June 1, 1965 J. A. WEST ETAL 3,186,589

DEVICE FOR DISPENSING PRESSURE-SENSITIVE LABELS

Filed May 2, 1963

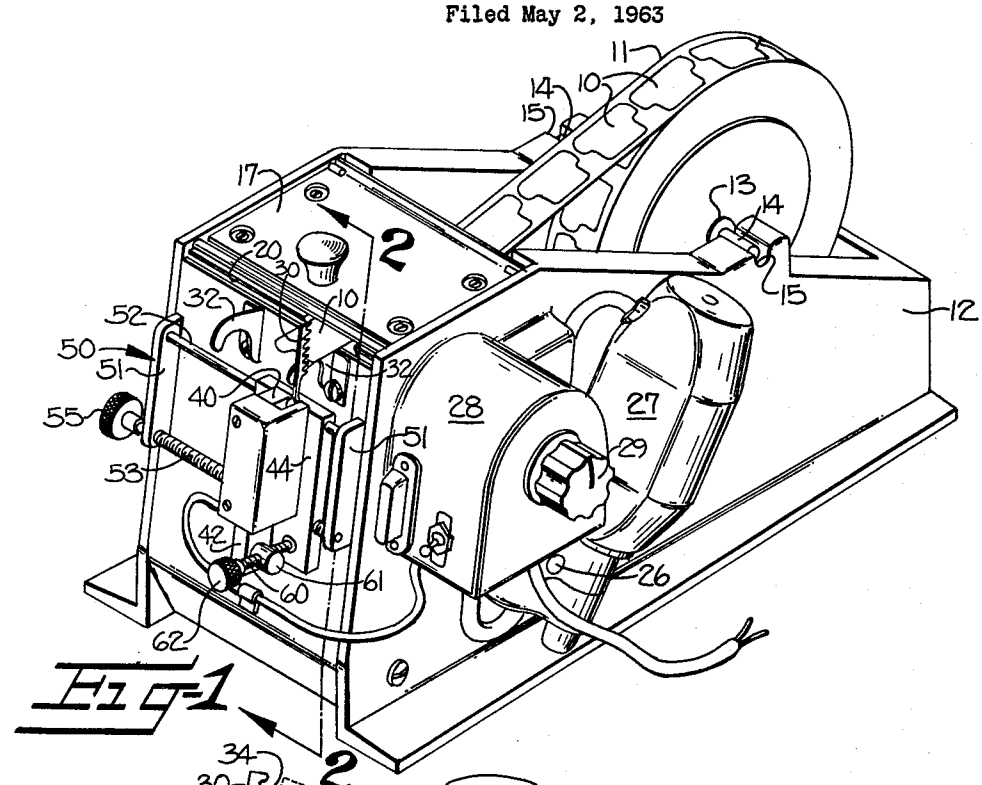


Fig-1

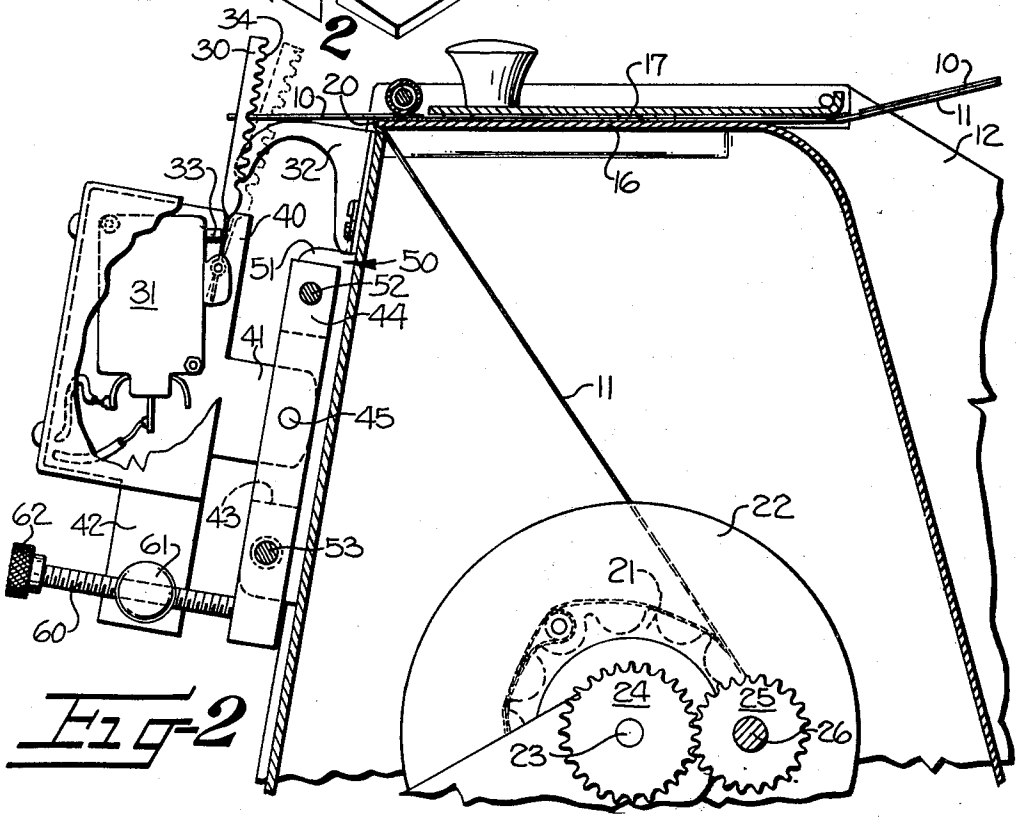


Fig-2

United States Patent Office 3,186,589 Patented June 1, 1965

3,186,589

DEVICE FOR DISPENSING PRESSURE-SENSITIVE LABELS

John A. West and William R. Eppes, Charlotte, N.C., assignors to Idento Equipment Company, a corporation of North Carolina

Filed May 2, 1963, Ser. No. 277,535
8 Claims. (Cl. 221—13)

This invention relates to improvements in a device for dispensing labels from a web having a series of separately detachable labels adhered thereto along the length thereof by a pressure-sensitive adhesive. More particularly, the dispensing device according to the present invention is one in which the feeding of a web having a series of dispensable labels detachably mounted thereon is automatically controlled to provide for intermittent stopping of the feeding of the web, thereby permitting successive removal of individual labels from the web by the operator of the device with the feeding of the web being automatically resumed each time a label is removed therefrom to deliver another label on the web into a dispensable position for subsequent removal by the operator.

It is therefore an object of the present invention to provide in a device for dispensing labels from a web having a series of separately detachable labels mounted thereon, an improved control mechanism of simple construction for intermittently stopping the feeding of the web in order to permit successive removal of individual labels therefrom by an operator in a smooth, substantially continuous operation.

It is another object of this invention to provide a device of the character described for dispensing labels from a web having a series of separately detachable labels adhered thereto along the length thereof, wherein the web is fed along a predetermined path to provide for successive delivery of the labels on the web to a dispensable position in which a forwardly disposed portion of the leading label on the web is stripped from the web to project outwardly at an angle from the web so as to forcibly engage an actuator arm by continued movement of the leading label to the dispensable position moving the actuator arm in a direction for operating a control member to stop the feeding of the web, whereupon the leading label can be removed from the dispensable position permitting the actuator arm to return to its previous position which operates the control member to resume feeding of the web for subsequent dispensing of another label in the same manner.

