June 17, 1930. J. R. McWANE 1,765,023

CRANE RIG

Filed Aug. 7, 1928 2 Sheets-Sheet 1

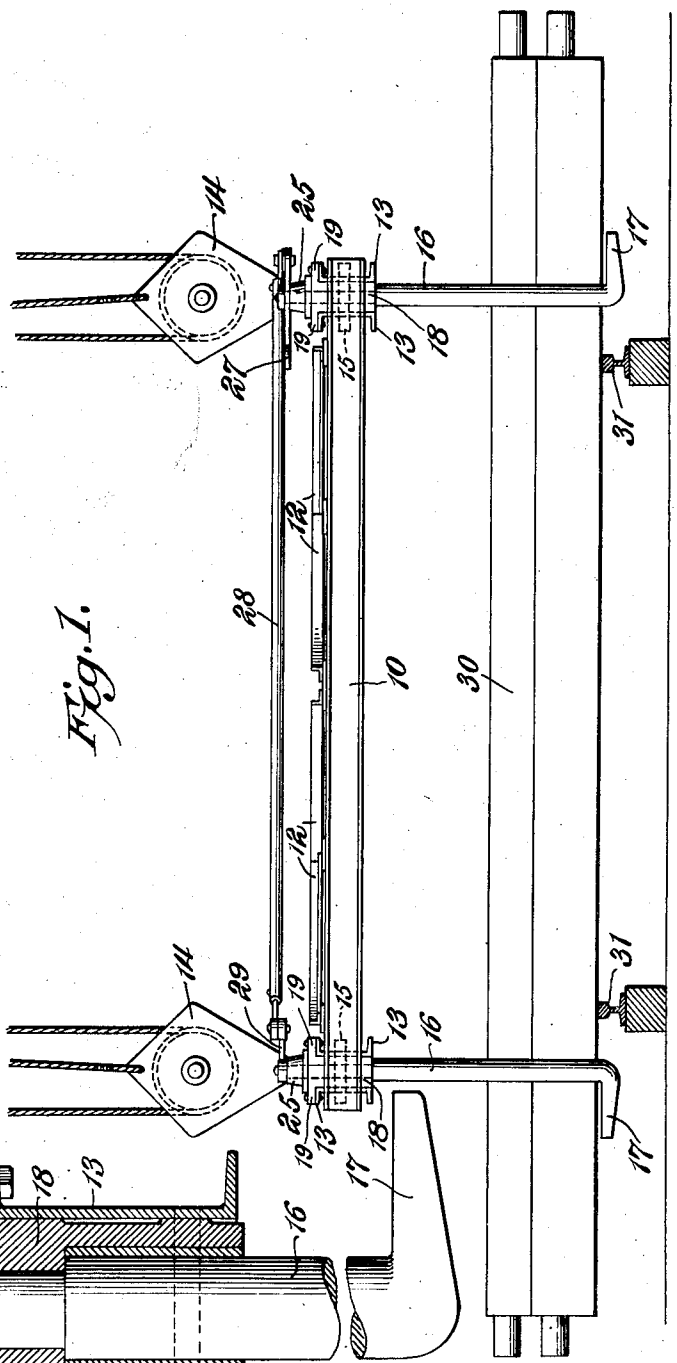


Fig. 1.

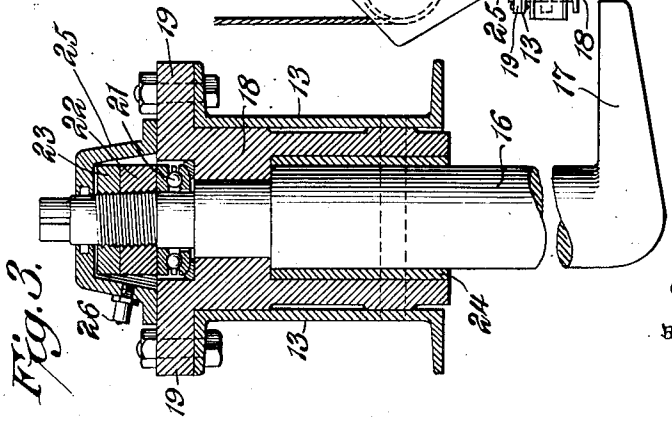


Fig. 3.

