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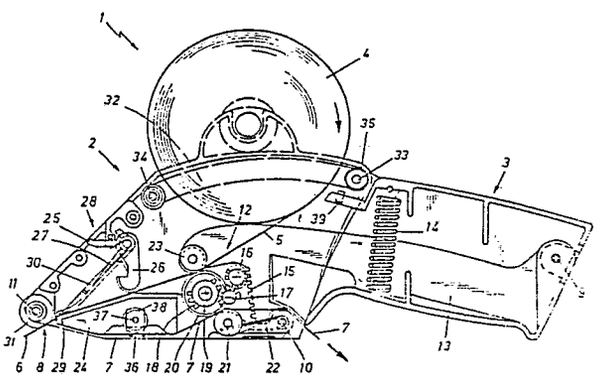
(71) Applicant: **Casarin, Giancarlo**
Via dei Zattieri 14/b
I-31014 Ponte nelle Alpi (BL)(IT)

(72) Inventor: **Casarin, Giancarlo**
Via dei Zattieri 14/b
I-31014 Ponte nelle Alpi (BL)(IT)

(74) Representative: **Lanzoni, Luciano**
c/o BUGNION S.p.A. Via G. Garibaldi n. 19
I-37121 Verona(IT)

(54) Manually-operated portable labelling machine.

(57) The labelling machine (1) comprises a box-shaped body (2) having a handgrip (3) and carrying a roll (4) at the top, a slot (8) through which labels (6) individually come out being formed at the front part thereof. A ribbon (5) coming from the roll (4) passes through a feed member (12) driven by a lever (13) associated with the handgrip (3). The feed member (12) comprises a rack (15) formed on the lever (13) and meshing with one sprocket (16) meshing with a second sprocket (17) which in turn is engaged with a third sprocket (18) integral and coaxial with a capstan (19) associated with a free wheel. A band-like support (7) coming from the slot (8) passes on said capstan (19) and is pressed thereon by one idler roller (21). The operation of the lever (13) causes the rotation of the capstan (19) and consequently the forward movement of the band-like support (7) and the issue of a label (6) through said slot (8).



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Manually-operated portable labelling machine

The present invention relates to a manually-operated portable labelling machine to be used for applying differently-sized labels to goods and packages of different kinds.

Manually-operated portable labelling machines are currently known in which the mechanism for the forward movement or feeding of the ribbon from a roll substantially consists of a ratchet gear or another similar device of the step type which grasps the ribbon and, while stretching it tight, makes it move forward one step of a predetermined fixed length. The labelling machines of the known type, as they are provided with a fixed-step mechanism, can only apply labels of one size, which represents a great operating restriction.

In addition in these labelling machines the label to be sticked completely projects from the machine. As a result the label cannot overcome a given measure because otherwise the pressing action for achieving its adhesion would only involve the final part of the label itself which is disposed in register with the presser roller located at the front end of the labelling machine. That is why all labels presently used have relatively reduced sizes.

A further drawback is given by the fact that if the step-type device stretches the ribbon in an imperfect way, this inconvenience will be repeated for the subsequent pulling actions and, as a result, either the position of the labels will become more and more stepped back or labels will be overlapped.

In addition, due to the presence of the feeding mechanism of the step type, the silicone-treated band-like support carrying the labels must be provided with notches adapted to allow the support to be entrained. Furthermore, the thickness of the band-like support must be fit for withstanding tensile stresses and this is achieved to the detriment of the number of labels carried, the rolls having identical sizes.

The main object of the present invention is to overcome the drawbacks of the known art by providing a labelling machine for applying labels of variable width and length, more particularly of unlimited length, which is of easy construction and has relatively low prices.

The foregoing and further objects are atteined by the labelling machine of the invention the main features of which are stated in the following claims.

Further features and advantages will best be understood from the detailed description of a preferred embodiment of the labelling machine given hereinafter by way of non-limiting example with reference to the accompanying drawing in which the only figure is a diagrammatic side view of the machine with the cover removed in view of showing the inner part thereof.

With reference to the drawing the labelling machine of the invention has been generally identified by reference numeral 1. It consists of a box-shaped body 2 provided with a handgrip 3 at the rear part thereof and carrying a roll 4 at the top, which roll consists of a ribbon formed with a series of labels 6 of a freely selected length carried by a silicone-treated band-like support 7. Provided at the front of said box-shaped body 2 is a slot 8 through which the individual labels 6 and band-like support 7 are fed.

The box-shaped body 2 and the handgrip 3 associated therewith are made up of two shells arranged in a mirror image and joined to each other by spacers 9, 10 and 11. Therefore in the drawing the labelling machine 1 is shown with one of the two shells removed.

