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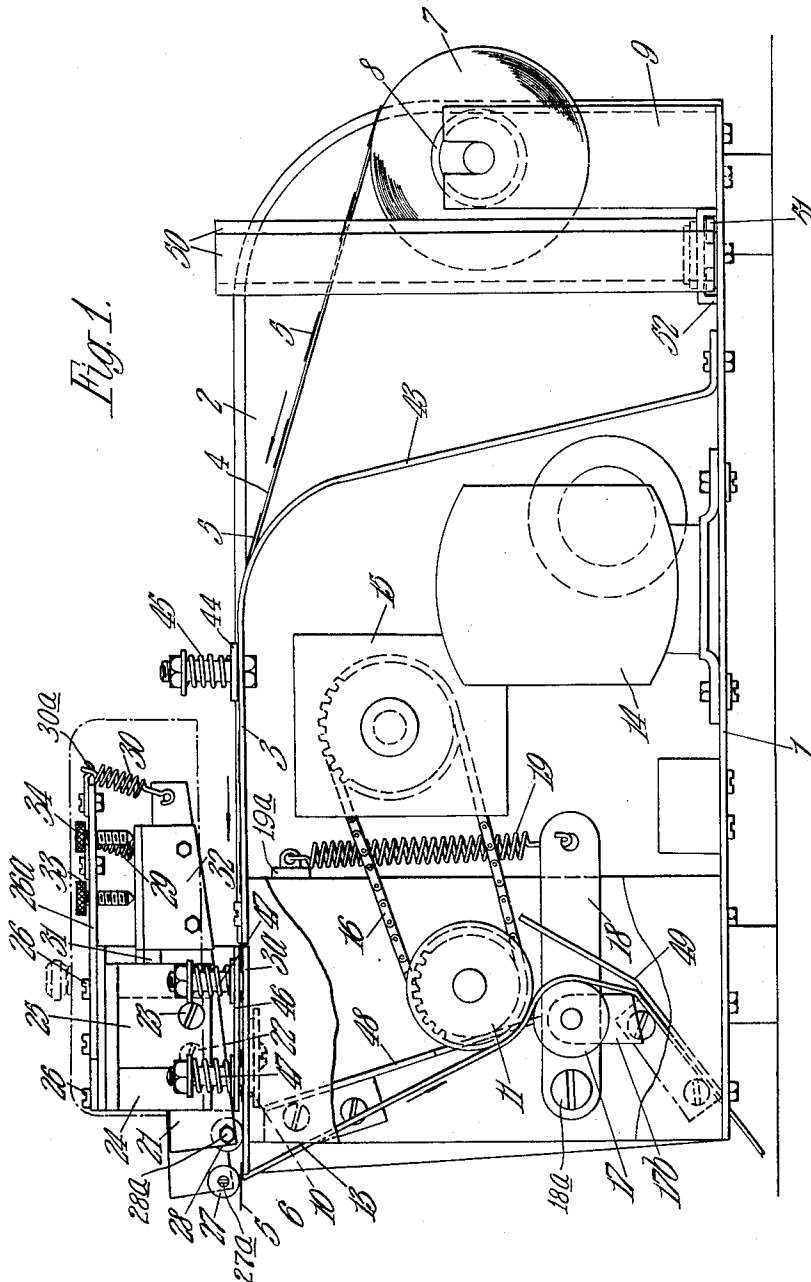
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3,029,979

