Dec. 17, 1957 A. SERAGNOLI 2,816,760

FEEDING MECHANISM FOR LABELS AND THE LIKE

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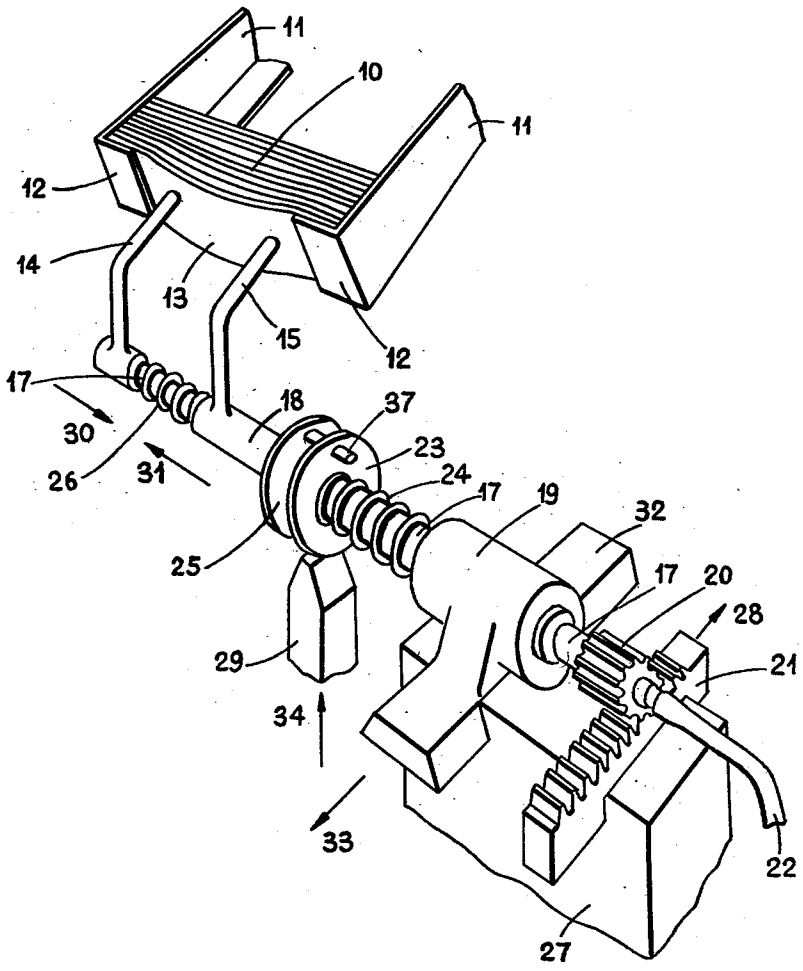


Fig. 1

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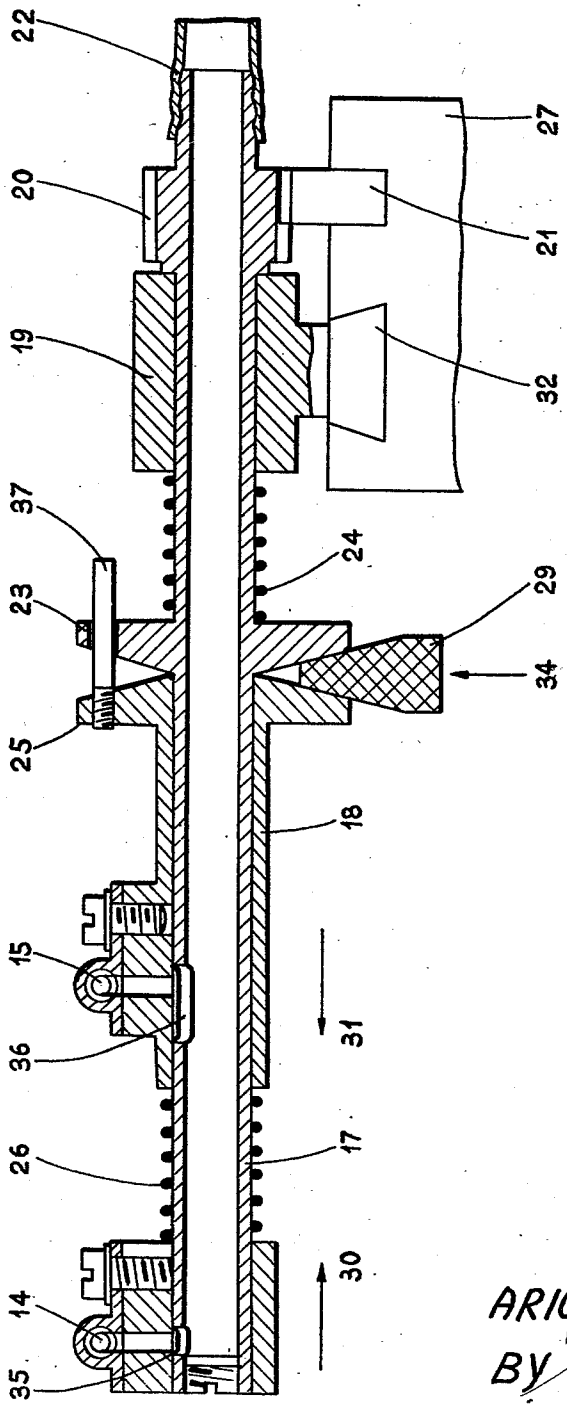


