

Feb. 10, 1970

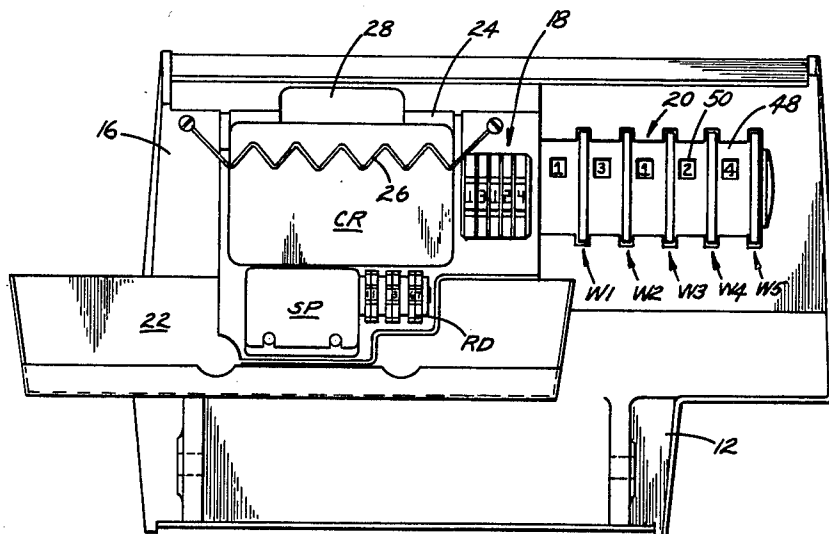
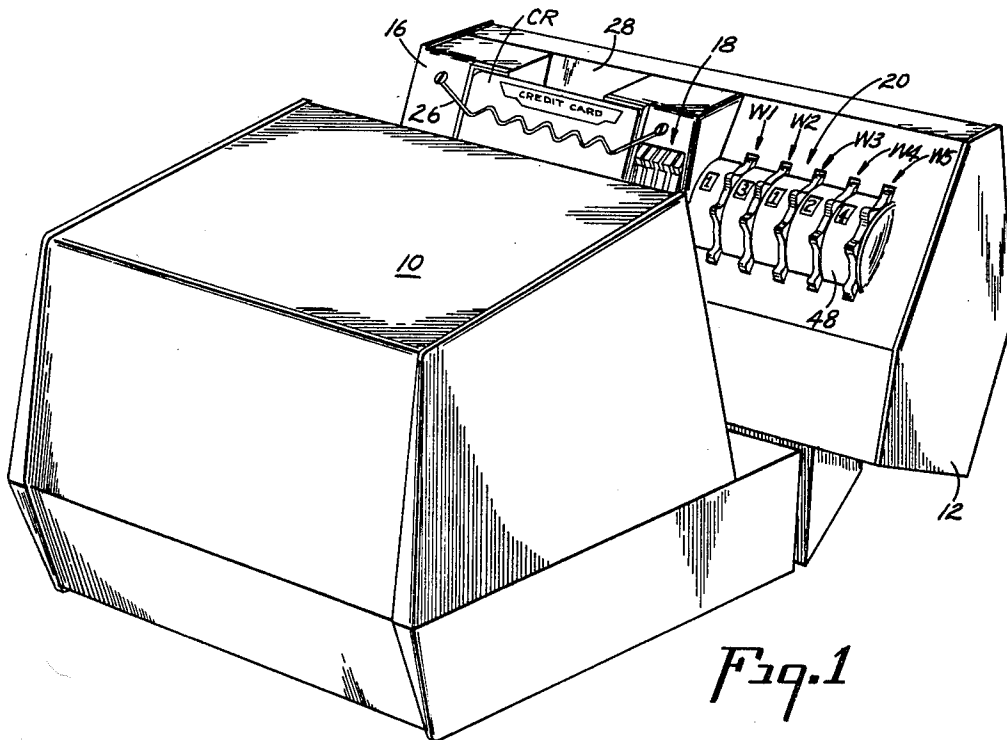
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3,494,282

