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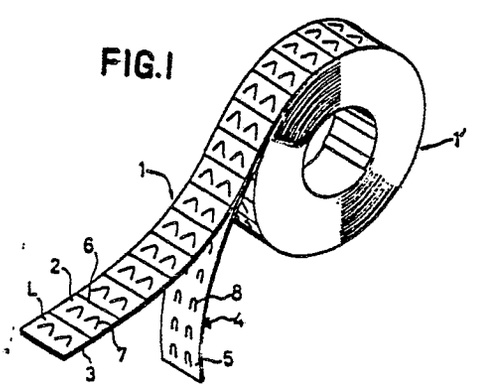
(54) Pressure sensitive label strip.

(57) A pressure sensitive label strip (1) comprising a tape-like strip of label material (2) that is overlaid on a tape-like strip of backing material (4); parting cut lines (6) extend transversely across the strip of label material at regular intervals so as to form a plurality of unit label pieces (L); feeding cut lines (7) are defined in the effective portions of each unit label piece except the marginal portion of the label piece to form feeding tongues, and other feeding cut lines (8) are defined in the backing material at the positions corresponding to the above former feeding cut lines to form feeding tongues which are of different shape from that of the former feeding tongues. Further, the above cut lines are effective for preventing the occurrence of unprinted portion and unfair switching of labels.

FIG.1



EP 0 011 163 A1

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Description

Pressure Sensitive Label Strip

This invention relates to a tape-like, pressure sensitive label strip for use in a hand-held label printing and dispensing machine (hereinafter referred to simply as a "label printing machine"). More particularly, the invention relates to the feeding cuts in the label strip by which the label strip is advanced through the label printing machine when they are engaged by feeding pins formed on a feeding roller and the hand lever of the machine is squeezed and released. These feeding cut lines are also serviceable as the cuts for preventing the unfair switching of labels.

The pressure sensitive label strip of this kind comprises a long, thin strip layer of label material having an adhesive coating layer and a long, thin strip layer of backing material having a releasing agent coating layer. The strip of label material has a plurality of transverse parting cut lines and a large number of unit label pieces are formed among these parting cut lines. Feeding cut lines are formed across each parting cut line in the label material. At the positions corresponding to the above feeding cut lines, other feeding cut lines are defined in the backing material. Such the prior art label strip is convenient to be advanced through the label printing machine.

Meanwhile, the respective feeding cut lines of label material and backing material are temporarily stood up when the feeding cut lines are brought into engagement with the feeding pins of the feeding roller in a label printing machine. After that, the erected feeding tongues are depressed flat by a label correcting member which is attached to the printing head and the label strip is advanced into the printing sections. The label material is then printed, however, the erected tongue of the backing material is often pressed down over the front edge portion of a unit label piece during the correction of the erected feeding tongue because the feeding cut line of the backing material is located just under the parting cut line of the label material. Accordingly, such the overlapped portion in the front side of the unit label piece cannot be printed.

The printed label material is then peeled off from the backing material and the peeled unit label piece is applied to the surface of merchandise. In this operation, the feeding tongue of the above feeding cut lines is liable to be erected again. The erected tongues on the front and rear edges of the unit label piece can be corrected by rubbing them with an applicator roller

when it is applied to merchandise, however, the erected feeding tongue on the front side is often left standing since it exists outside the range of rolling of the applicator roller. Accordingly, the appearance of the label is not good, in addition, the unfair switching of labels can easily be done.

It is the principal object of the present invention to provide an improved label strip with feeding tongues.

It is another object of the present invention to provide such a label strip which prevents the occurrence of unprinted portions in the marginal portions of obtained unit label pieces.

Another object of the present invention is to provide a pressure sensitive label strip which gives the unit label pieces of good appearance without the occurrence of erected feeding tongues when the label pieces thereof are applied to the surfaces of articles.

A further object of the present invention is to provide a pressure sensitive label strip which has the cuts to prevent the unfair switching of labels.

Still a further object of the present invention is to provide a pressure sensitive label strip which is simple in structure and can be mass-produced without difficulty.

