

April 11, 1939.

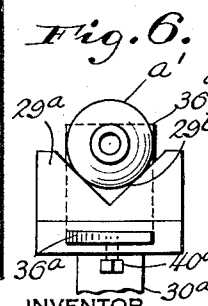
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2,154,222

LABEL APPLYING MECHANISM

Filed April 15, 1937

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

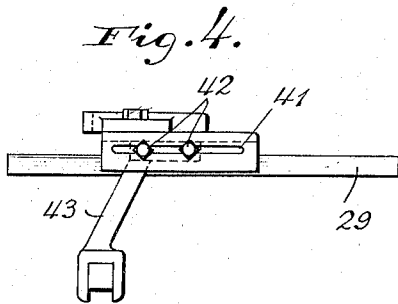


Fig. 2.

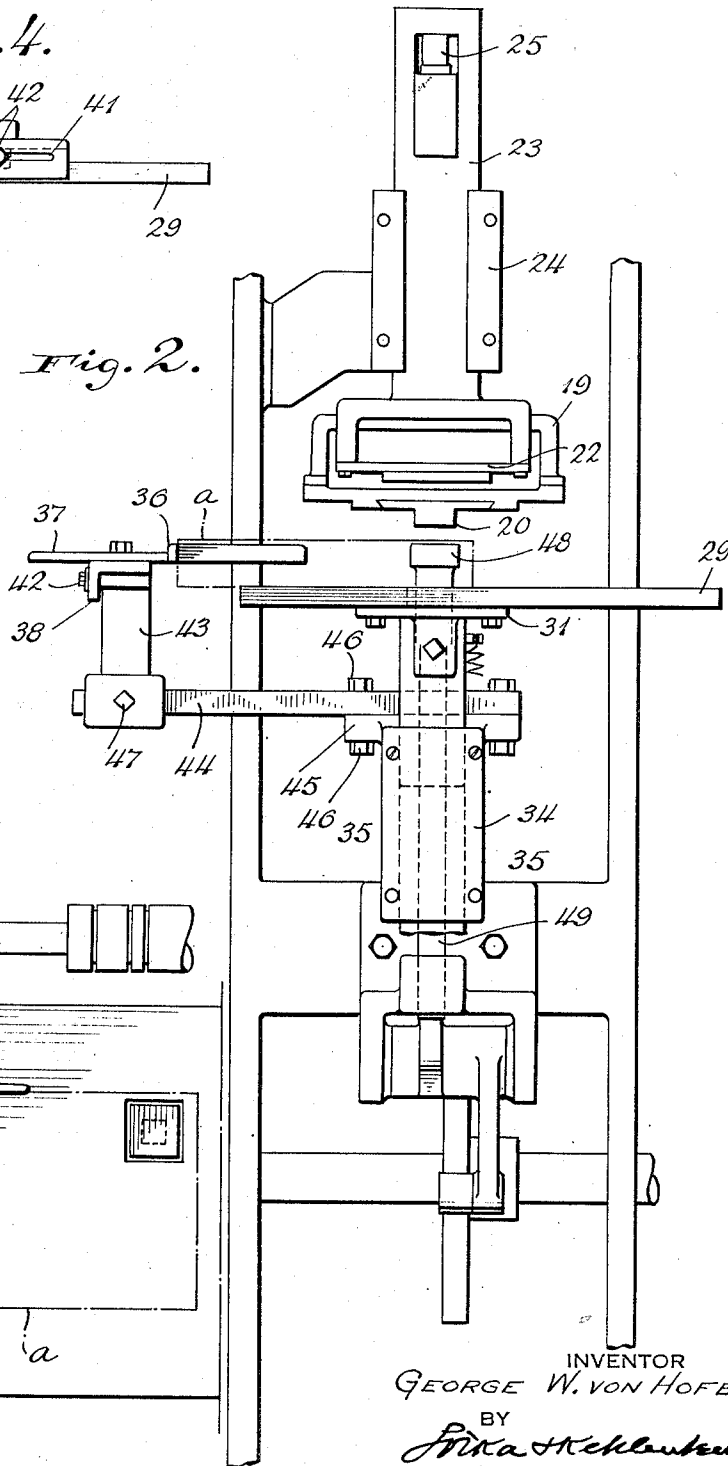
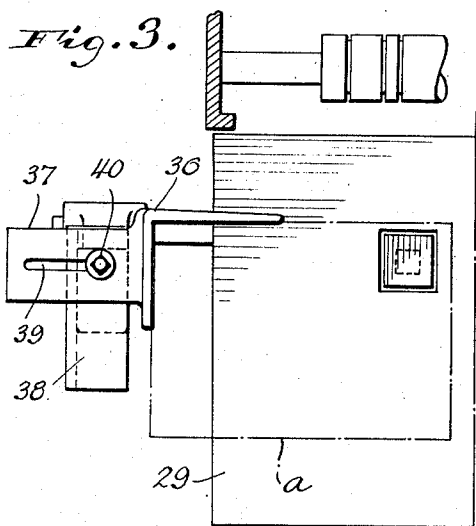


Fig. 3.