PRINT WHEEL SETTING MEANS AND PRINT CONTROL MEANS IN TRAVELING
ROLLER BED AND CYLINDER PRINT MACHINES

Filed Feb. 13, 1968

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

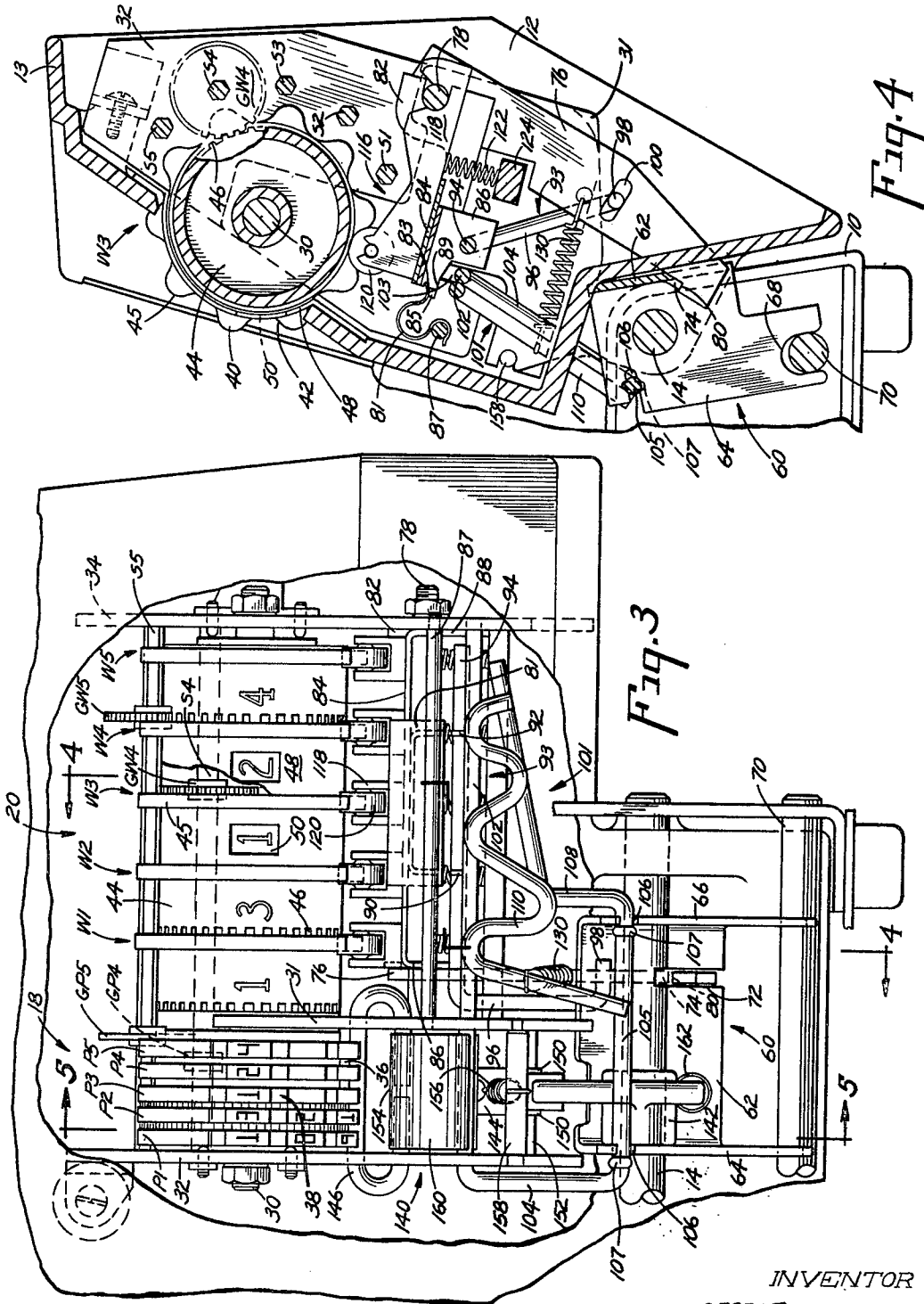


Fig. 3

Fig. 4

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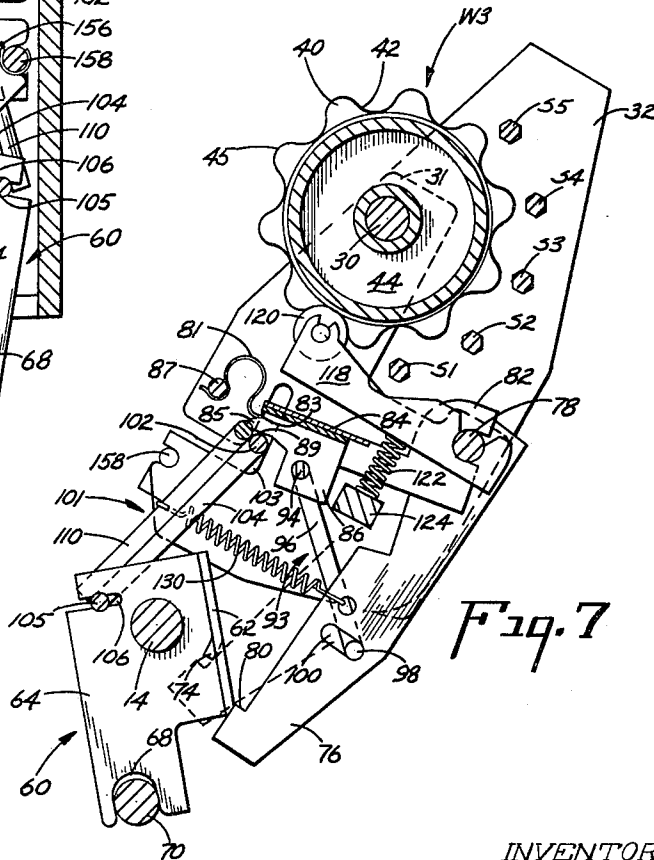
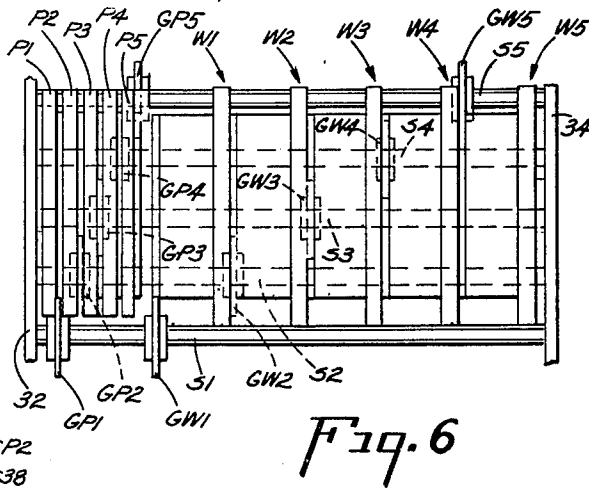
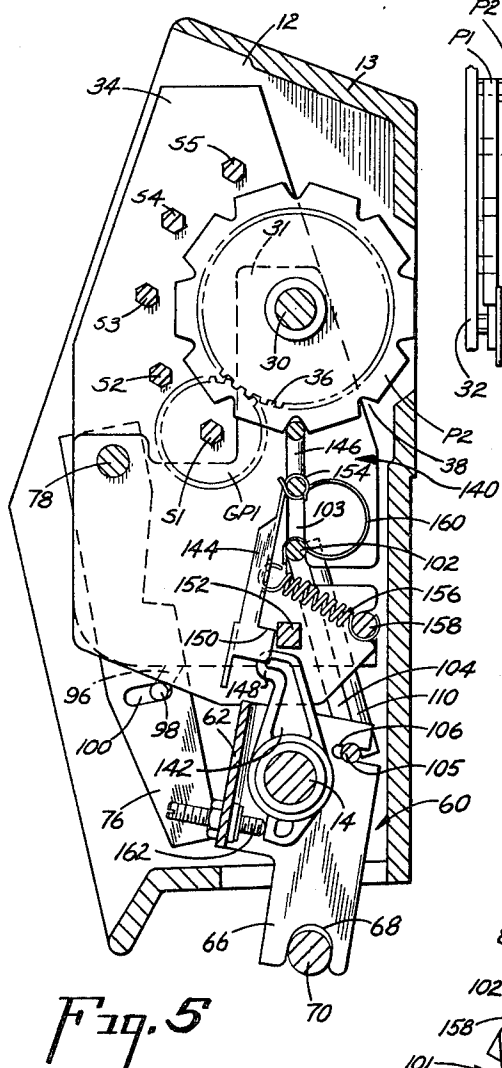
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3 Sheets-Sheet 3



