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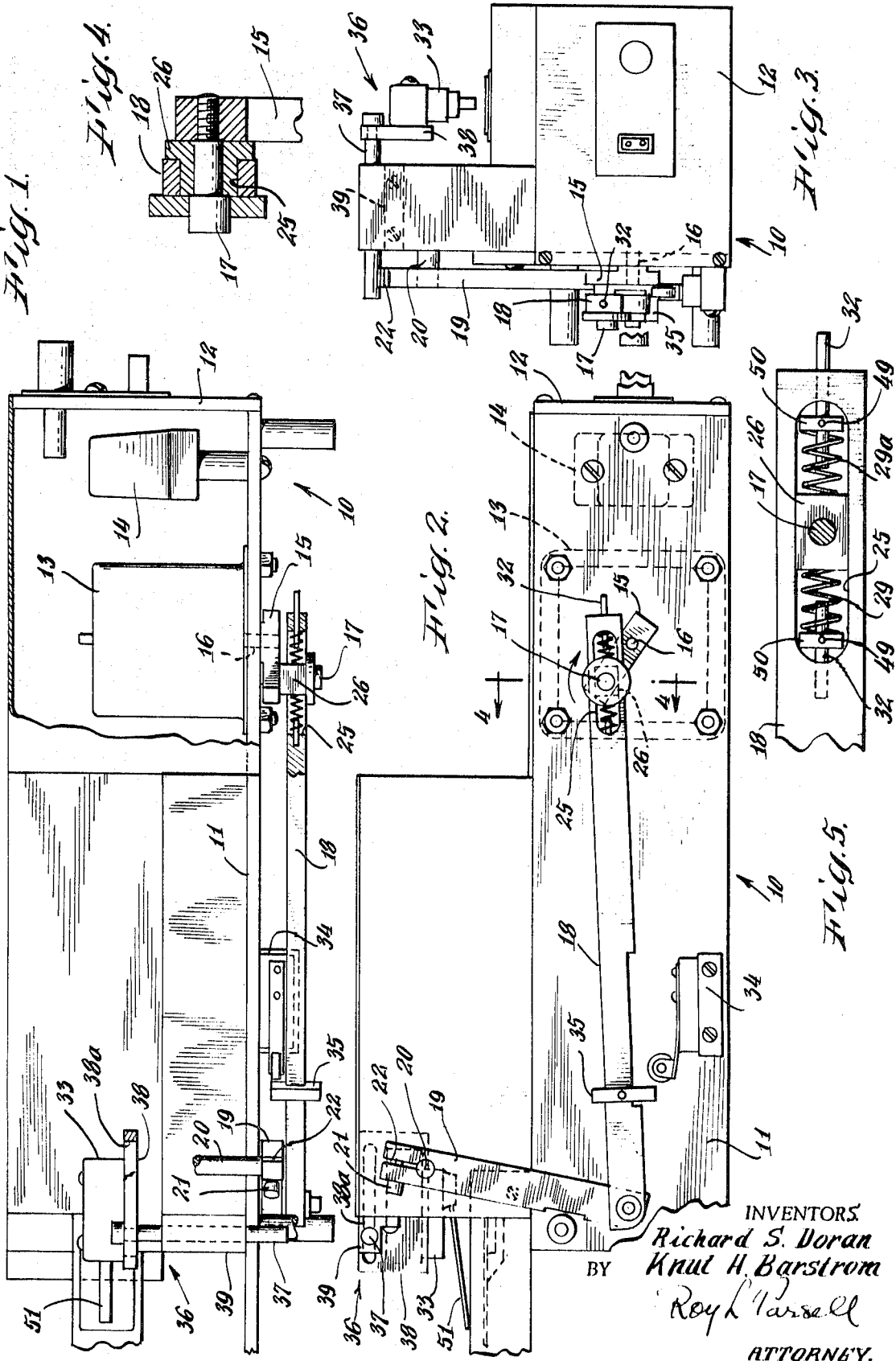
R. S. DORAN ET AL

