

(No Model.)

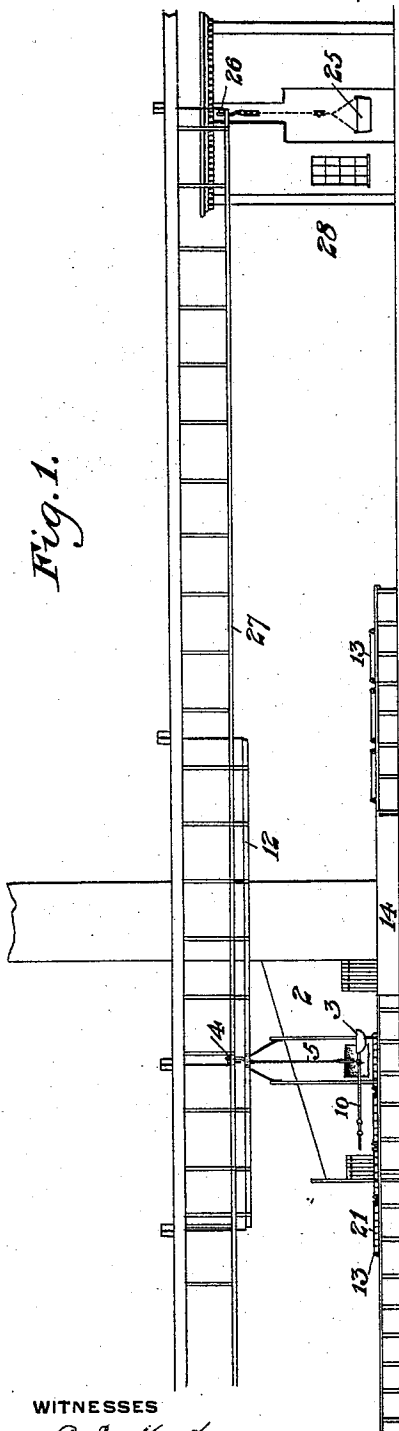
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W. S. REESE.
APPARATUS FOR CASTING METALS.

No. 577,209.

Patented Feb. 16, 1897.

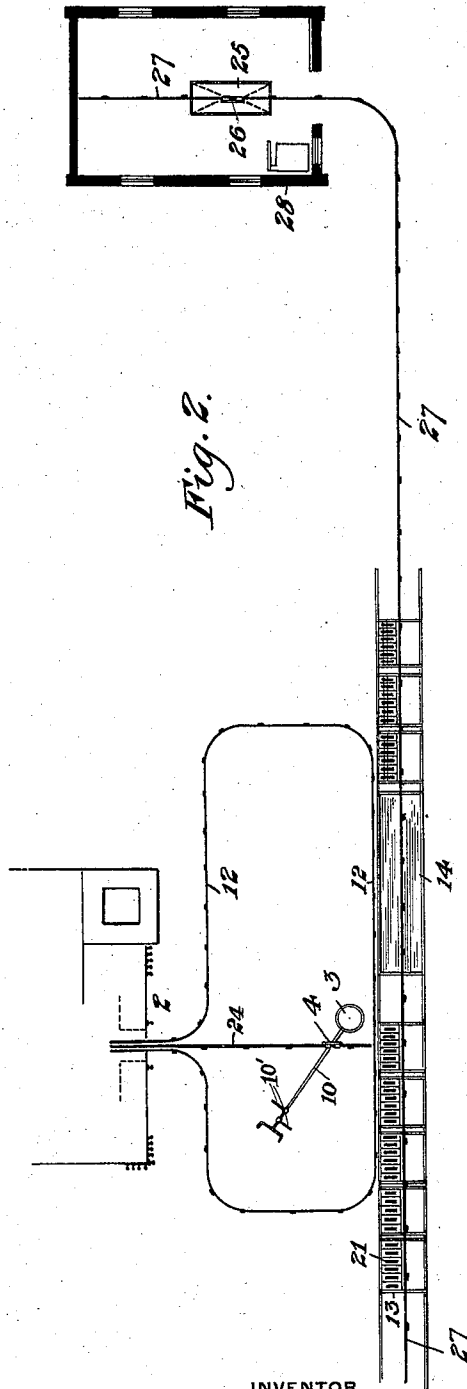
Fig. 1.



