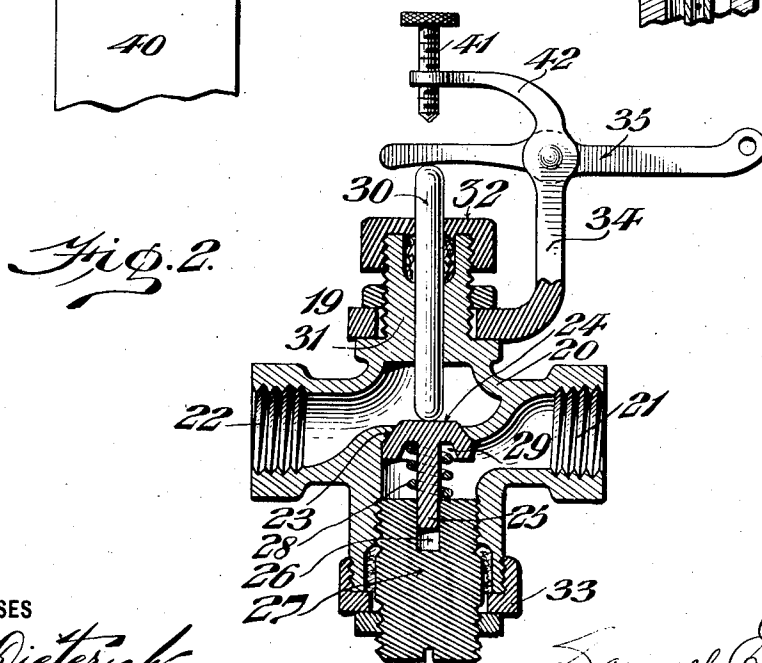
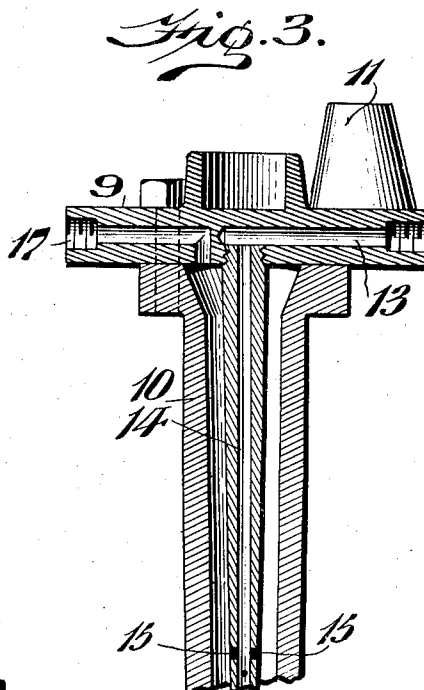
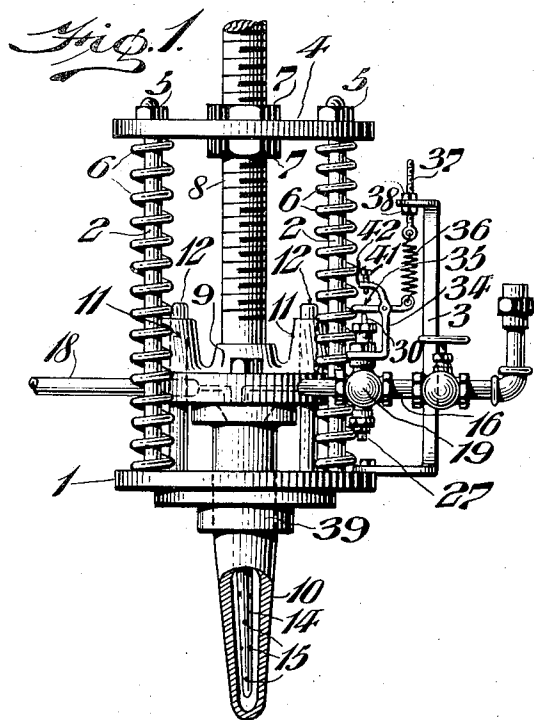


S. E. WINDER.
 DEVICE FOR COOLING PLUNGERS OF BOTTLE BLOWING MACHINES.
 APPLICATION FILED JAN. 30, 1912.

1,057,198.

Patented Mar. 25, 1913.