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PRINT WHEEL SETTING MEANS AND PRINT CONTROL MEANS IN TRAVELING ROLLER BED AND CYLINDER PRINT MACHINES

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Int. Cl. B41j 1/22

U.S. Cl. 101—45

11 Claims

ABSTRACT OF THE DISCLOSURE

A power operated data recorder which is roughly cubical. An open-throat effect is obtained by hinging at the bottom the rear wall of the cube, permitting it to open to approximately a 30° angle. The hinged rear section serves as a bed of the machine against which a roller platen is designed to act, and contains means for positioning and retaining an embossed card and a form to be imprinted.

A variable data printing unit is also provided in the movable bed of the machine and includes a plurality of print wheels, settable by manually actuated indexing wheels, for imprinting variable data of the form simultaneously with the imprinting of the fixed data from the embossed card.

The variable data recorder also includes lock-out means to prevent closing of the movable bed in those instances where the variable data print wheels have not been repositioned from an immediately preceding printing operation. Movement of only a single print wheel is effective to release the locking means so that the bed can be closed to thereby permit operation of the machine.

The bed is manually moved to a closed position which activates the machine, setting the roller platen in motion to effect an imprinting operation. When the platen reaches the end of the printing stroke, the bed of the machine opens, the platen returns to its home position and the machine shuts off.

Data recorders are currently being used in a wide variety of applications for imprinting various types of forms, documents and the like. In many cases these data recorders include roller platens and are designed for a manual operation wherein the operator grasps the platen carriage and causes the roller to pass over a form and a printing member lying on the bed to cause an impression of the data on the printing member to be made on the form.

Data recorders of the foregoing kind have met with a certain amount of success, although the manual operation associated with these machines, and the fact that the same machine is frequently operated by various people during a normal work period, result in non-uniformity in the quality of the printed impressions on the forms. Also, in those cases where the data recorders are utilized for fairly high production by a single operator, the manual actuation of the machines becomes tedious and undesirable.

An electrically operated data recorder which avoids the problem of non-uniformity implicit in manual operation, but which can still be provided in a price range such that effective use for ordinary data recorder purposes is not precluded, is disclosed in Patent No. 3,420,171, issued Jan. 7, 1969. As shown therein, the data recorder includes a bed section hinged to a base to provide an open-throat for the reception of the embossed card and the form to be printed. The platen is automatically set in printing motion when the bed is pivoted to closed position against the base and, on completion of a printing stroke, the bed is automatically opened to avoid double imaging of the form as the platen moves back to its home position.

An object of the present invention is to provide a data recorder of the kind, for example, disclosed in the above patent, but which also includes a variable data printing unit for imprinting numerals from manually positionable variable print wheels, and a lock-out means to prevent closing of the bed against the base to perform a printing operation unless at least one of the print wheels has been reset following a previous printing operation.

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 sales transaction. Advantageously, the account number on the credit card and the numerals on the variable amount 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 printed 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 lock-out arrangement to prevent operation of the data recorder in the event that the operator forgets to reset the variable data print wheels after each printing operation. To eliminate the possibility that the store clerk, station attendant, etc. may record a new sales transaction using the information set into the variable data print wheels for a previous transaction, the present machine requires that at least one of the print wheels be moved or reset before the bed can be closed against the base and an impression on the form can be made.

The data recorder of the present invention also includes novel positioning means for positioning the print wheels to the desired setting, and sensing means controllably associated with the positioning means for conditioning the machine for either a printing operation or to prevent a printing operation.