WITNESSES

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Fig. 2.



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(No Model.)

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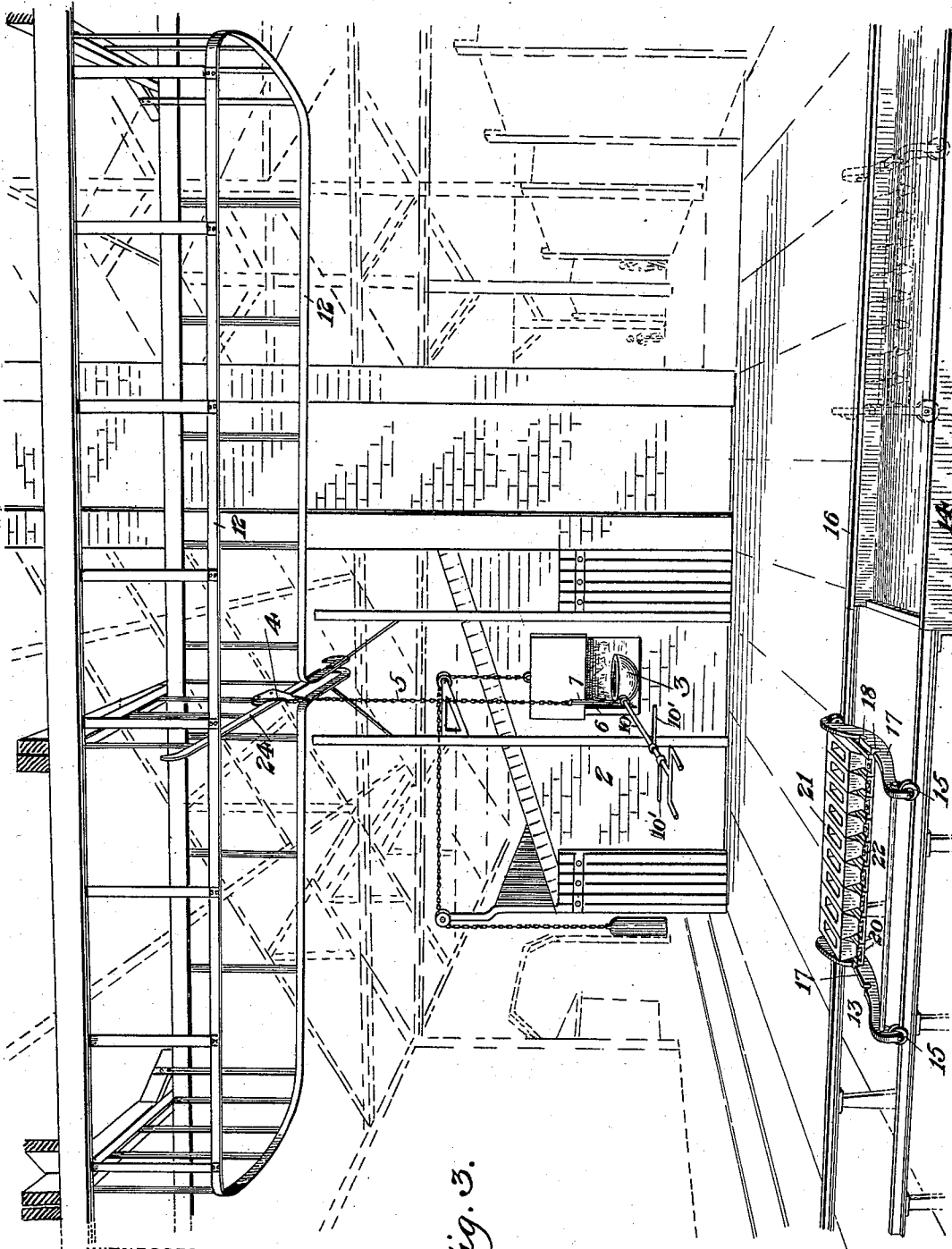


Fig. 3.

