Dec. 17, 1940. W. S. FRAULA 2,224,906

POURING LADLE

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FIG. 1.

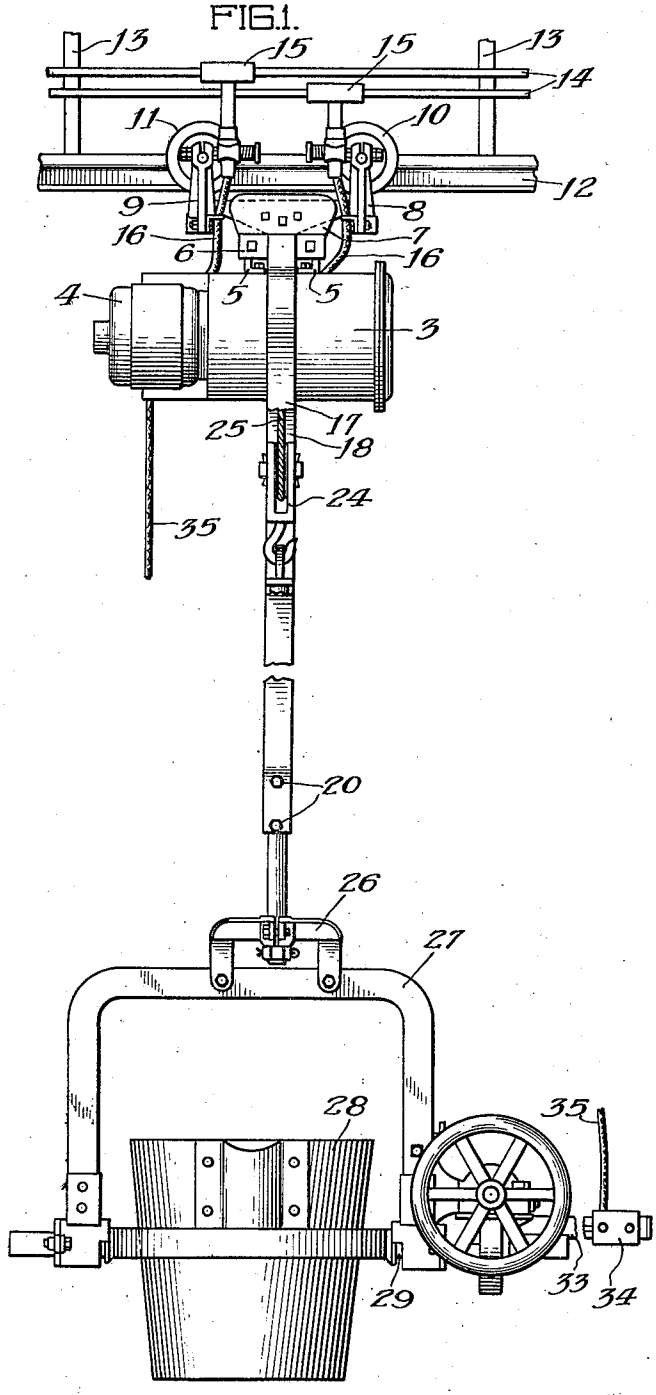
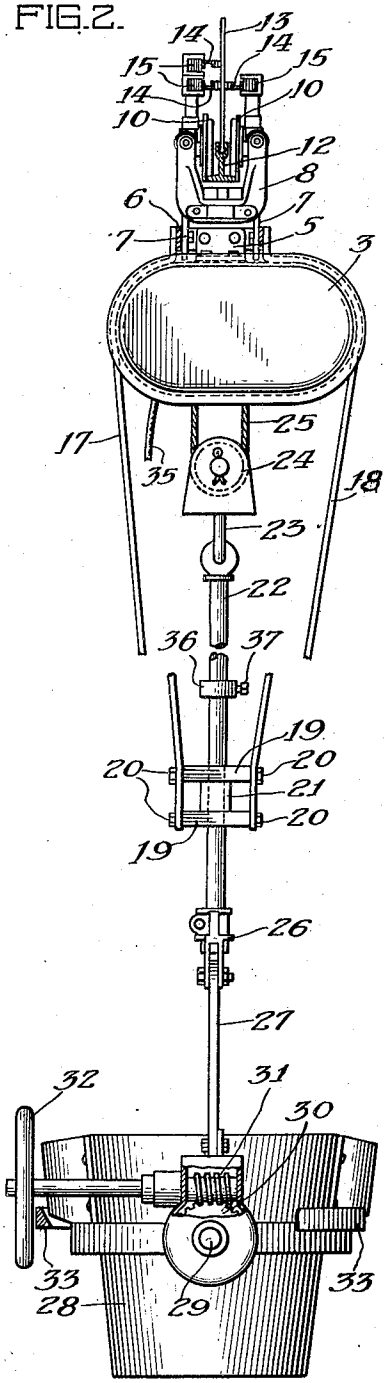