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

In the drawings:

FIG. 1 is a front-right perspective of an electrically operated data recorder constructed in accordance with the present invention in idle position with the bed open;

FIG. 2 is a face view of the bed layout;

FIG. 3 is a front elevation of the bed with portions of the bed frame broken away to expose a variable data printing unit, showing the parts as they appear after the bed is closed and just before the printing stroke has begun;

FIG. 4 is a section taken on the line 4—4 of FIG. 3 but showing the parts as they appear when the bed has been moved slightly towards closed position from open position, but is latched against closing;

FIG. 5 is a section taken on the line 5—5 of FIG. 3;

FIG. 6 is a front elevation, in schematic and on a reduced scale, of a gear drive means for setting the variable data print wheels; and

FIG. 7 is a section similar to FIG. 4, but omitting the bed frame and showing the parts as they appear when the bed is in fully opened position, and unlatched and ready to be closed, with the alternate position of the latch shown in broken lines.

DESCRIPTION OF THE PREFERRED EMBODIMENT

As shown in FIGS. 1, 3, 4 and 5, the data recorder of the present invention comprises a base 10 and a hinged bed 12 including a frame 13, adapted for movement between open and closed positions, pivotally supported on a shaft 14 provided in the base. With reference also to

FIG. 2, the bed provides an anvil 16 for supporting thereon an embossed credit card CR, a station plate SP, a rotary dater RD, and variable data print wheels indicated generally at 18. Finger operated indexing or thumb wheels, as indicated generally at 20, are provided for selectively positioning the print wheels, and a form gauge 22 for retaining a form to be imprinted is likewise provided. The credit card CR is positioned within a cavity 24 provided in the anvil and is held in place by a flexible spring member 26 which engages the upper portion of the face of the card outside of the embossed area. A finger recess 28 is also provided in the bed to facilitate placement and removal of the card CR.

Before proceeding further with the description of the present invention, it should be pointed out that the power drive mechanism and roller platen assembly of the present machine are substantially the same as that disclosed in the aforementioned Patent No. 3,420,171 and, therefore, a detailed description and illustration thereof are not included herein. Briefly, in the operation of the machine, movement of the bed 12 to closed position is effective to close a switch and energize a motor. The motor, through a crank arm and drive fork, drives the roller platen through a printing operation (from left to right as viewed in FIG. 2) across the bed of the machine. When the roller platen reaches the end of its printing stroke at the right end of the machine, the bed 12 is caused to open. However, the motor remains energized to drive the roller platen back to its start position, with the bed open to prevent double imaging of the form. In response to the roller platen reaching its start position, the switch is opened to shut off the motor and stop the machine.

The present invention is directed to a novel variable data printing unit including a print wheel retaining and aligning device, and a lock-out arrangement to prevent operation of the machine if at least one of the variable data print wheels is not reset following a preceding printing operation, for use with, for example, a data recorder of the kind disclosed in the above referred to patent. Accordingly, for brevity and ease of understanding, this disclosure covers only the novel inventive features over and above those of the above patent.

With reference to FIG. 3, there is shown in detail the relationship of the various parts of the variable data printing unit and lock-out mechanism as they appear when the bed 12 is closed against the base and just prior to a printing operation. This is a self-contained assembly which can be mounted or removed from the machine as a unit.

The variable data print wheels 18 and the indexing wheels 20 are rotatably mounted on a fixed shaft 30 supported in a pair of side plates 32 and 34 and an auxiliary side plate 31. Although only five print wheels are shown, indicated at P1, P2, P3, P4 and P5, and five corresponding indexing wheels indicated generally at W1, W2, W3, W4 and W5, it will be understood that this is merely representative and 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 mechanisms related to each digit are identical in operation with those related to other digits, only one set will be described hereinafter.

The print wheels P1-P5 are preferably made of molded plastic and include type faces bearing printing characters 1-9. Also, each print wheel is provided with an integral pinion such as 36, and a notch or a groove 38 between each of the type faces for positioning and aligning the print wheels as will be further explained below.

The indexing wheels W1-W5 each include an actuating flange such as 45 having a serrated periphery providing a plurality of uniformly spaced projections 40 and letent notches 42, see FIGS. 4 and 7. Additionally, each indexing wheel is provided with a hub 44 having gear teeth 46 at one end thereof. Each of the indexing wheels is also preferably made as a unitary member of molded plastic. The hubs 44 are further provided with digits 0-9

corresponding to the digits on the print wheels, and covers 48 (see FIG. 4) having windows 50 therein enclose the indexing wheels such that only the digits selected for printing are exposed through the windows. As shown in FIG. 3, the cover 48 has only been shown in association with the indexing wheels W3 and W4, but it is to be understood that a cover also encloses each of the other indexing wheels.

With reference to FIGS. 3, 4 and 6, it will be seen that each indexing wheel such as W4 and corresponding print wheel such as P4 have associated therewith a shaft such as S4 which is rotatably mounted in the side plates 32 and 34. The shaft 34 is provided with a pinion GW4 fixed on the shaft and in mesh with the gear teeth 46 on the hub of the indexing wheel W4, and a second pinion GP4 fixed on the shaft and in mesh with the pinion such as 36 of the print wheel P4.

It will be appreciated that similar shafts and pinions are associated with each pair of indexing and print wheels, as shown in FIG. 6, as follows:

P1 and W1 are associated with a shaft S1 and pinions GP1 and GW1 respectively;

P2 and W2 are associated with a shaft S2 and pinions GP2 and GW2 respectively;

P3 and W3 are associated with a shaft S3 and pinions GP3 and GW3 respectively; and

P5 and W5 are associated with a shaft S5 and pinions GP5 and GW5 respectively.

