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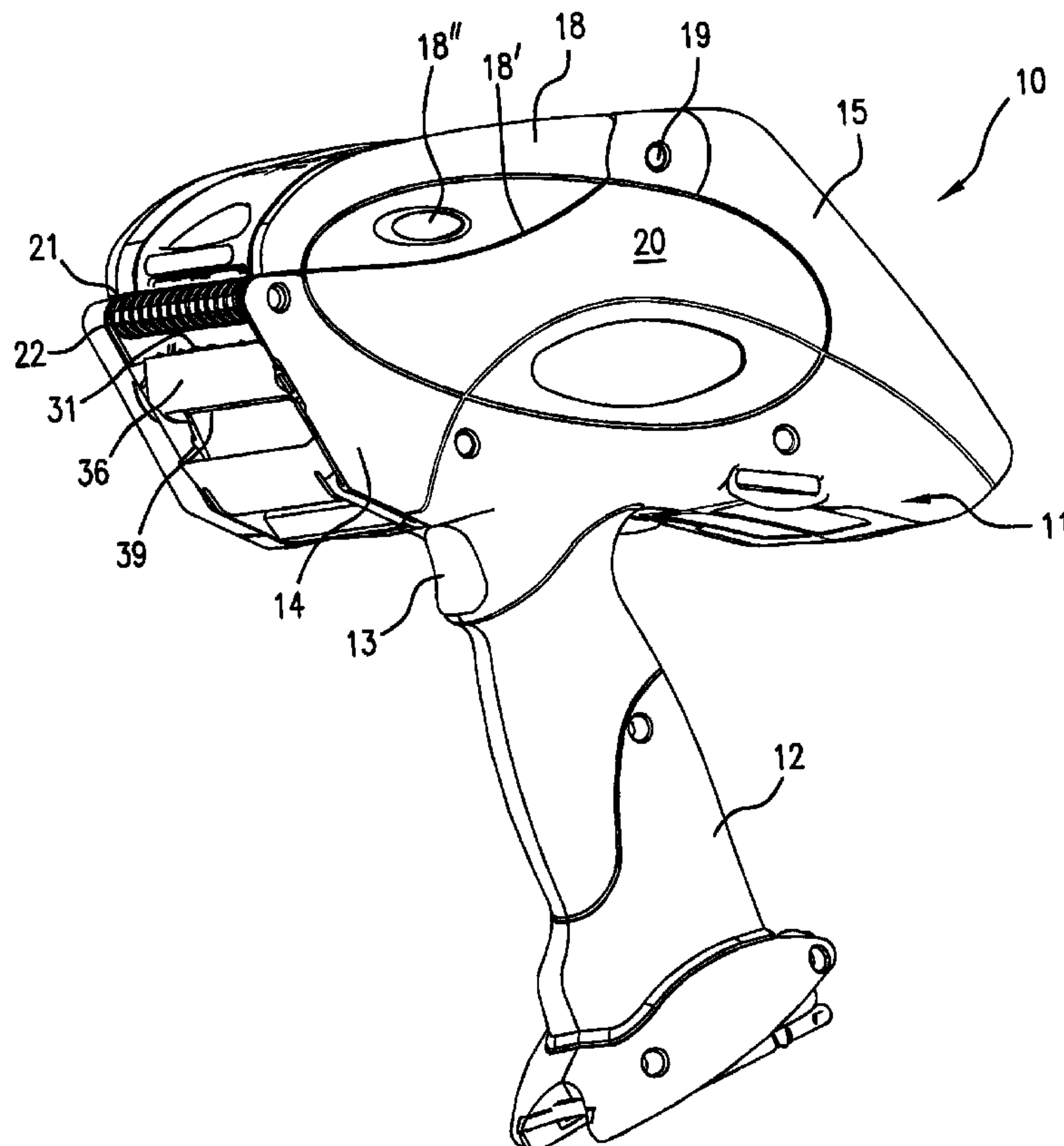
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(54) Title: HAND-HELD PORTABLE LABELER AND METHOD OF LABELING



(57) Abrégé/Abstract:

There is disclosed a hand-held portable labeler and labeling method that enables the label web supply to be quickly threaded into the labeler. The path of the carrier web for the labels from the nip of the print head and platen roll, about the delaminator, into the nip between the platen roll and a pressure roll, and out of the labeler is short and the pressure roll is widely separable from the platen roll to facilitate threading.



Abstract of the Disclosure

There is disclosed a hand-held portable labeler and labeling method that enables the label web supply to be quickly threaded into the labeler. The path of the carrier web for the labels from the nip of the print head and platen roll, about the delaminator, into the nip between the platen roll and a pressure roll, and out of the labeler is short and the pressure roll is widely separable from the platen roll to facilitate threading.

HAND-HELD PORTABLE LABELER AND METHOD OF LABELING

Background

Field

The embodiments of the invention relate to the field of hand-held portable labelers.

Brief Description of the Prior Art

The following documents are made of record: U.S. design patent D486,512; U.S. patent 5,049,228; U.S. patent 5,174,669; U.S. patent 5,267,800; U.S. patent 5,486,259; U.S. patent 5,570,121; U.S. patent 5,597,249; U.S. patent 5,642,666; U.S. patent 6,241,407; U.S. patent 7,284,922; and U.S. Publication No. US2007/0166092.

Summary

An embodiment relates to a hand-held portable labeler including a hand-held portable housing having a handle and having space to receive a label roll comprised of a carrier web and labels disposed along and releasably adhered to the carrier web, a print head mounted on the housing, a driven platen roll cooperable with the print head to print on the labels, a delaminator disposed downstream of the print head and capable of delaminating printed labels from the carrier web, a mounting member, a shelf disposed on the mounting member downstream of the delaminator, an applicator disposed above the level of the shelf and in label applying relationship to the printed label, a pivot axis below the platen roll, the mounting member being pivotally mounted to the housing about the pivot axis, a pressure roll rotatably mounted on the mounting member, the platen roll and the pressure roll being the sole means to advance the carrier web, wherein the mounting member, the pressure roll and the shelf are pivotal as a unit about the pivot axis between an operating position in which the printed label is between the applicator and the shelf and in which the carrier web is in pressure relationship between the platen roll and the pressure roll and a non-operating position in which the platen roll and the pressure roll are spaced apart and accessible to the user for threading of the carrier web between the platen roll and the pressure roll.

The labeler can be quickly threaded as follows: after inserting a new label roll of a composite label web having labels releasably adhered to a carrier web into the labeler, the composite web is fed from the label roll to between the print head and platen roll and passed over the delaminator. With the shelf and pressure roll mounting member in the

open position, wherein the pressure roll is spaced from the platen roll, the free end portion of the composite web can be inserted into the wide space between the platen roll and the pressure roll, and thereafter the mounting member can be pivoted to the operating position. With a slight tug on the free end portion of the composite web, any slack can be taken up and the labeler is ready for use. The web which is in the path between the nip of the print head and platen roll and between the nip of the platen roll and the pressure roll is taut and it remains taut so that peeling of successive labels at the delaminator can occur reliably.

