

L. J. MASTERSON.
Machines for Twisting Metal.

No. 152,501.

Patented June 30, 1874.

FIG. 1.

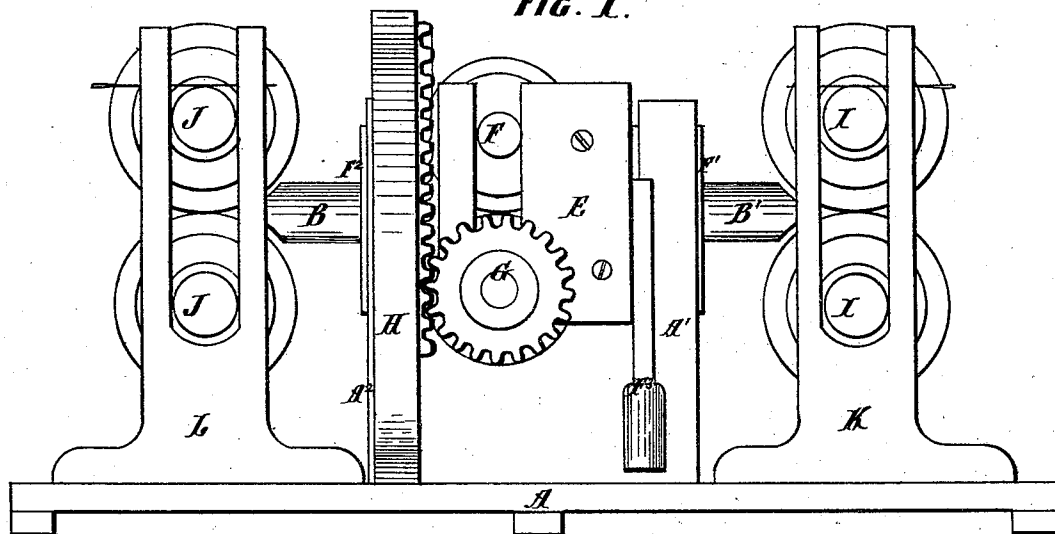


FIG. 2.

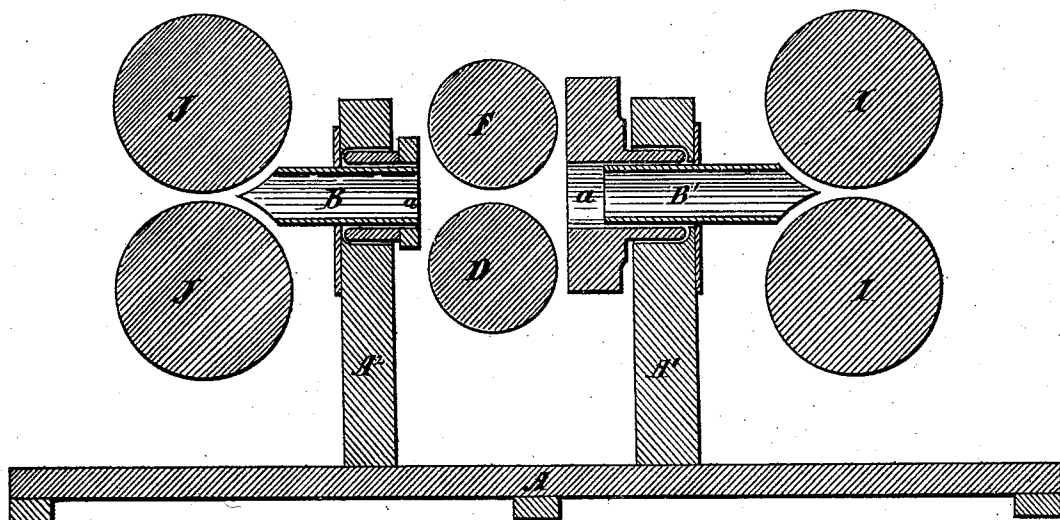
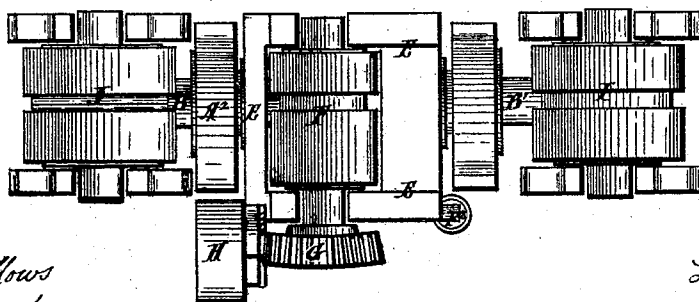


FIG. 3.



WITNESSES.

Benjamin Tallows
Jno. S. Clarke

INVENTOR
Levi J. Mastersom

UNITED STATES PATENT OFFICE.

LEVI JAMES MASTERSON, OF PITTSBURG, ASSIGNOR TO HIMSELF, SAMUEL P. HANSON, AND G. MORGAN ELDRIDGE, OF PHILADELPHIA, PA.

IMPROVEMENT IN MACHINES FOR TWISTING METAL.