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LABEL APPLYING MECHANISM

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6 Claims. (Cl. 216—55)

The invention relates to mechanisms for applying labels to elements and articles and has for its object to provide novel means whereby the application of the labels may be accomplished in an accurate and uniform manner. The invention contemplates further the provision of novel mechanism whereby the application of labels in predetermined positions upon the elements and articles for which said labels are designed is facilitated to a maximum extent. Other more specific objects will appear from the description hereinafter and the features of novelty will be pointed out in the claims.

In the accompanying drawings, which show examples of the invention without defining its limits, Fig. 1 is a fragmentary side elevation, partly in section, of a machine embodying the novel mechanism; Fig. 2 is a fragmentary front elevation thereof; Fig. 3 is a detail plan view; Fig. 4 is a detail side view of a portion of the novel mechanism, and Figs. 5 and 6 are fragmentary elevations looking at right angles to each other showing another form of the novel mechanism.

For the purpose of illustrating and describing the novel features thereof, the label applying mechanism is shown installed in a labeling machine of a type for which it is specially designed. It is to be understood, however, that this is in no sense intended to restrict the field of usefulness of said mechanism, and that the latter is adapted for efficient combination with many other types of labeling machines or their equivalent.

The labeling machine shown in the drawings includes a frame 10 of suitable construction and dimensions on which a hopper 11 is supported in any convenient way. The hopper 11 is arranged to contain a supply of labels A in the form of a stack resting upon the bottom 12 of said hopper 11 as illustrated in Fig. 1; as is customary in labeling machines of the type shown, the bottom 12 is vertically movable upward at intervals determined by the progressively diminishing height of the stack due to the removal of successive labels A therefrom. The purpose of the aforesaid upward movements of the bottom 12 is to periodically restore the upper end of the stack of labels A to a predetermined level. As none of these elements, per se, constitute a part of the novel mechanism, it has not been deemed necessary to show the same in detail.

The illustrated example of labeling machines for which the novel mechanism is adapted, further includes suitable means for successively removing the individual labels A from the upper

end of the stack in the hopper 11 and transferring said individual labels in succession to the point of application to the elements or articles for which the labels are designed.

As shown in the drawings, the label transferring means referred to above is of the suction operated type and includes a carriage 13 slidably mounted upon a horizontal guide rail 14 supported on the frame 10 in any convenient manner. The carriage 13 is arranged to be slidably reciprocated on the rail 14 in any well known way in proper operative synchronism with the other parts of the machine, as for instance by means of an arm 15 fixed upon a shaft 16 suitably journaled on the frame 10. It will be understood that suitable provision is made to operatively rock the shaft 16 in a manner to produce the desired results; the specific means for rocking the shaft 16, per se, forms no part of the novel mechanism and has not been illustrated as it is well known and may be of any suitable existing type. The free end of the arm 15 is pivotally connected with a coupling rod 17 which in turn is pivotally and yieldingly connected with a lug 18 forming part of or fixed upon the carriage 13 as shown in Fig. 1.

The carriage 13 serves as a support for a vertically movable member terminating at its lower end in a yoke 19 which in turn supports a suction head 20 of any conventional type suitable for the purpose; the suction head 20, in any case, is connected with a source of suction, for instance, by means of a tube 21. Suitable provision is made, as is customary in labeling machines of the type illustrated, for automatically controlling the suction in proper synchronism with the operations of the machine; such arrangements are well known and as, per se, they form no part of the novel mechanism, it is unnecessary to complicate the drawings with detail illustrations thereof.

In addition the labeling machine is constructed in a manner to provide for the vertical operation of the suction head 20 for the purpose of removing terminal labels A in individual succession from the stack in the hopper 11 and subsequently applying said labels to the elements or articles designed to receive the same. This arrangement is also well known and accordingly needs no specific illustration.