Another embodiment relates to a hand-held portable labeler, comprising a hand-held portable housing having a handle and having space to receive a label roll comprised of a carrier web and labels disposed along and releasably adhered to the carrier web, a print head mounted on the housing, a driven platen roll cooperable with the print head to print on the labels, a delaminator disposed downstream of the print head and capable of delaminating printed labels from the carrier web, a mounting member, a shelf disposed on the mounting member downstream of the delaminator, an applicator disposed above the level of the shelf and in label applying relationship to the printed label, a pivot axis below the platen roll, the mounting member being pivotally mounted to the housing about the pivot axis, a pressure roll rotatably mounted on the mounting member, the platen roll and the pressure roll being the sole means to advance the carrier web, wherein the mounting member, the pressure roll and the shelf are pivotal as a unit about the pivot axis between an operating position in which the printed label is between the applicator and the shelf and in which the carrier web is in pressure relationship between the platen roll and the pressure roll and a non-operating position in which the platen roll and the pressure roll are spaced apart and accessible to the user for threading of the carrier web between the platen roll and the pressure roll, wherein the mounting member includes an exit opening to allow passage of the spent carrier web from which labels have been delaminated. It is preferred that the exit opening is the only opening through which the spent carrier web can pass.

An embodiment of a method for loading a labeler with a composite label web having a carrier web and labels releasably adhered to the carrier web along its length, wherein the composite web is wound into a supply roll includes providing a labeler having a label roll mounting space, a print head and a cooperable platen roll, a delaminator capable of delaminating printed labels from the carrier web, an applicator for applying printed labels to articles, wherein the print head and the platen roll are movable between a cooperating position and a spaced-apart position to enable the supply roll to be loaded into

the labeler, a pressure roll disposed downstream of the delaminator and cooperable with the platen roll, wherein the platen roll and the pressure roll are movable between a cooperating position and a space-apart position, loading the supply roll into the label roll mounting space while the print head and platen roll are in the spaced apart position, passing a leading free end of the composite web into space between the spaced print head and platen roll, partially about the delaminator and to between the platen and pressure rolls in their spaced-apart positions but short of the exit opening, moving the print head and the platen roll relative to each other into the cooperating position, and moving the pressure roll and the platen roll relative to each other into their cooperating position.

Brief Description of the Diagrammatic Drawings

FIGURE 1 is a pictorial view of a hand-held portable labeler in accordance with an embodiment, with a mounting member in its operating position;

FIGURE 2 is a sectional view of a fragmentary portion of the labeler shown in FIGURE 1;

FIGURE 3 is a fragmentary pictorial view of the front portion of the labeler, showing the mounting member in a non-operating, open position to enable easy threading of the labeler;

FIGURE 4 is an enlarged pictorial view of the mounting member and a fragmentary portion of the housing or frame of the labeler;

FIGURE 5 is a pictorial view of a hand-held portable labeler in accordance with another embodiment, with a mounting member in its operating position;

FIGURE 6 is a fragmentary sectional view of a portion of the labeler shown in FIGURE 5, showing the labeler fully threaded or loaded;

FIGURE 7 is a fragmentary sectional view of the labeler of the embodiment of FIGURES 5 through 11 with the labeler shown in its open or non-operating position in which the print head and platen roll are separated to enable the label supply roll to be positioned or loaded into a label roll space and to enable a free end portion of the composite web to be positioned between the spaced print head and platen over, partially about the delaminator and to a position between the spaced platen and pressure rolls, as shown;

FIGURE 8 is an enlarged fragmentary view of the labeler showing a mounting member in an open or non-operating position with the pressure and platen rolls spaced

apart and the composite label web as having been passed to a position confronting the platen roll;

FIGURE 9 is a pictorial view showing the underside of the mounting member and the pressure roll mounted thereon;

FIGURE 10 is a partly sectional view of the right side of the labeler, showing the manner in which the holder is pivotally mounted to the housing; and

FIGURE 11 is a sectional view similar to FIGURE 10, but showing the left side of the housing.

Detailed Description of the Preferred Embodiments

With reference to FIGURE 1, there is shown a hand-held portable labeler generally indicated at 10. The labeler 10 includes a hand-held portable housing 11 including a manually graspable handle 12. A trigger switch 13 is disposed adjacent the handle 12. The trigger switch 13 underlies a front portion 14 of the labeler 10. A rear portion 15 of the labeler 10 includes a keyboard or touchscreen 16 and printed circuit boards 17 (FIGURE 2). The housing 11 includes an upper housing section 18 pivotally mounted about a pivot 19 and releasably latched to a lower housing section 20. A parting line between the upper and lower housing sections 18 and 20 is indicated at 18'. The handle 12 extends downwardly from the bottom or lower region or underside 20b of the lower housing section 20 of the housing 11. The handle 12 can extend both downwardly and rearwardly and preferably contains a rechargeable battery (not shown). The front portion 14 includes an applicator generally indicated at 21 preferably in the form of an applicator roll 22. A laser scanner 9 is also mounted on the upper housing section 18 of the housing 12.

With reference to FIGURE 2 it shows that the housing 11 includes a space 23 for a roll R of a composite label web C. The web C includes a carrier web W to which labels L are releasably adhered by tacky or pressure sensitive adhesive L'. The composite label web C can pass along a path from the roll R to beneath a guide or direction changing roll 24 and from there to the nip between a thermal print head 25 and a driven platen roll 26. The platen roll 26 is preferably comprised of a resilient material. An electric motor 27 is gear-connected to the platen roll 26 to drive or advance the composite web C and its web W while the print head 25 is printing on the leading label L. A delaminator generally indicated at 28 is disposed downstream of the print head 25 and the platen roll 26. The delaminator 28 can take the form of a small diameter roll 28' as shown in FIGURES 2 and

3 or a peel edge. As the composite web C passes from the print head 25 and platen roll 26 in the downstream direction, the web W is trained partially around the delaminator 28 where the web W makes an abrupt change in direction. Thus, the delaminator 28 is capable of causing the leading label L which has been printed to be delaminated from the web W. In the position shown in FIGURE 2, a short trailing end portion of the leading label L still remains adhered to the web W so that the leading label L is in underlying or label applying relationship to the applicator roll 22. After the web W passes the delaminator 28, the web W passes between the platen roll 26 and a pressure roll 29. The pressure roll 29 is in the operating position shown in FIGURE 2, the pressure roll 29 exerts pressure against the web W which in turn exerts pressure against the platen roll 26. Accordingly, traction is applied to the web W both at the nip between the print head 25 and the platen roll 26 and at the nip between the pressure roll 29 and the platen roll 26 when the platen roll 26 is driven. In that the pressure roll 29 is preferably an idler roll, the driving force is applied by the platen roll 26 with assistance from the pressure roll 29 in maintaining good pressure contact of the web W with the platen roll 26. The pressure roll 29 is shown to be disposed forward of the platen roll 26. As best shown in FIGURE 2, the web W exits at the front portion 14 of the housing 12 at the front of the labeler 10 a short distance after having passed between the nip of the platen roll 26 and the pressure roll 29.

