No. 608,382.

Patented Aug. 2, 1898.

G. G. McMURTRY.

ROLLING MILL.

(Application filed Dec. 16, 1897.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 1.

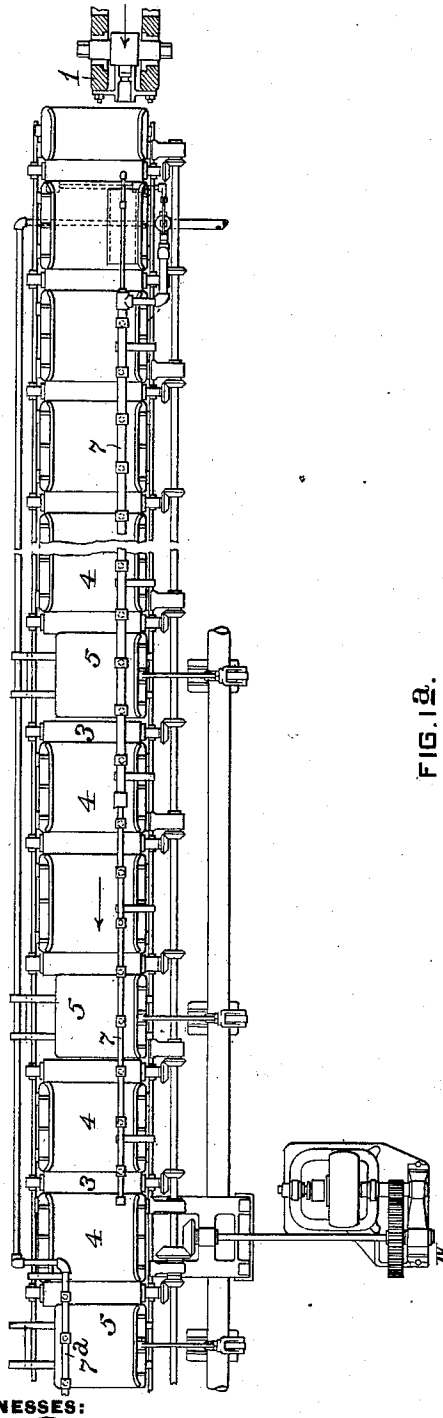
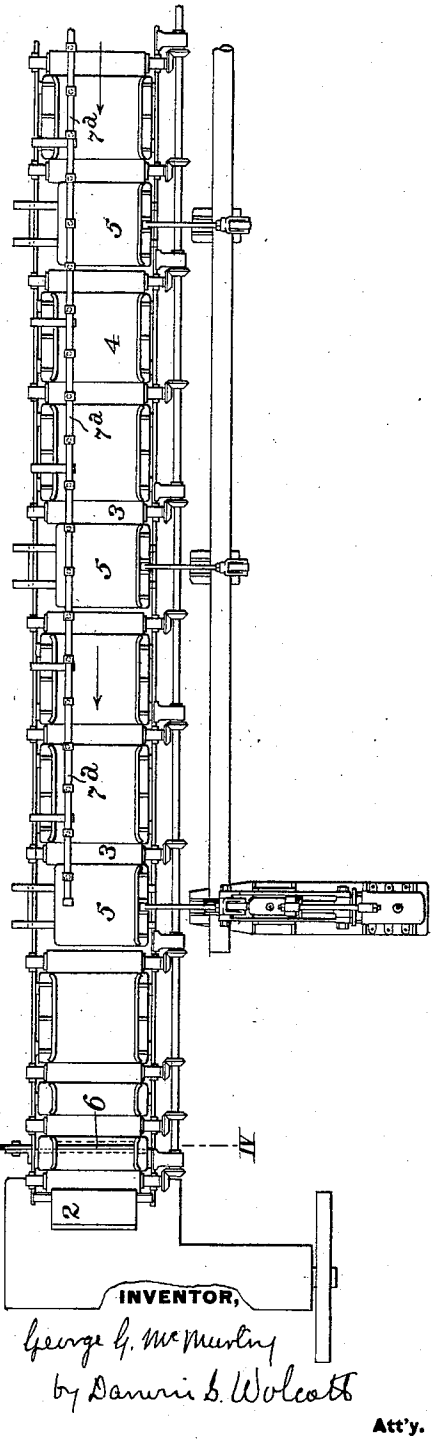


FIG. 2.



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2 Sheets—Sheet 2.

FIG. 2.