It is a further object of this invention to provide in a label dispensing device of the character described having an actuator arm forcibly engaged by the advancement of a leading label on the web thereagainst to stop feeding of the web for permitting removal of the leading label, an adjustment mechanism for properly positioning the actuator arm to accommodate label-containing webs where respective webs have labels of different width and/or length mounted thereon.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds, when taken in connection with the accompanying drawings, in which—

FIGURE 1 is a perspective view of a device for dispensing pressure-sensitive labels in accordance with the present invention; and

FIGURE 2 is a fragmentary enlarged longitudinal sectional view taken along the line 2—2 in FIGURE 1, parts being broken away.

Referring more specifically to the drawings, there is illustrated a device for dispensing pressure-sensitive labels 10 which are mounted on an elongated web or backing strip 11 along the length thereof in separately detachable

relationship. The dispensing device comprises a housing 12 within which is partially received a feed roll 13 containing a supply of the web 11 wound thereabout. In this connection, it will be observed that a rearwardly disposed upper portion of the housing 12 is open to provide a well or recess for receiving a roll of the label-containing web 11 wound about the feed roll 13, the feed roll 13 being capable of accommodating webs of different widths and lengths. The feed roll 13 is rotatably supported by axles 14 extending laterally from the opposite sides thereof and being received within suitable notches 15 formed in the opposite side walls of the housing 12.

A portion of the label-containing web 11 is unwound from the roll thereof and threaded between a platform 16 having a flat surface and a removable flat pressure plate 17 which rests against the web 11 to hold it against the flat surface of the platform 16. The flat surface of the platform 16 terminates in a forwardly disposed edge 20 over which the web 11 is sharply bent in a reverse direction, with the free end of the web 11 being secured to a driven take-up roll 21 having flanges 22 to retain the windings of the web 11 thereon. The take-up roll 21 is secured to a shaft 23 which is rotatably supported within the housing 12. The shaft 23 carries a gear 24 which is adapted to be driven by an operating gear 25 in meshing engagement therewith. This construction generally conforms to the dispensing device disclosed in U.S. Patent 3,077,919 issued to Alfred P. Krueger on February 19, 1963.

The operating gear 25 is secured on the power shaft 26 of an electric motor 27 which is connected in series with a variable speed drive mechanism in the form of a rheostat 28 having an adjustment knob 29 so that the power shaft 26 may be driven at a selected rate of rotation to rotate the take-up roll 21 at a selected rate of speed through the gearing arrangement described.

Feeding means are therefore provided for advancing the label-containing web 11 in a predetermined path of movement proceeding from an idler feed roll 13 to a driven take-up roll 21, wherein the path of movement of the web 11 sharply changes direction as the web 11 passes over the forward edge 20 of the platform 16 to successively partially strip individual labels 10 from the web 11 when each label 10 advances past the forward edge 20 of the platform 16. In this connection, each label 10 adhered to the web 11 is successively delivered to a dispensable position in which the label 10 extends outwardly beyond the forward edge 20 of the platform 16 in partially stripped relationship from the web 11 and projecting outwardly at an angle therefrom.

In accordance with the present invention, an improved control means of simple construction is employed to intermittently stop the feeding of the web 11 from the feed roll 13 to the take-up roll 21 by breaking the electrical circuit supplying electric energy to the motor 27 for rotating the take-up roll 21 through the rotation of the power shaft 26. To this end, the forwardly disposed wall or front wall of the housing 12 for the dispensing device adjustably supports a pivotal actuator arm 30 which is movable between positions operating a feed control switch 31 to complete and break the electrical circuit for the motor 27 to start and stop the feeding means for advancing the web 11 by providing for either rotation or non-rotation of the take-up roll 21. The actuator arm 30 is generally vertically elongated, being pivotally mounted at its lower end to the housing containing the control switch 31. The actuator arm 30 is disposed adjacent the forward edge 20 of the platform 16 in spaced relation thereto, the actuator arm 30 being adjustably positioned, as hereinafter described, so as to be spaced from the forward edge 20 of the platform 16 a distance less than

the dimension to which a label 10 may be stripped from the web 11 as the web 11 advances past the forward edge 20 of the platform 16 and is sharply bent backwardly toward the take-up roll 21. One or more label supports 32 (two such label supports being shown in FIGURE 1) may be secured to the front wall of the housing 12 adjacent the forward edge 20 of the platform 16 so as to extend forwardly of the front wall to support the forwardly disposed portion of a label 10 which has been stripped from the web 11 in a suspended dispensable position projecting outwardly at an angle from the web 11.

