

C. Hewitt.

Rolling Iron,

Patented June 7. 1859.

N^o 24,304.

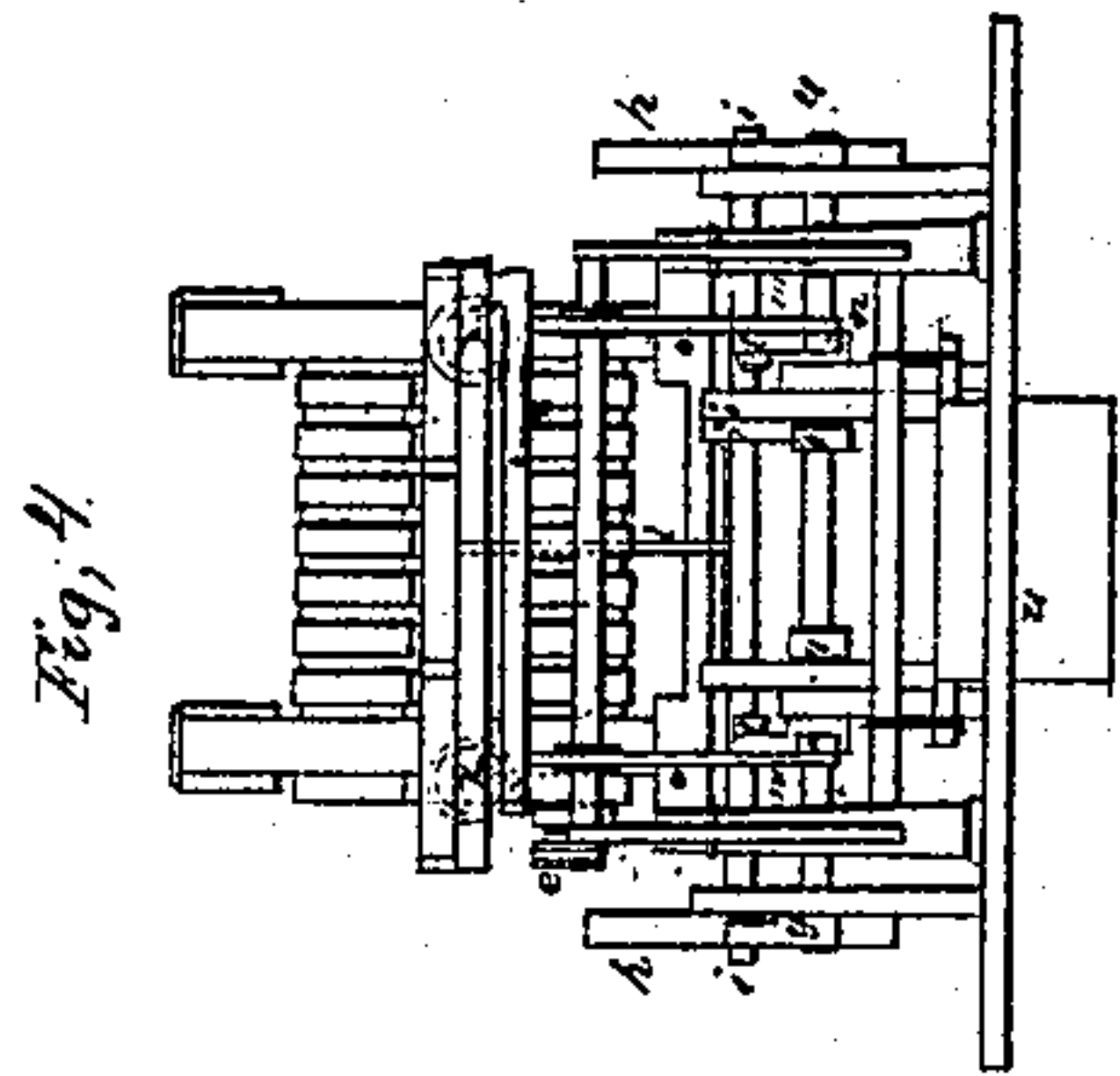


Fig. 4.

