No. 716,321. Patented Dec. 16, 1902.

C. C. WEBSTER.

APPARATUS FOR SUPPLYING MOLTEN METAL TO MOLDS.

(Application filed Dec. 26, 1900.)

(No Model.) 2 Sheets—Sheet 1.

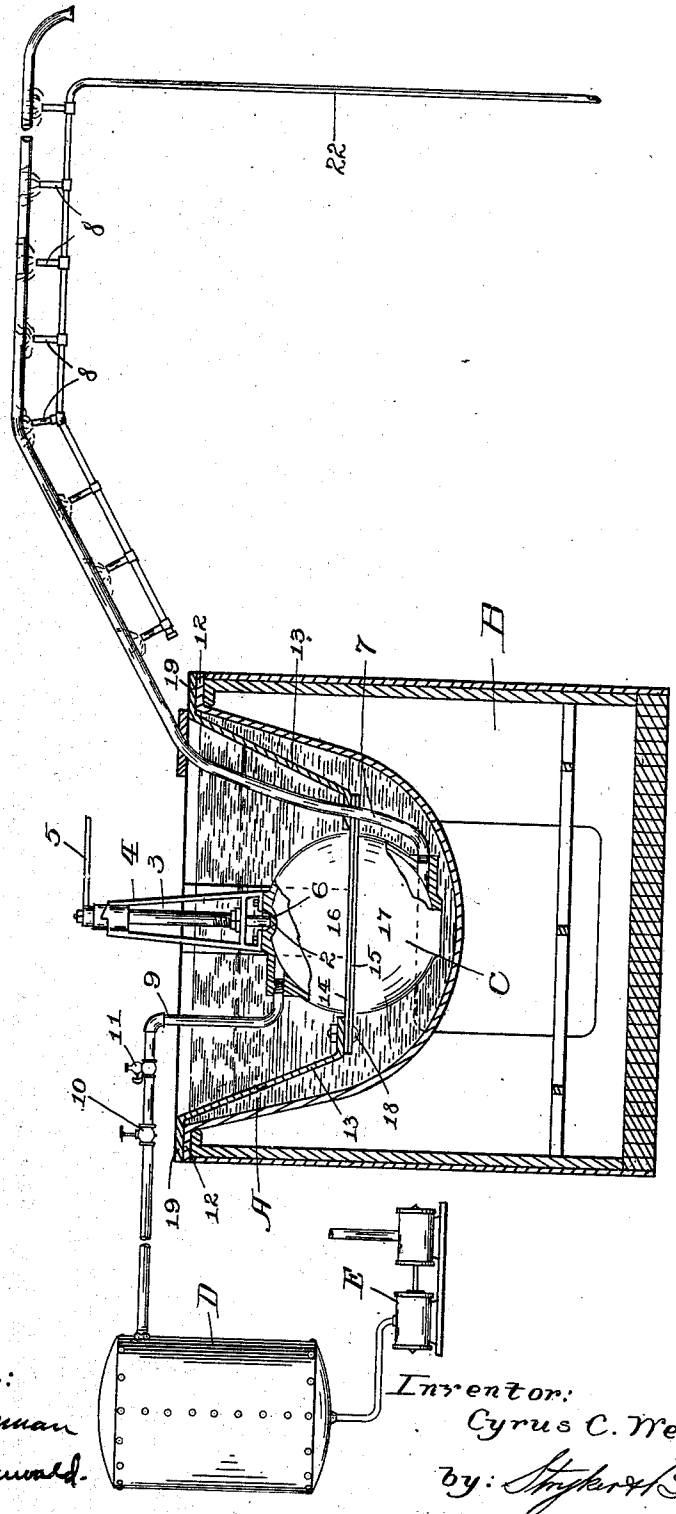


Fig. 1.

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Fig. 2.

