

H. BROOKE.
GLASS FURNACE.
APPLICATION FILED MAY 19, 1898.

925,864.

Patented June 22, 1909.
2 SHEETS—SHEET 1.

Fig. 1,

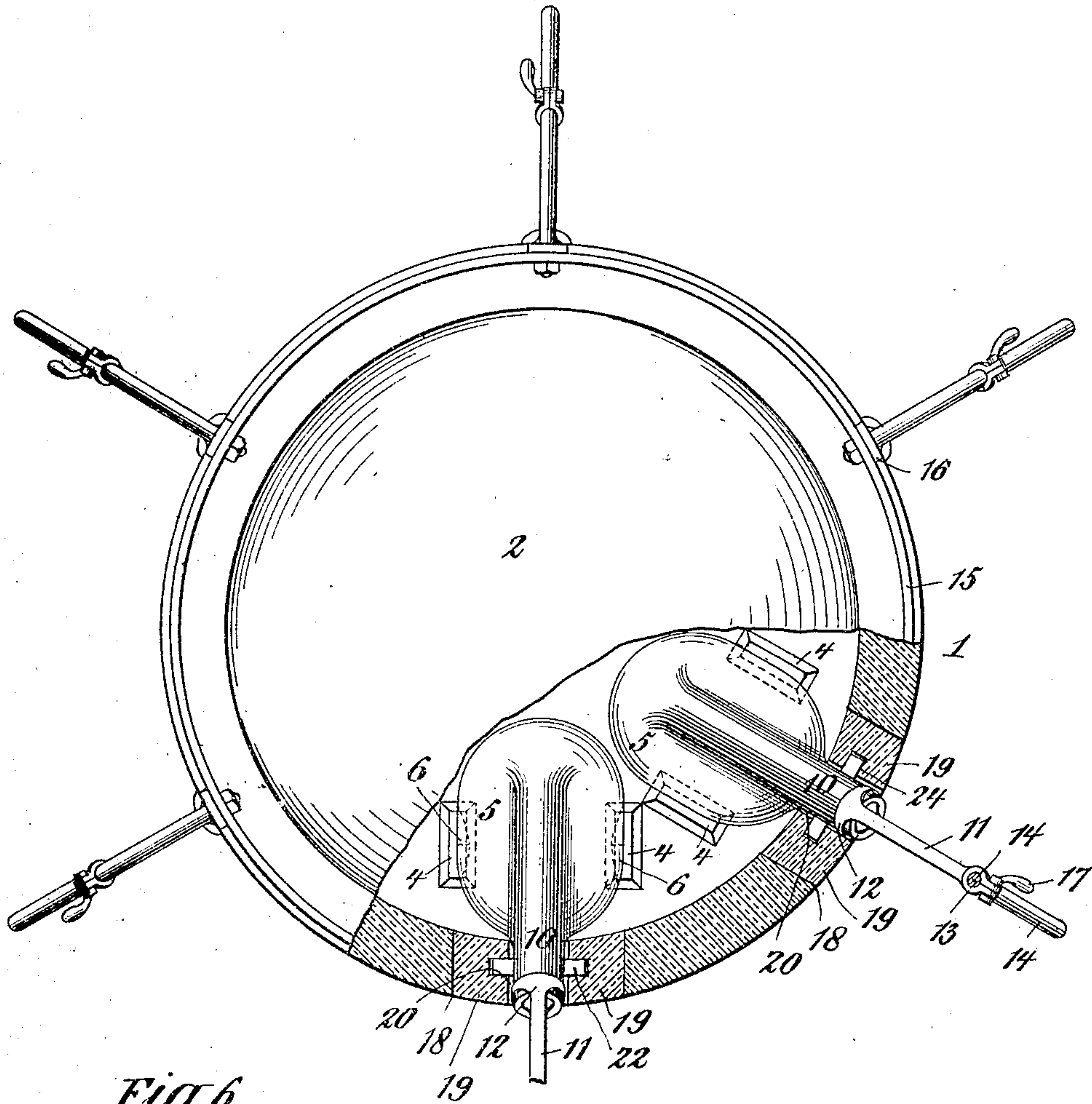


Fig. 6,

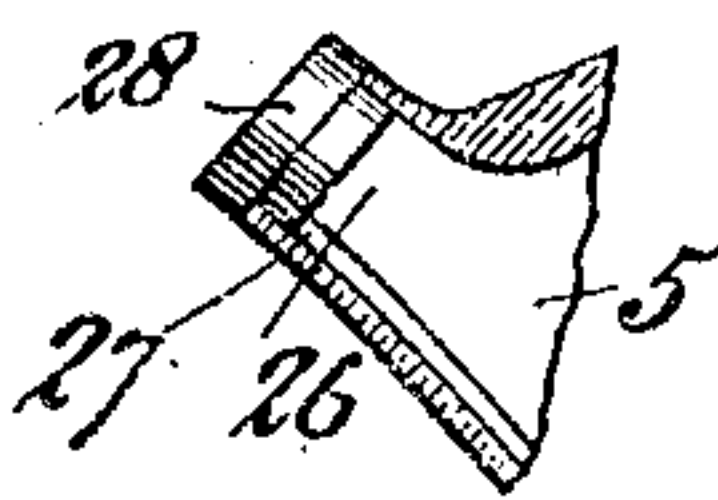
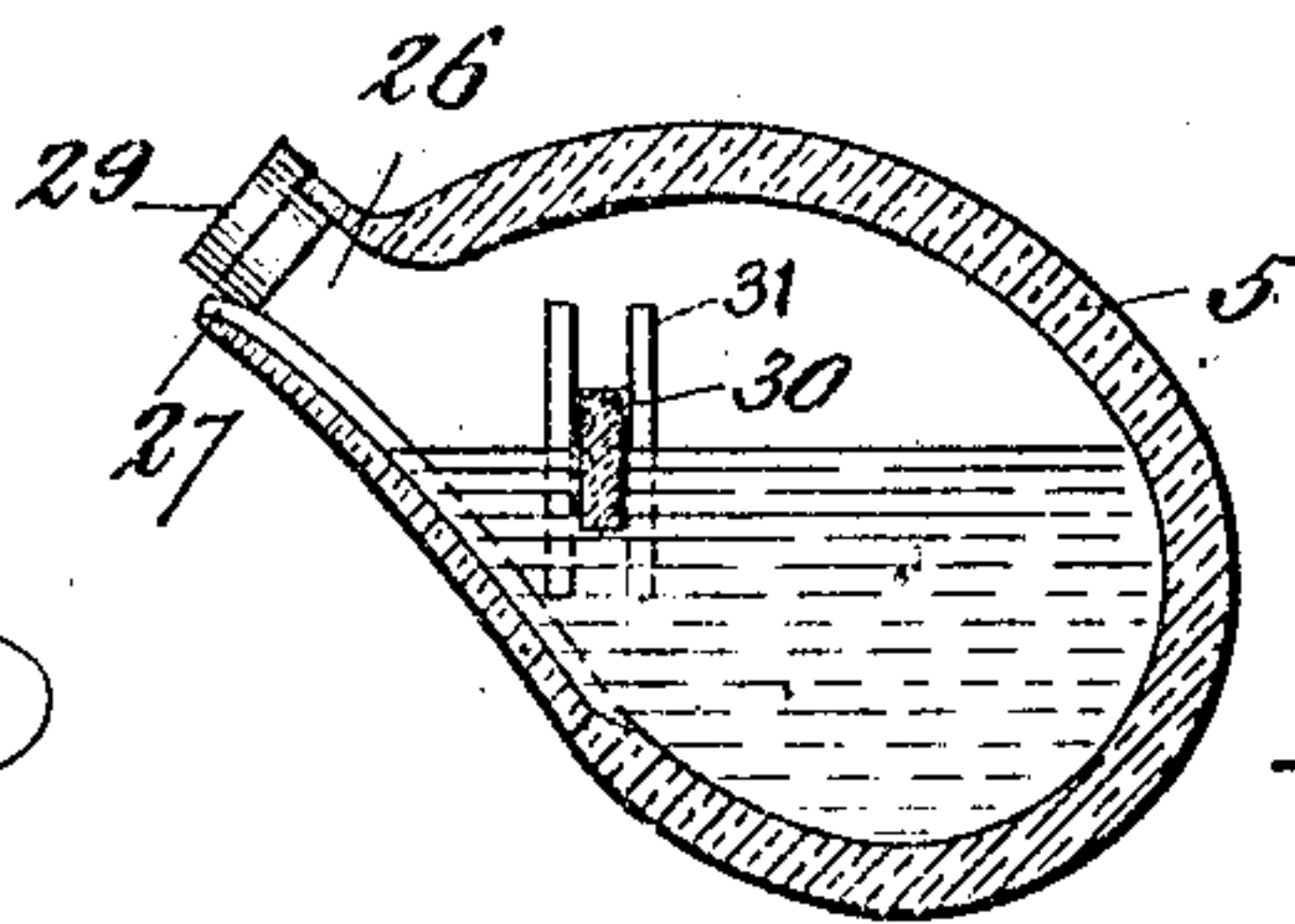


