

[54] **PORTABLE TAGGING MACHINE**

[75] Inventor: **Yo Sato**, Tokyo, Japan

[73] Assignee: **Kabushiki Kaisha Sato Kenkyusho**,
Tokyo-to, Japan

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[51] Int. Cl. **B25c 5/00**

[58] Field of Search 93/87, 88; 227/76

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Primary Examiner—Granville Y. Custer, Jr.

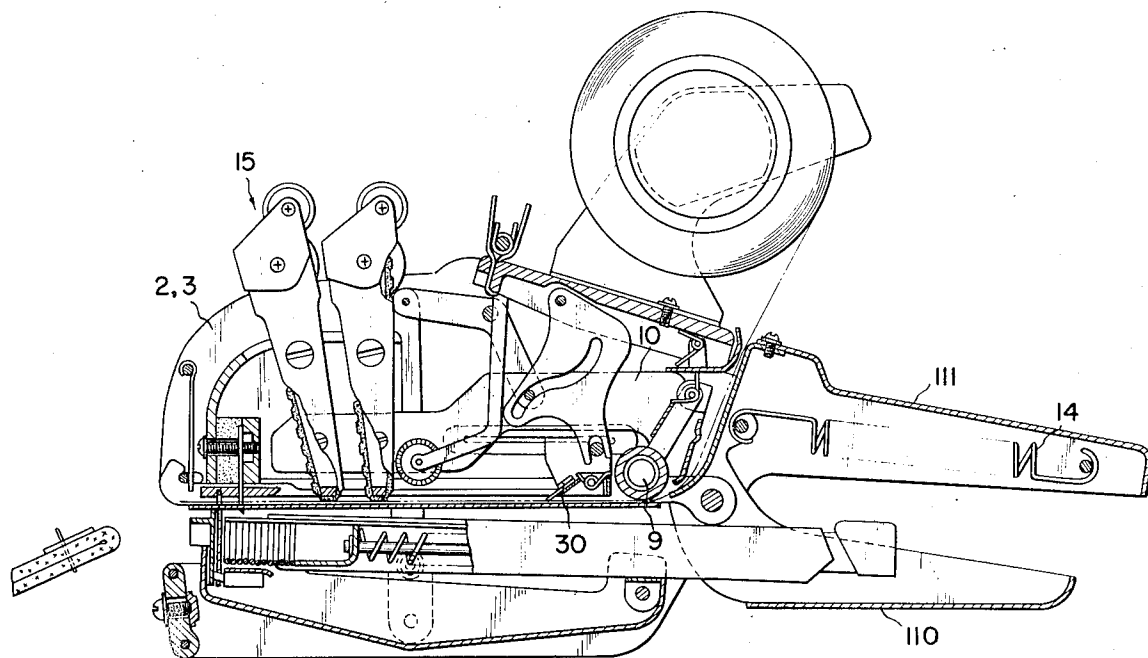
Assistant Examiner—James F. Coan

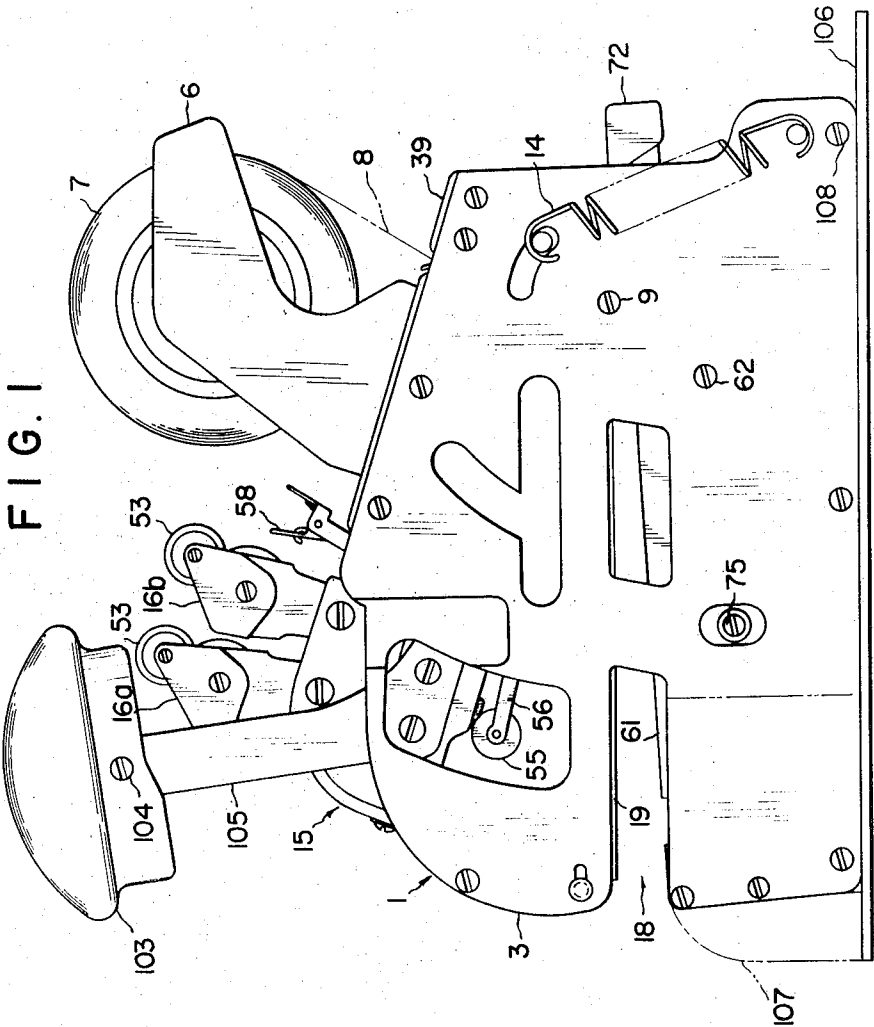
Attorney, Agent, or Firm—Waters, Roditi, Schwartz & Nissen

[57] **ABSTRACT**

A continuous strip of separable tags held in a roll above the casing of a tagging machine is supplied onto a passageway extending through the casing and is indexed along the same by feed means actuated by the manual operation of lever means. Each time the lever means is manually operated, the foremost or leading tag of the continuous tag strip is printed with a desired inscription, separated from the rest of the strip by a cutter, and stapled to an article being tagged which is inserted into a slot formed in the casing. The printing, cutting, and stapling means are all actuated by the manual operation of the lever means.