The labeling machine further is generally provided with means for developing a pressure upon the labels subsequent to their initial application to the elements or articles by the suction head 20, in order to cause said labels to firmly and

smoothly adhere to said elements or articles. The said pressure developing means is also well known and accordingly has been illustrated only to the extent required for a complete and accurate comprehension of the novel features of the label applying mechanism.

In the illustrated example of the labeling machines the pressure means consists of a pressure member 22 carried by a plunger 23 vertically slidable in a guideway 24 suitably supported in proper position upon the frame 10. The pressure member 22 may be vertically actuated in operative synchronism with the other parts of the machine by means of a lever 25 loosely mounted on the shaft 16 and connected with suitable and conventional operating means through the medium of a connecting member 26.

In labeling machines of the type selected for purposes of illustration, the individual labels A, after having been picked up from the stack in the hopper 11, are provided with a coating of adhesive during the transfer of said labels to the point of application to the elements or articles. For this purpose the labeling machine includes adhesive applying means consisting, for instance, of an adhesive applying roll 27 and an adhesive distributing roll 28 located in tangential relation to the roll 27 and dipping into a supply of adhesive in a container 29 as shown in Fig. 1. The arrangement is such that the labels during transfer by the suction head 20 to the point of application pass in tangential contact with the adhesive applying roll 27 and receive a coating of adhesive thereupon. Take-off means in the form of fingers or strippers 27^a is generally provided to prevent the labels from adhering to said roll 27.

As so far described, the machine may be of any well known and conventional type, the illustrated construction having been selected merely to enable the novel label applying mechanism which is described hereinafter to be easily and fully understood.

The novel mechanism consists of a support, which, as illustrated in Figs. 1 to 4 inclusive, may be in the form of a table 29 of predetermined dimensions and shape and carried by a member 30; preferably the table 29 is detachably secured upon the member 30, for instance, by means of a bracket 31 and screws or bolts 32. To provide for the accommodation of elements and articles of different types and dimensions, the table 29 is vertically adjustable as by slidably mounting the member 30 in a guide bracket 33 suitably positioned on the frame 10 of the machine; a clamping plate 34 and clamping screws 35 or their equivalent serve to clamp the member 30 against movement relatively to the guide bracket 33 and to thereby fix the table 29 in an adjusted position.

In practice the application of labels to elements or articles having inherent characteristics as to shape and type have presented difficulties, this being specially true in the case of hollow elements such as box bodies or box covers to which labels are to be applied at some particular part of their surfaces. These difficulties are overcome in the instant case by providing the mechanism with means for accurately locating the elements or articles on the support or table in label receiving position. Furthermore, the application of labels at predetermined parts of the surfaces of hollow elements or articles is greatly facilitated by providing the mechanism with means for resisting the pressure developed by the label applying means and thereby preventing collapse of said

elements or articles in the operation of applying labels thereto.

The means for locating the articles or elements, for instance, rectangular box covers *a*, in predetermined label-receiving position upon the support or table 29, consists of a positioning device 36 arranged to provide a right-angle recess for the accommodation of a corner of the box cover *a* as indicated in Fig. 3. It will be understood that the device 36, instead of providing a right-angle recess, may be otherwise constructed in dependence upon the shape and nature of the elements or articles to be labeled. In any case, the device 36 may be secured to or form part of a carrying-plate 37 which is mounted upon an angle-bar 38 and is provided with a slot 39 and bolt 40 to enable the device 36 to be adjusted to different positions and fixed therein. To increase the range and variety of adjustment of the device 36 the depending flange of the angle-bar 38 may include a slot 41 for the accommodation of set-screws 42 whereby said angle-bar 38 is adjustably mounted upon a supporting bracket 43. To still further increase the range and variety of adjustment of the device 36 the supporting bracket 43 is slidably mounted upon a supporting bar 44 which itself is fixed in place upon a stationary bracket 45 by means of screws or bolts 46 as shown in Fig. 2; a set screw 47 or the like serves to secure the supporting bracket 43 in place upon the supporting bar 44.

The means for resisting the pressure developed by the label applying means on the box cover *a* or its equivalent, comprises a pressure resisting member or head 48 carried by a plunger 49 and preferably fastened in place thereon by means of screws or bolts 50 so as to be readily detachable. The plunger 49 is vertically slidable in guide bearings 51 which, as shown in Fig. 1, may comprise parts of the guide bracket 33; the vertical movements of the plunger 49 correspondingly move the member or head 48 to and from its operative position, the table 29 being provided with an opening 52 for the passage of the head 48 during the aforesaid operations.

