

(No Model.)

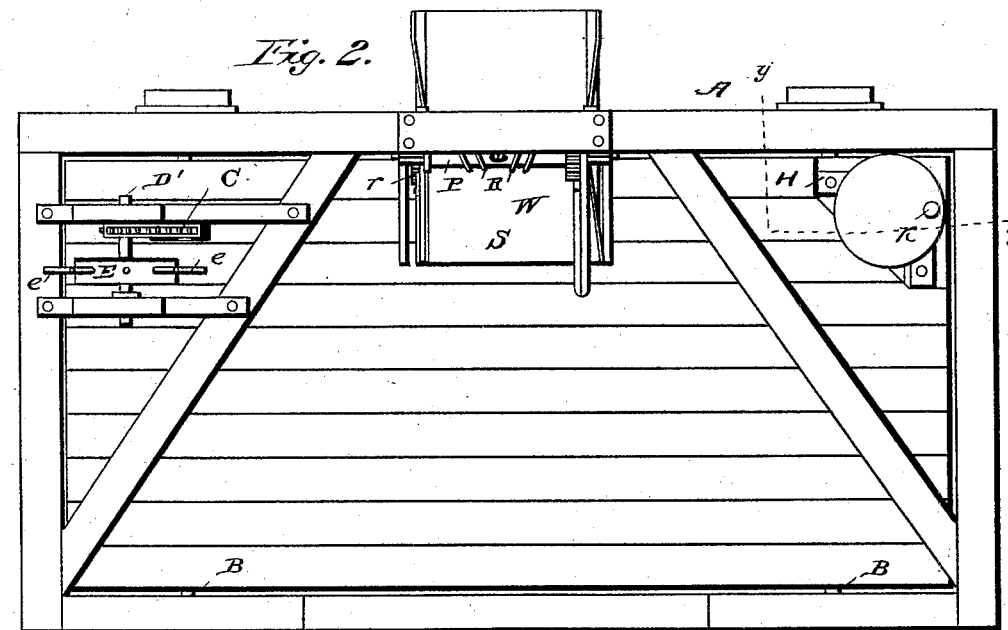
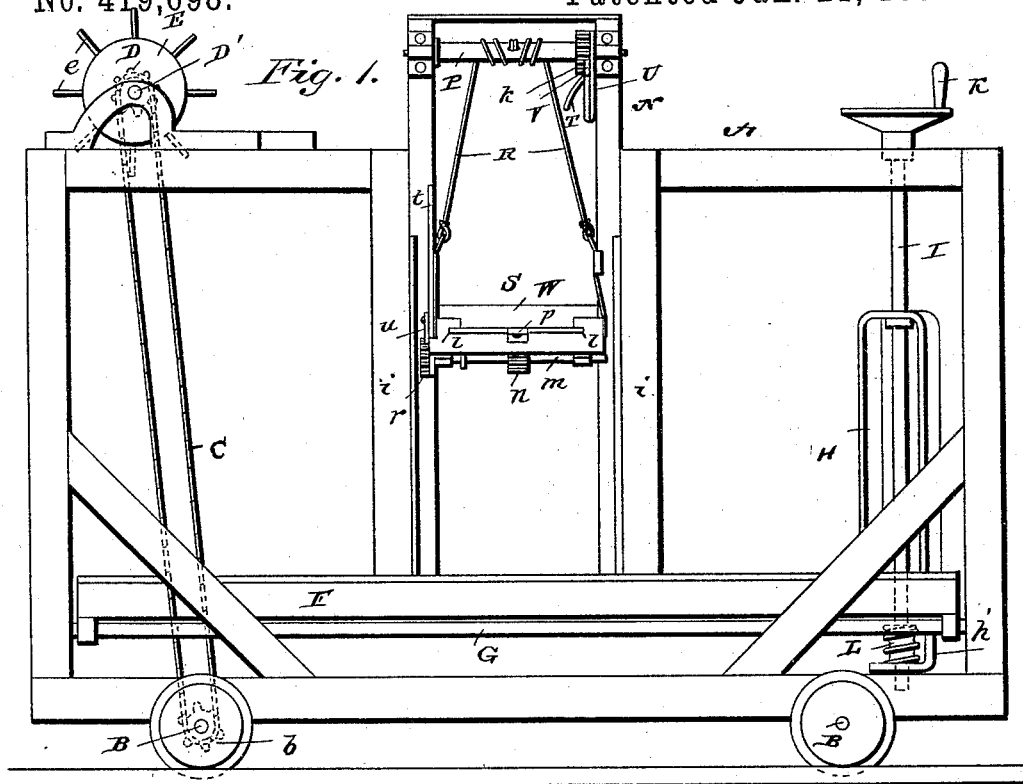
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W. A. MITCHELL.

