

(No Model.)

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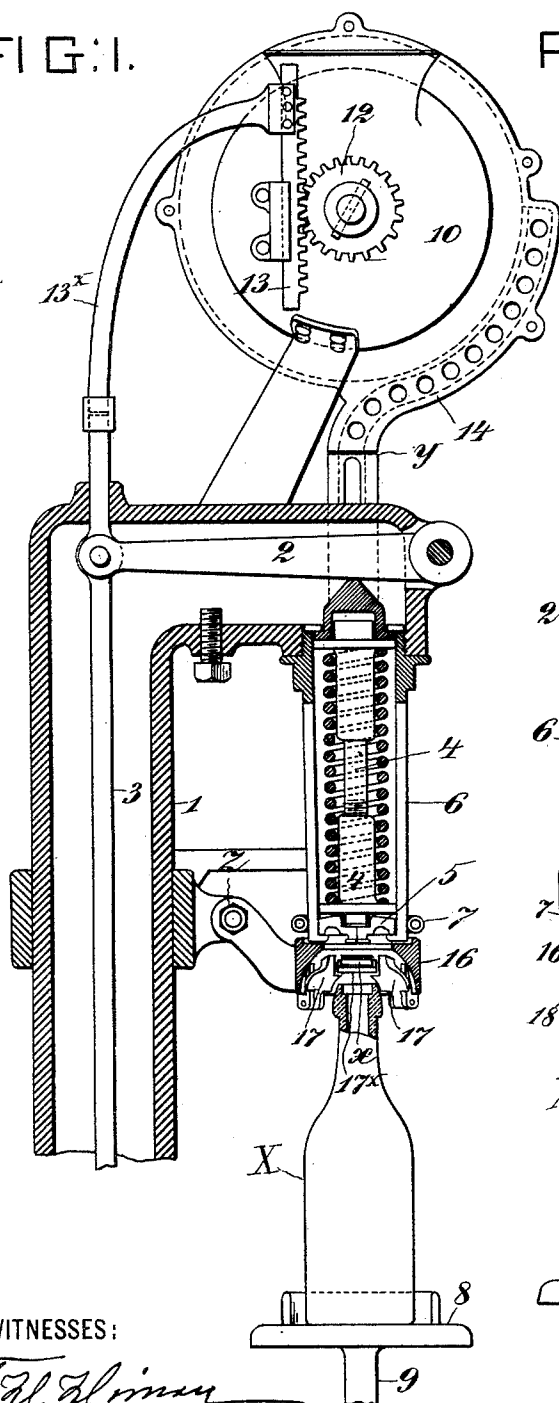
N. MUSLAR.

MACHINE FOR FEEDING STOPPERS AUTOMATICALLY TO BOTTLES.

No. 586,613.

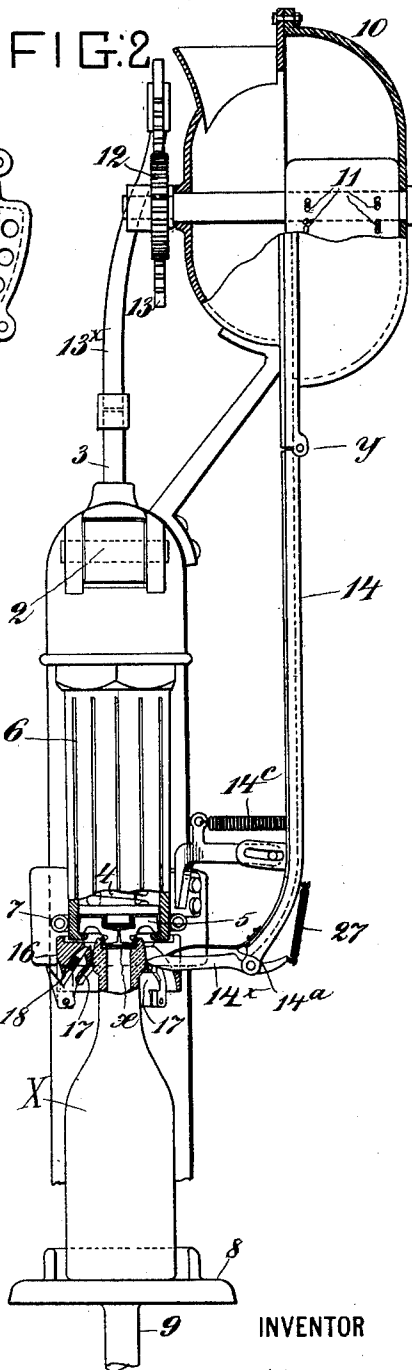
Patented July 20, 1897.