In accordance with the present invention, the pressure sensitive label strip comprises a tape-like strip of label material having an adhesive coating layer and a tape-like strip of backing material having a release layer. The strip of label material is temporarily overlaid on and attached to the strip of backing material and parting cut lines extend transversely across the strip of label material. The parting cut lines are spaced at regular intervals so as to form a plurality

of unit label pieces of the label strip material and the unit label pieces can be peeled off from the strip of backing material by bending the backing material rearward.

The improvement in the pressure sensitive label strip of the invention is characterized in that at least one feeding cut line to form a feeding tongue is defined in the inside area of each unit label piece excluding the marginal portion thereof (hereinafter referred to as "effective area") and other feeding cut lines are defined in the backing material. The latter feeding cut lines have a shape which is different from the shape of feeding cut lines of the label material.

Further, each feeding cut line in the label material is of an almost V-shape and each feeding cut line in the backing material is of an almost U-shape. The top end portions of the almost V-shaped feeding cut lines of the label material and the almost U-shaped feeding cut lines of the backing material are oriented in the direction reverse to the advancing of the label strip.

Other objects and features of the present invention will be apparent from the following description of the invention with reference to the accompanying drawings, in which:

Fig. 1 to 3 show a first embodiment of a pressure sensitive label strip according to the present invention, wherein:

Fig. 1 is a perspective view of the whole of the label strip which is rolled up;

Fig. 2 is an enlarged plan view of the same label strip; and

Fig. 3 is a vertical cross-sectional view of the same label strip which is taken on the line III-III in Fig. 2;

Fig. 4 is a vertical cross-sectional view of the whole body of a label printing machine in which the label strip of the present invention is attached;

Fig. 5 is a schematic cross-sectional view for showing the state of label feeding;

Fig. 6 is an enlarged plan view of a second embodiment of a label strip according to the present invention;

Fig. 7 is an enlarged plan view of a third embodiment of a label strip according to the present invention; and

Fig. 8 is a perspective view of an example of a label strip in the prior art.

In order to make the characteristic features of the present invention distinct, one of prior art label strip will be described in the first place.

As shown in Fig. 8, the pressure sensitive label strip 100 of this kind comprises a long, thin strip layer of label material 101 having an adhesive coating layer and a long, thin strip layer of backing material 102 having a releasing agent coating layer. The label material 101 and the backing material 102 are put in layers together. The strip of label material 101 has a plurality of transverse parting cut lines 103 that are spaced at regular intervals along its length. A large number of unit label pieces L' are formed among these parting cut lines 103. A pair of feeding cut lines 104 cross each parting cut line 103. At the positions corresponding to the above

feeding cut lines 104, almost U-shaped feeding cut lines 105 are defined in the backing material.

The label strip 100 in which the feeding cut lines 104 cross the parting cut lines 103, can be smoothly brought into engagement with the feeding pins disposed around the feeding roller when the label strip 100 is passed through a label printing machine. Therefore, such the prior art label strip 100 is convenient to be advanced through the label printing machine.

Meanwhile, the respective feeding cut lines 104 and 105 of label material 101 and backing material 102 are temporarily stood up when the feeding cut lines 104 and 105 are brought into engagement with the feeding pins of the feeding roller in a label printing machine. After that, the erected feeding tongues are depressed flat by a label correcting member 32 (see Fig. 4) which is attached to the printing head and the label strip 100 is advanced into the printing section. The label material 101 is then printed, however, the erected tongue of the backing material 102 is often pressed down on the front edge portion of a unit label piece L' of the label material 101 during the correction of the erected tongue of the feeding cut line 105 because the feeding cut line 105 of the backing material 102 is located just under the parting cut line 103 of the label material 101. Accordingly, such the overlapped portion in the front side of the unit label piece L' cannot be printed.