The ribbon 5 coming from roll 4 passes through a feed member 12 located inside the box-shaped body 2, which is driven by a lever 13 hinged at 9 and associated with the handgrip 3, the upward movement of which (carried out by exerting a manual pressure thereon) is counteracted by a spring 14.

The feed member 12 is comprised of a rack 15 formed on the lever 13 and meshing with one sprocket 16 meshing with a second sprocket 17 which in turn is engaged with a third sprocket 18 integral and coaxial with a capstan 19. The capstan is provided with rubber rings 20 on the cylindrical surface thereof and is associated with a free wheel (not shown).

Passing on the capstan 19 is the band-like support 7 which comes from the slot 8 and is pressed in this region by one idler roller 21 pushed by a spring 22 which is fastened at 10. Therefore the operation of lever 13 causes the rotation of the capstan 19 and consequently the forward movement of the band-like support 7 which brings about the forward movement of the ribbon 5 so that, as a result, the front portion of a label 6 comes out of the slot 8.

Carried by the lever 13 at the front free end thereof is a second idler roller 23 which, when the lever 13 (thrusted by the spring 14) is being released, presses the ribbon 5 coming from roll 4 against the surface of the capstan 19 which during this step is at a standstill, due to the action of the free wheel associated therewith.

By pressing the label 6 in contact with the goods or packages and pulling the labelling machine 1 in the handgrip direction, the ribbon 5 will run towards the slot 8. During this step the capstan

19 is driven in rotation by ribbon 5 (pressed thereon by the second idler roller 23) and in turn will cause the band-like support 7 pressed thereon by the first idler roller 21, to move forward by the same length.

Obviously the pulling action exerted on the labelling machine 1 will last as far as the whole label 6 (of a predetermined length at will) has completely come out of the slot 8 and has been sticked to the goods or packages.

The box-shaped body 2 is provided at the lower part thereof with an openable bottom cover 24 one end of which is hinged at 10 in the boundary region between the body 2 and handgrip 3. Said cover is provided with a snap-fit closing device which can be disengaged by an operating lever 25 associated with a ratchet gear 26 equipped with a spring 27 and accessible from the outside through an opening 28 in the front part of body 2.

The free end 29 of the bottom cover 24 defining the slot 8 at the lower part thereof is in the form of a wedge. The ribbon 5 is wrapped around this end 29 so that a label 6 is allowed to detach from the band-like support 7 which, running along the lower part of the bottom cover 24, is sent back to the area between the capstan 19 and the first idler roller 21 then issuing through the rear part of the bottom cover itself.

A plate 30 acting as a ribbon-stretching brake is hinged in the region of the ratchet gear 26. The free end of this plate 30, under the action of the spring 27, presses the ribbon 5 against the upper part of the bottom cover 24 close to the slot 8. Adjacent the slot 8 the body 2 is equipped with a label-pressing idler roller 31.

Provided at the top of the box-shaped body 2 in register with the roll 4 is a ribbon-centering device consisting of a pair of plate-like elements 32 disposed to the sides of the roll 4 and joined to each other at the respective ends by a pair of shafts 33 and 34 both threaded with opposite threads and carrying a knurled operative wheel 35 in the middle.

Provided underneath the bottom cover 24 is a guide and centering device for the band-like support 7, which is formed of a pair of movable blocks 36 having slots therein, adapted to receive the edges of the band-like support 7. Said blocks 36 can be simultaneously moved close to or away from each other because they are mounted on a threaded shaft 37 consisting of two halves having opposite threads and carrying a knurled operative wheel 38 in the middle.

Operation of the labelling machine of the invention is as follows.

When the handgrip 3 is pressed, the lever 13 is actuated against the action of the spring 14. The rack 15 drives in rotation the capstan 19 through the sprockets 16, 17 and 18 (during this step the free wheel is locked) and the capstan 19, in turn, presses the band-like support 7 against the first roller 21, thus causing the forward movement of said support by a predetermined length which can be also adjusted by adjusting screws 39 acting as limit stops for the lever 13.

At this point the label 6 projects beyond the bottom cover 24 as far as it is disposed opposite the label-pressing roller 31.

When the operator releases the handgrip 3 and lever 13, no movement of the ribbon 5 takes place because the gears rotate but the capstan 19 is at a standstill as a result of the action of the free wheel.

By exerting a slight pressure the first part of the label 6 is sticked to the goods or packages, then the labelling machine 1 is pulled back in the direction of the handgrip 3 so that the whole label 6 can come out and reach the pre-cutting position.

