Nov. 4, 1958 H. B. TUTHILL 2,858,954

LABEL SECURING ATTACHMENT

Filed Aug. 20, 1956 2 Sheets-Sheet 1

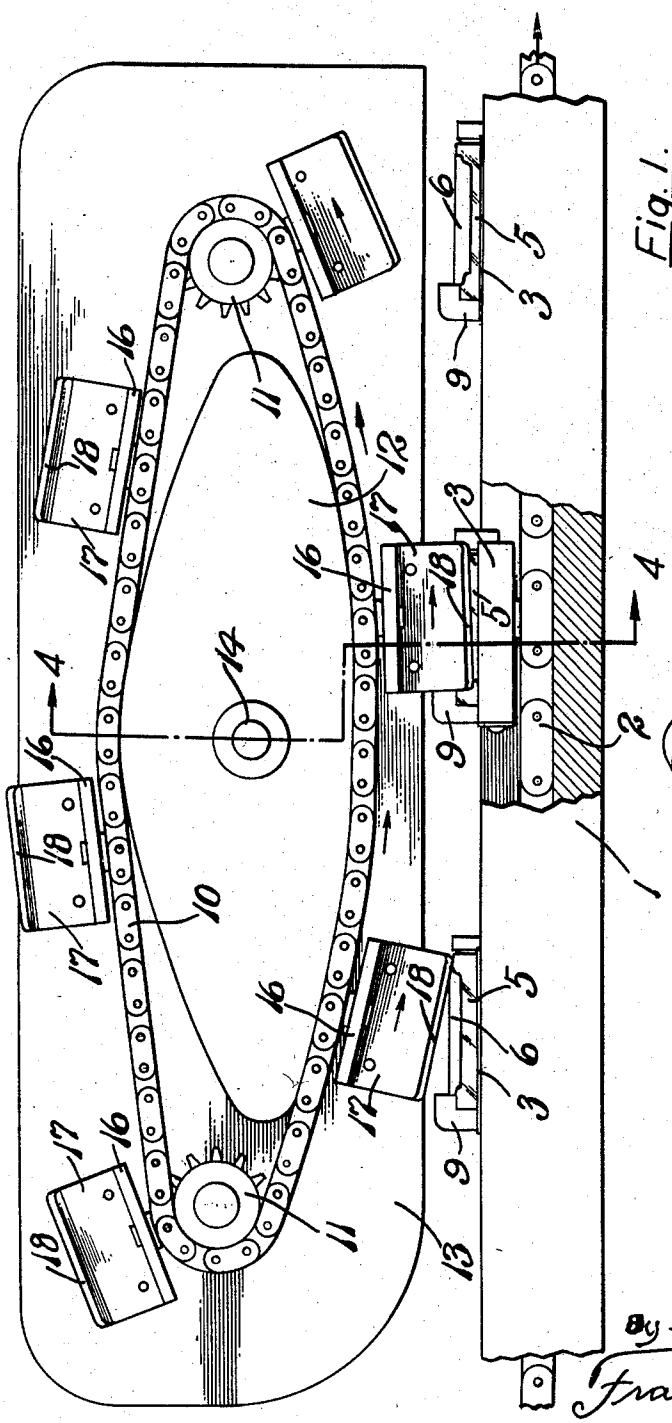


Fig. 1.

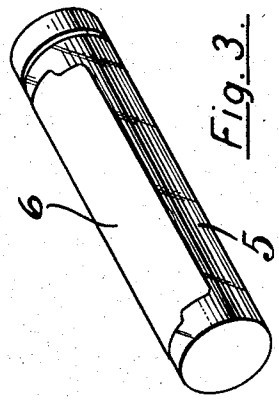


Fig. 3.

