

[54] **MERCHANDISE MARKING GUN**
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 [73] Assignee: **Uniline Corporation, Union City, Calif.**

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Related U.S. Application Data

[63] Continuation of Ser. No. 134,346, April 15, 1971, abandoned.

[52] **U.S. Cl.**..... **101/288, 156/384**
 [51] **Int. Cl.**..... **B41f 1/08**
 [58] **Field of Search** 101/288, 291, 292, 92;
 226/127, 157, 76, 82; 156/384

[57] **ABSTRACT**

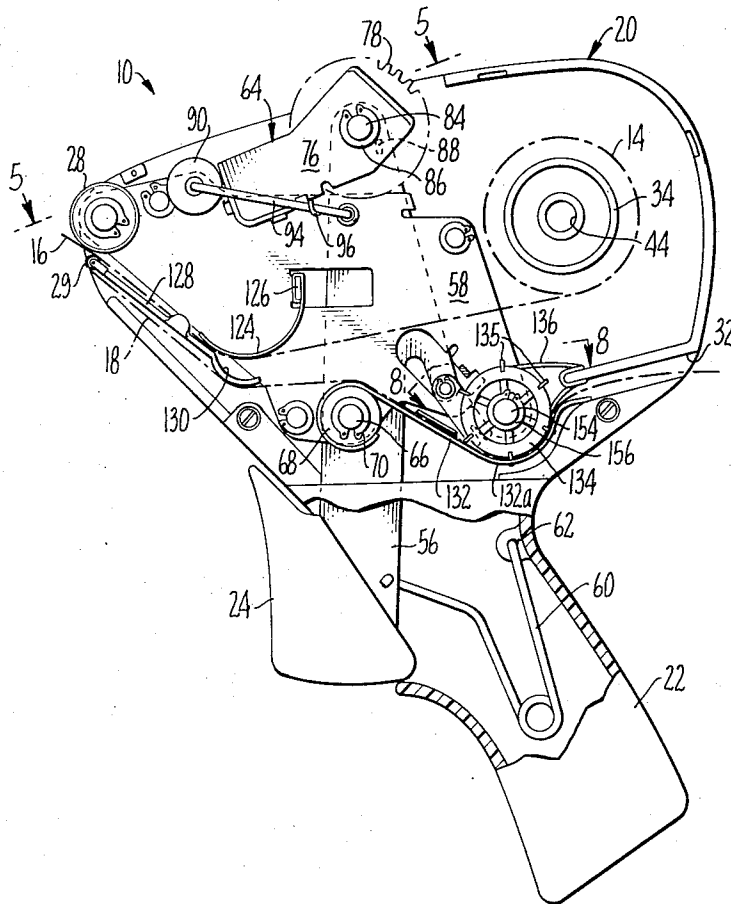
A marking gun for printing adhesive labels with pricing and the like having a printing head connected to an operating trigger for impressing the labels, and a drive wheel linked to the operating trigger by a ratchet and pawl assembly for incrementally advancing the labels carried on a backing tape by engaging radial drive teeth on the drive wheel into perforations in the backing tape after the pre-cut adhesive labels have been impressed by the printing head and separated from the backing tape.

[56] **References Cited**

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9 Claims, 12 Drawing Figures