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CONTROLLER FOR LABEL PRINTER AND DISPENSER

Filed July 29, 1969

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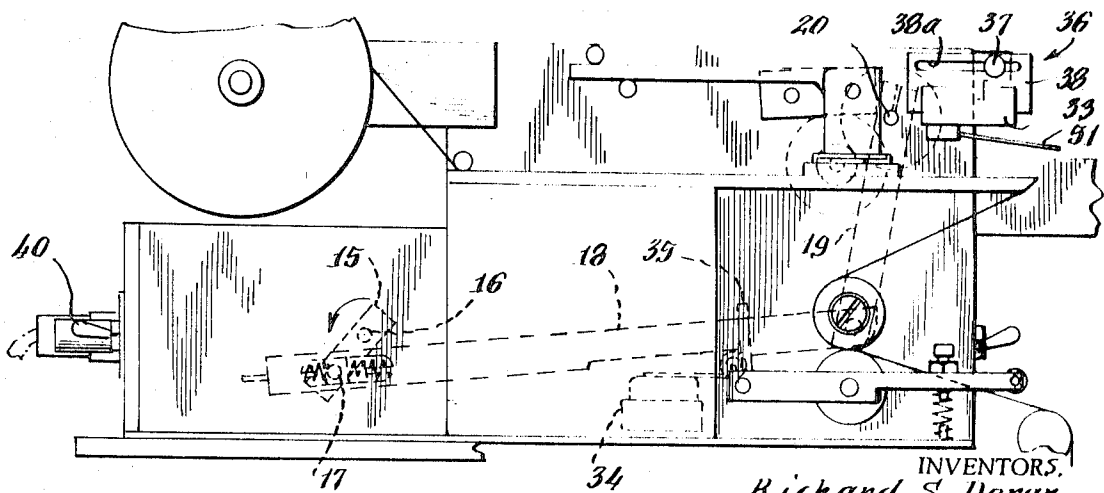
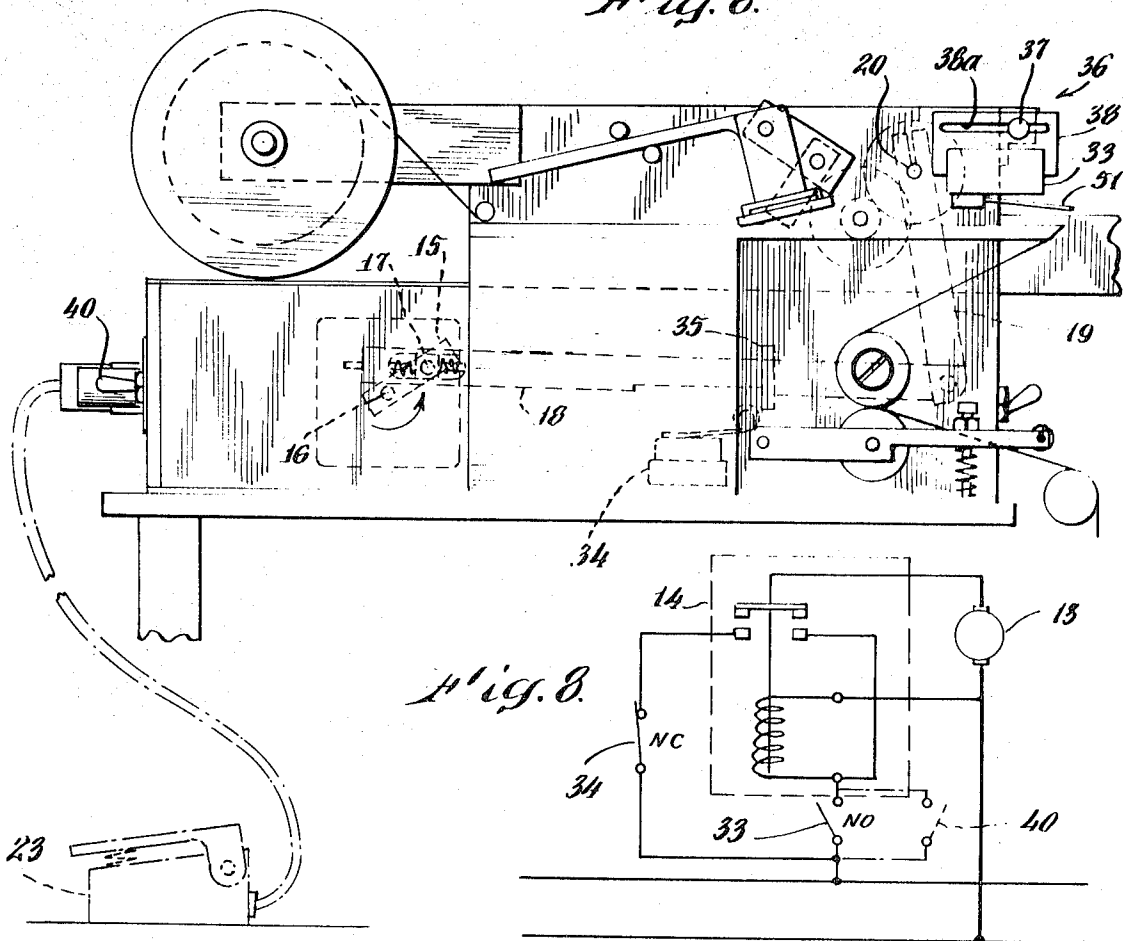
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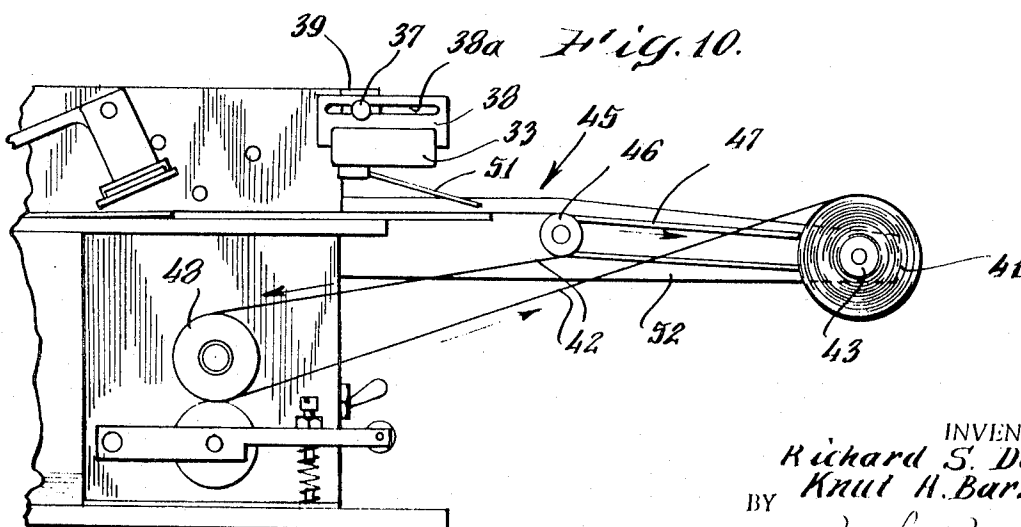