MACHINES FOR DISPENSING ADHESIVE LABELS AND THE LIKE

Filed March 13, 1959

4 Sheets-Sheet 1



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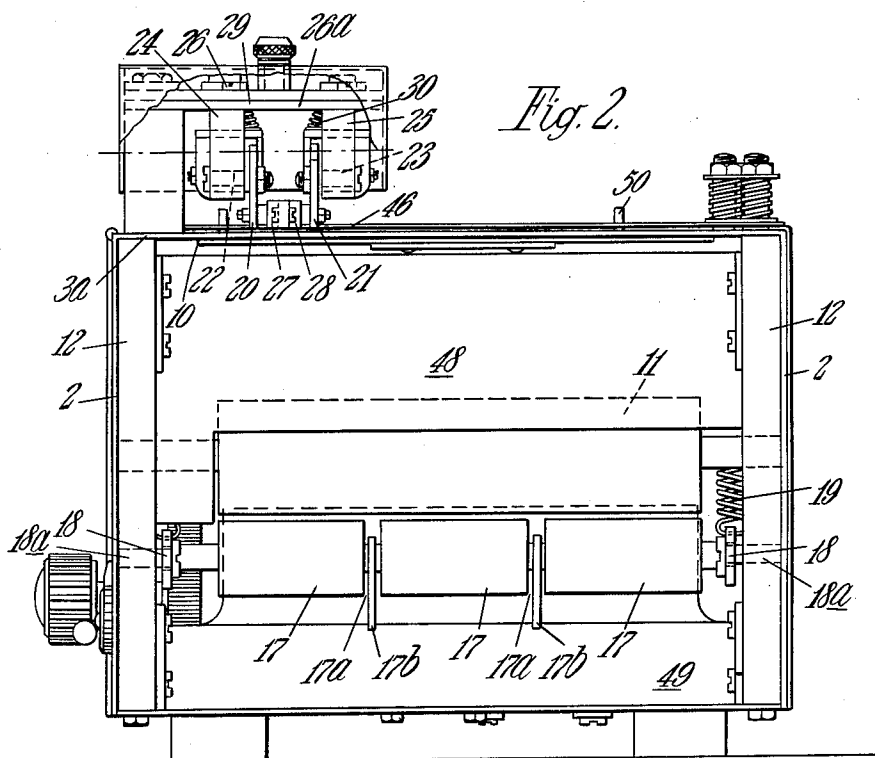
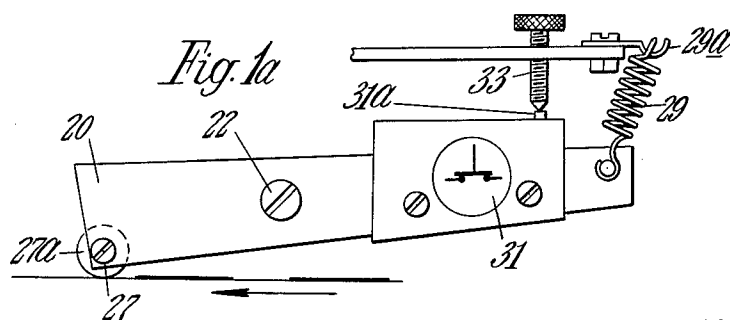