FIG:1.



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(No Model.)

2 Sheets—Sheet 2.

N. MUSLAR.

MACHINE FOR FEEDING STOPPERS AUTOMATICALLY TO BOTTLES.

No. 586,613.

Patented July 20, 1897.

FIG:3.

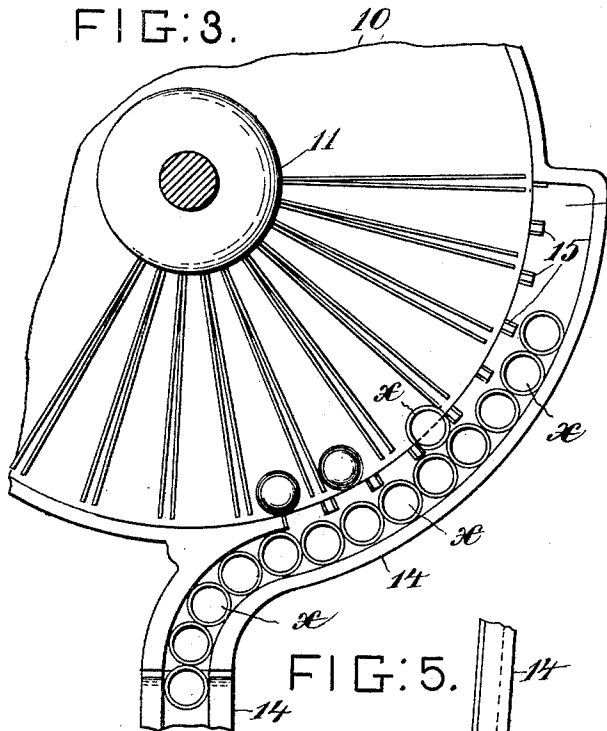


FIG:4.

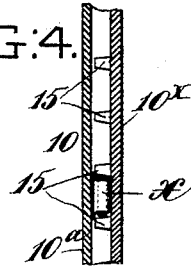


FIG:7.

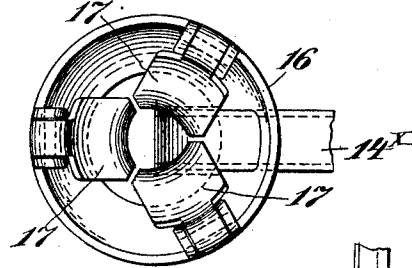


FIG:5.

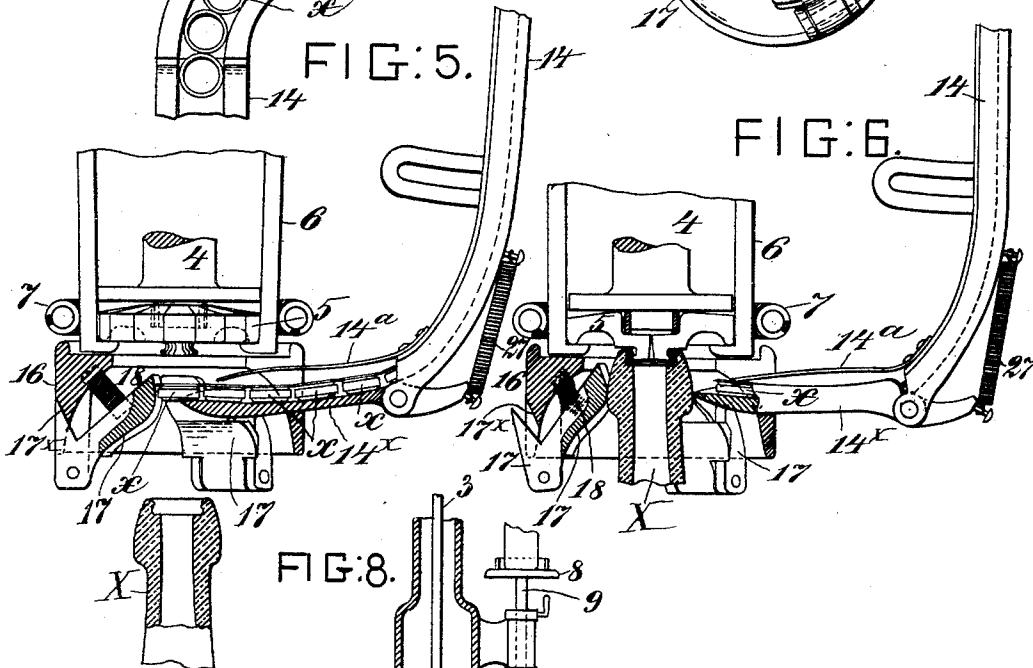
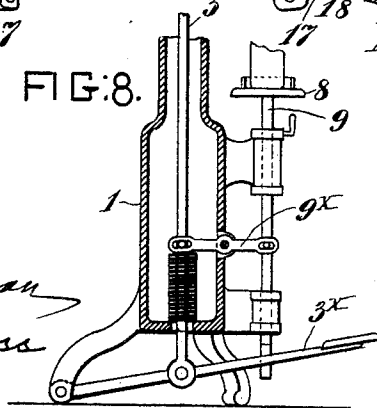


