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A. R. WILSON & L. M. DULL.
APPARATUS FOR MANUFACTURING GLASS.

APPLICATION FILED FEB. 10, 1903.

NO MODEL.

Fig. 1.

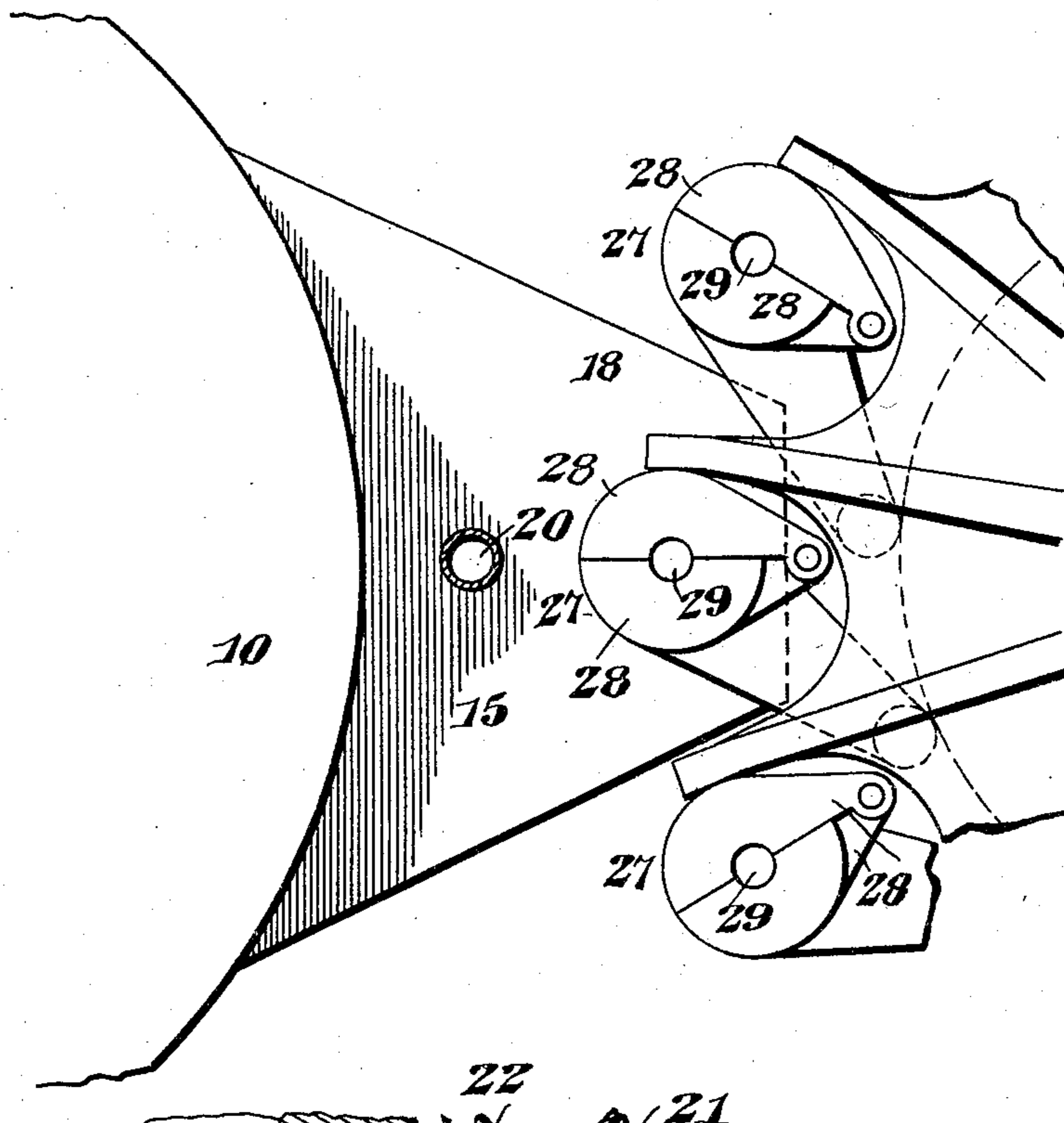
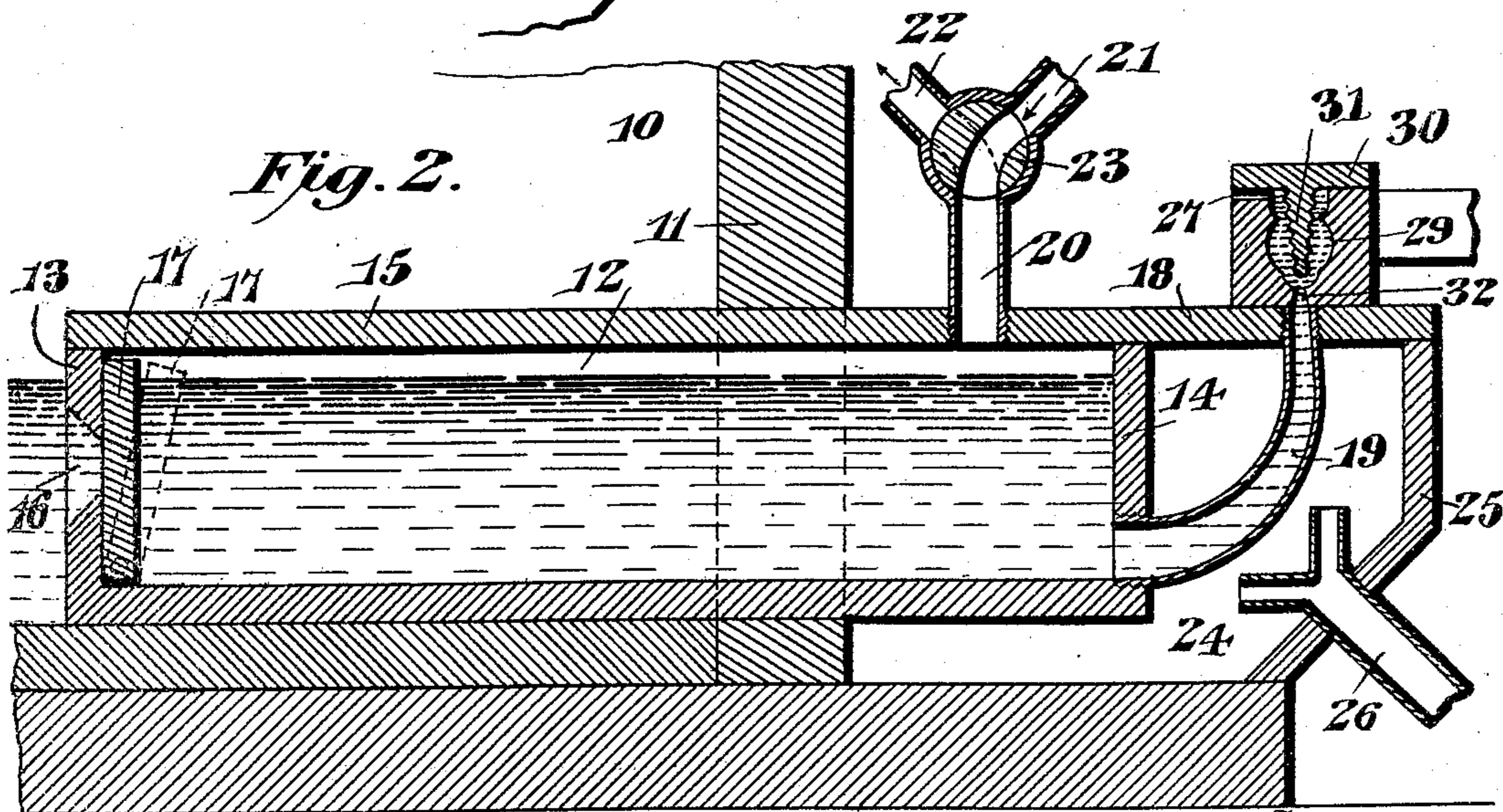