With reference to FIGS. 4, 5 and 7, each of the print wheels P1-P5 is positionable to present a selected type face for a printing operation at a printing station, the selected type face being positioned for printing cooperation with the roller platen when the bed 12 is closed. Also, the shafts S1-S5 are spaced around the print wheels on the side remote from the printing station and are parallel to the common axis of the print and the indexing wheels.

Thus, manual rotation of the indexing wheels to select the desired digits to be printed is effective through the gear drive arrangement to position the selected digits on the corresponding print wheels. This arrangement has not only proved to be reliable in operation but, also, the staggered positions of the gears with respect to the indexing and the print wheels permits construction of a compact variable data printing unit.

The lock-out mechanism, to prevent closing of the movable bed 12 in all instances where at least one of the variable data print wheels has not been reset following a printing operation, will now be described with reference to FIGS. 3 and 4. As shown therein, the mechanism comprises a bracket indicated generally at 60 and including a back wall 62 and depending legs 64 and 66. The bracket is supported on the shaft 14, and the legs are each provided with bifurcated ends 68 which embrace a tie-bar 70 in the bed 12 to prevent the bracket from rotating. The back wall 62 is provided with a slot 72 terminating at its upper end in a locking lip 74.

A locking link or lock-out latch 76 is pivotally mounted on a shaft 78 fixed in the side plates 31 and 34 of the bed 12, and extends downwardly towards the bracket 60. The end of the latch adjacent the bracket is provided with a ledge 80 adapted to coact with the lip 74 as will be further explained below.

The latch 76 is movable with respect to the bed 12 to an active position such that while the bed is closed the latch is rendered potentially effective in relation to the lip 74 and when the bed is opened the latch takes effect in relation to the lip so that the bed is prevented from being moved to its closed position, and movable to an unlocked position to permit closing of the open bed.

An interposer 82 is pivotally mounted on the shaft 78 and extends between the side plate 34 and the latch 76. The interposer includes a top shelf 84, depending end walls 86 and 88 and a U-shaped bracket 85 fastened to

5

the underside of the top shelf to provide a pair of spaced apart depending legs 90 and 92.

A U-shaped, overcenter retaining spring 81 is also associated with the interposer 82 and, as shown in FIG. 4, has one end in engagement with a notch 83 provided in each of the legs of the bracket 85 and the other end secured to a rod 87 mounted in the side plates 31 and 34. The spring 81 is adapted to hold the interposer 82 in either of two stable positions as will be further described hereinafter.

A first actuator member indicated generally at 93 interconnects the latch 76 with the interposer 82 and, as shown in FIGS. 3 and 4, includes a straight section 94 passing through openings in the end walls 86 and 88 of the interposer and openings in the legs 90 and 92 of the bracket 85, and a downwardly inclined section 96 terminating in a right angle extension 98 which enters an elongate slot 100 provided in the latch 76.

A second actuator member indicated generally at 101 is also provided and comprises a straight section 102 extending between the side plates 32 and 34 with each end thereof being guided in a slot 103 in the side plates (only one slot being shown in FIGS. 4 and 7), a downwardly inclined section 104 passing on the outside of the side plate 32, a short straight section 105 extending through keyhole slots 106, 106 in each of the legs of the bracket 60, and upwardly inclined and then angled tail section 108 terminating short of the side plate 34.

As best shown in FIG. 3, a brace 110 is spotwelded to the actuator 101 to provide rigidity thereto, and the section 105 is provided with a pair of crimped flat sections 107, 107 to permit assembly and to prevent the actuator 101 from disengaging with the keyhole slots 106, 106 in the bracket 60.

The lock-out mechanism described thus far is controllably associated with a plurality of sensing and detent devices 116, one of which can be seen in FIG. 4, each comprising a sensing cradle 118 and a sensing and detent roller 120. It is to be understood that an identical sensing device 116 is associated with each of the indexing wheels W1-W5 and, therefore, only the sensing device coacting with the indexing wheel W3 will be described hereinafter.

The sensing cradle 118 is pivotally supported on the shaft 78 and extends forwardly therefrom with its bottom surface resting on the top shelf 84 of the interposer 82, and the forward end of the cradle rotatably supports the sensing roller 120 for engagement with the projections 40 and the detent notches 42 of the actuating flange 45 of the corresponding indexing wheel. The sensing cradle is urged upwardly to maintain the sensing roller against the flange by a spring 122 positioned between a fixed bar 124 and the bottom surface of the cradle, the bar 124 being supported in the side plates 31 and 34.

The operation of the lock-out mechanism will be described with special reference to FIG. 4 wherein the bed 12 has started to close but is held latched against closing, and FIG. 7 in which the bed is open but unlatched. The usual position of the parts with the bed open is shown in FIG. 4, except that the bed would be pivoted slightly further clockwise and the latch 76 would be slightly spaced from the lip 74 as shown in broken lines in FIG. 7. In this condition, rotation of any one of the indexing wheels W1-W5 causes one of the projections 40 on the flange 45 of the indexing wheel to act against its sensing roller 120 to thereby pivot the cradle in a counterclockwise direction. As the cradle is pivoted it acts against the top shelf 84 of the interposer 82 to pivot the interposer in the same direction against the bias of the overcenter spring 81, to a latch unlocking position wherein an edge 89 on each of the end walls 86 and 88 of the interposer is resting on the section 102 of the actuator 101. The sensing roller 120 continues to be maintained in engagement with one of the detent notches 42 on the flange of the indexing wheel by the spring 122 acting against the bottom surface of the sensing cradle 118.

