No. 780,372. PATENTED JAN. 17, 1905.

J. C. McCOY.

LADLE MECHANISM.

APPLICATION FILED APR. 29, 1904.

2 SHEETS—SHEET 1.

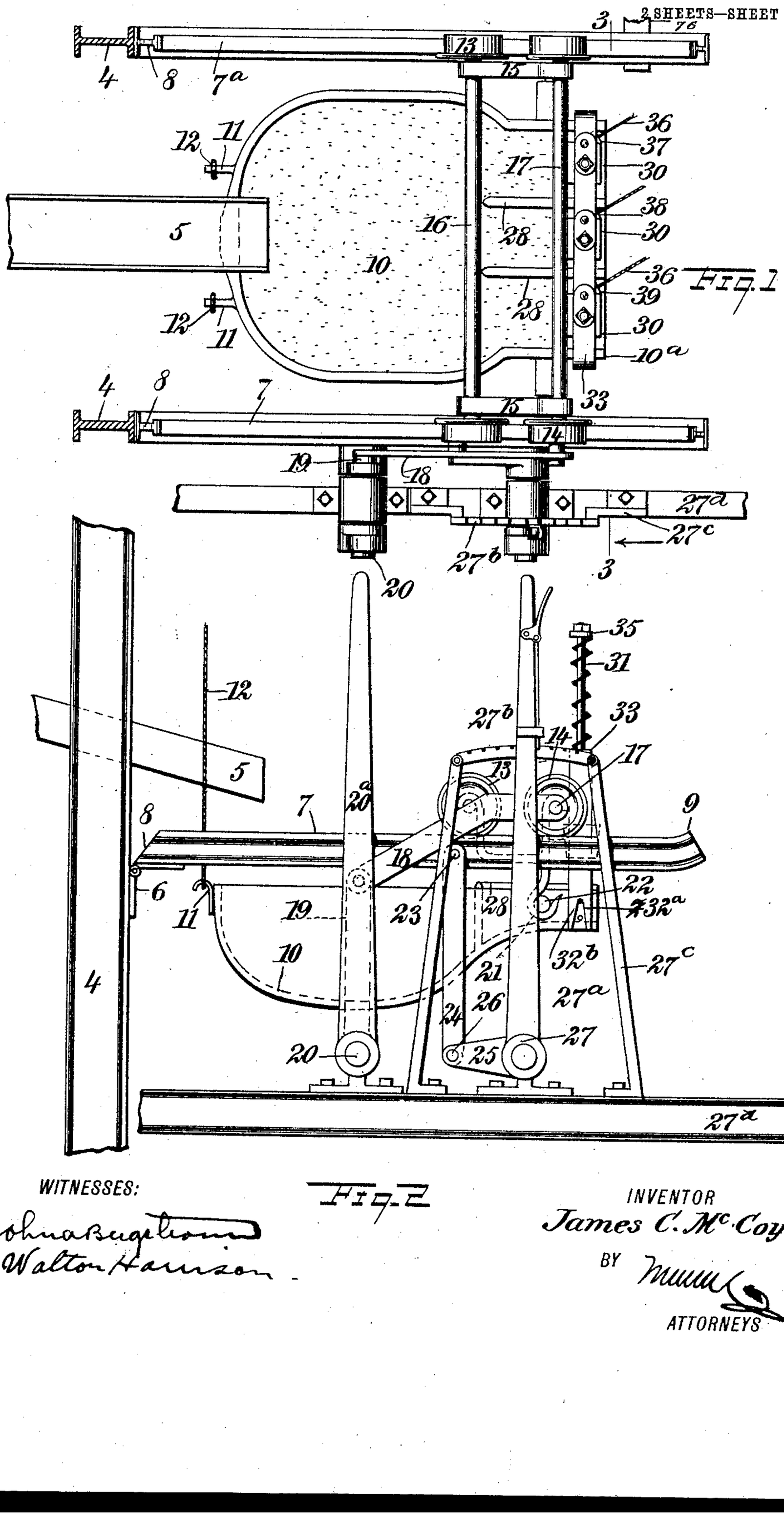


FIG. 1

FIG. 2

WITNESSES:

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Walton Harrison

INVENTOR

James C. McCoy

BY Munn & Co

ATTORNEYS

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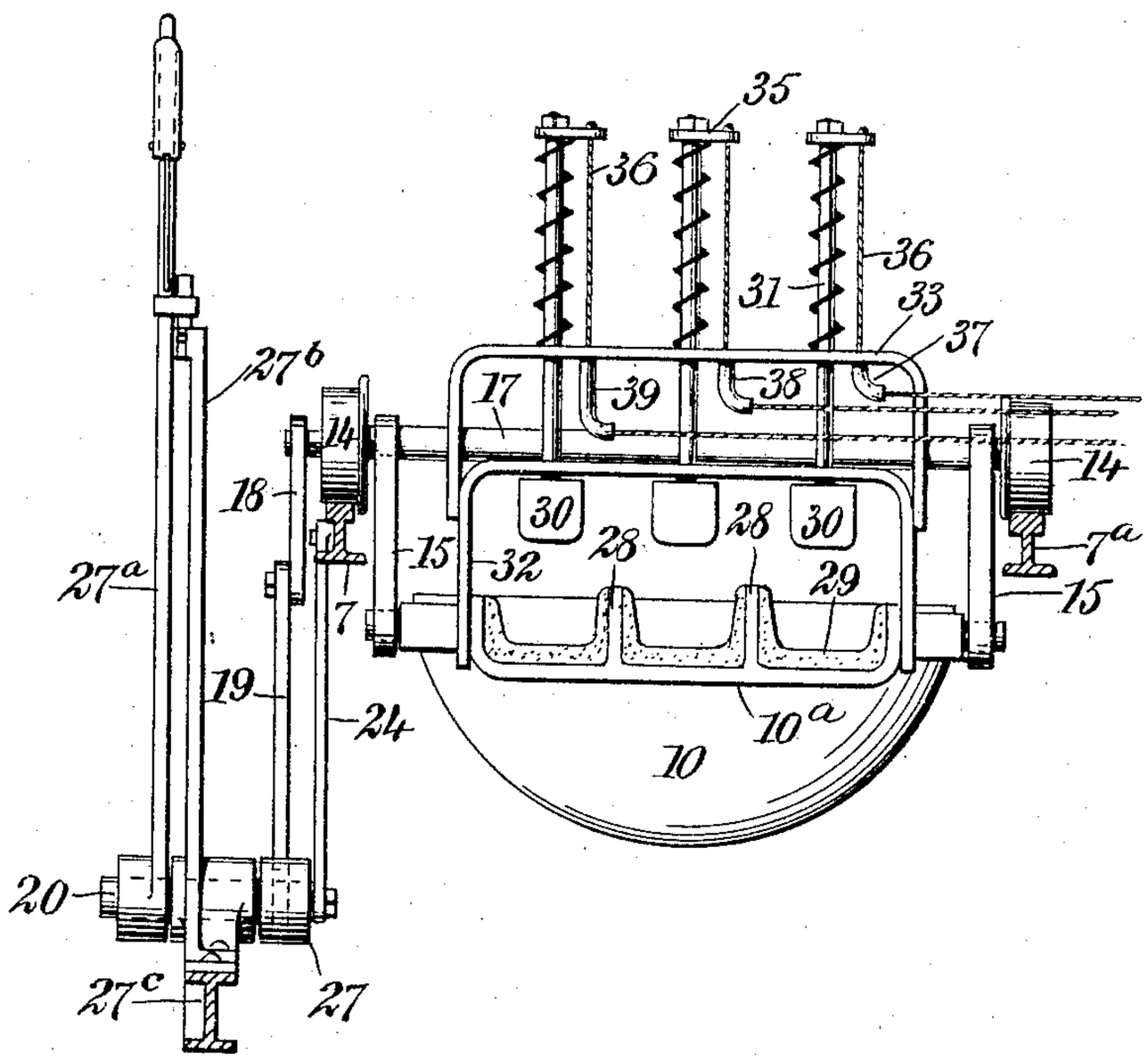


FIG. 3

WITNESSES:

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No. 780,372. Patented January 17, 1905.