DEVICE FOR CONVEYING AND ELEVATING LADLES.

No. 419,698.

Patented Jan. 21, 1890.



Witnesses

*J. E. Shupin*  
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Inventor

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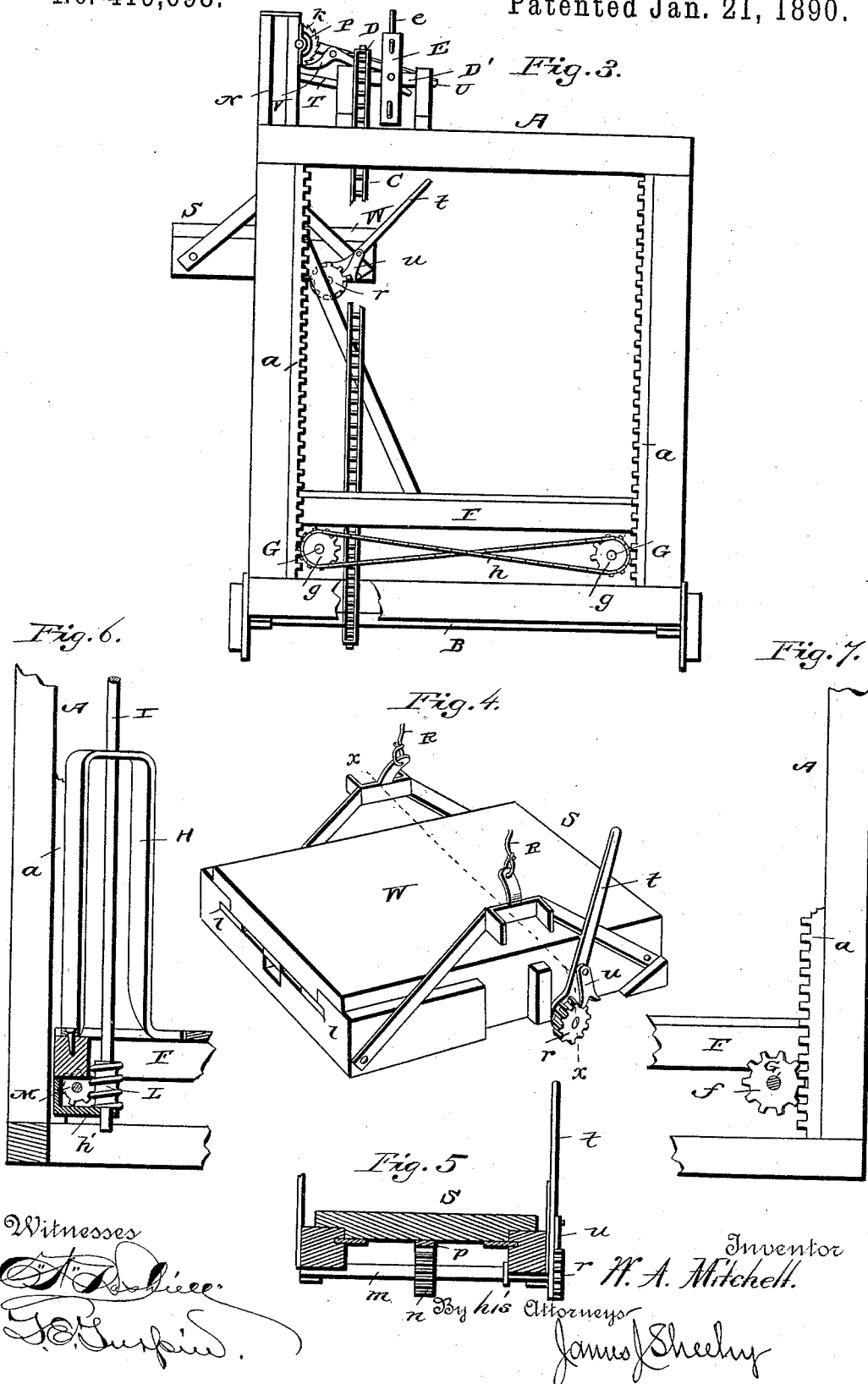
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# UNITED STATES PATENT OFFICE.

