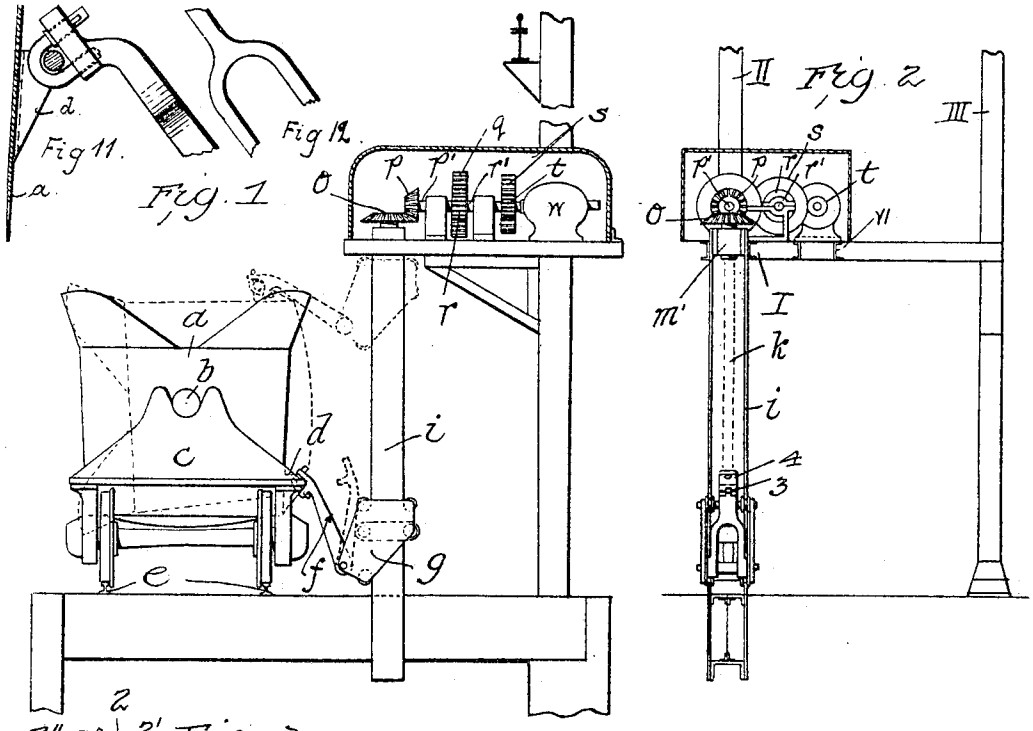
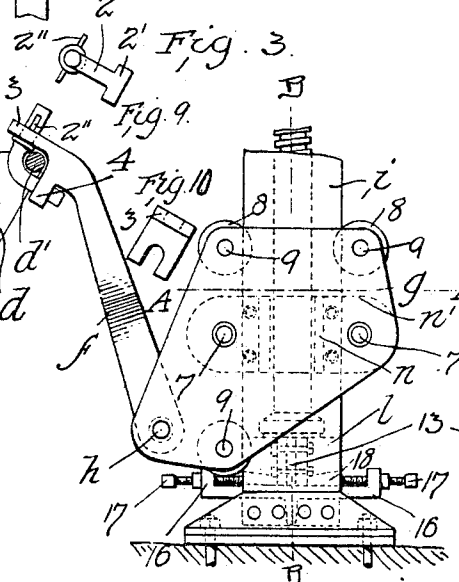
No. 798,834. PATENTED SEPT. 5, 1905.

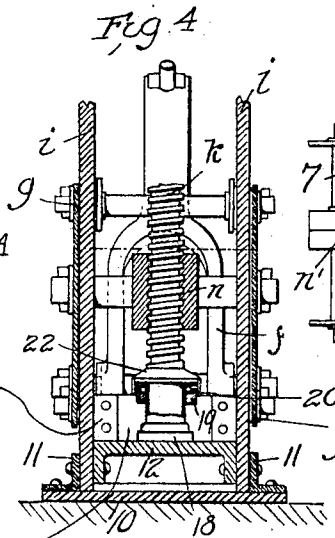
R. SCHNEIDER.