With reference to FIGURES 3 and 4, there is shown a mounting member or holder generally indicated at 30 which mounts a shelf 31 and the pressure roll 29. The shelf 31 preferably has label-contacting ridges 32 which can support the essentially entirely delaminated leading label L. But for the shelf 31, the leading label L could droop below the level at which the applicator 21 can apply the leading label L to a product or surface, depending on the material composition of the labels L and/or the length of the trailing marginal edge of the leading label L which is still adhered to the web W. The pressure roll 29 is preferably comprised of a material such as plastic. The pressure roll 29 preferable has annular ridges 33 which contact the web W. The roll 29 include opposed stub ends or stub shafts 34 snap-fitted into C-shaped openings 35 in the mounting member 30. The pressure roll 29 is free to rotate as the platen roll 26 is driven. The mounting member 30 includes a curved front portion 36 which terminates at an edge 37. Each side of the mounting member 30 has a pair of leg portions 38 which extend beyond the edge 37. The edge 37 and the leg portions 38 provide an opening or passage 39 for the web W to exit the housing 11. Each arm 38 has an outwardly extending pivot or pivot portion 40

received in the housing 11 so that the mounting member 30 can pivot between an operating position shown in FIGURES 1 and 2 and an open, non-operating, or threading position shown in FIGURE 3. The pivots 40 are aligned and extend along axis A.

As best shown in FIGURE 2, the applicator 21 overlies the shelf 31 and the leading label L, and the leading label L can pass between the applicator 21 and the shelf 31 in label applying relationship to the applicator 21 in the operating position. The pressure roll 29 bears against the web W and the web bears against the platen roll 26 in the operating position. In the open position shown in FIGURE 3, the composite web C can simply be advanced over the platen roll 26 and the delaminator 28 and the hand-fed or inserted downwardly in the throat between the platen roll 26 and the pressure roll 29 and through the opening 39. From there the web W can naturally enter a tapered chute 11' which may be part of the housing 11. The chute 11' terminates at a tear edge 11''. In order to bring the shelf 31 into its label-supporting position and to bring the pressure roll 29 into pressure relationship with the platen roll 26, the mounting member 30 is manually pivoted about its axis A into the position shown in FIGURES 1 and 2.

The mounting member 13 has opposed projections 41 which fit into recesses 42 in the housing 12 to releasably hold the mounting member 30 in the operating position (FIGURES 1 and 2). The mounting member 30 and the housing 12 are constructed of molded plastics material and there is enough "give" or flexure to enable the mounting member to be snapped into and out of the operating position. A projection or stop 43 on one leg portion 38 limits the movement of the mounting member toward the operating position. The housing 11 has a pair of opposed, tapered, lead-ins 44 to facilitate guiding of the mounting member 29 to the operating position.

To load the labeler 10, the upper housing section 18 and the lower housing section can be opened by unlatching the upper housing section 18 from the lower housing section 20 by dispensing opposed buttons 18''. When the upper housing section 18 is pivoted to its open position from the operating position shown in the drawings, the label roll R can be inserted into the label roll space 23 the same as in co-owned U.S. patent 5,486,259. When the label roll R has been inserted into the labeler 10 with the free end portion of the composite web laid over the platen roll 26 and the delaminator 28 and extending to a position beyond the delaminator 28 and with the mounting member 36 in the open position, the remainder of the free end portion of the composite web C can be inserted into the space between the pressure roll 29 and the platen roll 26 and through the chute 11'.

Then the mounting member 29 can be moved to the operating position and the free end portion that projects out through the chute 11' can be manually tugged to remove any slack, and the labeler 10 is ready to be operated.

With reference to the embodiment of FIGURES 5 through 11, the labeler is designated at 10A. Since essentially the entire labeler 10A is the same as the labeler 10, the same reference characters are used for components having the same construction, arrangement and purpose.

The labeler includes a holder or holder member generally indicated at 50 having a pressure roll 51 cooperable with the platen roll 26. The holder 50 is shown to have a pair of oppositely outwardly extending stub ends or pivots 53 and 53' which are captive in open-ended, opposite, aligned, arcuate, bearings 52 and 52' in the housing 11. The pivots 53 and 53' pivot about a pivot axis A' at the bottom 20b of the main part of the lower housing section 20. The pressure roll 51 is rotatably mounted by stub ends 51' in C-shaped notches 51'' in the holder 50. The holder 50 has a shelf 31' with label-supporting ridges 32'. The holder 50 has a generally angle-shaped configuration and has a front portion or front wall 54 and a bottom portion or wall 55 joined to each other. The front and bottom portions 54 and 55 make an obtuse angle with respect to each other as best shown in FIGURES 6 and 7. The holder 50 has an exit opening 56 at the bottom portion 55. The opening 56 extends to a bend 57 in the holder 50. The holder 50 is preferably of one-piece molded plastics construction.

FIGURE 10 and 11 illustrate how the holder 50 is connected to the housing 11. FIGURE 10 illustrates the right side and FIGURE 11 illustrates the left side of the labeler 10. To connect the holder 50 to the housing 11, the user holds the holder 50 in a certain attitude wherein flats 53f and 53f' of stub ends 53 and 53' are aligned with gaps G and G' between the respective bearings or pivots 52 and 52' and bosses 11C and 11C'. With the stub ends 53 and 53' thus inserted to the position shown in FIGURES 10 and 11, the bearings 52 and 52' and bosses 11C and 11C' will capture the stub ends 53 and 53' to retain the holder 50 pivotally mounted to the housing. To remove the holder 50 from the housing 11, the user aligns the flats 53f and 53f' so that the stub ends 53 and 53' can pass out of the gaps G and G'. There is a slight interference fit between the bosses 11C and 11C' and the stub ends 53 and 53' to prevent accidental disconnection of the holder 50 from the housing 11. There is enough "give" or yield between the bosses 11C and 11C'

and the bearings 52 and 52' and the stub ends 53 and 53' for the stub ends 53 and 53' to be inserted to the position shown in FIGURES 10 and 11 and to be removed therefrom.

As shown in FIGURE 6, in use, the composite web C is paid out of the roll R and can pass partially around a direction-changing roll 24 to between the platen roll 26 and the print head 25. From there the composite web C passes to a delaminator preferably in the form of a peel roller 28 where the printed label L is progressively peeled from the carrier web W as the carrier web W moves through a sharp angle about the delaminator 28. From there the carrier web W passes into the nip between the platen roll 26 and the pressure roll 51. The carrier web W then passes through the narrow throat 61 between a front housing wall 11' and spaced elongate ribs 58 on the underside of the holder 50. The carrier web W passes generally downwardly through a throat opening 62 past a tear edge 59 and directly through the exit opening 56. There is only one exit opening 56 through the holder 50 so the leading end 60 of the carrier web W cannot exit anywhere except at the exit opening 56.