2 SHEETS—SHEET 1.



WITNESSES

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BY

INVENTOR

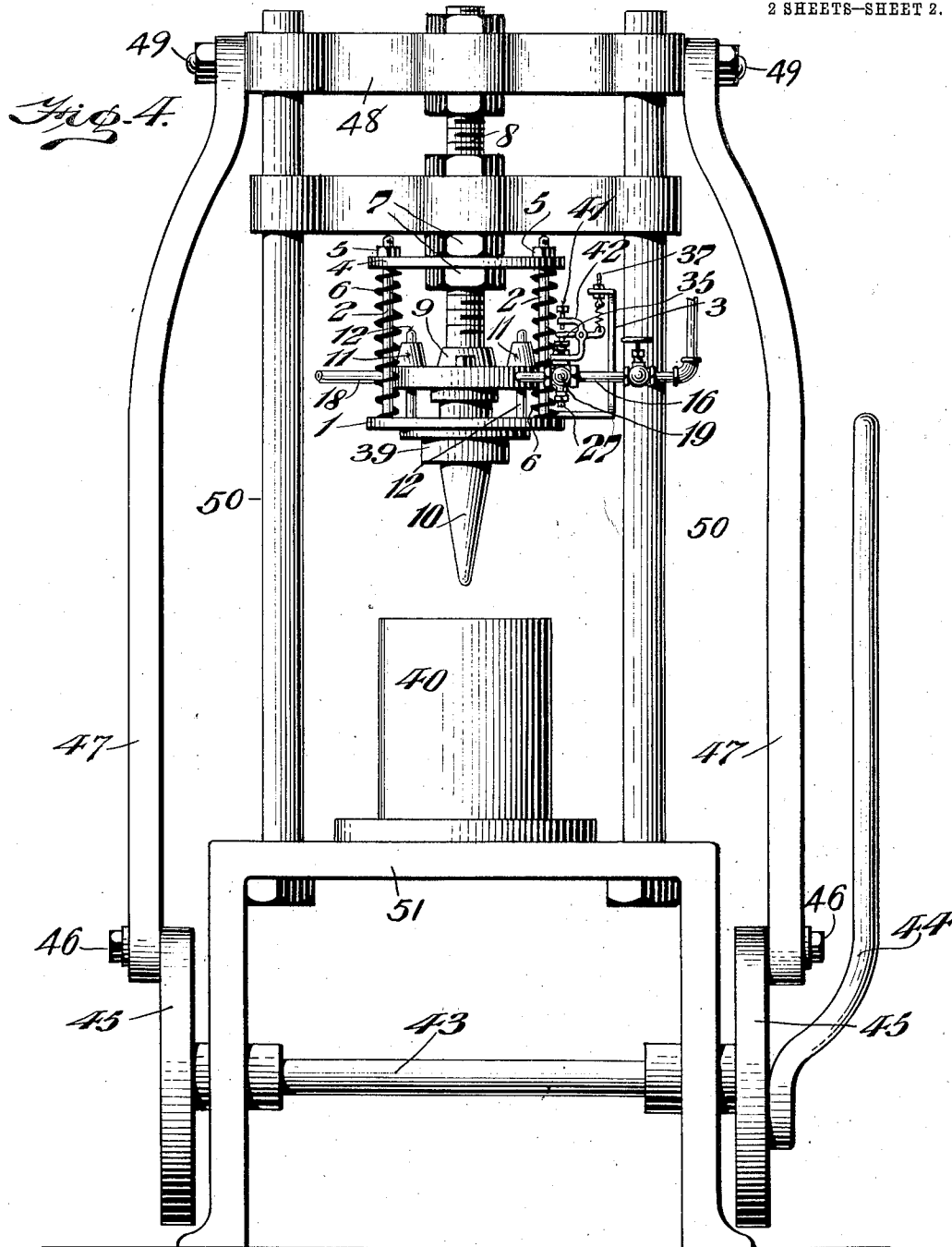
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WITNESSES

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UNITED STATES PATENT OFFICE.

SAMUEL E. WINDER, OF WALTHAM, MASSACHUSETTS, ASSIGNOR OF FORTY-NINE ONE-HUNDREDTHS TO HENRY C. DAUBENSPECK, OF WASHINGTON, PENNSYLVANIA.

DEVICE FOR COOLING PLUNGERS OF BOTTLE-BLOWING MACHINES.

1,057,198.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed January 30, 1912. Serial No. 674,315.

To all whom it may concern:

Be it known that I, SAMUEL E. WINDER, a citizen of the United States, residing at Waltham, county of Middlesex, State of Massachusetts, have invented a new and useful Device for Cooling Plungers of Bottle-Blowing Machines, of which the following is a specification.

My invention relates to a new and useful device and method for retaining the plunger of a glass machine at a desired temperature by subjecting the same to the action of a cooling medium at predetermined times.

It further consists in passing water or other cooling medium or agent into the plunger while the same is in the glass and in cutting off or reducing the supply of water as the plunger is removed from the glass, so that the interior will remain at substantially an even temperature and will not mark the glass.

It further consists of a valve for controlling the supply of water and in providing means for adjusting the valve whereby the amount of water passing therethrough may be varied.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

The annexed drawings and the following description set forth in detail one mechanical form embodying the invention, such detail construction being but one of various mechanical forms in which the principle of the invention may be used.