# UNITED STATES PATENT OFFICE.

JAMES C. McCOY, OF METUCHEN, NEW JERSEY.

## LADLE MECHANISM.

SPECIFICATION forming part of Letters Patent No. 780,372, dated January 17, 1905.

Application filed April 29, 1904. Serial No. 205,472.

*To all whom it may concern:*

Be it known that I, JAMES C. McCOY, a citizen of the United States, and a resident of Metuchen, in the county of Middlesex and State of New Jersey, have invented a new and Improved Ladle Mechanism, of which the following is a full, clear, and exact description.

My invention relates to ladle mechanism and admits of general use, but is of particular service in the handling of molten copper.

Among other objects I attain are the following: First, I provide for adjusting the ladle so as to maintain the same approximately level, thus facilitating the casting of copper as rapidly as possible when it has attained the proper pitch; second, I save time by handling the copper very rapidly; third, I pour the copper from a plurality of spouts at the same time under conditions otherwise offering more or less difficulty.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the invention ready for use. Fig. 2 is a side elevation looking in the direction of the arrow X in Fig. 1, and Fig. 3 is a sectional side elevation on the line 3 3 in Fig. 1.

A pair of vertical posts 4 are disposed opposite each other, as indicated in Fig. 1, and between these posts is mounted a spout 5 for supplying the molten copper. Hinges 6 are mounted upon the posts 4 and connected with rails 7 $7^a$, provided with bevels 8 and with upturned ends 9, these rails constituting a track for supporting the carriage. The rail $7^a$ rests on a rigid support $7^b$ (see Fig. 1) and is therefore immovable. The ladle is shown at 10 and is provided with a hook 11, to which is connected a rope 12. The front part of the ladle is provided with a spout $10^a$ for discharging the metal. Wheels 13 14 engage the rails 7 $7^a$ and are connected together by truck-frames 15, which connect together the axles 16 17. A link 18 is connected with one end of the axle 17 and is pivotally connected with an arm 19, said arm being rigidly secured upon a shaft 20, adapted to rock for the purpose of allowing the arm 19 to assume various angular positions, thereby moving the ladle 10 and the carriage supporting the same in a direction toward and from the posts 4. By this means the operator is enabled to shift the position of the ladle at will. The truck-frames 15 are provided with hooks 21, depending therefrom and engaging lugs 22, connected rigidly with the spout $10^a$, thereby partially supporting the ladle 10. By means of a pivot 23 a link 24 is connected with the rail 7 and also connected by a pivot 26 with a rocking arm 25, provided with a collar 27, whereby it may be turned to various angles for the purpose of elevating or depressing the rail 7, thereby inclining the ladle 10 at different angles. The ladle is not emptied by the use of the arm 25. The purpose of this arm is to adjust the level of the ladle, which it does by changing the angle of the rail 7. The rail $7^a$ being fixed, the rail 7 is slightly lowered or raised, if desired, so that there is no difficulty in maintaining the level of the ladle.

The spout $10^a$ is provided with vertical partitions 28 and with refractory linings 29 of sand or other suitable material. A number of gates 30, each having substantially the form of a plunger, as shown, are mounted upon rods 31, these rods slidably engaging the yokes 32 33, which serve as guides and also as supports therefor. The lower end of the yoke 32 is provided with a slot $32^a$, which is engaged by a pin $32^b$ upon the extreme upward movement of the ladle-spout $10^a$, thereby forming a limiting-stop for the same. Spiral springs 34 encircle the respective rods 31 and normally force the same upward. Each rod 31 is provided with a head 35, directly engaged by one of the springs 34. Connected with the several heads 35 are ropes 36, passing, respectively, through the guides 37, 38, and 39. These ropes are under the control of the operator, and by causing them to draw he can pull down the several heads 35 and rods 31, thereby depressing the gates 30 and forcing the same toward and partially into the spout $10^a$. These gates partially obstruct the flow of metal from the spout and cause the same to flow more slowly than would otherwise be the case. The idea is that the operator can control the flow of metal from the