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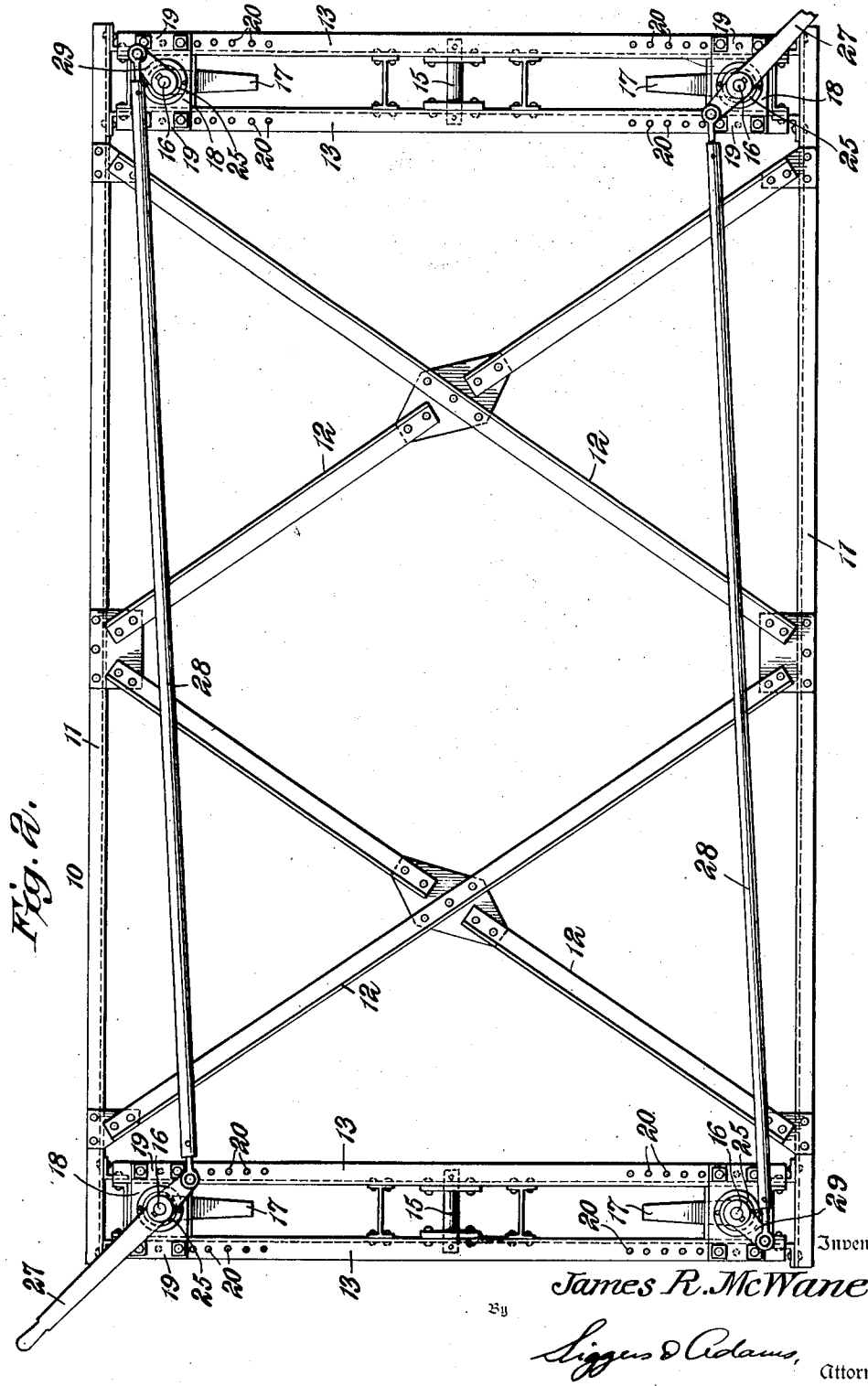


Fig. 2.