The actuator arm 30 is normally biased to a rearward position by a resilient spring (not shown) associated with a push-button 33 for opening and closing the switch 31, the push-button 33 abutting the actuator arm 30 adjacent the lower pivotally mounted end thereof. Thus, as the web 11 is being fed from the feed roll 13 to the take-up roll 21, the forwardly disposed portion of the leading label 10 thereon is stripped from the web 11 as it is delivered to the dispensable position in the manner described and forcibly engages the actuator arm 30, whereupon continued movement of the leading label 10 to the dispensable position forces the actuator arm 30 forwardly to its forward position, thereby depressing the push-button 33 and opening the switch 31 to stop feeding of the web 11. Movement of the web 11 is thereby stopped with the leading label 10 thereon disposed in partially stripped relationship overlying the label support(s) 32 so that it can be readily removed.

When the leading label 10 is removed from the dispensable position by the operator, the actuator arm 30 is biased rearwardly about its lower pivotally mounted end by the extension of the push-button 33. Movement of the actuator arm 30 to its rearward position operates the switch 31 to close the switch 31 for completing the electrical circuit to operate the motor 27, thereby resuming the feeding of the web 11 by causing the take-up roll 21 to be rotated. This cycle of operations may be continuously repeated to successively remove each of the labels 10 from the web 11 in the manner described.

It will be noted that the actuator arm 30 includes a substantially vertically extending, rear serrated surface 34 opposed to the leading edge of a label 10 as it is partially stripped from the web 11. This serrated surface 34 on the actuator arm 30 provides a plurality of teeth therealong to prevent slipping of the forwardly disposed edge of the partially stripped label 10, as it is being delivered to the dispensable position, either upwardly or downwardly along the length of the actuator arm 30 which might otherwise result in the failure of the leading label 10 to force the actuator arm 30 forwardly a sufficient distance to depress the pushbutton 33 for operating the switch 31 to open the electrical motor circuit and stop feeding of the web 11.

The control mechanism for intermittently stopping the feeding of the label-containing web 11 from the feed roll 13 to the take-up roll 21 further includes adjustment means for regulating the position of the actuator arm 30 with respect to the forward edge 20 of the platform 16 in both longitudinal and transverse directions. To this end, it will be observed that the switch housing containing the control switch 31 and on which the actuator arm 30 is mounted for pivotal movement about its lower end is itself mounted on a base member 40. The base member 40 is provided with a generally horizontal rearwardly extending leg 41 and a dependent generally vertical leg 42 disposed at right angles to the rearwardly extending leg 41. The rearwardly extending leg 41 of the base member 40 is loosely received within a vertically elongated slot 43 of a rectangular block 44, the leg 41 being swivelly connected to the block 44 by a pin 45 carried by the block 44 and which extends transversely across the slot 43 and penetrates the leg 41 of the base member 40.

The block 44 is supported by a rack 50 secured to the front wall of the housing 12. The rack 50 comprises forwardly extending end members 51 secured to the front wall of the housing 12 and interconnected by an upper smooth shaft 52 and a lower threaded shaft 53 extending therebetween in spaced parallel relation with respect to each other. The block 44 is suitably apertured so as to be slidably received by the smooth shaft 52 and threadably received by the threaded shaft 53. The lower threaded shaft 53 may be rotated by turning a knurled knob 55 affixed to one end thereof extending outwardly of an end member 51 for adjusting the position of the block 44 on the rack 50. Since the block 44 carries the base member 40 through the connection between the pin 45 and the leg 41 of the base member 40, the position of the actuator arm 30 mounted on the switch housing of the control switch 31 which is carried by the base member 40 can be adjusted longitudinally along the forward edge 20 of the platform 16 or transversely with respect to the opposite sides of the housing 12 by turning the knob 55 to rotate the threaded shaft 53.