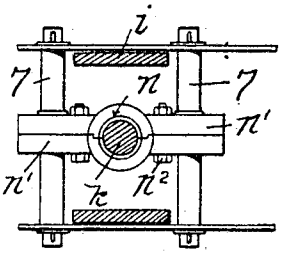
POURING DEVICE FOR LADLES, &c.

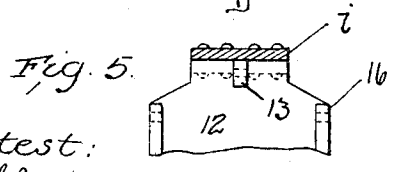
APPLICATION FILED AUG. 22, 1904.

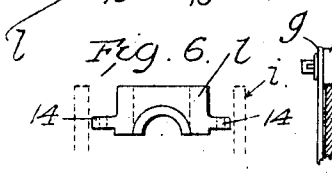


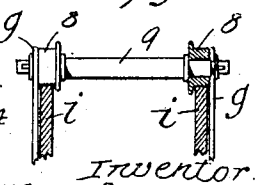












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UNITED STATES PATENT OFFICE.

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POURING DEVICE FOR LADLES, &c.

No. 798,834. Specification of Letters Patent. Patented Sept. 5, 1905.

Application filed August 22, 1904. Serial No. 221,688.

To all whom it may concern:

Be it known that I, REINHOLD SCHNEIDER, a citizen of the United States, residing at Sharon, Pennsylvania, have invented certain new and useful Improvements in Pouring Devices for Ladles and the Like, of which the following is a specification.

My said invention relates to improvements in devices for tipping or dumping ladles containing molten metal.

In devising the present invention I have aimed to provide mechanism which shall be positive in its action and always under the control of the operator and which shall be free from all liability of slipping in case the ladle is top-heavy, while all necessity is avoided for the use of a ladle having a heavy bottom in order to restore it to initial position after dumping.

A further object was to secure a construction which would eliminate all danger of accidents to the workmen due to the escape of the ladle or its disconnection from its operating mechanism or to the excessive or uneven speed of the operating mechanism.

Another object in view was to secure such a form of operating mechanism that in case of breakage of any of the driving connections the ladle would not be accidentally dumped, but would be securely locked against further movement until the breakage or difficulty had been repaired or overcome.

A still further object was to devise an apparatus of extreme simplicity, requiring a minimum amount of floor-space, and offering the least possible interference with the runways of the pouring-buildings of pig-casting plants.

Then, again, I have aimed to provide operating connections which shall be unaffected by the baking on of iron sparks and which can be readily taken apart at any time for repair work or the like.

Finally, I have aimed to provide a form of connection to the ladle which may be readily manipulated by one man, but which will be proof against accidental unlocking.

With these and other objects in view the invention comprises the construction and arrangement of parts hereinafter described, and particularly pointed out in the claims.

An embodiment of the invention is shown in the accompanying drawings, in which—

Figure 1 is an end elevation showing a ladle and truck and showing in full lines the operating-arm attached to the ladle ready to start the tilting of the ladle and showing also in dotted lines the position of the arm before connection with the ladle and its position after pouring. Fig. 2 is a front elevation with the ladle and car omitted. Fig. 3 is a detailed side elevation on a larger scale. Fig. 4 is a vertical section on line B B of Fig. 3. Fig. 5 is a half-plan view of the bottom plate which carries the spindle-bearing. Fig. 6 is a half-plan view of the bottom bearing for the spindle. Fig. 7 is a horizontal section on line A A of Fig. 3. Fig. 8 is a detailed sectional view showing the trolley guide-wheels in connection with the side plates, while Figs. 9 and 10 are detail views illustrating further the connection between the arm and the bracket of the ladle. Figs. 11 and 12 are views of a modification.

