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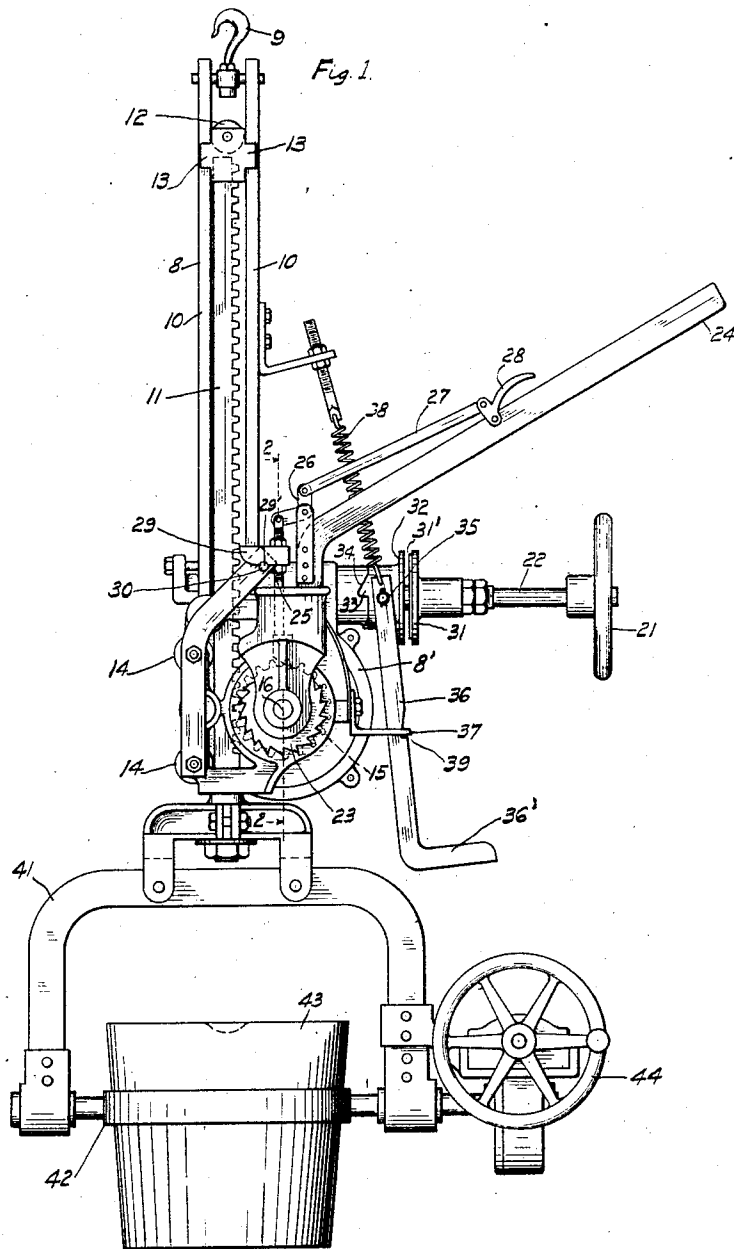
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M. W. GOLDBERG

