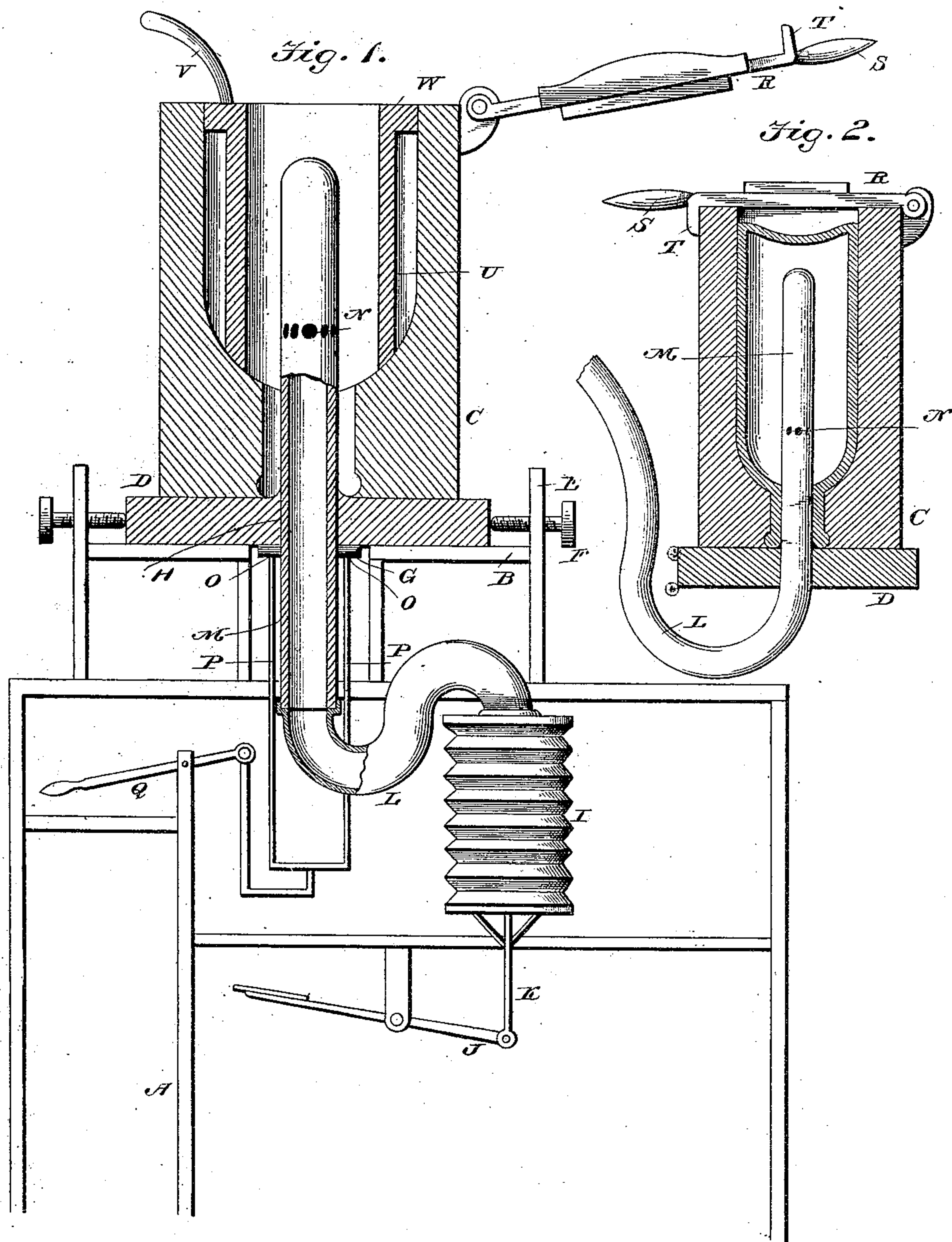


(No Model.)

H. BARD.
GLASS BLOWING MACHINE.

No. 453,977

Patented June 9, 1891.



Witnesses:

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HARRY BARD, OF PHILADELPHIA, PENNSYLVANIA.

GLASS-BLOWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 453,977, dated June 9, 1891.

Application filed September 10, 1890. Serial No. 364,584. — (No model.)

To all whom it may concern:

Be it known that I, HARRY BARD, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, 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.

My invention relates to improvements in glass-blowing machines; and it consists in certain novel features which will be hereinafter pointed out.