6

Pivoting of the interposer 82 moves the actuator 93 such that its extension 98 acts against one end of the slot 100 in the latch 76 causing the same to rotate in an counterclockwise direction to the position shown in solid lines in FIG. 7 against the bias of a spring 130. This rotation imparted to the latch is effective to withdraw the ledge 80 of the latch so that its path will not encounter the locking lip 74 provided on the bracket 60, to thereby permit closing of the bed 12 against the base 10. The latch 76 is held in the unlocked position shown in FIG. 7, as a result of the overcenter spring 81 acting downwardly on the interposer 82, until such time as the bed is closed.

As the bed 12 is moved to closed position, its pivoting motion relative to the actuator 101 is such that the section 102 of the actuator acts upwardly against the edges 89 of the interposer 82, thereby rotating the interposer in the opposite direction until it is again in contact with the underside of the cradle 118. This, however, occurs after the latch has proceeded to a point where it has already cleared the lip 74. The interposer is held in this latch permitting position (FIG. 4) by the overcenter spring 81 which is now acting upwardly against the interposer. During this rotation of the interposer, of course, the actuator 93 is also restored to the position shown in FIG. 4 and, with the ledge 80 of the latch free of the lip 74, the latch merely rides over the surface of the back wall 62 of the bracket 60 to permit the bed to be moved to fully closed position against the base.

On completion of a printing operation, the bed is automatically opened in a previously known manner as shown in Patent No. 3,420,171, whereupon the actuator 101 is restored to its inactive position at a low point in the slot 103, and the latch 76 is urged towards the bracket 60 by the spring 130 until the ledge 80 of the latch snaps over the lip 74 and returns to a position such as shown in dotted lines in FIG. 7. At this point, the bed 12 is latched in the open position and cannot be closed to perform another printing operation until at least one of the variable data print wheels is reset by means of the indexing wheels. Any attempt to close the bed would bring the parts into the position of FIG. 4 with the ledge 80 of the latch 76 against the lip 74 so that further counter clockwise motion of the bed 12 is precluded.

It will be seen that the machine is conditioned to permit or to prevent a printing operation depending on the position of the interposer 82. Thus, as long as the interposer is in contact with the sensing devices 116, specifically the underside of the sensing cradles 118, the bed 12 cannot be closed and a printing operation is prevented. However, movement of any one of the sensing devices, through the indexing wheels, is effective to actuate the interposer and move it out of contact with the sensing devices thereby actuating the conditioning means (i.e., the members 76 and 93) permitting closing of the bed and the making of a printed impression on a form.

A print wheel retaining and aligning device indicated generally at 140, to accurately position and hold the print wheels against movement during a printing operation, will now be described with reference to FIGS. 3 and 5. The device 140 comprises a trip means in the form of a tappet 142 free on the shaft 14, a bail retaining latch 144 and a print wheel aligning and locking bail 146.

The bail 146 is adapted to be moved between an active position in which it is engaged in the notches 38 in the print wheels, as shown in FIGS. 3 and 5, and an inactive position in which it is disengaged from the print wheels in response to closing and opening of the bed 12 respectively. The trip means, in response to closing of the bed 12, releases the latch 144 to allow movement of the bail 146 into engagement with the print wheels.

The tappet 142 is provided with a nose 148 adapted to act against the latch 144, and the latch is provided with a pair of ears 150 which coast with a bar 152 fixed in the

side plates 31 and 32. The latch is also provided with a curved retaining lip 154 for attaching the latch to the bail.

The bail 146 is preferably made of plastic and is in the form of a rod having a round cross section and is formed into an elongate loop shape, and the lip 154 of the latch 144 snaps onto the bail such that the latch depends from the bail as shown in FIG. 5. The latch 144 is biased toward the bar 152, in a counterclockwise direction as viewed in FIG. 5, by a spring 156 secured at one end to a rod 148 fixed in the side plates 31 and 32. Further, a U-shaped, leaf type compression spring 160 is secured at one end to the bail and at the other end to the section 102 of the actuator 101, previously described in connection with the lockout mechanism, and acts as a link between them.

Thus, with the bed 12 in the closed position shown in FIG. 5, and with the bail in pressure engagement with the aligned grooves 38 in the print wheels, due to deflection of the spring 160, the pivoting motion of the bed to its open position on completion of a printing operation causes the bail retaining latch 144 to move downwardly relative to the bed, in response to the downward movement of the actuator 101 to its inactive position as mentioned above. As the actuator is moved it relaxes the spring 160 and, through the spring, withdraws the bail 146 out of engagement with the print wheels, until such time as the latch 144 is lowered to a position whereby the urging of the latch by the spring 156 causes the ears 150 of the latch to move into locking engagement with the bottom surface of the bar 152. Further travel of the bed to its fully open position causes the lockout latch 76 to lock the bed against closing as heretofore described and, until the bed is again closed, the bail retaining latch 144 effectively holds the bail 146 disengaged from the print wheels.

When the bed is moved to closed position, the pivoting movement of the bed causes the tappet 142 to act against a push rod in the form of a screw 162 provided in the bracket 60, thereby pivoting the tappet in a counterclockwise direction as viewed in FIG. 5. This motion of the tappet results in the nose 148 thereof pushing against the latch 144 and moving it to a position where the ears 150 are out of engagement with the bar 152. As soon as the ears are free of the bar, the spring 160 urges the bail 146 upwardly and into engagement with the aligned notches 38 in the print wheels P1-P5.

