No. 659,291. Patented Oct. 9, 1900.

L. H. COLBURN.

GLASS BLOWING MACHINE.

(Application filed Feb. 14, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

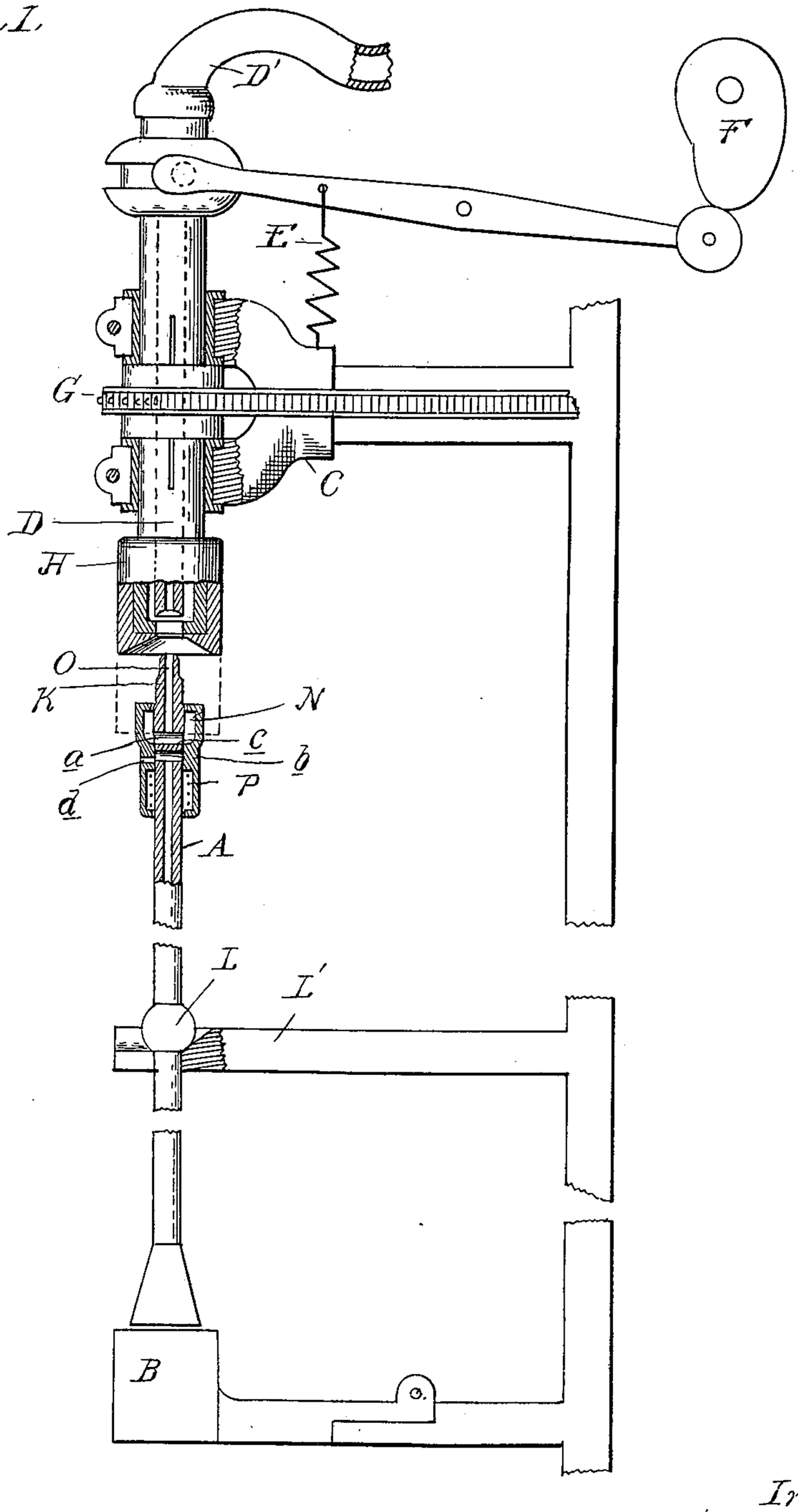

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Fig. 2.

