No. 799,269. PATENTED SEPT. 12, 1905.

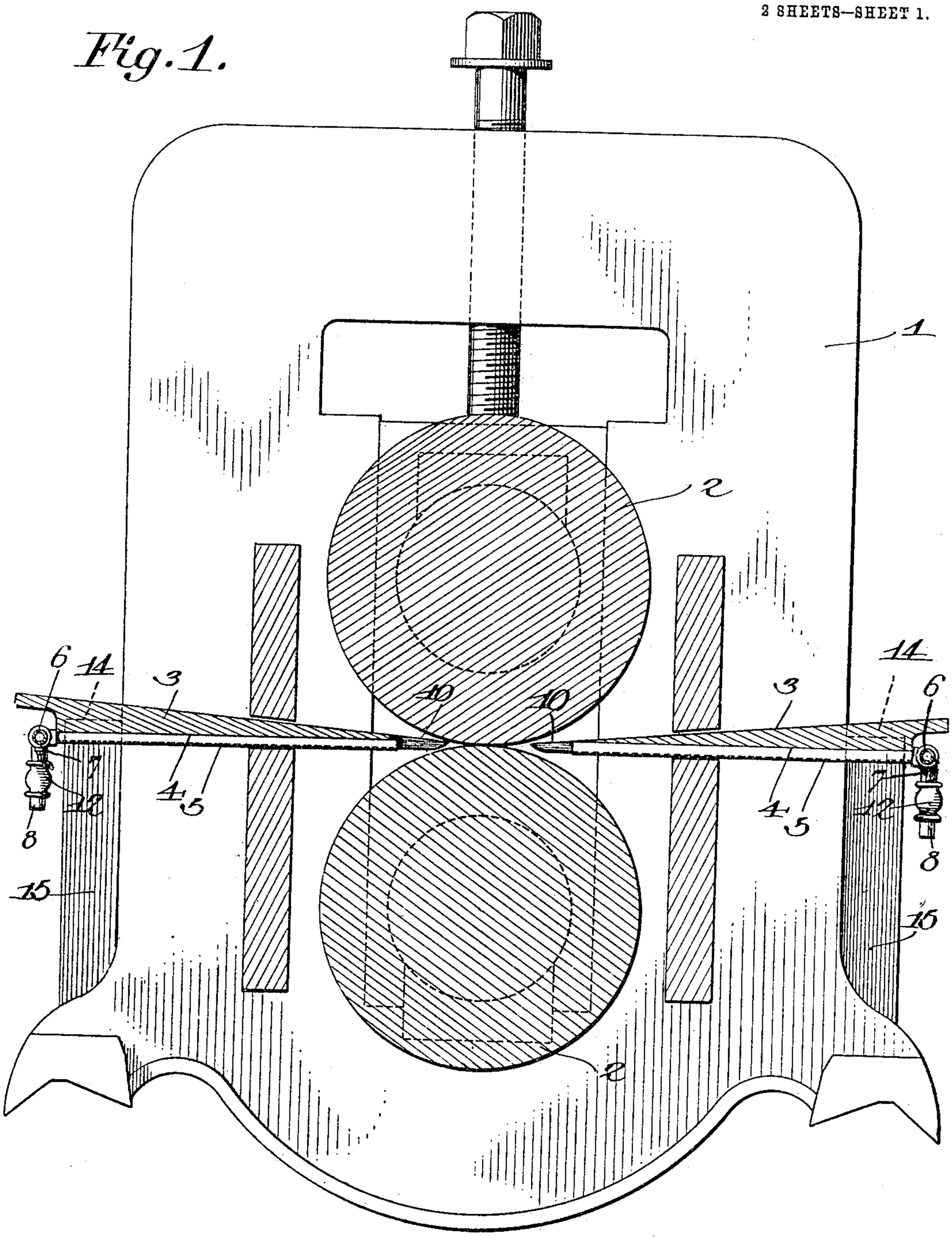
A. RIDD.

ROLLING MILL ROLL.

