Aug. 12, 1930. F. E. FOWLER 1,772,540

STOP FOR BOTTLE CROWNING MACHINES

Filed June 11, 1928 2 Sheets-Sheet 1

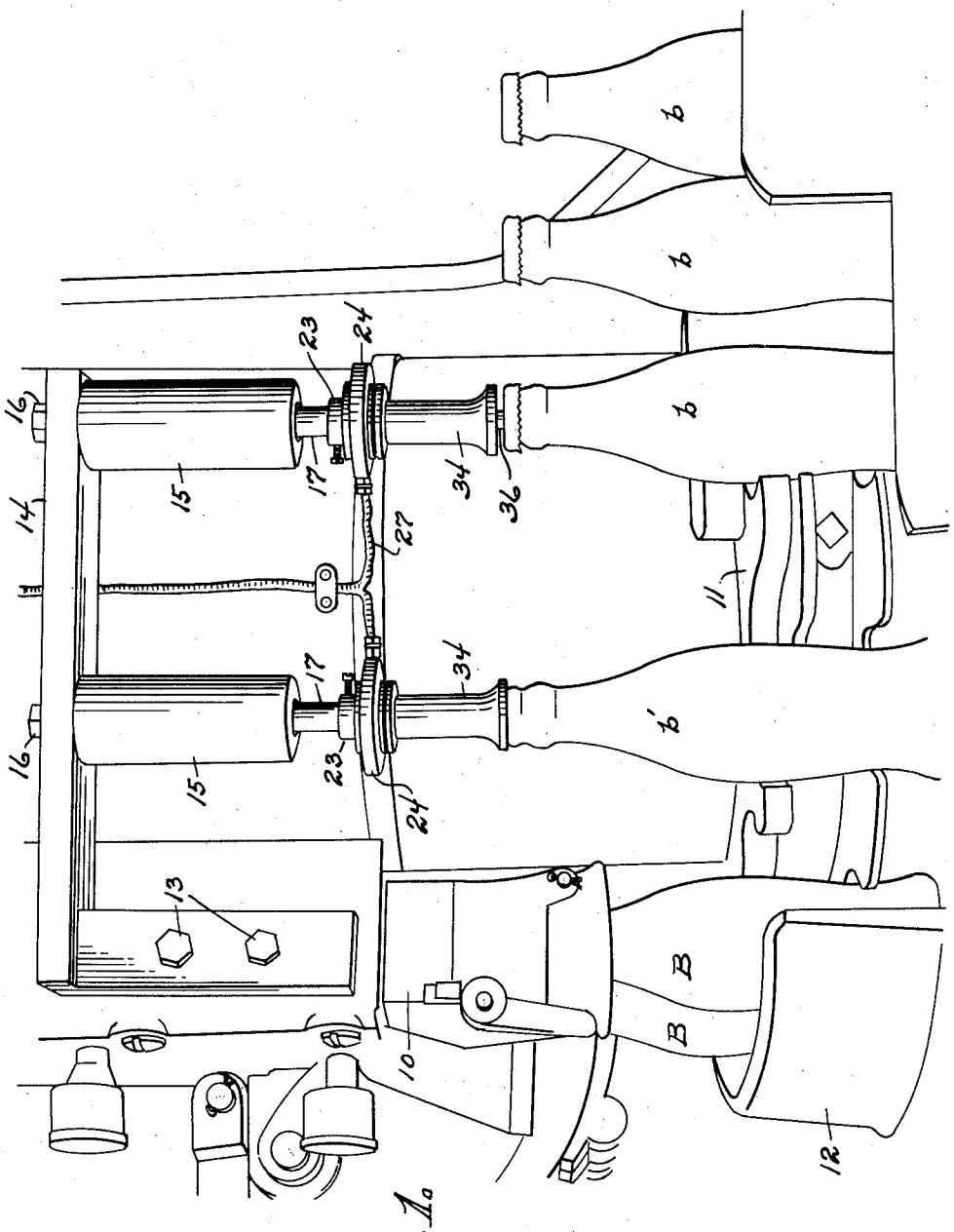


Fig. 1.

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Fig. 2.