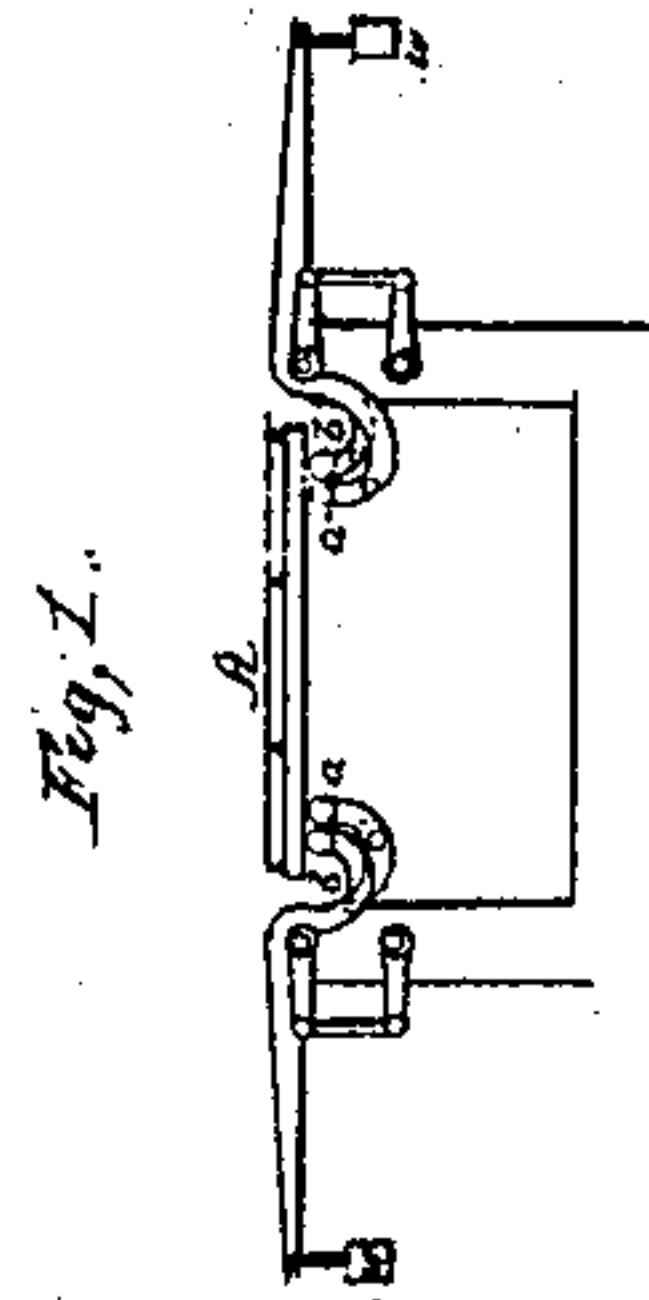


Fig. 1.

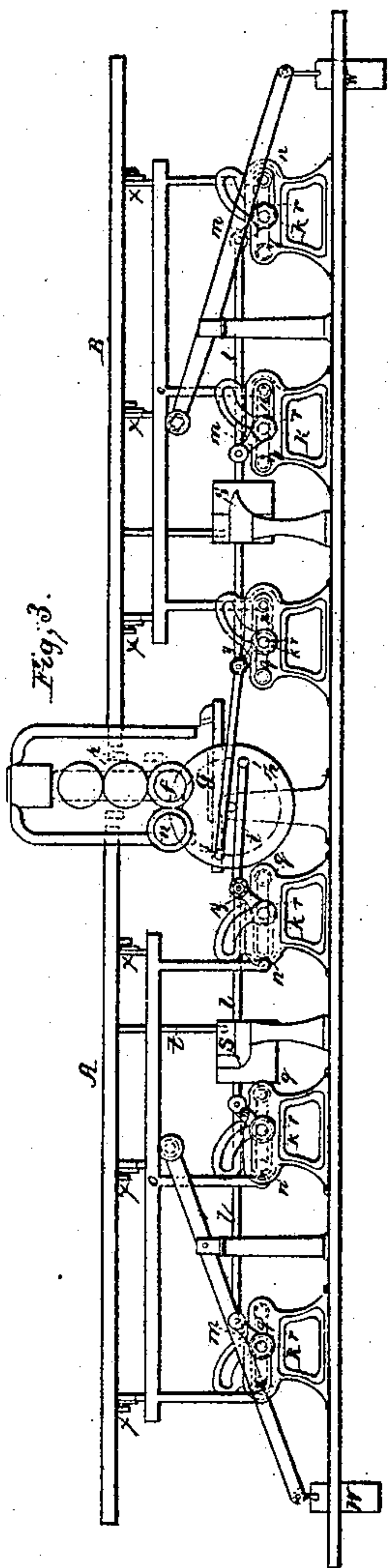


Fig. 3.