Fig. 5,



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2 SHEETS—SHEET 2.

Fig. 2,

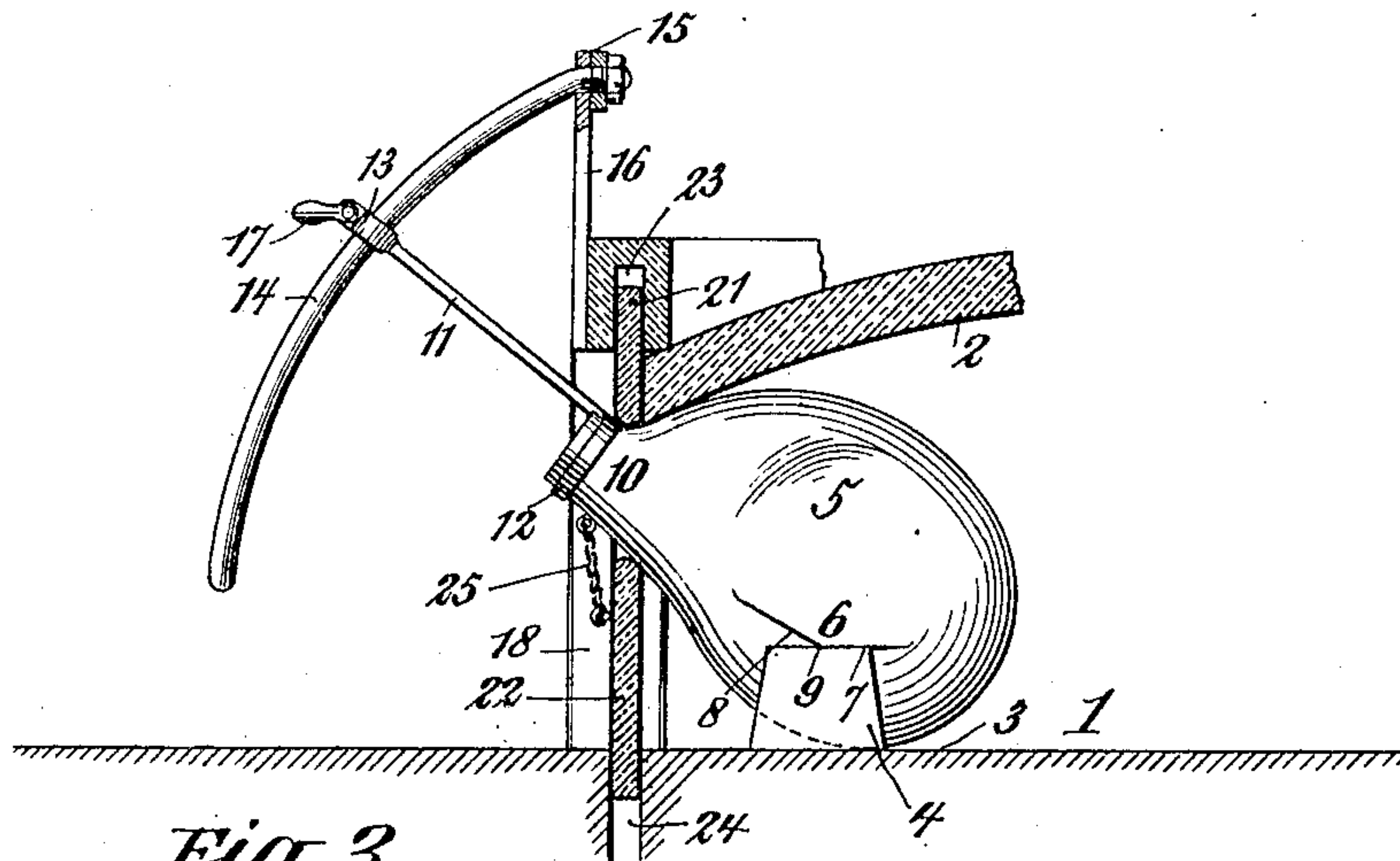


Fig. 3,

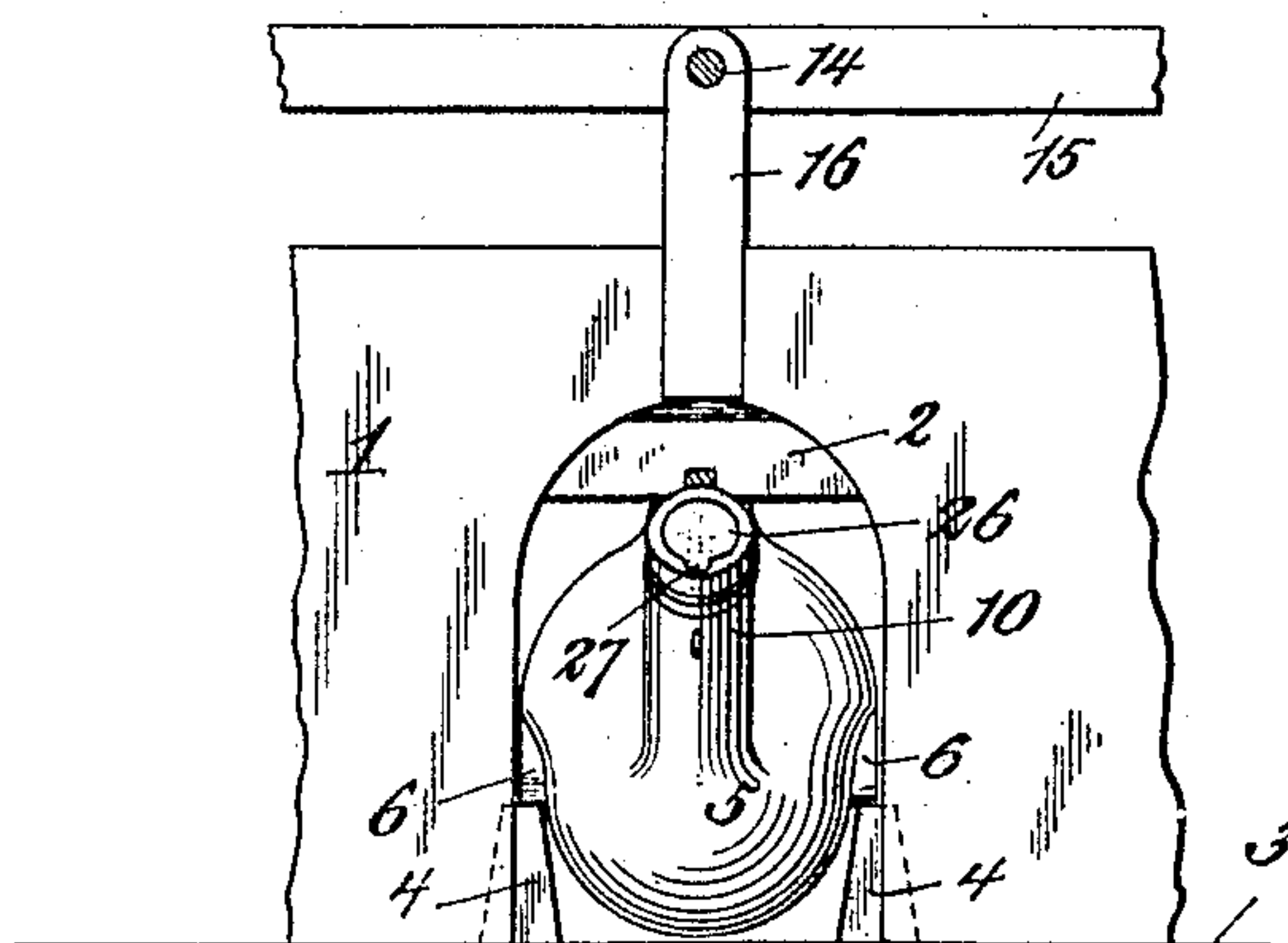
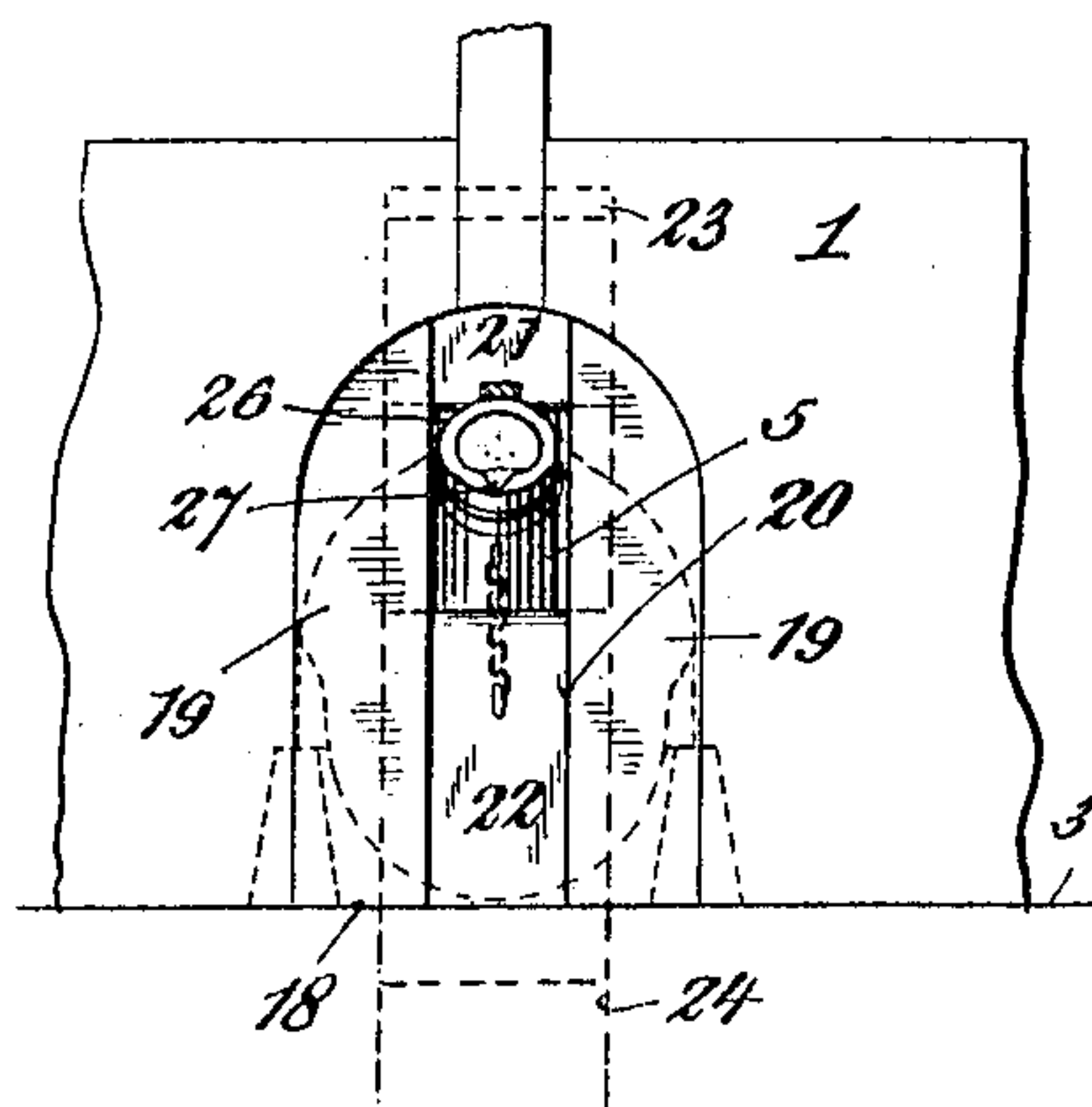


Fig. 4,



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UNITED STATES PATENT OFFICE.

