

- [54] **VARIABLE INPUT DATA RECORDER**
[75] Inventor: **John J. Van Acker**, Chesterland, Ohio
[73] Assignee: **Addressograph-Multigraph Corporation**, Cleveland, Ohio
[22] Filed: **July 9, 1973**
[21] Appl. No.: **377,348**

Related U.S. Application Data

- [63] Continuation of Ser. No. 191,674, Oct. 22, 1971, abandoned.
[52] U.S. Cl. **101/45, 101/56**
[51] Int. Cl. **B41j 7/08**
[58] Field of Search 101/45, 56, 269, 274, 284, 101/109, 99, 110

References Cited

UNITED STATES PATENTS

- | | | | |
|-----------|---------|-----------------------|-----------|
| 3,138,091 | 6/1964 | Maul..... | 101/45 |
| 3,334,582 | 8/1967 | Mahoney..... | 101/45 |
| 3,363,547 | 1/1968 | Thut et al. | 101/45 |
| 3,405,634 | 10/1968 | Maul et al. | 101/269 X |
| 3,421,436 | 1/1969 | Patterson et al. | 101/45 |
| 3,468,244 | 3/1969 | Hu | 101/90 |

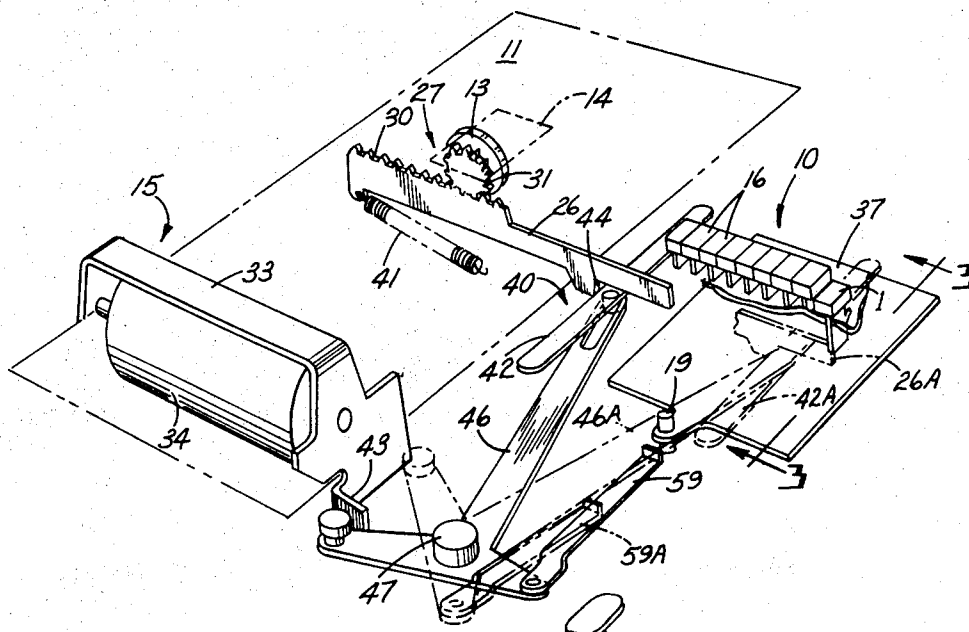
- | | | | |
|-----------|--------|-----------------|--------|
| 3,508,488 | 4/1970 | Maul et al..... | 101/45 |
| 3,563,171 | 2/1971 | Heisner..... | 101/45 |
| 3,606,833 | 9/1971 | Deutsch..... | 101/45 |
| 3,709,144 | 1/1973 | Sims..... | 101/45 |