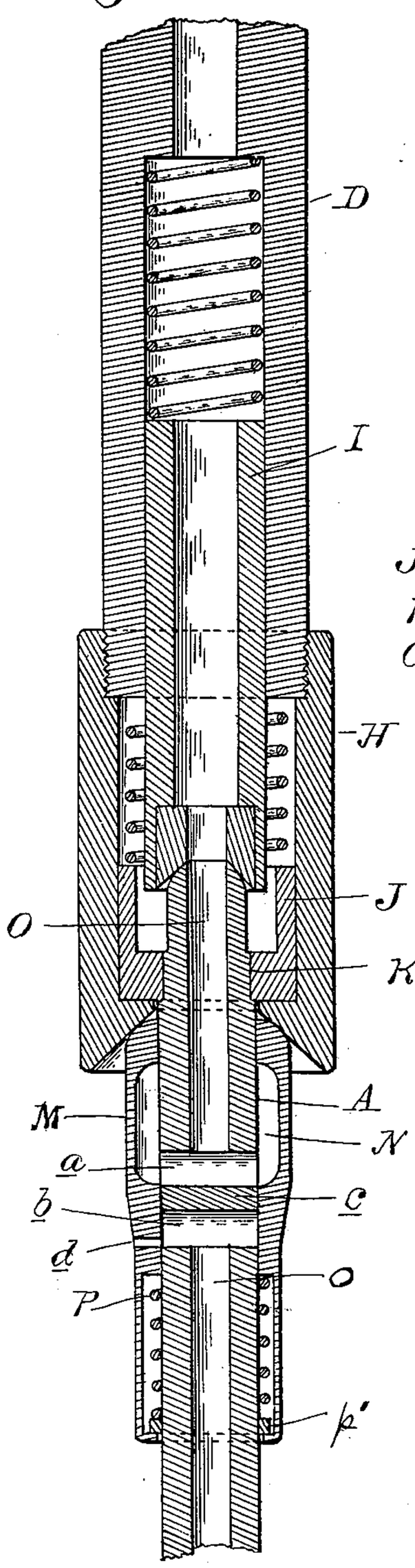


Fig. 3.

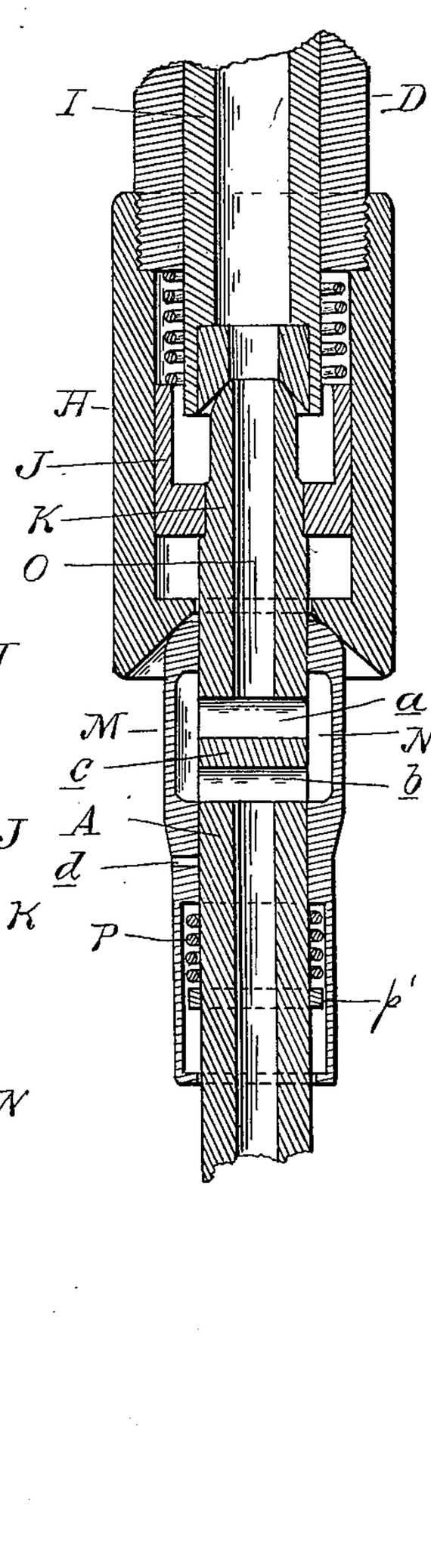
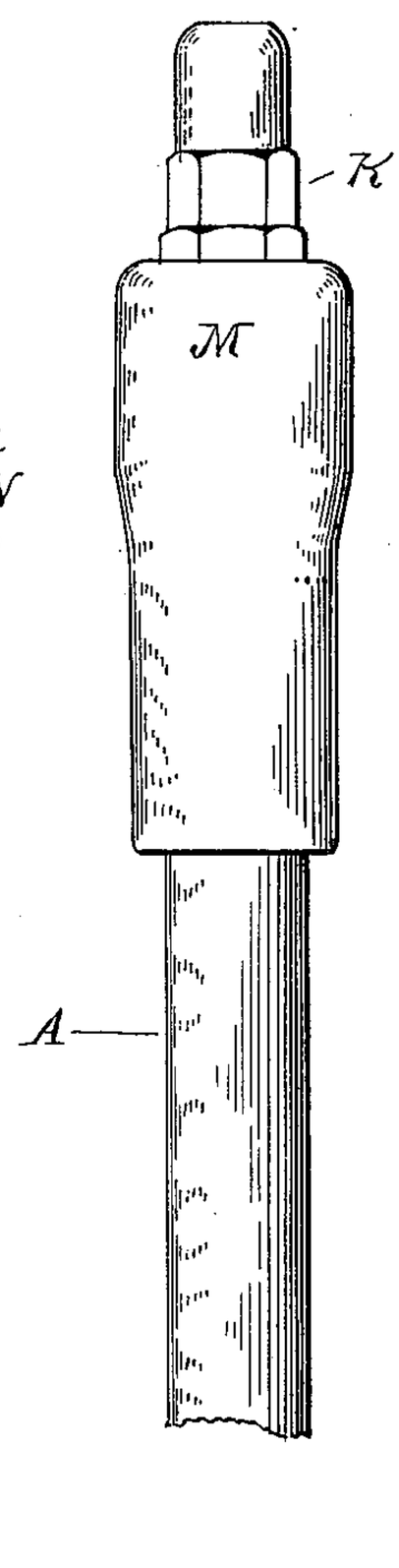