HOMER BROOKE, OF JERSEY CITY, NEW JERSEY.

GLASS-FURNACE.

No. 925,864.

Specification of Letters Patent.

Patented June 22, 1909.

Application filed May 19, 1898. Serial No. 681,174.

To all whom it may concern:

Be it known that I, HOMER BROOKE, a citizen of the United States, residing at Jersey City, county of Hudson, and State of New Jersey, have invented a new and useful Improvement in Glass-Furnaces, of which the following is a specification.

The present invention relates to furnaces, and the particular object of the invention is to provide a glass furnace having a number of oscillating crucibles or melting pots.

Heretofore, constructions for melting glass have existed, consisting of a main furnace in which are placed a number of comparatively small crucibles containing "batches" to be melted. In operating a furnace of this character the crucibles or pots are removed from the interior of the furnace and the contents poured therefrom into molds or other suitable receptacles in which the molten material is given formation; or the pots or crucibles are left in the main furnace and the contents taken therefrom by gathering. In my construction the molten glass is flowed from the pots or crucibles by tilting or oscillating the same while they are in the main furnace.

In the drawings I have illustrated a construction embodying my invention, in which

Figure 1 is a plan view, partly broken away and partly in section. Fig. 2 is a detail view showing a portion of the furnace in vertical section with a crucible in position. Fig. 3 is a front elevation view of a portion of the furnace. Fig. 4 is a similar view showing the furnace opening closed. Fig. 5 is a central vertical section of one of the crucibles; and Fig. 6 is a detail view of the neck of a crucible showing the same entirely closed. Like numerals of reference refer to like parts throughout the several views of the drawings.

Referring to these drawings in detail 1 designates the furnace or heating chamber which is of the usual circular form and provided with a crown or dome 2. The floor of the furnace, designated by the numeral 3 is provided with a series of blocks 4 which are designed to support the crucibles 5. These crucibles are provided with journal lugs 6 projecting on each side. These journal lugs are provided with two bearing surfaces, one of which 7 is designed to rest upon the blocks 4 to support the crucible in its normal upright position while the other 8 supports the

crucible in its lowermost position, the two surfaces 7 and 8 meeting in an oscillating point 9 upon which the crucible is rocked or tilted to discharge its contents.

Each of the crucibles is provided with a pouring mouth or neck 10 to which is preferably secured some means of tilting or oscillating the crucible on the blocks 4. The means here illustrated consist of a rod 11 which is secured to the neck of the crucible by a collar 12, said rod 11 having at its other end a split ring 13 which surrounds an arc-shaped rod 14 secured to a circumferential band 15 supported on standards 16 extending from the walls of the furnace. The split ring 13 may be provided with a clamping handle 17 if desired, for the purpose of securing the same to the rod 14 in order to support the crucible in any desired position.

The front wall of the furnace or heating chamber 1 is provided with openings 18 through which the crucibles are moved in and out of the furnace when it is desired to do so. Normally these openings are partially closed by blocks 19 as illustrated in Fig. 4, leaving a longitudinal opening 20 through which the neck of the crucible projects. In the operation of drawing off the molten glass from the crucible, it is necessary that the heating chamber should be kept closed so as to confine the heat within the same and prevent the flames from issuing through any opening, as they would prevent or render difficult the manipulation of the crucible by the operator on the outside. For the purpose of keeping the longitudinal opening 20 closed I provide blocks 21 and 22, the block 21 being a gravity piece sliding in a way 23 and bearing upon the neck of the crucible. The block 22 slides in the way 24 and is secured by any desired means, as a chain 25, to the neck of the crucible. It will be seen that by these means the heating chamber is kept closed throughout the oscillation of the crucible to discharge the molten glass.