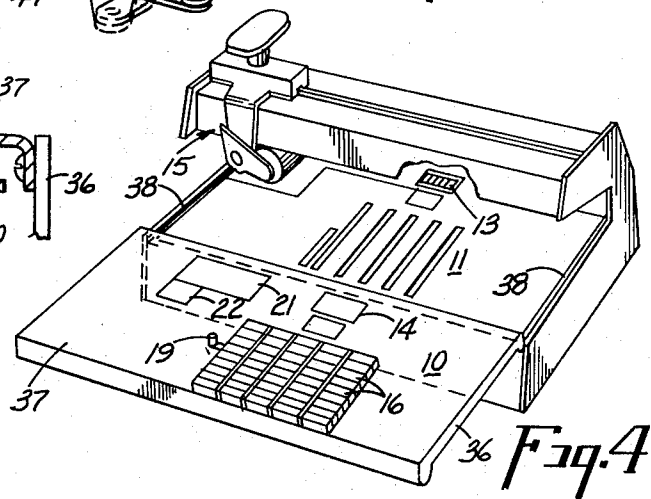
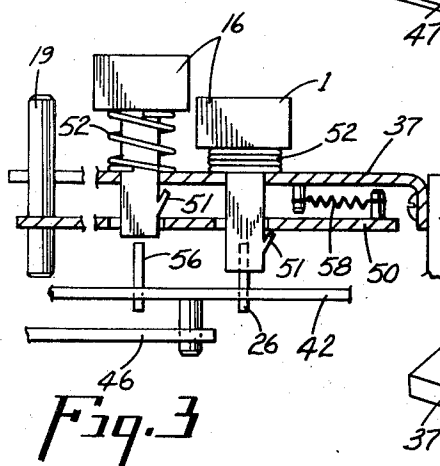
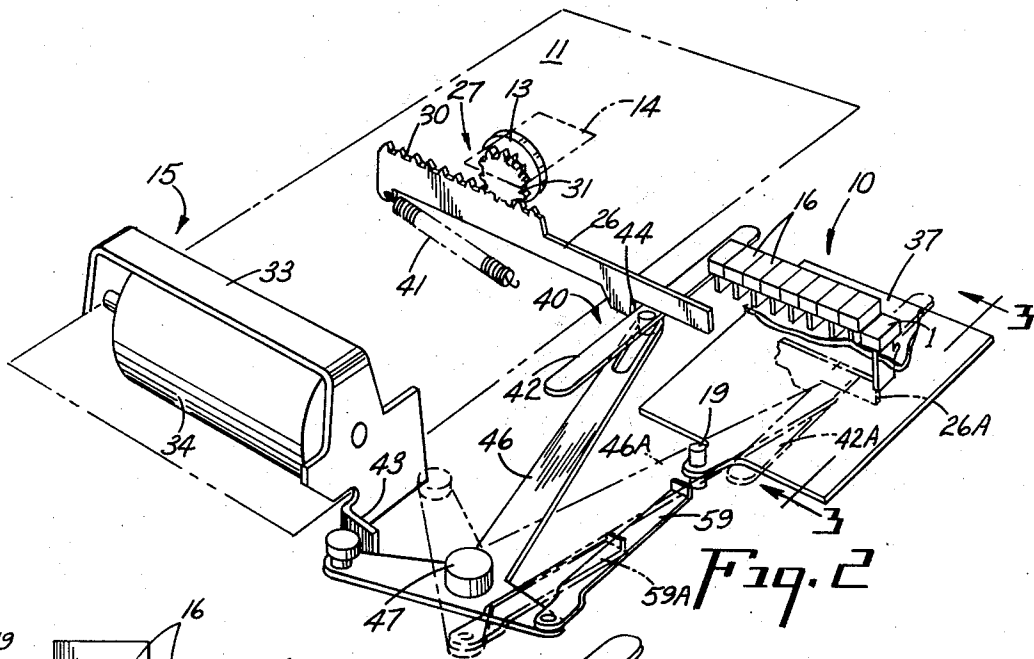
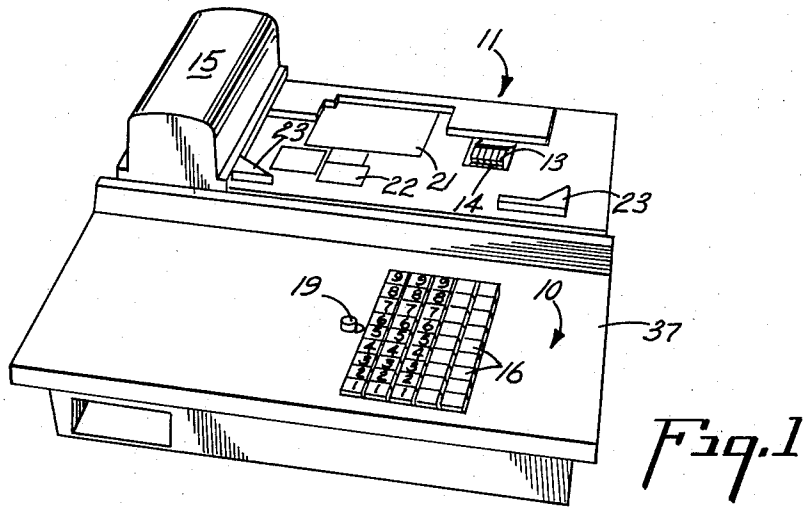
Primary Examiner—Robert E. Pulfrey
Assistant Examiner—Edward M. Coven
Attorney, Agent, or Firm—Ray S. Pyle