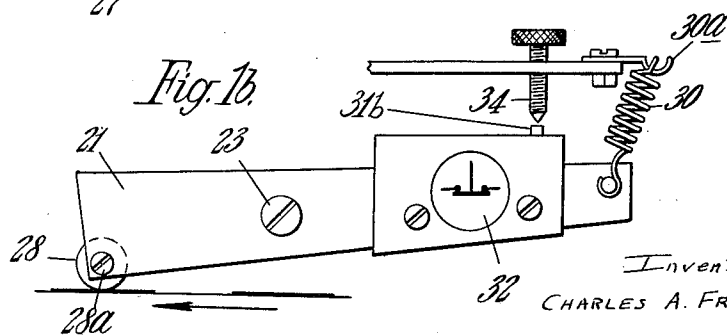
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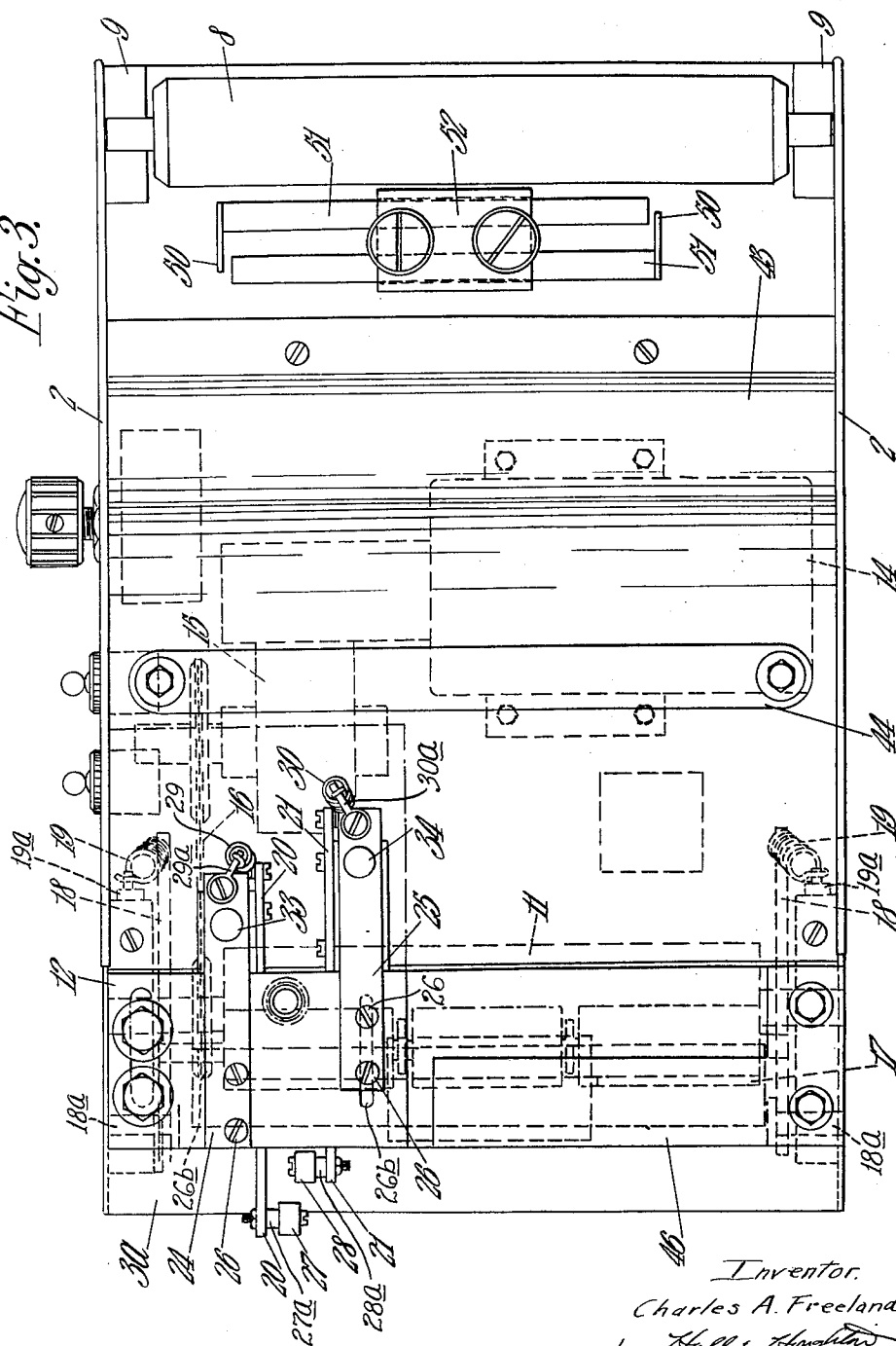
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Fig. 3.