Fig. 4.



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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. 659,291, dated October 9, 1900.

Application filed February 14, 1898. Serial No. 670,187. (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.

The invention consists in the construction of a blowpipe having the air-controlling valve located therein; further, in the construction of a glass-blowing machine having a movable coupler or coupling which actuates the air-valve by and upon the coupler's engagement with the blowpipe, and, further, in such a coupler having means for rotating it to rotate the pipe, with means for operating the valve by the movement of the coupler.

The invention further consists in the construction, arrangement, and combination of the various parts, all as more fully hereinafter described.

I have not deemed it necessary to show a complete glass-blowing machine, but only so much thereof as relates to the application and use of my invention, the rest being shown in diagram.

In the drawings, Figure 1 is a diagrammatic sectional elevation of a glass-blowing machine embodying my invention. Figs. 2 and 3 are vertical central sections through the upper part of the blowpipe and coupling therewith, showing the valve in different positions. Fig. 4 is a side elevation of the upper end of the blowpipe, showing its valve.

The ordinary glass-blowing machine comprises a standard or support which has suitable means for holding the blowpipe A in proper relation to the molds, which are indicated at B, and to a supply of air under pressure at the opposite end.

As my invention does not relate to the mold nor to the opening and closing devices therefor, nor to the construction of the standard, nor to the operating mechanism, I have not thought it necessary to illustrate those in detail, and the coupling which I have shown is substantially the same as that shown in patent of the United States No. 584,755 to H. J. Colburn, dated June 15, 1897.

C is the upper bracket or arm, which carries the tube D, at the lower end of which is a coupling. The tube D and its coupling are actuated vertically by any suitable mechanism—such, for instance, as the spring E, controlled by a cam F, which may be driven from any suitable source of power, the spring lowering the coupling and the cam lifting it. The coupling is preferably driven so that it will rotate the blowpipe, and this may be done in any suitable manner—such, for instance, as by a sprocket chain and wheel, (shown at G,) the sprocket-wheel having a suitable spline to permit of the vertical movement of the tube D while driving it. The coupling consists of the casing H on the end of the tube D and spring-actuated tube I, against which the end of the blowpipe presses and makes contact, and a spring-backed disk J, having a polygonal opening, with which the polygonal bearing K on the blowpipe engages. These parts are of known construction and form by themselves no part of my present invention. The tube D is supplied with air from any source. In this case I have shown it as an air-supply means or device in the nature of a conduit D'.

The blowpipe has any suitable supporting means—such, for instance, as the enlargement L, engaging in a bearing in the arm or arms, such as L'. At a suitable point in the length of the blowpipe, preferably near the upper end thereof, is a controlling-valve. This valve I preferably form as shown in Figs. 2 and 3, comprising a sleeve M, having a chamber or passage N within, which is adapted to connect the two cross-ports *a b*, these cross-ports being separated by a partition or diaphragm *c* and connecting, respectively, with the main passage O above and below the partition *c*. The valve is held normally closed by means of a spring P, this spring bearing at one end against a collar or stop *p'* on the pipe and the other end against the sleeve M. I preferably arrange a port *d* through the sleeve to connect with the lower cross-port *b* when the valve is in its closed position—that is, closed against the supply of air under pressure to the article to be blown—so that atmospheric pressure will prevail normally in the blowpipe proper and in the article thereon.