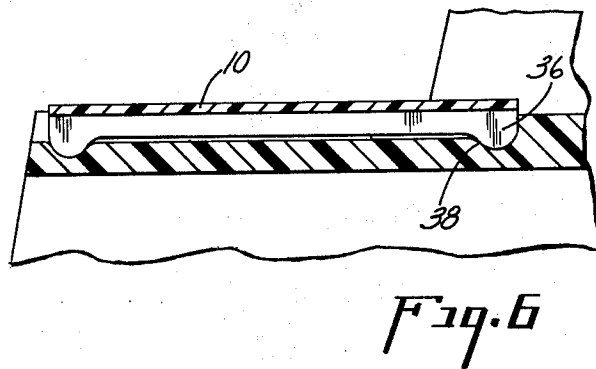
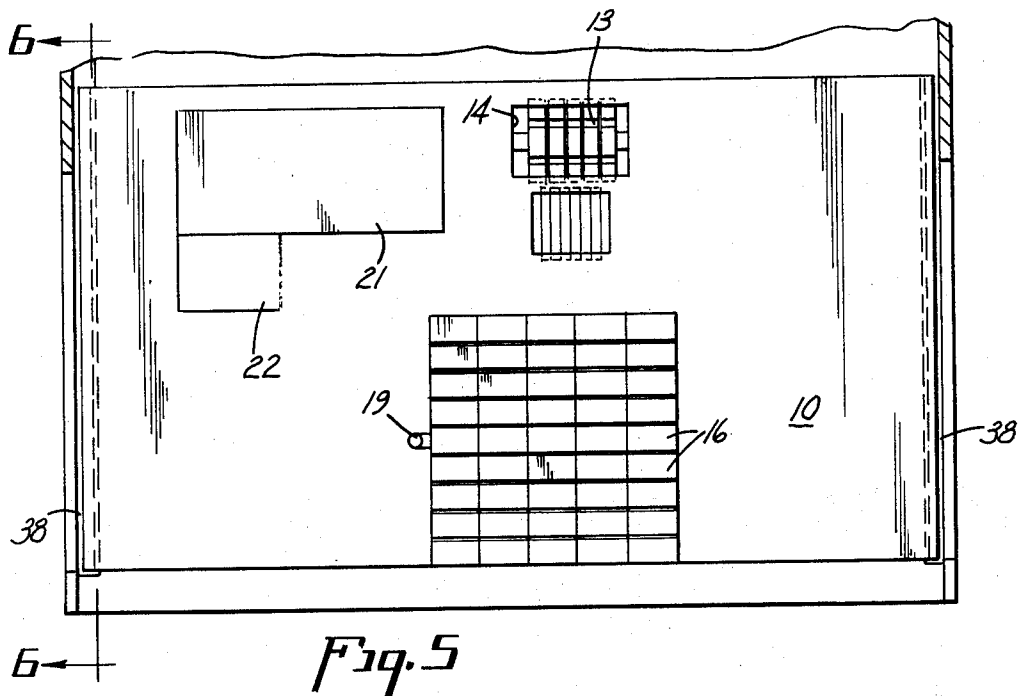
[57] **ABSTRACT**

