

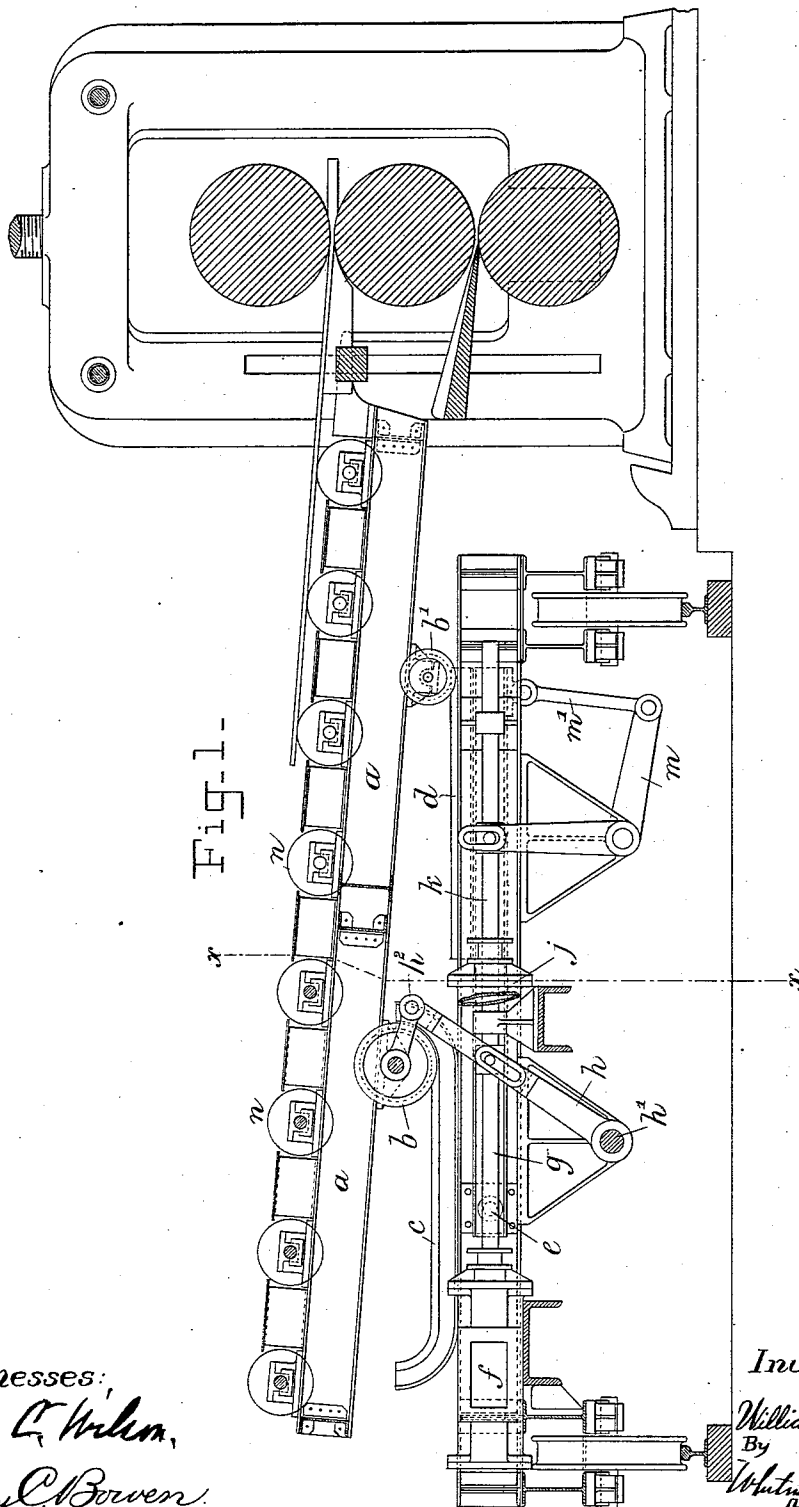
(No Model.)

3 Sheets—Sheet 1.

W. DAVIES.
ROLLING MILL PLATFORM.

No. 564,597.

