

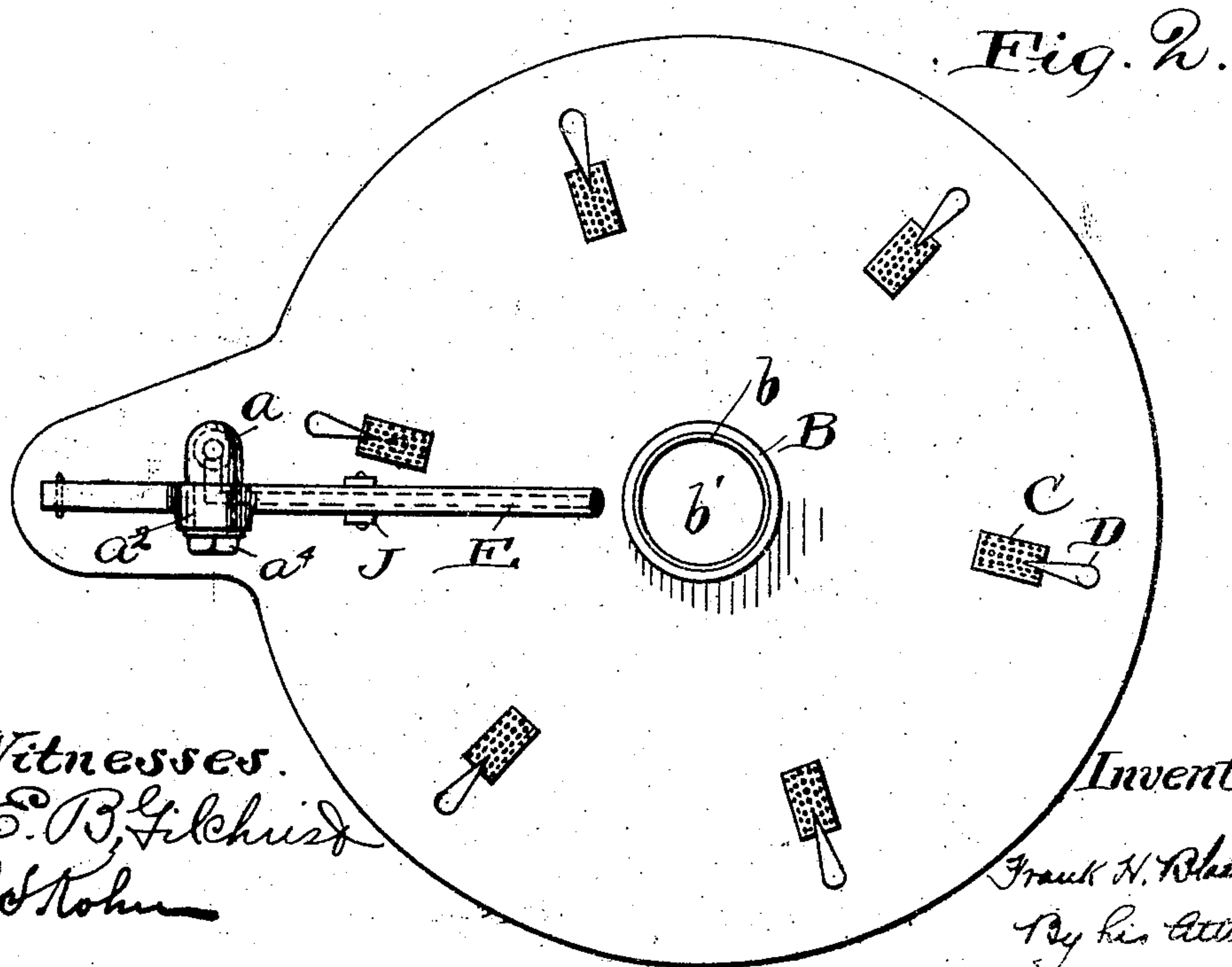