A variable input data recorder is disclosed comprising a data input means and a data recorder means. The data input means can be programmed by actuating keys or levers while the data input means is located within or at a remote location from the data recorder means. When the data input means is inserted into the data recorder means, the action of a printing head effects movement of printing characters in accordance with the preactuated keys or levers to transfer the programmed information into the recorder to be recorded on a document. The invention is compatible for use with pushbutton keys or conventional slide levers operating at a local or remote location from the recorder.

3 Claims, 6 Drawing Figures







VARIABLE INPUT DATA RECORDER**RELATED PATENTS AND APPLICATIONS**

This is a continuation of Ser. No. 191,674 filed Oct. 22, 1971, now abandoned.

BACKGROUND OF THE INVENTION

This invention relates to data recording machines and more particularly to data recording means recording fixed and variable information on the same form.

The use of credit cards in consumer sales is still on the increase and is rapidly becoming the most common type of business transaction. Such use requires speedy and accurate recording of fixed data from a credit card and variable data from the transaction such as the purchase price and date. The prior art has known many types of variable input data recorders to record fixed and variable data upon a document. Most of these data recorders used slide levers to serve as an input for variable data. The slide levers rotate printing wheels having character thereon, to select a given character in accordance with the position of the slide lever. A credit card or a source of fixed data would then be placed upon a printing surface and a document would overlie both the variable data information on the printing wheels and the fixed data information on the credit card. The document would be printed containing both the variable and fixed data.

This type of recorder performed reasonably well but did not make efficient use of the data recorder machine. In periods of high sales, congestion would develop due to the fact that the variable data would have to be set on the manual levers of the data recorder machine. Subsequent art solved this problem in part by mounting the slide levers on a data board which was removable from the data recorder. This allowed the variable data to be preset at a remote location from the data recorder and to be inserted into the data recorder along with the credit card and the document to be recorded.

This type of arrangement solved the problem of congestion but derived the wheel drive power solely from the manual insertion of the data board into position and had no provision to use keys instead of slide levers.

The use of keys is desired for several reasons. Keys have a more favorable appearance and are faster and more convenient to set. In addition, keys are easier to read and to reset.

Therefore, an object of this invention is to produce a variable input data recorder which is capable of using either keys or slide levers.

Another object of this invention is to produce a variable input data recorder which is easy to operate.

Another object of this invention is to produce a variable input data recorder which can be preset at a remote location from the data recorder.

Another object of this invention is to produce a variable input data recorder in which preset data in a data input board is automatically transferred into the data recorder upon the command of an operator.

Another object of the invention is to produce a variable input data recorder which has an automatic reset.

Another object of this invention is to produce a variable input data recorder which is inexpensive.

SUMMARY OF THE INVENTION

This invention is embodied in the steps of providing a bed upon which printing members may be assembled to lie in a printing level printing plane. Mounting a series of adjustable printing elements on the bed, each of which is movable to a selected printing position on the bed. Preferably these are a plurality of print wheels each having a series of indicia about the periphery thereof. There is a means urging each printing member to move through a series of positions to an extreme position. When wheels are used, they are urged to rotate completely through a 360° rotation. When wheels are used they are operatively connected to a rack with an extension arm which serves as an extension means which can be blocked by the movement of indicia keys on a keyboard. The keys act as removable abutments extended into the path of the extension means to bring the adjustable printing elements to a stop intermediate their possible extent of travel. In this way, the printing member wheels may be cocked, keys established to values, and the wheels released to cause the extension means to strike the key blocks and stop.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 illustrates a variable input data recorder in which the data input means and the data recorder means are incorporated into a single system;

FIG. 2 is the preferred embodiment which illustrates the operation of the disclosed invention;

FIG. 3 is a sectional view on line 3—3 of FIG. 2 illustrating the operation of the input keys;

