United States Patent [19]

Grasmann

[11] **3,821,057**

[45] **June 28, 1974**

[54] **PRICE MARKER**

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[22] Filed: **Jan. 13, 1971**

[21] Appl. No.: **106,159**

[30] **Foreign Application Priority Data**

Jan. 16, 1970 Austria 429/70

[52] **U.S. Cl.** **156/384,** 156/541, 156/542, 156/579, 156/584

[51] **Int. Cl.** **B32b 31/00**

[58] **Field of Search** 156/384, 541, 542, 579, 156/584

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Assistant Examiner—Robert A. Dawson
Attorney, Agent, or Firm—Kurt Kelman

[57] **ABSTRACT**

In a hand-held price marker, a backing strip detachably carrying a sequence of presure-sensitive adhesive labels is guided over a deflecting edge where the labels are stripped from the backing strip and dispensed under a press-on roller which applies the labels to a surface. Aprinting mechanism is mounted in the path of the labels for eccentric rotation into a printing position and an inking position, a roatable backing roller supporting and guiding the backing strip in the printing position and an inking device adjacent the type faces of the printing mechanism in its inking position. A non-slip driving connection between the press-on roller and the printing mechanism spindle causes the latter to rotate at the same peripheral speed as the roller when the same applies a printd label, and the rotating printing mechanism drives the backing roller by one label width at a time.

