Aug. 26, 1941. G. W. VON HOFE 2,253,923

LABEL APPLYING MACHINE

Filed Dec. 21, 1940

Fig. 1.

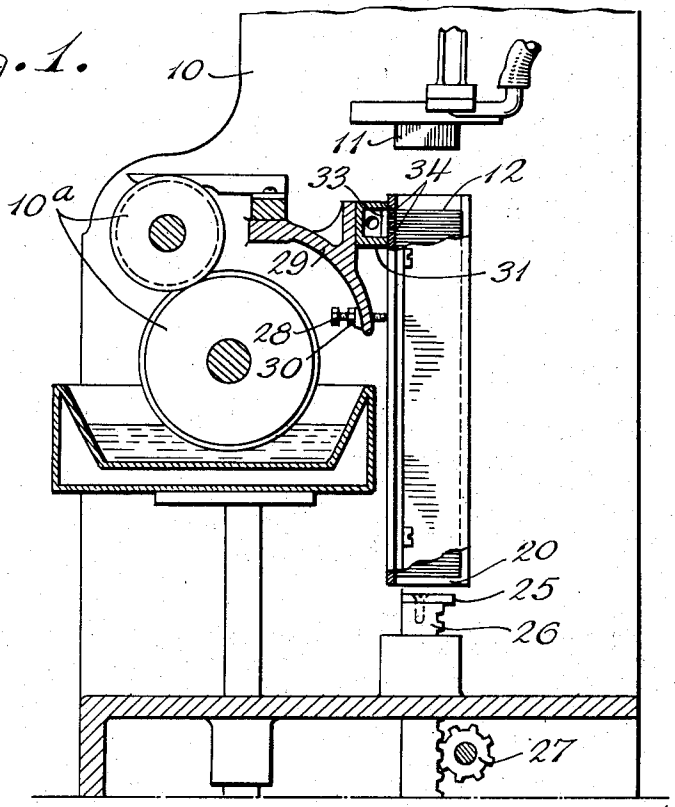


Fig. 4.

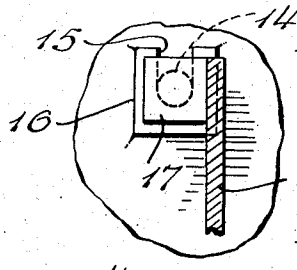


Fig. 2.

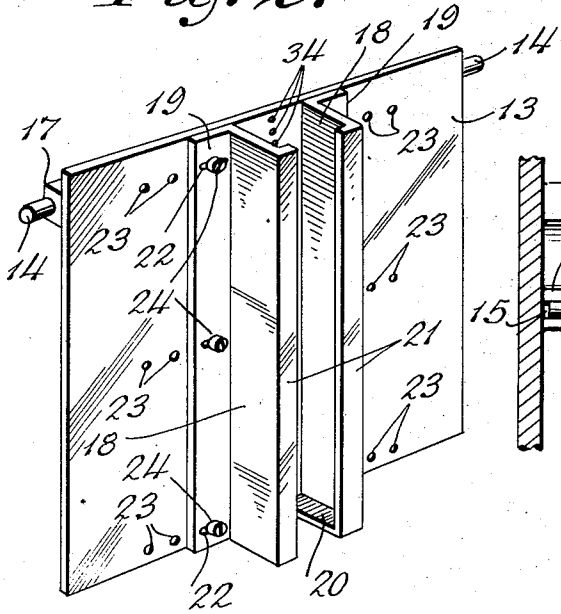
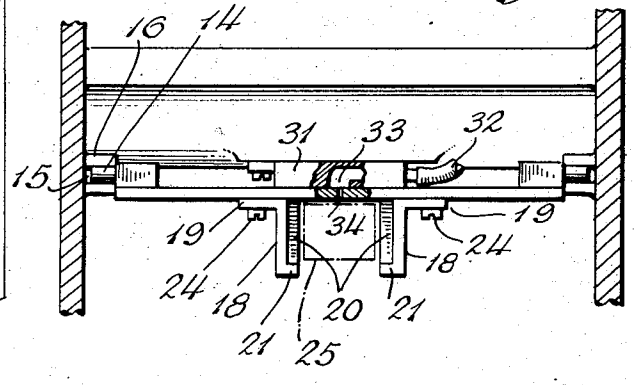


Fig. 3.