Referring more particularly to the figures, in which the same reference characters are used to designate the same parts in the several views, the ladle-chamber of the ordinary or any desired construction adapted to contain molten metal is indicated at *a*. It is journaled in the usual or any desired manner by bearings *b* on the frame of a car or truck *c*, the wheels of which travel on the rails, (indicated at *e*.) As the particular construction of this part does not enter into the present invention, a more detailed description thereof is deemed unnecessary. The ladle is provided at the side with a bracket *d*, having a bar or rod *d'*, which is adapted to be engaged by the free end of the arm *f*, the opposite end of which is pivotally connected to the trolley-frame in the manner hereinafter described.

The free end of the arm, which engages the bar *d'*, has a forked end, the forks being indicated at 3 and 4. The arm 4 of the fork is recessed or bifurcated, and the arm 3 has an opening therethrough, and an angle-iron 2 has a T-shaped head 2' at one end designed to engage behind the bifurcated arm, while its other end is provided with a transverse passage for a locking-key 2''. By removing the locking-key the angle-iron may be readily removed to detach the arm *f*, while at the same time while the parts are in the position shown in Fig. 3 a very effective connection is secured and one in which liability of accidental disconnection is reduced to a minimum. The lock shown in Figs. 11 and 12 may be used with advantage.

In order to effect the tipping of the ladle

to dump its contents, I provide screw operating means whereby the arm is raised from the position shown in full lines in Fig. 1 to the position shown at the top in dotted lines, which means will be now described.

Upon a suitable base-plate (indicated at 10) are supported two vertically-disposed parallel plates *i*, which form guides or tracks for a vertically-moving trolley-frame consisting of side plates *g*, which are connected together by transverse rods 9, upon which are journaled trolley-wheels 8, which bear against opposite edges of the plates *i*. The arm *f*, as before indicated, is pivotally connected to this trolley, the connection being made to the shaft or rod *h*, extending between the plates, which are projected outward a convenient distance, as indicated in Figs. 1 and 3, and afford ample room for the connection. Two half-nuts *n* are carried by plates *n'*, which in their turn are supported by rods 7, extending between the side plates *g*, these plates or bars *n'* being preferably bolted together by bolts and nuts, (indicated at n^2.) The nut formed by the two halves *n* just referred to is engaged by a screw-spindle *k*, and it will be seen that when the screw is rotated in the one direction or the other a corresponding vertical movement will be imparted to the trolley and, according to the direction, the arm *f* will be operated to either tilt the ladle or to restore it to its initial position. In order to provide a convenient and effective support for this spindle a sole-plate 12 is placed between the track-plates *i* at the lower end, which has downwardly-turned flanges abutting against the track-plates, and bolts are passed through these flanges, the track-plates *i*, and the upturned flanges or angle-plates 11, whereby the said parts are all rigidly connected together. The horizontal flanges of the angle-plates 11 are in turn bolted to the base-plate 10 and the latter to foundation, whereby the whole device is rigidly secured in position. Upon this sole-plate 12 are placed a pair of wedges 18, against the outer faces of which bear the inner ends of screws 17, which are threaded in lugs 16, projecting upwardly from the opposite sides of the sole-plate.

The journal-bearing *l* has its lower face provided with oppositely-inclined portions corresponding to the wedges and resting thereupon, so that as the wedges are caused to approach or recede the bearing will be correspondingly raised or lowered. The bearing *l* consists of two half bearing-blocks, as indicated in Fig. 6, provided with webs or lugs 14, which are designed to be clamped together by suitable bolts, but provide space in which rest flanges or webs 13, by which the bearing *l* is guided in its up-and-down movement. I prefer to place on the upper side of the bearing *l* a ring 19, which, together with a flange 22 on the screw-spindle *k*, forms a ball-race for the balls 20, thereby forming an antifriction-bearing.