4 Claims, 9 Drawing Figures

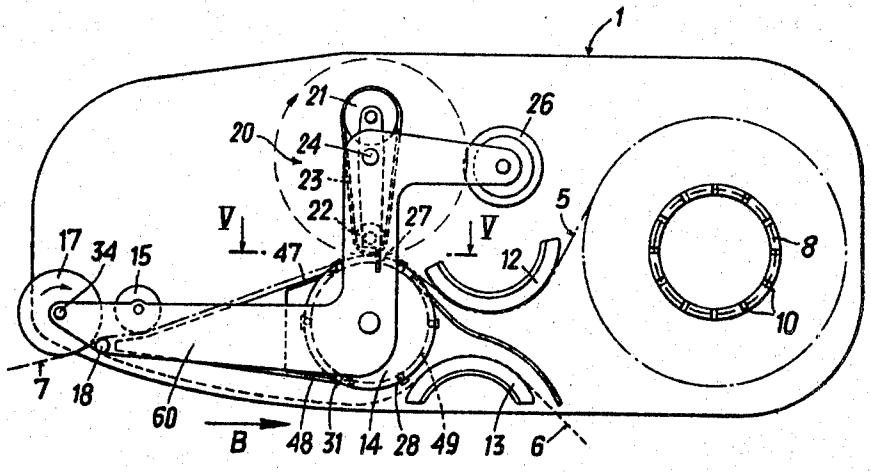


FIG. 1

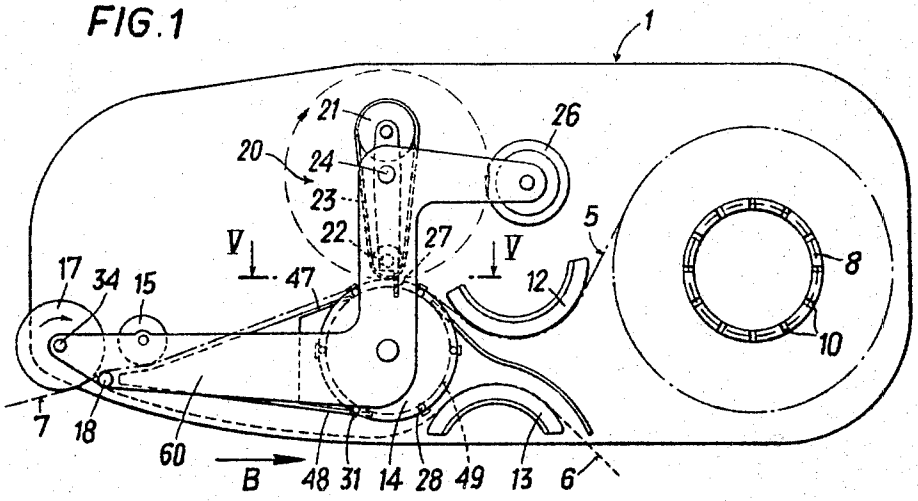


FIG. 2

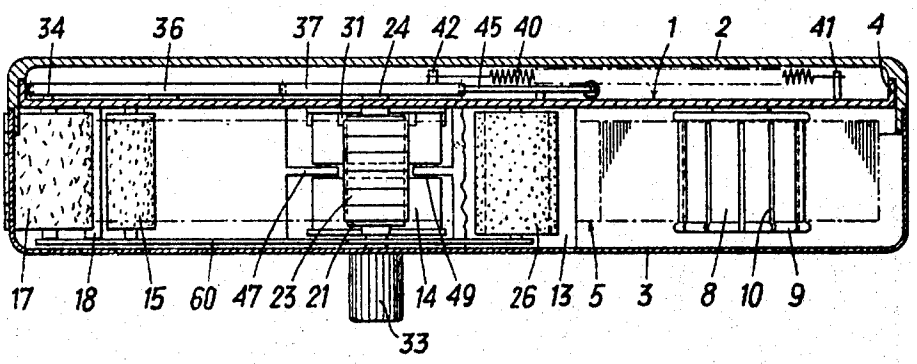


FIG. 3

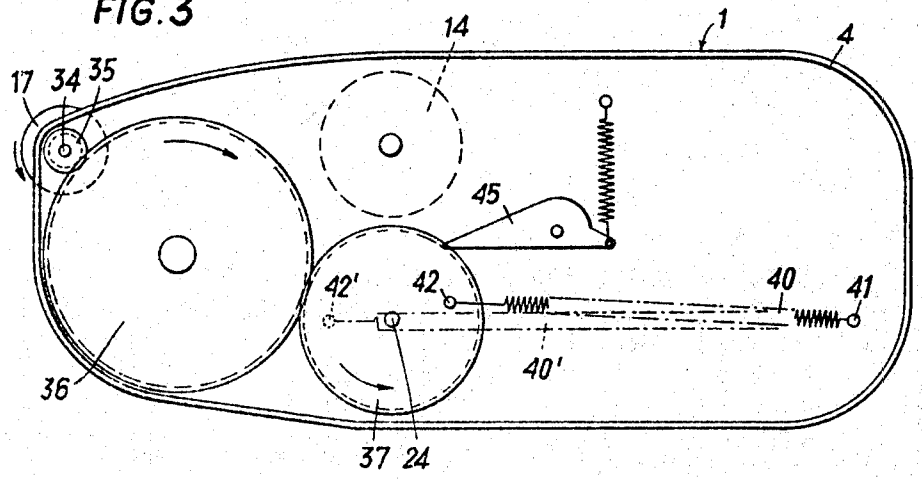


FIG. 4

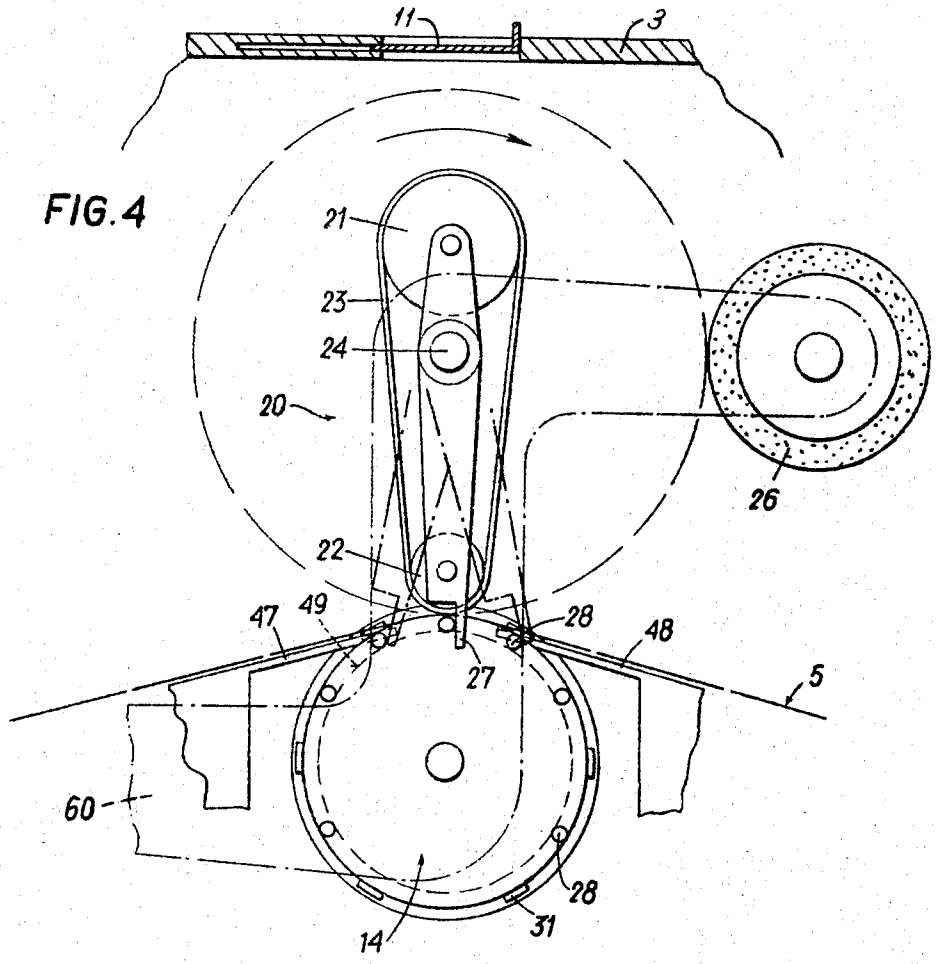

11
3
21
23
24
20
26
22
47
49
28
48
27
5
60
28
31
14

FIG. 5

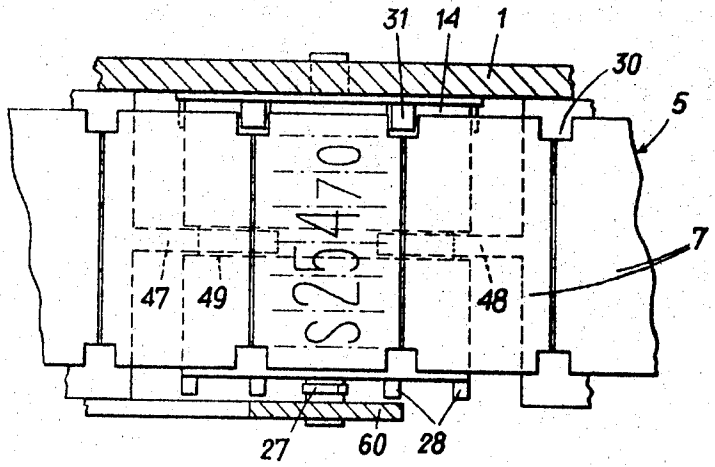

31
14
1
30
5
7
47
49
48
27
60
28

FIG. 6

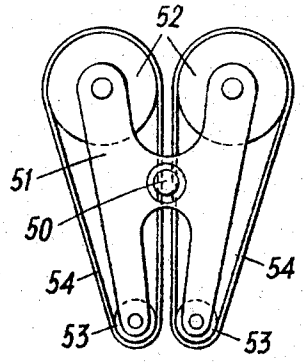


FIG. 7

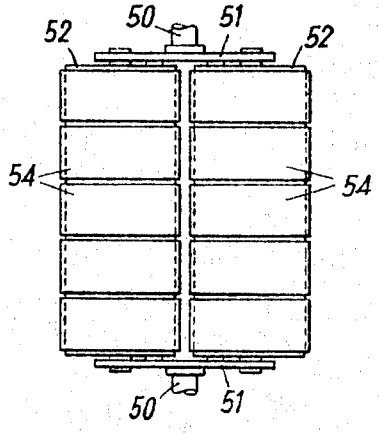


FIG. 8

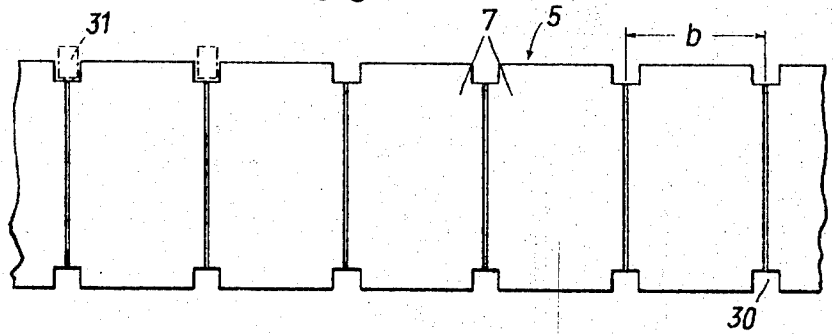
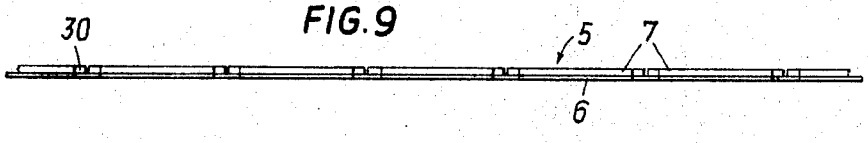


FIG. 9



PRICE MARKER

The invention relates to a price marker, i.e., a device by means of which packed mass-produced articles, such as are offered for sale, for example in stores and self-service shops, can be provided with price labels. Such devices are known in various constructions; many of them are operated by the mutual movement together of handles to be gripped by one hand; the relative movement of these handles serves to draw forward a label tape from a supply roll accommodated in the interior of the device, and to print and deliver and possibly also sever each label from the rest of the tape. This ticket is applied to the article to be marked in that while it is projecting somewhat from the device it is pressed onto the article by means of the device, or more exactly by means of its press-on roller. All these devices have a printing mechanism permitting various adjustments with regard to the statement appearing on the label, generally a statement of the price.