3 Claims, 11 Drawing Figures





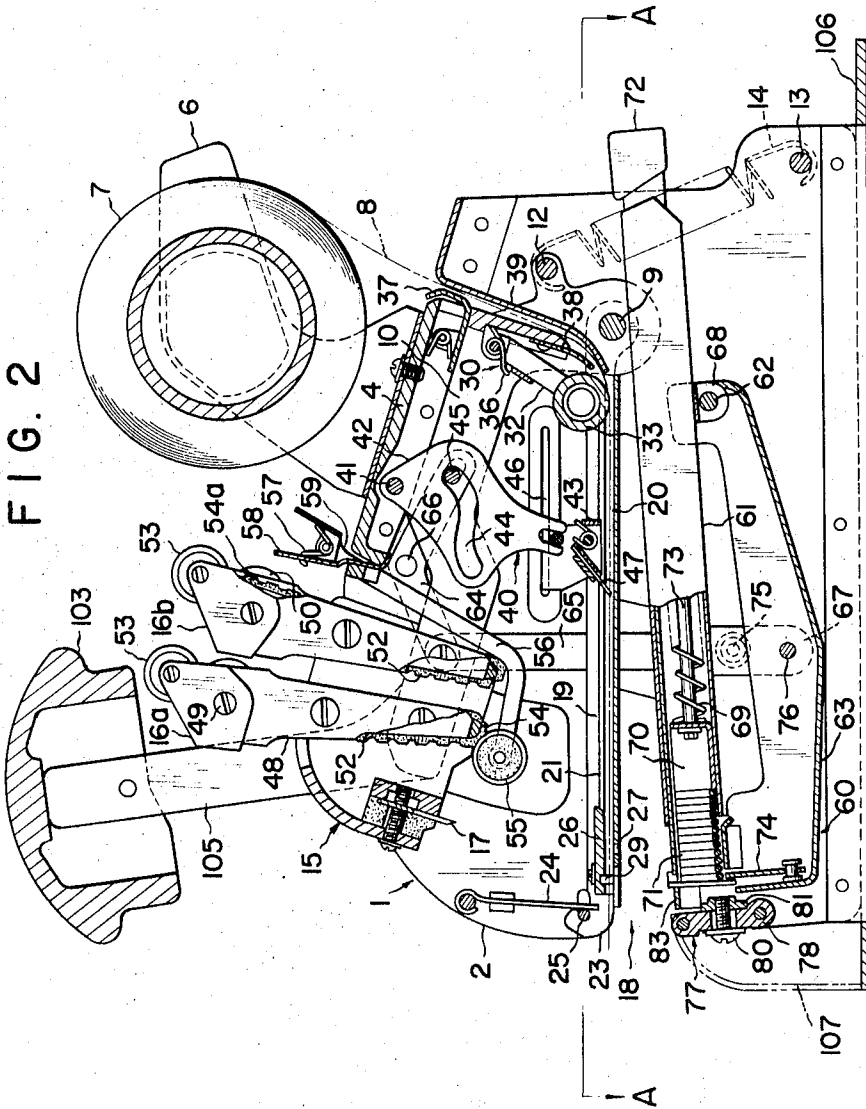


FIG. 3

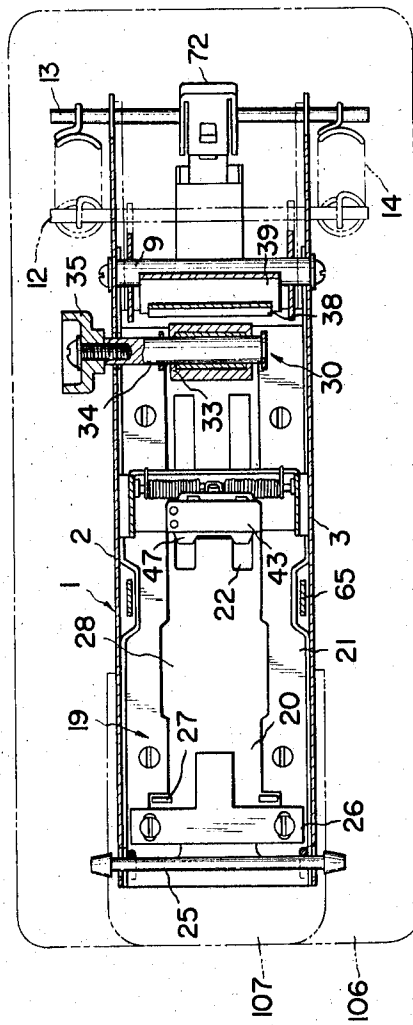


FIG. 4

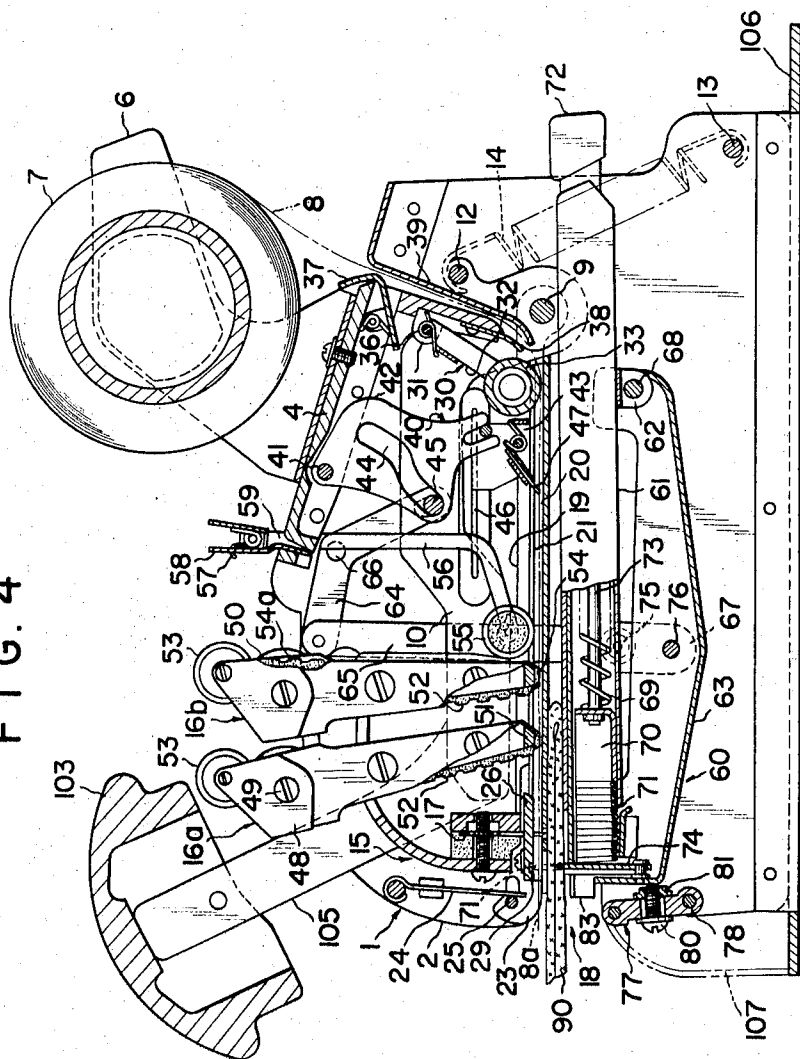


FIG. 6