The space existing between the actuator arm 30 when it is disposed in its normal rearward position and the forward edge 20 of the platform 16 may likewise be adjusted to a predetermined distance to accommodate labels 10 of different lengthwise extent as mounted on the web 11. It should be understood that this predetermined distance should be such that the actuator arm 30 will be forced forwardly by engaging movement of a partially stripped label 10 thereagainst to in turn operate the switch 31 to stop the feeding of the web 11 prior to complete stripping of label 10 from the backing web 11 to thus present the label 10 in dispensable position. To this end, a threaded shaft 60 is rotatably mounted at one end on the block 44, the threaded shaft 60 extending forwardly of the block 44 and being threadably received through a lateral extension 61 secured to the dependent leg 42 of the base member 40. A knurled knob 62 is provided on the forward end of the threaded shaft 60 and may be turned to rotate the threaded shaft 60 for adjusting the position of the lateral extension 61 on the threaded shaft 60. Adjustment of the lateral extension 61 on the threaded shaft 60 in the manner described causes the base member 40 to be pivoted about the pin 45 to which the leg 41 is swivelly secured, thereby changing the position of the base member 40 with respect to the front wall of the housing 12 to accordingly adjust the space between the forward edge 20 of the platform 16 and the elongated actuator arm 30 to a selected distance for accommodating a web 11 having labels 10 with a predetermined lengthwise dimension as mounted on the web 11 to enable the control mechanism to intermittently start and stop feeding of the label-containing web 11 in the described manner. It will therefore be understood that the device according to the present invention may be employed to dispense labels from a web, wherein the dimensions and positioning of the labels along the web may be varied over a wide range, while the width of the web may be changed to suit the particular size of the labels to be detachably mounted thereon for subsequent dispensing.

In the drawings and specification there has been set forth a preferred embodiment of the invention and although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

We claim:

1. A device for dispensing labels from a web having a series of separately detachable labels adhered thereto along the length thereof, said device comprising

(a) a web supporting plate having a forward label stripping edge which is adapted to have a web with labels thereon drawn thereover and therearound,

(b) feeding means operatively associated with said web supporting plate for moving the web along a

predetermined path of travel onto said web supporting plate and over and around said label stripping edge for successively stripping the labels from the web and for successively delivering the labels to a dispensable position in which a portion of each successive label is stripped from the web and projects forwardly from said label stripping edge,

(c) an actuator arm disposed forwardly of said label stripping edge of said web supporting plate and extending into the path of travel of a label being stripped from the web and adapted to be engaged thereby, said actuator arm normally occupying a rearward position toward which the same is biased and being movable by a label being stripped from the web to a forward position and being adapted to be held in this forward position by each label in the dispensable position and aids in maintaining the label in the dispensable position until the label is removed, said actuator arm then returning to said rearward position, and

(d) control means operatively associated with said actuator arm and said feeding means and operable in response to movement of said actuator arm to said forward position for stopping said feeding means and operable upon return of said actuator arm to said normal rearward position for actuating said feeding means.

2. A label dispensing device according to claim 1 including

(e) label supporting means disposed intermediate said label stripping edge on said web supporting plate and said actuator arm and adapted to receive each successive label being stripped from the web for supporting the labels as the same are delivered to the dispensable position.

3. A label dispensing device according to claim 1 wherein said actuating arm has a plurality of serrations in the rearwardly facing surface thereof, said serrations being adapted to receive the leading edge of a label being stripped from the web therein for supporting this leading edge of the label and for insuring against relative movement between this leading edge of the label and said actuating arm.

