variations and modifications as may fall within the true spirit of the invention.

What is claimed is:

1. A data recorder having a base affording a bed for holding printing means and a form to be imprinted;
 - a printing head pivotally mounted on the base and movable between a closed position against the base and an open position spaced from the base;
 - a platen carriage including a roller platen mounted on the printing head and movable across the bed to perform a printing cycle when the printing head is in the closed position;
 - a plurality of settable print wheels in the bed located for printing cooperation with the platen;
 - positioning means for setting each print wheel to a desired setting;
 - shuttle means movable from a first to a second position in response to opening of the printing head, and from the second back to the first position in response to closing of the printing head;
 - stop means movable to a blocking position in which the printing head is prevented from being moved to its closed position in response to movement of the

shuttle means to its second position, and movable to an unblocking position to permit closing of the printing head when the shuttle is moved to its first position;

blocking means movable between a first position effective to prevent movement of the shuttle means to its first position, and a second position to permit movement of the shuttle means to its first position;

means responsive to movement of the printing head to its open position for moving the blocking means to its first position; and

means responsive to movement of one of the positioning means for moving the blocking means to its second position.

2. A data recorder as set forth in claim 1 in which the said two last-named means for moving the blocking means comprise: sensing means movable to a first position in contact with the positioning means in response to movement of the shuttle means to its first position, and to a second position out of contact with the positioning means in response to movement of one of the positioning means.

3. A data recorder as set forth in claim 2 in which there is provided retaining means for holding the sensing means in either of its two positions.

4. A data recorder as set forth in claim 2 in which the positioning means comprises gear wheels with which the sensing means is adapted to move into and out of contact.

5. A data recorder as set forth in claim 4 which also includes pawl means associated with the shuttle means for aligning the print wheels in response to movement of the shuttle means to its first position.

6. A data recorder as set forth in claim 1 in which the positioning means comprises:

a pinion integral with each of the print wheels;

a gear wheel associated with each said pinion and in mesh therewith, each said gear wheel having an extension gear integral therewith;

a rotatable indexing wheel associated with each said gear wheel and having a pinion integral therewith;

an idler gear associated with each said indexing wheel and in mesh with the pinion thereon and with the extension gear;

detent means associated with each said gear wheel for releasably retaining the print wheel in the selected position;

said indexing wheel being effective upon movement thereof to position the corresponding print wheel to the desired setting.

7. A data recorder having a base affording a bed for holding printing means and a form to be imprinted;

a printing head pivotally mounted on the base and including a movable platen carriage rotationally supporting a roller platen, said printing head being movable between a closed position against the base and an open position spaced from the base;

a plurality of settable print wheels in the bed located for printing cooperation with the platen;

positioning means for setting each print wheel to a desired setting comprising;

a pinion integral with each of the print wheels;

a gear wheel associated with each said pinion and in mesh therewith, each said gear wheel having an extension gear integral therewith;

a rotatable indexing wheel associated with each said gear wheel and having a pinion integral therewith,

said indexing wheel being effective upon movement thereof to position the corresponding print wheel to the desired setting;

an idler gear associated with each said indexing wheel and in mesh with the pinion thereon and with the extension gear;

detent means associated with each said gear wheel for releasably retaining the print wheel in the selected position;

shuttle means movable from a first to a second position in response to opening of the printing head, and from the second back to the first position in response to closing of the printing head;

pawl means associated with the shuttle means and movable into engagement with the print wheels for aligning the print wheels when said shuttle means is moved to its first position, and movable out of engagement with the print wheels when the shuttle means is moved to its second position;

stop means movable by the shuttle means to a blocking position in which the printing head is prevented from being moved to its closed position when the shuttle means is moved to its second position, and movable to an unblocking position to permit closing of the printing head when the shuttle is moved to its first position;

sensing means movable to a first position in contact with the gear wheel in response to movement of the shuttle means to its first position, and to a second position out of contact with the gear wheel in response to movement of any one of the indexing wheels;

blocking means movable between a first position effective to prevent movement of the shuttle means to its first position when the sensing means is in its first position, and a second position to permit movement of the shuttle means to its first position when the sensing means is in its second position; and

retaining means for holding the sensing means in its first position when the shuttle means is moved to its second position, and for holding the sensing means in its second position when the blocking means is moved to its second position.

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