Any suitable means may be provided for automatically operating the plunger 49 and head 48 in vertical directions in operative synchronism with the label applying means. For instance, as shown in Fig. 1, the plunger 49 may rest upon one arm of a bell-crank lever 53 pivoted at 54 on the frame 10 and having its other arm provided with a roller 55 in rolling contact with a cam 56. The latter is fixed upon a shaft 57 journaled in the frame 10 and operated in any convenient manner to produce the desired results. A spring 58 has its one end fastened at 59 to the plunger 49 and its other end connected with a stationary eyelet 60, and serves to yieldingly maintain the plunger 49 in engagement with the bell-crank lever 53 and the roller 55 of the latter in contact with the cam 56. The arrangement is such that the member or head 48 is located in proper vertical registry with the label applying means as exemplified by the suction head 20 and the pressure member 22, so as to most efficiently resist the label applying pressure developed thereby, as will appear more fully hereinafter.

In describing the operation of the novel mechanism, it will be assumed that the labeling machine is being used for applying small labels to rectangular box covers at one corner of the label receiving surface thereof.

Under such conditions, the positioning device 36

is adjusted in a predetermined position dependent upon the dimensions of the box covers *a* and the point thereon at which the labels are to be located; in other words, when the device 36 has been fixed in its adjusted position, it is simply necessary to place one corner of the cover *a* in the right-angle recess of the device 36 in order to accurately locate the cover *a* on the table 29 in the predetermined label receiving position as shown, for instance, by dotted lines in Fig. 3. It will be understood that during the placing of the covers *a* in position upon the table 29, the head 48 is located in the opening 52 below the upper surface of the table 29 so as not to interfere with the aforesaid operations.

As the operation of the labeling machine proceeds, the carriage 13 is reciprocated on the rail 14 and, at one terminal of the reciprocation, the suction head 20 is actuated to lift a terminal label *A* from the stack in the hopper 11 and then to transfer it to the other terminal of said reciprocation, that is, to the point of application. During its transfer from the stack to the application point, the label *A* carried by the suction head 20 is passed over and in tangential engagement with the adhesive applying roll 27 and thus receives a coating of adhesive therefrom.

When the label *A* reaches the aforesaid applying position, the suction head 20 is depressed to bring the adhesive coated surface of said label *A* into contact with the label receiving surface of the box cover *a*. Either coincidentally with the aforesaid initial application of the label *A* to the box cover *a*, or preferably just prior thereto, the bell-crank lever 53 is operated by the cam 56 to lift the plunger 49 against the tension of the spring 58 and to correspondingly raise the head 48 to the operative position illustrated in Figs. 1 and 2. In any case, the head 48 will support the label receiving surface of the cover *a* from below and in registry with the point at which the label is to be applied, at the moment when the suction head 20 initially applies the label *A* to the cover *a*. As the operation of the labeling machine proceeds, the suction in the suction head 20 will be relieved to release the label *A* and permit it to adhere, without interference, to the box cover *a*, and the suction head 20 will then be raised and shifted into position to pick up another terminal label *A* from the stack in the hopper 11. In proper sequence of operation the pressure member 22 is actuated to develop a pressure upon the previously applied label whereby the latter is caused to smoothly and firmly adhere to the cover *a*. The pressure developed upon the box cover *a* by the pressure member 22 during the aforesaid operative steps, will be efficiently resisted by the head 48 which at this stage still occupies its operative position to support the top of the cover *a* from below in registry with the applied label *A*.

The box cover *a* or its equivalent, is thereby protected against collapse and other injury and at the same time the application of the label *A* to the box cover *a* or its equivalent, is materially improved and facilitated. When the application of the label *A* has been completed, the cam 56 will permit the bell-crank lever 53 to be pivotally actuated and the plunger 49 to be moved downwardly by the action of the spring 58 to lower the head 48 to its inoperative position below the upper surface of the table 29. The labeled cover *a* may then be removed without interference and another cover *a* readily placed in position on the table 29 in label receiving

position whereupon the operations described above are repeated.

It will be noted that the support or table 29 may be raised or lowered to different set positions in order to properly accommodate articles or elements of different dimensions, as for instance covers *a* of varying depths, and to position the same in place to be properly acted on by the label applying means and the head 48. Similarly, the device 36 may be adjusted in a variety of ways to meet the requirements of different types of articles or elements to which labels are to be applied.

