

No. 659,290.

Patented Oct. 9, 1900.

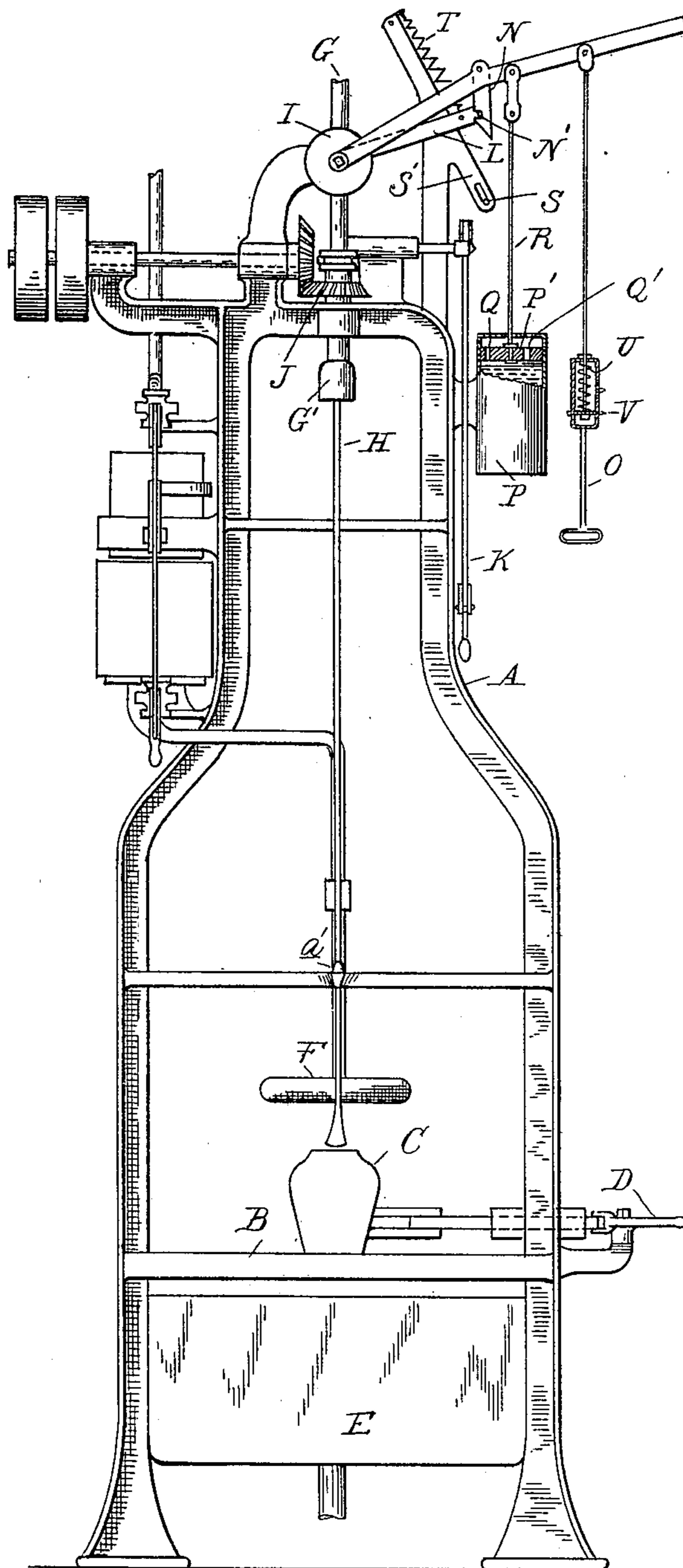
L. H. COLBURN.  
GLASS BLOWING MACHINE.

(Application filed Mar. 30, 1898.)

(No Model.)

2 Sheets—Sheet 1

Fig. 1.