APPLICATION FILED JAN. 30, 1905.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

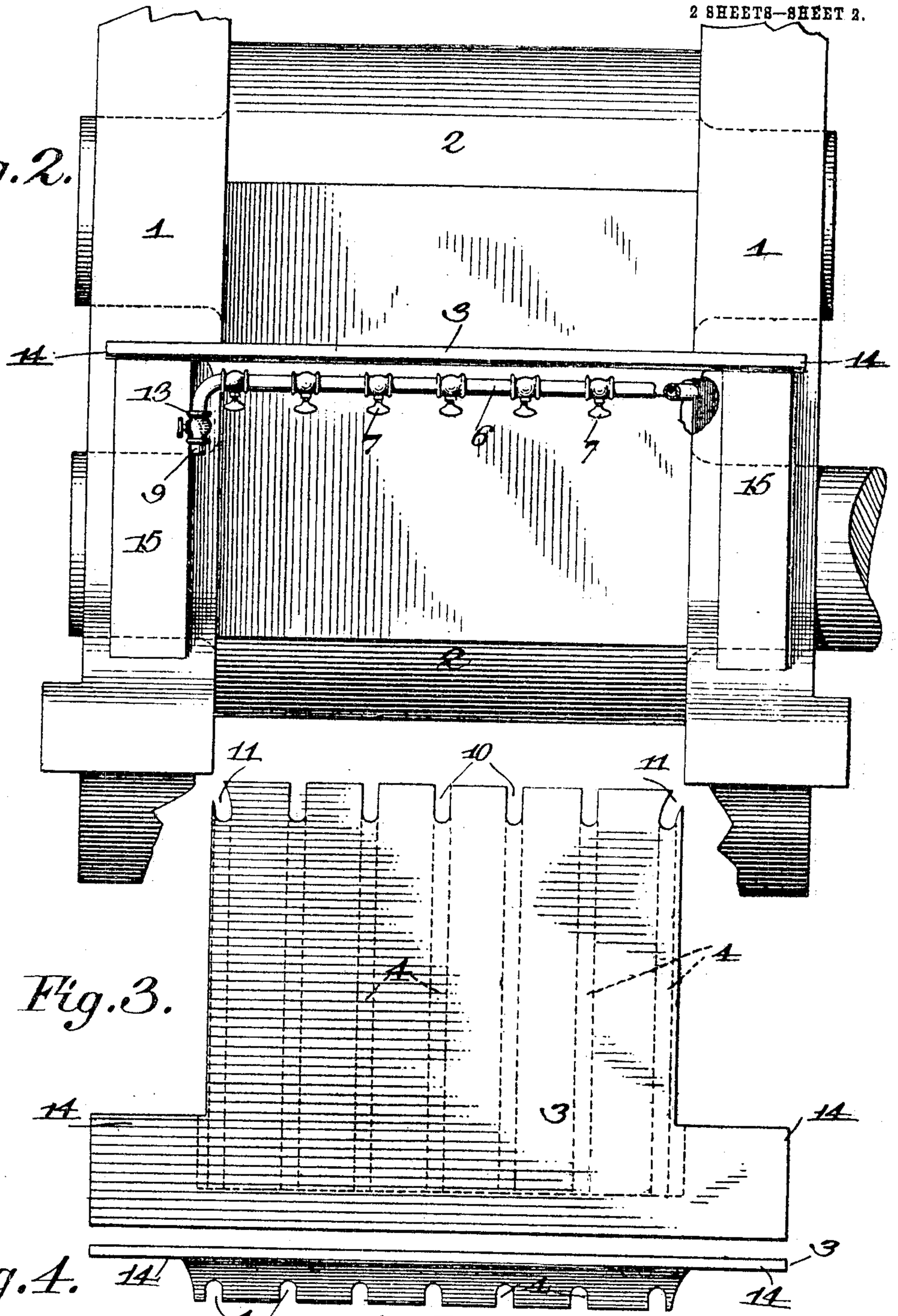

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

AMBROSE RIDD, OF NEWPORT, KENTUCKY, ASSIGNOR OF ONE-HALF TO ALBERT SIMMS, OF NEWPORT, KENTUCKY.

ROLLING-MILL ROLL.

No. 799,269. Specification of Letters Patent. Patented Sept. 12, 1905.

Application filed January 30, 1905. Serial No. 243,373.

To all whom it may concern:

Be it known that I, AMBROSE RIDD, a citizen of the United States, residing at Newport, in the county of Campbell and State of Kentucky, have invented a new and useful Rolling-Mill Roll, of which the following is a specification.

This invention relates generally to rolling-mill rolls, and more particularly to a combined heating and cooling attachment for use in connection with such machines.

The object of the invention is in a novel manner to effect either heating or cooling of the rolls throughout their entire extent, or at any predetermined point, whereby expansion and contraction of the rolls may be positively placed under the control of the operator and whereby, further, fire-cracking of the rolls with attending danger of breakage will be positively obviated.