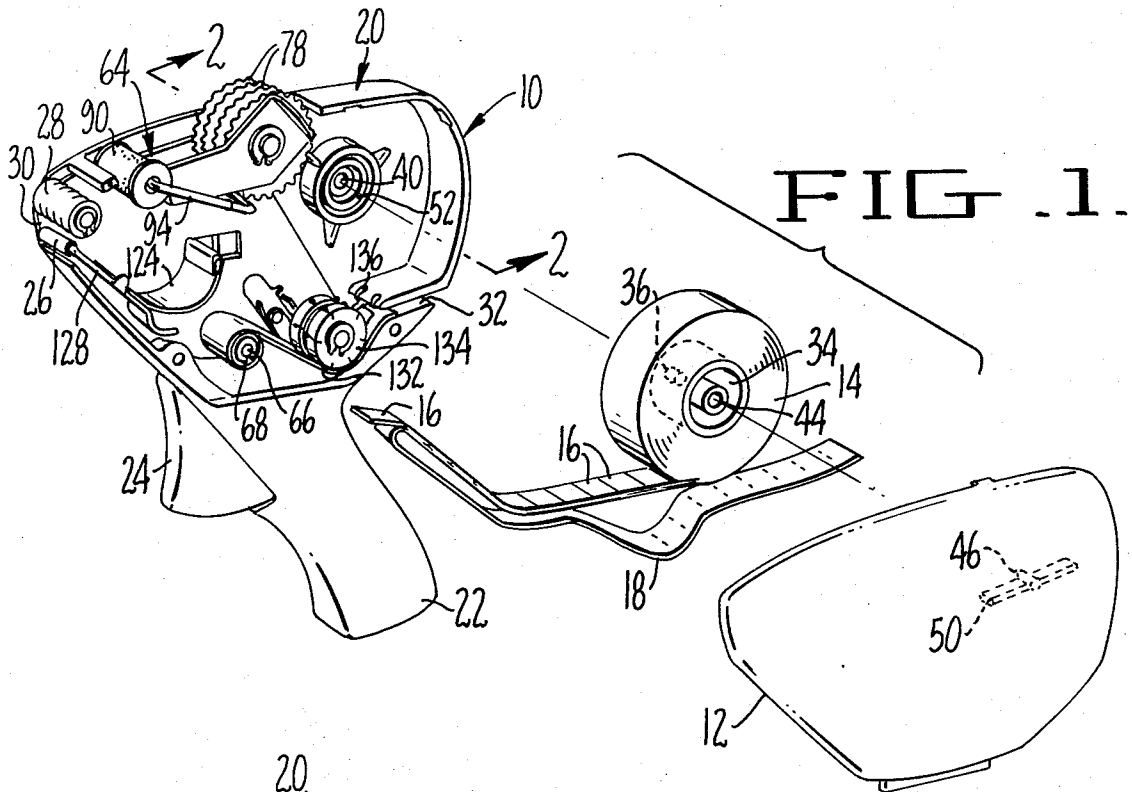


FIG. 1.

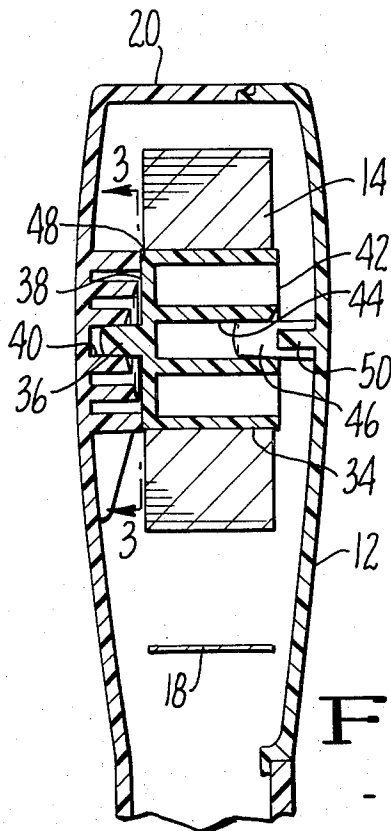


FIG. 2.

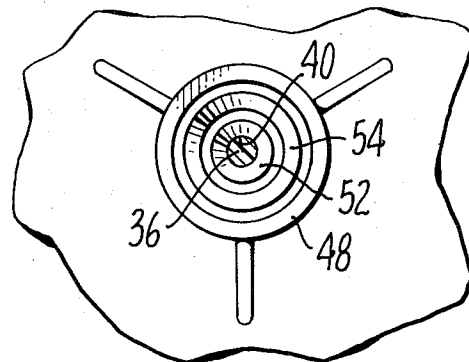


FIG. 3.