As best shown in FIGURE 6, the front wall 54 of the holder 50 and its ribs 58 and the front housing wall 11' provide the narrow passage or chute or throat 61 preferably with a convergence or tapering to the throat opening 62. The front wall 54 of the holder 50 and the bottom wall 55 of the holder 50 can be joined by a pair of arms 63. The arms 63, the front wall 54 and the bottom wall 55 help define the exit opening 56. The bottom wall 55 is spaced rearwardly of the tear edge 59. The opening 56 extends rearwardly far enough so that there is no opportunity for the carrier web W to do anything except pass through the throat opening 62 and through the exit opening 56.

FIGURE 7 shows how the labelers 10 and 10A are threaded. The upper housing portion 18 is unlatched and moved to an open position, as shown. The roll R can be inserted into the label roll receiving space 23 and free end or marginal end portion M can be passed between the platen roll 26 and the print head 25. Specifically, the composite web C can be laid over the platen roll 26 and slightly beyond. The upper housing section 18 can now be moved to the closed or operating position shown in FIGURE 6 wherein the composite web C is in the nip between the print head 25 and the platen roll 26. The marginal end M can be bent around the delaminator 28 to the position shown in FIGURES 7 and 8. The holder 50 can then be moved from the open position shown in FIGURE 7 to the closed or operating or cooperating position shown in FIGURE 6, thereby pinching the leading marginal end M between the platen roll 26 and the pressure roll 51. The trigger

switch 13 can now be operated to advance the carrier web W through the exit opening 56 and, as the carrier web W moves, one or more labels L can be peeled from the web W at the delaminator 28. It is to be noted that there is no need to try to feed or stuff the marginal end M through the exit opening 56 before the pressure roll is moved into pressure cooperation with the marginal end M and the platen roll 26. This saves time and enables the final advance of the carrier web W to be made by the motor-driven roll 26 and pressure roll 51. While it is preferred to move the upper housing section 18 into the closed or operating position before the holder 50 is moved to the operating position, the holder 50 can be moved to the operating position before the upper housing section 18 is moved to the closed position, if desired. It should also be noted that when bringing the margin end of the composite web C to the position shown in FIGURES 7 and 8, it is not necessary to remove labels L from the marginal end M. This also saves time for the operator of the labeler 10 or 10A.

Other embodiments and modifications will suggest themselves to those skilled in the art, and all such of these as come within the spirit of this invention are included within its scope as best defined by the appended claims.

CLAIMS:

1. A hand-held portable labeler, comprising:
 - a hand-held portable housing having a handle and having space to receive a label roll comprised of a carrier web and labels disposed along and releasably adhered to the carrier web,
 - a print head mounted on the housing,
 - a driven platen roll cooperable with the print head to print on the labels,
 - a delaminator disposed downstream of the print head and capable of delaminating printed labels from the carrier web;
 - a mounting member;
 - a shelf disposed on the mounting member downstream of the delaminator,
 - an applicator disposed above the level of the shelf and in label applying relationship to the printed label,
 - a pivot axis below the platen roll,
 - the mounting member being pivotally mounted to the housing about the pivot axis,
 - a pressure roll rotatably mounted on the mounting member, the platen roll and the pressure roll being the sole means to advance the carrier web, wherein the mounting member, the pressure roll and the shelf are pivotal as a unit about the pivot axis between an operating position in which the printed label is between the applicator and the shelf and in which the carrier web is in pressure relationship between the platen roll and the pressure roll and a non-operating position in which the platen roll and the pressure roll are spaced apart and accessible to the user for threading of the carrier web between the platen roll and the pressure roll, wherein the mounting member includes an exit opening to allow passage of the spent carrier web from which labels have been delaminated.
2. A labeler as defined in claim 1, wherein the exit opening is the only opening through which the spent carrier web can pass.
3. A labeler as defined in claim 1, wherein the mounting member has at least one carrier web guide rib which extends between the pressure roll and the exit opening.

4. A labeler as defined in claim 1, wherein the exit opening is disposed generally between the pressure roll and the pivot axis.
5. A labeler as defined in claim 1, wherein the mounting member has an angle-shape that makes an obtuse angle.
6. A labeler as defined in claim 1, wherein the holder is detachably connected to the housing.
7. A labeler as defined in claim 1, wherein the holder includes a least one pivot disposed at the underside of the housing, wherein the handle extends downwardly from the underside of the housing, wherein the pivot(s) is (are) along the pivot axis, and wherein the pivot axis is rearward of the front end of the housing.
8. Method of loading a labeler with a composite label web having a carrier web and labels releasably adhered to the carrier web along its length, wherein the composite web is wound into a supply roll, comprising:
 - providing a labeler having
 - a label roll mounting space,
 - a print head and a cooperable platen roll,
 - a delaminator capable of delaminating printed labels from the carrier web,
 - an applicator for applying printed labels to articles,
 - wherein the print head and the platen roll are movable between a cooperating position and a spaced-apart position to enable the supply roll to be loaded into the labeler,
 - a pressure roll disposed downstream of the delaminator and cooperable with the platen roll,
 - wherein the platen roll and the pressure roll are movable between a cooperating position and a space-apart position,
 - loading the supply roll into the label roll mounting space while the print head and platen roll are in the spaced-apart position,
 - passing a leading marginal end of the composite web into space between the spaced print head and platen roll, partially about the delaminator and to between the platen and pressure rolls in their spaced-apart positions but short of the exit opening, moving the

print head and the platen roll relative to each other into the cooperating position, and moving the pressure roll and the platen roll relative to each other into their cooperating position.

9. Method as defined in claim 8, including thereafter advancing the composite label web through the exit opening.

10. A hand-held portable labeler, comprising:

a hand-held portable housing having a handle and having space to receive a label roll comprised of a carrier web and labels disposed along and releasably adhered to the carrier web,

a print head mounted on the housing,

a driven platen roll cooperable with the print head to print on the labels,

a delaminator disposed downstream of the print head and capable of delaminating printed labels from the carrier web;

a mounting member;

a shelf disposed on the mounting member downstream of the delaminator,

an applicator disposed above the level of the shelf and in label applying relationship to the printed label,

a pivot axis below the platen roll,

the mounting member being pivotally mounted to the housing about the pivot axis,

a pressure roll rotatably mounted on the mounting member, the platen roll and the pressure roll being the sole means to advance the carrier web, wherein the mounting member, the pressure roll and the shelf are pivotal as a unit about the pivot axis between an operating position in which the printed label is between the applicator and the shelf and in which the carrier web is in pressure relationship between the platen roll and the pressure roll and a non-operating position in which the platen roll and the pressure roll are spaced apart and accessible to the user for threading of the carrier web between the platen roll and the pressure roll.