multiple spout by adjusting the gates at will. After the copper has been refined and brought to the proper pitch it should at once be poured into the mold. This would be an easy matter if the copper could be made to flow uniformly from a wide spout or from a multiple spout; but experience shows that this is impossible. By the use of my invention the workman can make the flow of the copper comparatively uniform, which he does by manipulating the gates as above described. For instance, if he finds the stream to the right too thin and the middle stream too thick he corrects the flow by adjusting the proper gates, which are made independent for the purpose.

It will be understood, of course, that considerable time is ordinarily required for pouring the copper into the molds and that the copper should be poured in while its proper pitch is maintained. By governing the flow of the metal in the manner above described much loss of time is avoided. As soon as the ropes 36 are caused to relax, the springs 34 retract the gates 30, which then assume their normal position, as indicated in Fig. 3.

The shaft 20 is rocked at will by means of a hand-lever $20^a$, so as to move the carriage forward and backward upon the rails, and the arm 25 is manipulated by means of the hand-lever $27^a$, integrally connected with the collar 27, so that when the hand-lever is moved forward or backward the outer or free end of the rail 7 is raised or lowered. This lever is held in place by a quadrant $27^b$, supported by framework $27^c$, mounted upon the beam $27^d$.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A ladle mechanism, comprising a track, a carriage mounted thereupon and movable relatively thereto, means for tilting said track to different angles, and mechanism connected with said carriage and adapted to move the same independently of the inclination of said track.

2. In a ladle mechanism, the combination of a track, a carriage mounted thereon and movable relatively thereto, a ladle connected with said carriage and partially supported thereby, a supporting member connected with said ladle and coacting with said carriage for supporting the same, means controllable at will for moving said carriage relatively to said track, and mechanism controllable by the operator for inclining said track to different angles.

3. In a ladle mechanism, the combination of a ladle provided with a spout, a framework disposed adjacent to said spout, movable members slidably mounted within said framework and provided with gates for partially obstructing said spout, spring mechanism for retracting said movable members, and means controllable by the operator for depressing said movable members, thereby forcing said gates toward said spout.

4. In a ladle mechanism, the combination of a track provided with a fixed rail and with a movable rail, a carriage adapted to ride upon said track, means for shifting said carriage relatively to said track, mechanism for actuating said movable rail so as to cause said carriage to tilt, and a ladle connected with said carriage and adapted to be tilted by movements thereof.

5. In a ladle mechanism, the combination of a ladle provided with a divided spout, a plurality of gates for obstructing said spouts, means for actuating said gates and mechanism controllable at will for tilting said ladle to different angles.

6. In a ladle mechanism, the combination of a ladle provided with a divided spout, separate gates for regulating the flow of metal from said spout, and means controllable at will for tilting said ladle in a direction lateral to the general direction of flow of metal from said spout.

7. In a ladle mechanism, the combination of a ladle provided with a divided spout, a framework disposed adjacent to said spout, movable members mounted within said framework and provided with gates for partially obstructing said spout, means controllable by the operator for depressing said movable members, thereby affecting the degree of opening of said gates, and means controllable at will for tilting said ladle in a direction lateral to the general direction of said spout.

8. In a ladle mechanism, the combination of a ladle provided with a comparatively wide spout, and means for tilting said ladle in a plane crossing the general direction of said spout for the purpose of apportioning the thickness of the stream of metal flowing upon different portions of said spout.

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

JAMES C. McCOY.

Witnesses:

FRANK LINDEN ANTISELL,

A. CLAYTON CLARK.