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LABEL APPLYING MACHINE

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12 Claims. (Cl. 271—61)

The invention relates to label applying machines and more particularly to machines of the type in which successive terminal labels are removed from a supply stack for application to the articles for which said labels are designed. The object of the invention is to provide a novel means for holding supply stacks of labels in position in the machine for removal by associated mechanism in an operative cycle of said machine. The invention contemplates primarily the provision of a novel label hopper and a novel mounting arrangement therefor whereby replenishment of supply stacks of labels in the machine is facilitated to a maximum degree. Other objects will appear from the description hereinafter and the features of novelty will be pointed out in the claims.

In the accompanying drawing, which illustrates an example of the invention without defining its limits, Fig. 1 is a fragmentary sectional elevation of a labeling machine with the novel label holding means embodied therein; Fig. 2 is a perspective view of the label holding means itself; Fig. 3 is a plan view of the label holding means with parts of the labeling machine in section, and Fig. 4 is an enlarged detail view showing the method of suspending the label holding means.

The label applying machine per se may be of any conventional type and construction and generally includes a frame 10 on which the elements of the machine including the operating instrumentalities thereof are mounted in the customary manner. The latter may be of any well-known type and arrangement and include all the elements commonly embodied in label applying machines or specific to any special form thereof. Such instrumentalities, as shown in Fig. 1, may include label transporting and applying means comprising a suction head 11 whereby successive terminal labels 12 are removed from the supply stack and conveyed thereby to the label applying station of the machine for application to the articles thereat. In transporting the labels, the latter may be passed in adhesive receiving relation to adhesive applying means 10a of customary type whereby said labels are provided with a coating of adhesive on one surface in the conventional manner.

In many existing types of such label applying machines the supply stacks of labels 12 are contained in hoppers so located as to properly cooperate with the label transporting and applying means such as for instance the suction head 11 and its associated elements. Because of the arrangement and location of such hoppers which generally are fixed in place in the machine, the operation of replenishing the labels therein involves difficulties and requires the labeling machine to be shut down while replenishment takes place. With the novel arrangement described hereinafter these disadvantages and difficulties are avoided and replenishing of labels may be accomplished in a minium of time and with a minimum of effort and without requiring the operation of the machine to be discontinued.

As illustrated in the drawing the novel label holding means comprises a supporting or suspending member shown in the form of a plate 13 whereby the label hopper is suspended in operative position in the machine. The means for removably mounting said plate 13 in the machine may be of any suitable type. For instance the plate 13 may be provided with trunnions 14 located contiguous to the upper edge of said plate 13 and projecting in opposite directions therefrom. The trunnions 14 are arranged to fit into the bearing recesses 15 of bearing blocks 16 located at the proper points in the machine and fixed on the frame 10 thereof in any convenient manner. Preferably the trunnions 14 are located in off-set relation rearwardly of the plate 13 for instance by means of blocks 17 suitably secured upon the rear face of said plate 13 as illustrated in Fig. 2; the purpose of this arrangement will be more fully pointed out hereinafter.

The supporting member or plate 13 carries a label hopper arranged to contain the supply stack of labels 12, said hopper preferably being adjustable on said plate for accommodating labels of various dimensions. In its illustrated form the hopper comprises side members 18 provided with longitudinal base flanges 19 projecting outwardly from said side members 18 in surface engagement with the supporting plate 13 as shown in Figs. 2 and 3. The side members 18 also include supporting flanges 20 which project toward each other from the lower ends of the side members 18 for supporting the supply stack of labels 12 from below. In addition longitudinal flanges 21 extend along said side members 18 from the supporting flanges 20 and project toward each other to maintain said supply stack of labels 12 in the hopper.