This operation is made possible by the fact that during the label-sticking step the ribbon 5 by its rotation causes the capstan 19 to rotate as well (during this step said capstan acts as a driven roller), which rotation is produced by the pressure of the second idler roller 23 applied to the lever 13 and acting under the action of the spring 14.

The ribbon 5 moves forward by a length equal to that of the label 6 as far as it reaches the free end 29 where the detachment of labels 6 occurs. After this position has been reached, the band-like support 7 which is already located between the first idler roller 21 and capstan 19, due to the rotation of the latter is compelled to move forward towards the exit by a length identical to that of the label 6 just sticked.

In this way there is a forward movement of the ribbon 5 due to a tractive action while the band-like support 7 is taken up by the same length through the exit so that said ribbon 5 and support 7 are continuously kept stretched tight and against the bottom cover 24.

The subsequent pressing and release operations of the lever 13 cause a new portion of the label 6 to project as far as it is in register with the label-pressing roller 31. Due to the slight pressure exerted by roller 31 on the label to be applied to the goods or package and the subsequent movement of the labelling machine 1 in the direction of the handgrip 3, the detachment and sticking of the whole label 6 takes place, the length of said label being only determined by the position of the pre-cuts on the ribbon 5.

The invention attains the intended purposes.

Obviously modifications and variations can be made to the invention as conceived, all falling within the scope of the inventive idea characterizing it. In addition all of the details can be replaced

by technically equivalent elements and the materials used and sizes can be of any nature and magnitude according to requirements.

Claims

1. A manually-operated portable labelling machine (1) characterized in that it comprises a box-shaped body (2) provided with a handgrip (3) at the rear part thereof and at the top carrying a roll (4) formed with a ribbon (5) comprised of a series of labels (6) disposed on a band-like support (7), a slot (8) through which the individual labels (6) and band-like support (7) come out being also formed at the front part thereof, wherein said ribbon (5) coming from the roll (4) passes through a feed member (12) located inside the box-shaped body (2) and driven by a lever (13) associated with the handgrip (3), said feed member (12) comprising a rack (15) formed on said lever (13) and meshing with one sprocket (16) meshing with a second sprocket (17) which in turn is engaged with a third sprocket (18) integral and coaxial with a capstan (19) which is associated with a free wheel and through which said band-like support (7) coming from said slot (8) passes, being pressed thereon by one idler roller (21), the operation of said lever (13) causing the rotation of the capstan (19) and consequently the forward movement of the band-like support (7) and the partial coming out of one label (6) through said slot (8).

2. A labelling machine according to claim 1, characterized in that said lever (13) is hinged to the rear end of the handgrip (3) and at its free end carries a second idler roller (23) which, when the lever (13) pushed by a counterspring (14) is being released, presses said ribbon (5) coming from the roll (4) against the surface of the capstan (19) which during this step is at a standstill due to the action of said free wheel.