The printed label material 101 is then peeled off from the backing material 102 by bending the backing material 102 backward and the peeled unit label piece L' is applied to the surface of merchandise. In this operation, the feeding tongue of the above feeding cut lines 104 is liable to be erected again into the tongue 104'. The erected tongues on the front and rear edges of the unit label piece L' can be corrected by rubbing them with an

applicator roller 34 (see Fig. 4) when it is applied to an article, however, the tongue piece 104' on the front side is often left standing on the merchandise since it exists outside the range of rolling of the applicator roller 34. Accordingly, the appearance of the label is not good, in addition, the unfair switching of labels can easily be done.

In view of the above-described disadvantages in the label strip of the prior art, the improved label strip of the present invention is herein proposed and will be described in detail.

In the first embodiment shown in Fig. 1 to 3, inclusive, the label strip 1 comprises a long, thin strip layer of label material 2 and a long, thin strip layer of backing material 4. The label material 2 and the backing material 4 are put together in layers. The rear surface of the label material 2 is provided with an adhesive coating layer 3, while the opposed front surface of the backing material 4 is provided with a release layer 5 such as a layer of silicone so as to facilitate the peeling of the temporarily stuck label material 2 from the backing material 4.

The strip of label material 2 has a plurality of transverse parting cut lines 6 that are spaced at regular intervals along its length. This produces a large number of unit label pieces L. Further, in this label material 2 are defined a pair of feeding cut lines 7 in the open V-shape. The feeding cut lines 7 are disposed in about the middle portion between adjacent pair of parting cut lines 6 and positioned side by side to each other in the direction perpendicular to the length of the label strip 1. That is, the pair of feeding cut lines 7 are defined in the inside area of each unit label piece L except the marginal portions thereof, that is, the effective area. Further, other feeding cut lines 8 in the shape

like U are defined in the backing material 4 at the position corresponding to the above-described feeding cut lines 7 of the label material 2. That is, the shape of the feeding cut lines 8 of the backing material 4 is different from the shape of the feeding cut lines 7 of the label material 2, so that, the combination of them are not through cut lines. Furthermore, it should be noted that the tops of these domeshaped feeding cut lines 7 and 8 are oriented reversely relative to the direction of the advancing of the label strip 1.

The tape-like label strip 1 of the present invention is set to the main body 10 of a label printing machine as shown in Figs. 4 and 5. The states of advancing and label peeling will be described in the following.

The label printing machine shown in Fig. 4 comprises a hand lever 12 that is pivotally secured to a pivot shaft 13 that is fitted to the machine frames 19 disposed on both sides. An integrally formed hand grip 11 extends rearwardly from the frames 19. A return spring 16 is stretched between spring supporting members 14 and 15 that are respectively formed on the hand lever 12 and the hand grip 11. The force of spring 16 returns the hand lever 12 to the original downward rest position when the lever is released after being squeezed.

The hand lever 12 extends forward (to the left in the drawing) of its support shaft 13, and this section of the hand lever 12 is comprised of a printing section 12a remote from shaft 13 and an actuating section 12b nearer to the shaft 13. The printing section 12a carries a printing head 17 which is provided with a plurality of types 18 which can be selected by turning stamp wheels or stamp belts. The actuating section 12b is provided with a known sector drive gear (not shown) near the pivot shaft 13.

A main shaft 20, which is nonshiftably attached to the pair of machine frames 19, rotatably supports a feeding roller 21 having a pawl wheel that is engaged with the drive gear of the actuating section 12b of the hand lever 12. The circumferential surface of the feeding roller 21 is provided with a plurality of feeding pins 22 that are spaced at regular intervals for advancing the tape-like label strip 1 of the present invention that is composed of the label material 2 and the backing material 4.

When the label strip 1 is advanced through the label printing machine during operation thereof, a rolled label strip 1' is supported by a label supporting section 23 of the machine. The free end of the label strip 1 is passed through the space between the feeding roller 21 and a label pushing member 25 by way of a label guide member 24. The free end of the label strip 1 is further led onto a platen 26 which is supported inside the machine frame in opposition to the printing head 17. In this advancing of the label strip 1, the feeding cut lines 8 and 7 in the strip of the backing material 4 and of the label material 2 are first brought into engagement with the feeding pins 22 on the feeding roller 21 and the label pushing member 25 in then fitted over the upper surface of the label strip 1.