FIG:6.

FIG:8.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR FEEDING STOPPERS AUTOMATICALLY TO BOTTLES.

SPECIFICATION forming part of Letters Patent No. 586,613, dated July 20, 1897.

Application filed March 31, 1897. Serial No. 630,089. (No model.)

To all whom it may concern:

Be it known that I, NELSON MUSLAR, a citizen of the United States, residing at West Boylston, Worcester county, Massachusetts, have invented certain new and useful Improvements in Machines for Feeding Stoppers Automatically to Bottles, of which the following is a specification.

This invention relates to the class of bottle-stoppering machines in which the closure is effected by expanding a cupped disk of some thin sheet metal, usually aluminium, into a circumferential groove formed in the interior of the bottle-neck near its mouth. A bottle sealing or stoppering device of this character is described in the patent to R. A. Hall, No. 541,203, dated June 18, 1895.

Heretofore in operating such machines the closing-cups or stoppers have been placed in the mouths of the machines by hand, one by one, and no centering device has been employed to bring the bottle in line with the expander. Consequently the operation has been relatively slow, and liability to improper expansion of the stopper, with consequent leakage from the bottle under internal pressure and breakage of bottle-mouth from displacement, is of common occurrence.

The object of the present invention is in part to provide an automatic feed for the closing-cups or stoppers and in part to provide means for centering the bottle with the expander.

It consists also in other features and combinations of mechanism, which will be fully hereinafter described, and carefully defined in the claims.

In the accompanying drawings, Figure 1 is a sectional front view of the upper part of a bottle stoppering or sealing machine embodying my improvements, the vertical plane of the section being in the axis of the bottle seen in Fig. 2; and Fig. 2 is a side elevation of the same part of the machine as seen from the right in Fig. 1. In this view the feed-box at the top of the machine is represented in mid-section. The base of the machine, with the treadle, has been omitted from these views, as it is a known device. It is illustrated in Fig. 8. Fig. 3 is a fragmentary face view on double the scale of Figs. 1 and 2,

showing the interior of the feed-box. Fig. 4 is a fragmentary sectional edge view of the feed-box, showing the means for selecting the stoppers. Figs. 5 and 6 are sectional views of the raceway-shoe, showing the means for segregating the stoppers at the delivery end of the raceway and the centering device. Fig. 7 is an under side view of the centering device. Fig. 8 is a sectional elevation of the base or lower part of the machine on a small scale.

Referring first to Figs. 1, 2, and 8, 1 is the frame or pedestal of the machine, which may be of any suitable form. As here shown, it is of cast-iron and hollow or tubular. In the hollow arm at the upper part of the frame is mounted a lever 2, to the free end of which is coupled a rod 3, which extends down to a treadle 3^x, Fig. 8, in the base of the frame. The lever 2 bears on the conical head of a plunger 4, which acts on a sectional expander 5 in an expander-casing 6, fixed to the frame at its upper end. This casing 6 is longitudinally slitted from its lower end to form stiff spring-sections, and it has about its lower end a sphincter-spring 7.