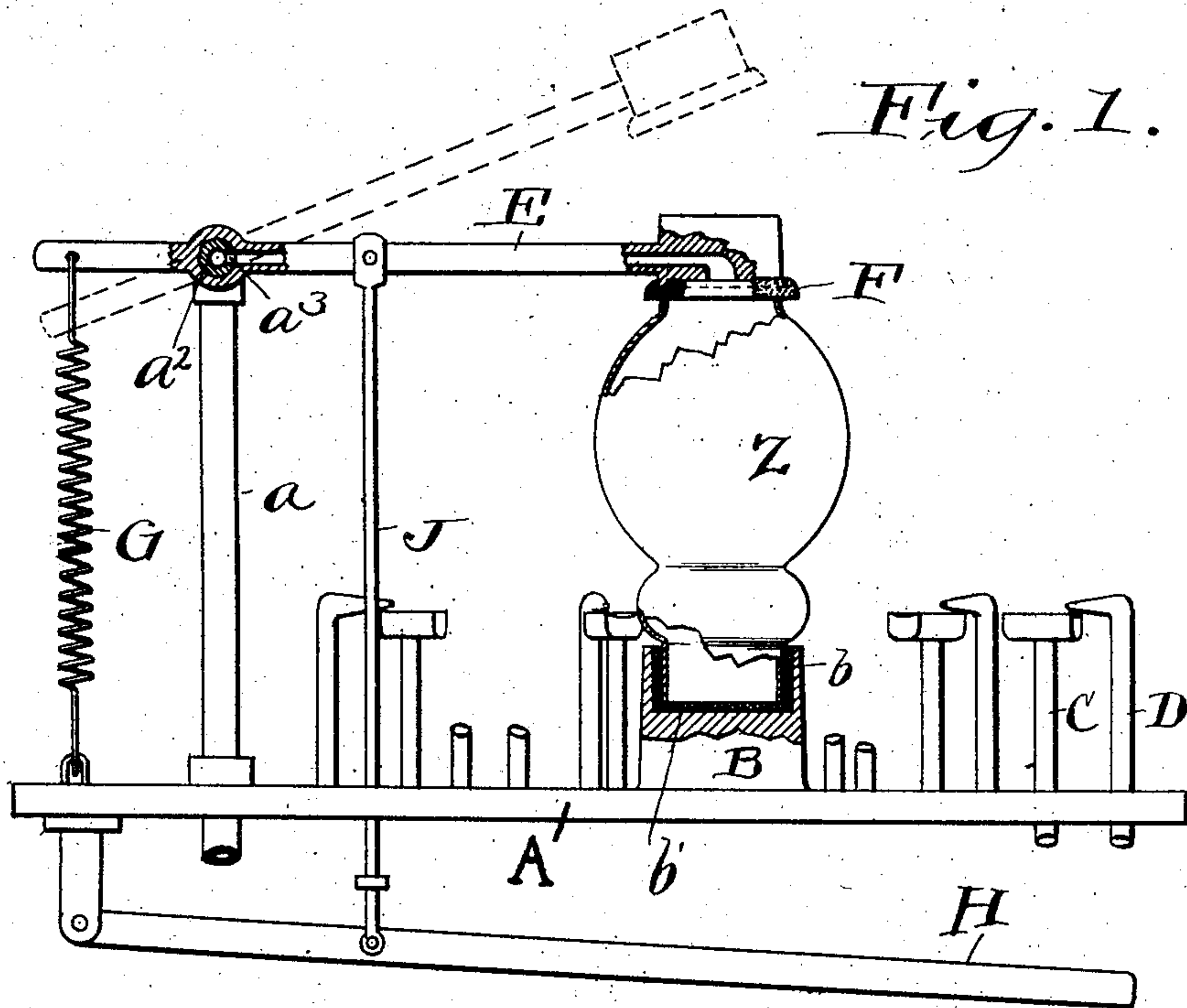
No. 810,465.