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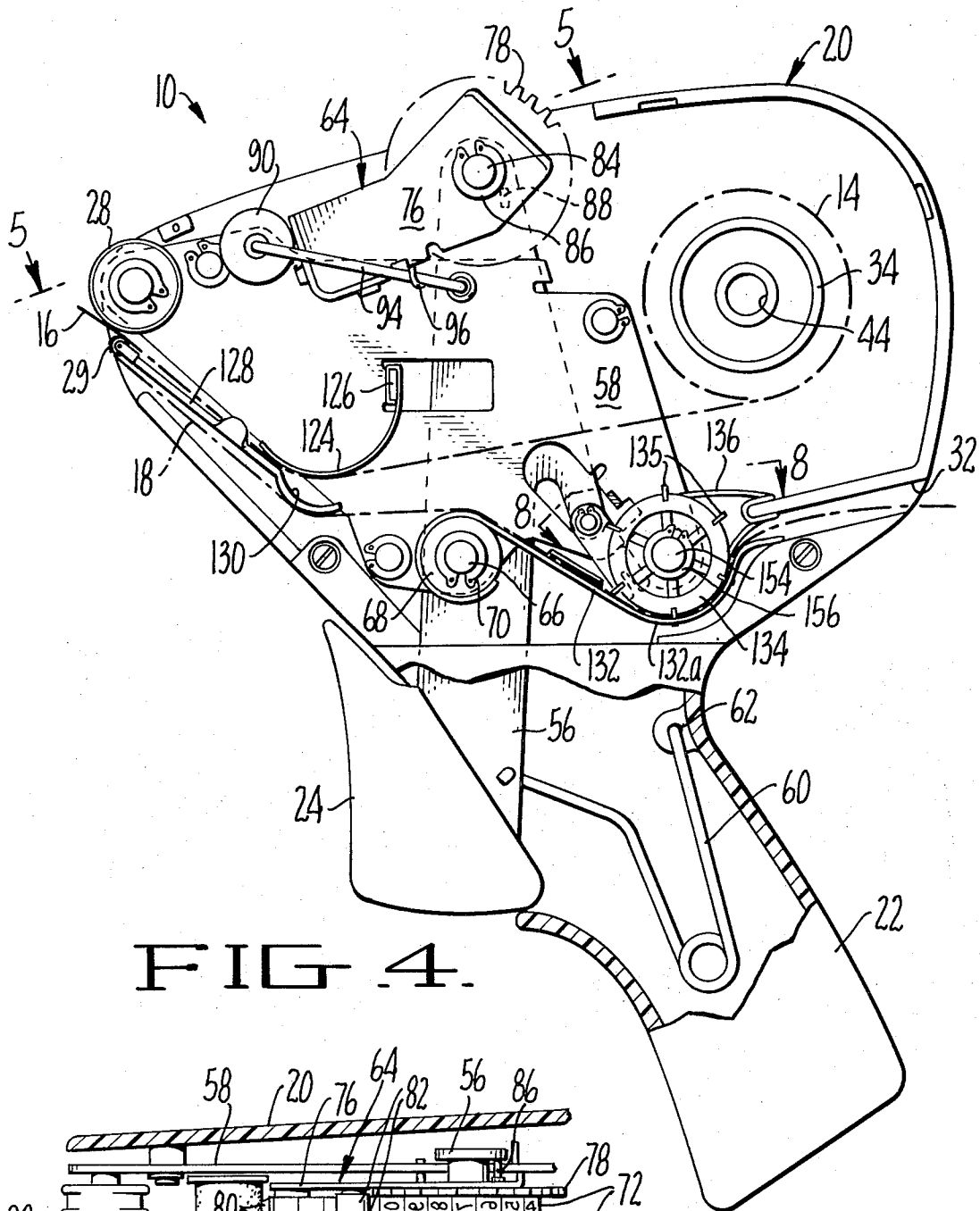


FIG. 4.

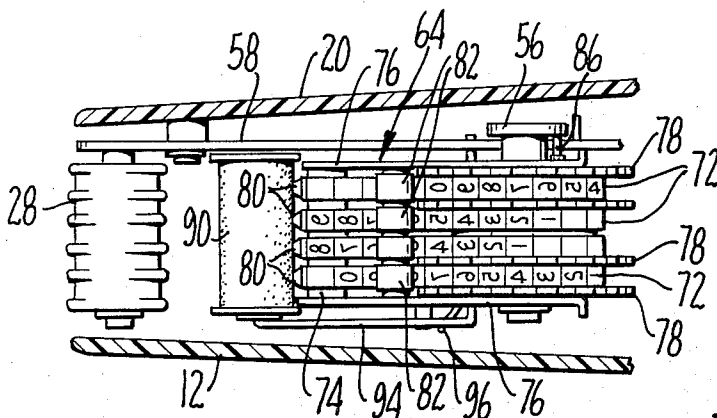


FIG. 5.

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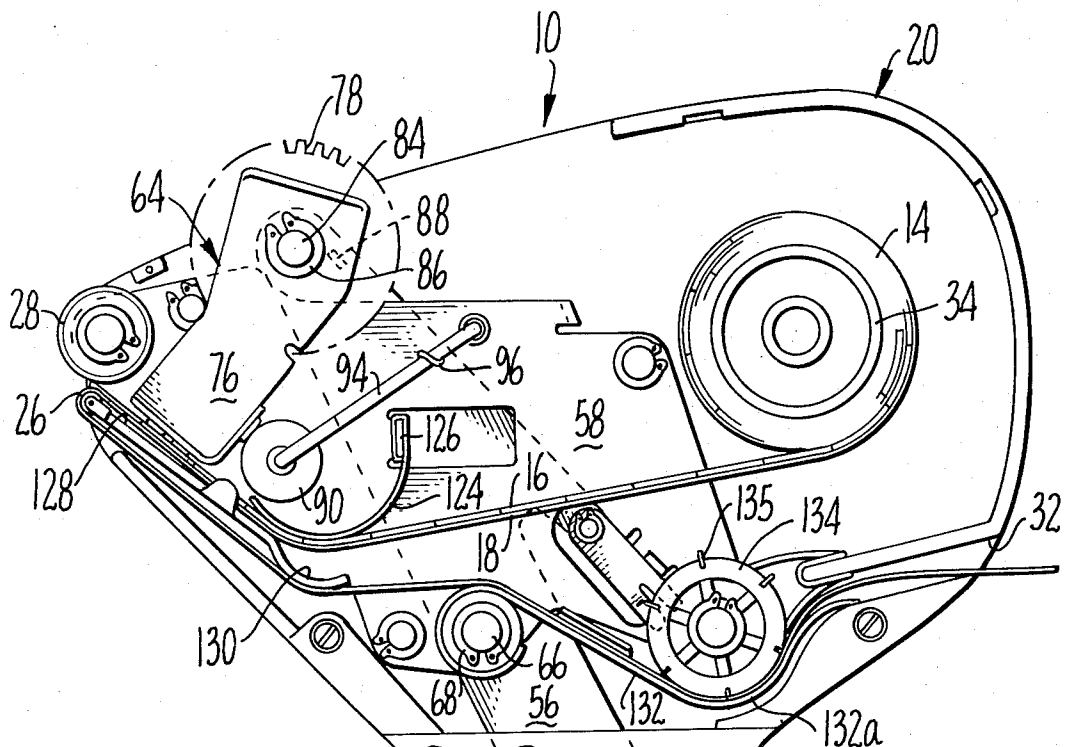