It is the aim of the invention to provide a price marker for the purpose just mentioned, which is distinguished for its particularly simple construction, easy manipulation and small external dimensions, the latter without the need to accept a reduction in the usual size of label. For solving this problem a start is made from a price marker having substantially the following components: A press-on roller for pressing the label onto a surface of the article to be marked; arrangements in the casing of the device for receiving a tape supply consisting of a backing strip and individual pressure-sensitive adhesive labels detachably carried on this backing strip; a deflecting edge over which the backing strip is led for detaching the labels therefore. In this construction, the present price marker provides a printing mechanism in the form of a body which is rotatable eccentrically about a spindle and the periphery of which body carries independently adjustable printing type rows, preferably in the form of a number of type face carrying flexible belts arranged side by side; the type group most remote at the time from the spindle of the printing mechanism on passing an inking device is provided with printing ink, and the same type group in another position of the printing mechanism forms, with a backing roller supporting the label tape, a printing gap, in that the backing roller on the passage of the printing mechanism through the said printing gap, is rotated by one label width, by being driven by the printing mechanism, and the press-on roller rotates at a peripheral speed which is equal to that prevailing in the printing gap.

In this price marker, the label is printed in the printing gap and continues to adhere to the backing strip from which, as is known per se, it is detached only when the backing strip passes over the deflecting edge. The now released label, by means of the press-on roller, can be rolled onto the surface of the article to be marked where it adheres by reason of its self-adhesiveness. It will accordingly be appreciated that the tape must have the same speed in the printing gap and at the delivery point. The drive itself could be produced by means of a small motor accommodated in the device but the construction of the marker according to the invention is so simple that not very much power is required to operate it; this is made possible simply by deriving the entire necessary driving movement from the rotation of the press-on roller rolling over the article to be marked. This means that the device can be grasped by one hand for passing it with this press-on roller over the surface, whereby the driving movement is produced; everything else proceeds quite automatically.