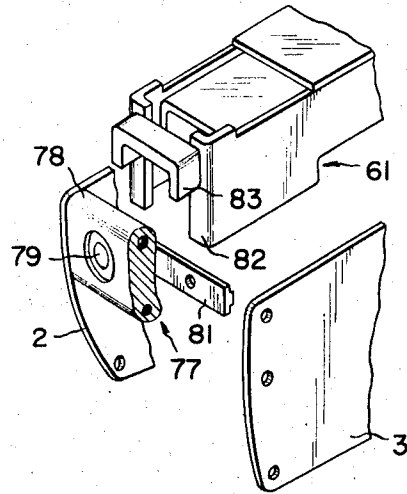


FIG. 8

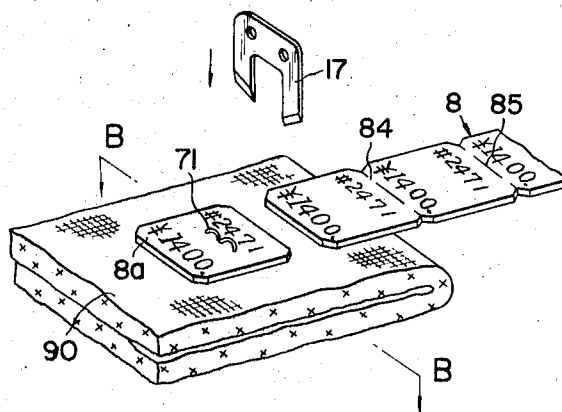


FIG. 9

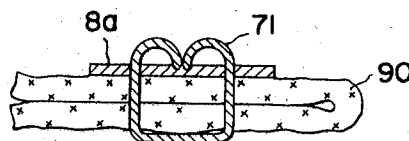
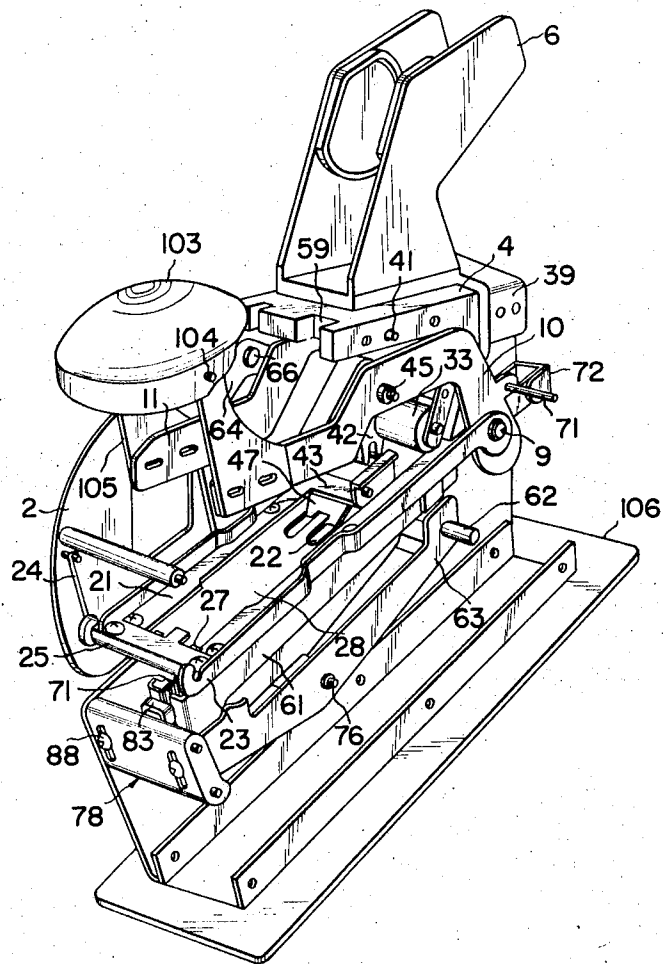