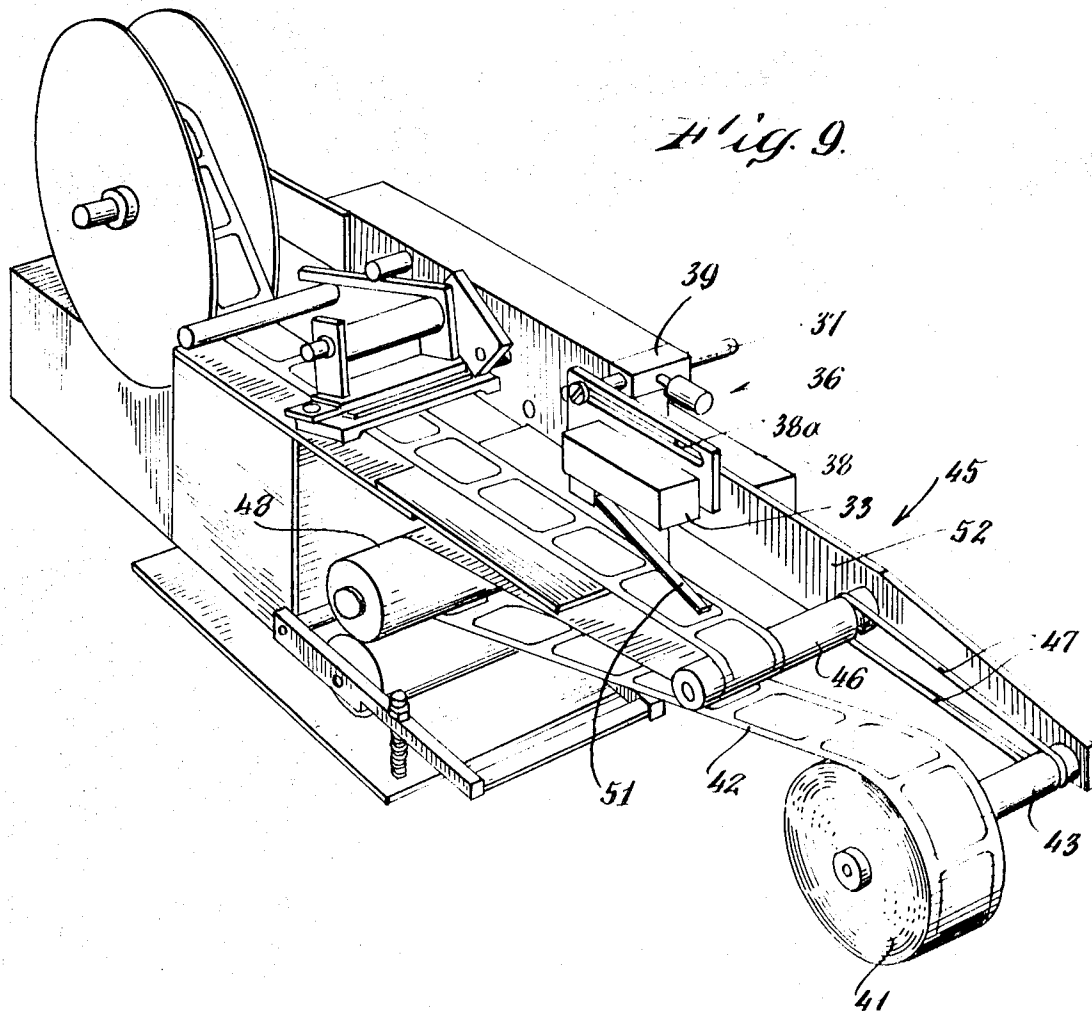
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CONTROLLER FOR LABEL PRINTER AND DISPENSER