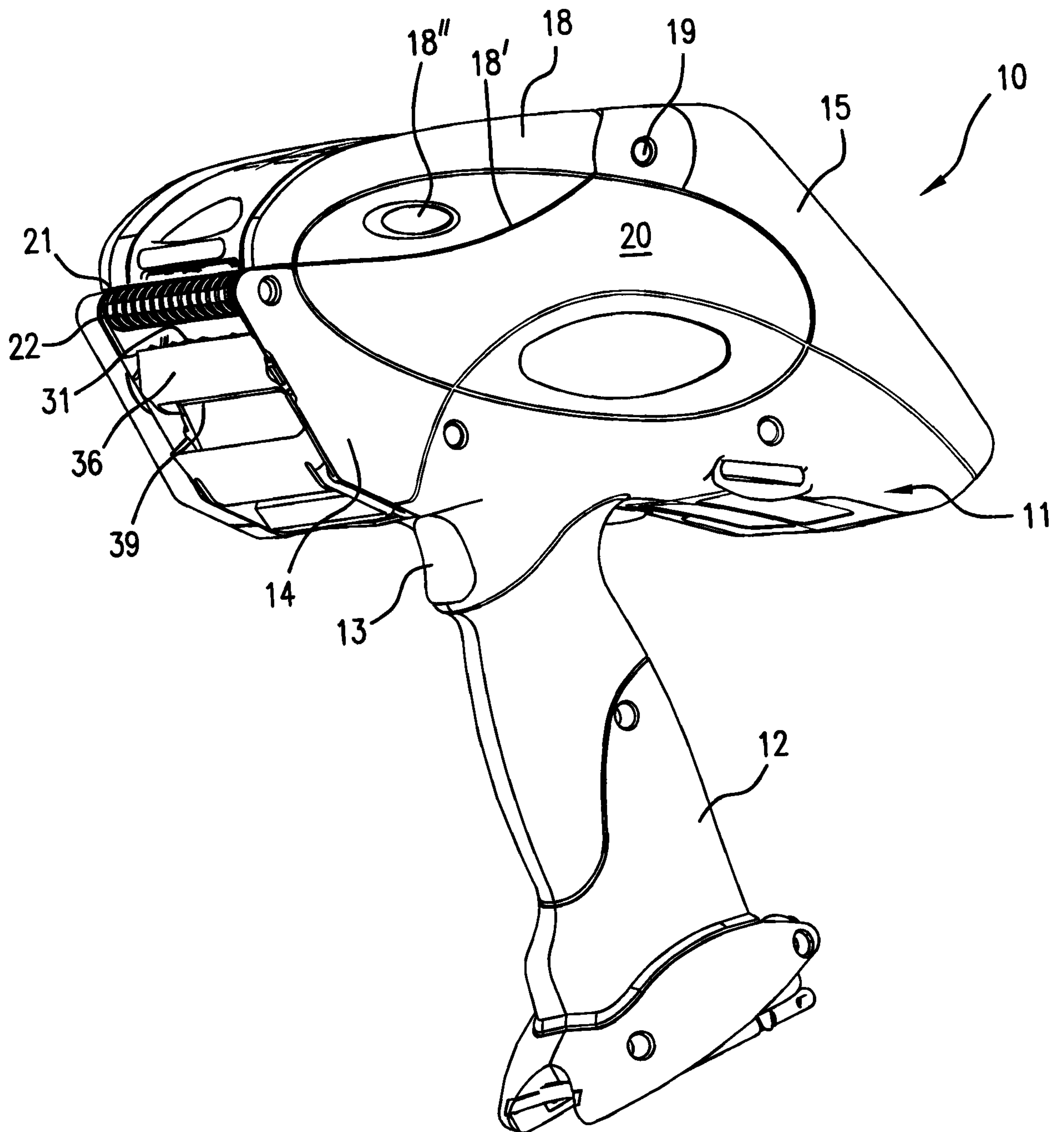


FIG. 1

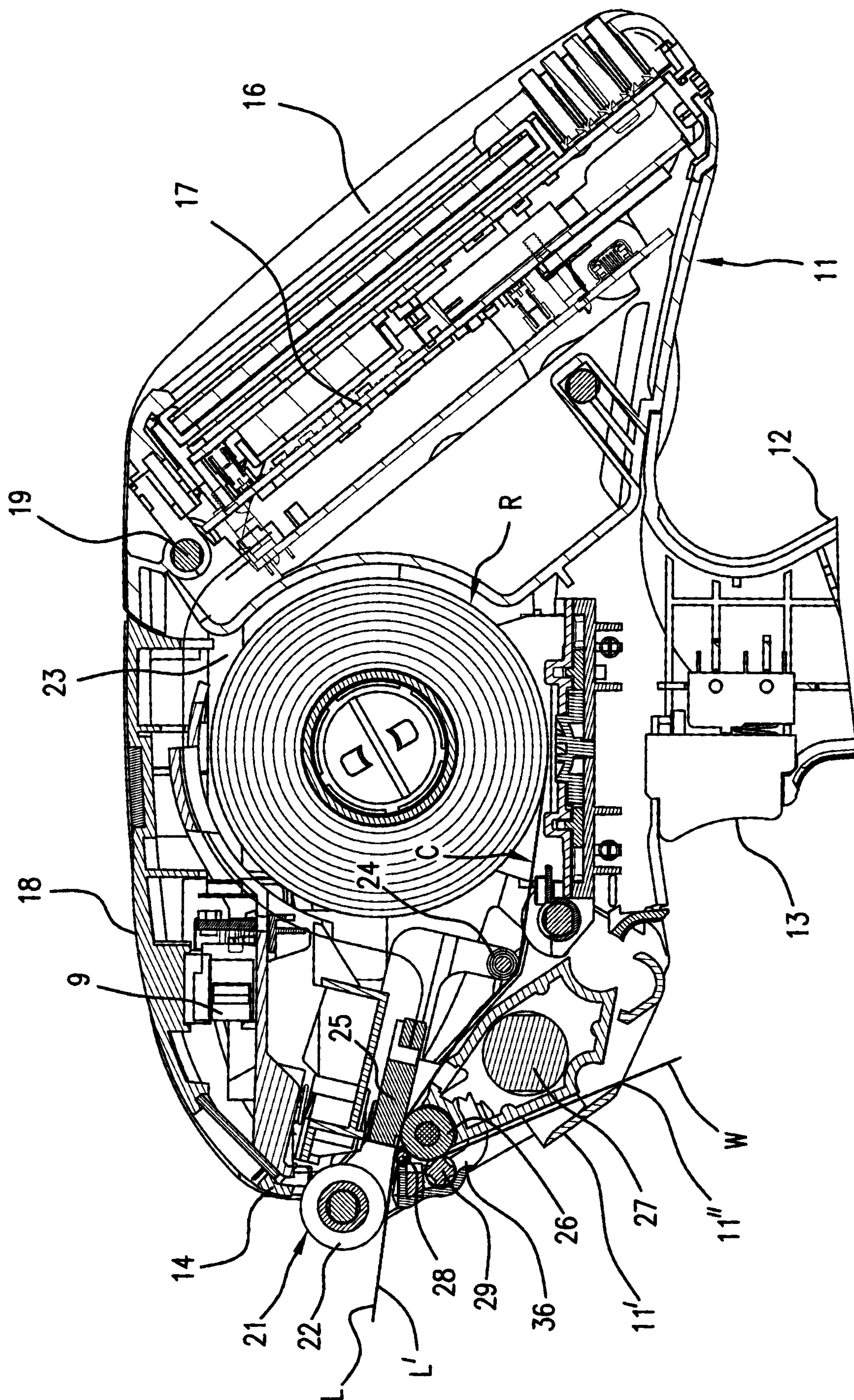