Figure 1 represents an elevation of a form of press-head for hollow glassware machines showing my device in position thereon, and showing the upper portion of a mold. Fig. 2 represents a sectional view of a valve employed, on an enlarged scale. Fig. 3 represents, on an enlarged scale, a portion of the plunger employed. Fig. 4 represents an end elevation of a portion of a machine showing a means for actuating the plunger with the parts, shown in the other figures, on a smaller scale.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, in hollow glassware machines it is important to retain the plunger at a substantially even temperature to prevent the same from becoming overheated and at the same time to prevent the same from becoming so cold as to mark

the glass. My invention is designed to accomplish this purpose and to this end I provide a valve which is opened by the operation of the press-head to allow water or other cooling agent to pass into the plunger when the same is in the glass, and as the plunger is drawn from the glass, the valve is closed or partly closed so that the heat in the plunger will drive out the water, allowing the interior to remain at a substantially even heat which will prevent the plunger from becoming too cold and so marking the glass. I further provide means in the valve for adjusting the same in order that the amount of the cooling medium passing therethrough may be varied in order that the requisite amount of cooling medium may pass through the plunger in order to hold the same at one heat.

1 designates the lower spring plate carrying the bolts or pins 2 and provided with a bracket 3.

4 designates the top spring plate having suitable openings through which pass the pins 2, which are provided with nuts 5, which serve as stops, to limit the outward movement of the top plate 4, suitable springs 6, around the pins 2, forming resilient means for holding the plates in and returning the same to their separated position.

Connected with the top plate 4 as by the nuts 7 is the plunger rod 8 which is connected with a crosshead 9, which carries the hollow plunger 10 which passes through a suitable opening in the lower spring plate 1. The crosshead is provided with the bosses or guides 11 through which extend pins 12 carried by the lower plate 1 which serve to guide the crosshead in its movement. In the crosshead I provide a passage 13 which communicates with a pipe 14 extending suitably into the plunger 10, which pipe is provided with a suitable number of ports 15 at intervals, and the lower end of which is closed. The passage 13 is adapted to communicate with a pipe 16 leading from a suitable source of water, or other cooling medium, supply. 17 designates a second passage on the crosshead 9, which is in communication with the interior of the plunger 10 and also with a pipe 18 leading to a suitable point of discharge. At a suitable point in the supply pipe 16, I provide a valve 19 for controlling the passage of the

water or other cooling medium or agent into the plunger 10. This valve 19 is formed of a casing 20 having the inlet 21 and the outlet 22 and a valve seat 23 at a suitable point therebetween.

24 designates the valve proper having a stem 25, a suitable portion of which is seated and movable in a pocket or recess 26 in an adjusting screw 27. The latter is in threaded engagement with a suitable part of the casing 20 whereby the position thereof may be varied so that it can be positioned near or away from the valve seat 23, whereby the throw of the valve proper 24 may be controlled by reason of the engagement of the pin 25 with the inner wall of the pocket 26. A spring 28 around the pin 25 and abutting the screw 27 and valve 24 serves to normally hold the valve 24 in engagement with and return the same to its seat 23, a suitable portion of the said spring 28 being seated in the race 29 of the valve.

30 designates a pin bearing on the valve 24 and passing through a boss 31 on the casing and extending exteriorly thereof. A suitable stuffing box 32 is provided for the valve and for the pin and a suitable stuffing box 33 is provided for the screw 27. Carried by the valve casing is an arm 34 to which is pivoted a lever 35, one end of which is adapted to bear on the pin 30 and the other end of which is connected with a spring 36, which is also connected with a screw 37, which is in engagement with a suitable portion of the bracket 3 and is adjustable with respect thereto and held in its adjusted positions by the nuts 38, whereby the tension of the spring 36 may be varied.

39 designates a plunger ring suitably mounted with respect to the plate 1 and is adapted to contact with the mold 40 at the proper time.

In some instances I may find it of advantage to control the flow of the cooling agent in order that a small quantity thereof will flow into the plunger when the same is removed from the glass and to this end I have provided a set screw 41 mounted in an extension 42 of the arm 34 and so situated that the same can be positioned to act as a stop for the pin end of the lever 35, so that the same cannot rise sufficiently to permit the valve 29 to completely seat, whereby a small quantity of the cooling agent may reach the plunger when it is removed from the glass and by the action of the lever 35 previously described a large quantity may pass into the plunger when it is in the glass. I desire it understood that any suitable means may be employed for actuating the plunger, as it may be driven by air, mechanically or by hand power. I have shown in Fig. 4 a means for accomplishing this, in which 43 is a main drive shaft receiving

power from any suitable source as by a hand lever 44. 45 are cranks carried by the shaft 43, having the pins 46, engaged by the connecting rods 47 which are likewise connected with the crosspiece 48 by the pins 49. The crosspiece 48 is connected with the piston rod 8 which also carries the crossbars 49 which latter are guided in their movement by the rods 50 carried by the frame or table 51 which likewise supports the mold 40. In this way the plunger and parts therewith are reciprocated.