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Patented June 17, 1930

1,765,023

UNITED STATES PATENT OFFICE

JAMES R McWANE, OF BIRMINGHAM, ALABAMA, ASSIGNOR TO McWANE CAST IRON PIPE COMPANY, OF BIRMINGHAM, ALABAMA, A CORPORATION OF ALABAMA

CRANE RIG

Application filed August 7, 1928. Serial No. 298,005.

This invention relates to crane rigs and aims, among other objects, to provide an improved rig adapted to be suspended from an overhead crane and having provision for engaging pipe mold or flask sections so that they may be picked up and transferred from one point to another in the plant, without injury to the mold.

This application involves an improvement in mechanism especially useful in practicing a portion of the method described and claimed in my co-pending application, Serial No. 220,731, filed Sept. 20, 1927, one of the aims being to expedite the transfer of completed or assembled pipe molds from the assembling zone to the pouring zone.

In the accompanying drawings:

Fig. 1 is a side elevation of the preferred form of rig, showing it ready to be applied to an assembled pipe mold;

Fig. 2 is a top plan view of the rig shown in Fig. 1, the crane connections and pipe mold being omitted; and

Fig. 3 is a vertical, sectional view through one of the flask carrying members.

In accordance with the method of making cast iron pipe horizontally, as described in my aforesaid co-pending application the rammed flask sections and cores are assembled in the assembling zone and then transferred to the pouring zone where they are set in position to receive the molten metal from the ladles. The transferring operation is a rather delicate one because of the danger of destroying the molds by any undue jarring action; consequently, it has heretofore been considered impracticable, if not impossible, to move them. The present invention provides an improved crane rig adapted to pick up a complete mold without subjecting it to destructive strains or jolts. Also, the arrangement is such that a complete mold is carried in a proper position for pouring so that when it is set down in the pouring zone, and the rig is disengaged, the mold is ready to receive the molten metal.

Referring to Figs. 1 and 2 of the drawing, the rig, there shown, includes a substantially rectangular frame 10 which is conveniently fabricated of structural steel having side frame members 11, braces 12 and spaced channel beams 13 arranged in pairs at the opposite ends, the idea being to support pendent flask-engaging means below the frame at its opposite ends. The frame is adapted to be supported in a horizontal plane, as clearly shown in Fig. 1, and may be carried by hoisting blocks 14 or any other suitable crane hoisting mechanism connected as by hooks or pivots (not shown) to members 15 substantially midway between the sides 11, so that the frame swings freely from the hoist.

Adjacent to the four corners of the frame there are shown depending spindles or shafts 16 each having a hook 17 at its lower end adapted to be swung into and out of engagement with the bottom of a flask. Herein, the upper ends of the spindles are mounted in bearing blocks 18 (Fig. 3) inserted between the webs of the channel beams 13, the upper ends of the blocks having flanges 19 adapted to be bolted in adjusted positions on the flanges of the beams 13. In Fig. 2, a series of holes 20 are shown as being provided in the flanges of the channel beams so that the bearing blocks 18 have a relatively wide range of adjustment, the idea being to adjust the spindles so that the hooks will engage beneath flasks of different widths, thus making the rig usable with more than one size of flask. Ordinarily, pipe of different diameters is cast in flasks of differing widths.