FIG. 2

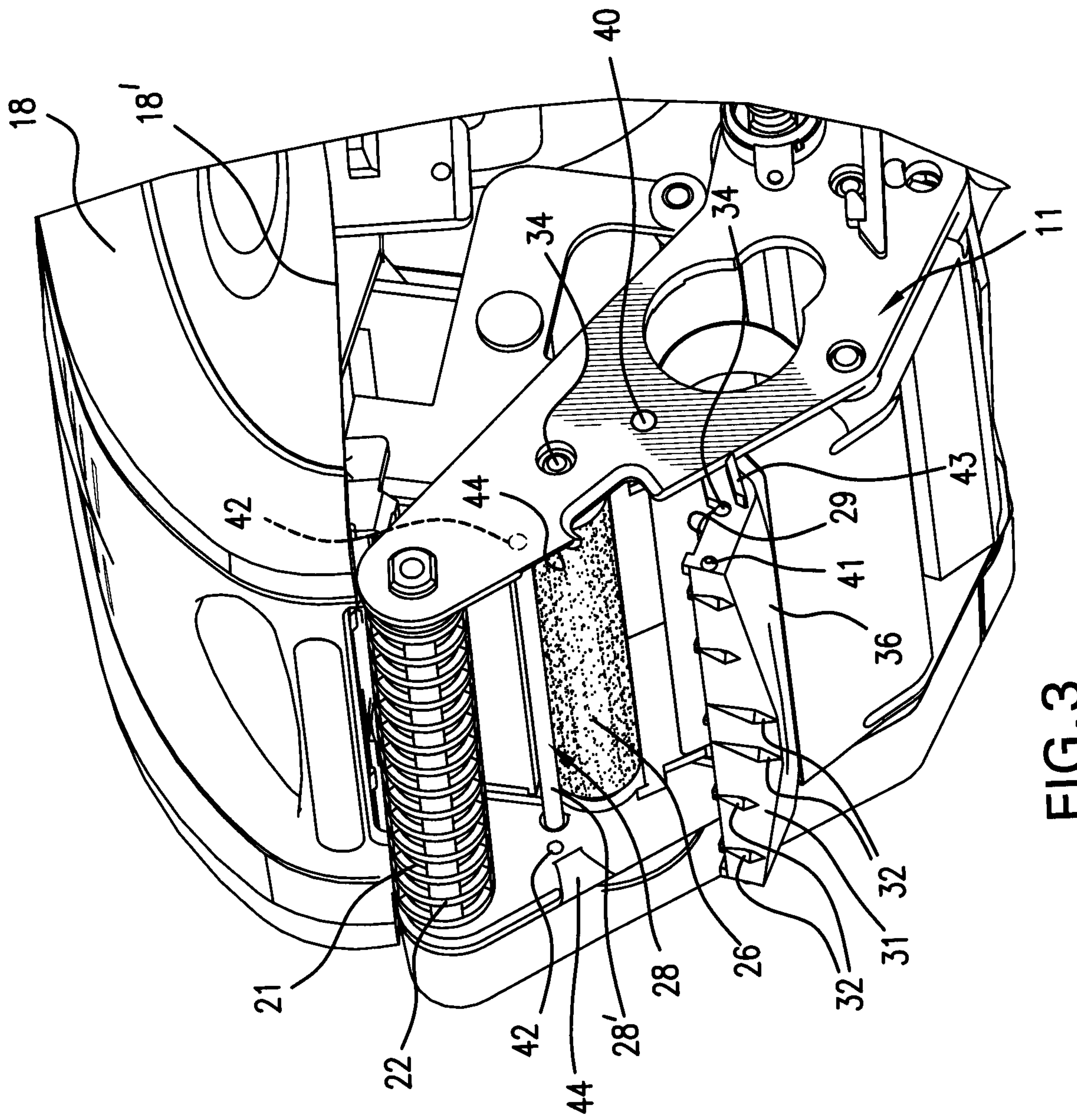


FIG. 3

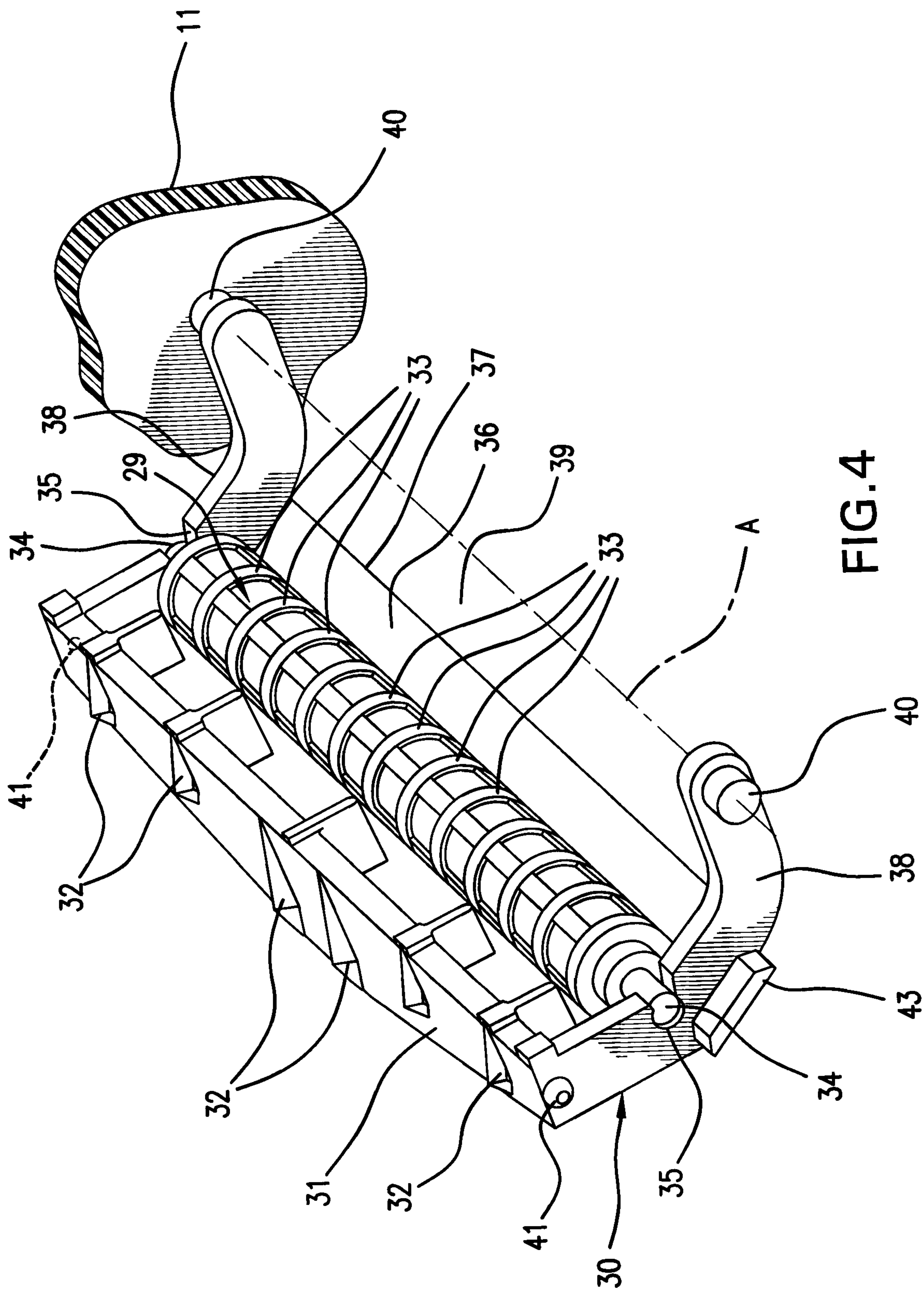


