

(No Model.)

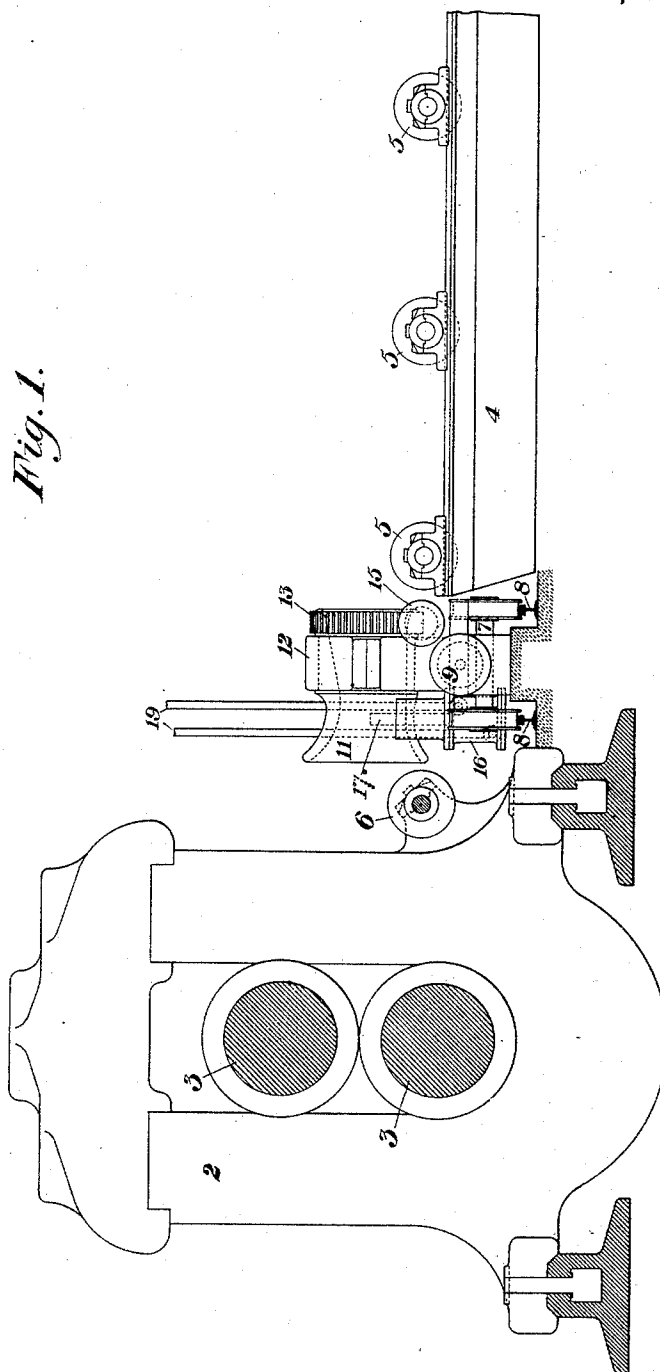
3 Sheets—Sheet 1.

J. A. POTTER & P. T. BERG.
ROLLING MILL.

No. 485,982.

Patented Nov. 8, 1892.

Fig. 1.