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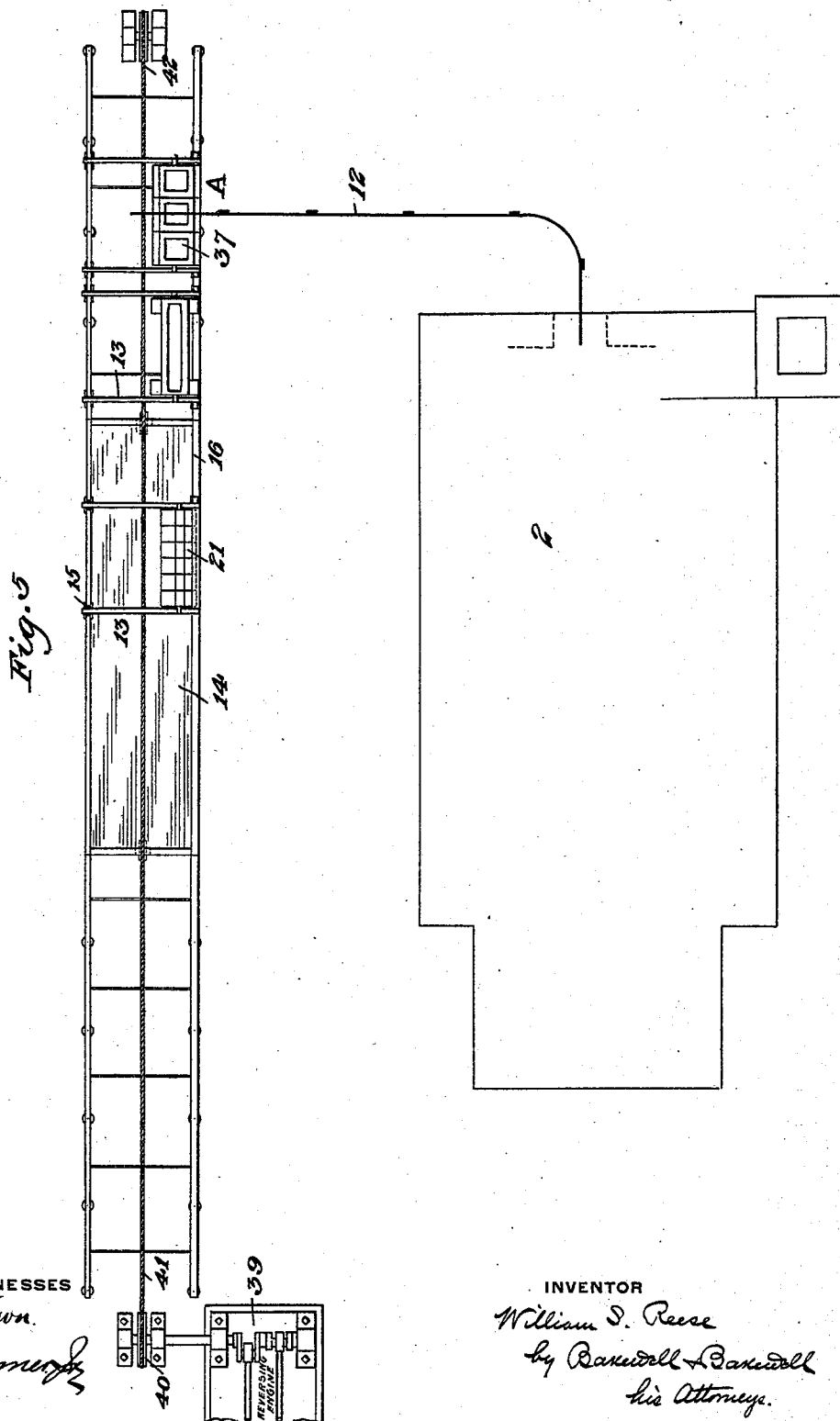
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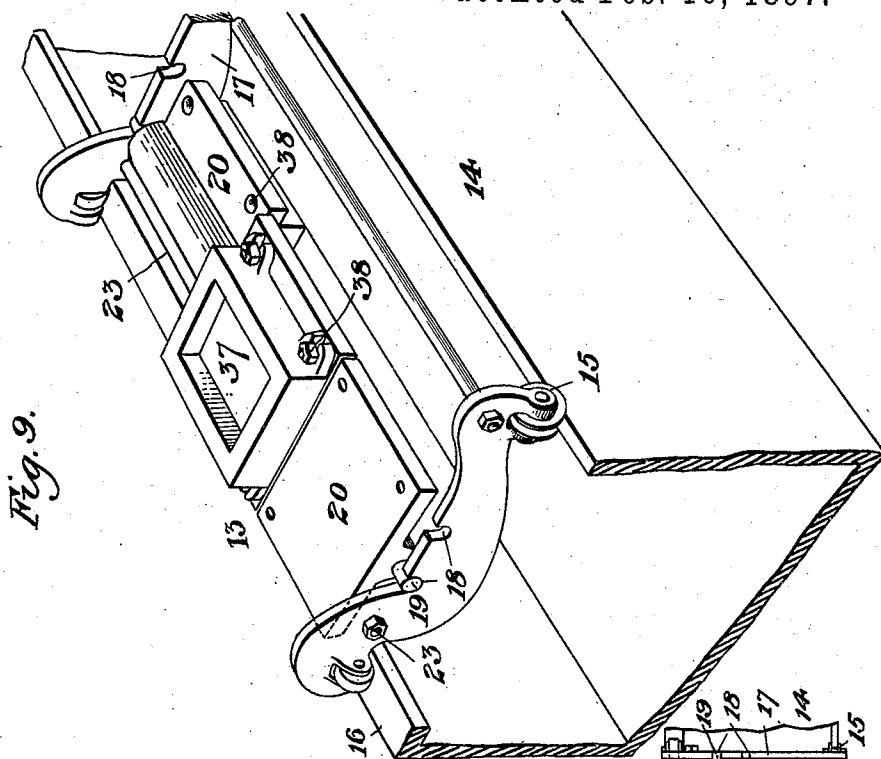