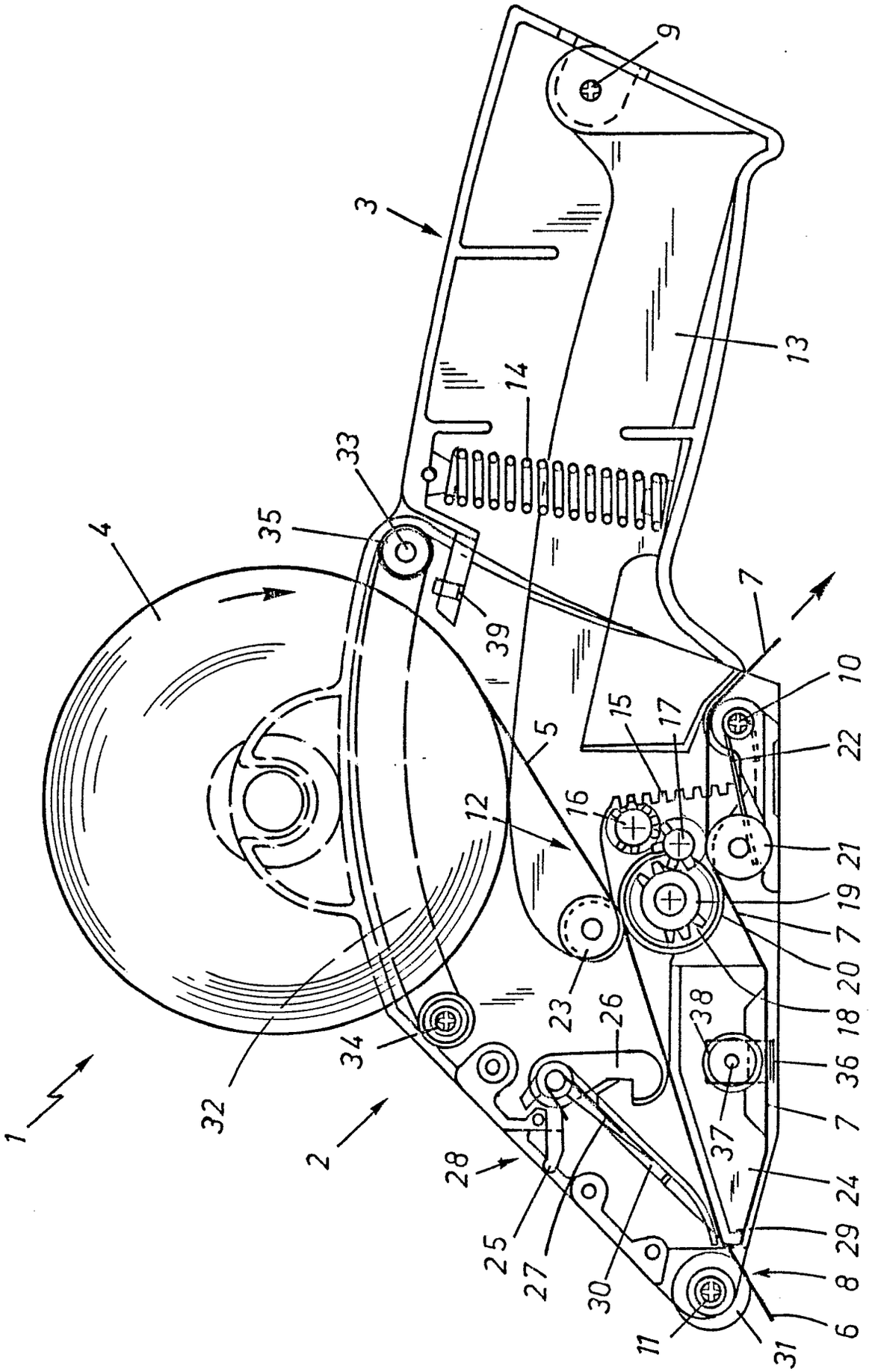
3. A labelling machine according to claim 1, characterized in that said box-shaped body (3) is provided at the lower part thereof with an openable bottom cover (24) hinged by one of its free ends in the region defining the separation between the box-shaped body (2) and handgrip (3), said bottom cover (24) being provided with a closing snap-fit device which can be disengaged by an operating lever (25) associated with a ratchet gear (26) accessible from the outside through an opening (28) in the front part of the body (2), the free end (29) of the bottom cover (24) defining the lower part of the slot (8) being in the form of a wedge and around this end (29) being wrapped the ribbon (5) so that a label (6) can be detached from the band-like support (7) which is pulled along by said capstan (19) and first idler roller (21).

4. A labelling machine according to claim 3, characterized in that a plate (30) acting as a ribbon-stretching brake is hinged in the region of the ratchet gear (26), the free end of this plate (30), under the action of the spring (27) of said snap-fit device, pressing said ribbon (5) against the upper part of the bottom cover (24) close to the slot (8).

5. A labelling machine according to claim 1, characterized in that adjacent said slot (8) and exactly above it said box-shaped body (2) is equipped with a label-pressing idler roller 31.

6. A labelling machine according to claim 1, characterized in that at the top of the box-shaped body (2) in register with said roll (4), provision is made for a ribbon-centering device consisting of a pair of plate-like elements (32) disposed to the sides of the roll (4) and joined to each other at the respective ends by a pair of shafts (33 and 34) both threaded with opposite threads and carrying a knurled operative wheel (35) in the middle.

7. A labelling machine according to claim 3, characterized in that underneath said bottom cover (24) provision is made for a guide and centering device for the band-like support (7), which device is formed of a pair of movable blocks (36) having slots therein adapted to receive the edges of the band-like support (7), said blocks (36) being designed to be simultaneously moved close to or away from each other due to the fact that they are mounted on a threaded shaft (37) consisting of two halves having opposite threads and carrying a knurled operative wheel (38) in the middle.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EUROPEAN SEARCH REPORT

Application Number

EP 89 83 0394

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 134 018 (KNOGO CORP.) * Page 12, line 23 - page 13, line 19; figures 1-3 *	1,5,6	B 65 C 11/00
A	FR-A-2 573 035 (FONTAINE)		
A	CH-A- 657 104 (ROTHENBERGER)		
A	DE-A-2 600 189 (SUMP)		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

B 65 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	05-01-1990	DEUTSCH J.P.M.

CATEGORY OF CITED DOCUMENTS

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