When the hand lever 12 is released after it is squeezed, the feeding roller 21 is turned counterclockwise intermittently by the length of one label piece. This correspondingly advances the label strip 1 by one pitch since it engages with the feeding pins 22 on the feeding roller 21. During the advancing of the label strip 1, as shown in Fig. 5, as each of the feeding cut lines 8 of the backing material 4 engages a feeding pin 22, it is raised up by the feeding pin 22 to form feeding tongue 8'. When each feeding tongue 8' is bent upright, it comes into surface contact with the flat feeding face 22' of the feeding pin 22. Therefore, any instability in feeding

lowing to concentrated loading can be eliminated by distributing the load throughout the entire contacting surfaces. As a feeding pin 22 lifts a feeding tongue 8' of the backing material 4, it is also inserted into the feeding cut line 57 of the label material 2, and the feeding pin 22 also lifts the feeding tongue 7'. The pushing force of the feeding pin 22 can be borne by both of the feeding tongues 7' and 8' when the label strip 1 is advanced.

The label strip 1 that is in engagement with the feeding pins 22 is then intermittently advanced onto the platen 26 by the squeezing and releasing operation of the hand lever 12.

The feeding tongues 7' and 8' of the label strip 1 are stood up by the above feeding pins 22, however, when the printing head 17 is moved down to the platen 26 by squeezing the hand lever 12, the erected feeding tongues 7' and 8' are corrected into flat position simultaneously with the printing operation to the next unit label piece ahead. More particularly, the label correcting member 32 that is disposed at the rear end of the printing head 17 presses down the label strip 1 on the platen 26 to depress the erected feeding tongues 7' and 8' into the original flat position. This corrective action is performed before the above printing action by one pitch.

The feeding cut lines 7 and 8 of the label strip 1 that are in engagement with the feeding pins 22 of the feeding roller 21 do not cross the parting cut lines 6 between unit label pieces L and the almost U-shaped feeding tongues 8' of the backing material 4 is smaller than the wide-angled V-shaped feeding tongues 7' of the label material 2. Therefore, the feeding tongues 8' are not folded on the label material 2 in the corrective operation, which prevents the occurrence of unprinted portion.

After the printing step, the layer of backing material 4

of the label strip 1 is shifted in front of the platen 26 and is bent downwardly and rearwardly forming a bending portion 29 of a loop in the narrow space 28 between a keep plate 27 and a bottom cover 30 with interposing the platen 26. Once it is bent rearwardly, the backing material 4 is further led rearwardly and is brought into engagement with the feeding pins 22 of the above-described feeding roller 21, so that the label strip 1 can be pulled by the roller 21. Two label pushing members 31 are attached on the inside of a bottom cover 30. Thus, both side edge portions of the backing strip 4 are pressed against the feeding roller 21, and the backing strip 4 is brought into engagement with the feeding pins 22 of the feeding roller 21 so as to be passed out from the rear portion of the machine body by the intermittent rotation of the feeding roller 21.

The just printed label material 2 is peeled from the bending portion 29 of the backing material 4 to give a unit label piece L. By the bending of the backing material 4, the feeding tongues 7' of the label material 2 becomes upright temporarily. This can be corrected by pressing an applicator roller 34 which is rotatably attached to the shaft 33 in the lower front portion of the machine body. In this case, since the feeding cut line 7 is positioned almost in the middle of the unit label piece L, the erected feeding tongues 7' can be completely corrected by rolling the applicator roller from the front edge to the rear edge of the label.

While, in the case of the prior art label strip 100 as shown in Fig. 8, the feeding tongues 104' between the feeding cut lines 104 are erected on the front and rear edges of a unit label piece L'. Even though the erected feeding tongue 104' on the rear edge of the unit label piece L' can be corrected by using the above-mentioned applicator roller 34, the erected feeding tongue 104' on the front edge exists outside the range of rolling of

the roller 34 and it stands up reverse to the direction of the rolling of the roller 34. Therefore, the feeding tongue 104' on the front side cannot be corrected and it is left as it stands on merchandise.