METAL POURING DEVICE

Filed Feb. 20, 1925

3 Sheets-Sheet 1



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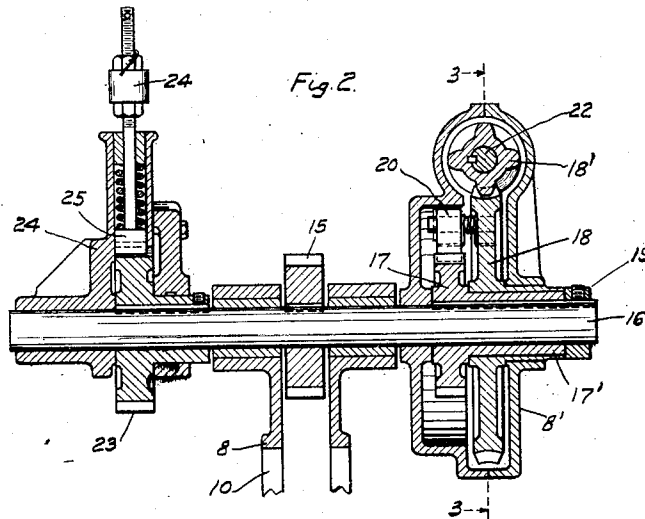
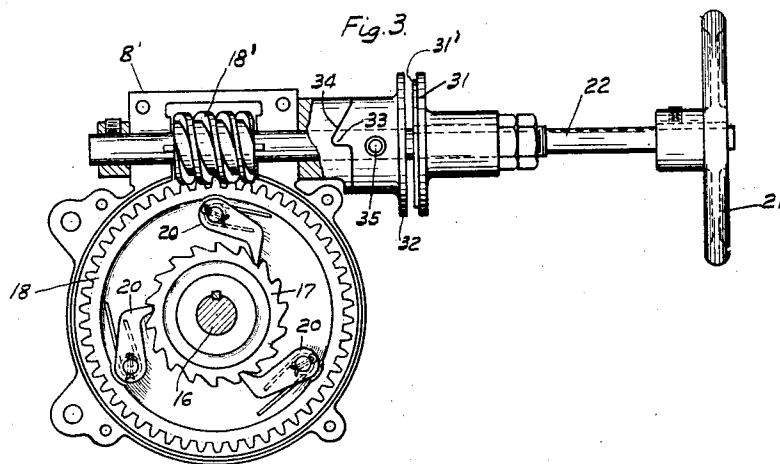
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3 Sheets-Sheet 2



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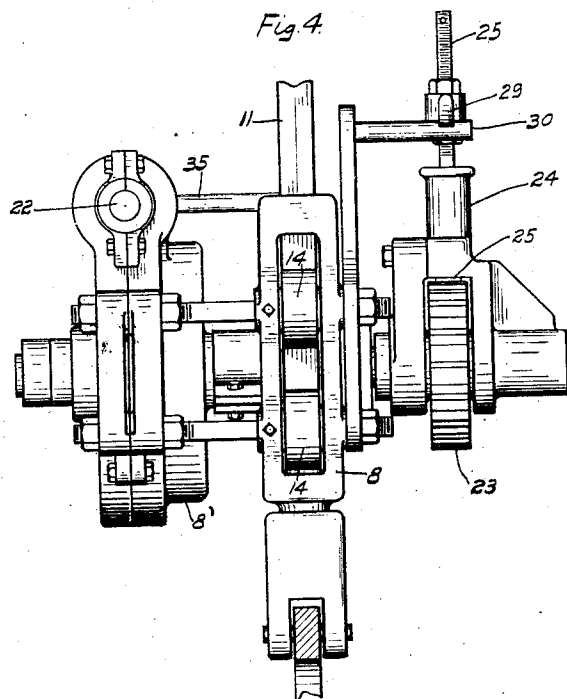
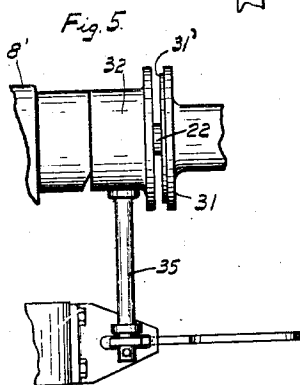
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METAL POURING DEVICE

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

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METAL-POURING DEVICE.

Application filed February 20, 1925. Serial No. 10,605.

This invention relates to improvements in metal pouring devices of the portable type.

It is the present foundry practice to carry the molten metal in a container and suspend the container from an overhead crane which can be moved to different portions of the foundry to pour the metal into molds. In handling the container, it is of great advantage to provide a construction which permits the operator alongside of the device to control the raising and lowering and the pouring of the metal from said container in view of the varying heights of the molds.

It is one of the objects of the present invention to provide a metal pouring device permitting the before mentioned features in a very simple manner.

A further object of the invention is to provide a metal pouring device, in which a worm and worm wheel means is utilized for raising the container and which means will automatically hold the container at any elevation desired.