FIG. 5



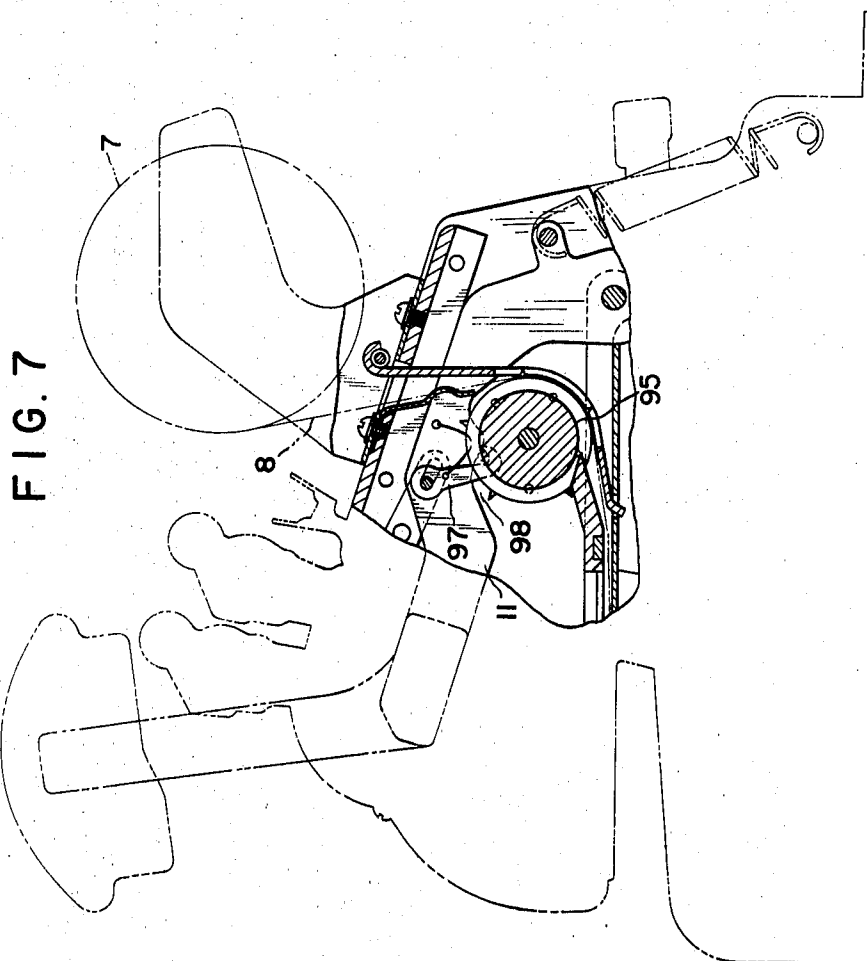
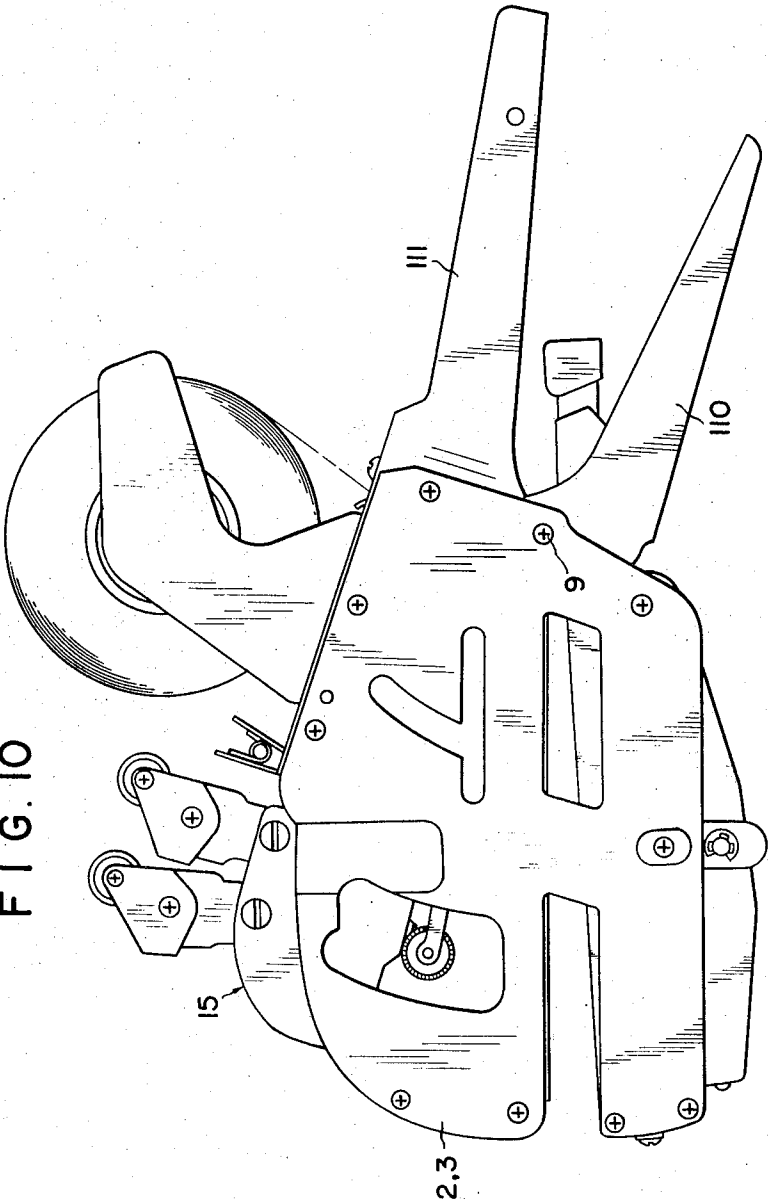
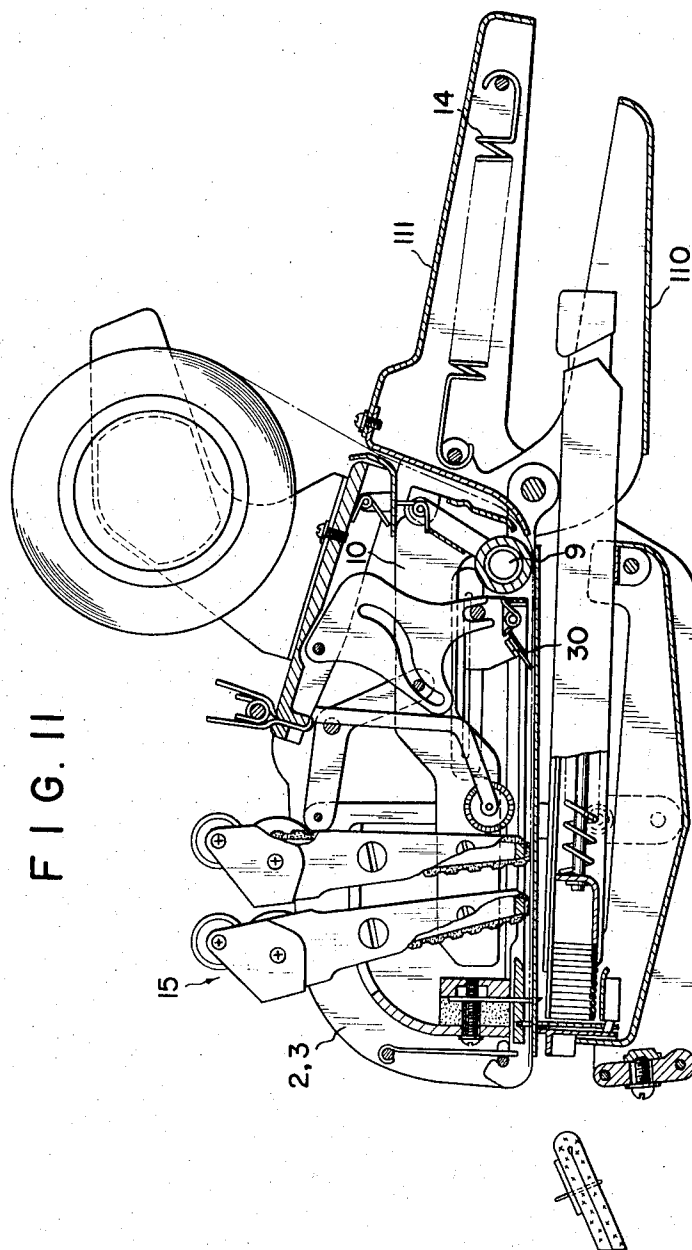