WILLIAM A. MITCHELL, OF NEVADA, MISSOURI.

## DEVICE FOR CONVEYING AND ELEVATING LADLES.

SPECIFICATION forming part of Letters Patent No. 419,698, dated January 21, 1890.

Application filed April 17, 1889. Serial No. 307,608. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM ALLEN MITCHELL, a citizen of the United States, residing at Nevada, in the county of Vernon and State of Missouri, have invented certain new and useful Improvements in Devices for Conveying and Elevating Ladles in Furnaces; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a device for conveying and elevating ladles in furnaces; and the novelty will be fully understood from the following description and claims, taken in connection with the accompanying drawings, in which—

Figure 1 is a front view of my improved device. Fig. 2 is a plan view of the same. Fig. 3 is a side elevation. Fig. 4 is a perspective view of the ladle-platform removed. Fig. 5 is a cross-sectional view of said platform, taken at the point indicated by the dotted line *x x* on Fig. 4. Fig. 6 is a sectional detail view showing the manner of adjusting the main platform, taken at the point indicated by the dotted line *y y* on Fig. 2; and Fig. 7 is also a detail view showing one of the rack-bars and pinions whereby the main platform is adjusted.

Referring by letter to the said drawings, A indicates the main frame, which is mounted on a suitable truck, as shown, and this truck is designed to travel upon a suitable track arranged between the molds and the furnace. Secured vertically to each corner upright of the main frame A is a fixed rack *a*, to receive pinions journaled in the main platform, as will be presently explained.

B indicates the driving-axles of the truck, one of which is provided with a chain-gear *b*, to receive an endless chain C, which passes over a chain-wheel D, secured to a short horizontal shaft D', journaled in the upper portion of the main frame A. Fixed to this short shaft D, in the upper portion of the main frame, is a hand-wheel E, having handles or hand-levers *e*. By this means it will be seen that when the hand-wheel has been turned by the operator motion will be imparted, through the medium of the endless

chain C and the gear *b*, to the axle B of the truck, and the frame and entire apparatus moved from place to place.

F indicates a horizontal platform, which is arranged in the main frame, and has journaled to its under side parallel shafts G, carrying near their outer ends fixed pinions *f*, which engage the teeth of the vertical racks *a*, fixed to the corner uprights of the main frame. These shafts are also provided at their extreme ends with chain-wheels *g*, and are connected by means of endless chains *h*, whereby when motion has been communicated to one of them, by means which will be presently explained, it will be imparted, through the medium of the said chains *h*, to the opposite one, so that the pinions thereon will travel in the racks *a*.

Secured to the main platform F, and preferably at one corner thereof, is a vertical frame H, which serves as a guide-bearing for a vertical rotatable shaft I, which carries at its upper end a crank-handle K, whereby the said shaft may be rotated. This vertical shaft, which is stepped in a bearing *h'*, near its lower end, and passes through the platform, has fixed to it a worm-gear or endless screw L, which screw meshes with a gear M fixed to one of the horizontal shafts G. It should be observed that this vertical shaft, as well as the horizontal shaft G, has its bearing in the platform F, or at least the part *h'*, secured to the platform, consequently when the said vertical shaft has been turned, both will move simultaneously and together with the platform, thereby lifting or lowering the operator according to the position desired at the furnace.