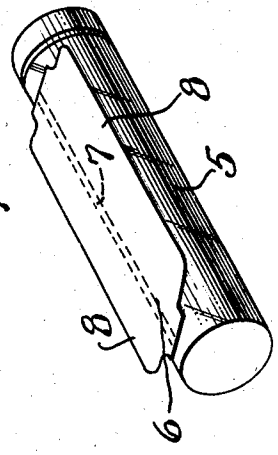


Fig. 2.

Inventor
Howard B. Tuthill
By Frank E. Liverance, Jr.
Attorney

Nov. 4, 1958 H. B. TUTHILL 2,858,954

LABEL SECURING ATTACHMENT

Filed Aug. 20, 1956 2 Sheets-Sheet 2

Fig. 5.

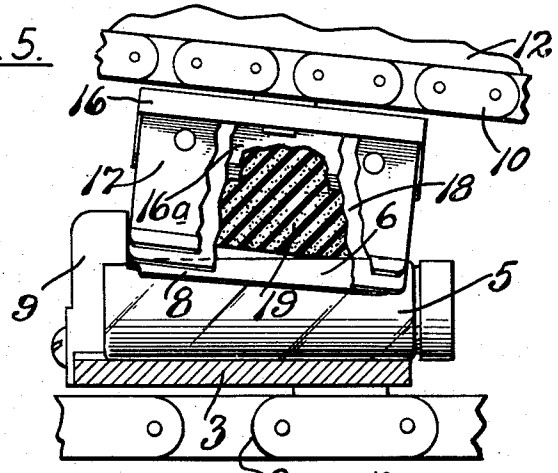


Fig. 4.

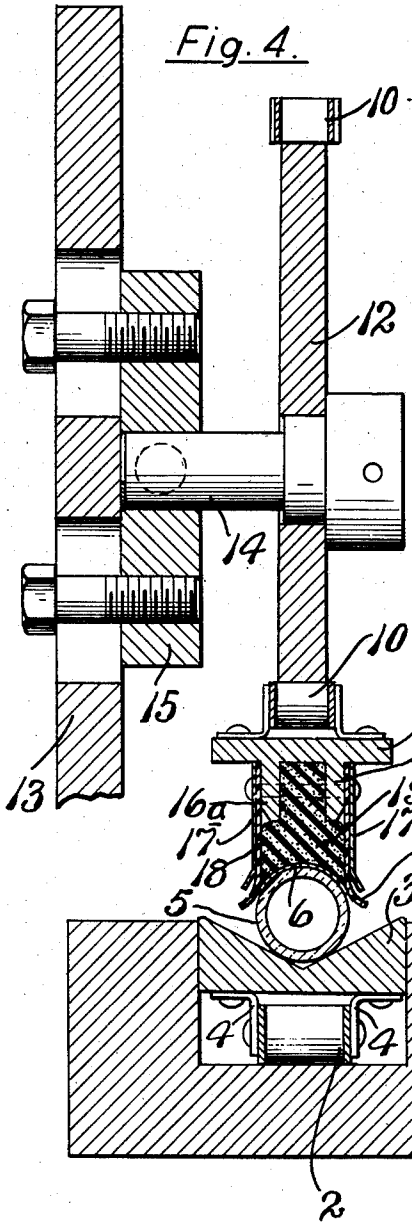


Fig. 6.

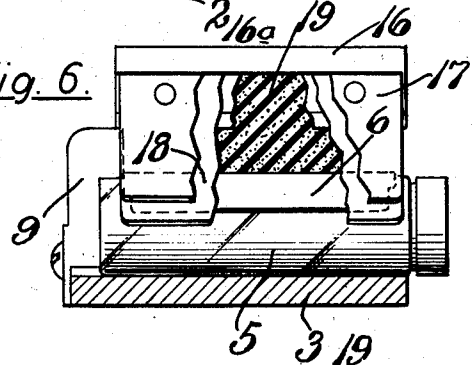
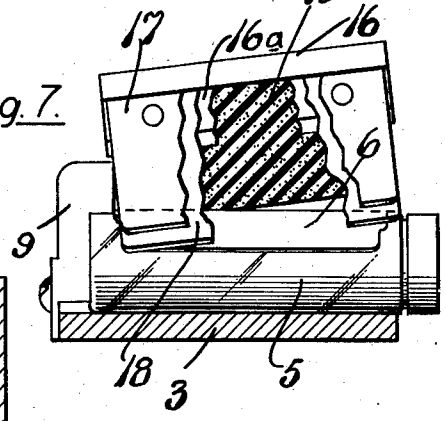


Fig. 7.