FIG. 4

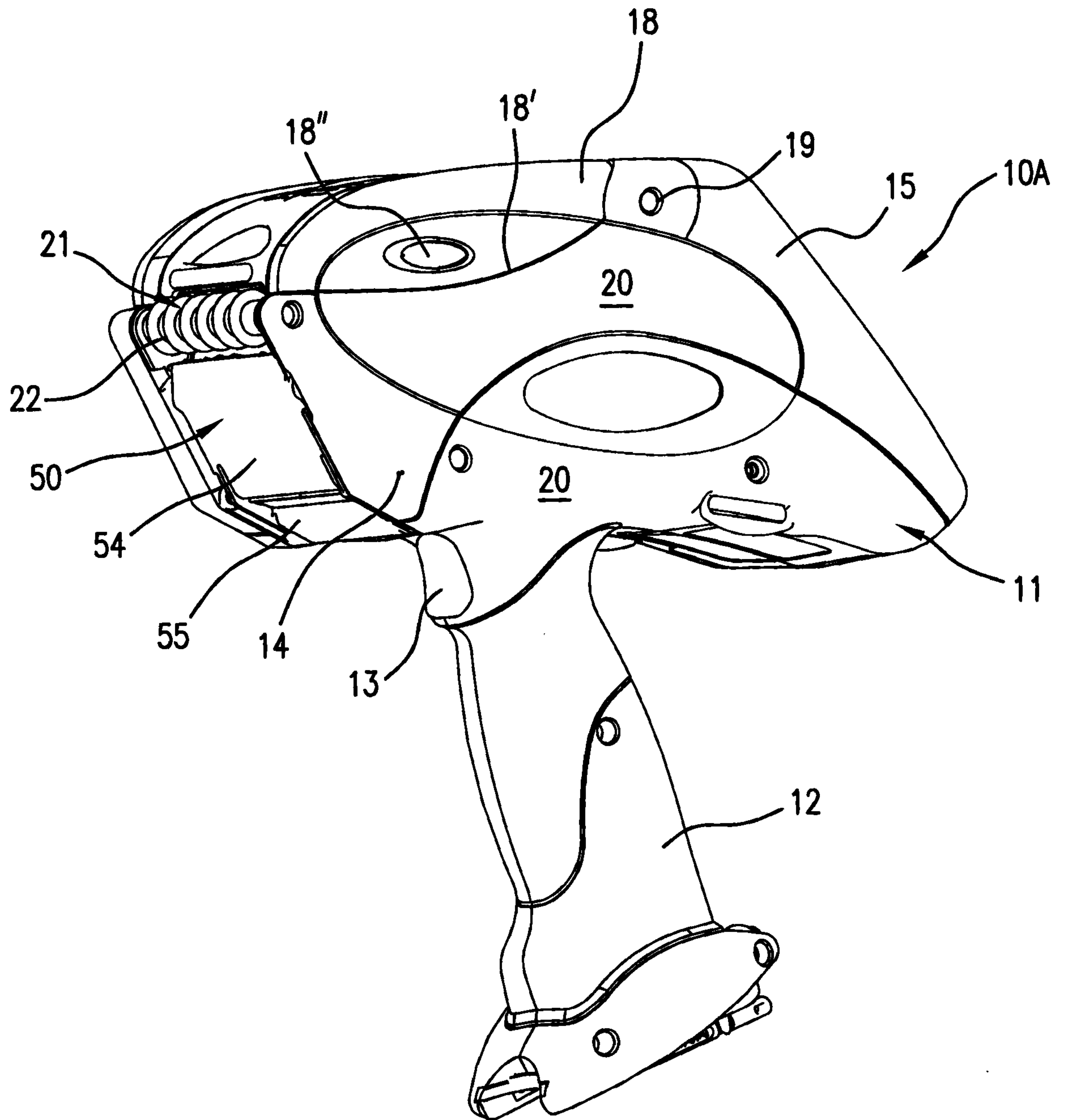


FIG. 5