The parts being thus constructed, their operation is as follows: The operator supports the blowpipe in proper relation to the mold and to the air-supply, and then by any suitable mechanism the cam F is turned in such a way as to permit the spring E to act to lower the coupling over the upper end of the blowpipe, the parts first assuming the position shown in Fig. 2. In this position it is evident that the air-pressure can freely enter the upper end of the blowpipe, but cannot enter the lower passage because of the partition *c*. The coupling continues its movement after the coupling proper is effected, and such movement downward will move the sleeve M with it, connecting the air-supply under pressure in the chamber N with the cross-port *b*, and thence supply the pressure through the blowpipe to the article blown. The continuing movement of the cam F will, after the proper interval, lift the coupling, so as to close the air-supply port and open the port *d* and admit the atmospheric pressure into the blowpipe, and will finally withdraw the coupling from the blowpipe, so that it may be withdrawn from the machine with the blown article.

I have shown the air-valve directly carried by the blowpipe and in the form of a sleeve. This form and location has some advantages, and so far as my claims specify the location I believe it to be desirable; but other features of my invention do not require this specific form or location of the valve.

In order to understand and appreciate the advantages of having the valve directly on or controlling a port directly in the blowpipe, it must be remembered that when blowing with such machines the maximum pressure may not exceed three ounces and the time of blowing may not exceed from four to six seconds. If the valve controlling the air-supply leads into an intermediate chamber, which in turn connects with the blowpipe, that chamber or passage returns to atmospheric pressure every time the blowpipe is taken away and the valve closed, and that chamber is necessarily filled with the air-pressure before it will be admitted through the blowpipe to the article. Inasmuch as the chances of leakage, &c., in this chamber are considerable and inasmuch as fractions of seconds, as well as fractions of ounces of pressure, are of importance in the proper blowing of certain articles, it is desirable that a controlling device for the pressure should be by a port directly in the blowpipe itself, as this insures the most accurate regulation of the pressure in the article to be blown, the time interval being fixed. It will also be observed that making this valve in the shape of a sleeve does not interfere with the symmetrical exterior of the blowpipe, and therefore does not interfere with its handling readily by the operators in the use of the device. In the initial marbering and blowing which is done by the operator with this valve also he can readily move it sufficiently to allow him to blow into the end in the usual manner.

What I claim as my invention is—

1. In a glass-blowing machine, the combination with means to supply air under pressure, of a blowpipe adapted to be supported detachably in operative relation to said supply, of a controlling device for said supply comprising a sleeve carried by the blowpipe and adapted to be moved to open and close the air-supply into the article to be blown.

2. The combination in a blowpipe, of a controlling-valve for the air-passage in the pipe comprising a movable sleeve having a passage or chamber therein, two ports in separated passages in the blowpipe, said sleeve adapted to be moved to connect said ports or to close one of them.

3. In a glass-blowing machine, the combition with a blowpipe, of a support for the blowpipe, of an air-supply device, a coupler arranged above the mouth of the blowpipe when in its support, means for moving said coupler, after the blowpipe is supported, into engagement therewith, an air-controlling valve, and means for operating the air-controlling valve by the movement of the coupler after the engagement has been made between the two.

4. In a glass-blowing machine, the combination with the blowpipe, its support and an air-supply device, of a coupler adapted to be moved to connect the air-supply device to the blowpipe and means for moving said coupler after connection has been perfected to control the air-supply.

5. In a glass-blowing machine, the combination with the blowpipe, its support, and an air-supply device, of a coupling, means for moving said coupling to engage with the blowpipe, and for effecting a further movement of the coupling member after its connection to the blowpipe, to control the air-supply thereto.

6. In a glass-blowing machine, the combination with the blowpipe, its support and an air-supply conduit, a coupling on the conduit, of a valve on the blowpipe for controlling the air-supply, and means for actuating said valve by the coupling.

7. In a glass-blowing machine, the combination with the blowpipe, its support and the air-supply tube or conduit, means for vertically actuating said tube and for rotating the same, a spring-actuated valve on the blowpipe, normally closed, and a connection between that valve and the coupling member whereby the movement of the coupling member actuates the valve, substantially as described.

8. In a glass-blowing machine, the combination with the blowpipe, its support and an air-supply conduit, a movable coupling on the conduit, a valve for controlling the admission of air to the blowpipe, means for moving the coupling into engagement with the pipe, and for giving it a further movement after its en-

gagement, which movement opens the air-valve.

9. In a glass-blowing machine a rotating coupler, means for moving it to connect it with the blowpipe to thereby rotate the same, and an air-valve opened by said coupler.

10. In a glass-blowing machine, a sliding, rotating coupler, an air-supply means connected to the coupler, and an air-valve opened by and upon the coupler's engagement upon the blowpipe.

11. In a glass-blowing machine, a mold, a blowpipe, a support for the blowpipe in operative relation to the mold, an air-supply conduit, a movable coupler at the terminus of said conduit and arranged above the blowpipe when in its support, a valve controlling the flow of air to the article to be blown, means for moving said coupler into engagement with the blowpipe to effect the coupling of the two and to operate said valve.

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

LESLIE H. COLBURN.

Witnesses:
FREDERICK L. GEDDES,
CARL H. BECKHAM.