To fasten the hopper in place on the plate 13 in a manner to enable the side members 18 and the associated flanges 20 and 21 to be adjusted toward and away from each other, the base mem-

bers 19 are provided with slots 22 arranged to register with apertures 23 formed in the plate 13 and preferably screwthreaded for the threaded accommodation of screws 24 passing through the slots 22 and whereby the side members 18 and the associated flanges 20 and 21 are fixed in place in parallel relation to each other on the plate 13. To further increase the range of adjustment of the hopper and to enable its position on the plate 13 to be varied if desired, the apertures 23 are arranged in associated groups at predetermined spaced points of said plate 13 as illustrated in Fig. 2. With this arrangement the side members 18 may not only be spaced apart to a maximum extent, but in a given spacing relation may be located at different points of said plate 13 if for any reason this should be desirable. Generally speaking the hopper consisting of the side members 18 and their associated flanges is located at the median point of said plate 13 as shown in Fig. 2. In the preferred arrangement the parts are dimensioned so that the supporting flanges 20 and the lower edges of the side members 18 are substantially flush with the lower edge of the supporting plate 13, and so that the upper edges of the side members 18 and their associated flanges are approximately flush with the upper edge of said plate 13.

Because of the rearwardly off-set relation of the trunnions 14, the plate 13 when suspended in the bearing recesses 15 and the hopper carried thereby normally tend to assume an inclined suspended position, the purpose of which will appear more fully hereinafter. In the operation of the labeling machine the supply stack of labels 12 is however required to occupy a position in proper operative relation to the label transporting and applying means as exemplified by the suction head 11 and to the mechanism whereby the supply stack of labels 12 is periodically raised, as exemplified by the elevator member 25 carried by the rack 26, and operating pinion 27 which meshes with said rack 26. Means is accordingly provided which co-operates with the supporting plate 13 to maintain the latter and the label hopper carried thereby in the proper and predetermined suspended position.

The means referred to is shown in Fig. 1 in the form of a stop screw 28 mounted in screw-threaded connection with a suitable bracket 29 to constitute an adjustable stop, said bracket 29 being fixed in the frame 10 in any convenient way. A lock nut 30 may serve to secure said stop screw 28 in an adjusted position against unintentional displacement.

With certain types of labels 13, as for instance labels pre-coated with thermo-plastic adhesives, it is the practice to heat such labels to soften the adhesive coatings thereof for adhesively attaching such labels to articles, the heating being effected for instance by means of a heated suction head 11. Under such conditions it is desirable to separate the terminal labels 13 at the top of the supply stack in order to prevent the heat from the suction head 11 or its equivalent from passing down into the supply stack and causing the labels therein to adhere together and thereby interfere with the removal of individual successive terminal labels 13 from said stack during an operative cycle of the machine.

For this purpose an air chamber 31 may be suitably mounted on the bracket 29 as shown in Figs. 1 and 3, and may be connected for instance by means of a hose or the like 32 with any convenient and suitable source of air under pressure. The air chamber 31 is provided with an air vent 33 and preferably is of rectangular cross-section with said air vent 33 located in its upright front wall as shown in Figs. 1 and 3. In such arrangement the supporting plate 13 when suspended in the machine is located in co-operative surface relation with the upright front wall of the air chamber 31 and is provided with air inlets 34 in communicating registry with the air vent 33 of said air chamber 31 as illustrated in Figs. 1 and 3. The air inlets 34 lead to the interior of the label hopper formed by the side members 18 and associated flanges, and preferably are located at different levels contiguous to the upper end of the supply stack of labels 12 as shown in Fig. 1.

