Dec. 27, 1955 A. K. MARSH ET AL 2,728,392

TAG CUTTING AND COUNTING APPARATUS CONTROLLED BY FEELER PIN MOVING THROUGH THE PLANE OF A TAG STRIP

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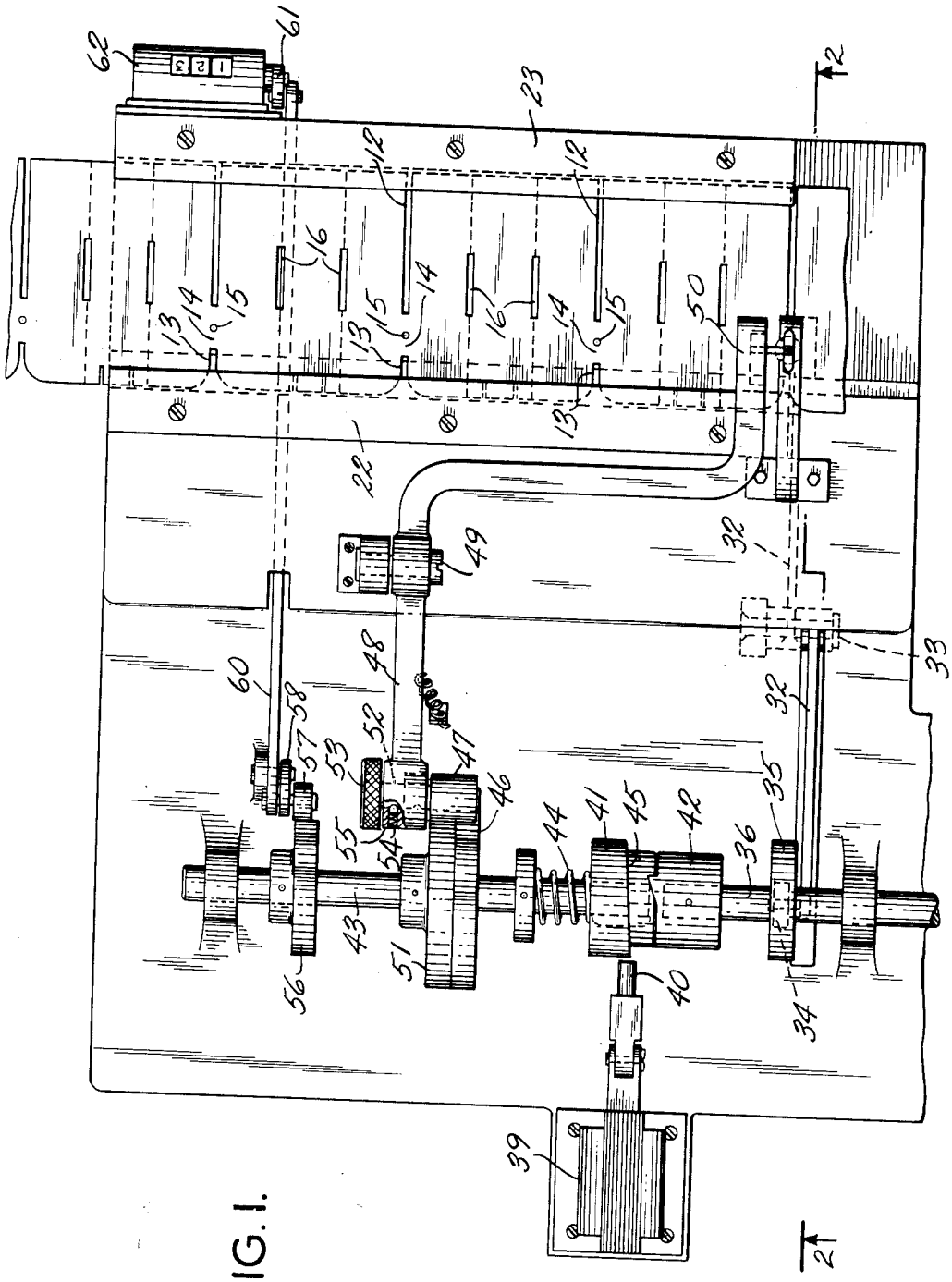


FIG. 1.