Fig. 2

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FEEDING MECHANISM FOR LABELS AND THE LIKE

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4 Claims. (Cl. 271—20)

This invention relates to a mechanism to separate and remove individual labels from a label magazine and to convey each individual label to an accepting means to which they have to be delivered.

This mechanism is particularly suitable for feeding to wrapping machines, labels which frequently are heavy, narrow and long strips of somewhat stiff material, so that with the usual mechanisms it is very difficult to separate each of them from the others and to take them out of the magazine one at a time.

The main characteristic of this invention is that the labels are placed in the magazine in such a manner that the walls of the magazine, which slopes down towards an exit, faces pick-up means which hold each label to be picked out, only at its extremities, leaving each free in its central part so that the central part will bend outwards, due to the action of its own weight. Each label is successively separated from the others and picked up by suction at two points distant from each other; said pick-up means are then brought closer to each other, thus causing the label to bend still more, so as to separate it from the others and to free it from the magazine by making its extremities slide out from the retaining means of the magazine.

The following specification of the invention is intended to be illustrative and not limitative. It relates to a preferred embodiment shown as an example in the specification and in the figures which are an integral part of it, and in which:

Fig. 1 is a somewhat schematic perspective view of the mechanism.

Fig. 2 is a section of the mechanism made on a vertical plane passing through the axis of the hollow shaft **17**.

In the preferred embodiment described here as an example, the invention comprises a stationary magazine **11** for containing the labels **10** to be distributed. The magazine is fixed to the frame of a supporting mechanism (not shown) and slopes down towards a pick-up means. The magazine is provided with lateral walls and with retaining projections **12**, placed in the lower part thereof. Against the projections rests the bottom label **13** to be distributed. The pick-up means comprises suction tubes **14** and **15** open at their ends fronting the bottom label. A bearing **19** is provided, carried by a slide **32**, guided on frame **27**. A hollow shaft **17**, with a cap at one end with the other end joined to a flexible suction pipe **22** rotates and axially slides on bearing **19**, carrying the pick-up means subject to the suction through hole **35** (shown in Fig. 2). The suction is provided by means of any known type, and is not a part of the invention, nor is it shown in the drawings nor described in the specification. The suction means alternately applies and ceases the suction, or alternatively, applies a suction and a blowing pressure to the open ends of the suction tubes **14** and **15**, through the flexible connecting pipe **22**. A sleeve **18**, sliding but not rotating on said hollow shaft **17**, carries the suction tube **15**, which is subject to the suction, through hole **36**, as shown in Fig. 2. A pair

of conical discs **25** and **23** are provided, the first connected with sleeve **18** and the latter with the hollow shaft **17**. Pin **37** is carried by disc **25** and passes through a hole on the disc **23** so as to compel shaft **17** and sleeve **18** to rotate together. A spring **26** axially pushes the sleeve **18** with respect to shaft **17**. A wedge **29** is guided by stationary guides, fixed to the frame **27**, which are not shown in the drawings. The wedge is movable in the direction of arrow **34** and in the opposite direction. A spring **24** axially pushes shaft **17** with respect to bearing **19**. A rack **21** is meshed with a pinion **20**, which in turn is connected with shaft **17**. The teeth of the pinion are long enough to mesh with the rack when shaft **17** moves axially in the direction of arrow **30**. Means are also provided to alternatively move wedge **29** in the direction of arrow **34** and in the opposite direction, to move the rack and eventually also slide **32** in the direction of arrows **28** and **33** respectively and in the opposite directions. These means are not shown in the drawings and may be of any known type.