FIG. 6.

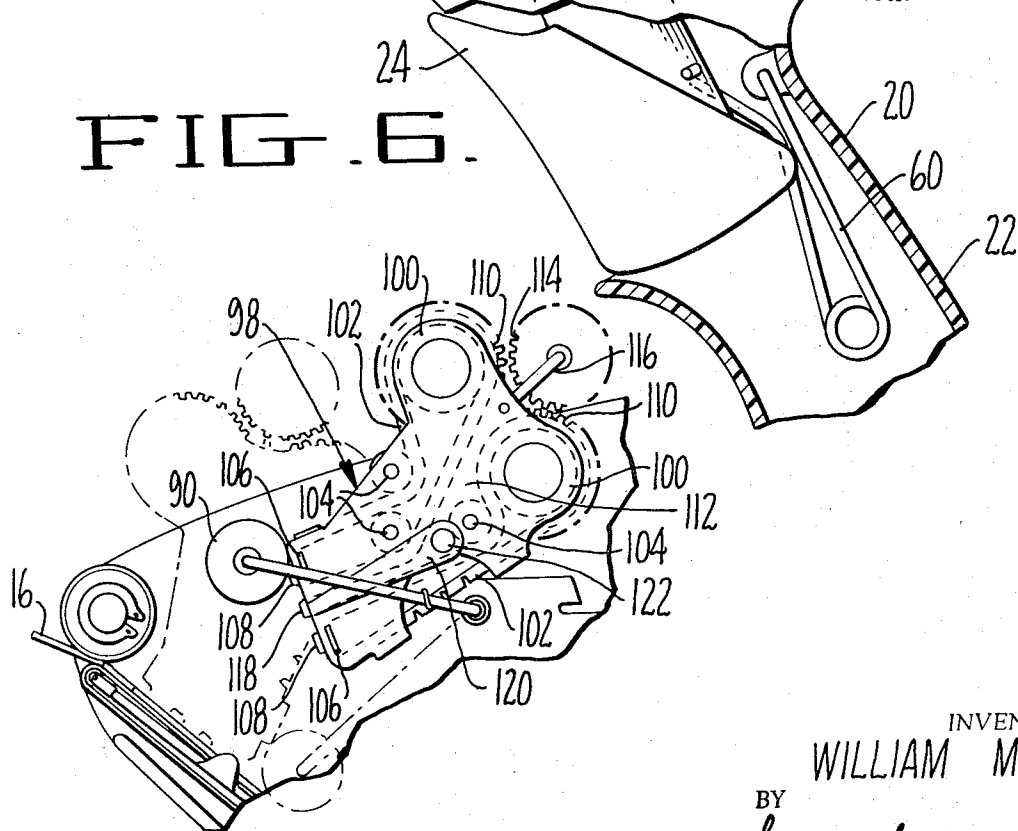


FIG. 7.

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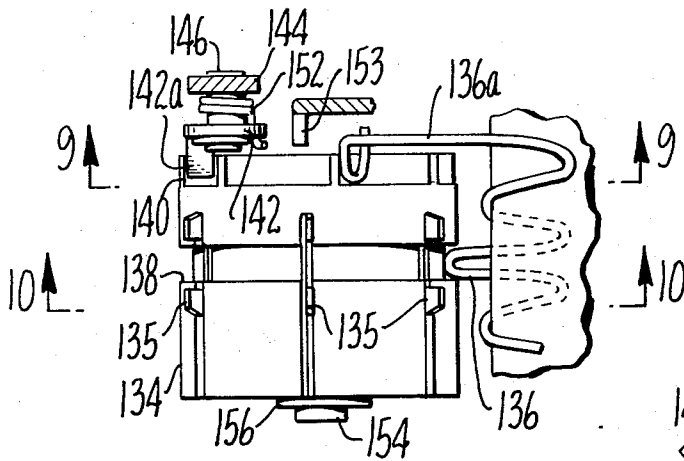


FIG. 8.