A further object of the invention is to provide a metal pouring device in which the worm and worm wheel means may be released from action and a brake means put into action to control the lowering of the container or other load.

A further object of the invention is to provide a metal pouring device having means for holding the dog of the lowering mechanism in disengaging position.

A further object of the invention is to provide a metal pouring device having means for easily tilting the container.

A further object of the invention is to provide a container holder which is of simple construction, is easily controlled and is well adapted for the purpose described.

With the above and other objects in view, the invention consists of the improved metal pouring device and its parts and combinations as set forth in the claims, and all equivalents thereof.

In the accompanying drawings in which the same reference characters indicate the same parts in all of the views:

Fig. 1 is a side view of the improved pouring device;

Fig. 2 is a vertical sectional detail view on a larger scale taken on line 2—2 of Fig. 1;

Fig. 3 is a vertical sectional detail view taken on line 3—3 of Fig. 2;

Fig. 4 is a front view of a medial portion of the device; and

Fig. 5 is a top view of the brake mechanism actuating parts.

Referring to the drawings, the numeral 8 indicates a vertical frame provided with a swiveled hook 9 at its upper end for connection with a cable or overhead traveling crane (not shown). The frame is formed in part of two vertical guide bars 10 in parallel relation, and between these bars an adjustable rack bar 11 is positioned and guided. To eliminate friction to a large extent, the upper end of the rack bar is provided with a roller 12 which bears against the inner edge portions of the guide bars, and the roller frame mounted on the upper end of the rack bar and in which the roller is journaled, is provided with projecting portions 13 which bear on the side faces of the guide bars to maintain the rack bar in alinement therewith. The lower portion of the frame is also provided with guide rollers 14 which bear against the edge of the tooth bar 10 opposite to the edge provided with the teeth. A toothed wheel 15 in mesh with the teeth of the rack bar is keyed on a shaft 16 journaled in the lower portion of the frame. Said wheel engages the teeth at a point opposite to and in a horizontal plane between the two lower guide rollers 14 and said rollers take the lateral strain of the engagement. One end of a portion of the shaft has keyed thereon a ratchet wheel 17 which is provided with an outwardly extending elongated hub portion 17', and on this hub portion a worm wheel 18 is journaled and held in position between the ratchet wheel 17 and a collar 19 fixed on the end of the shaft 16. A worm 18' is in mesh with the worm wheel 18. The side portion of the worm wheel adjacent the ratchet wheel is provided with a number of spring actuated pawls 20 which engage the teeth of the ratchet wheel 17 to rotate the wheel 17 in one direction but prevent retrograde rotation of the ratchet wheel and shaft 17 and 16 with relation to the worm wheel 18 in a direction to lower the rack bar. Said pawl and ratchet connection permits rotation of the shaft 16 in the opposite direction to raise the rack bar independently of any motion of the worm

or worm wheel. The worm 18' is turned to revolve the shaft in one direction by means of a hand wheel 21 which is mounted on the outer end of a shaft 22 and upon which shaft the worm 18' is also mounted.

The outer end portion of the shaft 16 also has a ratchet wheel 23 keyed thereon, and an angular elevating lever 24 for rotating the shaft 16 is fulcrumed on said shaft and on the hub portion of the ratchet wheel 23, as clearly shown in Fig. 2. Said elevating lever 24 carries a spring actuated detent or dog 25 which engages the ratchet wheel 23 and turns the wheel and the shaft 16, when the lever 24 is pulled downwardly to raise the load. In turning the shaft 16 to lift the load by means of the lever, the ratchet wheel 17 and the pawls 20 permit said movement, and automatically lock the same in any position of adjustment due to the worm and worm wheel connection, before mentioned. The lever 24 also carries a bell crank lever 26 which has one arm pivoted to the dog 25 and its other arm connected to a rod 27. The rod 27 extends towards the outer end of the lever 24 and is connected to a small lever 28, mounted on the lever 24, for disengaging the dog 25 from the ratchet wheel 23. In lowering the load by means of the worm and worm wheel, the dog 25 is held out of engagement with the ratchet wheel 23 by means of a latch 29 which is swiveled on the upper portion of the dog 25 and may be turned to have its notched portion 29' engage a holding pin 30 projecting outwardly from the frame 10.