Fig. 9.

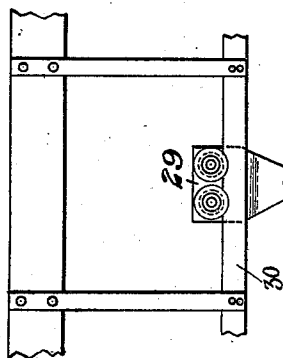


Fig. 7.

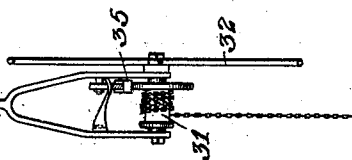


Fig. 8.

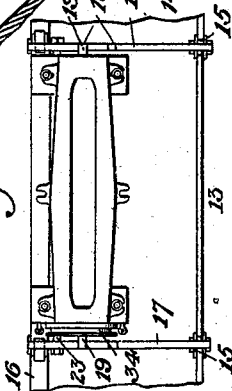
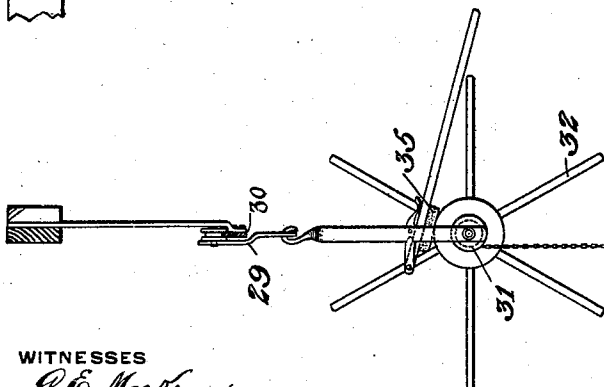


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILLIAM S. REESE, OF NATRONA, PENNSYLVANIA, ASSIGNOR TO THE PENNSYLVANIA SALT MANUFACTURING COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

APPARATUS FOR CASTING METALS.

