(No Model.) 2 Sheets—Sheet 1.

J. S. DOUGHERTY.

MECHANISM FOR HANDLING MOLTEN METAL.

No. 528,770. Patented Nov. 6, 1894.

Fig. 1.

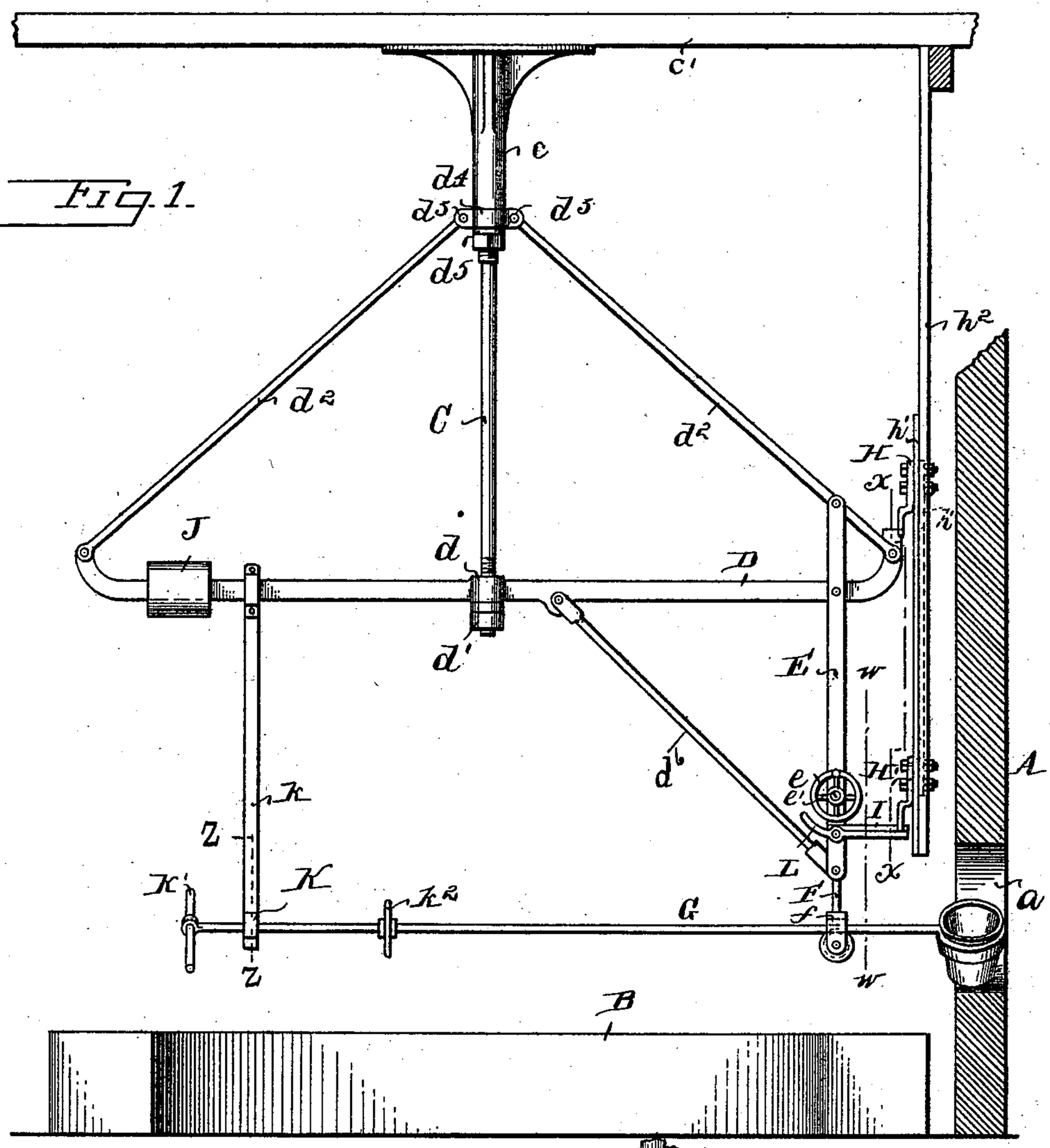


Fig. 2.