Specification forming part of Letters Patent No. **152,501**, dated June 30, 1874; application filed January 20, 1874.

To all whom it may concern :

Be it known that I, LEVI JAMES MASTERSON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in the Rolling of Iron, Steel, or other Metals; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon, which form a part of this specification.

The nature of my invention consists in a new device, whereby iron, steel, or any other metal can be turned and twisted during the operation of rolling, or twisted without rolling.

In the accompanying drawings, Figure 1 is a side view of my improved device attached to ordinary rolls. Fig. 2 is a longitudinal section of the same. Fig. 3 is a plan view of the same.

Letters of reference denote parts.

Attached to and upon a bed-plate, A, are standards A¹ and A², constructed of any suitable material. E is a frame, made of any suitable material, with hollow bearings *a a*, which lie in said standards in any suitable manner, so that the frame E, which carries the rolls F and D, and the gear or toothed wheel G, may revolve. H is a standard, made of any suitable material and in any suitable manner, the upper part of which is curved, the one side being provided with a toothed rack, in which the said gear or toothed wheel G works.

I do not limit or confine myself to this specific form of rack, as I may require to use a semicircular, circular, or other-shaped one to effect what I shall hereafter describe and explain.

I I and J J are ordinary rolls, which revolve in the ordinary housings K and L, which are fixed to the bed-plate A, and being directly in line with the grooves of the rolls F and D, and geared and rotated by any suitable motive power.

It will be seen in the accompanying drawings that the frame E is so arranged in its bearings that the preponderance of weight and material is on the side upon which the gear or toothed wheel G is attached, running through the standards A¹ and A²; and through the bearings of

the frame E are hollow tubes, upon which the said bearings of the frame E rotate. The tubes are securely fastened by the plates F¹ and F², and produced toward the rolls I I and J J, said tubes being so arranged and cut that they approach very near to the grooves of said rolls. The frame E is so hung in position that the grooves, at the points where the rolls F and D come in contact with each other, are always in perfect line with the grooves of the other rolls and the tubes.

The mode of operating my device is as follows: When the pile or billet of iron or other metal has been sufficiently heated for rolling, it is passed through the rolls I I, and enters the tube B¹, which is bell-mouthed or otherwise shaped, and which serves as a guide for the metal being rolled, and also as a bearing for the journals of the frame E. The metal, by the action of the rolls I I, is carried forward into the rolls F and D, which are held in the frame E. The friction produced upon these rolls by the iron or other metal being pushed through them causes them to rotate. The lower roll D has affixed to one end of its shaft an ordinary gear-wheel, G, which fits into the toothed rack on standard H, so that when the rolls F and D are rotated by the pass of the metal the lower roll is rotated, and the gear G turned, causing the said gear-wheel to travel up and along said rack, thereby turning the whole frame E on its bearings, and with it the rolls D F, at the same time turning and twisting the iron ready for the pass into the rolls J J.

It will be understood that by this device being placed between rolls the metal can be passed from one set of rolls to the other, giving the metal to be rolled either a partial or a whole turn, repeating the twisting of the metal between each and every set of rolls, if necessary. If only a quarter-turn of the frame is required, then a rack of the shape of a quadrant would be sufficient. If a half-turn is required, then a semicircular rack; if a three-quarter turn, a tri-circular rack; and if a whole turn, then a rack forming a complete circle would be necessary.

It will be seen that, when the frame E has made a quarter-turn, and the gear-wheel G has

traveled to the top of the rack, it runs out of gear, and remains in this position until it has delivered the metal into the tube B and rolls J J, when it falls back into its original position by the excess of weight on the frame on that side, and is held in position by a stop-block, F³, of any suitable construction.

I do not confine myself to any number of sets of rolls, or to any peculiar construction of them; nor to the number or position of my improved device between the sets of rolls.

My invention is applicable to existing rolls. It is evident that the rolls J J may be used as mere feed-rolls and the rolls I I for delivering-rolls when the metal is only to be twisted.

By the present system of rolling, the iron, after passing the first set of rolls, whether it be square or round, has a small fillet or rough edge on either side of it, which is caused by the rolls not working perfectly close; whereas, by my improved device being placed between sets of continuous rolls, the iron is taken hold of and given any turn or twist required, so that the fillet or rough edge is rolled down in the succeeding pass, at the same time improving the quality of the iron by being regularly worked and turned; but, in order to effect this,

it requires a train of rolls of any required number, which are all or part coupled together by ordinary gearing. The iron is not handled or touched, after entering the first set of rolls, until it discharges itself from the last roll finished for market, of superior quality and form, all the required twisting being accomplished by my device during the operation of rolling. By the ordinary process of rolling, the labor of the men employed at such work is very severe and dangerous. By my device I greatly diminish the manual labor and danger arising therefrom.

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

The combination, with the two pairs of grooved rolls I and J, of the pair of grooved twisting-rolls, the rack, and the pinion, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

LEVI J. MASTERSON.

Witnesses:

FRANCIS DANIEL TAYLOR,
BENJAMIN FALLOWS.