The shaft 22 is provided with a disk brake member 31 fixed thereon which is engaged by a coacting brake member 32 loosely mounted on the shaft 22. The member 31 is provided with a face of frictional material 31'. Said brake member 32 is formed with a projecting cam 33 on one face which normally extends into a cam recess 34 formed in the adjacent face of a portion of the gear casing 8' forming a part of the frame 8. The cam faces are inclined upwardly, outwardly so that when the cam portion of the member 32 is turned upwardly or clockwise the said member 32 will be forced outwardly and into wedging engagement with the brake member 31 and retard the rotation of the shaft 16 and the lowering of the load. An arm 35 projecting radially outwardly from the cam member 32 extends loosely through an opening formed in a control member 36 which is positioned alongside of the brake 32. Said control member extends through and is guided in a slotted bracket 37 mounted on the frame. A coiled spring 38 adjustably connected to one of the guide bars 10 and to the upper end of the control member is adapted to pull said control member upwardly and revolve the clutch member 32 into clutching position when the control lever is released. To hold the brake mem-

bers in disengaging position, the control lever is formed with a shoulder 39 which engages the bracket member 37, as shown in Figs. 1 and 5. The lower end of the control member is bent outwardly at an angle as indicated by the numeral 36' to form a stop to limit the upward movement of said control and also to provide a convenient handle or treadle to be pushed inwardly when it is desired to apply the brake, or be pulled downwardly when the brake is to be released.

A bail 41 is swiveled to the lower end portion of the rack bar 11 and the lower ends of the bail have a container holder 42 journaled therein in which a container 43 is positioned. One end portion of the container holder has a geared means controlled by a hand wheel 44 for tilting the container to pour out the molten metal therefrom.

In operation the lever 24 is oscillated upwardly and downwardly to rotate the shaft 16 and lift the container and during oscillation the pawls in connection with the ratchet wheel 17 and the worm and worm wheel 18 and 18' will prevent retrograde movement of said shaft. If it is desired to lower the container, the dog 25 is disengaged from the ratchet wheel 23 and the hand wheel is turned to rotate the shaft 16. If the speed of descent of the container is too rapid it may be retarded by pushing or kicking inwardly on the control member 36 to apply the brake.

From the foregoing description, it will be seen that the metal pouring device is of very simple construction, and is well adapted for the purpose described.

What I claim as my invention is:

1. A metal pouring device, comprising a portable frame, a vertically movable member carried thereby and having means for holding a container, a lever means for positively elevating the movable member with respect to the frame, a worm and worm wheel means for holding the movable member in adjusted position, and a hand wheel and brake means for controlling the lowering of the movable member.

2. A metal pouring device, comprising a portable frame, a vertically movable member guided therein and having means for holding a container, a lever and a rotary means for positively elevating the movable member with respect to the frame, a worm and worm wheel means for maintaining the movable member in adjusted position, and a hand wheel and brake means for controlling the lowering of the movable member.

3. A metal pouring device, comprising a portable frame, a rack bar vertically movably guided therein and having means for holding a container, a toothed wheel in mesh with the teeth of the rack bar, an oscillating means for rotating the toothed wheel, a rotary means for maintaining the rack bar in

adjusted position, and other means controlling the lowering of the rack bar.

4. A metal pouring device, comprising a portable frame, a rack bar vertically movably guided therein and having means for holding a container, a gear wheel in mesh with the teeth of the rack bar, an oscillating means for rotating the toothed wheel, a worm and worm wheel means for maintaining the rack bar in adjusted position, and other means controlling the lowering of the rack bar.