The foregoing arrangement provides for the pre-alignment of the print wheels prior to the final alignment and retention afforded by the bail 146, in order to prevent damage to the machine and erroneous impressions on the form if one of the print wheels were misaligned and the bed was allowed to close to perform a printing operation. Thus, the sequence of operation is such that as the bed is moved towards closed position, the actuator 101 first acts upwardly against the interposer 82 to move it against the cradle 118. This motion of the actuator striking the cradle insures that the sensing and detent roller 120 is seated in a detent notch 42 of the indexing wheel. With the sensing roller properly seated in the detent notch, the corresponding print wheel will also be properly positioned such that the notch 38 in the print wheel is near enough to the ideal position to receive the bail 146. Subsequently, upon further movement of the bed to its fully closed position, the latch 144 which has been holding the bail out of engagement with the print wheels is released by the tappet 142 to allow the spring 160 to move the bail into pressure engagement with the notches in the print wheels and provide perfect alignment.

In the unlikely event that one of the indexing wheels and its corresponding print wheel are not properly set, such that the sensing roller 120 is opposed to one of the projections 40 on the indexing wheel instead of seated in one of the detent notches 42, and the wheel fails to line up under the nudging of the roller 120, the action of the actuator 101 acting against the interposer 82, cradle 118, sensing roller 120 and projection 40 provides a solid ob-

struction preventing sufficient travel of the bed to allow it to move to closed position. This obstructing action takes effect at a point such that it prevents the trip means from releasing the latch 144 and moving the bail against the print wheels. Accordingly, until the misaligned indexing wheel is properly set so that the sensing roller is seated in the detent notch, there is no locking action on the print wheels by the bail 146, nor can the bed be closed to perform a printing operation.

An overall description of the operation of the novel data recorder of the present invention will now be given, starting with the bed 12 in the open and locked position approximately as shown in FIG. 4. With the embossed credit card and a form to be printed in position on the anvil 16, the machine operator rotates the indexing wheels W1-W5 to position the corresponding print wheels P1-P5 for printing the desired variable data. Rotation of any one of the indexing wheels releases the latch 76 as heretofore described, and the bed 12 is now free to be moved to closed position against the base 10.

As the bed is closed, the actuator 101 strikes the interposer 82 and restores it to the position shown in FIG. 4 where it is held against the sensing device by the spring 81. In response to the terminal portion of the bed closing motion, the tappet 142 acts upon the bail retaining latch 144 to release it so that the spring 160 can urge the bail 146 upwardly and into engagement with the aligned notches 38 of the print wheels as shown in FIG. 5. At this point the bed is fully closed initiating a printing operation in which the roller platen is driven across the bed to imprint the form. When the platen reaches the end of its travel in one direction, the bed is caused to open in a known manner so that no double imaging of the form will occur when the platen is returned to its start position.

Movement of the bed to the open position causes relative movement of the actuator 101 and the bail retaining latch 144 to thereby withdraw the bail 146 out of engagement with the print wheels. Further movement of the bed to open position causes the latch 144 to be drawn by the spring 156 into locking engagement with the bar 152, and the lock-out latch 76 to be drawn by the spring 130 into a position to be in locking relationship to the lip 74.

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 machine operator fails to perform the operation of setting the variable data print wheels, the bed will be locked against closing thereby preventing a printing operation. Movement of any of the indexing wheels is effective to unlock the bed and permit it to be manually pivoted to its closed position.

From the foregoing, it will be seen that the present invention provides an electrically operated data recorder which is admirably suited to imprinting forms 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 bed, either in those instances where the machine operator fails to set the print wheels for imprinting the variable data on the form, or when a wheel for any reason refuses to assume proper printing position. 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 compact, reliable in operation, versatile in its use and relatively inexpensive to manufacture.

What is claimed is:

1. A data recorder having a variable data printing unit including a set of coaxial settable print wheels in close array, said print wheels having type faces thereon; positioning means for setting each print wheel to a de-

sired setting to present a selected type face for a printing operation at a printing station;

a pinion integral with each of the print wheels;

a set of coaxial indexing wheels associated one with each said print wheel and each having integral there- 5 with gear teeth and an actuating flange for manual engagement, said actuating flanges being spaced apart sufficiently to provide a workable spacing for operator finger contact therebetween, said indexing wheels being arranged coaxially with each other 10 and with said print wheels;

a plurality of spaced shafts parallel to the print and the indexing wheel axis, one for each print wheel, said shafts being arrayed around the print wheels on the side remote from the printing station; and 15

a pair of gears on each shaft, drivingly associated therewith, one of said gears meshing with the pinion on a print wheel and the other meshing with the gear teeth on the associated indexing wheel; 20 whereby each indexing wheel is effective upon manual movement thereof to position the corresponding print wheel to the desired setting.

2. A data recorder as set forth in claim 1 in which the gear wheels associated with the print wheels and the gear wheels associated with the indexing wheels are 25 of reduced diameter relative to the diameters of the print wheels and the indexing wheels respectively to provide respectively for freedom from interference with printing operation of the print wheels and finger actuation of the indexing wheels, the gear wheels being arranged to overlap the print wheels for meshing with the print wheel pinions, and to overlap the indexing wheels for meshing with the gear teeth thereon.

