Aug. 25, 1964 P. SILVERSTEIN 3,146,149

LABEL PRINTING AND DISPENSING MACHINE

Filed Sept. 1, 1960 3 Sheets-Sheet 1

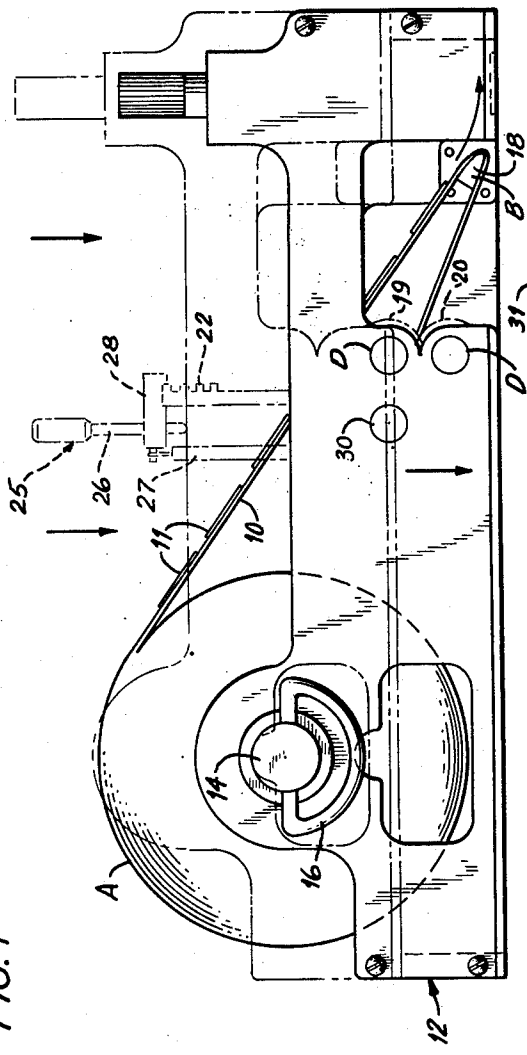

FIG. 1

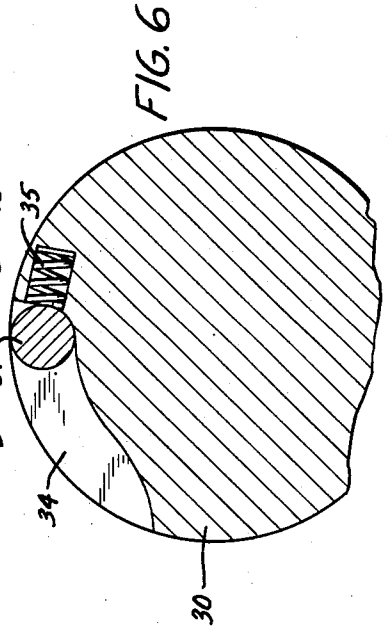

FIG. 6

INVENTOR.
PAUL SILVERSTEIN
BY Kleinberg & Lilling
ATTORNEYS

Aug. 25, 1964 P. SILVERSTEIN 3,146,149

LABEL PRINTING AND DISPENSING MACHINE

Filed Sept. 1, 1960 3 Sheets-Sheet 2

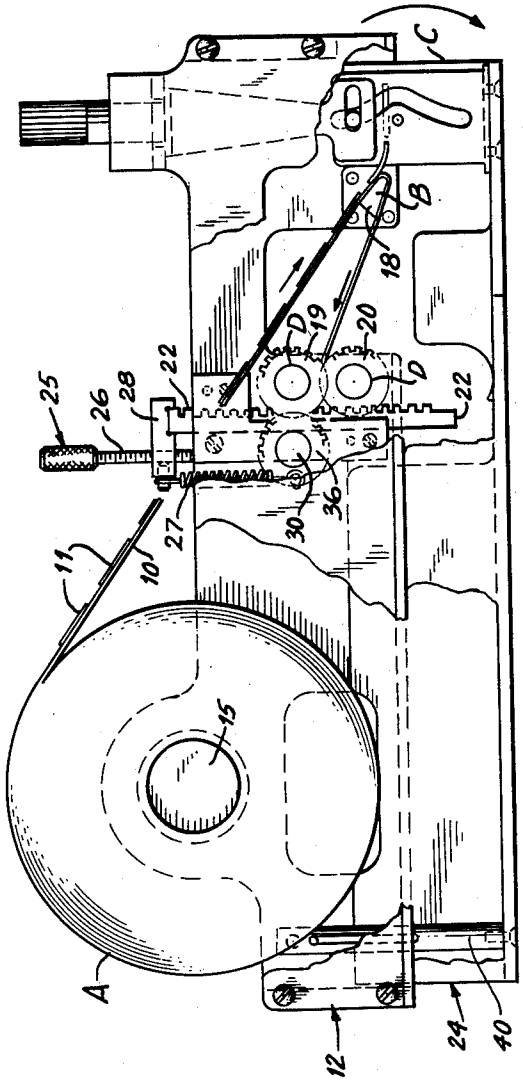

FIG. 2

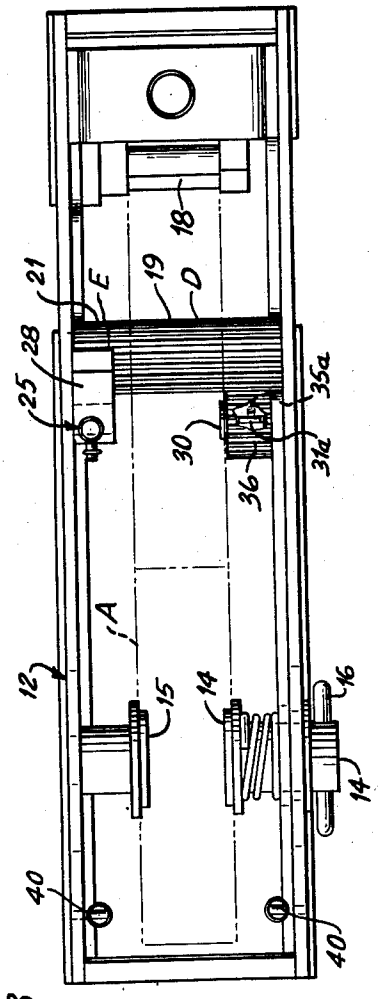

FIG. 3

INVENTOR.
PAUL SILVERSTEIN
BY
Kleinberg & Selling
ATTORNEYS

Aug. 25, 1964 P. SILVERSTEIN 3,146,149

LABEL PRINTING AND DISPENSING MACHINE

Filed Sept. 1, 1960 3 Sheets-Sheet 3

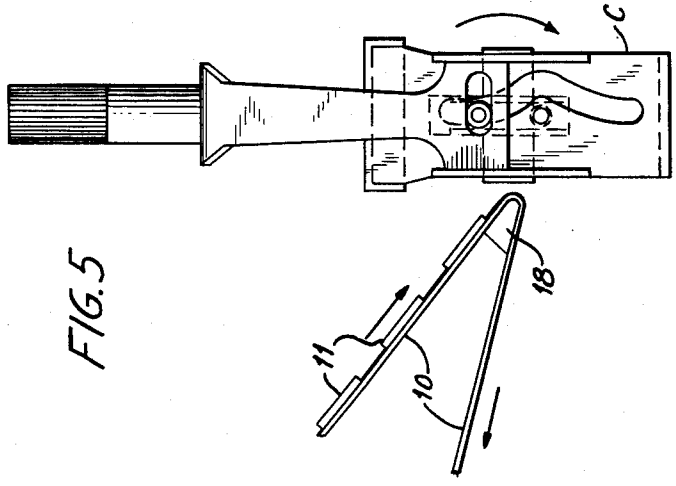

FIG. 5

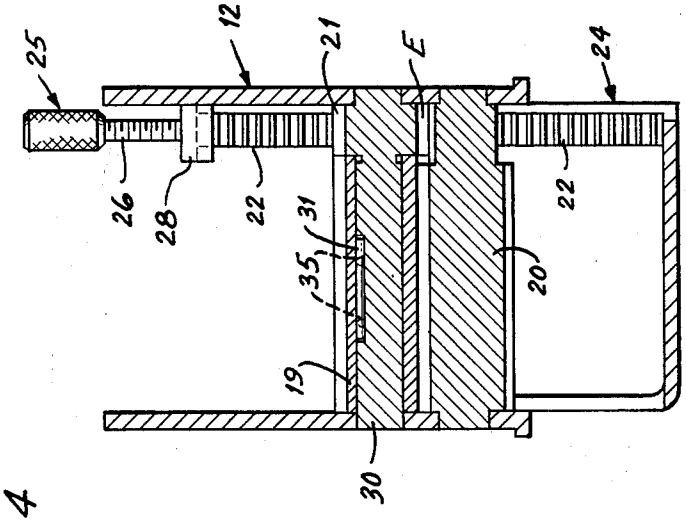

FIG. 4

INVENTOR.
PAUL SILVERSTEIN

BY Kleinberg & Lilling

ATTORNEYS

United States Patent Office 3,146,149 Patented Aug. 25, 1964

3,146,149

LABEL PRINTING AND DISPENSING MACHINE

Paul Silverstein, 550 E. 21st St., Brooklyn, N.Y.

Filed Sept. 1, 1960, Ser. No. 53,549
5 Claims. (Cl. 156—385)

The invention here presented is broadly in the field of the label applicating art; more specifically it presents an automatic tape labeler; and in detail it is concerned with apparatus for printing and transferring pressure sensitive tickets from a carrier tape to an article.