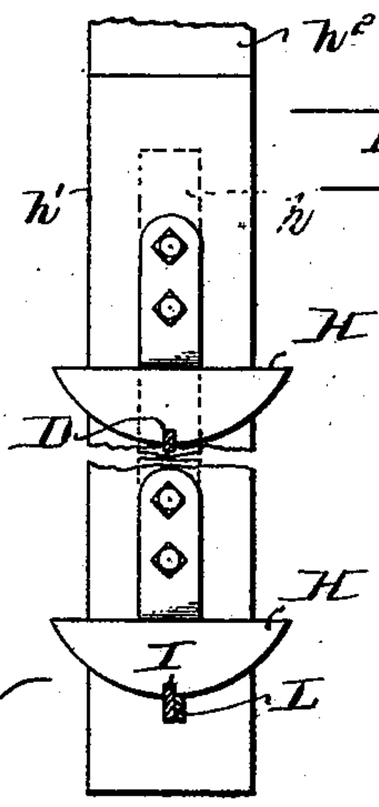
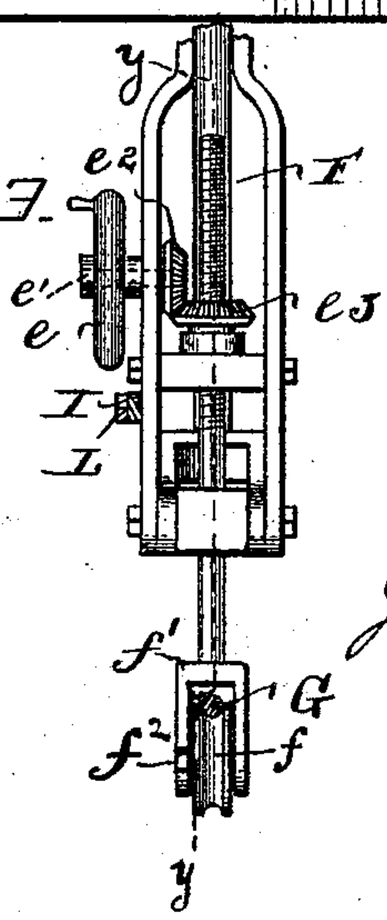


Fig. 3.



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(No Model.) 2 Sheets—Sheet 2.