Patented July 28, 1896.



Witnesses:
John C. Wilson,
Rory C. Bowen.

Inventor:

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(No Model.)

3 Sheets—Sheet 3.

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Fig. 3.

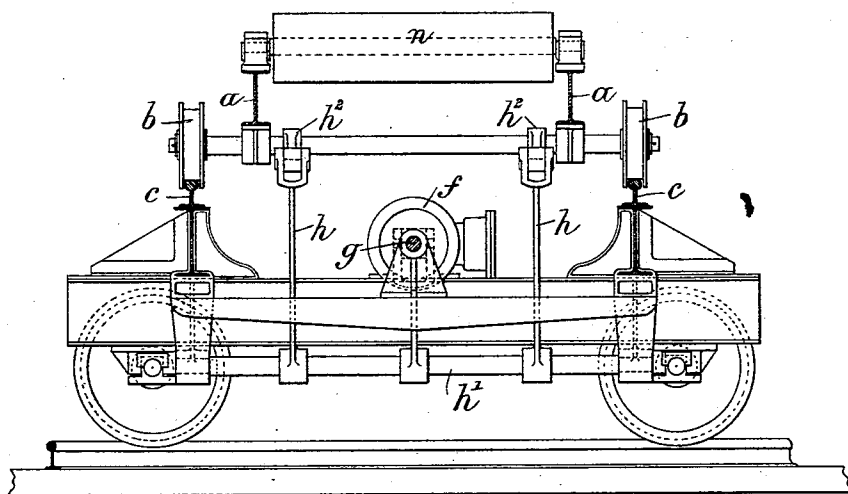
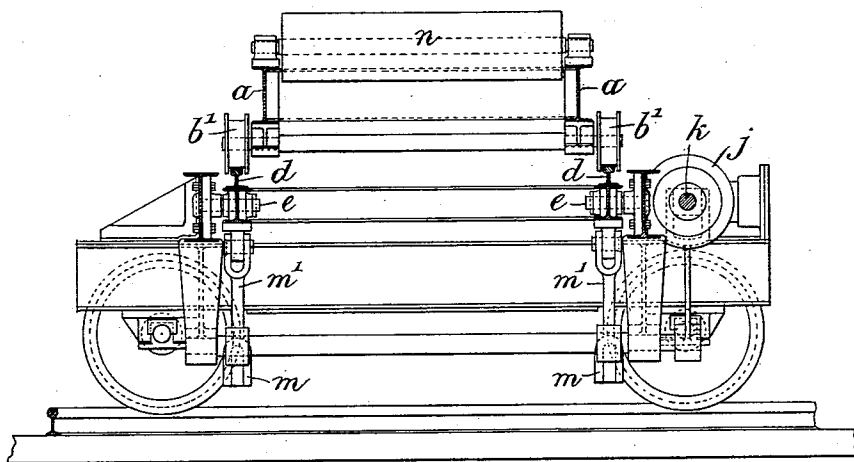


Fig. 4.



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UNITED STATES PATENT OFFICE.

WILLIAM DAVIES, OF MIDDLESBOROUGH, ENGLAND.

ROLLING-MILL PLATFORM.

SPECIFICATION forming part of Letters Patent No. 564,597, dated July 28, 1896.

Application filed November 19, 1895. Serial No. 469,415. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DAVIES, a subject of the Queen of Great Britain and Ireland, residing at Middlesbrough-on-Tees, in the county of York, England, have invented certain new and useful Improvements in Rolling-Mill Platforms; and I do hereby 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 rolling-mill platforms of the kind in use mainly in conjunction with rolling-mills for rolling iron and steel plates, bars, and billets, and is intended to facilitate the manipulation of such plates, bars, or the like in the manner required for passing them through the rolls.

In specifying my invention I will, for the sake of simplicity of description, refer to plates only, but it is to be understood that I include in that expression bars, billets, and the like heavy articles which are passed through the rolls in the same way and for the manipulation of which my invention is similarly applicable.