While pressure sensitive ticket dispensers generally are well-known, their construction has limited their use.

In department stores or the like it is often necessary to indicate price and other information on each article to be sold. In even a relatively small establishment this job can be enormous. It is necessary to manually indicate the price and any other coding information directly on the article or first on a pressure sensitive ticket and then press the ticket on the article to be sold.

It is the cardinal object of this invention, therefore, to provide automatic adhesive ticket printing and affixing apparatus.

It is another object and accomplishment hereof to provide a device as above described that is relatively compact and which can be readily carried by an operator.

Still another object of this invention is to describe a pressure sensitive ticket printer and applicator that is economical to produce and has relatively few working parts.

A further object of this device is to describe a mechanism that will dispense printed pressure sensitive tickets automatically, utilizing only one hand of the operator.

A further purpose of this invention is to set forth a pressure sensitive ticket dispenser which is readily and conveniently adjustable to accommodate different sizes of tickets.

An ancillary object of this invention is to set forth a new and improved method of feeding tape through any machine.

With these objects in view, the invention consists of the novel features of construction and arrangement of parts which will appear in the following specification and recited in the accompanying claims, reference being made to the accompanying drawings in which the same reference numerals indicate the same parts throughout the various figures, and in which:

FIGURE 1 is a side elevational view of the invention, illustrating the parts in their normally inoperative position in phantom, and in the operative or ticket dispensing position in solid.

FIGURE 2 is a side elevational view partly in section corresponding to FIGURE 1 but illustrating the parts only in their normal inoperative position.

FIGURE 3 is a top plan view of the invention prior to the installation of the pressure sensitive ticket carrier reel.

FIGURE 4 is a detail view in section of the carrier tape activating means, and the frames.

FIGURE 5 is a detail sectional view of the ticket printer and the ticket dispensing means.

FIGURE 6 is an enlarged detail sectional view of the tape actuating clutch.

In the exemplary embodiment of the invention depicted, which may be for some purposes a preferred embodiment of the invention, there is illustrated generally an adhesive ticket printing and dispensing mechanism comprised generally of a reel A, a dispenser B, a printer C, a carrier tape actuator D and an actuating mechanism E.

