Sept. 14, 1948. W. HOPPE 2,449,298

METHOD OF AND MACHINE FOR APPLYING LABELS

Filed Aug. 9, 1946

Fig. 2.

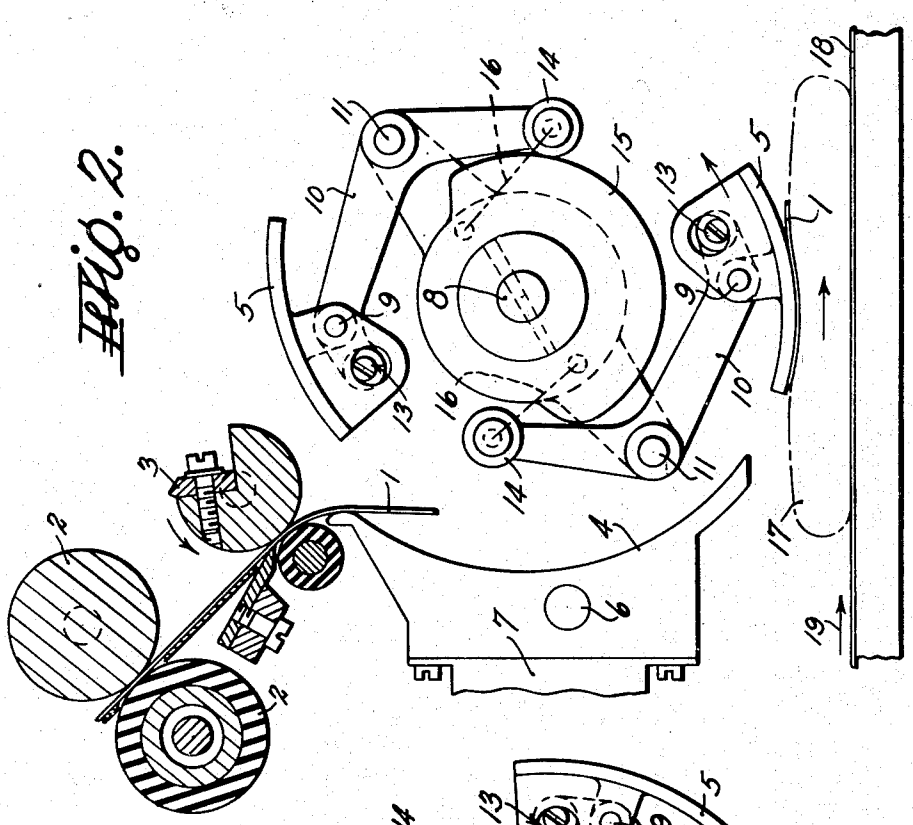
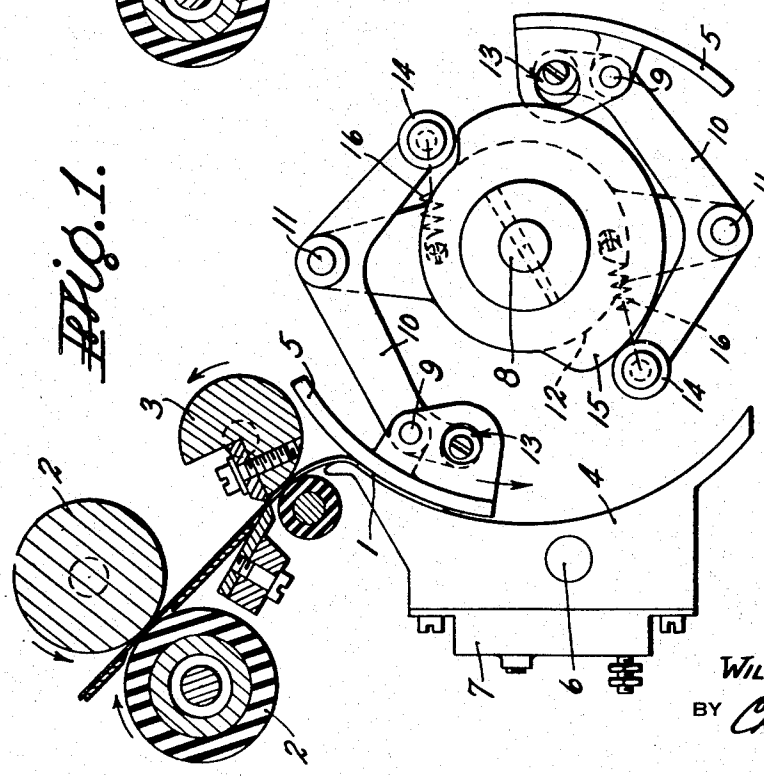


Fig. 1.