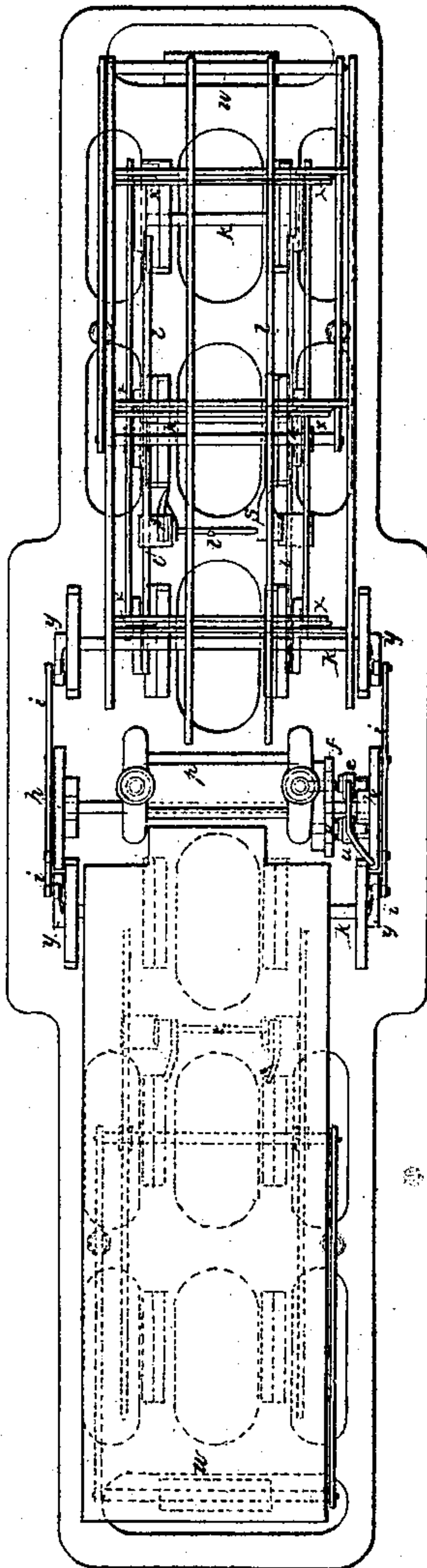


Fig. 5.



Fig. 2.

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UNITED STATES PATENT OFFICE.

CHARLES HEWITT, OF TRENTON, NEW JERSEY.

MACHINE FOR MOVING IRON AT THE ROLLS.

Specification of Letters Patent No. 24,304, dated June 7, 1859.

To all whom it may concern:

Be it known that I, CHARLES HEWITT, of the city of Trenton, in the county of Mercer and State of New Jersey, have invented a new and Improved Mode of Moving Iron or other Metal While the Same is in Process of Manufacture at the Rolls; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawings, making a part of this specification, and which represent two modes of applying my invention, one of which is shown Figs. 1 and 2, which are respectively an end and side elevation. The other is shown Figs. 3, 4, and 5, Fig. 3 being a side elevation, Fig. 4 an end view, and Fig. 5 a plan.

Similar letters of reference indicate corresponding parts in the several figures.

I will now proceed to explain the first and most simple application of my invention which is shown Figs. 1 and 2. The floors A and B of Figs. 1 and 2 are represented at a level midway between their highest and lowest positions, and resting on rollers.

The floor A Figs. 1 and 2 rests on the rollers *a a a a a a* and the floor B Fig. 2 on rollers *b b b b b b* (see Fig. 1). These rollers are attached to the levers *c c c* &c. and the levers *c' c' c'* &c. These levers have for their fulcrums the shafts *d d d d* and from them are suspended the weights *w w w* &c. Before explaining the operation of these parts it is necessary to state that in practice it is found best to have the lower surface of the pile or piece to be rolled, while on the entering side, below a plane that is tangent to the roll, on which the iron or other metal is to be entered, or in other words the center of the pile should be lower than the center of the groove, so that in entering, the end of the pile will first strike the lower roll of the two between which it is to be passed and be carried upward by it into the groove. The opposite side however or, that upon which the metal is to be delivered, should be tangent or nearly so to the lower of the two rolls *b*. Therefore the floor from which the metal is to be entered must always be lower than that upon which it is to be delivered. As A is the entering side when the floors are in their lowest position, it must then be lower than B, but as it is the receiving side when the floors are highest, it

must then be higher than B. Hence B never ascending as high nor descending as low as A has less motion than the latter. On this difference of motion depends one important feature of my invention—namely, the raising as well as the lowering of the metal without the use of other power than gravity. If the rolls are thirty inches in diameter A may be made to have a motion of thirty four inches and B of twenty six inches. The mode of accomplishing this difference in the movement of the two floors may be seen by referring to the rollers *a a a* &c., *b b b* &c., the distance of the fulcrum *d* from the latter being so much less than from the former, as to produce the desired effect; the weights, levers and fulcrums being all so connected as to affect each floor at the same time, but not to the same degree. As the iron or metal to be rolled always descends on floor A which has the greater motion and rises on floor B which has the less, it is easy to see that the floors, men, and the metal to be rolled may lift the counterbalances in the one case, and be lifted by them in the other.