The reel A, as is commonly known in the prior art, consists of a carrier tape **10** of a preferably waxed surface with pressure sensitive tickets **11** affixed thereto.

Each ticket **11** is coated on one side with a pressure sensitive adhesive which will releasably engage the carrier tape but which will permanently adhere to the article to be labelled.

The reel A is rotatably fastened to the main frame **12**. It should be noted that the main frame **12**, as most of the other frame parts, is fashioned from formed sheet metal, thereby contributing to the low cost and ease of production of the device. Pivots **14** and **15** are positioned on frame **12** to engage a center opening in the reel A in such a manner as to allow rotation thereof. One of the pivots **14** is spring biased towards reel A to prevent free rotation thereof, and may be withdrawn by means of a handle **16** for replacement of the tape.

As is seen clearly in FIGURES 1 and 2, the tape, with the tickets **11** upward is fed angularly downward through the length of the device to a lower tape dispensing means B rigidly secured to the main frame **12**. As illustrated most clearly in FIGURE 5, the tape passes over a stripper bar **18** at a sharp or acute angle. As is common in the prior art, the adhesion of the tickets **11** to the backing **10** is sufficiently weak, whereby the tickets **11** will separate from the backing **10** at stripper bar **18** and will continue their downward path.

As will be explained in detail hereinafter, the tickets **11** when disengaged from the backing **10** will impinge and be fastened permanently on the article to be labelled. Simultaneously, with the affixing of the ticket **11**, a printing mechanism shown at C descends on the top surface of the said strip and will print such information as price, code number, serial number, etc., as well as press down and secure ticket **11** to the article.

It will be noted that many of the details of the printing device C are not described since they form no part of the present invention. It is contemplated that any of the well known printers may be substituted for the one disclosed.

The carrier tape **10**, now separated from the tickets **11** doubles back through the device as shown in FIGURE 2. Serrated shafts **19** and **20** engage the carrier tape **10** and provide the actuating force to urge it through the apparatus. The serrations of each of the shafts **19** and **20** are relatively dull and under normal circumstances will not sever the carrier tape **10**. The carrier tape **10** will either fall free after passing through shafts **19** and **20**, if severed, or will continue rearward and pass out of the open back of the apparatus.

Each of the serrated shafts **19** and **20** are mounted for rotation to the main frame **12**. One of the shafts **19** however, has integrally fastened at one end a pinion gear **21** arranged to be engaged by a vertically extending rack gear **22**. Rack gear **22** is slidingly positioned and arranged to bear against lower frame member **24** during at least part of its travel. As illustrated, main frame **12** is adapted and arranged to slide vertically; relative to lower frame **24**. When this occurs, the rack gear **22**, which bears against lower frame **24**, will move relative to and thereby rotate pinion gear **21**, which is fastened to the main frame **12**. As heretofore described, pinion gear **21** will rotate serrated shaft **19**, further rotating serrated shaft **20** and urging the carrier tape **10** through the device.

It is necessary, however, to provide adjustment of the above described movement to accommodate different lengths of tickets **11**. The adjustment is provided by an upper rack gear stop mechanism **25** consisting primarily of a threaded member **26**, secured to a bar **28** integrally fastened to the top of rack gear **22** and urged downward by a tension spring **27**. Rack gear **22** therefore will normally be urged downward into contact with lower frame **24** by tension spring **27**. This action, however, is limited by threaded member **26** contacting the top of main

frame **12** during one portion of the stroke. It will be seen then, that by adjusting threaded member **26** relative to bar **28** and rack gear **22**, the stroke of rack gear **22** will be adjusted. When, for example, threaded member **26** is threaded the maximum distance downward, the effective length of travel of rack gear **22** relative to pinion gear **21** is reduced to a minimum, and vice versa.