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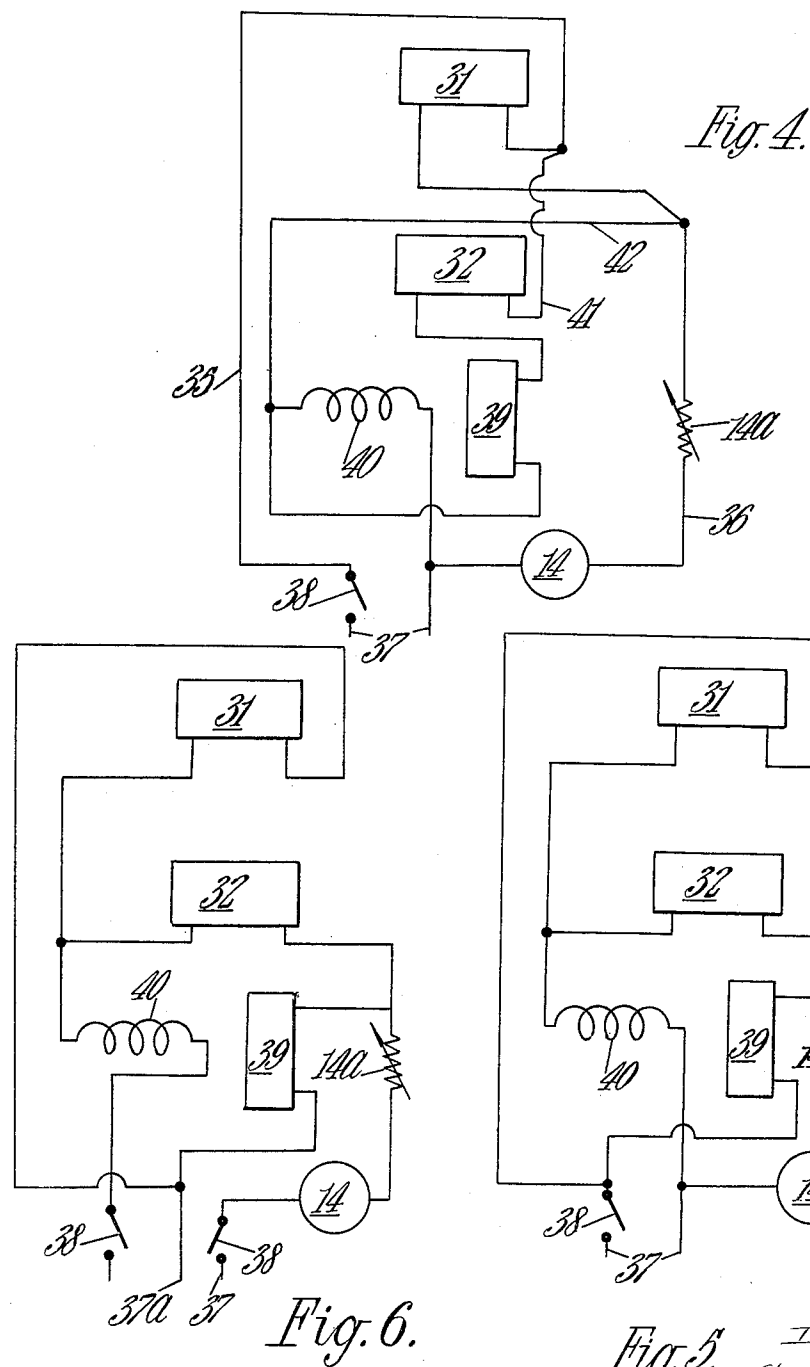