SPECIFICATION forming part of Letters Patent No. 577,209, dated February 16, 1897.

Application filed October 3, 1895. Serial No. 564,507. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. REESE, of Natrona, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Casting Metals, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which—

10 Figure 1 is a front elevation of my improved plant. Fig. 2 is a plan view of the same. Fig. 3 is a perspective view of a portion of the plant. Fig. 4 is a vertical sectional view taken through the furnace and molds. Fig. 5 is a plan view of another form of plant. Fig. 6 is a cross-section of a water-tank, showing a turning device for heavy molds, Fig. 7 being a front elevation of the turning device. Fig. 8 is a top plan view of a second form of mold for heavy ingots. Fig. 9 is a perspective view showing a third form of mold in place upon the carrying-truck.

My invention relates to the casting of metals, more especially those, such as copper, 25 which are ladled or dipped out of the furnace and poured into the ingot-molds, and is designed to greatly lessen the amount of time and labor required in such operation, to prevent waste of the molten metal and make the 30 work of the attendant much easier.

In the drawings, in which similar numerals indicate corresponding parts, 2 represents a melting-furnace, and 3 a ladle arranged to dip the molten metal therefrom and pour it 35 into the molds. This ladle is supported from an overhead trolley 4 by a chain 5, to the lower end of which is secured a sliding clutch consisting of two bars 6 and 7, the bar 6 having a swinging loop which engages suitable ratchet-teeth upon the other bar and holds the bars 40 together in their adjusted position. To the bar 7 is secured the swivel 8, the lower element of which is provided with a ring 9, taking about the ladle-handle 10, this ring being 45 held in place by two collars 11 adjustably secured to the handle. The end of the ladle-handle is forked, as shown, to make easy its operation, and, if desired, two additional handles 10' may be used for turning it where a 50 heavy cast is made.

The trolley 4 rides upon an overhead track 12, which may be of any suitable form, but preferably incloses an oblong space in front of the furnace, as shown in Figs. 2 and 3. The molds are disposed along this track at 55 such points that the ladle may be moved over them as the trolley moves along the track, and I prefer to arrange them upon wheeled trucks 13, which may be moved along above a water-tank 14, which may be continuous or 60 arranged in separated sections in line as desired. The rear wheels 15 of the trucks are grooved and rest upon the rim of the trough or bosh, while the front wheels are plain-faced and travel upon a ledge or rim 16. 65

The end bars 17 of the trucks are provided with upper slots 18, arranged in pairs, and in which rest the shafts 19, upon which are loosely pivoted the mold-supporting plates 20. These plates 20 swing independently of 70 each other, and where a series of small molds is employed, as in Fig. 3, the molds 21 are preferably dovetailed endwise into longitudinal grooves in the plates 20, they being held in place by suitable bolts 22. 75

The shaft is so arranged relatively to the molds that it passes in the rear of their centers and their forward portions rest upon a connecting tie-rod 23 between the end bars. Where the molds are arranged in front of the 80 oblong space inclosed by the overhead track, as in Fig. 1, I prefer to use a cut-out or track 24, extending from the furnace directly across the oblong space to the molds, which are moved along over the tank to a point adjacent to the ladle, where they are filled and 85 then pushed along the tank to cool and be dumped. Beneath the point in the length of the tank when the metal is solidified I place therein a crate or pan 25, arranged to receive 90 several ingots, this crate being connected by a suitable block and tackle to a traveler 26, moving on an overhead track 27, which leads to a storage-room 28, as shown in Figs. 1 and 2.