As clearly shown in Fig. 3, each of the bearing blocks has provision for receiving the spindles and supporting them so that they may be easily rotated. In the present instance, the upper ends of the spindles have reduced or stepped portions and the upper portion of the bearing opening in each block 18 is conveniently recessed or counterbored to receive a ball bearing 21, a pair of lock nuts 22 and 23 being threaded on the shaft or spindle above the bearing to provide an adjustable supporting shoulder. The lower portion of the bearing is shown as having a suitable bushing 24 within which the enlarged portion of the spindle is supported, the idea being to provide sufficient bearing surface

to take care of side thrust and to prevent the spindles from bending laterally.

To protect the ball bearings, cup-shaped dust covers or caps 25 are shown as being secured to the upper faces of the bearing blocks 18 and each of these cups preferably has a suitable fitting 26 through which lubricant may be supplied. The spindles project through the tops of the cups and any suitable packing means may be provided between the upper ends of the spindles and the walls of the holes in the cups.

Obviously, the hooks are adapted to be turned individually so that they may be engaged with or disengaged from a flask; but it is desirable to operate two or more of them together in order to avoid loss of time. To this end, the spindles on each side of the frame are preferably connected by a linkage so that they may be operated in unison. Herein, a handle 27 is shown as being connected to the right hand spindle in Fig. 1 above the dust cover 25. This handle preferably extends beyond the spindle and provides a crank connection to a link or connecting rod 28, which is pivotally connected at its opposite end to a crank 29 suitably secured to the projecting upper end of the left hand spindle. The arrangement is such that, when the handle is partially rotated, both of the hooks will be turned in opposite directions through the same or substantially the same arcs. Referring to Fig. 2, the handle for operating the pair of spindles on the other side of the frame is preferably arranged at the diagonally opposite corner of the frame from the handle just described, the idea being to have a handle within convenient reach of the attendants who are stationed at the opposite ends of a row of completed molds, one on one side of a mold and the other on the other side. By this arrangement, the attendants may see the positions of the hooks with respect to the mold. However, the handles may be so connected that their positions will readily determine the positions of the hooks.

From the foregoing description, it will be seen that the rig is adapted to be lowered while the hooks are pointed lengthwise of the frame until the hooks are below the bottom of a mold 30, usually supported on spaced rails 31; then the attendants at the opposite sides of the mold will turn the hooks to engage under it and signal the crane operator to lift the mold and carry it to its destination. Further, it will be seen that the equipment is very easy to manipulate and that it is eminently adapted to carry the molds without danger of jarring and destroying them. Moreover, the flasks are supported at two points between their ends instead of from their ends; hence they are less likely to sag in the middle and cause destruction of the molds.

Obviously, the present invention is not restricted to the particular embodiment thereof herein shown and described. Moreover, it is not indispensable that all the features of the invention be used conjointly, since they may be employed advantageously in various combinations and sub-combinations.

What is claimed is:—

1. A crane carrying rig of the character described, comprising in combination, a structural frame adapted to be supported in a horizontal plane; a plurality of vertically arranged spindles supported by the frame and spaced apart to straddle a completed pipe mold; bearings for said spindles carried by said frame; means for manual control of the axial positions of said spindles whereby they may be rotated in unison to engage underneath the mold and be disengaged therefrom; and means whereby the spindles may be adjusted so that the rig may be applied to molds of different widths.

2. A crane rig for handling pipe molds and the like comprising, in combination, a rigid, substantially rectangular structural frame having pairs of spaced beams at its opposite ends and adapted to be suspended in a horizontal plane from the crane; block-like bearing members adjustably supported between the beams at the opposite ends; vertical spindles in said bearings; substantially horizontal hook members at the lower ends of said vertical hook members; a handle connected to one of said spindles to rotate its hook into and out of engagement with a mold, connections between said handle and another one of said spindles on the same side of the frame whereby both spindles and their hooks are operated simultaneously; and another operating handle including similar connections arranged at the opposite side of said frame but diagonally opposite from said first named handle.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

JAMES R. McWANE.