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FIG. 4

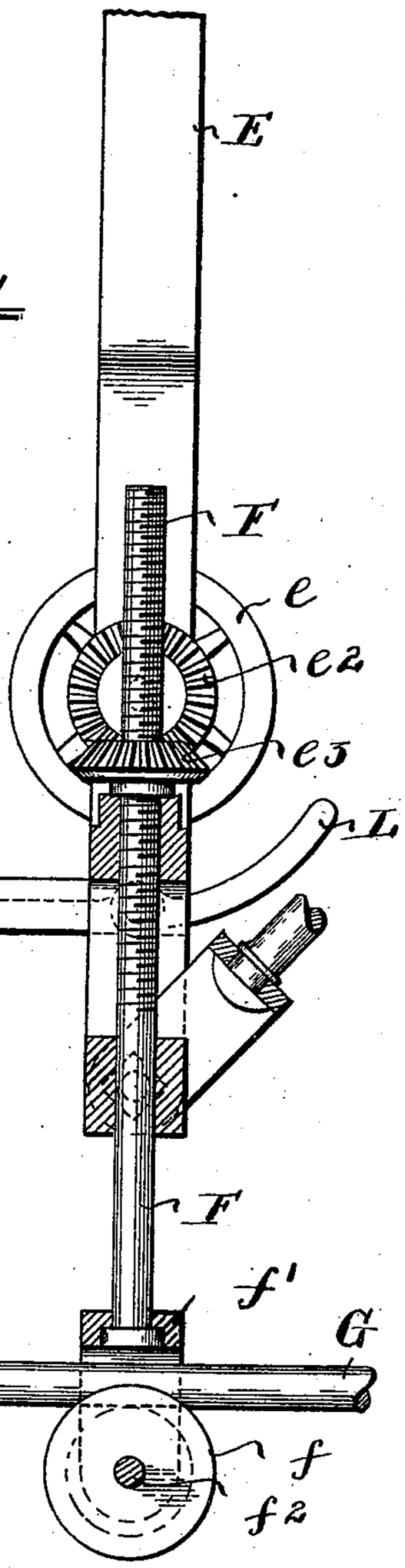
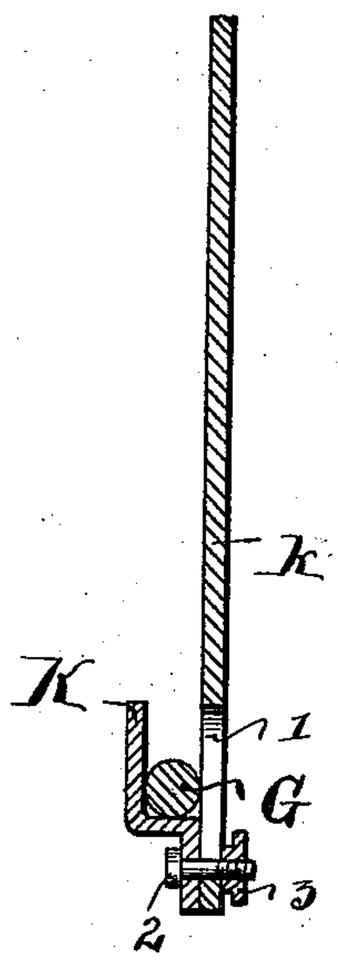


FIG. 5



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR HANDLING MOLTEN METAL.

SPECIFICATION forming part of Letters Patent No. 528,770, dated November 6, 1894.

Application filed September 9, 1893. Serial No. 485,150. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. DOUGHERTY, a citizen of the United States, residing at Anaconda, county of Deer Lodge, and State of Montana, have invented a new and useful Improvement in Mechanism for Handling Molten Metal, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object the transfer of molten metal from the furnace to the mold, and the advantage of my improved construction is that by its use the work is facilitated and the material handled readily and with the expenditure of small force.

I will first describe the construction and operation of my improvement and then specifically point out the invention in the claims.

In the drawings—Figure 1 is a view in side elevation of my improved machine, with a section of the furnace to the right. Fig. 2 is a section on the line *x—x*, Fig. 1, enlarged to show details of construction. Fig. 3 is a similar section on the line *w—w*, Fig. 1. Fig. 4 is a section on line *y—y*, Fig. 3. Fig. 5 is a section on line *z—z*, Fig. 1.

A is the furnace in which is contained the molten metal, *a* being the discharge opening for the removal of said metal.

B are the molds to which it is desired to convey the metal.

C is an upright shaft secured to a casting *c*, said casting being secured firmly to strong timbers *c'* so that said shaft is suspended downward as shown in the drawings.

D is a bar provided with the hub *d*, which is bored slightly larger than the shaft C and surrounds said shaft. The bar D is held in place upon said shaft by means of a nut *d'* working on a threaded end of shaft C. Secured at each end of the bar D are brace-rods d^2. The upper ends of these brace-rods are made fast to ears d^3 on a ring or bushing d^4, the ring or bushing surrounding the shaft C so as to have a capacity to revolve upon it. This ring or bushing d^4 is held in place by a collar d^5, secured to shaft C. Bolted to bar D and brace d^6 is a double upright bar E, at the lower end of which is a hand-wheel *e* on the shaft *e'*. On the shaft *e'* is a bevel gear e^2 which works in a bevel-gear e^3, through the hub of which a screw thread is cut.