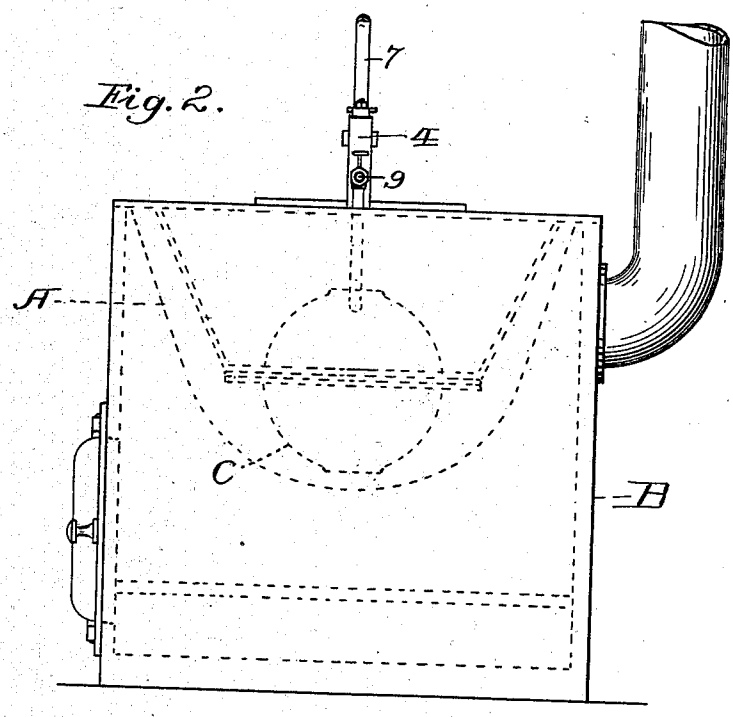


Fig. 3.

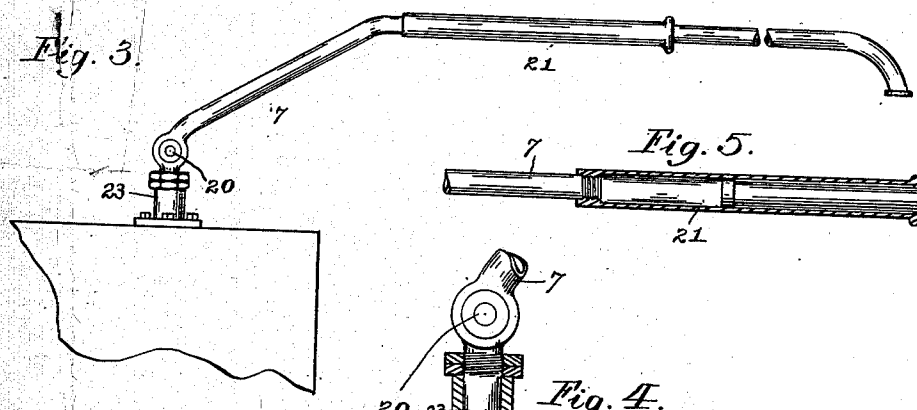


Fig. 5.

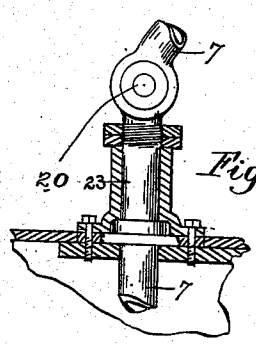


Fig. 4.

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UNITED STATES PATENT OFFICE.

CYRUS C. WEBSTER, OF MINNEAPOLIS, MINNESOTA.

APPARATUS FOR SUPPLYING MOLTEN METAL TO MOLDS.

SPECIFICATION forming part of Letters Patent No. 716,321, dated December 16, 1902.

Application filed December 26, 1900. Serial No. 41,053. (No model.)

To all whom it may concern:

Be it known that I, CYRUS C. WEBSTER, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Apparatus for Supplying Molten Metal to Molds, of which the following is a specification.

My invention relates to improvements in apparatus for supplying molten metal to molds.

The object is to provide simple and efficient means for melting lead, metals, or other substances and conveying the substance so melted to molds or receptacles in a quick and efficient manner.

In the accompanying drawings, forming part of this specification, Figure 1 is a front elevation in section of my improved apparatus for supplying molten metal to molds. Fig. 2 is a side elevation of Fig. 1, shown disconnected from the reservoir and pump. Fig. 3 is a side elevation of an alternate construction of pipe for conveying the molten metal from the melting-pot, having swivel and telescopic joints, so that the pipe may be adjusted to fill a mold or receptacle with molten metal; and Figs. 4 and 5 are sectional views, respectively, of the swivel and telescopic joints shown in Fig. 3.

In the drawings let A represent the melting-pot, B the fire-box below the melting-pot, and C the pump-chamber, which is positioned in the melting-pot. As shown, the pump-chamber is a hollow sphere; but it is obvious it may be of any suitable shape. This pump-chamber is provided with the valve 2, through the opening of which the molten metal is adapted to gravitate from the melting-pot. The valve-rod 3 extends above the melting-pot through the frame 4 and is adapted to be turned by the handle 5 so as to raise and lower the valve from its seat 6. The metal-conveying pipe 7 is adapted to extend from the pump-chamber to the place of delivery of the molten metal. Heat may be applied to this pipe to prevent the solidification of the metal as it flows from the melting-pot through the pipe. The burners 8 are positioned adjoining the conveying-pipe and are connected to the gas-pipe 22. The pipe 9 leads into the upper part of the pump-chamber and connects to a source of air-pressure, such as the air-reservoir D and air-pump E. The pipe is provided with the controlling-valve 10 and vent-valve 11. The vent-valve is positioned between the controlling-valve and the pump-chamber.