As is well known, the operation of passing plates backward and forward through the rolls is only to be effected by also lifting and lowering the plate, so that the front or advance edge thereof shall be brought level at one time with the gate or passage between the two lower rolls of a three-high mill and the next time with the gate or passage between the two upper rolls, or in a two-high mill with the gate or passage between the rolls and over the top roll in the reverse direction, a to-and-fro motion being combined in each of these cases with an up-and-down motion, except that in passing a plate backward and forward through a reversing mill the tilting motion is not always required; but a machine constructed for the purposes of my invention can also be employed in conjunction with a reversing mill, provision being made to combine the to-and-fro motion of the platform with the tilting motion when required, or to use the to-and-fro motion by itself to adapt the machine to the reversing mill.

I am aware that platforms have been constructed to change their level in the manner

required to enable the edge of the plate to be presented to the gate or passage between the two lower rolls and then to receive the plate as it comes back through the two upper rolls in a three-high mill or over the top roll in a two-high mill, but such platforms have hitherto been mounted on framework placed permanently in position for use in each case exclusively in conjunction with its own rolling-mill and furnished with operating mechanism capable of imparting to the platform a change of level only, which change of level is effected by applying a direct lift to the end near the rolls and which tilts the platform up and down about a hinged joint or the like at the other end, and meanwhile the plates are brought up to the rolls and withdrawn therefrom by means of bogies worked by men on the platform.

By my improvements I make provision for imparting to the platform not only the requisite change of level, but also a to-and-fro motion relatively to the mill, so that the platform is capable of effecting within its own movements the combined result of a tilting platform and the movements of bogies worked by hand, provision being also made for using the to-and-fro motion without the tilting motion when the machine is to be adapted to a reversing mill which does not always require the tilting motion; and, furthermore, I provide that a platform constructed according to my invention, although it may be a fixture in some cases and adapted exclusively to one particular mill or set of rolls, can be made serviceable for more than one rolling-mill or set of rolls by providing it with means for effecting its own locomotion whether to pass the plate from one mill or set of rolls to another or to be engaged exclusively with one mill or set of rolls at one time and with another mill or set of rolls at another time.

In the drawings annexed to this specification a machine is illustrated embodying in suitable mechanism for carrying my invention into effect the essential features thereof; but it must be understood that my invention is not limited to the precise combination or arrangement of details therein shown, as these can be modified into well-known equivalents in various ways.

In the drawings, Figure 1 is a side elevation

and part sectional view of the machine set in front of a three-high mill with the platform up-tilted to receive the plate returning from between the two upper rolls, the rolls themselves being shown in transverse section. Fig. 2 is a side elevation and part sectional view of the machine with the platform depressed to the position in which the plate could be delivered between the bottom rolls of a three-high mill; but the mill shown in transverse section is to be taken as representing a reversing mill which usually requires the platform to remain at the same incline, and so Figs. 1 and 2 represent the two extreme positions of the platform of the machine when tilted from its highest to the lowest positions, respectively, as the plate is passed through the rolls. Fig. 3 is a transverse sectional view taken on line *xx* of Figs. 1 and 2 of the machine, looking to the left, but with the cylinders and parts concerned in the tilting mechanism omitted, and Fig. 4 is a transverse sectional view taken on line *xx* of Figs. 1 and 2, looking to the right and showing the tilting mechanism only, it being assumed that the platform in these two figures appears in the level or horizontal position and not in the tilted positions shown in Figs. 1 and 2.

The same letters of reference indicate the same parts in all the figures.