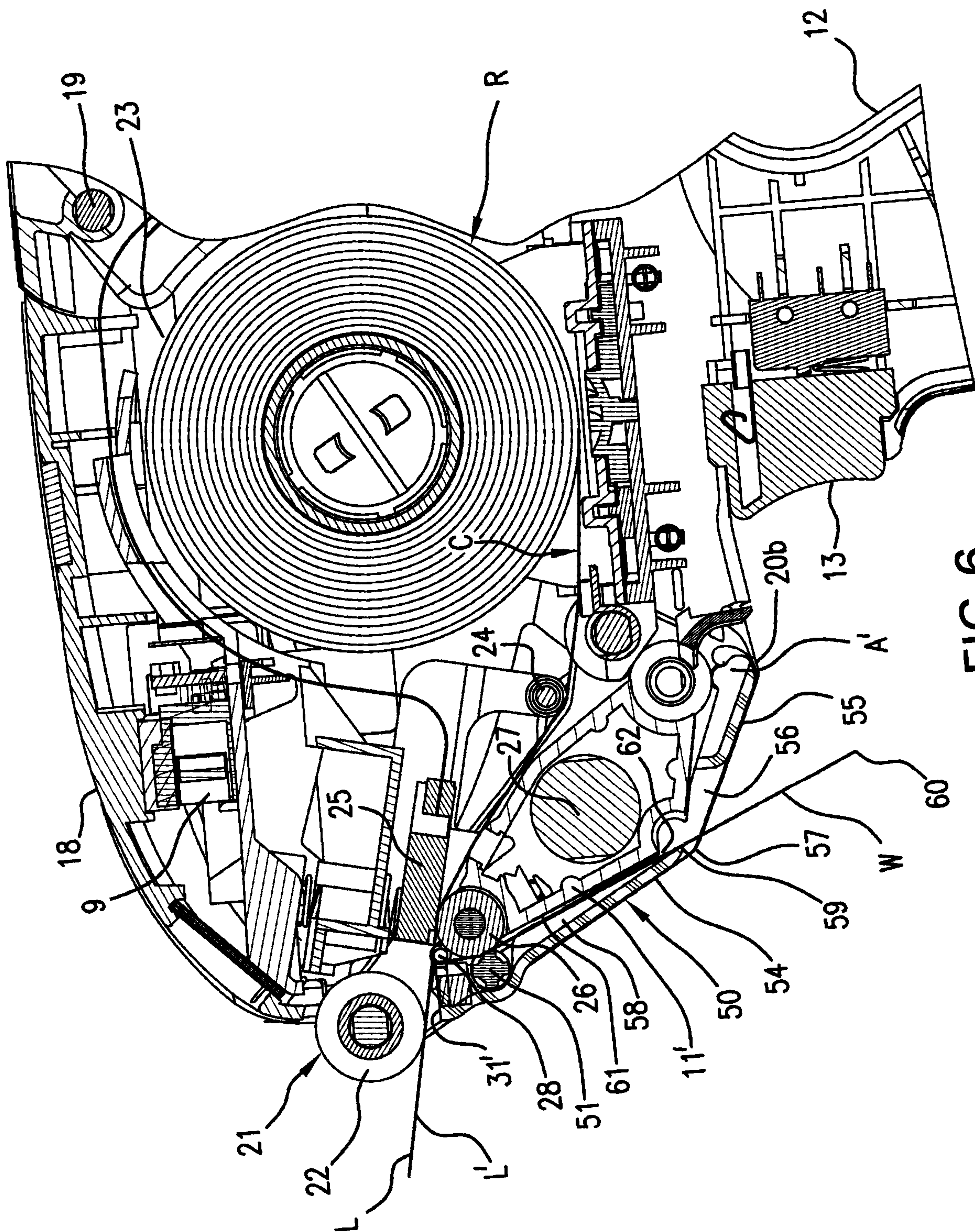


FIG. 6

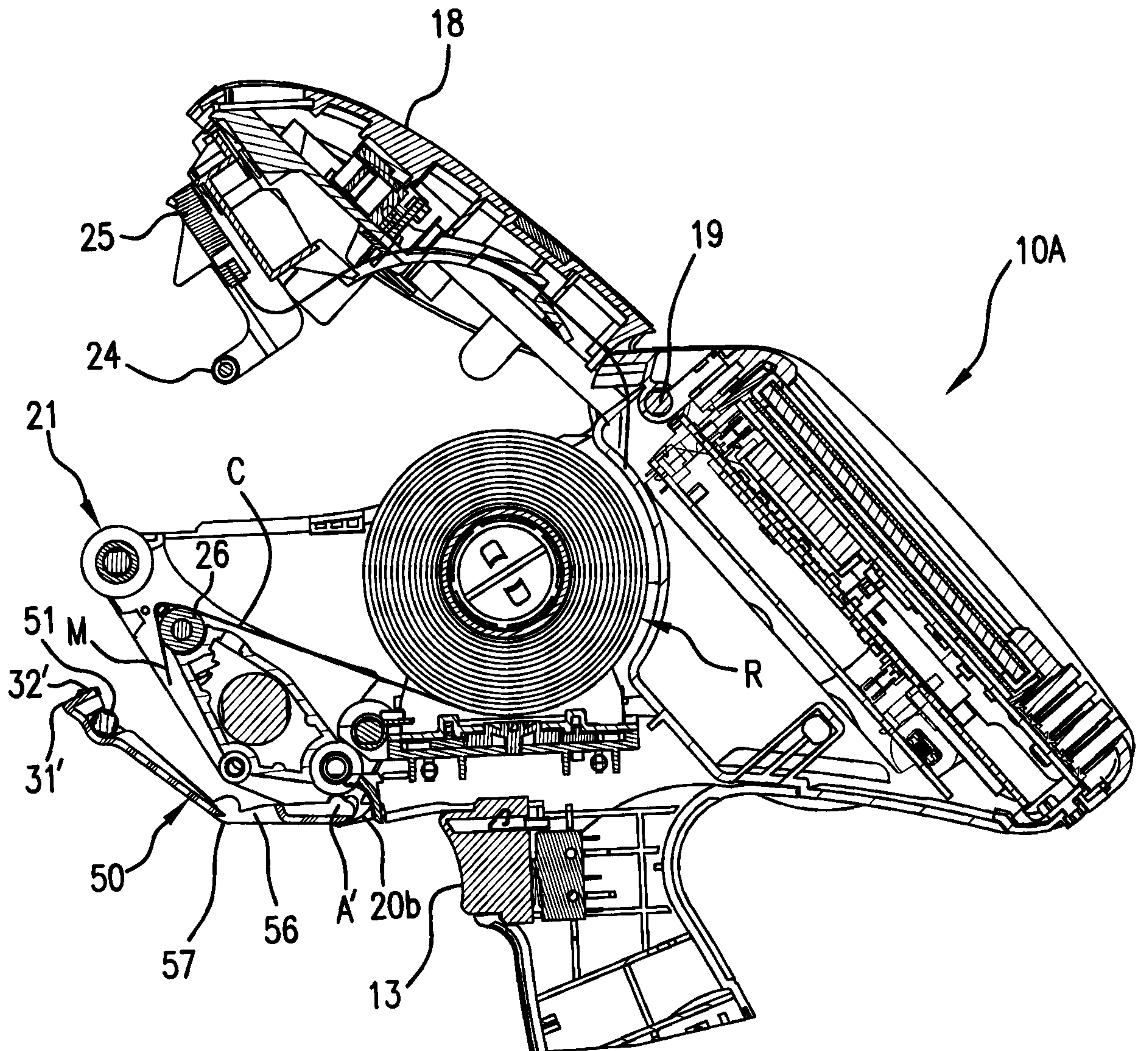


FIG. 7