Fig. 2.



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APPARATUS FOR MANUFACTURING GLASS.

SPECIFICATION forming part of Letters Patent No. 775,740, dated November 22, 1904.

Application filed February 10, 1903. Serial No. 142,733. (No model.)

To all whom it may concern:

Be it known that we, AMOS ROBERROW WILSON and LESTER MARTIN DULL, citizens of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Apparatus for Manufacturing Glass, of which the following is a specification.

This invention relates to means for feeding molten glass to molding apparatus; and the object thereof is to provide novel mechanism by which the glass can be fed from the melting-tank to the mold without the necessity of handling the same.

The preferred embodiment of the invention is illustrated in the accompanying drawings, though it will be apparent upon an inspection of the claims hereto appended that the structure herein shown and described is open to various changes and modifications.

In the drawings, Figure 1 is a top plan view of the apparatus, showing a portion of the molding-machine. Fig. 2 is a sectional view through the same.

Similar reference-numerals indicate corresponding parts in all the figures of the drawings.

In the embodiment illustrated a melting-tank 10 is employed which may be of any well-known construction, the side wall thereof being designated by the reference-numeral 11. A reservoir 12 is arranged at the lower portion of this tank, being located partly within the same and partly without and extending through the wall 11.

The reservoir 12 has an upright rear wall 13, an upright front wall 14, and a top 15. The rear wall 13 is provided with an inlet-opening 16, which is located below the level of the glass in the tank and constitutes the means of communication between said tank and the interior of the reservoir. This communication is controlled by an inwardly-opening check-valve 17, arranged within the reservoir and pivotally supported at its lower end, being arranged to swing toward and away from the inner face of the wall 13, and thus close the inlet-opening 16. The top 15 of the

reservoir projects beyond its front end, forming a mold-receiving platform 18, and from the lower end of the front wall 14 a discharge-conduit or tube 19 extends through the platform to the upper face thereof. This tube is preferably formed of clay or other heat-resisting material, as are also the walls of the reservoir. It will be observed that the discharge end of the conduit or tube is thus located some distance above the level of the glass within the reservoir, which level will under normal conditions be substantially the same as that in the tank. Extending to the reservoir and through the top thereof exteriorly of the wall 11 of the tank is an air-pipe 20, having inlet and exhaust branches 21 and 22, controlled by a suitable valve 23. The inlet branch is connected with any suitable source of air-supply under pressure, and it will be apparent that by turning the valve 23 this supply may be admitted to the reservoir above the level of the glass, or by turning the valve in an opposite direction the supply may be cut off and the exhaust opened. The exposed end of the reservoir is preferably surrounded by a heating-chamber 24, composed of walls 25, which are spaced from the walls of the reservoir and extend to the platform 18. Through this chamber the conduit 19 extends, and a burner 26, arranged within the chamber, directs heat against the conduit and also serves to keep the projecting end of the reservoir in a heated condition.

Coacting with the apparatus described are molds designated as a whole by the reference-numeral 27. While these molds may be of any desired construction, they are preferably attached to a machine, a portion of which is shown, this machine being fully shown, described, and claimed in copending application, Serial No. 142,734. The molds, however, in themselves constitute an important feature in the combination, and as they are all similar in structure, but one need be described. They are each preferably composed of sections 28, hinged together and having cavities 29, which when combined are of the shape of the article

to be molded. The upper end of the mold is open, but is arranged to be covered by a cap-plate 30, carrying a core 31, which extends into the cavities. An inlet-channel 32 opens
 5 through the bottom of the mold to the cavities, and this opening is so arranged that it alines with the discharge end of the conduit when the mold is placed upon the platform in proper position.

10 The operation of the apparatus is substantially as follows: When the supply of air is cut off from the reservoir, the check-valve 17 is opened and the glass in the conduit is some distance below the upper face of the platform.
 15 As soon as a mold is brought to proper position upon the platform, with the inlet-opening in alinement with the discharge end of the conduit, air under pressure is admitted to the reservoir. This pressure acting on the glass
 20 serves to force the same through the conduit and rearwardly through the inlet-opening 16. As a result the valve 17 will be closed and the molten glass will be elevated through the conduit into the mold, a suitable vent being
 25 left through the upper portion thereof to permit the escape of air. As soon as the mold is filled the valve 23, controlling the air-supply, is turned to cut off said supply and permit the exhaust, whereupon the glass will lower within
 30 the conduit, the check-valve 17 will again open, and molten glass from the tank will supply that taken from the reservoir by the mold. The filled mold is of course moved over the platform and another empty one brought to
 35 position, whereupon the operation is repeated. By this arrangement it will be seen that glass in its molten state can be fed directly from a melting-tank to the mold without handling the same, and its fluidity is greater at the point
 40 of discharge than at the inlet to the reservoir on account of the heating mechanism employed. This is therefore an important feature. Furthermore, by means of the combination shown and described the glass can be
 45 fed to the mold after the core is in place. Therefore it does not require a carefully-measured amount, as in those structures where the batch is necessarily dropped into the molds before the core can be placed therein. Fur-
 50 thermore, when glass is not being fed from the apparatus the portion thereof that is in the conduit is located entirely within the heating-chamber and is kept in its molten condition by the burner, so that it cannot become
 55 chilled and choke the conduit.

It will be evident that the device is very simple in construction and can be applied to any well-known form of melting-tank.