FIG. 2.



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POURING LADLE

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3 Claims. (Cl. 22—82)

This invention relates to pouring ladles and more particularly to such ladles used in iron foundries and the like where a conveyor system is used to transport the ladles from place to place as desired. When used with such conveyor systems the track or rail thereof is generally overhead and the ladle is suspended from rollers or wheels riding on the track or rail. Heretofore the ladles have been somewhat unwieldy and difficult to handle due to the susceptibility to swaying with the consequent danger to the foundry equipment and workmen from spilling of the molten metal. The primary object of this invention is to reduce such swaying to a point where it is not a source of danger to the workmen and property.

In many instances the ladles are suspended on cables or the like passing into hoisting mechanism to enable the raising and lowering of the ladles to receive the molten metal and to effect a more efficient pouring into the molds. In such instances the cables or the like facilitate the undesired swaying and it is another object to effectively eliminate or reduce the swaying of the ladles when they are so suspended.

A further object is to move the ladle readily along the track or rail by pushing on a handle provided on the ladle without swinging the ladle on its support.

Still further objects will be apparent from the following description and disclosure in the drawing in which

Fig. 1 is a front elevation showing one of the strap members partly broken away; and

Fig. 2 is a side elevation showing a portion in section.

Hoisting mechanism 3 operable by an electric motor 4 is secured through angle plates 5 to a cross bar 6. The cross bar 6 is bent at its ends and is secured by welding to the plates 7. The plates 7 are mounted in the yokes 8 and 9 which are arranged to carry the wheels or rollers 10 and 11, respectively. There are two wheels 10 as well as two wheels 11 which are adapted to ride on the track formed by the inverted flanged portion of the T-shaped rail 12. The rail 12 is suspended from supports 13 which are generally secured to the underside of the roof of the foundry. However, the supports 13 might as easily be suspended from standards rising from the floor. The supports 13 carry conductor bars 14. In the present instance three such conductor bars are illustrated for use with three-phase electric current. Brushes 15 are suitably mounted on the yokes 8 and 9 to engage the conductor bars 14. The brushes 15 are suitably connected to the motor 4 of the hoisting mechanism 3 by wires as 16. A pair of strap members 17 and 18 are welded to the plates 7 and are bent around the sides of the hoisting mechanism 3 and depend therebeneath where they are spaced from each other by the tie plates 19 which are bolted to the strap members 17 and 18 by bolts 20. The tie plates 19 are spaced apart by a spacer 21. A vertical opening is provided through the tie plates 19 and the spacer 21 through which a supporting bar 22 extends. The supporting bar is suitably secured to a hook 23 depending from the pulley yoke 24 which, through its pulley, rides on the cable 25 suspended from the hoisting mechanism 3. A yoke 26 is suitably secured to the lower end of the bar 22 and which is in turn secured to a larger yoke 27 which supports the ladle 28 mounted for pivotal movement in an axle 29 journaled in the yoke 27. The axle 29 has a worm gear 30 thereon meshed with a worm 31 operable by the hand wheel 32. Rotation of the wheel 32 turns the axle 29 to tilt the ladle for pouring of the molten metal contained therein into a suitable mold. A handle portion 33 extends outwardly from the ladle to a point well beyond the hand wheel 32. Near the outer end of the handle a switch 34 is secured thereto for controlling operation of the motor 4 through the electric cable 35.