The second embodiment of the label strip of the present invention is shown in Fig. 6. The constitution of the feeding cut lines 7 of the label material 2 having an adhesive coating layer 3 and that of the feeding cut lines 8 of the backing material having a release layer 5 are the same as those of the foregoing Example 1. In the unit label piece La in this embodiment, two pairs of wide-angled V-shaped cuts 9a and 9b for preventing unfair switching of labels are defined on both sides of the feeding cut lines 7. A pair of the switching preventive cuts 9a on one side are oriented just like the V-shape of the feeding cut lines 7, while the other pair of the cuts 9b are oriented reverse to the feeding cut lines 7.

After the unit label piece L or La is applied to merchandise, the above-described wide-angled V-shaped feeding cut lines 7 of the label material 2 is effective for preventing the unfair switching of labels. However, if the above cuts 9a and 9b are additionally defined in the label material and the top ends of the cuts 9a on one side is made reverse to the top ends of the cuts 9b on the other side, the unfair switching of labels can be prevented more effectively, because, when a unit label piece La is once applied to merchandise, the label piece La is generally peeled off from one side, therefore, either of the cuts 9a and 9b having their top end portions oriented reverse to the peeling direction are torn away.

The third embodiment of the label strip 1 of the present invention is shown in Fig. 7. Like the above embodiment, the feeding cuts 7 and 8 of the label material 2 and the backing material 4 are the same as those of the foregoing

first embodiment. In this embodiment, cut lines 9c to 9f for preventing unfair switching of labels are defined only in the label material 2. These cuts are short inclined cut lines which run in the direction from the center of the unit label piece Lb to the respective corners thereof.

When a person intends to peel off the unit label piece Lb that has been applied to merchandise from any direction, at least one of the cuts 9c to 9f is torn without fail. Therefore, the switching of labels becomes quite difficult.

In addition to the above, since the top ends of the feeding cut lines 7 and 8 of the label material 2 and the backing material 4 are oriented in the direction reverse to the direction of the advancing of the label strip 1 in the label printing machine, the tearing of the end portions of the feeding cut lines 7 and 8 are not caused to occur in view of the inertia of the advancing movement in the front end portion of the platen 26. Further, the feeding tongue 8' is not stood up after the rearward bending of the backing material 4 and the feeding tongue 8' is maintained flat. Therefore, the backing material 4 can be smoothly passed through the tapered narrow space between the platen 26 and the bottom cover 30 of the machine body. Accordingly, the label strip of the present invention is also quite effective for avoiding the tearing of feeding tongue portions of the backing material 4.

In the label strip of the present invention, the feeding cut lines to form the feeding tongues are defined in the effective area of the label material. Therefore, unprinted portion in the marginal portions of the label material is not caused to occur. In addition, the erected feeding tongues that are brought about when the label material is peeled off from the backing material by rearwardly

bending the backing material, can be corrected into flat state by pressing the applicator roller to the surface of the label piece that is applied to an article.

Accordingly, not only the label piece of the present invention is good in appearance but also it cannot be unfairly switched with another label since the feeding tongue is not stood up. Further, the feeding cut lines are in the open V-shape, the label is liable to be torn away from the feeding cut portions when it is peeled off.

Although the present invention has been described in connection with preferred embodiments thereof, many variations and modifications will now become apparent to those skilled in the art. It is preferred, therefore, that the present invention be limited not by the specific disclosure herein but only by the appended claims.

Claims

1. A pressure sensitive label strip which comprises a tape-like strip of label material having an adhesive coating layer and a tape-like strip of backing material having a release layer; said strip of label material being temporarily overlaid on and attached to said strip of backing material; and parting cut lines extend transversely across said strip of label material and are spaced at regular intervals so as to form a plurality of unit label pieces of said label strip material; and said unit label pieces are peeled off from said strip of backing material by bending said backing material backward; characterized in that at least one feeding cut

line to form a feeding tongue is defined in the effective area of each said unit label piece between said parting cut lines excluding the marginal portion of said unit label piece; and other feeding cut lines, the shapes of which are different from said feeding cut lines of said unit label piece, are defined in said strip of backing material.