PATENTED JAN. 23, 1906.

F. H. BLACKBURN.

APPARATUS FOR MAKING AIR HOLE GLASSWARE.

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Witnesses.
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UNITED STATES PATENT OFFICE.

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APPARATUS FOR MAKING AIR-HOLE GLASSWARE.

No. 810,465.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed March 2, 1905. Serial No. 248,022.

To all whom it may concern:

Be it known that I, FRANK H. BLACKBURN, a citizen of the United States, residing at Fostoria, in the county of Seneca and State of Ohio, have invented a certain new and useful Improvement in Apparatus for Making Air-Hole Glassware, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide an efficient apparatus for making holes in air-hole glassware. Such ware has a circumferential row of holes about it which must be smooth and regular to be of neat appearance. My apparatus provides means for heating the ware in spots where the holes are to be and then subjecting it to an internal air-pressure, forcing outward such heated spots in form of horns which are broken off, leaving a round hole, the edges of which are then ground down and glazed. These features are hereinafter more fully described, and their essential characteristics set out in the claims.

In the drawings, Figure 1 is a side elevation of my apparatus, and Fig. 2 is a plan thereof.

A bed-plate A constitutes the principal frame of my apparatus. Carried by the bed-plate is a holder B for the globe. This holder comprises an asbestos cup in which the globe to be treated seats, the cup making a more or less nearly air-tight connection with the globe. The cup is made with an asbestos lining *b* and a bottom disk *b'*.

Placed about the axis of the glassware and at equal distances from each other are flame-producers consisting of the gas-burner C and the air-pipe D. The parts are so positioned as to project an intense flame against the side of the glassware at the point where the hole is to be.

Pivotally carried by a suitable standard *a* rising from the bed-plate is a lever E, on the forward end of which is a hood F, adapted to make more or less air-tight connection with the upper end of the glassware Z. A spring G tends to hold the lever in position with the hood elevated; but the latter is adapted to be drawn down into engagement with the glassware by a depression of the operating-lever H, connected with the lever E by a link J. As shown in the drawings, the lever E in front of its pivot is hollow, the bore commu-

nicating with the hollow of the hood F. The standard *a* is made hollow and constitutes an air-pipe. Its upper end is bent over, forming the hollow pivot *a*² of the lever F. This pivot has an opening *a*³, which is adapted to aline with the bore of the lever E when the same is drawn down to cause the hood to engage the glassware, but is out of such registration when the hood is in the idle position. The pivot thus makes a key or valve for the lever, turning on compressed air automatically when the hood is brought into position. A screw *a*⁴ holds the lever on its pivot and also plugs the end of the air-pipe.

In operation the glassware is placed in the cup and the flames heat the various spots about it. When these spots are sufficiently hot, the lever H is depressed, drawing down the hood F and turning compressed air into the interior. This compressed air forces the soft heated spots outward in the form of projections or horns. Such outward forcing continues until the pressure is relieved by some of the horns being forced open by the air. These horns are afterward broken off and the rough edges ground down and glazed to complete the operation. In order to prevent the air which escapes through a ruptured horn from blowing out the adjacent flame, I mount the gas-burners and air-pipes so that the flames are projected a little out of the radial. The horn, however, is forced out radially and the air which issues from its end misses the flame.

I claim—

1. In an apparatus for making air-hole glassware, the combination of a support for the glassware, a series of flame-producers placed thereabout and immovable with reference to the support, and means for causing compressed air to pass into the interior of the glassware.

2. In an apparatus for making air-hole glassware, in combination, means for stationarily supporting the glassware, a series of flame-producers placed thereabout, a hood means for conveying compressed air thereto, and means for moving the hood into engagement with the glassware.

3. In an apparatus for making air-hole glassware, a support adapted to make an approximately air-tight connection with the glassware at its base, a series of flame-pro-

ducers each adapted to project a point of flame against the glassware above such support, means adapted to tightly engage the upper end of the globe, said means having
5 a passage-way for compressed air, and mechanism for operating said means.

4. In an apparatus for making air-hole glassware, the combination of means for engaging in approximately air-tight manner
10 the ends of the ware, a compressed-air conduit leading through one of said means, and a series of flame-producers placed about the ware and adapted to project flames against the glassware in directions slightly out of the
15 radial, whereby the air forcing outward and puncturing the heated glass will not blow out the flames.

5. In a machine for making air-hole glassware, a support for the glassware lined with
20 asbestos to make a non-conducting and approximately air-tight connection with the glassware, means for heating the glassware simultaneously in a plurality of places above such support, and means for forming projec-
25 tions at the heated points of the glassware.

6. In an apparatus for making air-hole glassware, the combination of a support for the glassware, means for maintaining com-

pressed air within the glassware, and means for heating a plurality of spots around the
30 glassware, which spots are adapted to be forced outward by the compressed air.

7. In a machine for making air-hole glassware, the combination of means for engaging in a substantially air-tight manner the lower
35 end of the glassware, a pivoted arm carrying a hood adapted to engage the upper end of the glassware, means for conducting compressed air to said hood, a spring tending to raise said arm, and means for lowering the
40 arm to bring the hood into engagement with the glassware.

8. In an apparatus for making air-hole glassware, the combination of a support for the glassware, a series of flame-producers
45 placed thereabout and adapted to project points of flame against the glassware above its lower edge to soften spots thereon, and means for conducting compressed air into the interior of the glassware.

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

FRANK H. BLACKBURN.

Witnesses:

MARY F. ROBINSON,
ETHEL STAHL.