Where large bar-molds are used, as shown 95 in Fig. 8, which require considerable power to tip them, I employ the device shown in Figs. 6, 7, and 8, a trolley 29, moving on an overhead track 30, located as shown in Fig. 4, having depending forked arms, between which 100

is pivoted the winding-drum 31, having operating-handles 32, and from which extends a chain 33, having two lower branches of different length secured to an arc-shaped end portion 34 of the mold. 35 is a brake which is applied to the drum, and the chains are so arranged that one is loose while the other is tight, one tipping the mold and the other returning it to its original position as the drum is turned. Thus when the mold is in position to be filled, as shown in Fig. 6, the shorter branch is taut. When it is desired to dump the cooled metal, the drum being rotated clockwise, the shorter branch tips the mold until its center of gravity passes a point above the pivot, when, the drum being allowed to turn backwardly, the weight of the mold carries it on to its inverted position, the longer branch wrapping about the arc-shaped end portion of the mold as it swings around. This wrapping of the longer branch converts it into the shorter branch when the mold is in its inverted position, so that when the drum is again rotated clockwise this longer branch throws the mold up to a point where, when again released, it will tilt back by gravity to its normal position.

In Fig. 9 I show another form of mold 37 for forming cakes, each mold being secured to its swinging mold-plate by bolts 38, the construction being otherwise as in the smaller ingot-molds.

When the plant is large and considerable power is necessary to move the molds, I prefer to use a motor therefor, as in Fig. 5, wherein 39 is a reversing-engine arranged to drive a drum 40, around which passes a cable 41, which extends over the tank and beneath rails extending in line therewith to a pulley or wheel 42. With this arrangement, the molds being poured at A beyond the end of the tank, so that no liability of explosion can occur consequent on the molten metal dropping into the water, the molds which are clamped to the cable are moved over the tank and emptied thereinto and the molds then moved on beyond the other end of the tank.

The operation of my improved plant is as follows: A ladleful of metal being dipped from the furnace, the ladle is moved along the oblong track or the cut-out to bring it over the molds, which are then filled therefrom, each series being moved along and replaced by another as fast as filled. When solidified, the ingots or bars are dropped into the water in the tank by tipping the molds, and the trucks pushed along farther. The ingots then being removed by the crate shown

or by tongs, the molds are run back to place and the operation repeated.

The advantages of the plant result from the small amount of manual labor necessary, the rapidity with which the operation can be carried out, and the simplicity and cheapness of the parts employed.

Many changes may be made in the form and arrangement of the various parts without departing from my invention, since

I claim—

1. The combination with a track, of a water-tank beneath a portion only of the same, a wheeled truck movable upon the track, and a tipping mold carried upon the truck, substantially as described.

2. The combination with a tank, of a water-tank beneath a portion only of the same, separate wheeled trucks movable upon the track, and tipping molds carried upon the trucks, substantially as described.

3. The combination with a tank, of tipping molds moving horizontally over the same, an overhead track, and a hand-controlled tipping device for the molds suspended from and movable along said track; substantially as described.

4. The combination with a tank, of a cage therein, a tipping mold movable over the cage, and an overhead track having movable thereon a trolley from which the cage is suspended, substantially as described.

5. The combination with a tank, of a cable passing thereover, molds supported independently of the cable but having detachable clamps arranged to grip the same, and means for moving the cable longitudinally, substantially as described.

6. The combination with a track, of a water-tank beneath a portion only of the same, a wheeled truck movable upon the track and having a longitudinal shaft, and a mold loosely pivoted upon the shaft, substantially as described.

7. The combination with a furnace having a side opening, of a dipping-ladle suspended from an overhead track and arranged to enter the opening and dip metal from the molten bath, a horizontal track adjacent to the overhead track and having molds movable thereon, and a water-tank beneath a portion only of the track; substantially as described.

In testimony whereof I have hereunto set my hand.

W. S. REESE.

Witnesses:

G. I. HOLDSHIP,
H. M. CORWIN.