The object of my invention is to provide means whereby the article formed in the machine will be thin and have a large capacity; and a further object of my invention is to provide a machine which will be simple in its construction and which can be operated by an unskilled person. These objects I accomplish by the use of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a sectional view of my improved machine, showing the retaining-cylinder within the mold, and Fig. 2 is a sectional view, on a reduced scale, of the mold with the cylinder removed.

The base or supporting-frame A may be of any desired size and of any suitable construction, but preferably consists of an open frame having the platform B at its upper end, on which the mold C rests. The base D of the mold fits upon this platform within the annular flange or rim E thereof, and set-screws F, mounted in said rim, bear against the base, so as to secure the mold firmly in its position, as clearly shown. At the center of this platform B is an opening G, which registers with a central opening H in the base of the mold, and through which the plunger and blow-pipe is passed into the mold. Below the platform I secure the bellows I, the lower end of which is adapted to be moved in a vertical plane by means of the treadle J and the link K, connecting the treadle with the bellows. A flexible tube L extends from the upper end of the bellows and serves to connect the same with the blow-pipe or plunger M, which consists of a hollow cylindrical rod having a closed upper end and provided near said end with the diametrical perforations N. The plunger is provided at an intermediate point

of its length with the offsets O, to which I pivot the upper ends of the links or pitmen P, the lower ends of which are connected with a lever Q, fulcrumed on the frame A. The upper end of the mold is open, and its interior is of a proper configuration to form the desired article. The mold is provided with a cover or lid R, which is hinged at one side to the mold and is provided at a diametrically-opposite point with a handle S and a latch T to hold it firmly in its closed position by engaging the edge of the mold.

U designates the retaining-cylinder, which is adapted to retain the molten glass in a cylindrical mass until after the plunger has been forced thereinto, after which it is removed to permit the glass to be blown against the sides of the mold. This cylinder is of a less diameter than the mold and is provided at its upper end with a handle V, by means of which it may be manipulated. The cylinder is further provided at its upper end with the external annular flange W, which bears against the mold to hold the said cylinder concentrically within the same.

The operation of my improved machine will, it is thought, be readily understood. The glass is melted in the usual manner, and when it is in condition for blowing the cylinder is placed in the mold and the molten glass then poured in the cylinder. The glass will thus be kept in a compact mass while the operator manipulates the lever Q to force the plunger up into the same. The cylinder is then removed and the cover or lid swung over the mold and fastened, after which the operator depresses the treadle to compress the bellows and thus send a current of air through the plunger. This current will escape through the perforations in the plunger, and its pressure will force the glass against the interior surface of the mold and cause it to conform to the configuration of the same, thereby producing the desired article.

It will be seen from the foregoing description that my machine is very simple in its construction and operation, and its advantages are thought to be obvious. The machine can be built at a low cost and can be readily and easily operated by an unskilled person. The use of the bellows gives a strong and steady current to act on the glass while

the lever Q and its connections permit the plunger to be easily forced into the molten glass. The use of the cylinder causes the quantity of molten glass to be of much less volume than the mold (so that the article manufactured may be thin and have a large capacity) and at the same time to be evenly distributed. By the time the plunger has been forced into the molten glass and the cylinder withdrawn the glass will have become somewhat chilled and will be in a plastic state, so that it will momentarily retain a cylindrical form quite long enough to allow the blowing to be commenced. The glass will then be forced against the sides of the mold and will be evenly distributed and have an equal thickness throughout. By means of cylinders of different diameters the thickness of the vessels manufactured can also be regulated.

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

1. A glass-blowing apparatus consisting, essentially, of a mold, a retaining-cylinder

adapted to be placed therein, and a combined blow-pipe and plunger adapted to enter the cylinder through the bottom of the same, as set forth.

2. In a glass-blowing apparatus, the combination, with the frame, of the mold secured thereon, the combined plunger and blow-pipe, the lever fulcrumed on the frame and connected to the said plunger and blow-pipe, a bellows connected with the blow-pipe, and a treadle for operating said bellows, as set forth.

3. The combination of the mold, the retaining-cylinder removably held therein, and the hollow plunger adapted to enter the cylinder and the mold through the bottom of the same, said hollow plunger being provided with diametrical perforations near its upper end, substantially as set forth.

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

HARRY BARD.

Witnesses:

JOHN F. HALBACH,
HENRY ROCKCY.