4. A device for dispensing labels from a web having a series of separately detachable labels adhered thereto along the length thereof, said device comprising

(a) a web supporting plate having a forward label stripping edge which is adapted to have a web with labels thereon drawn thereover and therearound,

(b) feeding means operatively associated with said web supporting plate and the label stripping edge thereon for moving the web along a predetermined path of travel onto said web supporting plate and over and around said label stripping edge for successively stripping labels from the web and for successively delivering the labels to a dispensable position in which a portion of each successive label is stripped from the web and projects forwardly from said label stripping edge,

(c) an actuator arm disposed forwardly of said label stripping edge of said web supporting plate and extending into the path of travel of a label being stripped from the web and adapted to be engaged thereby, said actuator arm having a plurality of serrations in the rearwardly facing surface thereof adapted to receive the leading edge of each successive label being stripped from the web for supporting this leading edge and for preventing relative movement between this leading edge and said actuator arm, said actuator arm normally occupying a rearward position toward which the same is biased and being movable by a label being stripped from the web to a forward position and aiding in maintaining the label in the dispensable position until the label

is removed, said actuator arm then returning to said rearward position,

(d) label supporting means disposed intermediate said label stripping edge on said web supporting plate and said actuator arm and adapted to receive each successive label being stripped from the web for supporting the labels as the same are delivered to the dispensable position, and

(e) control means operatively associated with said actuator arm and said feeding means and operable upon movement of said actuator arm to said forward position for stopping said feeding means and operable upon return of said actuator arm to said normal rearward position for actuating said feeding means.

5. A device for dispensing labels from a web having a series of separately detachable labels adhered thereto along the length thereof, said device comprising

(a) a web supporting plate having a forward label stripping edge which is adapted to have a web with labels thereon drawn thereover and therearound,

(b) feeding means operatively associated with said web supporting plate and the label stripping edge thereon for moving the web along a predetermnied path of travel onto said web supporting plate and over and around said label stripping edge for successively stripping labels from the web and for successively delivering the labels to a dispensable position in which a portion of each successive label is stripped from the web and projects forwardly from said label stripping edge,

(c) an actuator arm disposed forwardly of said label stripping edge of said web supporting plate and extending into the path of travel of a label being stripped from the web and adapted to be engaged thereby said actuator arm normally occupying a rearward position toward which the same is biased and being movable by a label being stripped from the web to a forward position and being adapted to be held in this forward position by each label in the dispensable position and aiding in maintaining the label in the dispensable position until the label is removed, said actuator arm then returning to said rearward position,

(d) means mounting said actuator arm for adjustment toward and away from said label stripping edge of said web supporting plate for accommodating labels of varying size and for adjustment laterally of said label stripping edge for insuring correct registration of said actuator arm with the labels being stripped from the web, and

(e) control means operatively associated with said actuator arm and said feeding means and operable upon movement of said actuator arm to said forward position for stopping said feeding means and operable upon return of said actuator arm to said normal rearward position for actuating said feeding means.

6. A label dispensing device according to claim 5 wherein said web supporting plate and the forward label stripping edge thereon are horizontally disposed and said actuator arm is vertically disposed and has a plurality of serrations in the rearwardly facing surface thereof which are adapted to receive the leading edge of a label being stripped from the web therein for supporting the leading edge of the labels and for preventing relative movement between the leading edge of the label and said actuating arm.