The arrangement illustrated in Figs. 5 and 6 exemplifies a form of the novel mechanism designed to support articles or elements having special inherent characteristics as to shape and type which present difficulties in the accurate positioning of said articles or elements in label receiving position. In the specific construction disclosed in Figs. 5 and 6, the support 29^a is shown in a form designed to support cylindrical articles such as cans, bottles and the like, in position to receive the labels; as shown in Fig. 6, the support 29^a is provided with a converging recess 29^b for the accommodation of a bottle *a'* or its equivalent.

As in the form first described, the support 29^a is carried by a member 30^a corresponding to the member 30 of the form first described and likewise mounted for vertical adjustment for instance, in a guide bracket similar to the guide bracket 33 of Figs. 1 and 2.

In the form now being described, the means for locating the articles or elements, such as the bottle *a'*, in predetermined label-receiving position upon the support 29^a comprises a positioning device 36^a slidably mounted on the member 30^a which is provided with a slot for this purpose. The device 36^a may be fixed in an adjusted position in any conventional manner as by means of a set screw 48^a.

In practice the positioning device 36^a is adjusted to a predetermined position dependent upon the dimensions of the bottles *a'* or their equivalent, and the point thereon at which the labels are to be located. It will be noted that in its operative position the device 36^a projects upwardly beyond the recess 29^b and accordingly provides a stop against which the bottoms of the bottles *a'* are placed; in this way the bottles *a'* are accurately positioned on the support 29^a in proper label receiving position without difficulty and without the necessity for exercising any particular care to secure the desired result.

The application of the labels to the bottles *a'* or their equivalent, is accomplished in the same way as previously described herein with respect to the machine shown in Figs. 1 and 2.

It will be noted that the support 29^a is capable of being raised and lowered to different set positions to properly locate articles or elements of different dimensions in label receiving relation to the label applying means. Similarly the device 36^a may be selectively set to automatically locate the articles or elements in predetermined label receiving relation to the label applying means.

In all of its forms the novel mechanism is simple in construction and efficient in operation and serves to materially increase the labeling speed of machines in which said mechanism is embodied. The mechanism may be incorporated in existing labeling machines without difficulty

and is capable of being efficiently used in labeling machines of varying construction.

Various changes in the specific forms shown and described may be made within the scope of the claims without departing from the spirit of the invention.

I claim:

1. In a labeling machine, the combination of means for applying labels to hollow elements, a support for supporting said hollow elements in label receiving position, resisting means on said support adjustable to an operative position beyond the supporting surface thereof for internal engagement with said hollow elements to resist the label applying action of said label applying means, and means for automatically shifting said resisting means to and from its operative position.

2. In a labeling machine, the combination of means for applying labels to hollow elements, a support for supporting said hollow elements in label receiving position, resisting means on said support adjustable to an operative position beyond the supporting surface thereof for internal engagement with said hollow elements to resist the label applying action of said label applying means, means for shifting said resisting means to and from its operative position, and a positioning device on said support for external engagement with said hollow elements to position the latter on said support in predetermined relation to said resisting means.

3. In a labeling machine, the combination of means for applying labels to hollow elements, a table for supporting said hollow elements in label receiving position and provided with an opening, a resisting head movable upwardly through said opening to an operative position beyond the supporting surface of said table for internal engagement with said hollow elements to resist the label applying action of said label applying means, and means for shifting said head vertically to and from its operative position.

4. In a labeling machine, the combination of means for applying labels to hollow elements, a table vertically adjustable to different levels for supporting said hollow elements in label receiving relation to said label applying means, said table being provided with an opening, a resisting head movable upwardly through said opening to an operative position beyond the supporting surface of said table for internal engagement with said hollow elements to resist the label applying action of said label applying means, a plunger carrying said head, and means for reciprocating said plunger vertically to shift said head to and from its operative position.

5. In a labeling machine, the combination of means for applying labels to predetermined portions of a given surface of hollow elements having an open end, a support on which said elements rest on said open end, resisting means associated with said support and adjustable to an operative position relatively thereto into said elements for internal engagement therewith in registry with said predetermined portions of said surface to resist the label applying action of said label applying means, and means for adjusting said resisting means to and from said operative position.

6. In a labeling machine, the combination of means for applying a label to a predetermined restricted portion of a given surface of a hollow element, means for supporting said hollow element in label receiving position, resisting means associated with said support for internally engaging said element in substantially conterminous registry with said predetermined restricted portion of said surface to resist the label applying action of said label applying means, and means for predetermining the position of said element on said support to thereby automatically bring said predetermined restricted portion of said given surface into operative registry with said label applying means and said resisting means.

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