With the above and other objects in view, as will appear as the nature of the invention is better understood, the same consists in the novel construction and combination of parts of a heating and cooling attachment for rolling-mill rolls, as will be hereinafter fully described and claimed.

In the accompanying drawings, forming a part of this specification, and in which like characters of reference indicate corresponding parts, there is illustrated one form of embodiment of the invention capable of carrying the same into practical operation, it being understood that the elements therein exhibited may be varied or changed as to shape, proportion, and exact manner of assemblage without departing from the spirit thereof.

In the drawings, Figure 1 is a view in sectional elevation of the rolling-mill, exhibiting the improvements of the present invention combined therewith. Fig. 2 is a view in front elevation. Fig. 3 is a detached view in plan of the fore plate. Fig. 4 is a view in end elevation of the fore plate.

Referring to the drawings, 1 designates the ordinary cheek-plates, 2 the rolls, and 3 the fore plates, one of which is shown as arranged on the roller's side of the machine and the other upon the catcher's side. While two fore plates are herein shown, it is to be understood that, if preferred, only one may be employed and that located on the roller's side, as usual. As is common in machines of this character, the fore plates incline slightly toward the lower roll to permit ready feeding of the sheet metals to the rolls.

The improvements of the present invention reside in combining with the fore plate means for supplying a heating medium or a cooling medium, as may be preferred, to the bite of the rolls and either across their entire extent or at different points along their length. This is secured by providing each of the fore plates on its under side with a plurality of grooves or recesses 4, in which are arranged pipes 5, that connect at their outer ends with a cross-pipe 6, a valve 7, combined with each of the pipes 5, serving to control the passage of the heating or cooling medium therethrough. At one end the pipe 6 has connected with it a pipe 8, which leads to a source (not shown) of cold air under pressure and at its other end has connected with it a pipe 9, which leads to a source (not shown) of gas or other inflammable material or to a source of superheated steam.

As will be seen by reference to Fig. 1, each fore plate is a right-angled triangle in cross-section with the hypotenuse on the upper side. The grooves, therefore, are disposed at an angle to the upper side, and the result of this arrangement is that at a point adjacent to the inner end of the fore plate the grooves cut through it, forming thereby intermediate recesses 10 and side recesses 11. The recesses 10 are disposed in alinement with the length of the grooves, but the recesses 11 are deflected laterally to the length of the grooves in order to throw the terminals of the two side pipes 5, which are arranged in such grooves, outward beyond the sides of the fore plate and around the ends of the rollers, whereby either flame or cold air projected from these pipes will be directed against the journals of the rollers and against their ends, and thereby effects either heating or cooling, as may be desired. Each of the pipes 8 is provided with a valve 12 by which to control the passage of air to the cross-pipe, and each of the pipes 9 is provided with a similar valve 13 for controlling the passage of gas thereto. It will be seen by this arrangement that it will only be necessary to provide one cross-pipe and one set of branch pipes to effect feeding of the heating or cooling medium

to the rolls; but, if preferred, an independent cross-pipe may be provided carrying branch pipes arranged in parallelism with the pipes 5 to supply the cooling or heating medium, as may be preferred, to the rollers.

In the operation of the device prior to starting up the machine gas from all the branch pipes or burners is ignited and allowed to play against the sides, ends, and journals of the rolls, thus equally and positively heating them throughout. If after the machine is started up it is found that one part of the roll be too hot, cold air may be blown against such part, or if a part be found too cold a flame may be blown against such part. In fact, under the arrangement shown the operator has under his control the adjustment of the temperature of the rollers to cause them to be thoroughly effective for the purposes required.

The fore plates may be supported in any preferred manner and are herein shown as provided with lateral extensions 14, which are adapted to bear upon bosses 15, carried by the cheek-plates.

It will be seen from the foregoing description that although the improvements of this invention are simple in character they will be thoroughly effective in use for the purposes designed and may be relied upon to accomplish the results desired.

Having thus described the invention, what is claimed is—

1. In a metal-rolling mill, the combination with a fore plate provided on its under side with grooves or depressions terminating at their inner ends in recesses, of conduits arranged within the grooves, and having their free ends disposed in the recesses, and means for supplying a heating or cooling medium to the conduits.

2. In a metal-rolling mill, the combination with the rolls, of a fore plate provided on its under side with grooves or depressions, conduits arranged within the grooves, the two outer ones of which are deflected laterally to discharge against the ends of the rolls, and the intermediate ones being disposed to discharge into the bite of the rolls, and means for supplying a heating or cooling medium to the conduits.

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

AMBROSE RIDD.

Witnesses:

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J. C. DEMOSS.