FIG. 10





PORTABLE TAGGING MACHINE

BACKGROUND OF THE INVENTION

This invention relates to a portable tagging machine operable by one hand for successively stapling price tags or the like, each printed with a desired inscription, to objects such as garments and other articles of manufacture which can be pierced by staples without affecting their commercial value.

Conventionally, the tagging of commodities has been carried out by, for example, a portable labeling machine in which labels separably laid over a continuous strip of backing paper are used. Prices or other pieces of information are printed on the successive labels, and these labels are then successively separated from the backing paper as they are dispensed out of the labeling machine to be attached to desired articles by adhesive layers coated on their back faces.

However, when labels or tags of this kind are attached to articles of clothing and other fabric-made products, some of the adhesive coated on their back faces can be left on such articles after removal of the labels or tags, so that the articles can easily be soiled with dust or the like adhering to the adhesive left thereon. In the worst cases the adhesive may chemically react with the articles thereby to discolor the same or to cause other damage of the articles. For these reasons such adhesive-coated labels or tags ordinarily have not been used with fabric-made products.

One commonly use method of tagging fabric-made products has been the manual sewing of previously stamped or printed tags to such products. Another method employed for the tagging of rather coarse-woven garments or the like has involved the use of a special hand-operated device which fastens tags to such articles by means of expensive plastic filaments. Staples have also been used widely for tagging various commodities.

One of the most serious disadvantages common to all these known tagging methods is that the printing or stamping of individual tags and their fastening to desired articles are carried out by separate means, so that considerable time and labor has had to be expended for the correct tagging of a number of differently priced articles. This disadvantage has so far been overcome only by a bulky and expensive power-operated tagging machine whereby tags are semiautomatically printed with the necessary inscriptions and pinned to desired articles. It will be apparent, however, that such a bulky, unportable machine has very limited applications.

SUMMARY OF THE INVENTION

Therefore, it is an object of this invention to provide an improved portable tagging machine which performs both the printing of desired inscriptions on successive tags and the fastening thereof to objects such as, perhaps most suitably, articles of clothing and other woven and knitted products.

Another object of the invention is to provide improvement of a tagging machine of the class referred to, which is simple and inexpensive in construction, easy to handle and to operate, and positive in operation.

With these objects in view and the other objects hereinafter made apparent, this invention provides a tagging machine which, stated in its perhaps broadest aspects, includes a casing having a holder for revolvably

holding a roll of a continuous strip of tags which are separable from each other. Within the casing there is mounted lever means so as to be turned, perhaps manually, between a first and a second position, the lever means being normally held in the first position by spring means and comprising a lever pivotally attached to a shaft and extending rearward, a hand lever formed by said extended part of said lever, and a grip fixed to the casing, said hand lever being turned around said shaft when said grip and hand lever are gripped. The continuous strip of tags is guided onto a passageway extending through the casing and is indexed along the same by feed means actuated by the motion of the lever means between the first and the second position. For printing a desired inscription on the foremost or leading tag of the continuous strip of tags being fed along the passageway, printing means is supported by the lever means for simultaneous turning motion therewith and is caused to print the desired inscription on the foremost tag when the lever means is turned to the second position. The printed foremost tag is separated from the continuous strip by cutting means which also is supported by the lever means, the printed foremost tag being separated when the lever means is turned to the second position. Stapling means is provided for fastening the printed and separated tag to an article inserted into a slot or recess formed in the casing, and this stapling means also is actuated when the lever means is turned to the second position. Thus, by the simple turning motion of the lever means, each foremost tag can be printed with any desired inscription, separated from the continuous strip of tags, and stapled to the article.