It will be noted that by reason of the movement of the spring 36 in the opening means of the valve, I am enabled to open quickly the valve member in order to provide for a full flow of the cooling medium into the plunger at the proper time. This is accomplished by reason of the fact that as the spring plate 1 is arrested in its movement, upon contact with the mold 40, the bracket 3 is also stopped in its movement. As the other parts continue their downward movement with the plunger 10, the spring 36 will be extended and as this tension acts against the valve closing pressure, that is, the pressure of the cooling medium and of the spring 28, it will, at the proper time, exert a quick upward movement on the end of the lever 35 with which it is connected, in order to quickly depress the end to open the valve members 24. By this means a full flow of the cooling medium is obtained and will enter the plunger at the proper time. This is of considerable advantage over a structure where a slow opening valve is employed, since a small quantity of the cooling fluid in this case would be permitted to enter the plunger and the flow of the cooling medium would be gradually increased as the valve opened.

The operation of the device is as follows:— It will be understood that the spring 36 normally holds the lever in the position seen in Figs. 1 and 3 with the pin 30 in elevated position and that the spring 28 normally holds the valve 24 in engagement with the seat 23 so that no water can pass through the valve 19. When the piston rod 8 is lowered it carries with it the top plate 4, crosshead 9 and all parts carried thereby. When the plunger ring 39 seats itself on the mold 40 the lower plate 1 and parts carried thereby will be prevented from further movement and the rod 8, crosshead 9 and plunger 10 will still continue to descend, forcing the plunger 10 into the glass. As this action takes place the spring 36 will elevate one end of the lever 35 and depress the pin end thereof forcing in the pin 30 and removing the valve proper 24 from the seat 23, so that the water, or cooling medium, can pass through the valve, the passage 13 into the pipe 14 and will be discharged through the ports 15 into the

interior of the plunger 10 while the same is in the glass. When the plunger is removed from the glass after the proper length of time, by the presser or automatically, the springs 6 will immediately act and this will relieve the tension on the spring 36 causing the same to actuate the lever 35 to release the pin 30, whereupon the spring 28 will cause the valve proper 24 to be seated and cut off the water, whereupon the heat in plunger 10 will drive out the water therein through the passage 17 and pipe 18. By this means the plunger will be supplied with the water or cooling medium, while in the glass, and will be prevented from being overheated and as the supply of the water or cooling medium is cut off or reduced as the plunger is removed for the glass the said plunger will not become cold enough to mark the glass but will be retained at substantially an even temperature. By means of the adjustment of the throw of the valve proper, I can regulate the amount of water or cooling medium supplied to the plunger, as it will be apparent that the different amounts of water are required to accomplish the purpose depending on the size of the plunger, since a small plunger will not need the same amount as a large one. By means of the stop 41 the parts can be regulated to permit a certain flow of the cooling agent when the plunger is removed from the glass, if this is necessary.

Other modes of applying the principle of my invention may be employed for the mode herein explained. Change may therefore be made as regards the mechanism thus disclosed, provided the principles of construction set forth, respectively, in the following claims are employed.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a device of the character stated, the combination of a plunger having an inlet and outlet for a cooling medium, a valve controlling said inlet, the valve member of

which is adapted to be seated by the pressure of the cooling medium, and means embodying a spring member for opening said valve when said plunger is in the glass, said spring member having its tension acting against the valve-closing pressure when the plunger is depressed, whereby the valve member is opened quickly to introduce the proper amount of water into the plunger while the latter is in the glass.

2. In a device of the character stated, the combination of a plunger having an inlet and outlet for a cooling medium, a valve controlling said inlet, the valve member of which is adapted to be seated by the pressure of the cooling medium, a spring bearing against the valve member on the inlet side, to assist in closing said valve member, and means embodying a spring member for opening said valve when said plunger is in the glass, said spring member having its tension acting against the valve-closing pressure when the plunger is depressed, whereby the valve member is quickly opened to introduce the proper amount of water into the plunger while the latter is in the glass.

3. In a device of the character stated, the combination of a plunger having an inlet and outlet for a cooling medium, a valve controlling said inlet, the valve member of which is adapted to be seated by the pressure of the cooling medium, means embodying a spring member for opening said valve when said plunger is in the glass, said spring member having its tension acting against the valve-closing pressure when the plunger is depressed, whereby the valve member is opened quickly to introduce the proper amount of water into the plunger while the latter is in the glass, and an adjustable stop for limiting the movement of said opening means.

SAMUEL E. WINDER.

Witnesses:

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E. O'MALLEY.