In crucibles heretofore constructed for the purpose of melting glass, it has been customary to construct the same with an opening through which the batch to be melted is inserted. While the batch is being melted this opening is sealed to confine the gases generated by the melting of the batch, and when the batch is melted, it is opened and the contents gathered or entirely discharged by pouring the whole contents. In my in-

vention, I construct the crucible with a single opening through the neck 10 which opening is provided with a large portion 26. The neck of the crucible is also provided with a
 5 discharge conduit or groove 27 through which the molten glass is drawn off. While the batch is being melted the entire opening in the neck of the crucible is closed, by the stopper 28, but during the operation of drawing
 10 off the contents the stopper 28 is removed and the stopper 29 placed in position. This stopper 29 only closes the large portion 26 of the opening, leaving the discharge conduit 27 unobstructed so as to permit of the flow of
 15 molten glass through the same. By these means it will be seen that the heat is confined within the crucible during both the melting and discharging of the glass.

Located in the interior of the crucible is a
 20 skimmer or floating dam 30, consisting of a bridge or cross-piece of firebrick or other suitable material. This skimmer extends across the interior of the crucible floating upon the molten glass, being kept in position by the
 25 lugs 31 which constitute guides. In the operation of the device, the surface of the molten glass next to the neck of the vessel dammed off by the skimmer is skimmed of the surface impurities, bubbles and the like,
 30 and when the glass is drawn off the skimmer dams back the surface glass and permits the flow to come from the middle portion of the molten mass where the glass is clear and free from impurities, the skimmer gradually de-
 35 scending as the surface of the molten glass is lowered.

While I have described the crucible as oscillating upon lugs on approximately the center of its side walls I do not wish to limit myself thereto, as it will be obvious that other
 40 means of tilting or rocking the crucible might be availed of and such means I deem the equivalent of the device shown. And an advantage of pivoting the crucible so as to os-
 45 cillate on its central point is that the range of movement of the neck of the crucible to and from the center of the heating chamber is minimized so that there is no undesirable projection of the neck of the crucible from
 50 the heating chamber.

The operation of the device will be obvious. Assuming the crucibles to be filled with the batch the openings 18 are closed so as to confine the heat within the heating
 55 chamber until the process of melting has been completed. The glass is then drawn from the crucibles by simply tilting the same by releasing the clamp 13 and lowering the mouth so as to rock the crucible on the piv-
 60 otal point 9 until the desired flow is obtained.

What is claimed as new is:

1. A device for containing molten glass consisting of a crucible provided with journal

pieces having oppositely inclined supporting 65 surfaces, substantially as specified.

2. A device for containing molten glass, consisting of a heating chamber closed on all sides, a crucible contained by and supported therein, said crucible being provided with
 70 journal pieces on opposite sides, blocks upon which said journal pieces rest, means for rocking said journal pieces on said blocks and means for securing the crucible in desired tilted position; substantially as described. 75

3. A glass furnace comprising a heating chamber, one or more crucibles provided with journal pieces having two straight oppositely inclined supporting surfaces, blocks upon which said crucibles are supported,
 80 means for oscillating or tilting said crucibles, and means for securing said crucibles in the desired tilted position, substantially as specified.

4. A crucible for containing molten glass, 85 having an opening therein divided into an upper filling portion and a lower discharge portion in combination with a stopper adapted in one position to entirely close said opening and in another position to close only the
 90 filling portion of said opening.

5. A crucible for containing molten glass, having an opening therein divided into an upper filling portion and a lower discharge portion a stopper adapted in one position to
 95 entirely close said opening and in another position to close only the filling portion of said opening, means for oscillating the crucible to discharge its contents, and means for securing the crucible in desired tilted position, sub- 100
 stantially as described.

6. A device for containing molten glass, the same consisting of a crucible provided with an opening divided into an upper filling portion and a lower discharge portion, a stop- 105
 per adapted to entirely close said opening, and a stopper adapted to close only the upper filling portion and leave the discharge portion unobstructed, substantially as described.

7. A glass furnace comprising a heating 110 chamber provided with an extended opening, a crucible located in said heating chamber, a neck to said crucible projecting through the opening in the heating chamber, means for oscillating said crucible independently of the 115
 heating chamber, means for closing said extended opening above and below the mouth of the crucible throughout the oscillation of the same, and means for securing the crucible in desired tilted position, substantially as 120
 specified.

In witness whereof, I have signed my name to this specification in the presence of two subscribing witnesses.

HOMER BROOKE.

Witnesses:

SOLON J. LIEBESKIND,
 SEABURY C. MASTICK.