To operate this form of my invention the metal to be rolled is brought to A Figs. 1 and 2 while the floors are in their lowest position, and is entered by the workmen into the rolls, and discharged by them upon B Fig. 2. The weights *w, w w* &c. in the manner already explained now lift the floors, men and metal to the requisite height for making the second pass by which the metal is again delivered on floor A of Fig 1 on which it descends by the action of gravity, the weights *w w w* &c. being raised to their original position. The operation just described continues to be repeated till the rolling of the bar is finished. With the upward and downward movements may be combined side movements of the floors without affecting their self-acting character seriously, and possibly even the backward and forward movements similar to what is hereafter described and shown Figs. 3, 4 and 5, which represent the second and more complete form of my invention—a form which renders it unnecessary to have men on the floors to enter or move the metal after it has been brought to, and passed through the first groove of the rolls. One man only is required to operate the floors. He need not however stand upon them, but may be at any

convenient distance where he may see but not be affected by the heat of the bars in process of manufacture.

I will proceed to describe the construction and operation of this application of my invention. The metal is first brought to floor A Fig. 3 and entered in the first groove. Passing through this it is discharged on floor B of Fig. 3. Then the workman in charge throws the clutch *e*, which works on a feather in the shaft, into gear with the wheel *f* which is loose on its shaft. This wheel thus receives motion which it communicates to the wheel *g*, to its shaft, and through the latter to the disks *h h*. These disks impart motion to the connecting rods *i i i i* and they by their connection with the arms *y y y y* to the shafts *k k k k* &c., all of these shafts being connected by the rods *l l l l* &c. and arms *m, m* &c. When the movement begins the shafts *k k k k* &c. all turn on their axes, the arms *n, n, n* &c. rotating upward and lifting the framework *o o* &c. and the floors, at the same time carrying them backward and from the rolls, so far that the end of the bar being rolled may not strike the rest *p*. Then the shafts *k k k k* &c. are prevented from rotating further by the guiding pins in the arms *q q q* &c., these guiding pins working in the slots shown in the drawings. These slots are so shaped that the action of the guiding pins in them prevents further rotation of the shafts than I have described, but enables them all to receive a forward motion toward the rolls upon the wheels *r r r* &c., the floor above and the iron on it receiving a similar movement. In the meantime the irregularly-shaped stationary pieces *s s s s* by their action on the movable parts *t t* cause the upper part of the floor or floor proper to roll on the wheels *x x* &c. far enough sidewise to carry the metal opposite the second groove of the rolls. The floors will at this time be in the position shown by the drawings.

The forward movement above described is greater in distance than the backward movement of the same floor while rising, and thereby the entering of the metal in the second groove is secured, through which it passes and is discharged upon the floor A Fig. 3. Then the operator throws the clutch *u*, which works on a feather into gear with the lower wheel *v*, which like the wheel *f* also communicates motion to the wheel *g*,

but in the opposite direction, thus reversing the motion on all the parts of the floors and connections.

It is to be noticed that the backward motion of floor A Fig. 3 is less than the forward motion it receives in its descent, thereby securing the entering of the metal in the third groove. The subsequent part of the operation is a mere repetition of the movements already described. With this mode of applying my invention, the use of power in addition to gravity is necessary, but in order that the full benefit of the latter may be had, the weights, *W W* are provided and are so graduated as to make it unnecessary to expend more power in lifting than in lowering the floors.

The mode of originating the floor movements through the agency of the clutches *e* and *w*, and the wheels *f*, *v*, and *g*, has been set forth and shown in the specification and drawings more for the purpose of having them agree with the model which it was convenient thus to make, than as the best mode of construction. I believe it would be preferable to have the machinery for moving the floors entirely disconnected from, and independent of, that which drives the rolls.

Among the advantages resulting from my invention are 1, a saving of labor and power; 2, the removal of all limitations upon the size and strength of rolls to be used; 3, the provision of means for making bars or plates of any size that may be required, as the success of the operation does not depend upon the ability of men to handle the weight of, or endure the heat radiated from large masses of metal, but only upon the size, strength and power of the machinery employed; 4, a product better and more uniform in quality, as the rolling will be more quickly done, and while the metal is at a heat favorable for good and reliable work.

What I claim as my invention and desire to secure by Letters Patent is—

The movable floors, platforms, or supports A B for moving iron or other metal at the rolls, while in process of manufacture, constructed and operated as herein described, or otherwise substantially the same.

CHAS. HEWITT.

Witnesses:

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EDWARD CORFU.