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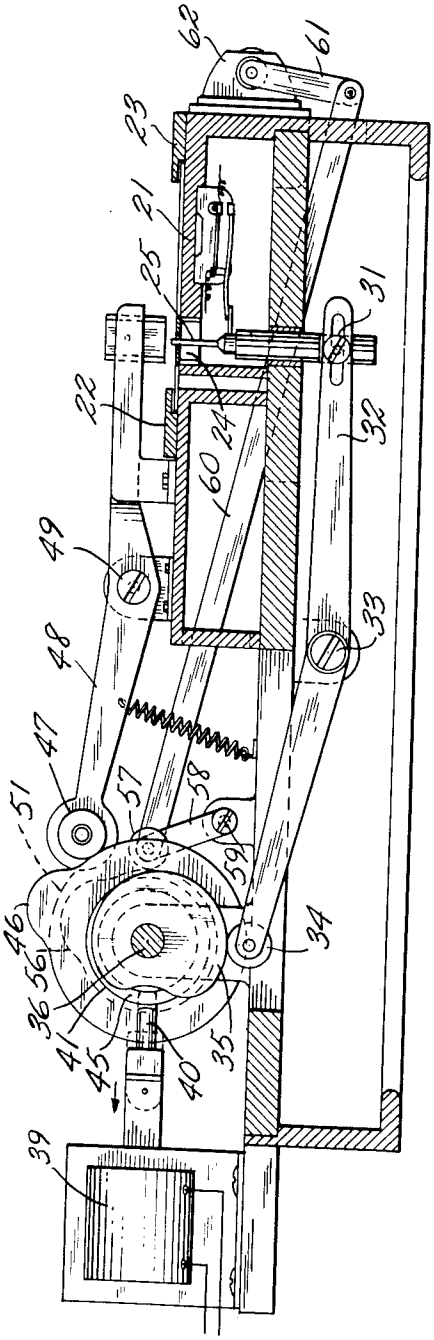


FIG. 2.

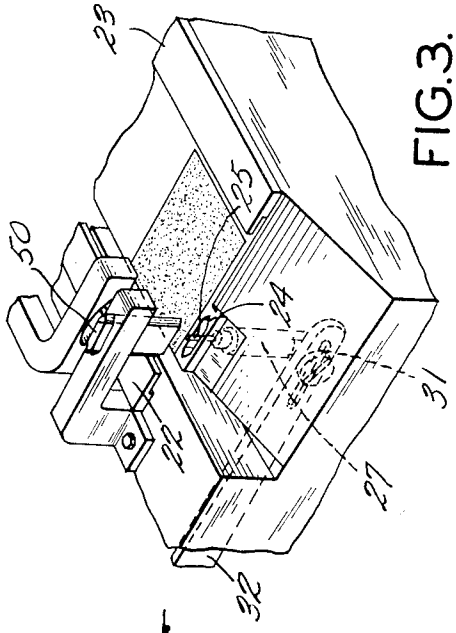


FIG. 3.

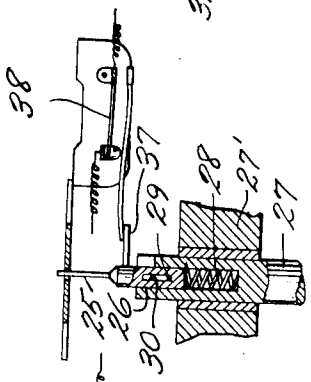


FIG. 5.

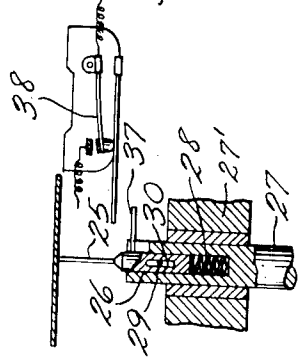


FIG. 4.

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FIG. 6.

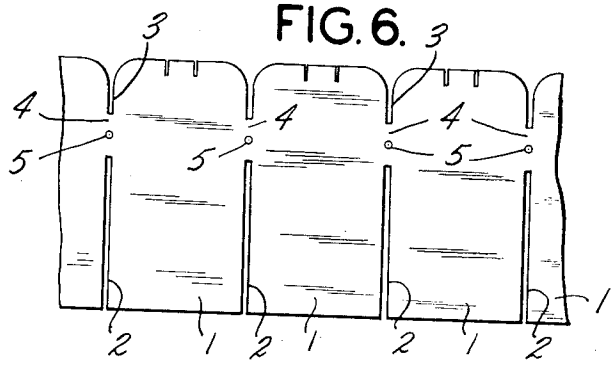


FIG. 7.