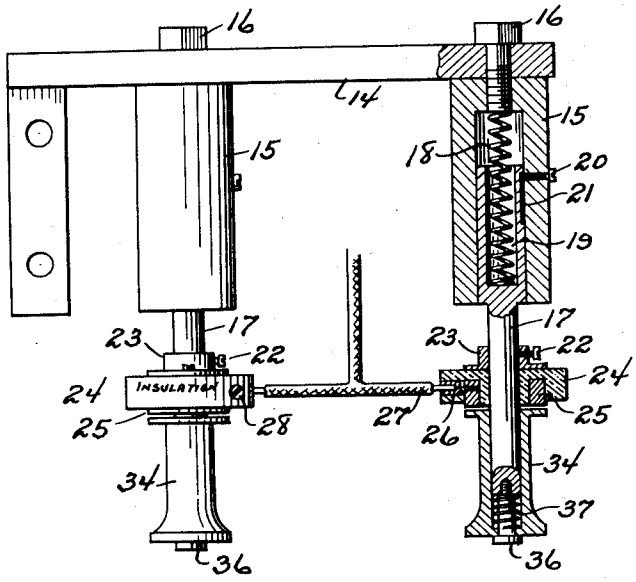


Fig. 3.

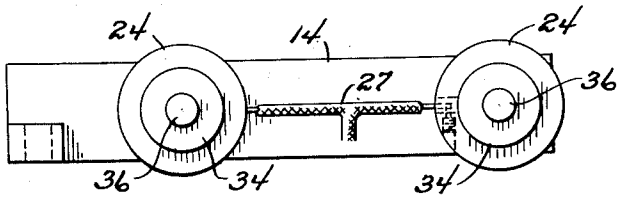
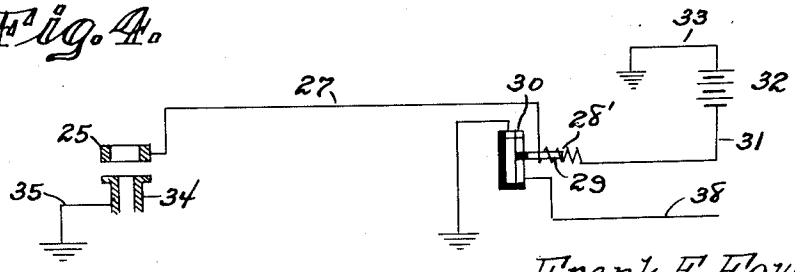


Fig. 4.



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UNITED STATES PATENT OFFICE

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STOP FOR BOTTLE-CROWNING MACHINES

Application filed June 11, 1928. Serial No. 284,619.

This invention relates to improvements in bottle capping machines and has for an object the provision of means for automatically stopping the operation of the machine in the event of failure to cap a bottle.

More specifically, the invention has for an object the provision of means for automatically interrupting the flow of current in the motor circuit of an electrically operated capping machine when the machine fails to cap a bottle from any cause, (such as clogged crown seal chute due to an imperfect seal, or for any other cause) the circuit interrupting means being governed by the bottles as they pass through the capping operation.

With the above and other objects in view, the invention further includes the following novel features and details of construction, to be hereinafter more fully described, illustrated in the accompanying drawings and pointed out in the appended claims.

In the drawings:—

Figure 1 is a perspective view showing a fragmentary portion of a bottle capping machine with the invention applied.

Figure 2 is an elevation partly in section of the invention per se.

Figure 3 is a bottom plan view of the subject matter of Figure 2.

Figure 4 is a diagrammatic view showing the wiring arrangement.

Referring to the drawings in detail wherein like characters of reference denote corresponding parts, the invention is shown applied to a portion of a bottle capping machine of the type wherein the magazine head is vertically movable. This head is indicated at 10 and receives the necks of the bottles which are moved into position by means of a feed device indicated at 11 and guided by means of a guide 12. The bottles B are in position for capping, while the bottles *b* have passed this position and have already been capped, while the bottle *b'* remains uncapped.

The machine as thus far described is of a type in common use and forms no part of the invention except that the magazine head is utilized to support the invention and the movement of this head utilized in its operation. With this in view there is attached to the magazine head as shown at 13, a bracket 14. This bracket carries spaced cylindrical members 15, the spacing of these members being equal to the spacing of the bottles as they pass through the machine. The cylindrical members 15 are closed at their inner ends and are attached to the bracket 14 by any suitable means indicated at 16.

Movable within the cylindrical member 15 is a plunger 17 which is yieldingly held against inward movement by means of a spring 18. One end of this spring is seated within a socket 19 provided in the plunger while its opposite end bears against the screw 16 or against the inner end o fthe cylinder. Movement of the plunger is limited by a screw 20 whose inner end enters a groove 21 provided in the plunger.

Secured to the plunger 17 by means of a screw 22 which is carried by a flanged collar 23, is a contact carrier or disk 24. This contact carrier or disk is formed of insulating material and is attached to the flange of the collar 23 by any suitable means. The contact carrier has embedded therein an annular contact 25 which has extending therefrom a socketed projection 26 which receives the terminal of a conductor wire 27. This terminal is held in place by means of a binding screw 28.