The features which are believed to be novel and characteristic of this invention are set forth with particularity in the appended claims. The invention itself, however, both as to its construction and mode of operation, together with the further objects and advantages thereof, will be best understood from the following detailed description of preferred embodiments read in connection with the accompanying drawings, in which like reference characters designate like parts throughout the several views.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. 1 is a side elevational view of one example of a tagging machine to be improved by the present invention;

FIG. 2 is a side elevation, in vertical section, showing the internal construction and arrangement of the tagging machine shown in FIG. 1, the tagging machine being shown in its normal inoperative condition;

FIG. 3 is a horizontal sectional view taken along the plane of line III—III in FIG. 2;

FIG. 4 is a view corresponding to FIG. 2 but showing the tagging machine in its operating condition;

FIG. 5 is a perspective view showing the internal construction and arrangement of the tagging machine shown in FIG. 1 from which printing means and one of the side plates have been removed to show other parts in detail;

FIG. 6 is a fragmentary, enlarged perspective view showing the front end portion of a staple enclosure and step means therefor;

FIG. 7 is a fragmentary, vertical sectional view explanatory of another preferred embodiment of the invention;

FIG. 8 is an enlarged perspective view showing the foremost tag of a continuous strip of tags separated and staples to an article;

FIG. 9 is a vertical sectional view taken along the plane of line IX—IX in FIG. 8;

FIG. 10 is a side elevational view of one embodiment of the portable tagging machine according to the present invention; and

FIG. 11 is a side elevational view in vertical section, showing the internal construction and arrangement of the tagging machine shown in FIG. 10.

DETAILED DESCRIPTION

Referring now generally to FIGS. 1 to 5 of the drawings, the tagging machine illustrated therein as a preferred embodiment of the machine to be improved of the present invention has a casing 1 comprising a pair of side plates 2 and 3 which are securely interconnected at their upper ends by a top plate 4 and are further screwed as at 108 to a bottom plate 106. A holder 6 is mounted on the top plate 4 to hold revolvably a roll 7 of a continuous strip of tags hereinafter described in more detail.

A shaft 9 extends transversely between the side plates 2 and 3 to turnably support a pair of parallel levers 10, which have a pin or rod 12 extending transversely therethrough and further projecting outwardly of the side plates 2 and 3 through arcuate slots formed therein. A pair of helical tension springs 14 are stretched between the projecting ends of the pin 12 and the corresponding ends of another pin or rod 13 fixedly supported by the side plates 2 and 3, thereby urging the levers 10 to turn clockwise, as seen in FIGS. 2 and 4, on the shaft 9.

The levers 10 have upward extensions 105 formed on their respective front ends 11, and a knob 103 of any suitable shape is screwed at 104 to the upper ends of the lever extensions 105. As seen in FIGS. 2 and 4, printing means 15 comprising a pair of printing heads 16a and 16b and a cutter 17 is removably supported between the lever 10.

As illustrated in FIGS. 1, 2 and 4, the side plates 2 and 3 are slotted at 18 for the insertion of an article to be tagged. Within the casing 1 a member 19 is pivotally supported by the shaft 9, as shown in FIGS. 2, 4 and 5, to provide a passageway 20 for the continuous tag strip 8 and a surface 28 for bearing the types as they are pressed against the successive tags. A guide 21 is provided above the member 19 with a slight spacing therebetween to guide the continuous tag strip as it is fed along the passageway 20 formed between the guide 21 and the upper surface of the member 19. A pair of grooves 22, FIGS. 3 and 5, are formed on the upper surface of the member 19, and a pair of feed pawls are provided at 47 so as to move in sliding contact with the respective grooves 22 as they feed the continuous tag strip 8.

It may be noted that the passageway 20 has a length corresponding to that of several individual tags combined together. A bar 25 supported by springs 24 is engaged by the front end 23 of the member 19 for purposes hereinafter made apparent. Also adjacent the front end of the member 19 there are formed a pair of slots 27 to receive the cutting edges of the cutter 17,

and there is also provided a member 26 having a groove 29 adapted to bend or clinch each of staples 71 piercing the desired article.

SUPPLY MECHANISM

As clearly shown in FIG. 2, adjacent to the rear end of the member 19 there is provided supply means 30 capable of directing the front tip of the continuous tag strip 8 into the passageway 20. The supply means 30 includes a pair of arms 32 turnably supported by a bracket 31 extending downwardly from the rear end of the top plate 4. The arms 32 supports a roller 33 capable of rotation in one direction only. A shaft 34 on which the roller 33 is mounted has one of its ends projecting outwardly of the side plate 2, as illustrated in FIG. 3, and a knob 35 is affixed to the projecting end of the shaft 34. Thus, by manually turning the knob 35, the roller 33 can be revolved in the predetermined direction to feed the continuous tag strip 8.

The leading tip of the continuous tag strip 8, supplied from its roll 7, is introduced into the casing 1 through an opening formed between a guide plate 39 and another plate 37 provided at the rear end of the top plate 4. Further passing through the space between the lower end portion of the guide plate 39 and another guide plate 38 which is secured close to the rear end of the aforesaid guide 21, the leading tip of the continuous tag strip 8 is led to the roller 33 of the supply means 30. The manual turning of the knob 35 is necessary only for feeding the front tip of the continuous tag strip 8 onto the passageway 20. Thereafter, the roller 33 is lightly held against the upper surface of the continuous tag strip 8 by a spring 36 provided for each of the arms 32.

FEED MECHANISM

As best illustrated in FIGS. 2 and 4, feed means 40 is mounted within the casing 1 so as to be driven by the manual depression of the knob 103. The feed means 40 comprises a cam 42 of the illustrated shape turnably supported by a shaft 41 fixedly provided below the top plate 4; and a pawl holder 43 having a pin slidably received in a slot formed at the lower end of the cam 42. The cam 42 has a curved slot 44 slidably receiving a pin 45 secured transversely to the levers 10. The pawl holder 43 includes portions which are slidably received in guide grooves 46 formed on the inside wall surfaces of the side plates 2 and 3, and the aforesaid feed pawls 47 are formed on the front end of the pawl holder 43.