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MACHINES FOR DISPENSING ADHESIVE LABELS AND THE LIKE

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7 Claims. (Cl. 221-22)

This invention relates to machines for dispensing adhesive labels and the like temporarily mounted on a backing strip or web so that successive labels or series of labels can be readily detached by an attendant. It is an object of the invention to provide an improved machine for this purpose which accurately dispenses labels in the required position for detaching and which is capable of a higher output than machines hitherto proposed for this purpose. Another object is to provide a machine of this character which can be readily adjusted for different sizes of labels and different dispositions of the labels on the backing strip or web. The invention is particularly intended for use with labels which are known as pressure sensitive labels or which are activated or rendered adhesive by heat though not necessarily restricted to this mode of activation.

According to the invention a machine for the purpose described comprises means for feeding a backing strip or web, upon which the labels or the like (hereinafter referred to as labels) are temporarily mounted, through an angle, as over an edge or lip so that the labels become partially separated from their backing, and control means for stopping the feed when a label is in partially separated position and for re-starting the feed when said label is removed, the control means comprising a feeler operative upon the partially separated label to start the feed upon removal of said label and a second feeler independent of the first feeler and operative to the rear of the latter to stop the feed when a succeeding label reaches an appropriate partially separated position.

Preferably the second or rear feeler is arranged so that when engaged upon a label it continues the feed of the backing initiated by operation of the first feeler, but stops the feed when engaged upon a part of the backing between two labels. In this position of the backing a label is in partially separated position ready for removal. It will accordingly be understood that the spacing of the feelers in the direction of travel of the backing is governed by the longitudinal dimension of the label.

In a convenient arrangement according to the invention the feelers actuate separate micro-switches which control the operation of an electric driving motor for the feed. The front feeler switch is arranged so that when closed it closes the circuit of the motor and also the circuit of a solenoid or relay which in turn closes a switch in circuit with the rear feeler switch, so that when the latter and the relay switch are closed the motor is energised. When the rear feeler descends after the passage thereunder of a label it opens its micro switch and de-energises the relay or solenoid switch which also opens and the motor is stopped.

Means is preferably provided for adjusting the positions of the two feelers relatively to the path of travel of the backing and to each other. Also the movement of the feelers is preferably magnified for switch operation by suitable lever means.

In the accompanying drawings,

FIGURE 1 is a side elevation of a label dispensing machine, constructed in accordance with the invention, with one side of the casing removed;

FIGURES 1a and 1b are side elevations of the two

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feeler levers and switches of FIGURE 1 shown separately side by side;

FIGURE 2 is a front view of the machine of FIGURE 1;

FIGURE 3 is a plan view of the machine of FIGURE 1;

FIGURES 4, 5 and 6 are diagrams of connections of the control means.

In carrying the invention into effect according to one convenient mode as illustrated, a label dispensing machine comprises a casing having a base 1 and sides 2 supporting a horizontal table 3 including a forward part 3a over which a backing strip or web 4, upon which adhesive labels 5 are temporarily mounted, can be fed. The front end of the table part 3a is formed as a lip or edge 6, and a roll 7 of backing material having labels thereon is mounted on a mandrel 8 which is detachably and rotatably supported at the opposite end of the casing in slotted bearings 9. A heater 10 for actuating the adhesive of the labels is disposed under the table part 3a near the lip 6. A feed roller 11 for feeding the backing 4 is mounted in bearings 12 below and inwardly of the table lip 6 so that the backing after passing over the said lip is drawn downwardly at an acute angle to the table surface as seen at 13 in FIGURE 1. The feed roller 11 is driven by an electric motor 14 through suitable gearing, indicated at 15, and a chain drive 16 to draw the strip 4 downwardly in conjunction with a jockey roller 17 on pivoted levers 18 loaded by springs 19. Each lever 18 has a pivot 18a, and each spring 19 is anchored to a lug 19a. The jockey roller is divided as shown at 17a, and stripper plates 17b hang loosely in the spaces. Two feelers are supported over the table near the lip 6 thereof to engage the backing 4 at points spaced in the direction of backing travel so that the feelers are sensitive to the presence or absence of a label thereon. The feelers are in the form of levers 20 and 21 pivotally mounted at 22 and 23 on brackets 24, 25 adjustably secured by screws 26 to a support 26a and having at their forward ends rollers 27 and 28 which rest on the backing 4, the rollers being carried by pivots 27a and 28a respectively. The levers are loaded by springs 29 and 30 respectively anchored to lugs 29a and 30a, and the lever mountings are such that the levers can be separately adjusted back and forth in the direction of travel of the backing 4. This is made possible by the brackets 24 and 25 being secured to the support 26a by screws 26 which are engaged in slots 26b in said brackets, see FIGURE 3. The lever 20 carries a micro switch 31 and the lever 21 carries a micro switch 32, the micro switches coacting respectively with adjustable fixed stops 33 and 34. As shown in FIGURE 1, the levers are pivoted so as to magnify the movement of the feeler rollers. FIGURES 1a and 1b show the feeler levers 20 and 21 separated to illustrate more clearly the operation of the micro switches 31 and 32. When the front roller 27 is raised by the passage of a label beneath it, the lever 20 pivots about 22 to displace the switch operating member 31a away from the fixed stop 33 and thereby opens the switch 31. When the second feeler roller 28 is engaged with a label as shown, the operating member 31b of micro switch 32 is placed in such relation to the fixed stop 34 that the switch 32 is closed. Thus the passage of a label beneath the rollers 28 causes the rear lever 21 to pivot about 23 and displaces the switch operating member 31b away from the stop 34 so as to close the switch 32.