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3 Sheets-Sheet 3



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3,620,161 CONTROLLER FOR LABEL PRINTER AND DISPENSER

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8 Claims

ABSTRACT OF THE DISCLOSURE

An attachment for controlling the operation of a mechanical apparatus that oscillates about an axis in performing its work function. In particular the attachment will control the operation of a formerly manually operated label printing and dispensing apparatus of the type used by supermarkets and the like for printing price labels to be attached to merchandise. The pressure adhesive labels are furnished attached to a web or continuous belt. Each label is printed and delivered by the printer-dispenser to the hand of the operator who then applies it to the merchandise. The attachment enables the operator to receive the printed label as it is removed by the web ready to be applied to the merchandise at a rate of speed controlled to the operator's reaction timing as he picks up the delivered label. The attachment controls the pressure of the printing head on the label and the inking pad. An embodiment of the attachment provides for continuous rolling up of the web after the labels have been printed instead of being dispensed individually from the web, in order to store the labels for subsequent use.

In particular this invention relates to a unitary means which is adaptable to a hand operated apparatus to start and stop same so as to free the hands of the person operating the apparatus for other purposes. It is more specifically illustrated as adapted to a label printer and dispenser as for example that shown in applicants' pending patent application Ser. No. 711,052 filed Mar. 6, 1968 in Group 337 entitled Label Printer and Dispenser.

It is therefore an object of this invention to provide an attachment which will start and stop the printer dispenser from various control stations such as that operated by the foot of the attendant or by the label itself as it is dispensed.

Still another object of this invention is to provide means for regulating the pressure of the printing head on the label itself.

Another object is to provide means for timing the movement of the printing head so that it will not rest in engagement with the ink pad.

Another object is to provide a reroll mechanism for rolling up the web with the printed label reposing thereon instead of being dispensed from the printer-dispenser as an individual label at the time of printing.

Other objects and a fuller understanding of the invention may be had by referring to the following description and claims taken in connection with the accompanying drawings in which:

FIG. 1 shows a plan view of the invention arranged to attach to the printer-dispenser apparatus;

FIG. 2 is a longitudinal elevation of the structure shown in FIG. 1;

FIG. 3 is an end elevation of the structure shown in FIG. 2;

FIG. 4 is a vertical section taken on line 4—4 of FIG. 2;

FIG. 5 is an enlarged elevation of the spring pressure means exerted between the driving crank pin and the pitman.

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FIG. 6 is an elevation showing the invention as attached to a printer-dispenser in which the printing head is reposing on the inking pad.

FIG. 7 is similar to FIG. 6 but showing the printing head pressing on the label;

FIG. 8 is a diagram of the circuitry;

FIG. 9 is a perspective view of the printer-dispenser showing the bracket, stop switch, and the embodiment of the reroll attachment; and

FIG. 10 is an elevation in part of the dispensing end of the printer-dispenser shown in FIG. 9.

Referring now to the drawings, numeral 10 denotes the assembled structure of the invention which may on occasion be referred to as a controller for convenience.

Referring to particularly FIGS. 1, 2, and 3, numerals 11 and 12 denote respectively longitudinal and transverse mounting plates which support the mechanisms to be subsequently described and further provide the foundation of a unitary structure which can be attached to the portion of the operating device to be controlled which in this example is the label printer and dispenser. It will thus be obvious at this point that the invention may be incorporated into the operating device (label printer and dispenser) when being assembled or may be attached after it is out in the field.

A motor 13 furnishes the mechanical power to run the controller 10 which is started and stopped in accordance with the circuitry shown in FIG. 8 and hereinafter described.

A crank arm 15 (FIGS. 1, 2, and 3) is fixedly mounted on the drive shaft 16 and is provided with an extending crank pin 17 which in turn operates pitman 18 through spring means to be subsequently described.

Pitman 18 (FIG. 2) through link 19 reciprocates shaft 20 of the printer-dispenser 45. Link 19 is fixed to shaft 20 by means of clamp screw 21 and bifurcated end 22. This shaft 20 (FIG. 1) is the operating shaft for the label printer-dispenser 45 or equivalent apparatus to which controller 10 is connected to serve. If it was not for controller 10 the shaft would be obliged to be reciprocated by a hand lever mounted thereon and operated by the person stationed at the label printer-dispenser.

To compensate for the stroke of the pitman 18 being greater or less than the permissible stroke of the link 19 which is locked to the printer-dispenser shaft 20, two spring members 29 and 29a (FIGS. 2 and 5) are mounted on retaining pins 32 inserted in the elongated opening 25 in the driven end of the pitman 18.

These springs 32 serve to yieldably position a bearing block 26 slidably mounted in the elongated opening 25 and also the slidable bearing block 26 (FIGS. 1, 2, 3, and 5) oscillates on crank pin 17 fixed to crank arm 15 and journaled in said bearing block 26. Thusly, if the length of stroke permitted by shaft 20 is less than the stroke of the pitman 18 as limited by oscillation of link 19, one spring will be in compression while the opposite spring expands, or vice versa, depending on the direction of the rotation of crank arm 15. On the other hand, if the stroke of shaft 20 is greater than the permitted stroke of the pitman 18 then the springs 29 and 29a will respectively provide the proper adjustment.