Directly beneath the expander 5 is a platform 8 to support the bottle X, which is to receive the aluminium stopper *x*, this latter being stamped up into the form of a circular flat-bottomed cup provided with a laterally-projecting flange about its open top, as best seen in Fig. 3. The platform 8 is fixed on the top of a stem 9, which plays in a guide in the frame below and is coupled to one arm of a lever 9^x, which is fulcrumed on the frame below and coupled at its other end to the rod 3, so that when the rod 3 is drawn down the platform 8 and the bottle thereon will be pressed upward.

All of the above features are old and well known in the machines now in use for expanding the aluminium stoppers in bottles, as described in the Patent No. 541,203; and in the operation of said known machine the attendant places a stopper *x* on the nipple of the expander 5 and then depresses the treadle with his foot, thereby forcing the bottle upward until the bottle embraces the stopper on the expander 5, when the downward pressure of the lever 2 on the plunger 4 expands

the nipple of the expander within the stopper x and causes the latter to fit into the circumferential channel or groove within the mouth of the bottle. The Patent No. 541,203 explains this operation.

The old devices being now understood, the improvements for centering the bottle and supplying the stoppers automatically to the bottles as they are stoppered will now be described.

Mounted on the top of the machine-frame is the feed-box 10, of circular form. Within this box is rotatively mounted an agitator-brush 11, and on one of the projecting journals thereof is fixed a toothed wheel or pinion 12, with which gears a vertically-arranged guided rack 13, which is connected by an arm 13^x with and operated from the rod 3, the up-and-down movements of said rod and the rack and pinion serving to impart a rotary to-and-fro motion to the brush 11, whereby the mass of stoppers x in the feed-box are agitated and caused to pass through a part of the box edge, which may be called a "selector," into the upper end of the raceway 14. The selector is formed by beveled teeth 15 on the back plate 10^x, Figs. 3 and 4, of the feed-box, with spaces beneath them only wide enough to allow the body of the stopper x to pass, while the flange on the stopper must pass between the ends of said teeth and the front plate 10^a of the feed-box. Thus the device will select and pass to the raceway only those stoppers x which are faced or presented to it properly—that is, with their flanges presented to the rear of the feed-box.

The stoppers pass down the raceway 14, which will be made somewhat in the usual form of raceways for feeding eyelets and the like, to the delivery end thereof at the expanding-point and within a ring or frame 16, which supports the elements of the centering device. The raceway is hinged at the point y in Fig. 2 and is adapted to swing back or away from the ring 16, up to which it is held normally by a spring 14^c, and it is furnished at its delivery end with a shoe 14^x, hinged to the main portion of the raceway and extending into the ring 16 at an opening or gateway formed in the side of the latter. The construction is most clearly illustrated in Figs. 5, 6, and 7, Fig. 5 showing the normal position of the parts and Fig. 6 the position when the bottle is pressed upward. The raceway has a spring-finger 14^a, which projects out over the stoppers x in the shoe 14^x, but not far enough to take over the extreme end stopper, and when the bottle is pressed upward, Fig. 6, its top takes under the beveled under side of the tip of the shoe, swinging the latter upward until the finger 14^a presses on the stopper x next to the end stopper; thus causing the said finger to grip or press on and hold it. At the same time the stopper at the end or tip of the shoe is pressed upward onto the expander and the upward pressure of the bottle on the beveled shoe drives the latter back

or outward and swings back the raceway, as seen in Fig. 6. This displacement of the shoe allows the mouth of the bottle to move up and receive the stopper on the expander and the downward pressure of the plunger expands the stopper in the bottle-mouth, as before explained.

When pressure is removed from the treadle and the bottle is let down, the spring 14^c returns the raceway to its normal position, the shoe 14^x descends to its normal position, and the stoppers x therein, now relieved from the pressure of the finger 14^a, move forward, the end one taking up a position directly beneath the expander and ready for the next operation. 27 is shoe-depressing spring.

The centering device for the bottle, which is a most essential part of the machine, will now be described.