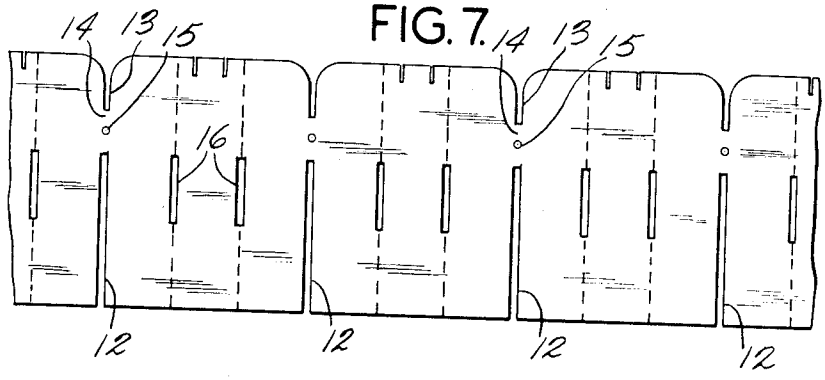
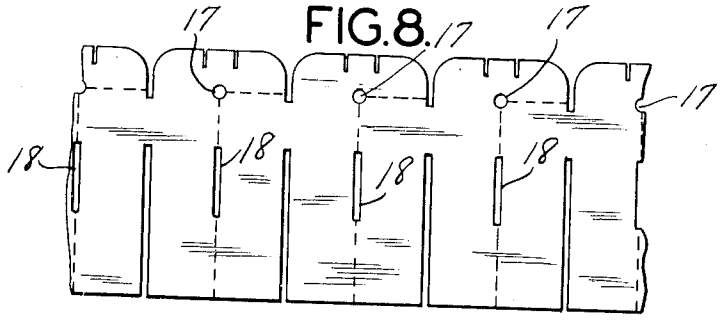


FIG. 8.



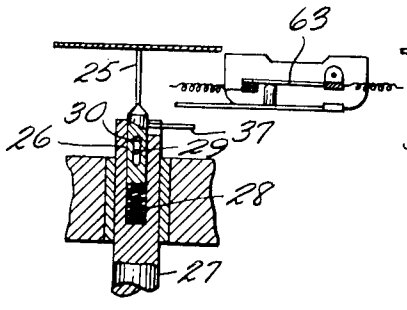


FIG. 9.

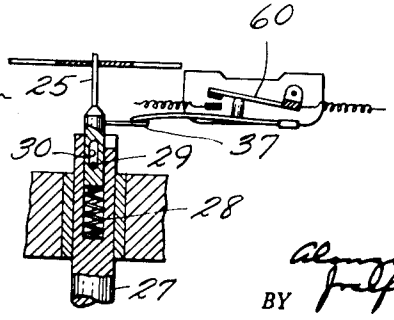


FIG. 10.

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TAG CUTTING AND COUNTING APPARATUS CONTROLLED BY FEELER PIN MOVING THROUGH THE PLANE OF A TAG STRIP

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Application September 1, 1950, Serial No. 182,762

7 Claims. (Cl. 164—42)

This invention relates to tag cutting and counting apparatus controlled by feeler pin moving through the plane of a tag such as are used for price tags and the like. Such apparatus may be embodied in and form an operating part of a marking machine such as is commonly used to print the desired sales information on such tags.

In such marking machines it is desirable to sever individual tags from the strips after they have been printed so that they may be attached to items of merchandise. It is also desirable to provide automatic tag counting means to indicate the total number of tags printed, and, if desired, to stop the machine automatically upon completion of a predetermined count.

The problem of severing and counting individual tags has been complicated by the increasing use of multi-section tags in which each tag comprises a plurality of tag sections used as an aid in accounting and for inventory control purposes. Depending on the accounting system prevailing in the particular store, such tags may comprise two, three or more sections separated by weakened lines extending transversely of the strip. Identical sales information such as price, size, style, etc. must be printed on each tag section, and it is customary to use a single printing head and single set of type for printing.

In feeding and printing single section tags, the severing and counting problem is relatively simple. In each cycle of the machine one tag is printed and the strip is advanced one tag width by a suitable feed mechanism. At a suitable point of the cycle a knife may be actuated to sever the end tag, and a counting mechanism may be connected to advance one number for each cycle.

In feeding and printing multi-section tags, however, the problem is more complex. Since each tag section must be printed, the strip must be advanced only one tag section width, but the strip must be severed only between tags, and it is desirable to count tags rather than tag sections.

The problem is further complicated by the fact that most stores using marking machines utilize various types of tags and require marking machines which can handle single section tags and multiple section tags interchangeably.