Inventor

By Howard B. Tuthill

Frank E. Liverance Jr.

Attorney

United States Patent Office 2,858,954 Patented Nov. 4, 1958

2,858,954

LABEL SECURING ATTACHMENT

Howard B. Tuthill, Grand Rapids, Mich., assignor to Oliver Machinery Company, Grand Rapids, Mich., a corporation of Michigan

Application August 20, 1956, Serial No. 604,962

6 Claims. (Cl. 216—57)

The present invention is concerned with a novel and useful improvement in the attachment of labels to small bottles and the like of the type shown in my pending application, Serial No. 583,036, filed May 7, 1956. In such application, the bottles or vials are carried successively in spaced relation to each other by an endless conveyor in which at spaced intervals carriages for the bottles are interposed. Labels are deposited lengthwise of and at the upper sides of the bottles or vials and having a thermoplastic cementitious composition at their under side, will adhere to the bottle in a zone lengthwise and midway between the longitudinal edges of the labels. The labels being of a normally flat form extend outwardly in both directions from such narrow zone of attachment and it is with respect to the better and more perfect cementitious securing of said portions of the labels to the bottles that the present invention is primarily concerned.

With the present invention, a novel last step, perfect securing of the labels to the curved surfaces of the bottles or vials to which connected is attained. The labels are pressed against the curved surfaces of the bottles and at the same time, through what may be termed a wiping action, are securely connected with the edge portions of the labels secured in place, without leaving any parts of the edges free from the bottles which, if it occurred, would result in a danger of the labels being bent back or torn away.

An understanding of the invention and of a preferred structural embodiment thereof may be had from the following description taken in connection with the accompanying drawings, in which,

Fig. 1 is an elevation with some parts broken away and shown in section of the rear end portion of the label attaching machines used, at which rear end portion my invention is located and used.

Fig. 2 is a perspective view showing a vial or small bottle with the label applied thereto as it is initially deposited and partially secured at a central longitudinal zone thereof.

Fig. 3 is a similar perspective view showing the label when it has been completely secured in place.

Fig. 4 is a vertical section substantially on the plane of line 4—4 of Fig. 1 looking in the direction indicated by the arrows, and

Figs. 5, 6 and 7 are somewhat enlarged, fragmentary elevations with parts broken away and in section showing the last step of label attachment operation.

The environment for the present invention includes a horizontal guiding track 1, channeled at its upper side, in which the upper run of endless chain 2 is moved continuously at uniform speed in the direction indicated by the arrow in Fig. 1. On such chain at spaced intervals carriages 3 are mounted by means of brackets 4 (Fig. 7). Each carriage comprises a somewhat elongated block at its upper side having downwardly and inwardly inclined surfaces to make a longitudinal trough in which a bottle 5, shown of circular form, is deposited to automatically

locate itself substantially centrally of the carriage. Prior to reaching the last stage of label fixing on each bottle as it is moved, an elongated label 6, shorter than, but nearly the full length of the bottle is deposited, the label having been previously elevated in temperature by suitable means so that the under surface coating which is of a thermoplastic nature is softened, and a narrow, centrally located zone 7 of the label contacts the upper side of the bottle and is cemented thereto. The outer longitudinal edge portion 8 of the labels (Fig. 2) extends outwardly as shown, free from the bottle.