As before stated, the ring 16 supports the moving parts of the centering device. This ring is supported on the frame at z and has in its upper edge a circumferential channel to receive the lower end of the expander-casing 6. Within and to the ring 16 are hinged spring-jaws 17, preferably three, the under surfaces of which are inclined upward in such a manner as to form a sort of conical receiver for the bottle-mouth, and the axis of this conical receiver is alined with that of the expander. The springs 18, which back the jaws 17, are of equal strength, so that the jaws will yield equally to upward pressure on the bottle, and thus center the latter automatically with the expander. The jaws 17 when in their normal positions (seen in Figs. 1 and 5) do not close together at their tips, but leave an opening about as large as the stopper x , and they are held against closing any further by some suitable stop. As seen in Figs. 5 and 6, this stop is a shoulder 17^x on the jaw, which shoulder impinges on the ring 16.

Of course the invention is not restricted to precisely the mechanical construction herein shown, as this may obviously be varied somewhat without departing materially from the spirit of the invention.

The expander and the treadle and lever mechanism for operating it and for raising the bottle are only shown herein for purposes of illustration. They are not claimed as new. The improvements herein described and claimed may indeed be used with other forms of expanders.

Having thus described my invention, I claim—

1. In a bottle-stoppering machine having an expander and means for pressing the bottle up to said expander, a centering device, comprising a ring or frame 16, fixed in position adjacent to the expander, a plurality of jaws, 17, having conical, concave faces at their free ends adapted to form a hollow cone when pressed together by their springs, and springs of equal strength behind the respective jaws, in combination with a feeder for the stoppers having a hinged shoe carrying the stopper pro-

jecting into the axis of the guide between adjacent jaws, said shoe adapted for being moved upward and outward by the ascending bottle, substantially as set forth.

2. In a bottle-stoppering machine, the combination with an expander and means for pressing the bottle up to said expander, of a centering device comprising a ring to support the centering-jaws, the said jaws pivotally mounted in the ring, and springs behind said jaws, of an automatic gravity-feeder for the stopper having at its lower end a shoe 14^x, which projects into the axis of the centering device between adjacent jaws, said shoe being adapted to be moved upward and outward by the bottle in its upward movement, substantially as set forth.

3. In a bottle-stoppering machine having an expander and means for pressing the bottle up to the expander, an automatic feeder for the stoppers, said feeder comprising a feed-box, an agitator within said box, a raceway 14, hinged at γ and adapted to receive the stoppers x and lead them down into the shoe 14^x, the said shoe, hinged to the lower end of the raceway, beveled on its under side and arranged to extend, normally, in under the expander, the finger 14^a on the raceway, extending out part way over the shoe 14^x, and the spring which holds the raceway in its normal position, substantially as set forth.

4. In a bottle-stoppering machine having an expander and means for pressing the bottle up to the expander, the combination with a centering device for the bottle comprising a frame and a plurality of hinged, spring-jaws arranged below the expander and forming a cone to receive the bottle-mouth, and an automatic feeder for the stoppers, said feeder comprising a feed-box, an agitator within said box, a raceway 14, hinged at γ

and adapted to receive the stoppers x and lead them down into the shoe 14^x, the said shoe, hinged to the lower end of the raceway, beveled on its under side and arranged to extend, normally, in under the expander, the finger 14^a on the raceway, extending out part way over the shoe 14^x, and the spring which holds the raceway in its normal position, substantially as set forth.

5. In a feeder for bottle-stoppers x , the combination with a feed-box and an agitator therein for the stoppers and the raceway 14, of the segregating device at the delivery end of said raceway, the same comprising the shoe 14^x, hinged to the raceway and adapted to be pressed upward by the bottle, and the finger 14^a, fixed to the raceway and extending out over the shoe and the stoppers thereon, whereby said finger is adapted to press upon the stopper next behind the end one of the series when the shoe is elevated, substantially as set forth.

6. In a feeder for flanged bottle-stoppers x , the combination with the fixed feed-box 10, composed of a front plate and back plate and having on one of said plates beveled teeth 15, spaced so as to admit only the body of the stopper between them and of such length as to permit the flanges of the stoppers to pass between their ends and the other plate, of a raceway to receive the selected stoppers, and an agitator in said feed-box, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

NELSON MUSLAR.

Witnesses:

WM T. HARLOW,
E. A. KENNAN.