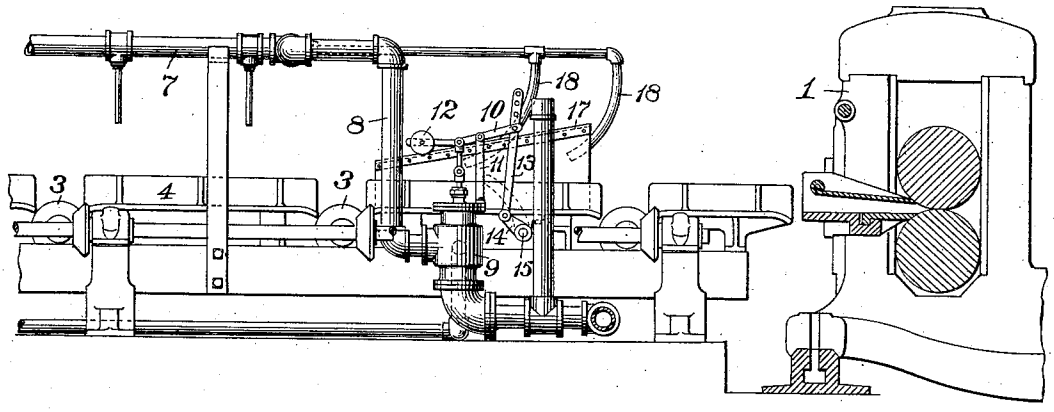


FIG. 3.

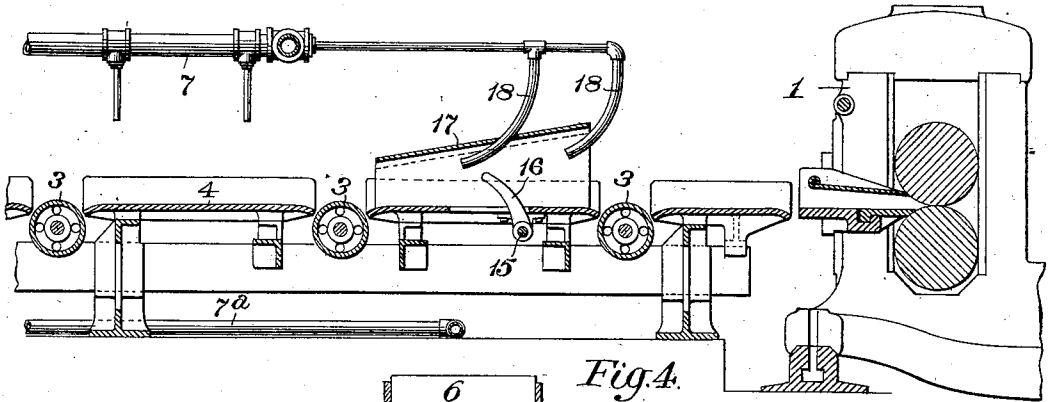
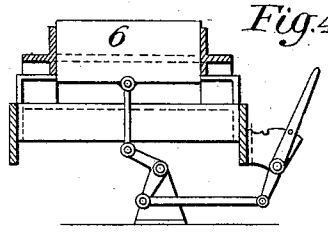


Fig. 4.



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UNITED STATES PATENT OFFICE.

GEORGE G. McMURTRY, OF ALLEGHENY, PENNSYLVANIA.

ROLLING-MILL.

SPECIFICATION forming part of Letters Patent No. 608,382, dated August 2, 1898.

Application filed December 16, 1897. Serial No. 662,145. (No model.)

To all whom it may concern:

Be it known that I, GEORGE G. McMURTRY, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Rolling-Mills, of which improvements the following is a specification.

It has heretofore been customary in rolling bars or rods to dip them into or cause them to pass through a tank of water as they leave the finishing-rolls for the purpose of rapidly chilling the same, and thereby cause the cracking off of the scale from the surfaces. Such means for boshing the bars or rods are ineffective to produce the desired rapid chilling and the removal of the scale.

The object of the present invention is to provide means whereby a rapid reduction of temperature can be effected and the scale forced off from the bars.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figures 1 and 1ª show in plan view a finishing-mill, a shear mechanism, and an interposed feed-table having my improvements applied thereto. Fig. 2 is a view, partly in section and partly in side elevation, of the finishing-mill and the portion of the feed-table adjacent thereto. Fig. 3 is a sectional elevation of the parts shown in Fig. 2; and Fig. 4 is a sectional view, the plane of section being indicated by the line IV IV, Fig. 1ª.