2. The pressure sensitive label strip of Claim 1, in which each of said feeding cut lines of said label material is of an almost V-shape and each of said feeding cut lines of said backing material is of an almost U-shape.

3. The pressure sensitive label strip of Claim 1, in which the top end portions of said feeding cut lines of said label material and said feeding cut lines of said backing material, are oriented in the direction reverse to the advancing of said label strip.

4. The pressure sensitive label strip of Claim 1, in which said feeding cut lines formed in both of said materials consist of pairs of feeding cut lines, each pair of said feeding cut lines are disposed in side by side relation transversely to said both materials.

5. The pressure sensitive label strip of Claim 1, in which a plurality of cuts for preventing unfair switching of labels are formed in the effective area of said unit label pieces.

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FIG.1

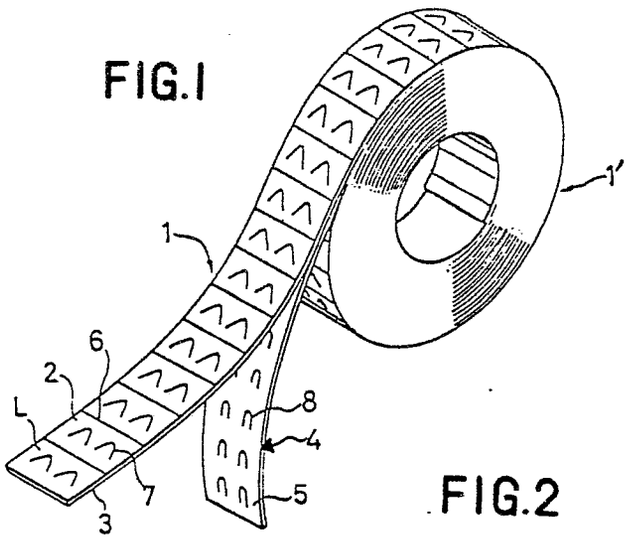


FIG.2

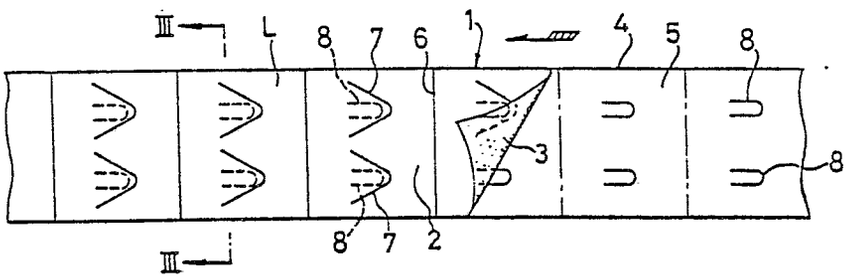


FIG.3

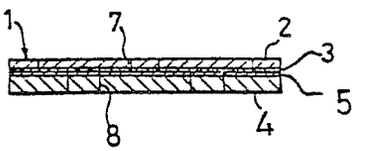


FIG.5

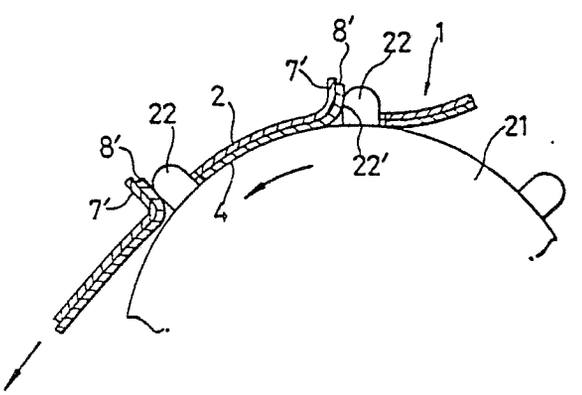
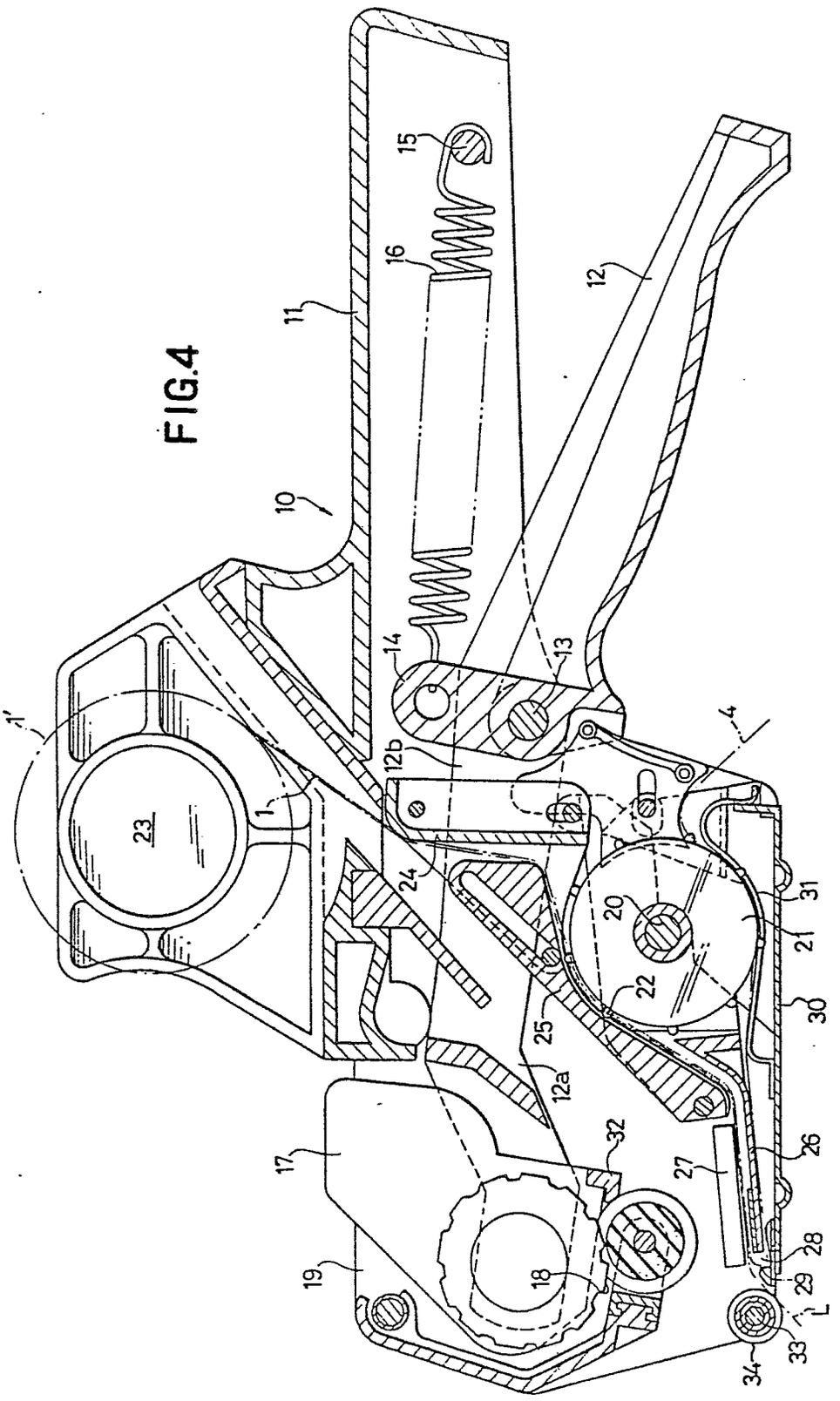


FIG.4


1'
23
1
10
11
15
16
12
14
13
12b
4
24
20
31
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22
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12a
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FIG.6