3. A data recorder as set forth in claim 2 which further includes detent means associated with each said indexing 35 wheel for releasably retaining the print wheel in the selected position comprising:

notches provided on each of the actuating flanges of the indexing wheels for ready manual engagement; and

detent means spring urged into engagement with the notches.

4. A data recorder comprising:

a base;

a bed mounted on the base for movement between an open position for receiving printing elements and forms and a closed position for printing;

a platen associated with the base and movable into printing relationship with the bed when the latter is closed;

a plurality of settable print wheels in the movable bed located for printing cooperation with the platen when the bed is closed, said print wheels having aligning notches therein;

print wheel aligning means movable on the bed into 50 and out of engagement with the print wheel notches; and

means for moving said aligning means into engagement with the print wheel notches in response to closing of the bed and out of engagement with the print wheel notches in response to opening of the bed comprising actuator means connected at one end with the base and having its other end connected with said aligning means.

5. A data recorder as set forth in claim 4 in which means is provided for latching the aligning means in inactive position responsive to opening of the bed, and wherein the actuator means includes a spring which is initially compressed as the bed is closed, and which further includes means for releasing the latch means to permit 70 activation of the aligning means in response to the bed's reaching fully closed position.

6. A data recorder comprising:

a base;

a bed mounted on the base for movement between an 75

open position for receiving printing elements and forms and a closed position for printing;

a platen associated with the base and movable into printing relationship with the bed when the latter is closed;

a plurality of settable print wheels in the movable bed located for printing cooperation with the platen when the bed is closed, said print wheels having aligning notches therein;

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

sensing and detent means located for contact with and operation by the positioning means, and movable between positions in contact with and out of contact with the positioning means;

an actuator means acting between the base and the sensing and detent means for positioning the latter in contact with the positioning means in response to closing of the bed;

bail means associated with the actuator means for movement to an active position in pressure engagement with the print wheel notches in response to closing of the bed to assure exact print wheel alignment, and to an inactive position withdrawn from the print wheels in response to opening of the bed to permit setting of the print wheels;

latching means associated with the bail means for normally holding the latter in its inactive position once achieved;

spring means drivingly linking the bail means and the actuator means and being subject to initial compression as the bed is closed, while the bail is still held by the latch;

trip means responsive to the terminal portion of the bed closing motion for releasing the latching means to allow movement of the bail means to active position under the influence of the spring means.

7. A data recorder as set forth in claim 6 which the positioning means provides plural projections so located as to straddle the sensing and detent means if the print wheels are properly aligned, and one of which will interferingly engage the sensing and detent means to limit its travel if the corresponding print wheel is not properly aligned, or will be nudged aside by the sensing and detent means sufficiently to bring about print wheel alignment.

8. A data recorder as set forth in claim 7 in which the actuator and the sensing and detent means are cooperatively related so as to provide a solid resistance to further closing of the bed in case interfering engagement of the sensing and detent means with one of the projections of the positioning means occurs, and nudging aside of the projection fails to occur.

9. A data recorder as set forth in claim 8 in which the trip means is timed to release the latching means after the interfering or nudging engagement of the sensing and detent means with the positioning means has occurred to insure that the bail means will not be engaged with the print wheels unless or until print wheel alignment is assured.

10. A data recorder having a variable data printing unit including a set of coaxial settable print wheels in close array, said print wheels having type faces thereon; positioning means for setting each print wheel to a desired setting to present a selected type face for a printing operation at a printing station;

a pinion integral with each of the print wheels;

a set of coaxial indexing wheels associated one with each said print wheel and each having integral there- with gear teeth and an actuating flange for manual engagement, said actuating flanges being spaced apart sufficiently to provide a workable spacing for operator finger contact therebetween, said indexing wheels being arranged coaxially with each other and with said print wheels;

11

a plurality of spaced shafts parallel to the print and the indexing wheel axis, one for each print wheel, said shafts being arrayed around the print wheels on the side remote from the printing station; and
 a pair of gears on each shaft, drivingly associated therewith, one of said gears meshing with the pinion on a print wheel and the other meshing with the gear teeth on the associated indexing wheel whereby each indexing wheel is effective upon manual movement thereof to position the corresponding print wheel to the desired setting;
 means for making a printed impression from the print wheels;
 conditioning means settable to prevent or permit operation of the impression making means;
 interposer means located for actuation by the indexing wheels; and
 means responsive to the actuation of the interposer means to control the setting of the conditioning means.
 11. A power operated data recorder comprising:
 a normally fixed base;
 a bed mounted on the base for movement between an open position for receiving printing elements and forms and a closed position for printing;
 a platen associated with the base and movable across the bed in printing relationship therewith when the latter is closed;
 motor means on the base for driving the platen through a printing stroke;

12

means to energize the motor means in response to closing of the bed;
 means for locking the bed firmly in the closed position in opposition to the printing pressure exerted thereagainst by the platen;
 means to release the locking means and cause the bed to move to open position upon completion of a printing stroke of the platen;
 a plurality of settable print wheels carried by the movable bed and located for printing cooperation with the platen when the bed is closed; and
 manually actuable mechanical operating mechanism carried by the movable bed for setting each print wheel to a desired setting.

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U.S. Cl. X.R.

101—99, 110, 269, 285

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,494,282 Dated February 10, 1970

Inventor(s) George A. Gruss

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, the bar indicating the end of the Abstract should be deleted from its position following line 21 and inserted between lines 41 and 42.

SIGNED AND
SEALED
AUG 13 1970

(SEAL)

Attest:

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