As heretobefore described, the shafts **19** and **20** activated by pinion gear **21** and rack gear **22** pull the carrier tape through the apparatus and dispense the ticket **11**. It is important, however, that shafts **19** and **20** move only in one direction; for if it were to reverse on the downstroke of the rack gear **22**, the backing would be returned towards the reel A instead of passing out the back of the device. This necessary one way movement of shafts **19** and **20** may be accomplished by a slip clutch arrangement.

As illustrated most clearly in FIGURE 4, pinion gear **21** has an extending integral shaft **30**. Serrated shaft **19** is hollow and is adapted to closely but loosely fit around pinion shaft **30**. To permit serrated shaft **19** to rotate only in one direction, relative to pinion shaft **30**, any slip clutch between the two should be provided. There is illustrated in FIGURE 6 one form of slip clutch, consisting of a groove of varying depths **34** in shaft **30**, with a rod **31** fitting completely within the deepest part of the groove. One or more compression springs **35** are adapted to normally urge rod **31** towards a shallow portion of the groove **34** thereby causing it to wedge between shaft **30** and outer serrated shaft **19** providing a positive connection therebetween and further, insuring that serrated outer shaft **19** will rotate with inner pinion shaft **30** in one direction of travel. If inner pinion shaft **30** rotates in the opposite direction, however, the rod **31** will be caused, because of its pressure against **30**, to ride into the deeper portion of groove **34** against the urging of spring **35**. This will remove the positive contact between shafts **19** and **30**, and pinion shaft **30** will rotate without transmitting the movement to outer shaft **19**.

To positively prevent shaft **19** from rotating the wrong way it may be necessary to provide an idler gear **36** in contact therewith. Idler gear **36** has an outer serrated portion and an inner fixed center shaft. When shaft **19** turns in the proper manner, outer serrated portion of idler gear **36** slips on the inner fixed shaft allowing free rotation. If shaft **19** should attempt to reverse direction, a clutch, similar to the one above described, will lock outer serrated shaft of idler gear **36** to the inner fixed shaft preventing any rotation.

The main frame **12** and the lower frame **24** are normally urged apart by springs **40**.

The operation of this device then is as follows:

A reel A is inserted in the apparatus, and the carrier tape is threaded initially through the machine as shown in FIGURE 2. The operator then merely holds the machine in one hand so that tape dispenser B is disposed over the article to be labelled. To activate the unit he presses downward with a relatively light pressure on the top, urging main frame member **12** down into lower frame member **24**. The rack gear **22** thereby moves relative to pinion gear **21** providing rotation thereof of serrated shafts **19** and **20**. This pulls the carrier tape through the machine a predetermined amount and disposes one ticket, as shown in FIGURE 5, securely on the article to be labelled. If a printer is provided, as further shown in FIGURE 5, it is separately activated by the relative movement of main frame **12** and lower frame **24** and will print any desired information on the ticket as it is impinged on the article. Serrated carrier tape **10** is fed out through the open rear of the device. When the operator lifts the apparatus from the article, lower frame **24** returns to its normal position as shown in FIGURE 2 under the urging of springs **40**. During this return movement the rack gear **22** will rotate pinion gear **21**; but not the shaft **19** because of the slip clutch arrangement provided therein.

Preferably the apparatus should have a cover affixed over the top, with a suitable handle for ease of carrying and operation. The cover should further be easily removable or separable for the installation of the reel A and for the necessary threading.

While there are above disclosed but a limited number of embodiments of the structure, and product of the invention herein presented, it is possible to produce still other embodiments without departing from the inventive concept herein disclosed, and it is desired therefore that only such limitations be imposed on the appended claims as are stated therein, or required by the prior art.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is:

1. A device for dispensing pressure sensitive tickets from a carrier tape to an article, comprising; a main frame to rotatably support said carrier tape, means to guide said tape to a lower stripper bar, means to bend said tape around said stripper bar at an acute angle whereby said pressure sensitive tickets will separate from said carrier tape and adhere to said article, at least two substantially parallel rotatable shafts fastened to said main frame, said rotatable shafts separated by a distance less than the thickness of said tape, means for guiding said tape between said rotatable shafts, and means for rotating said shafts periodically thereby advancing said tape a predetermined amount.