When the knob 103 is not depressed, as indicated in FIG. 2, the pawl holder 43 is held forward of the guide grooves 46, so that the feed pawls 47 are held at the most advanced position of their stroke. When the knob 103 is depressed against the tensile forces of the springs 14 to cause the levers 10 to turn counterclockwise, as shown in FIG. 4, the cam 42 also turns counterclockwise on the shaft 41 to cause the pawl holder 43 to move backward of the guide grooves 46. The feed pawls 47 are now carried to the most retracted position of their stroke. As the knob 103 is succeedingly released to permit the levers 10 to be turned clockwise by the springs 14 to their position shown in FIG. 2, the feed pawls 47 advance in engagement with one of transverse slits 85 formed at definite spacings on the continuous tag strip 8, as illustrated in detail in FIG. 8. In this manner the continuous tag strip 8 is fed by indexed movement along the passageway 20.

PRINTING MECHANISM

Each of the printing heads 16a and 16b supported between the levers 10 comprises support means 48, a plurality of gear wheels 50 mounted on a shaft 49 revolvably supported at the upper portion of the support means 48, a pressure head 51 formed at the lower end of the support means 48, a type band 52 extending between each gear wheel 50 and the pressure head 51, and a wheel 53 engaged with each gear wheel 50 for changing the types to be impressed upon the successive tags. The type band 52 has more than ten different types 54 formed on its portion in excess of a half of its entire circumference, and the reference numerals or characters 54a corresponding to the respective types are inscribed on the remaining portion of the band.

Adjacent the lower ends of the printing heads 16a and 16b there is provided an inking roller 55 which is rotatably supported at the tip of a bent arm 56 the upper end of which extends outwardly through an aperture 59 formed adjacent the front end of the top plate 4. The projecting upper end of the arm 56 is provided with a fixture 58 having a spring 57. Normally, the inking roller 55 is positioned close to the lower end of the front printing head 16a, as shown in FIG. 2. As the levers 10 are turned, however, the roller 55 is caused to move to its retracted position of FIG. 4 while inking the types placed under the pressure heads 51 of the printing heads 16a and 16b, so as not to hamper the printing operation. It will be apparent to those skilled in the art that the printing mechanism described hereinbefore is replaceable by other types of printing devices without substantial modification of the other parts of this tagging machine.

STAPLING MECHANISM

The stapling means generally indicated by the numeral 60 in FIGS. 2 and 4 is principally comprised of an enclosure 61 for holding a number of staples 71 therein, an ejector frame 63 turnably supported on a shaft 62 extending between the side plates 2 and 3, a pair of bell cranks 64 each turnably mounted on a shaft 66 projecting inwardly from each of the side plates 2 and 3, and a pair of links 65 each turnably coupled at one end to the front end of each bell crank 64 and at the other end to the mid-point of the ejector frame 63.

Each of the bell cranks 64 has its rear end operatively coupled to the aforesaid pin 45 secured to the levers 10. The staple enclosure 61 is secured to a bracket 68 which is supported by the shaft 62, so that the staple enclosure is also made turnable on the shaft 62. Within the staple enclosure 61, bar 73 extends between a pressure member 70 adapted to press the staple 71 toward the front end of the enclosure and a member 72 provided on the rear end of the enclosure. The pressure member 70 is urged against the staples 71 by a helical compression spring 69 wrapped around the bar 73. The ejector frame 63 securely supports an ejector 63 which when the knob 103 is depressed, ejects each foremost one of the staples 71 upwardly out of the enclosure 61. It will be seen from FIGS. 4 and 5 that the staple enclosure 61 can be accommodated in the ejector frame 63 when the knob 103 is depressed.

Each of the above mentioned links 65 has a short link 67 coupled to its lower end by an adjusting screw 75, so that the effective length of the links 65 and 67 can be regulated as desired by turning the adjusting screw

75. Each of the short links 67 is turnably coupled to the mid-point of the ejector frame 63 by a pin 76.

As illustrated in FIGS. 2, 4 and 5, and in greater detail in FIG. 6, a stop 77 is securely provided ahead of the staple enclosure 61. This stop includes a member 78 having a pair of parallel slots 79 therethrough and screwed to the side plates 2 and 3. An elongated plate 81 is attached to the member 78 by screws 80 extending through the slots 79, the plate 81 being adapted for engaging a U-shaped fixture 83 fastened to the front end 82 of the staple enclosure 61. A guide 107, FIGS. 1 to 4, is secured to the front end of the casing 1 to facilitate the insertion of the article 90 into the slot 18.

OPERATION

FIGS. 1, 2 and 5 illustrate the tagging machine in its normal stationary condition. The continuous tag strip 8, held in the roll 7 by the holder 6, is manually supplied into the casing 1 so as to pass along the plates 37, 38 and 39 until the leading tip of the continuous tag strip reaches the roller 33 of the supply means 30. The knob 35 is now manually turned in the prescribed direction to rotate the roller 33 and thus to feed the tip of the continuous tag strip onto the passageway 20.

The continuous tag strip 8 thus guided to the passageway 20 is further fed by the manual turning of the knob 35 until its tip comes close to the member 26. Prior to insertion of the article 90 into the slot 18, it is necessary that the knob 103 be manually depressed to print desired inscriptions on the foremost tag 8a, FIG. 8, of the continuous tag strip. As noted previously, the continuous tag strip has slits 85 at specified longitudinal spacing to define the individual tags to be separated from each other, and these slits 85 are engaged by the feed pawls 47 of the feed means 40 adapted to feed the continuous tag strip by indexed movement.

The article 90 is now inserted into the slot 18, and the knob 103 is manually depressed, whereupon the levers 10 are turned counterclockwise on the shaft 9 against the tensile forces of the springs 14, to their position illustrated in FIG. 4. By this turn of the levers 10, the pin 45 extending transversely therefrom slides along the curved slot 44 of the cam 42 thereby causing the same to turn counterclockwise on the shaft 41, so that the pawl holder 43 is moved backwardly to its retracted position.

The counterclockwise turning of the levers 10 also involves the clockwise turning of the bell cranks 64, which in turn cause the links 65 to move upward to raise the stapling means 60. Since now the ejector frame 63 is turned upward on the shaft 62, the ejector 74 moves into contact with the foremost one of the staples 71, while the staple enclosure 61 is also lifted against the article 90.