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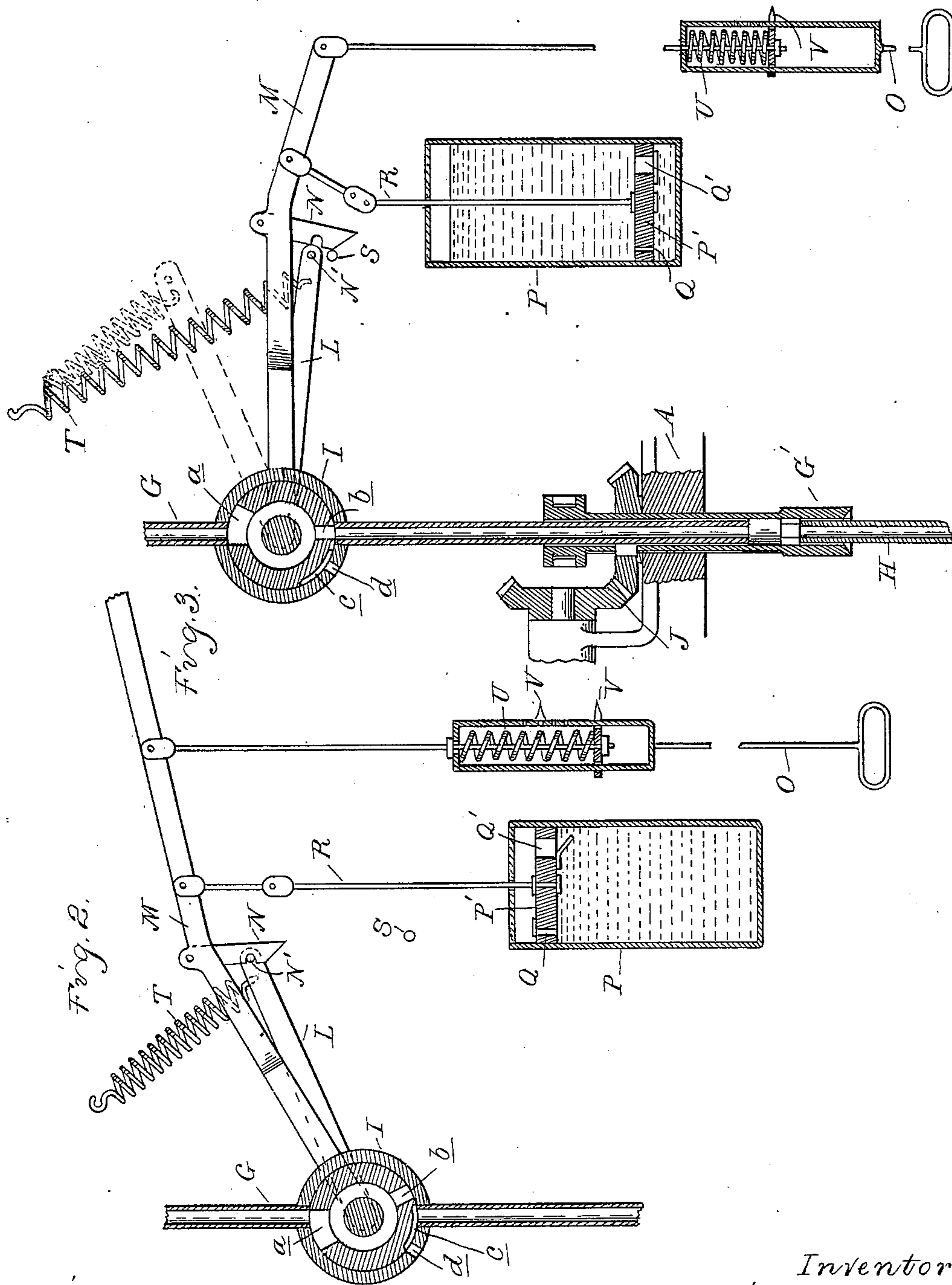
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# UNITED STATES PATENT OFFICE.

LESLIE H. COLBURN, OF TOLEDO, OHIO, ASSIGNOR TO THE TOLEDO GLASS COMPANY, OF SAME PLACE.

## GLASS-BLOWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 659,290, dated October 9, 1900.

Application filed March 30, 1898. Serial No. 675,655. (No model.)

