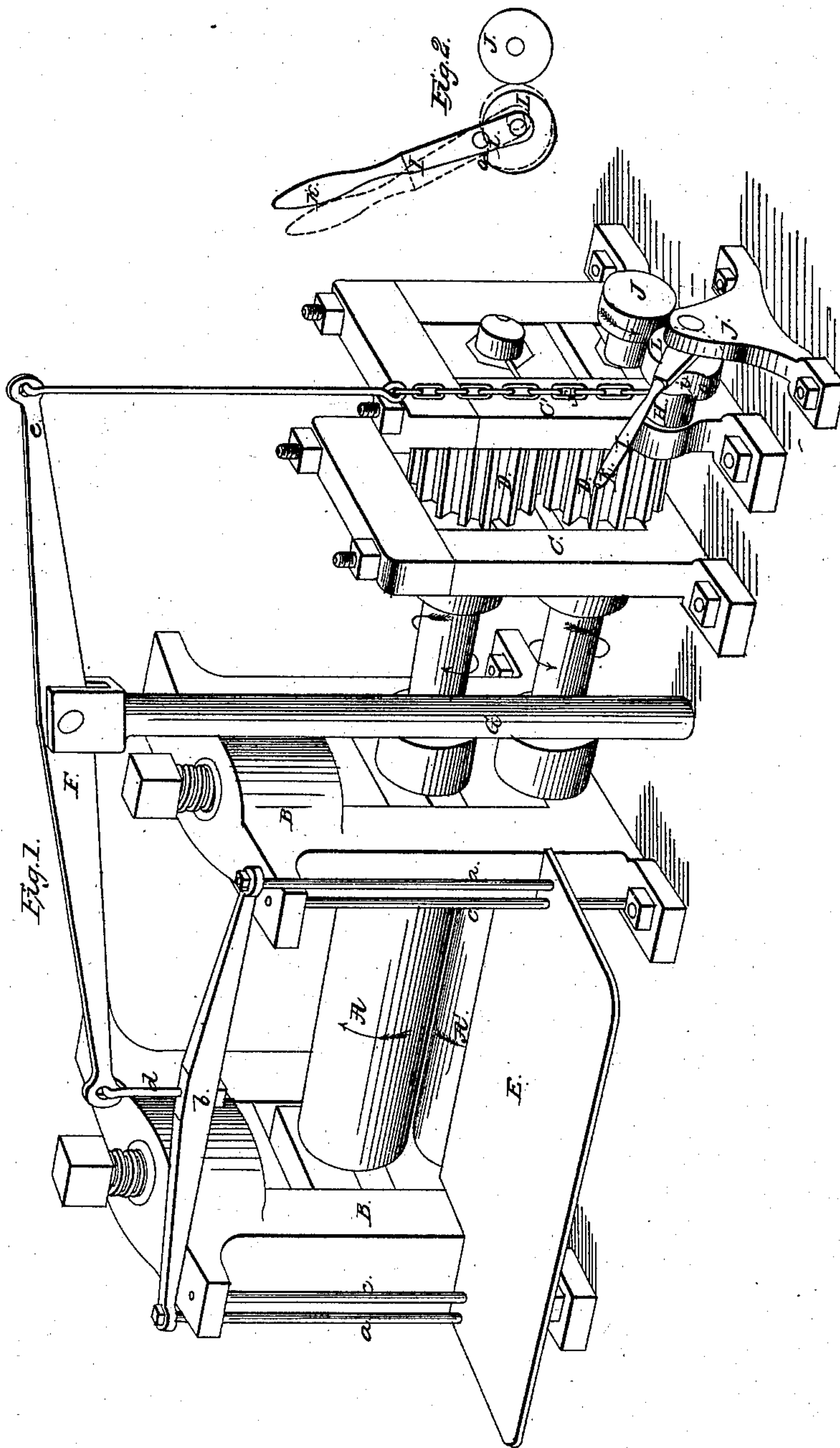


D. J. HAPPERSETT.
MECHANICAL HOOKER UP.

No. 8,204.

Patented July 8, 1851.



UNITED STATES PATENT OFFICE.

DAVID J. HAPPERSETT, OF DOWNINGTOWN, PENNSYLVANIA.

MECHANICAL HOOKER-UP.

Specification of Letters Patent No. 8,204, dated July 8, 1851.

To all whom it may concern:

Be it known that I, DAVID J. HAPPERSETT, of Downingtown, in the county of Chester and State of Pennsylvania, have invented a new and useful Improvement in Mills for Rolling Metals, particularly applicable to boiler-plate mills; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the accompanying drawing, which forms part of this specification and in which—

Figure 1 represents a view in perspective of a boiler plate mill with my invention applied thereto, and Fig. 2 is an elevation of the friction wheels detached from the mill.

In those rolling mills in which the metal is passed several times in succession between a pair of rolls which revolve continuously in one direction, it is necessary that the mass of metal which has been introduced between the rolls at one side of the mill and has been delivered by them at the opposite side thereof should be raised and passed over the top roll to the front of the mill in order that it may again be introduced between the rolls. When the weight of the mass being rolled is not very great the common device employed for raising it is a hook formed lever, which being suspended at a point between its two extremities is manipulated by an attendant, commonly called the hooker-up, who inserts its end beneath the mass delivered by the rolls, and bearing upon the opposite end of the lever, raises the mass sufficiently to permit it to be shoved forward over the top roll. This method of working is very convenient so long as the mass can be raised by a single workman, but it is extremely inconvenient and costly when the mass is so heavy that it requires the combined exertions of a number of men to raise it sufficiently to permit its passage over the top roll. The object of my invention is to raise the mass however large and heavy by the action of mechanism which is connected with the rolls and can be readily and instantaneously brought into action to raise the mass and to hold it when raised until it is passed over the top-roll, and can be lowered instantaneously to the proper position for receiving the mass delivered by the rolls, by the work of a single boy.