Simultaneously as the desired inscriptions are printed on the foremost tag 8a by the printing heads 16a and 16b, the cutter 17, FIG. 8, separates the tag by cutting the uncut portions 84 on both sides of the slit 85. During this operation the inking roller 55 is caused to retract to the position of FIG. 4 after inking the types 54 of the printing heads 16a and 16b, so as not to obstruct the descent of the printing heads as previously mentioned.

When the ejector 74 is raised as aforesaid while the article 90 to be tagged is placed within the slot 18, the foremost one of the staples 71 within the enclosure 61 pierces through the article 90 and further through the

separated tag 8a. The legs of this staple are then bent by the groove 29 of the member 26, as illustrated in FIGS. 8 and 9, so that the staple is properly clinched to complete the fastening of the tag 8a to the article 90.

As the knob 103 is released, the levers 10 are caused to turn clockwise on the shaft 9 by the springs 14 as seen in FIG. 2 in particular. By the reversal of the above described operation, the cam 42 so operates as to cause the feed pawls 47 to advance the continuous tag strip 8 a distance corresponding to the length of one individual tag to be separated therefrom. The ejector frame 63 is caused to descend by the bell cranks 64 and the links 65 and 67. The ejector 74 has been caught between the front end 82 of the staple enclosure 61 and the staples 71 which are pressed forward by the pressure member 70. Due to the friction thus exerted and to the weight of the staple enclosure 61, the ejector 74 descends together with the enclosure 61 until the fixture 83 at the front end of the enclosure comes into contact with the plate 81 of the stop 77. The staple enclosure 61 stops when the lower edges of the fixture 83 contacts the upper edge of the plate 81, but the ejector frame 63 is further lowered by the links 63 and 67 to the position shown in FIG. 2. The printing means 15 also returns to the position of FIG. 2. It is assumed that the slot 44 of the cam 42 is so shaped that the staple enclosure 61 will start descending before the feed pawls 47 start advancing.

Thus, as illustrated in FIG. 8, the foremost tag 8a which has been printed and severed from the rest of the continuous tag strip 8 is securely fastened to the article 90 by the staple 71. The article thus tagged can be readily removed from within the slot 18, so that the remaining tag strip 8 can be indexed without being hampered by the tagged article 90.

FIG. 7 illustrates another preferred embodiment of the invention, in which the feed pawls 47 and the pawl holder 43 of the preceding embodiment are replaced by a toothed wheel 96 mounted within the casing 1 so as to be capable of rotation in one predetermined direction only. This toothed wheel 96 is revolved by a hook 97 in step with the motion of the levers 10, to index the continuous tag strip 8 by its teeth 98 which are adapted to successively engage the slits 85, FIG. 8, of the continuous tag strip.

While it is believed that the various objects of the machine, either explicitly stated or otherwise pointed out, are fully accomplished, it will also be understood that such specifically recited embodiments of various means are subject to various modifications or changes within the usual knowledge of those skilled in the art. For instance, the up-and-down motion of the knob 103 may be carried out not only manually as in the foregoing but also electrically or pneumatically by means well known to the specialists.

One actual embodiment of the present invention is illustrated in FIGS. 10 and 11, in which the whole mechanisms such as supply means, feed means, printing means, cutting means, and stapling means are almost same as those disclosed in connection with FIGS. 1 to 9 except the lever means. In this embodiment shown in FIGS. 10 and 11, rear end of a lever 10 pivoted at a shaft 9 extends rearward at said pivotal part so as to form a hand lever 110, and a hand grip 111 is fixed to the rear ends of two side plates 2 and 3, said grip containing therein a spring 14 for restoring the hand lever 110.

When the grip 111 and hand lever 110 are gripped, the lever 10 is rotated around the shaft 9 and a printing means 15 and a supply means 30 are operated as in the same manner as the first embodiment illustrated in FIGS. 1 to 10.

I claim:

1. A portable tagging machine comprising:

a casing having side plates unified by connecting means and having a holder for revolvably holding a roll of continuous strip of tags which are separable from each other; lever means mounted within said casing so as to be turnable between a first and a second position, said lever means being normally held in said first position by restoring spring means; Supply means for supplying said continuous strip of tags onto a passageway extending through said casing;

feed means for feeding said continuous strip of tags along said passageway by indexed movement in step with the motion of said lever means between said first and said second position;

printing means for printing a desired inscription on the foremost tag of said continuous strip of tags, said printing means being supported by said lever means for simultaneous turning motion therewith and being actuated to print the desired inscription on the foremost tag when said lever means is turned to said second position;

cutting means for separating the printed foremost tag from the rest of said continuous strip of tags, said cutting means being also supported by said lever means for simultaneous turning motion therewith and being actuated to separate the printed foremost tag when said lever means is turned to said second position; and

stapling means for stapling the printed and separated tag to an article inserted into a slot formed in said casing; said feed means comprising a pair of feed pawls capable to reciprocating along said passageway while engaging said continuous strip of tags during forward travel thereof and disengaging the same during backward travel, and cam means adapted to translate the turning motion of said lever means into the reciprocating forward-and-backward motion of said feed pawls;

said lever means comprising a lever pivotally attached to a shaft and extending rearward, a hand lever formed by said extended part of said lever, and a grip fixed to the side plates of the casing, said hand lever being turned around said shaft when said grip and hand lever are gripped, thereby to cause operations of the printing means and supply means.

2. The tagging machine as defined in claim 1, wherein said stapling means comprises a staple enclosure for holding a number of staples therein, said staple enclosure being turnably supported below said passageway within said casing, an ejector frame mounted further below said staple enclosure so as to be turnable on one end thereof, an ejector fixedly supported on the other end of said ejector frame, and lift means for causing said ejector frame to turn upwardly with said staple enclosure when said lever means is turned to said second position, said ejector being capable of ejecting the foremost staple from within said staple enclosure to cause the ejected staple to fasten said printed and sepa-

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rated tag to the article when said lever means is turned to said second position.

3. The tagging machine as defined in claim 2, wherein said lift means comprises a pair of bell cranks

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each coupled at one end thereof to said lever means, and link means extending between the other end of each of said bell cranks and said ejector frame.

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