The upper end of the spindle *k* is journaled in a bearing *m'*, secured between the side plates *i*, which in their turn are suitably secured to the I-beams I. These in their turn may extend to and connect with the building-column II, these with the column III and I-beams VI, making a suitable frame for supporting the driving connections and motor, which are mounted on a suitable platform carried by this frame. These driving connections comprise a beveled gear *o*, connected to the upper end of the screw *k*, meshing with a corresponding beveled gear *p*, mounted on a shaft *p'*. This shaft carries a gear *q*, which meshes with a smaller gear *r* on a shaft *r'*, which in its turn carries a larger gear *s*, meshing with a smaller gear *t*, secured to the shaft of the armature of a motor *w*. It will be understood that the motor is connected to any suitable source of electric current and its speed regulated by any suitable rheostat or controller, which it is not necessary to illustrate or describe herein.

Having thus described my invention, what I claim is—

1. In an apparatus of the class described, a vertical guide, a member movable vertically on said guide, power-operated means for raising and lowering the same and a tilting arm having one end pivotally connected to the movable member and the other end adapted for direct connection to the side of a ladle, substantially as described.

2. In an apparatus of the class described, a ladle mounted upon suitable pivots, a vertical guide, a member movable lengthwise of said guide and having a pivoted tilting arm adapted for direct connection with a ladle at one side of the pivot-point, and screw operating means for reciprocating said movable member, substantially as described.

3. In a device of the class described, a pivoted ladle, a guide, a trolley-frame movable lengthwise thereof, a tilting arm pivotally connected to the trolley and adapted for direct connection to the side of the ladle, a nut carried by the trolley-frame and a screw engaging the nut with means for rotating the screw, substantially as described.

4. In a device of the class described, a pivotally-supported ladle, a guide, a trolley-frame embracing the guide and movable lengthwise thereof, a tilting arm pivotally connected to the trolley and adapted for direct connection to the ladle at one side of its point or pivotal support, a nut carried by the trolley-frame and a screw engaging the nut, and an electric motor having connections for rotating the screw, substantially as described.

5. In combination, a suitable vertical guide, a trolley comprising a frame having wheels traveling on the guide, a nut carried by the trolley, a screw within the guide and engag-

ing the nut, means for connecting the trolley to a ladle, and power-operated means for rotating the screw, substantially as described.

6. In combination, a vertical guide, a screw parallel thereto, a vertical adjustable bearing for the lower end of the screw, power-operated means for rotating the screw, a trolley vertically movable on the guide and having a nut engaging the screw and an arm pivotally connected to the trolley adapted for direct connection to the ladle, substantially as described.

7. In combination, a pair of vertically-disposed bars, a screw journaled between said bars with means for rotating the same, a trolley-frame having wheels traveling on the opposite edges of said bars, a nut carried by the trolley-frame engaging the screw and an arm pivotally connected to the trolley-frame and having its free end adapted for direct connection to a ladle, substantially as described.

8. In combination, a pair of plates arranged parallel to each other, a trolley-frame having wheels traveling on opposite edges of said plate, power-operated means for reciprocating the trolley-frame on the plates and an arm pivotally connected to the trolley-frame and adapted for connection to a ladle, substantially as described.

9. In combination, a pair of vertically-disposed plates, a bearing located between said plates at the lower end and capable of vertical movement, wedges beneath said bearing with means for operating them, a screw journaled in said bearing and extending upwardly between the plates, a trolley guided on said plates and having a nut engaging the screw, and means for connecting said trolley to a ladle for tilting the ladle as the trolley is raised and lowered, and means for rotating the screw, substantially as described.

10. In combination with a guide and a traveling member having means for operating it, of an arm pivotally connected to said traveling member and having a forked outer end for engaging the handle-bar of a ladle, a retaining-iron of substantially L shape having a T-shaped head engaging the slot in one arm of the fork and its other end passed through an opening in the other arm of the fork with means for securing said other end in place, substantially as described.

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

REINHOLD SCHNEIDER.

Witnesses:

M. A. TOZIER,

EDWARD JANER.