The apparatus I am about to describe is represented in the accompanying drawing as applied to a boiler-plate mill, A A' be-

ing the two rolls, B B the housings thereof, and C C' being the housings of the pinions D D by which the upper roll is put in motion from the lower. The rolls are driven in the usual manner in the directions respectively indicated by the arrows in the drawing. My apparatus is applied to the back of the mill or to that side at which the rolls in their movement deliver any thing inserted between. It consists mainly of a plate E to receive the mass delivered by the rolls, of a lever F from which this plate is suspended, and of the mechanism by means of which the lever is moved to raise or lower the plate. The plate E is connected by two suspension rods *a a* with a cross head *b* above the housings B B, and is guided in rising and falling by two guide rods *c c*, which are passed through suitable holes in the opposite extremities of the plate and are firmly secured to the housings of the rolls. The cross head *b* is suspended at its middle by a link bar *d* from the extremity of a lever beam F above. The latter is pivoted near its middle to a standard G which is erected between the roll and pinion housings, its extremity *e* is connected by a rod and chain *f* with the barrel of a drum H, one of whose gudgeons is pivoted in the adjacent pinion housing C' while its opposite gudgeon is pivoted in the lower extremity of a lever I. This lever is pivoted near its lower extremity to a standard, *j*, erected upon the bed plate of the mill; its upper extremity is prolonged and rounded to form a handle *k*, by moving which the lower extremity of the lever and the end of the chain drum connected therewith can be moved toward or from the spindle of the adjacent pinion. This pinion spindle is fitted with a circular friction drum J, and a similar drum L is secured to the chain drum H in such a position with respect to the friction drum J on the pinion spindle that its periphery can be pressed forcibly against that of the latter by moving the lever handle I. The friction drum L is cylindrical throughout only a portion of its periphery which terminates in a hollow space *l* and is succeeded by a lump or snag *o*. The hollow space is of a form to fit the periphery of the friction drum on the pinion spindle and the lump *o* is sufficiently large to bear upon this latter drum and prevent the further revolution of the drum from which it projects.

When the mill is in operation the rolls,

pinions, and friction drum J revolve continuously in the directions indicated by the arrows in the drawing. The mass of iron is introduced between the rolls and as they
 5 revolve is delivered by them upon the plate E, where it is seized with a fork or tongs by a workman standing behind the rolls; the boy standing with his hands upon the lever handle I now bears upon it and thus
 10 forces the periphery of the friction-drum L against the moving periphery of the corresponding friction-drum J on the pinion spindle; the friction of the latter upon the former is sufficient to cause it and the chain
 15 drum H to turn, thus winding up the chain and depressing the one extremity of the lever beam F to raise its opposite extremity and the plate suspended therefrom, together with the mass of iron which has just been
 20 delivered by the rolls and lays upon the plate. This raising of the plate E is continued until the hollow portion *i* of the friction-drum L coincides with the periphery of the drum on the pinion spindle, and
 25 the lump *o* upon the former bears upon the latter, when the further revolution of the chain drum, and the corresponding elevation of the plate, is stopped, and the plate E is thus held in its raised position until the
 30 mass laying upon it is transferred over the top roll to the front side of the mill. As soon as the mass is moved off the plate, the boy raises the lever handle thus moving the friction-drum L out of contact with that
 35 upon the pinion spindle, when the plate E, being no longer held up, drops by its weight to its lowest position to receive the mass again delivered by the rolls.

40 The chain drum is of such size that it will wind up a sufficient length of the chain to raise the plate, in turning only a portion of a revolution; and the chain is attached to

the drum in such manner that the lump of the one friction drum will bear upon the periphery of the other and thus prevent the
 45 further upward movement of the plate when the latter has reached its highest position.

The apparatus thus described may be termed a mechanical hooker-up, it is peculiarly adapted to rolling mills as it can
 50 be brought into action at any required moment when the mass has passed through the rolls; it also possesses the peculiarity of permitting the operator to stop and hold the plate in its highest position and to drop it
 55 immediately to its proper position to receive the mass issuing from the rolls; and it is not only extremely simple in its construction but also is free from the defect of requiring cog gear or other frangible mechanism which
 60 would be subjected to continual breakage by the jar in throwing the apparatus into or out of action.

What I claim as my invention and desire to secure by Letters Patent is, 65

In combination with a plate or the equivalent thereof for receiving the mass issuing from a rolling mill, the friction drums the periphery of one of which is shaped substantially as described and operating substantially as herein set forth in such manner
 70 that by their action the plate or its equivalent is quickly raised and held stationary at the proper height to permit the mass upon it to be passed to the front side of the mill
 75 and is rapidly lowered to the proper position to receive the mass issuing from the rolls.

In testimony whereof I have hereunto subscribed my name.

DAVID J. HAPPERSETT.

Witnesses:

E. L. RENWICK,
 P. H. WATSON.