N indicates an upright frame, which is fixed to the platform F, and is guided in its vertical movement by guide-posts *i*, rising from the main frame A. This upright frame N may have the outer sides of its vertical walls grooved and receive a tongue extending from the guide-post *i*, or the guiding may be accomplished by other suitable means, so that when the main platform has been raised or lowered this upright frame will move with it.

P indicates a shaft or drum, which is journaled in the uprights of the vertically-mov-

ble frame N, and has suspended from it, by means of ropes or cords R, an adjustable and extension table or platform S. The table or platform S, which is provided with suitable guides, is designed to be moved by means of the cords and drum up and down in the frame N. The drum has a ratchet *k* fixed to it near one end and a ratchet-lever U journaled adjacent thereto, so that by manipulating the same the drum or shaft will be turned and the cord wound or unwound thereon, as desired, a safety-lever T being employed to engage the teeth of the ratchet on the shaft to prevent the ladle platform or table from accidental descent. The ratchet-lever U carries a pawl V, pivoted thereto, so that it may be made to engage the ratchet *k* from different directions to wind or unwind the ropes upon the shaft or drum. The base of this extension table or platform S is provided with ways *l*, so that the top or table portion W may be guided truly in its movements.

*m* indicates a shaft, which is journaled in the base-section or under section of the extension-platform. This shaft is provided at a suitable point with a fixed gear *n*, which meshes with a toothed rack *p*, fixed to the under side of the sliding top W, so as to move the same in or out, as desired. This shaft *m* is furthermore provided at one end with a small gear *r*, and carries a hand-lever *t*, which has pivoted to it a dog *u*, being so arranged that it may serve to turn the shaft *m* from either direction, so as to move the platform in or out.

From the foregoing description it will be seen that I have an apparatus whereby a ladle of great capacity may be conveniently handled with but little labor. It will be seen that the operator may quickly and conveniently transport the apparatus from the furnace to the mold without leaving his position and adapt the extension-platform for furnaces of various heights.

In some cases it may be only necessary to have the extension adjustable, while the main platform may remain fixed.

Having described my invention, what I claim is—

1. In an apparatus of the character described, the combination, with the main frame,

of a vertically-adjustable platform, a vertically-adjustable and horizontally-slidable platform carried by the said platform, suitable means for propelling the apparatus, and suitable means for raising and lowering the platforms, substantially as specified.

2. The combination, with the main frame mounted on a truck, of a vertically-adjustable platform and a vertically-adjustable and horizontally-slidable platform for the ladle carried by the said platform, substantially as specified.

3. The combination, with the main frame having vertical rack-bars and mounted upon a truck, of the main platform carrying connected shafts provided with pinions engaging the racks, a vertical shaft carrying a worm-gear or endless screw and engaging a gear on one of the said platform-shafts, a gear upon one of the truck-axes, a shaft mounted on the main frame, and an endless belt connecting the gear on the latter shaft with the gear on the truck-axle, substantially as specified.

4. The combination, with the main frame, of the upright frame N, adjustable as described, and the ladle-platform having a slidable top, substantially as specified.

5. The combination, with the main frame, of the upright frame, the vertically-adjustable ladle-platform guided in the latter frame, the drum journaled in the top thereof and connected by ropes with the ladle-platform, and the ladle-platform having a slidable top, substantially as specified.

6. The combination, with the vertically-adjustable ladle-platform, of the shaft journaled in the lower section thereof and bearing a fixed pinion, the upper slidable section having the rack fixed to its under side and engaging the pinion on the shaft, the hand-lever *t*, journaled on the shaft, and the pawl *u*, pivoted on the hand-lever, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

W. A. MITCHELL.

Witnesses:

P. T. ABELL,

C. A. N. CAPION.