In the practice of my invention the finishing-rolls 1 and shear mechanism 2 may be of any suitable or known form or construction. Between the finishing-rolls and shear mechanism I arrange a feed-table of any desired form or construction, consisting of the positively-driven feed-rollers 3 and interposed aprons 4. As shown in Fig. 1, the finishing-rolls and the feed-tables are arranged in such relation to each other that a bar or rod will be fed along adjacent to one side of the table, and suitable transfer mechanism 5 is employed for laterally shifting the bar or rod to or toward the opposite side of the table after it has left the finishing-roll, where it is held by a suitable stop 6 until a number of such bars are collected and arranged side by side and then fed into the shear mechanism, where they are divided up into suitable sections. As a cracking off of the scale can be more efficiently attained by a rapid reduction from a high to a low temperature, suitable means are provided for effecting such chilling as the front end of the bar or rod emerges from the rolls. This chilling mechanism consists of a pipe 7, arranged above the table in or approximately in line with the path of movement of the bar from the finishing-rolls onto the table and provided with perforations or nipples adapted to direct streams of water down onto the bar. This pipe 7 is connected by a pipe 8 to a suitable valve mechanism 9, which in turn is connected to a suitable source of water-supply or other fluid adapted to effect a rapid reduction of temperature. In order to render the operation of the chilling mechanism automatic, suitable operating devices or mechanism are connected to the valve, such operating mechanism being adapted to be shifted to open the valve by the movement of the bar or rod onto the table and to be automatically closed after the rear end of the bar has passed beyond the valve-shifting mechanism. A suitable or convenient form or construction of such valve-operating mechanism consists of a lever 10, pivotally mounted on a post or support 11 and connected on one side of its pivotal point to the stem of the valve 9. On the same side of the pivotal point a weight 12 is attached to the lever, so as to shift the valve to a closed position. The opposite end of the lever is connected by a link 13 to an arm 14, secured to a shaft 15, which is mounted in suitable bearings on the feed-table and provided with an arm or trigger 16, projecting up into the path of movement of the bar or rod as it comes from the finishing-rolls.

It is preferred to provide a shield 17 near the front end of the feed-table, so as to depress the end of the bar as it comes from the roll and cause it to strike the trigger. It is preferred to arrange nozzles 18 so that streams of water will be directed down upon the bar or rod as it passes through the shield, and in order to prevent these nozzles from interfering with the movement of the rod their ends within the shield are bent in the direction of the movement of the bar or rod. It is preferred to divide the pipe 7 into two or more

sections, each section being of a length equal to the normal length of the bars produced. One of these sections, as 7, is arranged, as shown, immediately above the line of movement of the bar or rod as it comes from the table and the other section, 7^a, is arranged above the opposite side of the table in the rear of the first section. In using this apparatus the bar or rod is moved along the table until its front end abuts against the stop 6, adjacent to the shear mechanism. The bar or rod is then shifted by the transfer mechanism to the opposite side of the table, where it will be subjected to the action of streams of water from the pipe-section 7^a. When the bars or rods are of normal length, they will be acted upon by streams of water from the pipe-section 7 until they have passed out of the rolls, and then they will be subjected to streams of water from the pipe-section 7^a after they have been shifted to the opposite side of the table. As both pipe-sections 7 7^a are controlled by the same valve mechanism, the pipe or rod which has been shifted by the transfer mechanism will not be subjected to or acted upon by streams of water until the next bar or rod moves onto the feed-table, thereby opening the valve. If desired, however, each pipe-section may be provided with an independent controlling-valve.

It is characteristic of my improvement that the cooling medium, whether water or gas, is applied at a time and in a manner most effective for a rapid cooling of the bars or rods and for the removal of the scale loosened by such rapid chilling.

The water or other cooling medium should be under such pressure as to strike with considerable force against the bars or rods, so as to rapidly reduce their temperature below a point at which oxidation will occur and to force off any scale which is loosened by the rapid chilling.

No claim is made, broadly, herein to an arrangement of pipe or pipes in such relation to articles passing along a feed-table that a fluid will be directed toward or onto such articles, the flow of fluid through such pipe or pipes being controlled by the movement of the articles on the table, as such construction, broadly considered, forms the subject-matter of an application, Serial No. 662,144, filed by me December 16, 1897.

I claim herein as my invention—

1. The combination of a feed-table, one portion of which is adapted to be used for the storage of bars or rods, a movable stop at the end of the feed-table, one or more lines of pipe arranged in such relation to the table that streams of cooling fluid will be directed on the bars or rods on the table, and means controlled by the bars or rods for controlling the flow of fluid through such pipes, substantially as set forth.

2. The combination of a feed-table, transfer mechanism for laterally shifting articles on the feed-tables, two lines of pipe arranged respectively on opposite sides of the table and provided with discharge openings or nipples, an automatically-closing valve for controlling the flow of such fluid through the pipes and means operative by the article as it is being moved on the table for opening the valve, substantially as set forth.

In testimony whereof I have hereunto set my hand.

GEORGE G. McMURTRY.

Witnesses:

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J. C. McCORMICK, Jr.