In my application previously mentioned, the novel mechanism for accomplishing the functions and results thus far described is fully shown, together with a means, such as the fingers 9, a pair of which are at each rear edge of each carriage 3, and extend upwardly to engage the adjacent end of the label and properly locate it with respect to the bottle and to position the longitudinal edges of said label parallel to the longitudinal axis of the bottle.

With the labels secured at the narrow zone 7 on the bottles, such bottles are moved continuously and uniformly underneath the final label affixing mechanism which is the subject matter of the present invention. Such mechanism includes an endless conveyor chain 10 over the upper run of the chain 2, the lower run of chain 10 moving in the same direction and at the same speed of movement as chain 2. Such chain 10 is carried at its ends around sprockets 11, the shafts of which may extend through a plate 12 located outwardly and spaced from a second vertical plate 13 which is a part of the framework of the machine and which carries the plate 12 through the post or stud 14 and part 15 as in Fig. 4.

The plate 12 is of greatest vertical dimension midway between its ends and progressively decreases in height toward both of its ends. The under side of the plate 12 has a curved convex form as best shown in Fig. 1. The lower run of the chain 10 therefore progressively approaches the carriages 3 and the bottles and labels carried thereon until the midway point between the ends of such plate 12 is reached and thereafter progressively recedes therefrom.

At spaced positions in the length of the endless chain 10 a plurality of label engaging devices are secured, in general paralleling the lengths of the bottles and being spaced from each other the same distances as the carriages 3 which carry the bottles. Included in such label affixing completing device is a base 16 of metal, fastened by brackets to chain 10 and having at the outer side thereof two spaced apart flanges or legs 16*a*. To such legs and associated therewith are fixed outer relatively stiff but resilient metal plates 17, the length of which will be substantially the same or slightly in excess of the length of a label 8. Inside each of the plates 17 is a sheet 18 of a material which has a surface of very low frictional coefficient being smooth and non-adhesive and non-frictional in action, easily bendable and resilient, returning to its initial form when strained away therefrom. In practice it is supplied by material well known to those skilled in the art by the name of "Teflon." Between such sheets and extending upwardly between the flanges 16*a* is a block 19, in practice of sponge rubber, which at its lower side is concaved to fit substantially over the label 6 and press it downwardly into engagement with the upper curved side of the bottle 5.

Such block of rubber 19 is compressed when it reaches its lowermost position of travel midway between the ends of the member 12. The longitudinal edges of the labels 6 extend short distances beyond the longitudinal lower side edges of the block 19 and are pressed against by the members 18 which are curved or flared outwardly at their lower longitudinal edges as shown in Fig. 7. Such

members 17 are strained outwardly and bear with some pressure against the free longitudinal edge portions of the label, pressing them snugly and securely against the bottle and securing the adhesive connection of the label, particularly at such edges to the bottle.

The action which has been described is illustrated in Figs. 5, 6 and 7. It will be evident, referring to Fig. 5, that when the label engaging member comes first to the label it will do so at the end of the label nearest the bottle closure and there will be a continuous progressive engagement of the sponge rubber 19 and the Teflon elements 18 of the label from one end to the other. In such action the outwardly extending free longitudinal edge portions 8 will progressively come against the bottle surface and the lower edges of the Teflon sheets 18, by what may be termed a downward wiping action, will progressively move the longitudinal edge portions of the label into intimate adhesive engagement with the bottle. Such movement continues until the stage shown in Fig. 6 is reached where such label edge connecting device is directly below the central widest portion of the plate 12. Thereafter, on continuing movement of both the carriage 3 and the bottle 5 thereon and of the associated edge label attachment device, the end of such device nearest the closure end of the bottle is lifted and progressively moves away from the label until entirely freed therefrom. The compressed sponge rubber acts to furnish an ejecting force which disconnects or disassociates the bottle with the attached label from the device maintaining said bottle in its position on the carriage 3.

The structure described has proved to be exceptionally certain and accurate in operation. The edge portions of labels are perfectly secured to the bottles to which applied through their entire lengths and the speed of cementing labels to bottles may be increased with a certainty of uniformity of product coming from the machine.

