

March 21, 1939.

R. O. WILSON

2,151,000

METHOD OF APPLYING BINDINGS TO CONTAINER MOUTH COVERS

Original Filed Aug. 24, 1934

Fig. 1.

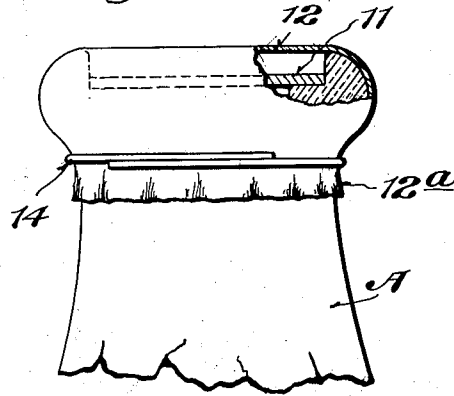
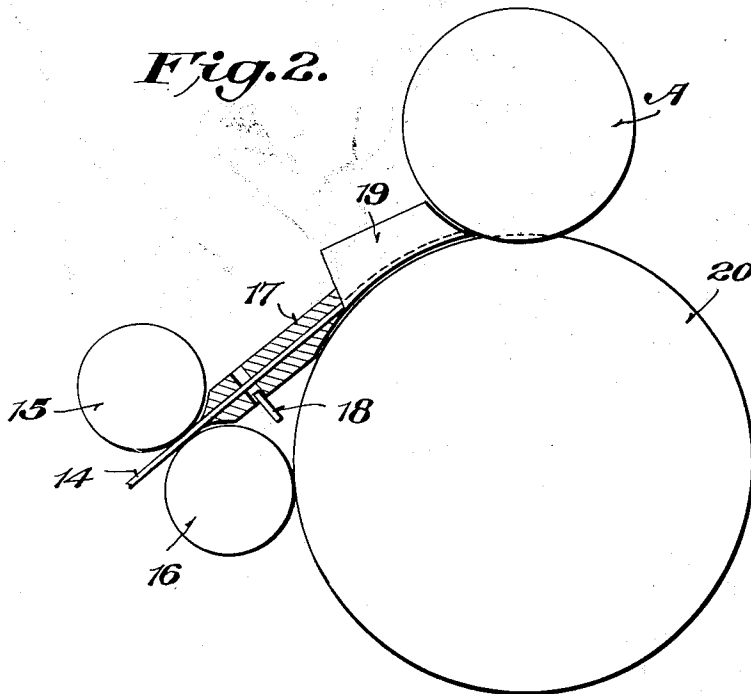


Fig. 2.



Inventor

Ray O. Wilson,

By *Raymond J. Blakeslee*

Attorney

UNITED STATES PATENT OFFICE

2,151,000

METHOD OF APPLYING BINDINGS TO
CONTAINER MOUTH COVERS

Ray O. Wilson, Los Angeles, Calif.

Continuation of application Serial No. 741,228,
August 24, 1934. This application May 29,
1936, Serial No. 82,634

5 Claims. (Cl. 226—83)

This invention relates to a method of and means for applying pre-waxed fastening strings or tapes about the skirt portions of protective closures or covers for the mouths of milk bottles and other containers, and has generally in view to provide a method and means whereby pre-waxed fastening strings or tapes may be applied to and secured upon the skirt portions of protective covers for container mouths rapidly and economically and in such manner as to be readily removable manually, yet to remain secure against the action of all ordinary forces and contacts tending to loosen the same.

The present application is a continuation of applicant's co-pending application, Serial No. 741,228, for Closure for bottles and other receptacles, filed August 24, 1934.

With the foregoing general purposes in view, the invention consists in the novel method, and in the features of novelty of the means employed in practicing said method, as will be hereinafter more fully described, illustrated in the accompanying drawing and defined in the appended claims.

In the drawing:

Fig. 1 is a side elevation, partly in section, of the top portion of a milk bottle showing a protective closure or cover for the mouth thereof fastened thereon in accordance with the invention; and

Fig. 2 is a schematic view of apparatus employed in applying a pre-waxed fastening string or tape to the skirt of a protective cover as shown in Fig. 1 in accordance with the present method.