Two push buttons are preferably provided on the switch 34, one of which will operate the motor 4 as long as the button is pressed inwardly to raise the ladle while the other button will operate the motor to lower the ladle as long as the button is pushed. A suitable collar 36 may be secured by means of a set screw 37 to the bar 22 above the tie plates 19 so that positive limitation of downward movement of the bar 22 and ladle 28 is provided, thus tending to avoid serious accident in the event of breaking of the cable 25 or failure in operation of the hoisting mechanism 3.

It will be obvious that the ladle may be readily moved along the rail 12 by pushing on the handle 33. The spacing of the wheels 10 and 11 effectively prevents undue swaying of the ladle about either sets of wheels. The strap members 17 and 18 likewise effectively prevent undue swaying of the ladle in a transverse direction. However, there is enough flexibility in these parts to enable the operator, through the handle 33 alone, to slightly swing the ladle in order to register the pouring stream of molten metal therefrom with the pouring gate of the mold after he

has moved the ladle along the track 12 into approximate pouring association with the mold. It will be noted that the bar 22 is relatively rigid as far as transverse or horizontal movement thereof is concerned by means of the relatively rigid bracing of the strap members 17 and 18. However, vertical movement of the bar 22 and consequently of the ladle 28 is readily produced by the simple operation of the buttons on the switch 34 which operate and control the motor 4 and hoisting mechanism 3.

While I have illustrated and described a preferred form of my invention, it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the spirit and scope of the following claims.

I claim:

1. A supporting structure for ladles of the character described comprising a longitudinally movable carriage, a supporting bar for a ladle suspended from the carriage, flexible cable means connecting the upper end of the supporting bar and carriage for raising and lowering the supporting bar, the upper end regions of said bar otherwise normally being free and having a potential limited magnitude of lateral movement relative to the carriage, a pair of semi-rigid straps secured at their upper ends to the carriage at transversely spaced points and depending therefrom and converging downwardly, a tie plate connecting the lower ends of the straps, said supporting bar extending through said tie plate and being slidable vertically therein, said straps being sufficiently flexible to permit limited transverse tilting movement of the bar and ladle for pouring purposes whereby the upper end of said bar moves laterally of the carriage in one direction and the lower end thereof moves laterally in the other direction to cause displacement of the ladle bodily, a collar for limiting the downward movement of the supporting bar slidably mounted on the latter above the tie plate and designed for engagement with said plate, and means for securing said collar to the supporting bar in any desired position of adjustment.

2. A supporting structure for ladles of the character described comprising a longitudinally movable carriage, a supporting bar for a ladle suspended from the carriage, flexible cable means connecting the upper end of the supporting bar and carriage for raising and lowering the supporting bar, the upper end regions of said bar otherwise normally being free and having a potential limited magnitude of lateral movement relative to the carriage, a pair of semi-rigid straps secured at their upper ends to the carriage at transversely spaced points and depending therefrom and converging downwardly, and a tie plate connecting the lower ends of the straps, said supporting bar extending through said tie plate and being slidable vertically therein, said straps being sufficiently flexible to permit limited transverse tilting movement of the bar and ladle for pouring purposes whereby the upper end of said bar moves laterally of the carriage in one direction and the lower end thereof moves laterally in the other direction to cause displacement of the ladle bodily.

3. A supporting structure for ladles of the character described comprising a longitudinally movable carriage, a supporting bar for a ladle suspended from the carriage, flexible cable means connecting the upper end of the supporting bar and carriage for raising and lowering the supporting bar, the upper end regions of said bar otherwise normally being free and having a potential limited magnitude of lateral movement relative to the carriage, a pair of semi-rigid straps secured at their upper ends to the carriage at transversely spaced points and depending therefrom and converging downwardly, a pair of tie plates connected at their ends to said straps adjacent the lower ends of the latter and serving to maintain said lower ends spaced, and a spacer sleeve positioned between the tie plates, said supporting bar extending through the tie plates and spacer sleeve and being slidable and rotatable therein, said straps being sufficiently flexible to permit limited transverse tilting movement of the bar and ladle for pouring purposes whereby the upper end of said bar moves laterally of the carriage in one direction and the lower end thereof moves laterally in the other direction to cause displacement of the ladle bodily.

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