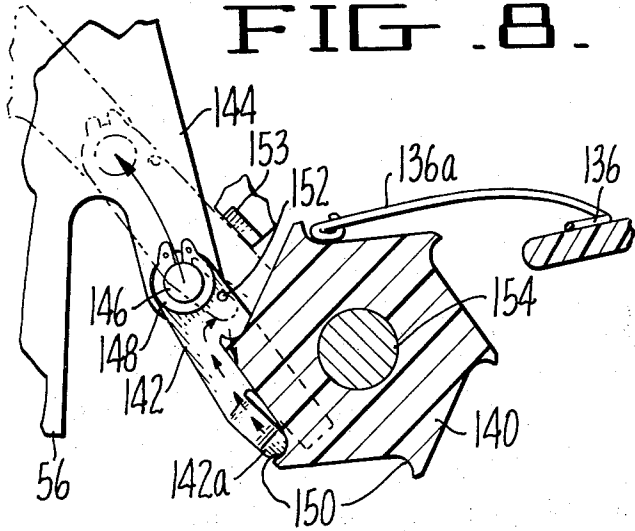


FIG. 9.

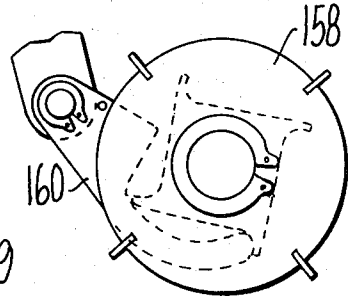


FIG. 12.

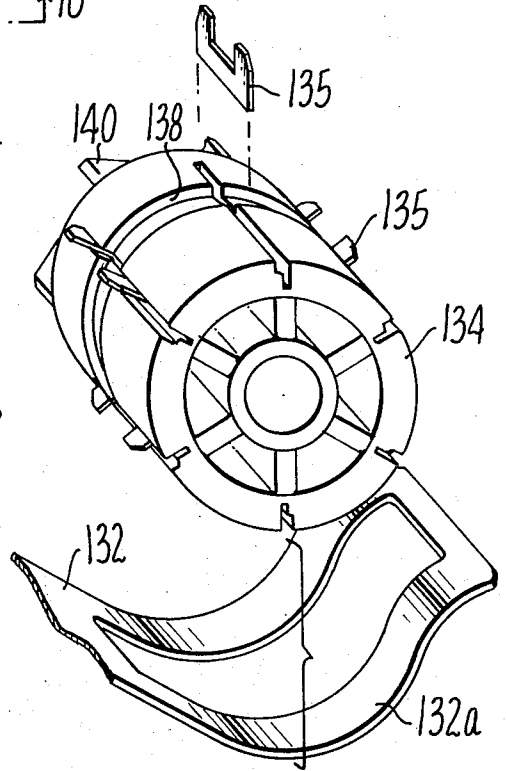


FIG. 11.

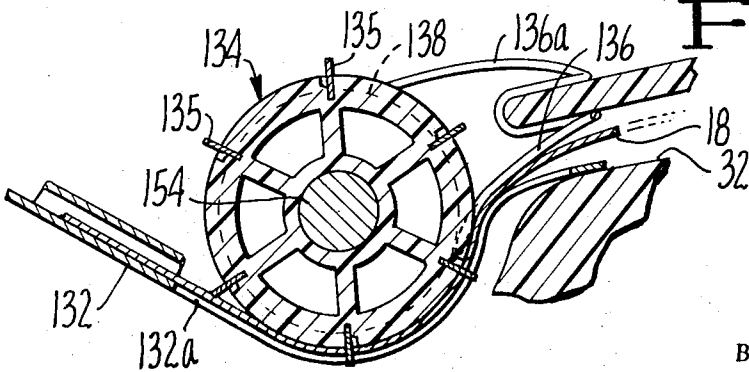


FIG. 10.

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MERCHANDISE MARKING GUN

This is a continuation, of application Ser. No. 134,346, filed Apr. 15, 1971 now abandoned.

SUMMARY OF THE INVENTION

Mass marketing of retail goods requires the repetitious marking of individual items with price or other information. Marks may either be directly stamped on the goods or first imprinted on adhesive labels and the labels affixed to the goods. The subject marking tool is of the latter category and contains a supply of adhesive labels and a printing head with a variety of selectable characters which may be impressed on the labels.