F is an upright threaded bar working in the threaded hub of gear e^3. The lower end of this bar F rests in the top of the fork or stirrup *f'* in which is secured the sheave *f*, so as to be adapted to revolve on the pin f^2 by which it is secured. The sheave *f* is adapted to receive the handle of the ladle G, which ladle is of a size sufficient to hold enough metal to fill a mold. When the operator turns the hand-wheel *e*, the bevel-gear e^2 operates the bevel-gear e^3, and the threaded hub of the gear e^3 operating upon the threaded rod F elevates or lowers it, and with it, the ladle when in position, and thus the ladle can be adjusted to the level of the metal in the furnace. The connection between the sheave *f* and upright F, is such that the sheave is swiveled and can have a rotary movement given it independent of the movement of the upright to which it is connected.

H, H' are latches connected with a bar *h'* behind the iron plate *h*, and are secured to a frame or post h^2 near the mouth of the furnace. The latch H drops on the end of bar D, the end of which is curved up to meet the latch H. The latch H' drops in a similar way on the end of a short bar I, which is connected to the upright bar E. Thus the positions of the parts are held fixed, with the exception of the movement which may be given upright F when the metal is being dipped from the furnace.

J is a weight upon the end of bar D to counterbalance the weight of the metal in the ladle.

When the metal has been dipped from the furnace and in the ladle, the long handle of the ladle is dropped into an adjustable hook K, which is adjustably secured to upright bar *k*, as shown in Fig. 5, in which *l* is a slot or guide in upright *k*, 2 a bolt, the head of which rests against the outside of bar K, and the bolt passes through said bar, and the slot or guide *l*, and the whole secured by means of the nut 3 working on the threaded end of said bolt, so that hook K can be moved up and down, the upright bar *k* being secured to bar D on the opposite side of the point of suspension from that of the rod E. The ladle handle is provided with a cross-bar *k'* and a

hand wheel k^2, by which one of the operators can dip and pour the metal. The latches H, H′, are disengaged by pulling down the handle L pivoted upon upright E connected with latch H′ at the other end.

The operation is as follows: The apparatus being in the position shown in Fig. 1, the ladle is inserted in the furnace, the handle resting upon the roller *f* and hook K. The ladle is adjusted to the position of the metal by the movement which is given to bar F by means of bevel gears e^2 and e^3 as hereinbefore described, and the ladle filled. The handle L is then operated and the latches H, H′, released, which allows the apparatus to be swung round until the ladle comes opposite the desired mold, when the contents are emptied into the mold.

As may be seen the frame work is supported from above and no support is on the level with the article to be moved and the support being centrally disposed enables the ingots to be in the arc of a circle around the central point of support.

Having now fully described my invention, what I claim as new, and desire to protect by Letters Patent, is—

1. In an apparatus for conveying metal from the furnace to the mold, the combination with a frame work constructed and adapted to revolve, a support or shaft suspended from above upon which said framework is adapted to revolve, an upright connected to said framework and adapted to support the handle of a ladle adjacent to the furnace.

2. In an apparatus for conveying metal from the furnace to the mold, the combination with a framework constructed and adapted to revolve, a support or shaft suspended from above upon which said framework is adapted to revolve, an upright connected to said framework, a support secured to said upright and adapted to have a rotary movement independent of said upright and adapted to support the handle of a ladle adjacent to the furnace.

3. In an apparatus for conveying metal from the furnace to the mold, the combination of a framework constructed and adapted to revolve, an upright connected to said framework, said upright being adapted to support the handle of a ladle adjacent to the furnace, locking devices, and means substantially as described to throw said locking devices in and out of connection with the upright and frame work.

4. In an apparatus for conveying metal from the furnace to the mold, in combination, a framework provided with a horizontal member D and constructed and adapted to revolve, an upright connected to said framework and adapted to support the handle of a ladle adjacent to the furnace, latches, H, H′, latch H being adapted to secure horizontal member D and latch H′ adapted to secure upright F, and means substantially as described to throw said latches in and out of action.

In testimony of which invention I have hereunto set my hand.

JOHN S. DOUGHERTY.

Witnesses:
B. McGINTY,
THOS. McGUIRE.