*To all whom it may concern:*

Be it known that I, LESLIE H. COLBURN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Glass-Blowing Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention consists in the construction of a glass-blowing machine, and particularly in the following: first, in means for controlling the air-supply to the article to be blown, which is controlled by a manually-operated  
15 means, having devices which control variation of pressure by varying the time interval required to open the valve to its full pressure and means for varying the time interval of blowing; second, in the construction of means  
20 for enabling the operator to determine the amount of pull required to give any desired time interval; third, in the construction, arrangement, and combination of the various parts, all as more fully hereinafter described.  
25 In the drawings, Figure 1 is a front elevation of a machine embodying my invention, showing the dash-pot partly in section. Figs. 2 and 3 are sections through the controlling-valve, showing its operating mechanism in  
30 elevation and in different positions at different periods of operation.

A is a suitable supporting-frame for the operating parts of the machine.

35 B is a table which supports the molds C, which are opened by any suitable means, such as by operating the lever D, which has suitable connection with the mold-sections. Below the mold is a tank E, which receives the water from the spraying-nozzle F and which  
40 has suitable means for carrying away the water therefrom. These parts may be of any desired construction, as their particular construction forms no part of my present invention.

45 In the present state of the art machines have been constructed for blowing glass in which the valve for controlling the air-supply was opened and closed automatically by means of power machinery. In my present device I  
50 desire to construct a machine in which the operator shall himself directly operate the

valve or other controlling device for the air. With this manually-operating controlling device I have devised means so that the operator may control the opening of the valve, as well  
55 as the time in which it shall open, from a partial to a full pressure and the time in which it shall remain open.

G represents the air-supply pipe from any suitable source of air-supply, and this has at  
60 its lower end a coupler G' to receive the end of the blowpipe H, which may be the usual blowpipe and which is supported by any suitable means in proper relation to the mold and the air-supply. I have shown it provided with  
65 the usual enlargement *a'*, resting in a bearing in the frame of the machine.

I is a controlling-valve which controls the air-supply in the pipe G, and this valve is of the construction shown in Figs. 2 and 3. The  
70 valve is shown as a plug-valve, having an inlet-port *a*, the exit-port *b*, and the by-pass *c* in its plug and having suitable inlet and exit ports adapted to register with the ports *a* and  
75 *b* in the casing, and the exhaust-port *d* for the exhaust of the air from the blowpipe through the by-pass when the valve is shut off. In Fig. 2 the valve is shown closed to  
80 the admission of air into the blowpipe, and the blowpipe is connected with the atmosphere through the by-pass *c* and the port *d*. In Fig. 3 the valve is shown with the ports *a* *b* aligned with the inlet and exit ports in the casing, as when it is supplying air to the  
85 blowpipe.

The coupler G' is of such construction as to grasp the blowpipe, so that when rotary motion is imparted to the coupler the blowpipe will also be turned. I have shown the coupler rotated by means of suitable gearing J,  
90 driven from any suitable source of power. The parts being arranged as thus described, the operator gets the necessary grasp on the end of the blowpipe H, inserts it into the machine with the upper end of the coupler G'.  
95 I have shown the coupler G' slidingly engaging in bearings upon the air-supply pipe and raising and lowering through suitable connecting-levers by means of the pull-rod K, so that the operator may insert the blowpipe laterally into the proper position and then operate the rod K and lower the coupler onto  
100

the blowpipe, having previously closed the mold-sections by operating the lever D. In this position of the parts the blowpipe is open to the atmosphere through the by-pass *c* and the ports *d*. The operator now admits air to the blowpipe to blow the article by turning the valve I. This could be done by hand; but it would be practically impossible to get the time interval for blowing properly regulated and also impossible to get the gradual increase in the air-pressure, which is desirable in glass-blowing, except by the interposition of some controlling means applied to the valve or the air-supply. I have shown the following device as one means of effecting this controlling of the air-supply.

L is an arm secured to the plug of the valve.

M is a lever journaled on the plug beside the securing-point of the arm L.

N is a latch or hook on the lever M, engaging a pin N' on the arm L to lock the two together.

O is a hand-pull, by means of which the operator may draw down the lever M and with it the arm L, and thereby open the valve.

P is a dash-pot having a piston P' therein with a restricted port Q, through which the liquid below the piston may pass, to determine the time interval required to lower the piston a definite distance. The piston is connected to the lever M by a connecting-rod R. Thus the operator pulling on the pull O can only slowly move down the arm L through the connections described, according to the speed with which the fluid can pass through the port Q, and thus will gradually allow a light pressure to enter the blowpipe, and then as the valve opens fully the full pressure of air will be admitted therein.