5. A metal pouring device, comprising a portable frame having guide means, a rack bar vertically movably guided in said guide means and having means for holding a container, a shaft journaled in the frame, a gear wheel mounted on the shaft and in mesh with the teeth of the rack bar, a worm wheel surrounding the shaft for rotating the shaft in one direction, a worm in mesh with the worm wheel for imparting rotation thereto, a ratchet wheel mounted on the shaft, and a lever and dog means for rotating the ratchet wheel and the shaft.

6. A metal pouring device, comprising a portable frame having upstanding guide bars, a rack bar interposed between and guided by said bars and having means for holding a container at its lower end, a shaft journaled in the frame, a gear wheel mounted fast on the shaft and in mesh with the teeth of the rack bar, a worm wheel surrounding the shaft and having a pawl and ratchet wheel engagement with the shaft, a second shaft journaled in the frame, a worm mounted fast on the second shaft and in mesh with the worm wheel, a ratchet wheel mounted fast on the first shaft, and a lever and dog means for rotating the ratchet wheel and the shaft.

7. A metal pouring device, comprising a portable frame having upstanding guide bars, a rack bar interposed between and guided by said bars and having means for holding a container at its lower end, a shaft journaled in the frame, a gear wheel mounted fast on the shaft and in mesh with the teeth of the rack bar, a worm wheel surrounding the shaft and having a pawl and ratchet wheel engagement with the shaft, a second shaft journaled in the frame, a worm mounted fast on the second shaft and in mesh with the worm wheel, a ratchet wheel mounted fast on the first shaft, and a lever loosely mounted on the shaft adjacent the ratchet wheel and having a spring actuated dog which engages the ratchet wheel for rotating said wheel in only one direction.

8. A metal pouring device, comprising a portable frame having upstanding guide bars, a rack bar interposed between and guided by said bars and having means for holding a container at its lower end, a shaft journaled in the frame, a gear wheel mount-

ed fast on the shaft and in mesh with the teeth of the rack bar, a worm wheel surrounding the shaft and having a pawl and ratchet wheel engagement with the shaft, a second shaft journaled in the frame, a worm mounted fast on the second shaft and in mesh with the worm wheel, a ratchet wheel mounted fast on the first shaft, a lever loosely mounted on the shaft adjacent the ratchet wheel and having a spring actuated dog which engages the ratchet wheel for rotating said wheel in only one direction, and means carried by the lever for disengaging the dog from the ratchet wheel.

9. A metal pouring device, comprising a portable frame having upstanding guide bars, a rack bar interposed between and guided by said bars and having means for holding a container at its lower end, a shaft journaled in the frame, a gear wheel mounted fast on the shaft and in mesh with the teeth of the rack bar, a worm wheel surrounding the shaft and having a pawl and ratchet wheel engagement with the shaft, a second shaft journaled in the frame, a worm mounted fast on the second shaft and in mesh with the worm wheel, a ratchet wheel mounted fast on the first shaft, a lever loosely mounted on the shaft adjacent the ratchet wheel and having a spring actuated dog which engages the ratchet wheel for rotating said wheel in only one direction, a latch for holding the dog in ratchet wheel disengaging position, and means carried by the lever for disengaging the dog from the ratchet wheel.

10. A metal pouring device, comprising a portable frame having upstanding parallel guide bars, a rack bar interposed between and guided by said rack bars and having means for holding a container at the lower end, a shaft journaled in said frame and extending transversely to the rack bar, a gear wheel fast on the shaft and in mesh with the teeth of the rack bar, a worm wheel surrounding the shaft, a ratchet wheel mounted fast on the shaft, pawls carried by the worm wheel and engaging the ratchet wheel for imparting motion thereto in one direction, a second shaft journaled in the frame and extending at an angle to the first mentioned shaft, a worm mounted fast on the second shaft and in mesh with the worm wheel, means for rotating the second shaft, a ratchet wheel mounted fast on the first shaft, and a lever and dog means for rotating the first shaft and the last mentioned ratchet wheel.