It is an object of the present invention to provide an apparatus and tag strip in which the severing and counting operations are controlled by the tag strip independently of the feeding and printing cycle of the machine, thus making possible a greatly simplified mechanism for severing and/or counting single or multiple section tags.

Other objects and advantages of the invention will appear hereinafter.

A preferred embodiment of the invention selected for purposes of illustration is shown in the accompanying drawings, in which:

Figure 1 is a top plan view.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a detail perspective view.

Figures 4 and 5 are detail sectional views showing the feeler pin and switch in two operating positions.

Figure 6 is a plan view of a tag strip consisting of single section tags.

Figure 7 is a plan view of a tag strip consisting of multiple section tags.

Figure 8 is a plan view of another form of tag strip consisting of multiple section tags.

Figures 9 and 10 are detail sectional views showing a modified form of feeler pin and switch adapted for use in connection with the tag strip of Figure 8.

In Figures 6, 7 and 8 of the drawings, representative types of tag strips are shown which are suitable for use in the apparatus hereinafter described. In Figure 6, a strip of single section tags **1** is shown, said tags being partially separated by slots **2** and **3** extending inwardly from opposite edges of the strip, but joined by lands **4** between the ends of the slots. The slots **2**, or any section thereof may be used as a feed aperture for engagement by the usual feed pawl of the marking machine. A series of control apertures **5** are also provided, located in any desired position, as for example, in Figure 6, the control apertures are located within the lands **4**. By using control apertures so located, and of a diameter no greater than the width of the slots **2**, **3**, and by using a cutting die of a width equal to the width of said slots, the control apertures may be eliminated from the severed tags which will then have smooth, straight side edges.

In Figure 7, a strip of multi-section tags **11** is shown in which each tag comprises three sections. Again the tags are partially separated by slots **12** and **13**, but are joined by lands **14** and control apertures **15** are provided as before. Additional feed slots **16** are provided between tag sections, so that the strip may be advanced one tag section at a time, but only one control aperture is provided for each tag.

A different form of multi-section tag strip is shown in Figure 8. Here each tag comprises two sections, and the strip has separating slots, lands and feed apertures as before. In this form of strip, however, the control apertures **17** are located within the body of the tag, preferably in line with the feed slot **18** between tag sections for purposes hereinafter described.

Referring to Figures 1 to 5, a strip of tags of the type described is fed along a bed **21** having guides **22** and **23** engaging the longitudinal edges of the strip. For purposes of this description, a multi-section tag strip such as shown in Figure 7 will be referred to. The strip is fed intermittently by means of a feed pawl (not shown) engaging the feed slots **12**, **16**. In the position shown in Figures 1 and 2, the feed stroke has been completed, and the land between successive tickets is located above the cutting die **24** mounted adjacent the end of the bed **21**. A feeler pin **25** is located beneath the die and extends through the die in position to intercept and enter the control aperture **15**. The pin **25** is slidably carried in a socket **26** in the upper end of rod **27** which is slidably mounted in any suitable fixed member **27'** of the machine. The pin **25** is urged upwardly by a light spring **28**, the upward movement being limited by a pin **29** extending into slot **30**.

The lower end of rod **27** is connected by a pin and slot connection **31** to one end of a lever **32** pivoted at **33**. The other end of the lever carries a roller **34** engaging cam **35**. This cam is mounted on shaft **36** which may be the main shaft of the marking machine or may be a counter-shaft connected to and driven by the main shaft in one to one relationship so that the cam **35** will make a complete revolution on each operating cycle of the machine.

The cam **35** is shaped and timed to withdraw the feeler pin **25** before the beginning of the feeding stroke of the feed pawl, but soon thereafter the pin is advanced to engage the under side of the strip as shown in Figure 4. Thereafter, on completion of a feed stroke, if a control

aperture is present, the feeler pin will enter the aperture as shown in Figure 5. Thereupon, the arm 37 on pin 25 engages and closes the switch 38 to close a circuit which includes a solenoid 39. When this solenoid is energized, it withdraws solenoid pin 40 which is normally in engagement with the cam element 41 of a so-called "one turn" clutch, the other element 42 being secured to shaft 36.

The cam element is keyed to shaft 43 aligned with shaft 36, and on withdrawal of pin 40 the element 41 is moved by spring 44 to engage the element 42 to cause shaft 43 to rotate with shaft 36. When the feeler pin 25 is withdrawn, the solenoid is deenergized, the solenoid pin engages the cam surface 45 of element 41 to separate the clutch elements. Once engaged, however, the clutch elements will not be disengaged until one revolution of shaft 43 has been completed.