The devices just described are arranged in pairs and the conductor wires 27 are connected with the coil 28' of a solenoid 29 whose core acts to hold a circuit closer 30 in normally closed position. The coil 28' is connected by a conductor 31 with a source of current 32 and the latter is grounded as indicated at 33.

The contact 25 is rigid with the plunger 17, while slidingly mounted upon the plunger is a contact sleeve 34. This sleeve is normally spaced from the contact 25, but when it engages the latter a circuit will be closed through the coil 28' due to the fact that the sleeve 34 is grounded as shown at 35. The sleeve is adjustably held upon the plunger 17 by means of a screw 36 and this screw is surrounded by a spring 37 which yieldingly resists inward movement of the sleeve 34.

The circuit closer 30 is included in a motor

circuit, a portion of which is indicated at 38, and the motor (not shown) which is controlled by the current passing through this circuit is utilized to operate the capping machine.

Normally, the parts are arranged as shown in Figure 2 of the drawings and as the bottles pass from the magazine head in properly capped condition, the head of the screw 36 engages the caps of the bottles as the magazine head is lowered. The lower end of the sleeve 34 will thus be prevented from engaging the cap so that no independent movement of the sleeve occurs.

Should however, an uncapped bottle pass the magazine head, the head of the screw 36 will enter the mouth of the bottle so that the enlarged or flanged lower end of the sleeve 34 will engage the bottle and the sleeve will be moved upward so as to engage the contact 25 and complete the control circuit through the machine as a ground. The coil 28′ will thus be energized so as to permit the circuit breaker 30 to operate and interrupt the motor circuit and stop the machine.

In Figure 1 of the drawings, the bottle *b′* is shown uncapped and the sleeve 34 moved upward to engage the contact 25, while the next adjacent bottle *b* which has been capped, has its cap engaged by the head of the screw 36. The contacts 25 and 34 above this bottle remain separated.

While the invention is shown as applied to a specific type of machine, it is not the purpose of the present application to restrict the invention in this particular, as it may, with minor changes, be applied to other types of capping machine.

The invention is susceptible of various changes in its form, proportions and minor details of construction and the right is herein reserved to make such changes as properly fall within the scope of the appended claims.

Having described the invention what is claimed is:

1. In an electrically operated bottle capping machine, a capping mechanism including a vertically movable head and means to feed the bottles past the head for capping, a normally closed circuit breaker included in circuit with the means for electrically operating the machine, and means carried by the head to operate the circuit breaker and open the circuit in the event an uncapped bottle passes the head.

2. In an electrically operated bottle capping machine, a capping mechanism including a vertically movable head and means to feed the bottles past the head for capping, a normally closed circuit breaker included in circuit with the means for electrically operating the machine, a control circuit for operating the circuit breaker, and means movable with the head to complete the control circuit and operate the circuit breaker in the event an uncapped bottle passes the head.

3. In an electrically operated bottle capping machine, a capping mechanism including a vertically movable head, a normally open switch carried by said head for controlling the operation of the machine, and means included in the switch whereby contact with an uncapped bottle only will close the switch and stop the operation of the machine.

4. In an electrically operated bottle capping machine, a capping mechanism including a vertically movable head and means to feed the bottle past the head for capping, a cylinder carried by the head, a spring influenced plunger extending from the cylinder, a contact member rigid with the plunger, a contact member movable with the plunger and normally spaced from the rigid contact member and adapted to engage the mouth of an uncapped bottle to move the movable contact member and close a circuit, and means carried by the plunger to engage a bottle cap and prevent operation of the movable contact.

5. In an electrically operated bottle capping machine, a capping mechanism including a vertically movable head and means to feed the bottle past the head for capping, a cylinder carried by the head, a spring influenced plunger extending from the cylinder, a contact member rigid with the plunger, a contact member movable with the plunger and normally spaced from the rigid contact member and adapted to engage the mouth of an uncapped bottle to move the movable contact member and close a circuit, means carried by the plunger to engage a bottle cap and prevent operation of the movable contact and means to adjust the movable contact in accordance with the degree of movement of the plunger head.

6. In an electrically operated bottle capping machine, a capping mechanism including a vertically movable head, a cylinder carried by the head, a spring influenced plunger extending from the cylinder, a contact member rigid with the plunger, a contact member movable with the plunger, a spring influenced sleeve movable upon the plunger and normally spaced from the rigid contact, and adapted to engage the neck of an uncapped bottle to move said sleeve to close an electric circuit and stop the operation of the machine, and means to prevent operation of the sleeve by engagement with the capped bottle.

In testimony whereof I affix my signature.

FRANK E. FOWLER.