The invention is defined in the appended claims and is to be considered comprehensive of all forms of structure coming within their scope.

I claim:

1. In means for completing the attachment of a label to an article having a convex label receiving surface, the combination comprising: a base member; a pair of flexible flaps each having one edge secured to said base member along opposite sides thereof and projecting away from said base member; a thin, stiff plate characterized by resilience, overlying a major portion of each of said flaps and firmly secured to said base member with said flaps between said base member and said plates; a yieldable block seated between said flaps; the face of said block adjacent the free ends of said flaps having a concave trough therein parallel to said flaps; said flaps projecting beyond said face of said block.

2. In means for completing the attachment of a label to an article having a convex label receiving surface, the combination comprising: a base member; a pair of flexible flaps each having one edge secured to said base member along opposite sides thereof and projecting away from said base member; a thin, stiff plate characterized by resilience, overlying a major portion of each of said flaps and firmly secured to said base member with said flaps between said base member and said plates; the ends of said plates remote from said base member being flared outwardly away from each other; a yieldable block seated between said flaps; the face of said block adjacent the free ends of said flaps having a concave trough therein parallel to said flaps; said flaps projecting beyond said face of said block.

3. In means for completing the attachment of a label to an article having a convex label receiving surface, the combination comprising: a base member; a pair of flexible flaps each having one edge secured to said base member along opposite sides thereof and projecting away from said base member; a thin, stiff plate characterized by resilience, overlying a major portion of each of said flaps and firmly secured to said base member with said flaps between said base member and said plates; the ends of both said plates and said flaps remote from said base member being flared outwardly; a yieldable block seated between said flaps; the face of said block adjacent the free ends of said flaps having a concave trough therein parallel to said flaps; said flaps projecting beyond said face of said block.

4. In means for completing the attachment of a label to an article having a convex label receiving surface, the combination comprising: an elongated base member; a pair of flexible flaps each having one edge secured to said base member along opposite sides thereof and projecting away from said base member; a thin, stiff plate characterized by resilience, overlying a major portion of each of said flaps and firmly secured to said base member with said flaps between said base member and said plates; a yieldable block seated between said flaps; the face of said block adjacent the free ends of said flaps having a concave trough therein parallel to said flaps and extending in the direction of elongation of said base member; said flaps projecting beyond said face of said block; means for rocking said base member about an axis normal to said trough.

5. In means for completing the attachment of a label to an article having a convex label receiving surface, the combination comprising: an elongated base member; a pair of flexible flaps each having one edge secured to said base member along opposite sides thereof and projecting away from said base member; a thin, stiff plate characterized by resilience, overlying a major portion of each of said flaps and firmly secured to said base member with said flaps between said base member and said plates; a yieldable block seated between said flaps; the face of said block adjacent the free ends of said flaps having a concave trough therein parallel to said flaps and extending in the direction of elongation of said base member; said flaps projecting beyond said face of said block; a carrier for said base member movable in the direction of elongation thereof; means for rocking said base member about an axis normal to said trough.

6. In means for completing the attachment of a label to an article having a convex label receiving surface, the combination comprising: a base member; a pair of flexible flaps each having one edge secured to said base member along opposite sides thereof and projecting away from said base member; said flaps being characterized by anti-friction surfaces; a thin, stiff plate characterized by resilience, overlying a major portion of each of said flaps and firmly secured to said base member with said flaps between said base member and said plates; a yieldable block seated between said flaps; the face of said block adjacent the free ends of said flaps having a concave trough therein parallel to said flaps; said flaps projecting beyond said face of said block.

References Cited in the file of this patent

UNITED STATES PATENTS

2,167,356	George	July 25, 1939
2,319,969	Besemer	May 25, 1943
2,681,743	Phin et al.	June 22, 1954
2,684,775	Von Hofe	July 27, 1954