60 From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, pro-
 65 portion, and minor details of construction may

be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus fully described our invention, what we claim as new, and desire to secure by 70 Letters Patent, is—

1. In apparatus of the class described, the combination with a reservoir for glass, of a cover closing the top of the reservoir and constituting a mold-receiving platform, a glass- 75 conduit leading from the reservoir through the cover and having an outstanding discharge end adapted to coact with the bottoms of the molds placed on the platform, and means for forcing the glass from the reservoir through 80 the conduit.

2. In apparatus of the class described, the combination with a reservoir, of a cover for the reservoir, said cover constituting a mold-receiving platform, and a conduit leading 85 from the reservoir through the platform to and terminating at the upper face of the same.

3. In apparatus of the class described, the combination with a reservoir, of an inclosed heating-chamber, an upwardly-extending con- 90 duit leading from the lower portion of the reservoir through the heating-chamber, and a burner located beneath and extending upwardly toward the upwardly-extending conduit. 95

4. In apparatus of the class described, the combination with a reservoir, of a heating-chamber surrounding a portion of the reservoir, the top of the chamber constituting a mold-receiving platform, a burner located 100 within the chamber, and a conduit leading from the lower portion of the reservoir through the top of the chamber.

5. In apparatus of the class described, the combination with a reservoir having an inlet 105 and discharge, of means for supplying air under pressure to the reservoir, and a check-valve controlling the inlet and automatically operated to close the same by the air-pressure in the reservoir. 110

6. In apparatus of the class described, the combination with a reservoir having an inlet in its lower portion, of an upwardly-extending discharge-conduit leading from the lower portion of the reservoir, means for supplying 115 air under pressure to the reservoir, and a check-valve controlling the inlet and automatically operated to close the same by the air-pressure in the reservoir.

7. In apparatus of the class described, the combination with a tank for the glass, of a reservoir associated therewith and having a submerged inlet, a valve controlling the inlet, a discharge-conduit connected with the reservoir, and means for supplying air under 125 pressure to the reservoir, said air-pressure effecting the discharge of glass through the conduit and the closing of the inlet by the valve.

8. In apparatus of the class described, the 130

combination with a tank for the glass, of a reservoir located partially within and partially without the tank, the part within having an inlet-opening forming communication between
5 the tank and reservoir, and a discharge connected with the exposed portion of the reservoir.

9. In apparatus of the class described, the combination with a tank for the glass, of a reservoir located partially within and partially without the tank, the part within having an inlet-opening, a heating-chamber surrounding the exterior portion of the reservoir, and a discharge-conduit extending through the chamber.
15 ber.

10. In apparatus of the class described, the combination with a reservoir, of a cover for the same projecting beyond the reservoir, said projecting portion constituting a mold-receiving platform, a conduit leading from the reservoir to the platform, and means for forcing the material from the reservoir through the conduit.
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11. In apparatus of the class described, the combination with a reservoir, of a cover for the same projecting beyond the reservoir and constituting a mold-receiving platform, a conduit leading from the lower portion of the reservoir, through the platform and terminating
30 at the upper surface thereof, and means for forcing the material from the reservoir through the conduit.

12. In apparatus of the class described, the combination with a reservoir, of a cover for the reservoir projecting beyond the same, said projecting portion constituting a mold-receiving platform, casing-walls associated with the projecting portion of the cover and forming a heating-chamber, a conduit extending from
40 the lower portion of the reservoir through the

heating-chamber and to the upper surface of the projecting portion of the cover, and means for heating the chamber.

13. In apparatus of the class described, the combination with a reservoir having an upright wall, said wall being provided with an inlet, of an outlet from the reservoir, means for supplying air under pressure to the reservoir, and an upright check-valve located in the reservoir and operated by the pressure therein to close the inlet.
45 50

14. In apparatus of the class described, the combination with a reservoir having opposite end walls, one of said walls being provided with an inlet, an upright swinging valve located within the reservoir and controlling the inlet, a conduit leading from the opposite wall, and means for supplying air under pressure to the reservoir.
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15. In apparatus of the class described, the combination with a tank for glass having a side wall, of a reservoir extending through the side wall and having an inlet communicating with the interior of the tank, a discharge-conduit leading from the lower portion of the reservoir, means connected with the exposed portion of the reservoir for supplying air under pressure to the interior of said reservoir, and a check-valve located within the reservoir and controlling the inlet, said check-valve being
60 65 70

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

AMOS ROBERROW WILSON.
LESTER MARTIN DULL.

Witnesses:

B. D. MILLS,
J. T. BRADFORD.