An embodiment of the invention is illustrated by way of example in the diagrammatic drawings in which:

FIG. 1 is a top plan view of the supporting plate of the device, with the casing cover removed, seen on the side on which the printing mechanism is mounted;

FIG. 2 shows a side elevational view of the device, partly in section;

FIG. 3 is a view similar to FIG. 1 but of the back of the supporting plate;

FIGS. 4 and 5 show on a larger scale a detail of FIG. 1, FIG. 5 being a section on line V—V of FIG. 1;

FIGS. 6 and 7 show a modified embodiment of the printing mechanism in elevation and plan; and

FIGS. 8 and 9 show a label tape in plan and in side view.

In FIGS. 1 to 3, 1 is a supporting plate which is secured in a flat casing part 2. This casing is closed by an easily detachable cover 3 to enclose the components carried by the supporting plate 1. This cover is easily detachable to enable the label tape spool to be inserted easily into the device. The supporting plate has a flange 4 fitting in the lower part 2 of the casing.

The label tape 5 consists of a backing strip 6 of paper having a coating, for example of silicone, for reducing the adhesion of the labels 7; which are pre-cut and arranged side by side on the strip, see FIGS. 6 and 7. The tap roll or tape supply (omitted in FIG. 2) is mounted on a fixed mandrel 8; the latter has a retaining flange 9 and slits 10, permitting contraction of the flange 9, so that the tape spool can be pushed over the flange; it is then held directly on the mandrel.

The tape passes between guide parts 12, 13 which also have the function of facilitating the threading of the tape, and runs over part of the periphery of the backing roller 14, thence under an idler roller 15 to the press-on roller 17, in the vicinity of which is constructed the deflecting edge 18. The labels 7 do not follow this sharp deflection but are detached from the backing strip 6, as is known per se, and therefore does not require more detailed explanation here.

The printing mechanism is shown at 20. It comprises, see also FIGS. 4 and 5, two rollers 21, 22 or fixed guides, arranged parallel at a distance apart, over which are placed type carrying flexible belts 23 consisting, for example, of rubber, as is known from date stamps. The belts are individually adjustable. If, for example, prices of 1–999 currency units and in addition 99 hundredths of units are to be marked, altogether five belts will be required, possibly in addition a sixth belt, which permits the currency abbreviation mark to be indicated, if the device is to be adapted for marking a number of currencies, or if it is desired in addition to the actual price to print some other symbol on the label.

The printing mechanism is rotatable about the spindle 24 which is mounted eccentrically relative to the rollers 21, 22 of the printing mechanism. The dimensions of the printing mechanism and its spacing from rollers 14 and 26 are selected so that on performing one revolution about the spindle 24, the type faces on the belts come into contact both with the inking roller 26 and with the backing roller 14, the former for inking

the operative types situated at the time farthest from the axis of rotation, the latter for printing, in co-operation with the backing roller, the label tape **5** resting on it.

The printing mechanism has a dog **27** co-operating with corresponding dogs **28** of the backing roller; the arrangement is such that, on each complete revolution of the printing mechanism in the direction of the arrow, the backing roller is driven by one label width. During this passage of the printing mechanism, it forms for a short time with the backing roller a printing gap and prints the label located on the backing strip in this gap with simultaneous feed of the label strip by one label width.

To ensure that the label will be correctly printed, i.e., to ensure that the printing appears in the middle of the label and not, say, in the edge portions of two adjacent labels on the backing strip, the tape **5** is provided with lateral incisions **30,** FIGS. **5, 8** and **9,** engaged by corresponding dogs **31** of the backing roller. This means that when threading the tape in the apparatus, care must be taken to ensure that the dogs **31** engage these tape incisions of the backing roller **14.**

The printing mechanism **20** is rotatable by means of an outwardly projecting knob **33** about the spindle **24** such that the printing mechanism region printing at the time, i.e., the region which is more remote from the spindle **24,** can be turned upwardly, as seen in FIG. **1.** The section then appears behind the sliding window **11** of the cover **3,** FIG. **4.** When the window is opened, adjustment of the desired printed matter can then be effected by shifting the type belts in the same way as is the case, for example, with a date stamp which is provided with quite similar printing belts. After adjustment of the printed matter, the window **11** is closed again.