The first feeler roller 27 is arranged adjacent the table lip 6, and the second feeler roller 28 is disposed to the rear thereof by a distance governed by the longitudinal dimension of the labels used. The first feeler switch 31 is arranged to be open when a label is engaged by the

feeler, as seen in FIGURE 1, and this switch is arranged to control the circuit of the driving motor 14 through connections 35 and 36 as seen in FIGURE 4. The power mains are at 37 and a starting switch is provided at 38. Thus when the micro switch 31 closes the solenoid and the motor will be energised. The second feeler switch is arranged to be open when no label is engaged by the feeler roller 28, i.e. when the latter rests upon the backing only as seen in FIGURE 1, but is closed when the said roller rests upon a label. This second switch 32 is in circuit with a relay or solenoid operated switch 39, the latter being arranged, e.g. by spring loading, to open when the relay is de-energised. The relay or solenoid switch is connected to be energised when the first feeler switch 31 is closed and once energised can be kept energised through the second feeler switch 32, but said second feeler switch cannot initiate the energising of the solenoid. The second feeler switch 32 and the relay switch 39 which is actuated by the coil 40 are in series with the motor 14 and forms second motor operating circuit 35, 31, 41, 32, 39 and 42 so that when the switch 31 is closed the motor operates, and when both switches are open the motor stops. A variable resistance 14a is included in the motor circuit.

The rear part of the table 3 is formed as a downwardly directed curved shield 43 which covers the motor 14. The backing strip 4 is drawn beneath a cross plate 44 loaded by springs 45 to give a slight tension to the backing strip. Also a cross plate 46 disposed near the feeler rollers is loaded by springs 47 so as to hold the backing strip in contact with the heated table part 3a and also to assist in guiding the said strip. Also guide plates 48 and 49 (FIGURE 1) are provided to control the passage of the backing strip before and after it passes the feed roller 11.

The travel of the backing strip as it leaves the mandrel 8 is controlled by upwardly extending lateral guide plates 50 carried by horizontal bars 51 slidable transversely in a base structure 52, and adapted to be set by hand.

Labels 5 are temporarily secured to the backing 4 in longitudinally spaced relation and there may be several laterally spaced lines of labels if desired. The arrangement is such that when a label which has had its adhesive activated by the heater reaches the table lip 6 the backing bends away, and if the feed is stopped at this point a part of the label protrudes horizontally over the lip, see FIGURE 1, and can be removed by an attendant. The arrangement is such that the or one of the labels in this position is engaged by the first feeler roller 27 whilst the second feeler roller 28 rests on the backing 4 in the space between two labels. The motor circuit is consequently open since both micro switches 31 and 32 are open. When the attendant removes the protruding label, the front feeler roller 27 descends and closes its micro switch 31 to start the feed and also to close the relay switch 39. The next label in the series then passes under the second feeler roller 28 to close its micro switch, thereby closing second motor circuit referred to above so that the motor continues to operate when said label passes beneath the first feeler roller 27 and opens its micro switch 31. The second feeler switch 32 also maintains closed the energising circuit of the relay 39. When the said label leaves the second feeler roller 28 the latter descends to open its micro switch 32 and also to de-energise the relay coil 40 so that the relay switch 39 also opens and the motor stops. At this stage the label is under the first feeler roller 27 and protrudes over the table lip. If this label is removed by the attendant the above cycle of operations is repeated. When the labels are disposed in transverse rows the feelers are arranged to engage labels in one of the longitudinal lines and the attendant removes the other protruding labels first.