FIG. 4 illustrates a variable input data recorder wherein the data input means is removable from the data recorder means;

FIG. 5 is a top plan view of the FIG. 4 structure, with the platen carriage removed to illustrate a separable data keyboard and

FIG. 6 is a section taken along line 6—6 of FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 illustrates a variable input data recorder in accordance with the disclosed invention. The data recorder includes a data input means 10 and a data recorder means 11. In this embodiment, the data input means 10 is a keyboard fixed in relationship to the data recorder means 11. A series of keys 16 in a plurality of rows provides keyboard entry of values. FIG. 1 illustrates the keyboard as having five key paths each path having a separate key for the integers from one to nine. The keys 16 are preselectable to select a given character for reproduction by moving a given key from an unactivated normal position to an activated depressed position. Although plural key means are used as stop means within the embodiments of this invention, the invention is compatible for use with single keys slidable in key slots.

The data recorder means 11 includes character wheels 13 which have characters corresponding to the characters on the stop means. The data recorder also includes racks 26 and transforming means 40 shown in FIG. 2, which interconnect the character wheels 13 and the keys 16. A roller platen 15 is able to cause a print-out of the character wheels 13.

The general operation of the structure shown in FIG. 1 can be explained as follows. An embossed data source card is placed within the section shown as 21. Section 22 contains fixed information such as the name of the store, location and department. A document is placed upon a top printing surface and held by guides 23 to cover the card position 21, the fixed data position 22 and an opening 14 for the character wheels 13. Variable information of the amount of sale is entered into the data input means 10. The keys can be of a size large enough to be depressed by a finger or can be designed to be depressed by an end of a pencil. In the event that an error is made by the operator in entering the variable information, a reset means 19 is available to reset the keys 16. After the variable input data is preset into the data input means 10, the platen 15 is moved across the surface of the document resulting in a permanent record of the information assembled in plates and wheels. Upon return of the platen 15 to a first position as shown, the keys will be reset. The data input means shown in FIG. 1 has five key paths and five character wheels. The key paths are arranged in a row and are able to record amounts up to 999.99 dollars.

The preferred embodiment FIG. 2 shows a variable input data recorder similar to those shown in FIGS. 1 and 4 but simplified by illustrating only one character wheel 13 to aid in the explanation of the operation of the invention. The data input means 10 includes keys 16 labeled by characters 1 to 9. The keys 16 are arranged in a key path and are preselectable to select a given character for reproduction. FIG. 2 shows key bearing the value 1 to be preselected. Key 1 is in a depressed or actuated position whereas key bearing values 2-9 are in an unactuated or normal position. The data recorder means 11 includes character wheel 13 shown as a printing wheel with characters thereon. The data recorder means 11 also includes racks 26 and gears 27 transforming the movement of the racks 26 along a first path into movement of the character means 13 to select a given character. As the racks 26 move along the first path, the character wheels 13 rotate to select the character to be printed. The dashed line 14 indicates the opening in a bed of the data recorder for the given character which is to be printed.

The platen 15 includes a frame 33 and a printing roll platen 34. The platen 15 and the character wheels 13 are able to move relative to each other and in this embodiment the platen 15 is able to move from the first position as shown to a second position which is on the opposite side of the character wheels 13.

The preferred embodiment FIG. 2 illustrates a spring 41 which urges the racks 26 along one direction of the first path and a restraining member 42 which restrains the movement of the rack 26.

For example, when an operator moves a key bearing value 1 into the actuated position as shown in FIG. 2, there is no change in the character wheel 13. When the restraining member 42 is moved away from a shoulder 44 on rack 26, the rack is allowed to move by action of the urging means 41 resulting in the rotation of the character wheel 13. The selector rack 26 moves along the first path until engagement with the actuated key. The movement of the rack 26 rotates the character wheel 13 such that when the rack 26 engages with a given actuated key, the corresponding character will appear on the character wheel 13 at opening 14 to be