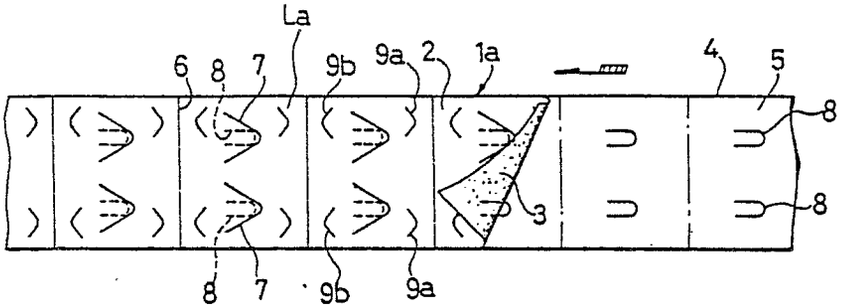


FIG.7

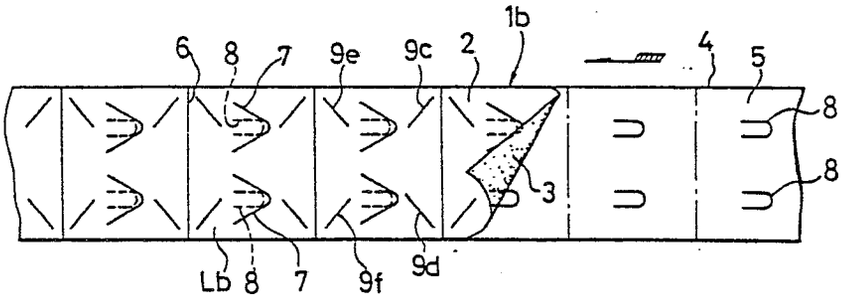
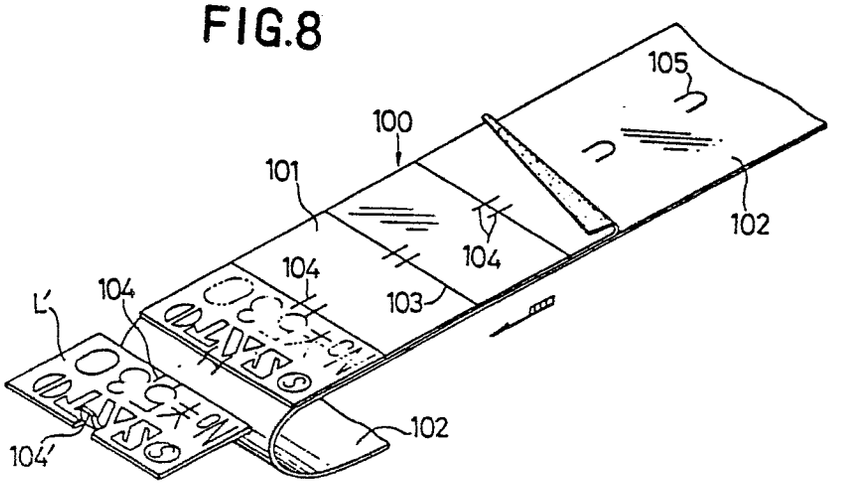


FIG.8



European Patent Office

EUROPEAN SEARCH REPORT

0011163
Application number
EP 79 10 4143

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
	DE - A - 2 644 462 (HERBERT LA MERS) * Claim 1; page 20; paragraphs 2-3; figures 10,18 *	1
	US - A - 2 194 309 (THEODORE H. KRUEGER) * Claims 1-3; figures 1-3 *	1,3
	US - A - 3 783 083 (MONARCH MARKING SYSTEMS INC.) * Claims 1-2, 13-17; column 12, line 19 - column 13, line 11; figures 23-31 *	1,5
	DE - A - 2 345 153 (GUHL & SCHEIBLER A.G. * Claims 1,6,7; page 8, paragraph 3 - page 9; figure 3 *	1,5
A	FR - A - 2 386 091 (KABUSHIKI KAISHA SATO) * Claims 1-5; figure 1 *	1

CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)

G 09 F 3/02
G 09 F 3/10

TECHNICAL FIELDS SEARCHED (Int.Cl. ³)

G 09 F 3/02
G 09 F 3/10
B 31 D 1/02
B 65 C 11/00
B 65 C 11/02

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
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E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	19-02-1980	FRANSEN

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