2. A device for dispensing pressure sensitive tickets from a carrier tape to an article, comprising; a main frame to rotatably support said carrier tape, means to guide said tape to a lower stripper bar, means to bend said tape around said stripper bar at an acute angle whereby said pressure sensitive tickets will separate from said carrier tape and adhere to said article, at least two substantially parallel rotatable shafts fastened to said main frame, said rotatable shafts separated by a distance less than the thickness of said carrier tape, means for guiding said tape between said rotatable shafts, and means for rotating said shafts periodically thereby advancing said tape a predetermined amount, said means for rotating including a rack and pinion, said pinion being attached to one of said shafts.

3. A device for dispensing pressure sensitive tickets from a carrier tape to an article, comprising; a main frame to rotatably support said carrier tape, means to guide said tape to a lower stripper bar, means to bend said tape around said stripper bar at an acute angle whereby said pressure sensitive tickets will separate from said carrier tape and adhere to said article, at least two substantially parallel rotatable shafts fastened to said main frame, said rotatable shafts supported by a distance less than the thickness of said tape, means for guiding said tape between said rotatable shafts, and means for rotating said shafts periodically thereby advancing said tape a predetermined amount, said means for rotating including a rack and pinion, said pinion being attached to one of said shafts, said rack normally extending below said frame whereby it will be urged upward and rotate said pinion when said device is pressed down on said article.

4. A device for dispensing pressure sensitive tickets from a carrier tape to an article, comprising; a main frame to rotatably support said carrier tape, means to guide said tape to a lower stripper bar, means to bend said tape around said stripper bar at an acute angle whereby said tickets will separate from said carrier tape and adhere to said article, at least two substantially parallel rotatable shafts fastened to said main frame, said rotatable shafts supported by a distance less than the thickness of said tape, means for guiding said tape between said rotatable shafts, and means for rotating said shafts periodically thereby advancing said tape a predetermined amount, said means for rotating including a rack and pinion, said pinion being attached to one of said shafts, said rack normally extending below said frame whereby

it will be urged upward and rotate said pinion when said device is pressed down on said article, and printing means disposed adjacent said stripper bar, means to actuate said printing means immediately after said ticket is dispensed.

5. A device for dispensing pressure sensitive tickets from a carrier tape to an article, comprising; a main frame to rotatably support said carrier tape, means to guide said tape to a lower stripper bar, means to bend said tape around said stripper bar at an acute angle whereby said tickets will separate from said carrier tape and adhere to said article, at least two substantially parallel rotatable shafts fastened to said main frame, said rotatable shafts supported by a distance less than the thickness of said tape, means for guiding said tape between said rotatable shafts, and means for rotating said shafts periodically thereby advancing said tape a predetermined amount, said means for rotating including a rack and pinion, said pinion being attached to one of said shafts, said rack normally extending below said frame whereby it will be urged upward and rotate said pinion when said device is pressed down on said article, the spacial position of said rack relative to said frame being adjustable whereby the stroke of said rack can be varied, printing means disposed adjacent said stripper bar, and means to actuate said printing means immediately after said ticket is dispensed.

References Cited in the file of this patent

UNITED STATES PATENTS

590,570	Forward	Sept. 28, 1897
1,065,831	Neary	June 24, 1913
1,201,829	Johnson	Oct. 17, 1916
1,812,980	Penney	July 7, 1931
2,522,224	Hedinger	Sept. 12, 1950
2,569,140	Avery	Sept. 25, 1951
2,582,979	Fritzinger	Jan. 22, 1952
2,582,980	Fritzinger	Jan. 22, 1952
2,634,877	Kaplan	Apr. 14, 1953
2,656,063	Kafka	Oct. 20, 1953
2,764,934	Kaplan	Oct. 2, 1956
2,920,780	Hauschild et al.	Jan. 12, 1960
3,051,353	Krueger	Aug. 28, 1962
3,093,528	Reich	June 11, 1963