WITNESSES

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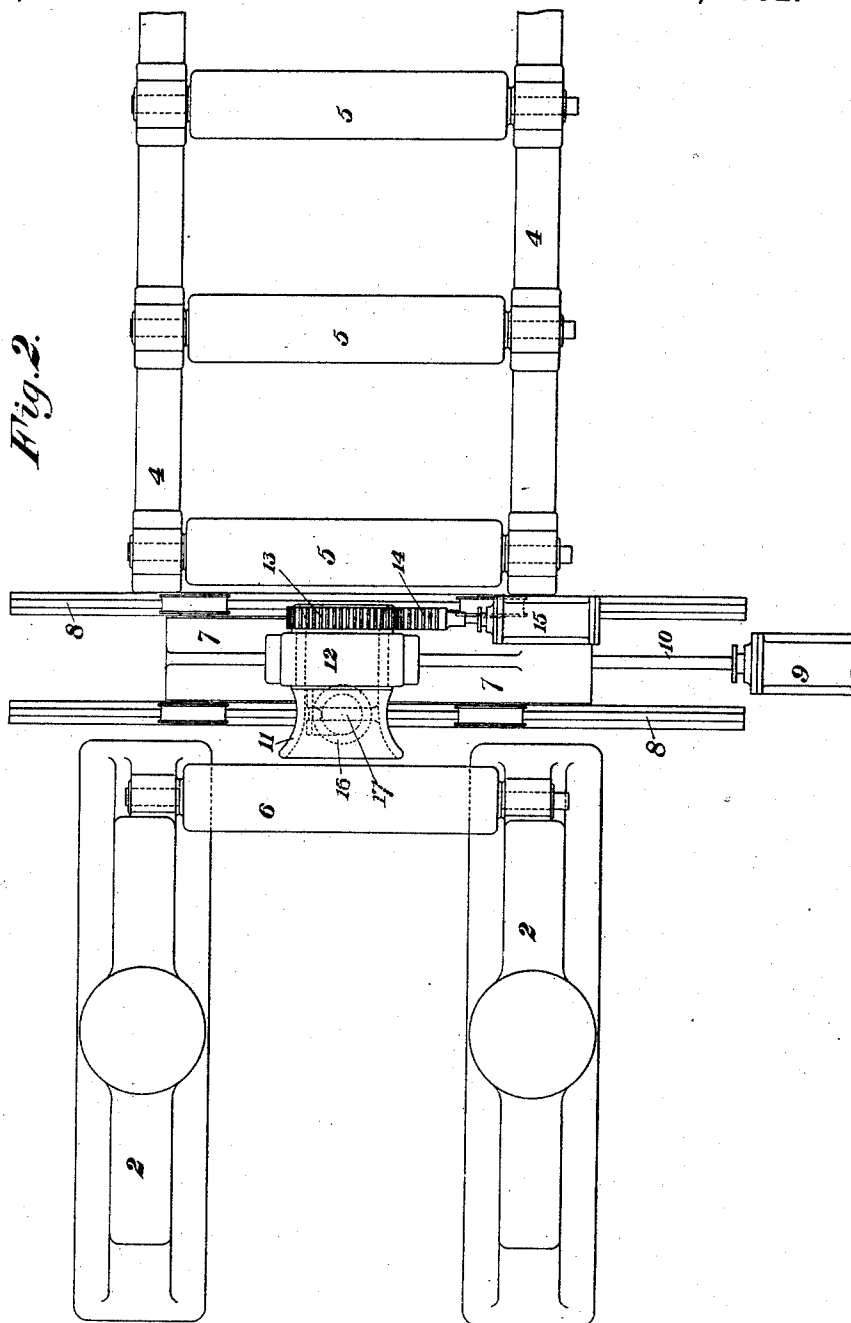
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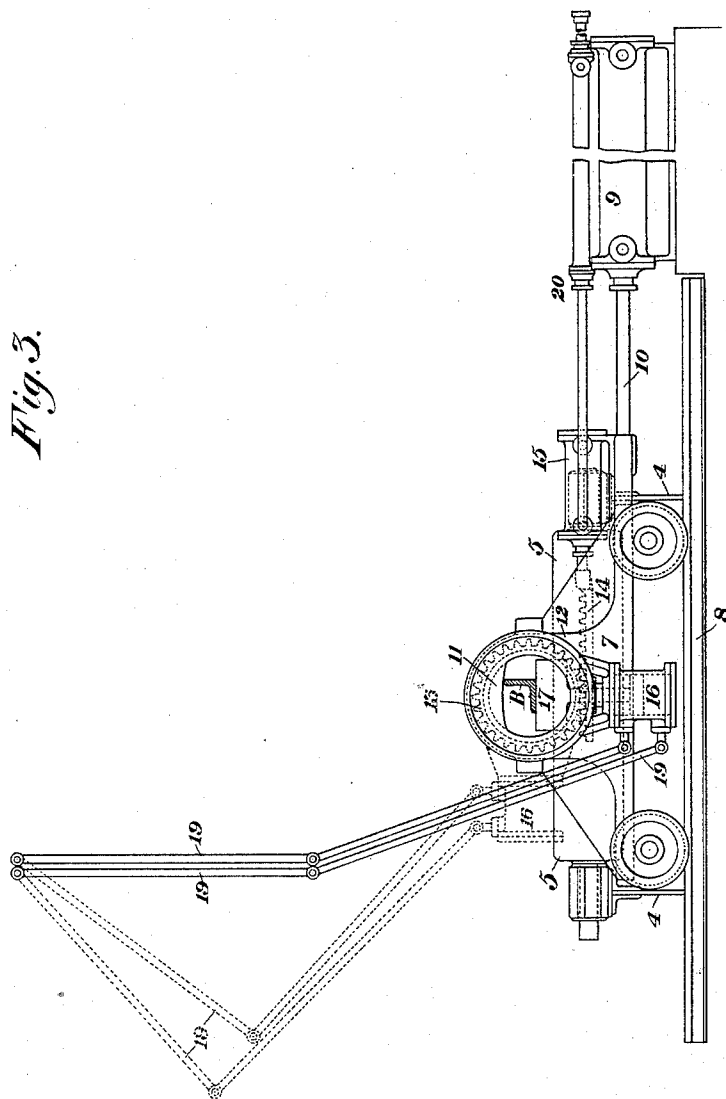
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Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN A. POTTER AND PER TORSTEN BERG, OF HOMESTEAD, PENNSYLVANIA.