The drive for the printing mechanism and the tape feed proceed as follows:

By rolling the press-on roller **17** on the surface of the article to be labelled, the press-on roller is set in rotation; for ensuring this with certainty the roller has a gripping coating of soft rubber or a material of similar properties. Since the roller **17** presses the label onto the article and the application pressure is improved if the roller surface is not smooth, this surface is provided with irregularly arranged prominences. A similar provision has been found expedient for the periphery of the roller **15,** which is provided with points or is knurled. The labels arriving at the roller **15** are dry if a suitable ink is used.

The rotation occurring as result of the rolling of the press-on roller **17** is transmitted by the roller spindle **34** to a toothed wheel **35** mounted on this spindle and an intermediate toothed wheel **36** to the toothed wheel **37,** which is mounted on the shaft **24** of the printing mechanism **20.** This gear train operates so that toothed wheels **35** and **37,** when the device is moved in the direction of the arrow B, FIG. **1,** rotate in the direction of the arrows shown. Assuming that the printing mechanism first occupies the inoperative position shown in FIG. **1** (why this is the inoperative position will be explained later), its rotation first produces the driving of the tape **5** by the dogs **31,** since the dogs **27** of the printing mechanism have in turn by means of the dogs **28** rotated the backing roller **14** by one label width (*b,* FIG. **8**). This step has consequently had the effect that a label has been printed in the printing gap between the parts **14** and **22,** and that on the other hand an already previously printed label appears under the press-on roller **17** and can be applied to the article by the said roller; this occurs at first only with an edge region of the label but the continued movement of the apparatus in the direction of the arrow B means that the entire self-adhesive label is securely rolled onto the surface to be marked and is fixed thereon.

Rotation of the wheel **37** has produced tensioning of the spring **40,** which is stretched between shoulder **41** on supporting plate **1** and a pin **42** of the toothed wheel **37.** After rotation of the wheel **37** by about 180°, the anchor pin **42** assumes approximately the position **42'**, and the spring the position **40'** (FIG. **3**). If, now, the device is again moved in the direction of the arrow B, i.e., rotation of the wheels **35, 36, 37** continues, the anchor pin **42** passes its dead centre; the spring **40** relaxes with rapid driving of the printing mechanism **20** and finally re-assumes the solidline position shown, in which the printing mechanism has reached the starting position shown in FIG. **1.** The spring **40** accordingly ensures, on the one hand, this starting or dead-centre position and, on the other hand, has the effect that the part of the travel of the apparatus representing purely lost motion for the printing operation can be considerably shortened. In the practical manipulation of the device, this means that after delivery and printing of the label, the device no longer has to move in the direction of the arrow B; it can be taken off the already labelled article, the spring **40** ensuring that the printing mechanism is at once brought into the correct starting position for the next printing and labelling operation. The winding mechanism **40, 37** thus ensures the rapid movement of the printing mechanism into the deadcentre position in which it remains.

FIG. **3** also shows a spring-loaded pawl **45** which co-operates with the toothed periphery of the wheel **37,** such that this wheel can be rotated only in the direction of the arrow, i.e., in that direction in which also tape transport takes place from the supply to the delivery gap. If rotation were to be allowed in the other direction, this would mean that, in consequence of the fact than an interlocking coupling exists between the edge of the tape and the periphery of the backing roller **14** by means of the dogs **31,** the already printed tape would be carried back, which must be avoided because it would lead to breakdown and would necessitate rethreading of the tape.