Although numerous marking tools of this type are presently available they are cumbersome and expensive. A primary problem in constructing a label marker is in accurately advancing the labels to printing position. Some devices employ friction drive rollers to advance labels. However, when the rollers pull on silicone coated backing tape of the adhesive labels, silicone eventually coats the rubber rollers and the rollers cease to operate properly. Other devices employ conveyor belts or shuttle mechanisms to advance the labels but the very complexity of these mechanisms often leads to their high cost and inefficiency.

The subject marking tool carries a supply of adhesive labels in a molded plastic casing having a pistol grip and trigger. The trigger is directly connected to the printing head by a long pivot arm. Connected to the pivot arm by a ratchet and pawl assembly is a tape drive mechanism which advances the labels by engaging drive teeth in perforation slits in the backing tape of the adhesive labels. The positive drive mechanism for advancing the tape insures that the printing head properly marks each label without drifting. Furthermore, by simple interchange of the drive wheel, different size labels can be accommodated. By further interchange of the printing head, additional information, such as the addition of a prime mark may be imparted to a larger size label. The subject merchandise marking gun is compact, inexpensive and designed to withstand the substantial abuse received in the marketing field.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is an exploded view of the marking gun and adhesive label supply.

FIG. 2 is a sectional view taken on lines 2—2 in FIG. 1.

FIG. 3 is a partial sectional view taken on lines 3—3 in FIG. 2.

FIG. 4 is a plan view, partially in section, of the marking gun with cover removed.

FIG. 5 is a partial sectional view taken on lines 5—5 in FIG. 4.

FIG. 6 is a view of the marking gun of FIG. 4 with printing head in printing position.

FIG. 7 is a schematic view of an alternate printing head.

FIG. 8 is an enlarged detailed view of the adhesive label drive wheel.

FIG. 9 is a sectional view taken on lines 9—9 in FIG. 8.

FIG. 10 is a sectional view taken on lines 10—10 of FIG. 8.

FIG. 11 is an exploded view of the adhesive label drive wheel.

FIG. 12 is a view of an alternate drive assembly.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the exploded view of FIG. 1, the marking gun 10 is illustrated with an access cover 12 displaced in a normal manner for inserting a roll 14 of pre-cut adhesive labels 16 carried on a separable backing tape 18.

The marking gun has a molded outer casing 20 with a pistol grip handle 22 and operating trigger 24. With the cover 12 snapped in place the unit comprises a compact enclosed marking tool that is simple to operate. With each squeeze of the trigger a marked label is partially emitted between a guide tip roller 26 and an applicator roller 28 at the tip 30 of the marking gun. By lightly pressing the applicator roller 28 to the item to be labeled and downwardly moving the marking gun 10, the marked label is removed from the tip 30 of the gun and rolled onto the item.

The exploded view of FIG. 1 depicts the path that the adhesive labels 16 and backing tape 18 traverses as it unwinds from the roll 14. The backing tape has pairs of incremental transverse and centrally located perforation slits positioned adjacent the incremental label cuts of the pre-cut adhesive labels. The backing tape 18 separates from the labels at the tip 30 of the gun, where the labels 16 are emitted, and switches back through the gun to exit from a slot 32 above the handle 22. The path of the labels and tape is shown in greater detail in subsequent figures of the drawing.

The labels and backing tape are supplied from the roll 14 which has a molded plastic core 34, illustrated in greater detail in FIG. 2.

Referring to FIG. 2, the core 34 is shown positioned within the enclosed casing 20. The cylindrical core 34 has a concentrically located boss 36 on one end 38 which fits into a bearing recess 40 on the casing 20. The other end 42 of the core contains a concentrically located, beveled recess 44 which is engaged by a boss 48 located on the cover 12. The core 34 is seated between a bearing surface 48 and a guide bar 50 which accurately position the core 34 and hence the roll 14 of labels and backing tape within the casing 20. The configuration of the bearing surface 48 is more clearly shown in FIG. 3.

Two inner concentric rings, 52 and 54, are beveled to guide the boss 36 on the core 34 into the recess 40 when inserting a roll 14 of labels and backing tape into the casing 22. By employing a boss on one end of the core and a recess on the opposite end it is impossible to improperly insert the roll in the gun thereby preventing the marking gun from printing on the backing tape instead of the labels.

Referring to FIG. 4, the marking gun is illustrated in greater detail. The trigger 24 is shown mounted to a long pivot arm 56 which is partially concealed by a fixed plate 58 fastened to the casing 20. The trigger 24 is maintained in a preoperative position by a spring 60 which is attached at one end to the pivot arm 56 and at the opposite end to a retainer 62 on the casing 20. At the distal end of the pivot arm 56 is fixed the printing head 64. When the trigger 24 is squeezed the pivot arm pivots on a pin 66 retained in a bearing sleeve 68 mounted to the fixed plate 58 by retaining ring 70. The printing head 64 swings to the marking position shown in FIG. 6 impressing an adhesive label with a selected marking.