7. A device for dispensing labels from a web having a series of separately detachable labels adhered thereto along the length thereof, said device comprising

(a) a web supporting plate having a forward label stripping edge which is adapted to have a web with labels thereon drawn thereover and therearound,

(b) feeding means operatively associated with said web supporting plate and the label stripping edge thereon for moving the web along a predetermined

path of travel onto said web supporting plate and over and around said label stripping edge for successively stripping labels from the web and for successively delivering the labels to a dispensable position in which a portion of each successive label is stripped from the web and projects forwardly from said label stripping edge,

(c) an actuator arm disposed forwardly of said label stripping edge of said web supporting plate and extending vertically into the path of travel of a label being stripped from the web and having a plurality of serrations on the rearwardly facing surface thereof adapted to receive the leading edge of a label being stripped from the web therein for supporting this leading edge and for preventing relative movement between the leading edge and said actuator arm, said actuator arm being movable between a rearward position spaced from said label stripping edge a distance less than the length of the portion of each successive label which projects forwardly from said label stripping edge when the label is in said dispensable position and a forward position spaced a further distance away from said label stripping edge than said rearward position, said actuator arm being adapted to be moved from said rearward position to said forward position by the labels being stripped from the web and aiding in maintaining the label in the dispensable position until the same is removed,

(d) means operatively connected to said actuator arm for biasing said actuator arm toward said rearward position but permitting movement of said actuator arm from the rearward to the forward position by the labels being stripped from the web,

(e) means mounting said actuator arm for adjustment toward and away from said label stripping edge of said web supporting plate for accommodating labels of varying size, and mounting said actuator arm for adjustment laterally of said label stripping edge for insuring correct registration of said actuator arm with the labels being stripped from the web,

(f) label supporting means disposed between said label stripping edge on said web supporting plate and said actuator arm for supporting the successive labels being stripped from the web as the same are delivered to and occupy the dispensable position, and

(g) control means operatively associated with said actuator arm and said feeding means and operable upon movement of said actuator arm to said forward position for stopping said feeding means and operable upon return of said actuator arm to said rearward position for actuating said feeding means.

8. A control mechanism for intermittently stopping the movement of a web having labels detachably adhered thereto along the extent thereof to provide for the successive removal of individual labels from the web, wherein the path of movement of the web sharply changes direction at one location therealong to successively cause each label to be partially stripped from the web as the respective label advances past the location at which the path of movement of the web sharply changes direction for delivering the label to a dispensable position, said control mechanism comprising

(a) an actuator arm disposed forwardly of the web and movable between forward and rearward positions, said actuator arm being normally biased to a rearward position in spaced alinement with the leading label on the web and opposing continued movement of the leading label to the dispensable position,

(b) means to adjust said arm in both transverse and longitudinal directions with respect to the web for locating said arm in spaced alinement with the leading label on the web and opposing continued movement of the leading label to the dispensable position, said adjusting means comprising

(1) a base on which said arm is carried,

(2) a rack including a pair of shafts disposed in spaced parallel relationship and extending transversely to the web, one of said pair of shafts comprising a first threaded shaft and the other shaft being smooth,

(3) a block threadably received on said first threaded shaft and slidably received on said smooth shaft,

(4) means pivotally connecting said base to said block in a changeable selected fixed position,

(5) said first threaded shaft being rotatable to move said block along said pair of shafts for imparting corresponding movement to said base and said arm carried thereby to adjust said arm in a transverse direction with respect to the web,

(6) a second threaded shaft rotatably mounted at one end on said block and extending outwardly therefrom,

(7) said base being threadably received on said second threaded shaft, and

(8) said second threaded shaft being rotatable to pivotally move said base with respect to said block in a direction longitudinally of the web for adjusting the changeable selected fixed position of said base, thereby adjusting said arm in a longitudinal direction with respect to the web,

(c) means operable by movement of said arm to its forward position for stopping the movement of the web,

(d) said arm being moved to its forward position in response to forcible engagement of the leading label with said arm and continued movement of the leading label to the dispensable position for stopping movement of the web, and

(e) the movement of the web being resumed in response to the removal of the leading label from the dispensable position returning said arm to its normal rearward position.

References Cited by the Examiner

UNITED STATES PATENTS

3,029,979	4/62	Freeland	221—22
3,033,417	5/62	VanMeer	221—13

EVERETT W. KIRBY, *Primary Examiner.*

LOUIS J. DEMBO, *Examiner.*