The girders *a a* are the main beams of the movable platform, which are held together as one structure by suitable cross-beams and connections. This platform is mounted on the rear carrier-wheels *b b* and the front carrier-wheels *b' b'*. The rear wheels *b b* run upon the rails *c c*, which are permanent fixtures to the main frame of the machine, while the front carrier-wheels *b' b'* run upon the rails or tracks *d d*, which rock or tilt about the spindle *e* as about a hinged joint. A to-and-fro motion is imparted to the wheels *b b*, while an up-and-down motion is imparted to the tracks *d d*—that is, to the wheels *b' b'*—and so the platform is tilted up and down about the shaft *e* as an axis or hinged joint at the same time that it is running in and out or to and fro along the rails *c c*. This combined movement is controlled and adapted to its purpose by suitable leverage worked from steam-cylinders or equivalent prime movers provided on the machine itself. In Fig. 3 *f* is a steam-cylinder, the piston-rod *g* of which is connected to the lever *h*, which rocks about *h'* as its center, and by means of the link *h²* its oscillatory motion is transmitted to the wheels *b b* and consequently to the movable platform. Referring to Fig. 4, *j* is a steam-cylinder, the piston-rod *k* of which actuates the bell-crank lever *m*, the motion of which is transmitted through the link or connecting-rod *m'* to the rails *d d*, which tilt up and down accordingly. The levers for turning the steam on or off for the cylinders *f* and *j* are manipulated independently of each other, by which the mechanism for the

to-and-fro movement can be used in combination with the tilting mechanism or by itself, or the said levers could be coupled or geared together to insure the combined action always taking place in the proper or intended manner.

By mounting the machine upon wheels, as shown in the drawings, the machine can be moved from one set of rolls to another set of rolls and be made to effect its own locomotion in the well-known way. But the machine may be in some cases a fixture, as the power of locomotion is not in all cases essential to the invention. The platform is furnished with prongs corresponding to the prongs and recesses usually provided on the top guide-rest or guide-plate of the mill, for guiding and lifting the plates as they enter and leave the rolls, and also with a series of friction-rollers *n*, as shown.

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

1. In a platform for use in connection with metal-rolling mills, the combination with a suitable truck; a stationary track mounted upon said truck and a second track pivotally mounted at one end upon said truck, and movable vertically at its opposite end; of a platform mounted upon carrier-wheels adapted to run upon said tracks; means for moving said platform longitudinally of said tracks, and means for raising and lowering the outer end of said pivoted track, substantially as and for the purposes described.

2. In a platform for use in connection with metal-rolling mills, the combination with a suitable truck mounted upon wheels and adapted to be moved laterally; a stationary track mounted upon said truck, and a second track pivotally mounted at one end upon said truck, and movable vertically at its opposite end; of a platform mounted upon carrier-wheels adapted to run on said tracks; means for moving said platform longitudinally upon said tracks, and means carried by said truck for raising and lowering the outer end of said pivoted track, substantially as and for the purposes described.

3. In a platform for use in connection with metal-rolling mills, the combination with a suitable truck mounted upon wheels adapted to be moved laterally; a stationary track mounted longitudinally upon said truck; a second track pivotally mounted at one end upon said truck and movable vertically at its outer end; a pair of bell-crank levers fulcrumed on said truck and each pivotally connected at one end to the outer end of one of the rails of said movable track; a steam-cylinder, and a piston-rod working therein and connected to the other ends of said bell-crank levers, and operating the same to raise or lower the outer end of the movable truck; of a platform mounted upon carrier-wheels adapted to travel upon said tracks; and means

for moving the platform longitudinally upon said tracks, substantially as and for the purposes described.

4. In a platform for use in connection with
5 metal-rolling mills, the combination with a
suitable truck mounted upon wheels adapted
to be moved laterally; a stationary track
mounted longitudinally upon said truck; a
10 second track pivotally mounted at one end
upon said truck and movable vertically at its
outer end; a pair of bell-crank levers ful-
crumed on said truck and each pivotally con-
15 nected at one end to the outer end of one of
the rails of said movable track; a steam-cyl-
inder, and a piston-rod working therein and
connected to the other ends of said bell-crank
levers, and operating the same to raise or

lower the outer end of said movable track;
of a platform mounted upon carrier-wheels
adapted to travel upon said tracks; a pair of 20
levers fulcrumed upon said truck and pivot-
ally connected to the said platform; a steam-
cylinder, a piston-rod working therein and
connected to said levers, for operating the
same and causing said platform to move lon- 25
gitudinally upon said truck, substantially as
and for the purposes described.

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

WILLIAM DAVIES.

Witnesses:

GEORGE JAMES CLARKSON,
EDWARD THOMAS ELCOAT.