In Fig. 1, A designates the top portion of a milk bottle which is of usual construction and which is provided, as usual, with a closure disk 11 fitted into the mouth thereof.

To cover the mouth, the pouring lips and the upper portion of the neck of the bottle A, thereby to provide a highly sanitary package, a sheet 12 of paper, "Cellophane" or the like is disposed over the mouth of the bottle and is extended downwardly in the form of a skirt 13 over the pouring lips and the upper portion of the bottle neck and, in accordance with the present invention, is secured in place on the bottle by a string or tape 14 encircling the skirt 13 and binding the same against the bottle neck.

While skirted, protective covers for the mouths of milk bottles and other containers have been employed heretofore, they have not met with universal favor, despite their great desirability, primarily because of the prohibitive cost of securing them on the containers according to prior

methods and means and because the most economical securing means heretofore employed have not proved entirely reliable. For example, one of the most economical securing means heretofore employed comprised a strip embracing the skirt of the cover and adhesively united therewith or having overlapped, adhesively united end portions. It was found, however, that the adhesive softened and the strip became loose when moistened or wetted and that, therefore, a securing element depending upon any ordinary adhesive was entirely impracticable, especially in the milk bottling and distributing industry, because of the dampness of most milk bottling plants and because of the common practice of packing milk bottles in crushed ice. Most other securing means heretofore employed have been of prohibitive cost either inherently or because of the method and means for applying them.

According to the present invention the string or tape 14 prior to being applied to the skirt 13, is coated or impregnated with wax or equivalent material having the characteristics that it is impervious to water, dry and hard, or substantially dry and hard, at ordinary atmospheric temperatures, becomes soft or tacky and adhesive when subjected to heat and assumes its dry and hard, or substantially dry and hard, normal state immediately upon removal of heat therefrom. Obviously, such a pre-coated or pre-impregnated string or tape is more or less stiff in its normal state and may be manipulated in much the same manner as metal wire, which is of importance in practicing the present economical securing method because the string or tape may be fed by a pushing action and thereby the feeding mechanism may be greatly simplified, as compared with a feeding mechanism which would be required if it were necessary to effect the feed by a pulling action. This will be apparent from the obvious simplicity of the means schematically illustrated in Fig. 2 for effecting application of the string or tape to a bottle.

In Fig. 2, 15 and 16 designate a pair of string or tape feed rolls; 17 designates a guide tube through which the string or tape is fed by said feed rolls; 18 designates a knife for cutting off advanced predetermined lengths of the string or tape; 19 designates a heating element by which the string or tape is heated; and 20 designates an applicator roll.

As will be understood, the feed rolls 15, 16, the knife 18 and the applicator roll 20 may be driven in any suitable manner with which the present invention is not concerned. As will also be un-

derstood the said feed rolls, knife and applicator roll may be synchronized in any suitable manner with each other and with any suitable means for bringing bottles or other containers successively into operative relationship to the applicator roll and for rotating the bottles or containers, so that application of separate lengths of the string or tape to the skirts of the covers which have previously been applied to the bottles or containers in any known or suitable manner, may be practiced substantially continuously.

When a bottle or container A is disposed operatively with respect to the applicator roll 20, said roll is substantially in contact with the skirt 13 of the cover 12 on the bottle and the bottle is disposed adjacent to the heater 19. The applicator roll and the bottle are rotated in opposite directions such as to advance the string or tape from the heater 19 and to cause the string or tape to be wound about the closure skirt 13. As the string or tape passes through or along the side of the heater 19 the latter functions to soften the wax or other substance with which the string or tape is coated or impregnated, and immediately thereafter the applicator roll 20, which is a cold roll, presses the string or tape against the closure skirt 13 and the latter against the bottle neck. At the same time, said applicator roll, because of being a cold roll, tends to harden the wax or equivalent substance so that the string or tape becomes effectively adhesively united with the skirt 13 substantially immediately following its application thereto by the roll 20. The roll serves as ironing or pressing means for the waxed string or tape.