An additional feature permitted by this adjustment is that the resulting pressure on shaft 20 at the end of each stroke can be varied by varying the resiliences in the springs 29 and 29a by means of abutment collars placed on the pins 32 to compress the respective springs 29-29a when mounted on the pins 32. Set screws 49 hold the collars 50 in place.

Since the prime function of the controller 10 is to provide control for start, stop, or continuous operation of the apparatus to which it is attached, as in this case the printer-

dispenser, use is made of electrical circuitry comprising an electric motor and micro switches acting through a suitable relay 14.

A starting switch 33 (normally open NO) located at the output or dispensing end of the printer-dispenser acting through relay 14 causes motor 13 and drive shaft 16 to rotate and with it crank arm 15 so that crank pin 17 will thus set up a reciprocating movement to pitman 18.

A stop switch 34 (FIGS. 1 and 2) mounted on supporting plate 11 is engaged by a cam 35 adjustably positioned on pitman 18 so that as pitman 18 tends to complete its stroke the motor 13 is stopped thus stopping the printer-dispenser from printing or dispensing or both.

By adjustably mounting the stop switch cam 35 on pitman 18 the cam may be positioned to stop the controller earlier or later in its complete cycle as desired. Thus for example the printing head may be arrested before it engages the inking pad. The pitman will not again move until start switch 33 is operated.

By mounting start switch 33 on an adjustable bracket 36 (FIG. 9) with a flexible operating finger 51 to engage the label as it is dispensed adjacent the dispensing point, for example, on the printer-dispenser, the starting switch 33 is operated by the removal of the label from the web as the attendant would pick up the label and the controller 10 again started on its cycle.

The bracket assembly 36 for holding the start switch 33 comprises a pin 37 slidable in mounting block 39 on which a plate 38 is slidably adjusted by means of slot 38a and to which plate 38 the start switch 33 is mounted having a flexible finger 51 for engaging the label as it is dispensed. The pin 37 is rotatable and slidable in a block 39 which is mounted on the printer-dispenser so that the start switch 33 can be adjusted in any desired position to engage delivery of labels from the printer-dispenser.

In another embodiment, the start switch 33 (FIG. 6) may be so mounted as to be operated by the foot of the attendant instead of the finger 51 at the dispensing point.

In still another embodiment (FIGS. 8 and 9) the start switch 33 may be bypassed by a continuous run switch 40 (FIGS. 9 and 10) so that the controller 10 will run continuously when so desired.

An example of such a continuous run is where it is desired to accumulate the printed labels on a roll 41 (FIGS. 9 and 10) by not dispensing them singly after they leave the printing station, but allowing the web to wind up on roll 41 mounted on roll axle 43 driven by belt 47. This embodiment may be in the form of an attachment to the printer-dispenser 45 consisting of a bracket arm 52 attached by any suitable means such as bolts having a jack axle 46 or guide roll journaled thereon and the wind-up roll axle 43. The two axles 43 and 46 are connected by a suitable driving belt 47. The web 42 on which the labels are mounted is passed over the jack axle 46 and over the driven wind-up axle 48 (FIGS. 9 and 10) of the label printer-dispenser 45 and thence wound up over the continuous wind-up roll 41 which is mounted on roll axle 43.

Roll wind-up axle 48 (FIGS. 9 and 10), being separately driven by the power of the printer-dispenser, enables the web 42 to rotate jack axle 46 and in turn by means of belt 47 to drive axle 43 and hence wind up the web 42 with the printed labels on roll 41.