The operation is as follows:

The labels **10** to be distributed are charged in piles into magazine **11** where, owing to the inclination of said magazine, they weigh against retaining projections **12** and are supported with the central part slightly bent outwards, as shown in Fig. 1. The wedge **29** is at this time withdrawn from the conical discs **23** and **25**, as shown in Fig. 1.

Spring **26** spaces the suction tubes **14** and **15** apart from each other, while spring **24** keeps shaft **17** entirely displaced towards the left, as shown in the figures.

Successively, the rack **21** is advanced in the direction opposite to arrow **28** and causes shaft **17** and sleeve **18** to rotate together, so as to push the open ends of the suction tubes **14** and **15** against the label **13**.

Now, by means of the suction means, air is sucked through pipe **22**, providing a suction at the ends of suction tubes **14** and **15**, causing adherence to label **13**. Successively, wedge **29** is advanced in the direction of arrow **34** between the conical discs **25** and **23** causing the suction tubes **14** and **15** to move one towards the other, in the direction of arrows **30** and **31** respectively.

Label **13** is thus further bent outwardly until its ends are drawn out from the projections **12** sliding against the corresponding ends of the following label.

Successively, the rack **21** goes back in the direction of arrow **28** and causes the pick-up means to transport the picked up label **13**. Successively, wedge **29** leaves the conical discs **23** and **25** and the pick-up means withdraw from each other, allowing label **13** to resume its flat shape while it is carried to its delivery point. Thereafter the suction is discontinued or alternatively a blowing pressure is applied, so as to free the distributed label from the pick-up means, leaving it to the accepting means, not shown, to which it is delivered. The accepting means is not a part of the invention and may be of any known type.

In the illustrated manner of operation, the hollow shaft **17** and the sleeve **18** only rotate and axially slide. It is also possible to superimpose to said movements a translation movement in the direction of arrow **33**, advancing the slide **32** which carries bearing **19**.

The movement of slide **32** may be operated by a mechanism of any known type, for instance a cam mechanism.

The distributed label may thus be carried for a long distance without the need of long arms for the pick-up means. A more suitable relationship may thereby be obtained between the positions of the magazine and the accepting means to which the label has to be delivered.

Having thus described the invention with reference to a preferred manner of embodiment, it will be obvious to those skilled in the art, after having understood the

invention, that many changes and modifications can be made without departing from the spirit and scope of the invention, and it is intended by the following claims to cover also all the changes and modifications which enter into the spirit and scope of the invention.

I claim:

1. Feeding mechanism for labels and the like, comprising a label magazine having projections at each end thereof to retain the ends of the flexible labels, the labels being free of support at the center to permit bending under the action of their weight; a pair of pick-up means rotatably mounted and linearly movable in a direction parallel to their rotation axis, said pick-up means provided with suction openings for pneumatically attaching the lowest label thereto at not less than two points; said pick-up means being movable towards each other, so as to make the attached label bend further and to separate it from the other labels by drawing its ends out from the projections; said pick-up means being rotatable with the attached label, and movable to the delivery point for release therefrom.

2. In the feeding mechanism of claim 1 wherein the pick-up means comprises a hollow shaft supported by a bearing; a linearly sliding sleeve mounted over said hollow shaft and having a suction port; one of said pick-up means carried by said hollow shaft and the other by the sleeve; said sleeve and hollow shaft provided with holes and ducts to connect with the pick-up means.

3. In the feeding mechanism of claim 1 wherein is provided means to bring the pick-up means nearer to each other, said means comprising conical discs, a wedge acting between said discs; a hollow shaft supported by a bearing; a linearly sliding sleeve mounted over said hollow shaft; springs pushing between the hollow shaft and the sleeve and between the hollow shaft and the bearing to keep them in position; a pinion carried by the hollow shaft; a rack meshed together with said pinion, said rack being linearly movable to cause the hollow shaft to rotate and take the label to be distributed out from the magazine and to carry and discharge it at the point of delivery.

4. In the feeding mechanism of claim 1 wherein is provided a bearing by which a hollow shaft is guided; a slide carrying said bearing, guided in the frame; a pinion carried by the hollow shaft; a rack meshed together with said pinion; said bearing and said rack being movable so as to give to the hollow shaft a rotating and translating movement.

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