To facilitate threading of the tape by suitable guiding thereof, guides in the form of sheet-metal strips **47, 48** are provided and ensure correct, i.e., not excessive, looping of the backing roller with the tape, the tape being deflected onto that part of the circumference where it belongs and being prevented from getting to the underside of this roller. The guide plates **47, 48** engage a middle gap **49** in the backing roller **14,** see more particularly FIG. **2.**

It will be appreciated that the printing mechanism **20** need not have the form shown since it suffices if the printing region of the printing mechanism on the one hand comes into contact with the inking roller **26** and, on the other hand, forms the printing gap. The form of printing mechanism shown, however, has the advantage that two printing mechanisms of this form can be combined into a double printing mechanism, as shown in FIGS. **6** and **7.** Such a double printing mechanism has a common eccentric spindle **50** which carries by means of a support bracket **51** two upper guide rolls **52**

and two lower guide rolls **53** for a number of belts **54** carrying printing type. Such a double printing mechanism is effective in two printing regions in the printing gap, and therefore by means of such a double printing mechanism it is possible to print two kinds of information on the label; thus, for example, in addition to expressing the price also a date, for example the date until which frozen or other preserved foods can be kept or internal particulars regarding the firm which are to be taken into consideration in making out the account of the customer leaving the shop, such as discounts or particulars for statistical purposes, made in clear text or in coded form.

At **60** is shown a plate which facilitates the mounting of rotating parts. It is left out altogether in FIG. **4** and partly broken away in FIG. **1.**

What is claimed:

1. A hand-held apparatus for sequentially printing, dispensing and applying to a surface of an article a pressure-sensitive adhesive label, a sequence of said labels being detachably carried on a backing strip to form a continous tape, the apparatus comprising

1. a casing;

2. a supply of the continous tape mounted in the casing;

3. a rotatable press-on roller mounted in the casing spaced from the tape supply;

4. a deflecting edge in the casing intermediate the tape supply and the press-on roller,

a. the deflecting edge being close to the roller and the backing strip being guided over the edge and deflected away from the roller whereby the labels are detached therefrom and the detached labels are engaged by the roller for pressure application to the article surface;

5. a printing mechanism mounted in the casing intermediate the deflecting edge and the tape supply, the printing mechanism including

a. a body,

b. a spindle eccentrically rotatably supporting the body for rotation into a printing position and into an inking position, and

c. a plurality of independently adjustable rows of printing type faces carried on the circumference of the printing mechanism body;

6. a rotatable backing roller mounted in the casing adjacent the printing type faces of the printing mechanism in the printing position thereof, the backing roller supporting and guiding the continous tape from the supply thereof to the deflecting edge;

7. an inking device mounted in the casing adjacent the printing type faces of the printing mechanism in the inking position thereof for inking the type faces in this position;

8. a non-slip driving connection between the press-on roller and the printing mechanism spindle whereby rolling of the press-on roller on the article surface to apply a printed label thereto produces rotation of the printing mechanism body at an equal peripheral speed; and

9. dogs on the periphery of the backing roller, the spacing between the dogs being equal to the width of the labels,

a. the rotating printing mechanism body driving sequential ones of said dogs to rotate the backing roller by one label width at a time.

2. The hand-held apparatus of claim **1,** wherein the non-slip connection between the press-on roller and the printing mechanism spindle is a gear train.

3. The hand-held apparatus of claim **2,** wherein the gear train includes a driving gear mounted on the printing mechanism spindle, and further comprising a locking pawl cooperating with the driving gear to prevent rotation of the printing mechanism body and of the backing roller driven thereby against the direction of movement of the continuous tape from the supply to the press-on roller.

4. The hand-held apparatus of claim **3,** further comprising a winding device cooperating with the driving gear, the winding device including a spring mounted to hold the rotatable printing mechanism body in an inoperative position, the spring being tensioned at the commencement of the labeling operation, attaining its maximum tension when the printing mechanism body has been rotated into the printing position by the rotation of the press-on roller and suddenly relaxing upon further rotation of the printing mechanism body to return the printing mechanism body into the inoperative position.

* * * * *