ROLLING-MILL.

SPECIFICATION forming part of Letters Patent No. 485,982, dated November 8, 1892.

Application filed February 3, 1892. Serial No. 420,206. (No model.)

To all whom it may concern:

Be it known that we, JOHN A. POTTER and PER TORSTEN BERG, both of Homestead, in the county of Allegheny and State of Pennsylvania, have invented a new and useful improvement in Rolling-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of a portion of a feed-table provided with our improved metal turning and delivering apparatus shown in connection with rolls which are in vertical section. Fig. 2 is a plan view of Fig. 1, and Fig. 3 is a rear end elevation of the apparatus.

Like symbols of reference indicate like parts in each.

The object of our invention is to provide efficient mechanical means by which metal can be delivered to and received from the passes of rolls and can be turned previous to its delivery to the rolls.

In the drawings, 2 2 represent the housings of a set of rolls 3.

4 is the feed-table having driven feed-rollers 5.

6 is an ordinary feed-roller journaled in the roll-housings in front of the lower passes of the rolls. This feed-roller, however, is not an essential part of our invention. In front of the passes at one side of the rolls is a carriage or truck 7, set on wheels (though this is not essential) on a track or way 8, which extends parallel to the roll at the front end of the feed-table. It is adapted to be moved longitudinally by means of a cylinder 9, whose piston 10 is connected with the truck. On the truck 7 is a metal-turning clamp adapted to receive and hold the metal piece, so that it may be turned and shifted laterally. The body of this clamp, preferably, is composed of a box 11, generally of cylindrical outline, with bell-mouths at each end and journaled in a standard 12 on the truck, so as to be rotary, through an arc of at least ninety degrees. The rear end of this box has a peripheral pinion 13 in gear with a rack 14, which is adapted to be moved longitudinally by a hydraulic cylinder 15 on the truck.

16 is an hydraulic cylinder, which is fixed

by brackets to the box 11, so as to be rotary therewith, and has a ram provided with a clamping-tongue 17, adapted to enter a slot in the box. The cylinders 16 and 15 are supplied with water or other motive fluid by jointed pipes 19 and telescopic pipes 20, respectively, or by other suitable means, permitting free motion of the parts without disturbing the fluid-supply.