We claim as our invention:

1. In a label printing and dispensing apparatus for printing labels detachably reposing on a continuous web portion from unwinding to wind-up rolls through printing and dispensing stations, respectively, said apparatus having an oscillating axle means carrying a printing head in which the oscillating cycle is between an inking station and the surface of the label to be printed, the improvement in means for driving the axle means; comprising:

- (a) a plate-like supporting member disposed in operating relation to the oscillating means;
- (b) a drive shaft journaled in said support member;
- (c) motor means driving said drive shaft;

- (d) a crank arm mounted on said drive shaft;
- (e) an arm-like link member disposed at one end on the oscillating axle and having an opposite end to receive a pitman member;

- (f) a pitman member disposed between the crank arm and the link member, said pitman member having coupling means disposed at each end thereof, to connect with the link member, and with the crank arm, respectively;

- (g) a first circuit means energizing the motor means;
- (h) a first circuit sensing member activating said first circuit means upon engagement of a label engaging portion thereof with a label being dispensed at the dispensing station;

- (i) a second circuit means de-energizing the motor means;

- (j) a second circuit sensing member activating said second circuit means; and

- (k) companion engaging means between the pitman member and the second circuit sensing member to operate said second circuit means to arrest the movement of the oscillating shaft at a desired position.

2. The apparatus according to claim 1, wherein:

- (a) the end of the pitman member having coupling means for connection with the crank arm is provided with an elongated slot adapted to support a bearing block member;

- (b) a bearing block member slidably mounted in the elongated slot;

- (c) means adapted for connection of the bearing block member to the crank arm member, comprising an axle pin having one end journaled in one of said members;

- (d) resilient means disposed between the bearing block and one end of said slot, whereby driving force is transmitted from the crank arm to the pitman member.

3. The apparatus according to claim 1, wherein the companion engaging means between the pitman member and the second circuit sensing member, includes a cam member adjustably mounted on said pitman member for operatively engaging said second circuit sensing member mounted on the plate-like supporting member.

4. The apparatus according to claim 2, wherein the resilient means disposed between the bearing block and one end of the slot, includes:

- (a) a pair of helical spring members disposed respectively on opposite sides of the bearing block mounted in the elongated slot;

- (b) said helical spring members being positioned in the respective spaces between the block and the respective adjacent end of the elongated slot; and

- (c) means for retaining the spring members in their operative positions within the elongated slot.

5. The apparatus in accordance with claim 4, wherein the means for retaining the spring members in their respective operative positions within the elongated slot comprises a pair of elongated rod-like members mounted respectively in the opposite ends of the slot and extending toward the slidable block on which the spring members are axially disposed.

6. A controller for a label printer in which a printing head having a type face is oscillated in a cycle between an inking pad station and the surface of the label to be printed and returned to said inking pad station by operating means comprising:

- (a) a crank shaft;
- (b) a crank arm on said crank shaft;
- (c) motor means driving the crank shaft;
- (d) an arm-like link member having a first end fixed to the operating means of the printing head and an opposite second end to receive a pitman member;
- (e) a pitman member disposed between said link member second end and the crank arm and having journaled coupling means at each end thereof to couple

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- the pitman member to the crank arm and to the link, member, respectively;
- (f) a first circuit means energizing said motor means;
- (g) a first switch means activating said first circuit means and so disposed for manual or foot operation; 5
- (h) a second circuit means de-energizing the motor means; and
- (i) a second switch means activating said second circuit means upon engagement between the second switch means and the pitman member, whereby to 10 arrest oscillation of the printing head at a desired position.
7. The apparatus according to claim 6, wherein:
- (a) the end of the pitman member having journaled coupling means is provided with an elongated slot 15 adapted to support a bearing block member;
- (b) a bearing block member slidably mounted in the elongated slot;
- (c) a crank pin connecting the bearing block member and the crank arm having: 20
- (1) a first end disposed in the bearing block and
- (2) a second end disposed in the crank, and having
- (3) at least one end of the pin journaled in either 25 the crank arm or the bearing block; and

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- (d) resilient means disposed in said slot so that one end of the resilient means engages the block and the opposite end of the resilient means engages one end of the slot, whereby the driving force from the crank is transmitted through the resilient means to the pitman member.

8. In the device of claim 1 said second switch means so located as to be actuated by said pitman upon completion of said cycle.

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