The pump-chamber is submerged in the molten metal contained in the melting-pot A when in operation. It is obvious that it is not essential that the pump-chamber be wholly within the melting-pot to produce an operative device. The melting-pot is fastened to the furnace by its flange 12. The pump-chamber is supported in the melting-pot by the skeleton frame, the arms 13 of which are connected to the flanges 14 and 15, respectively, of each section 16 and 17 by bolts 18. (Shown in Fig. 1.) The upper ends of the arms are formed with angles 19, which rest upon the flange of the melting-pot.

In operating my improved device crude metal is placed in the melting-pot A and reduced to a molten state. This metal covers the pump-chamber, as indicated in Fig. 1, so as to enter through its valve 2. By opening the vent 11 and closing the valve 2 the molten metal in the melting-pot flows into the pump-chamber until filled. The vent and valve 2 are then closed. Upon opening the valve 10 the pressure of the air from the reservoir forces the metal from the pump-chamber through the conveying-pipe 7. To more readily connect the conveying-pipe with the mold or the receptacle which it is desired to fill, the pipe may be constructed with the joints, such as are shown in Figs. 3, 4, and 5, which adapts the pipe to swing and extend to any desired position. This form of pipe is provided with a pivot-joint 20 and swivel-joint 23, so that the pipe may swing horizontally and vertically. The telescopic joint 21 (shown in Fig. 5) permits the pipe to be extended.

Having described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. An apparatus for supplying molten metal to molds, consisting in combination with a melting-pot and means for heating the same, of a pump-chamber, a frame for supporting the pump-chamber below the surface of the molten metal in the melting-pot, an egress-pipe from the pump-chamber, having a universal joint by which it is vertically and hori-

zontally adjustable, an opening in the top of the pump-chamber, a valve in said opening having its handle extending above the molten metal in the melting-pot, an air-reservoir, a passage-way from the pump-chamber to the reservoir, an air-cock in said passage-way and a valve interposed between said cock and the air-reservoir.

2. In a device of the class described, a melting-pot, means for heating the same, a pump-chamber in the melting-pot, a passage-way connecting the melting-pot with the pump-chamber, a valve in said passage-way, an air-reservoir, a second passage-way connecting the pump-chamber with the reservoir, a valve and an air-vent cock in said second passage-way, and an egress-pipe from the pump-chamber having means of vertical and horizontal adjustment.

3. An apparatus for supplying molten metal to molds, consisting in combination with a melting-pot and a heater for the same, of a hollow spherical pump-chamber in the melting-pot, a skeleton frame for supporting the pump-chamber below the surface of the molten metal in the melting-pot, an ingress-opening in the top of the pump-chamber for receiving the molten metal from the melting-pot into the pump-chamber, a valve in said ingress-opening, a passage-way from the pump-chamber to the air-reservoir and the exterior of the melting-pot, a valve in said passage-way between the pump-chamber and the air-reservoir, an air-vent cock in said passage-way between said second valve and reservoir, a metal-conveying pipe connected to the passage-way leading to the exterior of the pump-chamber, having a universal joint in said pipe by which the pipe is vertically and horizontally adjustable, a telescopic joint in the pipe by which the pipe is extensible, and means for heating the pipe.

4. An apparatus for supplying molten metal to molds, consisting in combination with a melting-pot and a heater for the same, of a pump-chamber in the melting-pot, a frame for supporting the pump-chamber, an air-reservoir, an ingress-opening in the top of the pump-chamber, a valve in said ingress-opening, a passage-way from the pump-chamber to the air-reservoir and the exterior of the melting-pot, a valve in said passage-way between the pump-chamber and the air-reservoir, and a pipe connected to the passage-way leading to the exterior of the pump-chamber, having means of vertical and horizontal adjustment.

5. An apparatus of the class described, consisting in combination of a melting-pot, a hollow spherical pump-chamber, in the melting-pot, a skeleton frame for supporting said pump-chamber, an ingress-opening in the top of the pump-chamber, a valve in said opening having an operating-rod rising above the melting-pot, an air-reservoir, a pipe connecting the pump-chamber with said reservoir, a valve in said pipe, a vent-cock located between said pipe-valve and the pump-chamber, a conveying-pipe connected to the bottom of the pump-chamber and rising through and projecting from the molten metal, by which it is heated in the melting-pot, and means for heating said projecting portion of the conveying-pipe and adjusting the same vertically and horizontally.

6. An apparatus of the class set forth, consisting in combination with a melting-pot, of a pump-chamber in the melting-pot, and of a conveying-pipe from the pump-chamber having universal adjustment.

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

CYRUS C. WEBSTER.

Witnesses:
H. L. HASEY,
GENEVIEVE HILL.