In practice the labels 12 in the form of a supply stack are introduced into the hopper while the latter with the plate 13 is outside of the machine and separated and disconnected therefrom. At this stage the supply stack of labels 12 is supported from below by the supporting flanges 20 or in other words rests upon said flanges 20 in contact with the plate 13 and is contained between the side members 18, the longitudinal flanges 21 serving to maintain said stack of labels in the hopper. When the supply stack of labels 12 has been introduced into the hopper, the unit consisting of the plate 13, side members 18 and associated elements is inserted into the machine and suspended therein by placing the trunnions 14 in the bearing recesses 15 of the bearing blocks 16. Because of the rearward off-set location of said trunnions 14, the plate 13 automatically swings into engagement with the stop screw 28 and into co-operative surface relation with the air chamber 31 if the latter is embodied in the machine. In such case the mere suspension of the aforesaid unit in the machine will also automatically bring the air inlets 34 into communicating registry with the air vent 33 of the air chamber 31 and thereby bring the interior of the label hopper into communication with the interior of the air chamber 31 and with the source of air under pressure with which it is connected. With this arrangement jets of air will pass through the air inlets 34 into the hopper during an operative period of the machine and will form air cushions therein whereby the terminal labels 12 at the upper end of the supply stack are floated in separated relation as illustrated in Fig. 1.

It will be understood that prior to the introduction and suspension of the plate 13 and its hopper with the supply stack of labels 12 therein, the elevator member 25 has been adjusted to a lowered position as shown in Fig. 1 in which it does not interfere with such introduction and suspension of said plate 13 and its hopper. Subsequent to such introduction and suspension the elevator member 25 is raised into the space between the supporting flanges 20 or into the lower open end of the hopper and into contact with the lower end of the supply stack of labels 12 therein.

As the operation of the machine proceeds successive terminal labels 12 will be removed from the upper end of the supply stack in the hopper and will be transported to the label applying station of the machine for application to articles properly supported thereat in label receiving position. Periodically the elevator member 25 will be raised by the rack 26 and pinion 27 or equiv-

alent mechanism to correspondingly raise the supply stack of labels 12 in the hopper and thereby maintain the upper end of said stack in proper co-operative relation to the suction head 11 or its equivalent.

When the labels 12 in a given supply stack have been exhausted the elevator member 25 is returned to its lower position below the lower end of the hopper and the plate 13 with the side members 18 and associated elements comprising the hopper therein is simply lifted out of or removed from the machine and its hopper is replenished with a new supply stack of labels 12 and together with its supporting plate 13 is returned to the machine in proper suspended position therein. In order to conserve time another hopper previously filled with a supply stack of labels 12 and mounted on its own plate 13 may be substituted in the machine for an empty hopper and its associated plate 13 if desired. In either case adequate supply stacks of labels 12 may be maintained in the machine at all times and interruptions in the operation of said machine because of the absence of labels or replenishment thereof are entirely avoided.

By loosening the screws 24, the side members 18 may be adjusted toward and away from each other within the limits of the slots 22 to accommodate labels of varying dimensions. For increasing the range of adjustment the screws 24 may be removed to permit the slots 22 to be set in registry with other groups of apertures 23 after which the screws 24 may be replaced as will be obvious. In addition the side members 18 in given relation to each other and in co-operation with predetermined groups of apertures 23 may be set in different positions on the plate 13 to vary the position of the hopper thereon if this should be desirable.

As illustrated in the drawing the hopper and its supporting plate and associated elements from a unit which is easily accessible in the machine and is readily handled for suspension therein and removal from said machine at will. The operation of suspending, removal and replacing of said unit may accordingly be accomplished in a minimum of time with little effort and without requiring any complicated adjustment and setting or any particular skill on the part of the attendant.

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. A label holding means for label applying machines, comprising a supporting plate provided with associated groups of apertures at predetermined spaced points, trunnions whereby said plate is removably suspended in said machine, side members located in spaced surface parallelism to constitute a hopper for containing a supply stack of labels, supporting flanges projecting toward each other from said side members for supporting said supply stack of labels from below, longitudinal flanges extending lengthwise of said side members and projecting toward each other therefrom to maintain said supply stack of labels in said hopper, base flanges projecting outwardly from said side members in surface engagement with said plate and provided with slots arranged to register with the apertures of each of said groups, and fastening screws extending through said slots into threaded engagement with the apertures of a given group whereby said side members are adjustable relatively to each other within the limits of said slots and whereby the location of said side members on said supporting plate may be selectively varied.