printed by the platen. However, the phantom position 26A shows the selector rack 26 engaged with the key 1. The selector rack 26 is not engaged with any of the keys 2-9 since these keys are in the unactuated position. If the key 5 in FIG. 2 were depressed into the actuated position, and the restraining member 42 allowed to recede, then the rack 26 would be urged along the first path into engagement with the actuated key 5 and the corresponding character 5 would appear at opening 14 to be printed. Platen 15 is movable from the first position as shown, to the second position in a print stroke, and then in a return movement to the starting position. The first and second positions are on opposite sides of the character means 13. A pivotable arm member 46 coacts between the rack 26 and the platen 15 to resist movement of the rack 26 when the platen 15 is in the first position and allows controlled movement of the racks 26 by the spring 41 when the platen 15 is moved from the first position. The arm 46 pivots about an axis 47 and contacts the platen 15 and the rack 26 at shoulders 43 and 44, respectively, when the platen 15 is in the first position. The rack 26 is restrained from moving by the friction and the inertia of the platen 15. Although the embodiments illustrate that the movement of the platen 15 controls the movement of the racks 26, these movements can be independent of one another.

When an operator moves the platen 15 from the first position toward the character wheels 13, the restraining member 42 allows the rack 26 to move and engage with the actuated key 1. The position of the arm 46 and the restraining member 42 are shown by the phantom positions 46A and 42A respectively, after the platen 15 has been moved to the second position. The spring 41 rotates the arm 46 about axis 47 into the position 46A or until the rack 26 engages with an actuated key. Upon return of the platen 15 from the second position to the first position, the arm 46 in conjunction with the restraining member 42 returns the rack 26 in a direction opposite to the direction of movement urged by the spring 41 and resists movement of the rack 26 when the platen 15 is again in the first position.

The operation of the keys 16 can best be appreciated by the study of FIG. 3. The keys 16 are stable in either the actuated or unactuated position. A detent member means 50 is located below the data input board 37. Each key 16 has a detent projection means 51 on the lower portion of the key. In addition, each key has a spring 52 which urges the key means 16 to be stable in the unactuated position. A detent member 50 and the data input board 37 are arranged to establish the detent member 50 to engage with the detent projection means 51 when a key is moved into the actuated position as shown by key 1. This movement of the key is transverse to the first path.

The detent member 50 has elongated holes to receive the base of the key 16. Upon depressing a key, the detent projection means 51 is engaged with the detent member 50. The diagram also shows the reset means 19 which is able to move the detent member 50 to the right in FIG. 3, relative to the data input board 37 to disengage the detent projection means 51 from the detent member 50. FIG. 3 shows key 1 in the actuated position in accordance with FIG. 2. FIG. 3 also shows an adjacent key path or row of keys which are not shown in FIG. 2. In the second row of keys, none of the keys are in the actuated position and the respective adjacent

rack 26 is not engaged with any of the keys whereas the rack 26 is engaged with key 1. A spring 58 returns the detent member 50 into the shown position relative to the data input board 37 after the operator has reset the keys by the reset means 19.

FIG. 2 shows a means to automatically reset the key-board upon completion of the printing process. An automatic reset means 59 acts together with the reset means 19 and the platen 15 by way of the arm 46 to disengage the detent means 50, 51 in accordance with the movement of the platen 15. When the platen 15 is moved from the first position across the character wheels 13, the rack 26 moves until it engages with the pre-selected key 1. At this point the automatic reset means 59 is in the phantom position 59A. Upon return of the platen 15, the rack 26 is returned to its original position and in the last increment of movement of the platen 15 the automatic reset means 59 engages with the reset means 19 to move the detent member means 50 relative to the data input board 37 to disengage the detent means. After disengaging the detent means, the keys 16 are returned to the unactuated position by the key spring 52. The spring 58 returns the detent member into the engageable position to allow the detent means to be engageable when a key is reactuated.