The operation of the device as thus constructed is as follows: The parts being in the position shown in Figs. 1 and 2, the turning-box 11 being opposite to one of the passes of the rolls, when in the operation of the mill the metal emerges from such pass it enters the turning-box and passes therethrough onto the feed-rollers 5. When the rear end of the metal has passed out from the usual stationary guides opposite the roll-passes, the rollers of the feed-table are stopped, so as to check the motion of the metal. Motive fluid is then admitted to the cylinder 16, thereby elevating its plunger and forcing its tongue up within the box and clamping the metal piece B against the side thereof. Then by means of the cylinder 9 the truck 7 is moved laterally, so as to shift the metal to the next adjacent pass of the rolls, and the cylinder 15 is actuated, so as to turn the box axially and to impart to the metal piece clamped therein a partial turn. The clamping-tongue is then released from the metal by exhausting the fluid from its motive cylinder, and the rollers of the table are driven, so as to feed the metal into the roll-pass, through which it passes upon the feed-table on the opposite side of the rolls. The metal is then returned through the rolls and is passed back and forth, and so the operation of the mill proceeds in the usual way.

An important advantage derived from the improved box is that the turning-box or clamp is adapted to be used without change in rolling metal of various shapes and sizes in cross-section, since the use of the clamping-tongues renders it self-adjusting in use. The facility in operation of the rolls which the improvement affords and the important results in respect of saving of time and labor in handling the metal will be appreciated by those using the same. By setting apparatus

constructed as above described on both sides of the rolls, the action of the mill in feeding and receiving the metal is mechanical.

It is clear that changes may be made in the form, arrangement, and details of construction of the parts. For example, where the apparatus is to be used in connection with three-high rolls instead of setting the apparatus in front of the feed-table it may be mounted upon the same, so as to be vertically movable therewith between the upper and the lower line of roll-passes. In such case we may conveniently set one of the apparatus on the feed-table at each side of the rolls, so that the action in receiving, turning, and shifting the metal piece shall be entirely mechanical and shall dispense with the expensive hand-labor heretofore commonly used for that purpose.

Instead of employing hydraulic cylinders for the purpose of actuating the various parts of the mechanism other power devices, even hand-worked levers, &c., may be employed, though these are not so efficient as the devices shown, which are made the subject of specific claims herein.

Instead of attaching the rack 14 to the plunger of the turning-cylinder 15 it may be fixed to the cylinder, the cylinder in that case being longitudinally movable and the plunger being fixed on the carriage.

The clamping and turning box may be modified greatly in form and construction, the only essential being that it shall be constructed to receive, seize, and turn the metal.

We claim—

1. In a rolling-mill, the combination, with the rolls, of metal-feeding apparatus com-

prising a rotatory clamp set in front of the rolls and adapted to receive the metal therefrom, mechanism for actuating the clamp to seize the metal, and mechanism for rotating the clamp and moving it laterally, substantially as and for the purposes described.

2. In a rolling-mill, the combination, with the rolls, of metal-feeding apparatus comprising a rotatory box set in front of the rolls, a clamping-tongue adapted to be projected to clamp the metal, and a cylinder attached to the box and adapted to actuate the tongue, substantially as and for the purposes described.

3. In a rolling-mill, the combination of the rolls, metal-feeding apparatus comprising a rotatory box, a clamping-tongue, and a tongue-actuating motor adapted to move the tongue in both directions to clamp the metal and to free the same, substantially as and for the purposes described.

4. In a rolling-mill, the combination, with the rolls, of metal-feeding apparatus comprising a rotatory box, a clamping-tongue, mechanism for actuating the latter to clamp the metal in the box, a laterally-movable carriage carrying the box, and a motor mounted on the carriage mechanically connected with the box and adapted to rotate the same, substantially as and for the purposes described.

In testimony whereof we have hereunto set our hands this 25th day of January, A. D. 1892.

JOHN A. POTTER.
PER TORSTEN BERG.

Witnesses:

H. H. HERVEY,
W. H. CORBETT.