It will be seen that the two feelers and their micro switches operate independently and that the first feeler

starts the drive but cannot stop it while the second feeler is engaged on a label. The second feeler cannot start the drive but operates to stop the motor when it engages the space between two consecutive labels. It will thus be seen that the longitudinal dimension of the label governs the drive control, and the feelers are independently adjustable to suit different sizes of label. The purpose of the relay switch is to obviate the possibility of the drive being accidentally restarted in the event of the motor over-running and passing a label under the feeler switch 32 thereby closing that switch. The machine is therefore capable of delivering labels accurately at a rapid rate.

In FIGURE 5 there is shown a modified wiring diagram in which the motor load is taken through the relay switch 39. FIGURE 6 shows a further modified diagram in which provision is made for a low voltage to be supplied to the micro switches from low voltage mains 37a. The principles of operation are as described previously and the same references have been employed.

The backing for the labels may be of paper or other suitable material, for example a paper having a smooth or glossy surface, and the adhesive used may be of any suitable kind.

The invention is not restricted to the example described, since the arrangement and mounting of the parts may be widely varied within the scope of the appendent claims. It is also to be understood that the term label includes any form of adhesive sheet.

I claim:

1. A machine for dispensing labels, having a backing web, labels carried by said backing web, feeding means for feeding labels on said web successively to dispensing position, and control means for stopping operation of the feeding means when a label reaches dispensing position and for re-starting operation of said feeding means when said label is removed, said control means comprising a first feeler engageable by a label in dispensing position, a first switch operated by said first feeler to start operation of the feeding means when said label is removed, a second feeler independent of the first feeler and disposed rearwardly of the latter a distance less than the longitudinal dimension of a label, and a second switch operated by said second feeler to stop operation of the feeding means when a label reaches dispensing position, the said control means including a stop means to prevent operation of the feeding means being initiated by said second feeler switch independently of a previous operation of the first feeler switch.

2. A machine according to claim 1, in which said second feeler is arranged to close its switch to continue operation of the feeding means when a label is beneath said second feeler.

3. A machine according to claim 1, in which the said switches are micro switches.

4. A machine according to claim 1, the said feed means comprising a driving motor, the said control means having a control circuit which is closed by operation of the first feeler switch to start the said motor when a label is removed from dispensing position and a second circuit controlled by the operation of said second feeler switch, the said stop means including a relay switch and a circuit which is closed by said operation of said first feeler switch, said relay switch also being included in the circuit of the second feeler switch to operate the said motor when said second feeler switch and said relay switch are both closed, said second feeler switch being closed by the passage of a label thereunder and being opened in the absence of a label so that such opening of the second feeler switch de-energizes and opens the relay switch to stop the feeding means when a label reaches dispensing position.

5. A machine according to claim 1, comprises a support for said feelers and means for separately adjusting

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said feelers in said support in the direction of the path of travel of the backing web and relatively to each other.

6. A machine according to claim 1, in which each feeler comprises a lever, a pivot for said lever, a roller carried by said lever and engageable with the backing web, and a loading spring connected to said lever for urging the roller thereon into engagement with a label on the backing web.

7. A machine according to claim 1, in which each feeler comprises a lever, a pivot for said lever, a roller carried by said lever and engageable with the backing web, a loading spring connected to said lever for urging

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the roller thereon into engagement with a label on the backing web, the lever carrying the feeler switch, a fixed stop arranged to be engaged by said switch upon tilting movement of the lever to operate the switch, and means to adjust said stop.

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