Referring to FIG. 5, the printing head 64 comprises a series of four rubber printing bands 72 each carried on a large roller (not visible) over a small backing block 74 between two support plates 76. The rollers are each fixed to a selector wheel 78 which by action of one's thumb rotates selectable printing characters 80 carried on the rubber bands across the backing block 74. The characters positioned on the backing block 74 are impressed against a label when the trigger 24 of the marking gun is squeezed. The bands are maintained in tension by a series of idler rollers 82 which depress the bands 72 between the printing block 74 and large rollers.

The printing head is fixed to a pin 84 at the distal end of the pivot arm 56 and secured by a retaining clip 86. The printing head 64 is prevented from rotating on the pin 84 by a small locking tab 88 on the pivot arm which engages a hole (not visible) in the support plate 76 of the printing head adjacent the distal end of the pivot arm 56.

The characters positioned against the printing block 74 are inked by an ink roller 90 which rotates on an inker arm 92 pivotally mounted to the fixed plate 58 in the casing 20. The ink roller 90 is maintained against the characters at the printing block by a spring clip 94. As the printing head 64 pivots to printing position, the ink roller 90 rolls across the characters and out of the way of the printing head as shown in FIG. 6.

By releasing the retaining clip 86, the printing head 64 shown in FIGS. 4 and 6 may be removed and replaced with an alternate printing head 98 shown in FIG. 7. The alternate printing head 98 contains a double set of printing rollers 100 each transporting a series of rubber printing bands 102 across idler rollers 104 and over twin printing blocks 98 for impressing two lines of selectable characters 108 on the labels 16. The characters 108 are selected by selector wheels 110 fixed to each of the rollers 100 for individually controlling the transport of the printing bands 102 over the printing blocks 106 between the two support plates 112 of the alternate printing head. For convenience, a thumb wheel 114 riding on an arm 116 is provided to selectively engage any one of the selector wheels 110 for selection of the desired character from each printing band 102.

An additional block of fixed characters 118 is mountable between the lines of selectable characters 108 at the end of a detachable arm 120 secured to a pin 122 on one of the support plates 112 of the printing head. The selectable characters 108 and the fixed characters 118 are inked by the ink roller 84 in the same manner as the selectable characters 80 of the principal printing head 64 of the disclosure.

Considering again, the path of the adhesive labels 16 and backing tape 18 from the supply roll 14, the tape and labels unwind from the bottom of the roll and pass under a flexible spring guide 124 which is attached to a punched tab 126 in the fixed plate 58. The spring guide 124 maintains the labels and backing tape against a printing guide plate 128 formed by bending a portion of the fixed plate. The backing tape 18 switches back around the guide tip roller 26 discharging individual adhesive labels 16, which are unable to negotiate the switchback and separate from the backing tape 18. The free end 130 of the printing guide plate 128 is partially bent to deflect the returning backing tape which threads over a wide, partially split guide spring 132 to

engage drive wheel 134. By bending the free end 130 of the printing guide plate the effective length of the tape path from guide tip roller 26, to drive wheel 134 can be adjusted. The adjustment provides a means of positioning the labels on the guide plate to center the impression of the printing head 64.

The guide spring 132 which receives the backing tape from the guide plate 128 is clipped at one end to the bearing sleeve 68 projecting from the fixed plate 58. The other end of the guide spring 132 rests on a wall of the exit slot 32 permitting a degree of flexure to the middle split portion 132a of the guide spring for maintaining the backing tape in firm engagement with the drive wheel 134.

The drive wheel assembly is illustrated in greater detail in FIGS. 8, 9, 10 and 11. As the backing tape 18 threads between the guide spring 132 and the drive wheel 134, a series of radially projecting drive teeth 134 pierce the backing tape in previously provided perforation slits incrementally spaced in the center of the tape. To separate the pierced tape 18 from the drive wheel, a wire spring clip 136 is forced to ride in a centrally located, circumferential groove 138 in the surface of the drive wheel 134. The spring clip 136 lifts the tape from the drive wheel and guides it out the exit slot 32 of the gun, as shown in FIG. 10. Thus, as the drive wheel 134 is incrementally rotated, the adhesive labels 16 and backing tape 18 are fed through the marking gun.

The drive wheel 134 is directly linked to the pivot arm 56, and hence the printing head 64 and trigger 24 by a ratchet and pawl assembly which is shown most clearly in FIG. 9.

The ratchet wheel 140 is an integral part of the drive wheel 134. The pawl 142 is pivotally connected to a finger extension 144 of the pivot arm 56 by a pin 146 and retainer clip 148.