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METHOD OF AND MACHINE FOR APPLYING LABELS

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4 Claims. (Cl. 216—29)

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This invention relates to a method and an apparatus for applying heat sealing labels to articles, wrapped packages, or wrapper webs, which for convenience will be referred to generically as articles. It has in the past been common practice to press such labels in place by means of a stationary or movable heated member. In cases where the label is printed there is a tendency in this prior practice for the heat to cause smearing of the ink, particularly when the labeled package is caused to slide along a stationary heated member. Furthermore, since in this prior process the heat had to pass through the material of the label before reaching the thermoplastic coating, a high temperature had to be used in order that softening of the coating could occur within the time available on modern high speed labeling machines. In order to reduce the amount of heat which had to be transmitted through the body of the label it has also been proposed to apply the label to the end folds of the package while the latter are still hot from the prior heat sealing to which they have been subjected. This is not always convenient or possible, and in any case does not materially reduce the heat necessary. Neither is it applicable to package surfaces which have not been previously heat sealed.

I have found that by passing the label over a smooth heated shoe with the thermoplastic coating on the label in direct contact with the shoe and transferring the label directly to the package the degree of heat can be reduced greatly and that it is not necessary to preheat the package. The heat can be kept just above that necessary to soften the thermoplastic coating, so that there is no danger of carbonization and but little heating of the printed side of the label. Contrary to expectations, it was found that there is no tendency for the thermoplastic to collect upon the shoe beyond the formation of a fluid coating which assists in free sliding of the label across the shoe. Furthermore, adhesion of the label to the package is instantaneous, and no subsequent pressing and cooling step is necessary. The invention is particularly useful for soft packages, which have hitherto been very difficult to label successfully.

The way the method is carried out, and one form of apparatus suitable for its practice, is shown in the accompanying drawings, in which

Fig. 1 is a detail showing the label just starting its traverse across the shoe; and

Fig. 2 is a similar view showing the label being applied to the article.

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The label 1 is delivered from any suitable supply, such as a magazine or a web feed, here shown as comprising feed rolls 2 and a cutter 3. From whatever source received, the label is grasped between a shoe 4 with a concave circular face and a pad 5 shaped to mate with the shoe. The shoe 4 is provided with an electric or other heater 6 preferably controlled by an adjustable thermostat 7 as is well understood in the art. The pad here shown as one of a pair rotating upon a shaft 8, is pivoted at 9 to a lever 10 itself pivoted at 11 on a hub 12 fixed on the shaft. The pad also has a pin and slot connection 13 with the lever to prevent excess motion when the pad is not in engagement with the shoe. The end of the lever remote from the pad has a cam roll 14 engaging a stationary cam 15 to keep the pad away from the shoe until in position to engage the label firmly. Contact of the pad, label and shoe is maintained by a spring 16 during the traverse of the label across the shoe. The feeding mechanism is set up so that a sufficient length of the label projects between the pad and shoe to insure a good grip, as shown in Fig. 2.

It will be noted that no positively acting gripper is necessary to carry the label past the shoe and into contact with the package. This is a definite advantage of the process, since a positive gripper leaves the gripped portion of the label unsoftened by the heat. This is possible because of the lubricating action of the molten thermoplastic upon the shoe, the coefficient of friction between the label and pad being much higher than that between the label and the lubricated shoe. If desired, the surface of the pad may be roughened or made of frictional material, but an ordinary metal surface will prevent slipping in most cases.

The pad carries the label directly from the end of the shoe against the package 17 and rolls it in place as shown in Fig. 2, the package being advanced as by a conveyor 18 in the direction of arrow 19 at the same linear speed as the label. Since the package is cool and only a slight amount of heat is retained in the body of the label, cooling of the thermoplastic is practically instantaneous and no subsequent cooling or pressing operations are required.

I claim:

1. A method of applying to an article a label having a thermoplastic surface which comprises passing the label over a heated member with the thermoplastic surface of the label in direct contact with said heated member to soften the thermoplastic and pressing the softened thermoplastic surface directly against the package.

2. A device for applying to an article a label having a thermoplastic surface which comprises a shoe having a surface heated to a temperature sufficient to soften the thermoplastic, and means for carrying the label across the shoe with its thermoplastic surface in direct contact with the shoe and thence into contact with the article.

3. A device for applying to an article a label having a thermoplastic surface which comprises a shoe having a concave cylindrical surface, means for heating the shoe to a temperature sufficient to soften the thermoplastic, a pad having a convex cylindrical surface mating with the cylindrical surface of the shoe, means for rotating the pad around the axis of said surface of the shoe, means for feeding a label between the shoe and the pad with its thermoplastic surface adjacent the shoe whereby the label is carried across the shoe and the thermoplastic is softened, and means for carrying an article tangentially to the path of the pad whereby the heated thermoplastic surface of the label is pressed against the article.

4. A device for applying to an article a label having a thermoplastic surface which comprises a shoe having a concave cylindrical surface, means for heating the shoe to a temperature sufficient to soften the thermoplastic, a pad having a convex cylindrical surface mating with the cylindrical surface of the shoe, means for rotating the pad around the axis of said surface of the shoe, means for feeding a label between the shoe and the pad with its thermoplastic surface adjacent the shoe, means for holding the pad within the radius of the shoe surface until the label is between the shoe and the pad and then moving the pad outwardly to engage the label and press it against the shoe, whereby the label is carried across the shoe and the thermoplastic is softened, and means for carrying an article tangentially to the path of the pad whereby the heated thermoplastic surface of the label is pressed against the article.

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