11. A metal pouring device, comprising a portable frame having upstanding parallel guide bars, a rack bar interposed between and guided by said rack bars and having means for holding a container at its lower end, a shaft journaled in said frame and extending transversely to the rack bar, a

gear wheel fast on the shaft and in mesh with the teeth of the rack bar, a worm wheel surrounding the shaft, a ratchet wheel mounted fast on the shaft, pawls carried by the worm wheel and engaging the ratchet wheel for imparting motion thereto in one direction, a second shaft journaled in the frame and extending at an angle to the first mentioned shaft, a worm mounted fast on the second shaft and in mesh with the worm wheel, means for rotating the second shaft, a ratchet wheel mounted fast on the first shaft, a lever loosely mounted on the first mentioned shaft and having a dog which yieldingly engages the second ratchet wheel for rotating it in one direction, and a latch for holding the dog in disengaging position.

12. A metal pouring device, comprising a portable frame having upstanding parallel guide bars, guide rollers therefor, a rack bar interposed between and guided by said rollers and having means for holding a container at its lower end portion, said rack bar having a guide roller at its upper end which bears against one of the bars, a shaft journaled in said frame and extending transversely to the rack bar, a gear wheel fast on the shaft and in mesh with the teeth of the rack bar, a ratchet wheel mounted fast on said shaft and having an elongated hub, a worm wheel journaled on the hub and having pawl means which engage the ratchet wheel to rotate it in one direction, a second shaft journaled on the frame and extending at an angle to the first mentioned shaft, a worm mounted fast on the second shaft and in mesh with the worm wheel, a ratchet wheel mounted fast on the first shaft, a lever loosely mounted on the first mentioned shaft and having a dog which yieldingly engages the second ratchet wheel for rotating it in one direction, a latch for holding the dog in ratchet disengaging position, and means for rotating the second shaft.

13. A metal pouring device, comprising a portable frame having upstanding guide bars, a rack bar interposed between and guided by said bars and having means for holding a container at its lower end, a shaft journaled in the frame, a gear wheel mounted fast on the shaft and in mesh with the teeth of the rack bar, a worm wheel surrounding the shaft and having a pawl and ratchet wheel engagement with the shaft, a second shaft journaled in the frame, a worm mounted fast on the second shaft and in mesh with the worm wheel, means for ro-

tating the second shaft, a brake controllable to retard the speed of rotation of said second shaft, a ratchet wheel mounted fast on the first shaft, and a lever and dog means for rotating the ratchet wheel and the shaft.

14. A metal pouring device, comprising a portable frame having upstanding guide bars, a rack bar interposed between and guided by said bars and having means for holding a container at its lower end, a shaft journaled in the frame, a gear wheel mounted fast on the shaft and in mesh with the teeth of the rack bar, a worm wheel surrounding the shaft and having a pawl and ratchet wheel engagement with the shaft, a second shaft journaled in the frame, a worm mounted fast on the second shaft and in mesh with the worm wheel, means for rotating the second shaft, a yielding brake for retarding the rotation of said second shaft, means for releasably holding the brake in non-braking position, a ratchet wheel mounted fast on the first shaft, and a lever and dog means for rotating the ratchet wheel and the shaft.

15. A metal pouring device, comprising a portable frame having upstanding guide bars, a rack bar interposed between and guided by said bars and having means for holding a container at its lower end, a shaft journaled in the frame, a gear wheel mounted fast on the shaft and in mesh with the teeth of the rack bar, a worm wheel surrounding the shaft and having a pawl and ratchet wheel engagement with the shaft, a second shaft journaled in the frame, a worm mounted fast on the second shaft and in mesh with the worm wheel, a hand wheel mounted on the second shaft for rotating said shaft, a brake member mounted fast on said second shaft, a coacting brake member loosely mounted on the second shaft and having a cam projection which extends into a cam recess formed in the frame, said cam portions coacting to force the two brake members in braking engagement with each other, a yielding means for turning the coacting brake member outwardly from the cam recess, means for releasably holding the coacting brake member with its cam projection within the cam recess, a ratchet wheel mounted fast on the first shaft, and a lever and dog means for rotating the ratchet wheel and the shaft.

In testimony whereof, I affix my signature.

MAX W. GOLDBERG.