The invention also includes means establishing the data input means 10 as a separable field board cooperating with the data recorder means 11. The means establishing cooperation is shown as a forward and a rear lateral ridge 36 shown in FIGS. 4 and 6 to position the key means arranged in the key path or a second path to be substantially adjacent to the first path to have the racks 26 engageable only with a key means in the actuated position. Cooperating groove 38 allows the field board 10 to drop down upon the machine bed for the purposes of locking the field board 10 onto the machine bed and to permit the wheels 13 to project up through opening 14. This allows the data input means 10 to be pre-selected at a remote location from the data recorder means 11 to be held in a position in which the data input means 10 and the data recorder means 11 can satisfactorily cooperate with one another.

FIGS. 4-6 show a variable input data recorder in which the data input means 10 is separable from the data recorder means 11. Cooperation of the data input means 10 with the data recorder means 11 is accomplished by action of the ridges 36 acting together with the grooves 38. In this embodiment, the key means 16, credit card holder 21, permanent information 22 and the document are located on data input means 10. An opening 14 allows printing of the variable data on the document by the character wheels 13 when the data input means 10 is inserted within the data recorder means 11. For example, at the time of the sale, the variable information can be preset or programmed into the data input means 10 and inserted directly into the data recorder means 11 with the credit card, the permanent information and the document. Movement of the platen 15 activates the racks 26 as explained in FIG. 2 to transfer the variable data from the data input means 10 into the data recorder means 11 to record the document with the necessary information.

The character wheels 13 are properly positioned prior to the time the platen 15 passes over the character wheels 13 to produce the reproduction. Upon return of the platen 15 the data input means 10 is reset and can be removed to allow another data input means

of another operator to cooperate with the data recorder means.

The invention as described is capable of being used with keys as shown in these embodiments and with the conventional slide levers of the prior art. In addition, the invention allows the operation of the data input means 10 within the data recorder or as a separable unit re-selectable at remote locations from the recorder. The keys offer a faster set-up time in addition to being more convenient and easier to read. Finally, the keys offer a fully automatic variable input data recorder at a reasonable cost.

What is claimed is:

1. A variable input data recorder, comprising:

1. a printing machine having a bed, a data board carried by said bed upon which printing members may be assembled to lie in a printing level plane;
a roller platen movable from a home position across said bed to a terminal position and return in a printing cycle;

an opening in said bed, a plurality of printing wheels, each wheel having a series of printing impression characters around the periphery thereof, said wheels rotatably mounted on a support positioned below said bed a distance to place the characters at said printing level plane;

a pinion dirvingly connected to each wheel;

a rack for each wheel, an extension arm connected thereto, said rack movable radially to the pinion to drive the pinion and wheel to a desired rotary position upon movement of the extension arm;

said extension arms mounted to extend in a common plane with means urging each rack and its extension arm independently in a first direction, each in a path, the several paths being side by side in said plane, whereby each wheel is urged to rotate as the extension arm moves in said plane;

a row of keys of said data board for each said rack, the row aligned with the path of the related rack, each key having a stop member extension connected thereto, each said key having a first position wherein the stop member is extended into the path and blocks extension of the rack extension arm beyond the key, and a second position out of the path, whereby the extension arm will be arrested as it moves in the first direction by contact with the first stop in said row that is moved to said first position; the stop members of each row each occupying a predetermined position such that in stopping the associated arm, the connected rack will set the associated printing wheel at an angular position with a selected one of its printing impression characters lying in the printing plane;

a restraining means movable adjacent said plane for intercepting said extension arms said restraining means being released by movement of said platen from said home position to be driven by the extension arms in said first direction, said restraining means being movable in response to movement of the platen to said home portion for moving all of said extension arms in a second direction away from said stop members, whereby the selection of stop members may taken place in the absence of the arms, and movement of said restraining means in said first direction allows said arms to move toward said stop members until each arm is arrested by a selected stop member.

7

- 2. A data recorder as defined in claim 1, wherein the stop members in each row are topped by a key-top for finger actuation from said second to said first stop position.
- 3. A data recorder as defined in claim 1, wherein the

8

data keyboard is removably attachable to said bed for setting up printing members and keys while separated from the machine.

* * * * *

10

15

20

25

30

35

40

45

50

55

60

65