Mounted on shaft 43 is a cam 46 against which rides a roller 47 mounted on one end of lever 48. The lever is pivoted at 49 and carries on its opposite end a suitable cutting member, here shown as a punch 50 adapted to cooperate with the die 24. The cam is shaped and timed to cause the punch to make a cutting stroke soon after the solenoid pin 40 is withdrawn.

In some cases it may be desirable to prevent operation of the punch. In such cases a circular disk 51 is mounted on shaft 43 adjacent cam 46. Roller 47 is mounted on a stud 52 which is movable laterally on the lever 48 so that the roller may be caused to engage either the cam 46 or disk 51. The stud may be adjusted by knob 53 and held in either of two positions by a spring detent 54 engaging notches 55.

The counting operation is effected by means of cam 56 also mounted on shaft 43. A roller 57 on arm 58 rides against the cam. The arm is pivoted at 59 and is connected by a link 60 to the operating arm 61 of a standard counting mechanism 62.

Thus, in the apparatus described, whenever the feeler pin enters a control aperture, the solenoid will be energized to permit the clutch to be engaged to cause the apparatus to cut and count, but whenever the feeler pin fails to find a control aperture the solenoid remains de-energized and the clutch remains disengaged.

A modified form of switch 63 intended for operation with a ticket strip such as shown in Figure 8 is shown in Figures 9 and 10. With a switch of this type the solenoid remains energized and the clutch remains engaged to operate the counter and cutter at all times except when the feeler pin finds a control aperture. Thus, as shown in Figure 9, the switch is closed and the solenoid is energized to permit the clutch to be engaged whenever the feeler pin is engaged by the under side of the tag strip. On the other hand, when the feeler pin finds a control aperture, as shown in Figure 10, the switch is opened and the solenoid is de-energized to prevent operation of the counter and cutter.

It will be understood that the invention may be variously modified and embodied within the scope of the subjoined claims.

We claim as our invention:

1. In a tag marking machine adapted to feed strips of tags, in combination, a constantly rotated driven shaft, a feeler pin, feeler pin supporting means operated by said shaft on each revolution thereof to move said feeler pin into and out of engagement with said strip of tags, said feeler pin supporting means including a yielding connection between said pin and said shaft, a second shaft, tag cut-off means operated by said second shaft, a clutch between said driven shaft and said second shaft, and means operated by said feeler pin when said pin moves through the plane of said tag strip for controlling the operation of said clutch and the operation of said second shaft.

2. Apparatus as claimed in claim 1, including a counting mechanism, and means operated by said second shaft for operating said counting mechanism on each revolution of said second shaft.

3. Apparatus as claimed in claim 1 in which said means operated by said feeler pin comprises a switch operated by said feeler pin, a solenoid controlled by said switch, and a solenoid pin movable into and out of engagement with said clutch.

4. In a tag marking machine, in combination, a bed having members for guiding the travel of a strip of tags along said bed, said strip of tags having control apertures therein aligned longitudinally of said strip, a constantly rotated driven shaft, a feeler pin, feeler pin supporting means operated by said shaft on each revolution thereof to move said feeler pin into and out of engagement with said strip of tags within the zone of said aligned control apertures, said feeler pin supporting means including a yielding connection between said pin and said shaft, a second shaft, tag cut-off means operated by said second shaft, a clutch between said driven shaft and said second shaft, and means operated by said feeler pin when said feeler pin moves through the plane of the strip for controlling the operation of said clutch and the operation of said second shaft.

5. In a tag marking machine, in combination, a bed having members for guiding the travel of a strip of tags along said bed, said strip of tags having control apertures therein aligned longitudinally of said strip, a constantly rotated driven shaft, a feeler pin, feeler pin supporting means operated by said shaft on each revolution thereof to move said feeler pin into and out of engagement with said strip of tags within the zone of said aligned control apertures, said feeler pin supporting means including a yielding connection between said pin and said shaft, a second shaft, tag cut-off means operated by said second shaft, a clutch between said driven shaft and said second shaft, a switch operated by said feeler pin when said feeler pin moves through the plane of the strip, a solenoid controlled by said switch, and a solenoid pin movable into and out of engagement with said clutch.

6. Apparatus as claimed in claim 5 in which said feeler pin carries a member which engages and closes said switch to energize said solenoid to cause said clutch to be engaged whenever said feeler pin finds and enters a control aperture.

7. Apparatus as claimed in claim 5 in which said feeler pin carries a member which engages and opens said switch to de-energize said solenoid to cause said clutch to be disengaged whenever said feeler pin finds and enters a control aperture.

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