When the desired opening of the valve has been effected and the desired time interval of blowing has elapsed, the latch N will strike upon a pin S, disengage the latch from the arm L, when the spring T will immediately draw the arm back to its initial position, (shown in dotted lines in Fig. 3,) immediately closing the valve and restoring atmospheric pressure in the blowpipe in the article to be blown. The mold can then be opened and the blowpipe removed in the usual manner.

The piston P' is provided with a suitable enlarged port Q', so as to enable the piston to be quickly returned when the operator pushes upon the pull-rod O to restore the parts to their normal position.

I may and preferably do make the pin S adjustable in its supporting-bracket S', so that the length of the stroke of the operating-lever may be controlled, and thereby the time interval more or less graduated.

I may and preferably do provide a means for indicating to the workman the amount of pull that is required approximately to give greater exactness to the time interval. That I have shown effected by the following mechanism: The pull-rod O is made in two parts, and between those two parts is placed a spring

U, and the parts are provided with indices or pointers V, one of which may be made adjustable by any suitable means. The operator then may pull with sufficient power upon the pull-rod to cause the spring to be compressed until the two pointers are side by side, which will indicate a pull sufficient, for instance, to require six seconds to pull the lever M down. By adjusting the pointers nearer together or farther apart different degrees of pull may be indicated.

With a strictly manually-operated valve to control the time interval with great nicety and practically as fine as with an automatic machine, in this device, which is intended to be operated by the man instead of by power, I desire to avoid any unnecessary exertion on the part of the workman in any operation, and therefore instead of dipping the molds, as has generally been done heretofore in glass-blowing machines, I sprinkle the paste-lined surfaces through the nozzle F, previously mentioned, which may be provided with any suitable means of controlling the water-supply.

What I claim as my invention is—

1. In a glass-blowing machine, the combination with the device to supply air to the article to be blown, of a controlling device therefor, and a manually-operated actuating device for said controlling device having means for affecting the speed of the controlling device.

2. In a glass-blowing machine, the combination with the device to supply air to the article to be blown, of a controlling device for such air-supply, a manually-operated actuating device for said controlling device, and means for timing the movement of the controlling device.

3. In a glass-blowing machine, the combination with the device to supply air to the article to be blown, a valve controlling the same, means for opening said valve directly by the power of the operator and a retarding device applied to such opening means.

4. In a glass-blowing machine, the combination with the blowpipe and a device to supply air thereto, a controlling device for the air-supply having a timed period of operation, means for shutting off said air-supply at the end of such period and means for automatically restoring atmospheric pressure in the blowpipe on the shutting off of the air-supply.

5. In a glass-blowing machine, the combination with the controlling device for the air-supply, of an actuating device therefor, comprising the lever M, the arm L adapted to be moved in one direction by the lever and means for disconnecting the arm from the lever returning it independently thereof, substantially as described.

6. In a glass-blowing machine, the combination with the air-supply pipe, of a valve, the arm L connected thereto, the lever M beside the arm L, a hook connecting the two,

a spring T connected to the arm and disengaging device for the hook at the end of the movement of the lever and a pull device for operating the lever.

5 7. In a glass-blowing machine, the combination with the controlling-valve, having operating means adapted to manually move the same, comprising a lever M, a pull-rod and a  
10 a piston working therein with a restricted port, substantially as described.

8. In a glass-blowing machine, the combination with the air-controlling device, of a manually-operated actuating means there-  
15 for, a retarding device for said actuating means, and means for indicating the pull required for a given time interval, substantially as described.

20 9. In a glass-blowing machine, the combination with the controlling device for the air-supply, of an actuating device and a retard-

ing device therefor, and a pull-rod in said actuating device, consisting of two parts slid-  
ingly engaged together and an interposed  
spring, and means to indicate the strength of  
25 pull on said pull-rod, substantially as described.

10. In a glass-blowing machine, the combination with the device to supply air to the  
article to be blown, a controlling device  
30 therefor, manually-operated means for the controlling device, and means for changing the operating time, comprising the adjustable pin S and its cooperating mechanism,  
35 substantially as described.

In testimony whereof I affix my signature  
in presence of two witnesses.

LESLIE H. COLBURN.

Witnesses:

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OTTO F. BARTHEL.