In practice it has been found that best results are obtained by rotating the cold roll 20 slightly faster than the bottle A during the initial stage of applying the string or tape 14. This results in the roll 20 sliding on the string or tape and pulling upon the same or subjecting it to tension, and also ironing the same into place upon the skirt 13, and additionally serves to prevent any sticking of the string or tape to said applicator roll. As shown in Fig. 1, the ends of the string or tape 14 are overlapped. They are, moreover, adhesively united with each other as well as with the skirt 13. During the later stages of application of the string or tape the speed of rotation of the roll 20 preferably is decreased or positive drive thereof terminated, and the speed of rotation of the bottle is relatively increased, so that the bottle rotates faster than the applicator roll. This results in a sliding action of the roll 20 on the string or tape which is the reverse of the sliding action first mentioned and which has the effect not only of ironing the last end portion of the string or tape against the skirt 13, but of again exerting a stretching action on the string or tape promoting constriction thereof about the skirt. That is to say, due to this stretching of the string or tape before the same has entirely cooled, its further subsequent cooling and consequent contraction or shrinking results in the same being drawn still more tightly about the skirt 13 and still tighter binding of the latter against the bottle neck. Thereby there is produced a tightly fitting and therefore highly sanitary cover.

Since the wax or equivalent substance with which the string or tape is coated or impregnated, is impervious to water, covers as applied in accordance with the present invention remain securely in place under conditions where the containers are exposed to moisture or water. On

the other hand, it is easy to loosen the covers for removal simply by picking one end of the string or tape loose and stripping the same from the skirt 13. Alternatively, one or both extreme end portions of the string or tape may be left loose to be conveniently grasped for stripping of the string or tape from the cover.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:

1. The method of applying a binding cord or tape, coated or impregnated with a substance which is substantially dry and hard at ordinary atmospheric temperatures and which becomes soft and adhesive when subjected to heat, about the skirt of a container mouth cover, which comprises heating the cord or tape to render the same adhesive, and passing the same between the container and a roll while rotating the container and roll, the latter at a higher peripheral speed than the container, thereby to cause the string or tape to be wound around and ironed against the cover skirt.

2. The method of applying a binding cord or tape, coated or impregnated with a substance which is substantially dry and hard at ordinary atmospheric temperatures and which becomes soft and adhesive when subjected to heat, about the skirt of a container mouth cover, which comprises heating the cord or tape to render the same adhesive, passing the same between the container and a roll while rotating the container and roll to cause the cord to be wound around and pressed against the cover skirt, and, during the last stage of the application, rotating the roll at a slower peripheral speed than the container to cause the string or tape to be stretched so that upon cooling and contraction thereof it is constricted tightly about the cover skirt.

3. The method of applying a binding string or tape, coated or impregnated with a substance which is substantially dry and hard at ordinary atmospheric temperatures and which becomes soft and adhesive when subjected to heat, about the skirt of a container mouth cover, which comprises heating the string or tape to render the same adhesive, passing the same between the container and a roll while rotating the container and roll, the latter initially at a higher peripheral speed than the container, thereby to cause the string or tape to be wound around and ironed against the cover skirt, and subsequently at a lower peripheral speed than the container, thereby to cause the string or tape to be stretched so that upon cooling and contraction thereof it is constricted tightly about the cover skirt.

4. The method of applying a binding cord or tape coated or impregnated with a substance which is substantially dry and hard at ordinary atmospheric temperatures and which becomes soft and adhesive when subjected to heat, about the skirt of a container mouth cover, which comprises heating the cord or tape to render the same adhesive, passing the same between the container and pressing and stretching means while rotating the container to cause the cord or tape to be wound around and pressed against the cover skirt, and, during the later stages of the application, reversing the direction of combined

pressing and stretching to cause the cord or tape to be stretched, so that upon cooling and contraction thereof it is constricted tightly about the cover skirt.

5 5. The method of applying a binding cord or tape coated or impregnated with a substance which is substantially dry and hard at ordinary atmospheric temperatures and which becomes soft and adhesive when subjected to heat, about
10 the skirt of a container mouth cover, which comprises heating the cord or tape to render the

same adhesive, passing the same between the container and pressing and stretching means while rotating the container to cause the cord or tape to be wound around and pressed against the cover skirt, and, during a stage of the application, reversing the direction of the pressing and stretching to cause the cord or tape to be stretched, so that upon cooling and contraction thereof it is constricted tightly about the cover skirt.

RAY O. WILSON.