2. A label holding means for label applying machines, comprising a supporting plate provided with associated groups of apertures at predetermined spaced points, trunnions whereby said plate is removably suspended in said machine, side members located in spaced surface parallelism to constitute a hopper for containing a supply stack of labels, means associated with said side members for supporting said supply stack of labels and for maintaining the latter in said hopper, base flanges extending lengthwise of said side members in surface engagement with said plate, and means co-operating with said groups of apertures for adjustably mounting said side members relatively to each other and for selectively locating said side members on said supporting plate at varying points thereof.

3. A label holding means for label applying machines, comprising a supporting plate provided with associated groups of apertures at predetermined spaced points, trunnions whereby said plate is removably suspended in said machine, side members located in spaced surface parallelism to constitute a hopper for containing a supply stack of labels, means associated with said side members for supporting said supply stack of labels and for maintaining the latter in said hopper, and means cooperating with said apertures for adjustably mounting said side members relatively to each other and for selectively varying the location thereof on said supporting plate.

4. A label holding means for label applying machines comprising a supporting member, means for removably suspending said member in said machine, a label hopper located on said supporting member for containing a supply stack of labels, and means whereby said hopper may be adjusted to accommodate labels of varying dimensions and whereby the location of said hopper on said supporting member may be varied.

5. A label holding means for label applying machines comprising a supporting member, means for removably mounting said member in said machine, a label hopper carried by said supporting member for containing a supply stack of labels, and means whereby said hopper may be adjusted to accommodate labels of varying dimensions.

6. A label holding means for label applying machines comprising a supporting member, means for removably mounting said member in said machine, a label hopper carried by said supporting member for containing a supply stack of labels, and means whereby the location of said hopper on said supporting member may be varied.

7. A label holding means for label applying machines comprising an upright label hopper for containing a supply stack of labels, said hopper being adjustable to accommodate labels of varying dimensions, and co-operating devices mounted on said machine and hopper respectively and detachably engaged with each other for removably suspending said hopper in said machine.

8. In a label applying machine, the combination of bearing blocks provided with bearing recesses, a supporting plate, trunnions on said plate mounted in said bearing recesses for removably suspending said plate in said machine, a label

hopper adjustably fixed upon said plate and suspended therewith in said machine, a bracket fixed on the frame of said machine, and an adjustable stop on said bracket co-operating with said supporting plate to maintain the suspended position of said hopper.

9. In a label applying machine, the combination of a bracket fixed on the frame of the machine, an air chamber on said bracket connected with a source of air under pressure and provided with an air vent, bearing blocks having bearing recesses, a supporting plate having air inlets, trunnions on said supporting plate mounted in said bearing recesses for removably suspending said plate in said machine in contact with said air chamber and with the air inlets of said plate in communicating registry with the air vent of said chamber, and a label hopper fixed on said plate in open communication with said air inlets.

10. In a label applying machine, the combination of an air chamber having an upright wall provided with an air vent, a label hopper provided with air inlets, and means whereby said hopper is pivotally suspended in associated relation with said air chamber so as to normally swing into surface engagement with said upright wall thereof whereby the air inlets of said hopper are automatically adjusted into communicating registry with the air vent of said air chamber.

11. In a machine for applying labels, the combination of suspending bearings fixed in said machine, a hopper for a supply stack of labels, and suspending means on said hopper co-operating with said suspending bearings in detachable engagement therewith for removably suspending said hopper in said machine in depending relation to said bearings.

12. In a machine for applying labels, the combination of suspending bearings fixed in said machine, a hopper for a supply stack of labels, suspending means on said hopper co-operating with said suspending bearings in detachable engagement therewith for removably suspending said hopper in said machine in depending relation to said bearings, and means in said machine co-operating with said suspending means to maintain the hopper in a predetermined depending position.

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