When the trigger is squeezed the pawl 142 moves to the position shown in phantom in FIG. 9. The foot 142a of the pawl 142a snaps in engagement with the next adjacent seat 150 of the ratchet wheel 140 by bias from a coil spring 152 wrapped around the pin 146 and fixed at one end to the pawl 142 and at the other end to the finger extension 144. Overshoot of the pawl is prevented by stop 153. An extension 136a of the spring clip 136 prevents the drive wheel 134 from backwardly rotating while the pawl is disengaged from the ratchet wheel 140 by engaging a seat of the ratchet wheel as shown in FIG. 9.

When the trigger is released the drive wheel 134 is rotated on a spindle 154 transporting the backing tape 18 the distance of a single label. Engagement for the tape transport is accomplished by the drive teeth 135 which pierce the backing tape held on each edge against the drive wheel 134 by the split portion 132a of the spring clip 132. The split portion of the spring clip permits the drive teeth 135 to pierce the centrally located perforation slits in the backing tape without engaging the spring clip 132.

To accommodate different sized adhesive labels, the drive wheel 134 and pawl 142 may be removed by releasing the retaining clip 148 at the pawl pivot pin 146 and a retaining clip 156 on spindle 154. The drive wheel 135 and pawl 142 can then be replaced with an alternate drive wheel 158 and pawl 160 shown in FIG. 12. The alternate drive assembly may be employed in combination with the alternate double printing head 98

shown in FIG. 7 to totally change the marking capabilities of the marking gun.

I claim:

1. In an adhesive label printer having an operating trigger and a printing head with a plurality of selectable characters, the printer being adapted to operate in combination with pre-cut adhesive labels carried on a separable backing tape with spaced perforations, the improvement comprising a drive assembly adapted to incrementally transport the labels and backing tape on predetermined paths including:

- a. a reciprocating pivot arm having the operating trigger mounted at one end and the printing head mounted at the opposite end, said arm being pivotally mounted in the printer for reciprocal movement between a preoperative position and a marking position by operation of the trigger;
- b. a cylindrical drive wheel having radially disposed drive teeth arranged to engage the perforations in the backing tape and having an integral ratchet wheel with a predetermined number of drive seats, said drive wheel being rotatably mounted in the printer adjacent the pivot arm;
- c. a spring member having one end mounted in the printer and an extension end biased to selectively engage a seat of said ratchet wheel and restrain movement of said ratchet wheel and said drive wheel when said arm is moved from the preoperative position to the marking position by displacement of the trigger; and
- d. a pawl pivotally linked to said pivot arm and arranged to engage a seat of said ratchet wheel and advance said drive wheel a predetermined increment when said arm is moved from the marking position to the preoperative position by return of the trigger.

2. The adhesive label printer of claim 1 wherein the printing head, and the drive wheel and pawl described therein are selectively replaceable with a printing head having a multiple plurality of selectable characters, a drive wheel having drive teeth arranged to engage perforations in a backing tape with more distantly spaced perforations and a pawl arranged to engage a modified ratchet wheel and advance said drive wheel an increased predetermined increment for use with labels of increased size.

3. In the adhesive label printer of claim 1, the improvement comprising further:

- a. a printing guide plate fixed in the printer and so constructed and arranged that the adhesive labels and backing tape are supportable on the guide plate, and the printing head is directed against a printing portion of the guide plate and is contactable with at least one label supported thereon when said pivot arm is in said marking position; and
- b. biasing means for imparting a pressure against said guide plate at a location adjacent the printing portion and maintaining adhesive labels and backing tape, arranged between said biasing means and guide plate, against said guide plate; said biasing means cooperating with said drive wheel to impart a tension to said back tape at said printing portion.

4. The improvement of claim 3 comprising further means connected to said guide plate for removing said adhesive labels from said backing tape.

5. The improvement of claim 4 wherein said means connected to said guide plate comprises a guide tip roller attached to the end of said guide plate, and guide means for switching said backing tape around said roller, the adhesive labels separating from said backing tape at said roller from an inherent stiffness of the labels.

6. In the adhesive label printer of claim 1, the improvement comprising further:

- a. guide means mounted in the printer having a guide element complementary to said cylindrical drive wheel, the guide element having recesses adapted to receive drive teeth on the periphery of the drive wheel as said teeth are projected through the backing tape.

7. The improvement of claim 6 wherein said guide element is spring biased against said drive wheel.

8. In the adhesive label printer of claim 1, the improvement comprising further, roller means having an ink supply engageable with selected characters on said printing head for inking said selected characters.

9. The combination of an adhesive label printer of claim 1 and a label supply having pre-cut adhesive labels carried on a separable backing tape with spaced perforations.

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