V. CHARTENER.

EDGING MILL.

APPLICATION FILED JUNE 27, 1913.

1,107,493.

Patented Aug. 18, 1914.

2 SHEETS—SHEET 1.

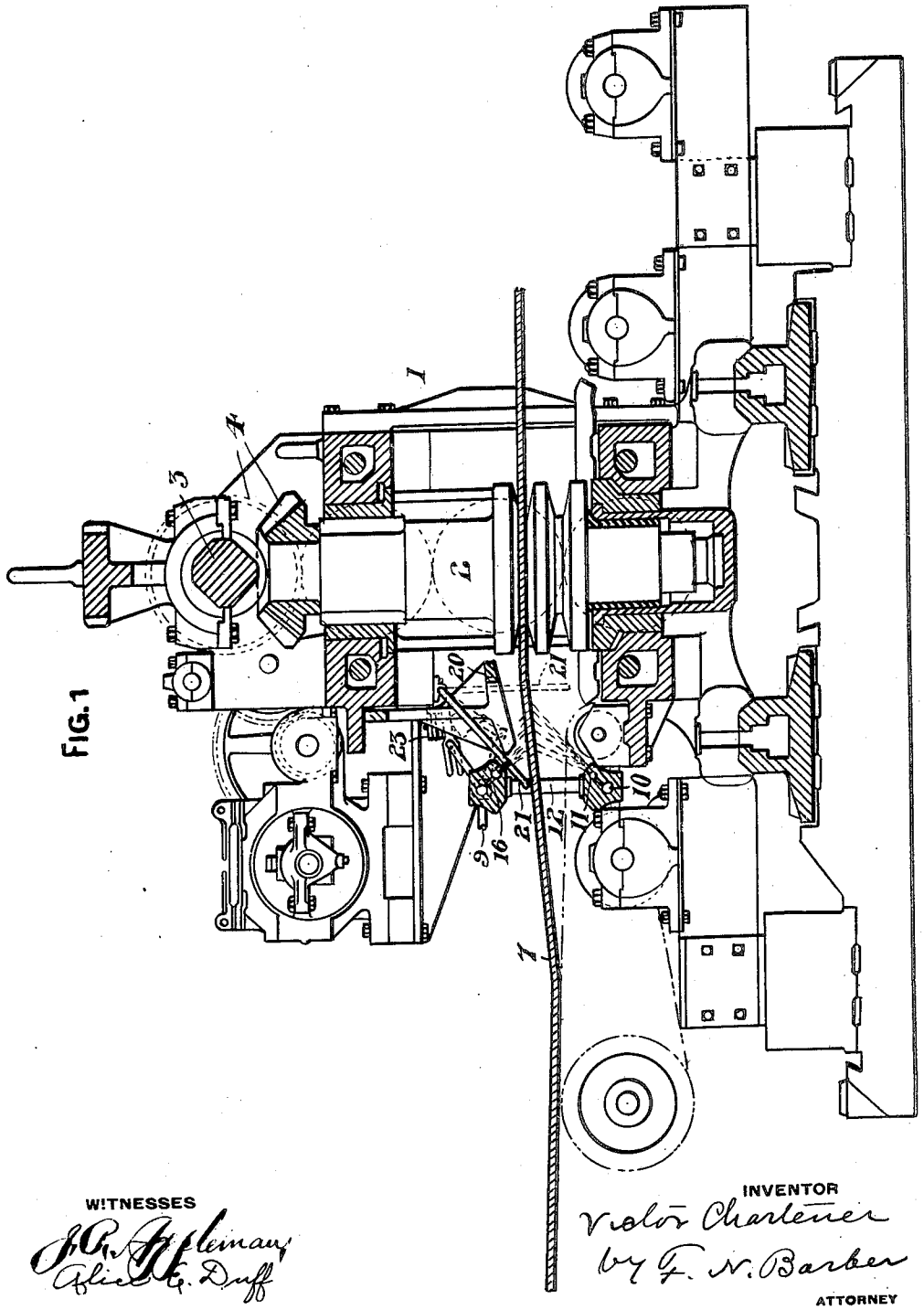


FIG. 1

WITNESSES

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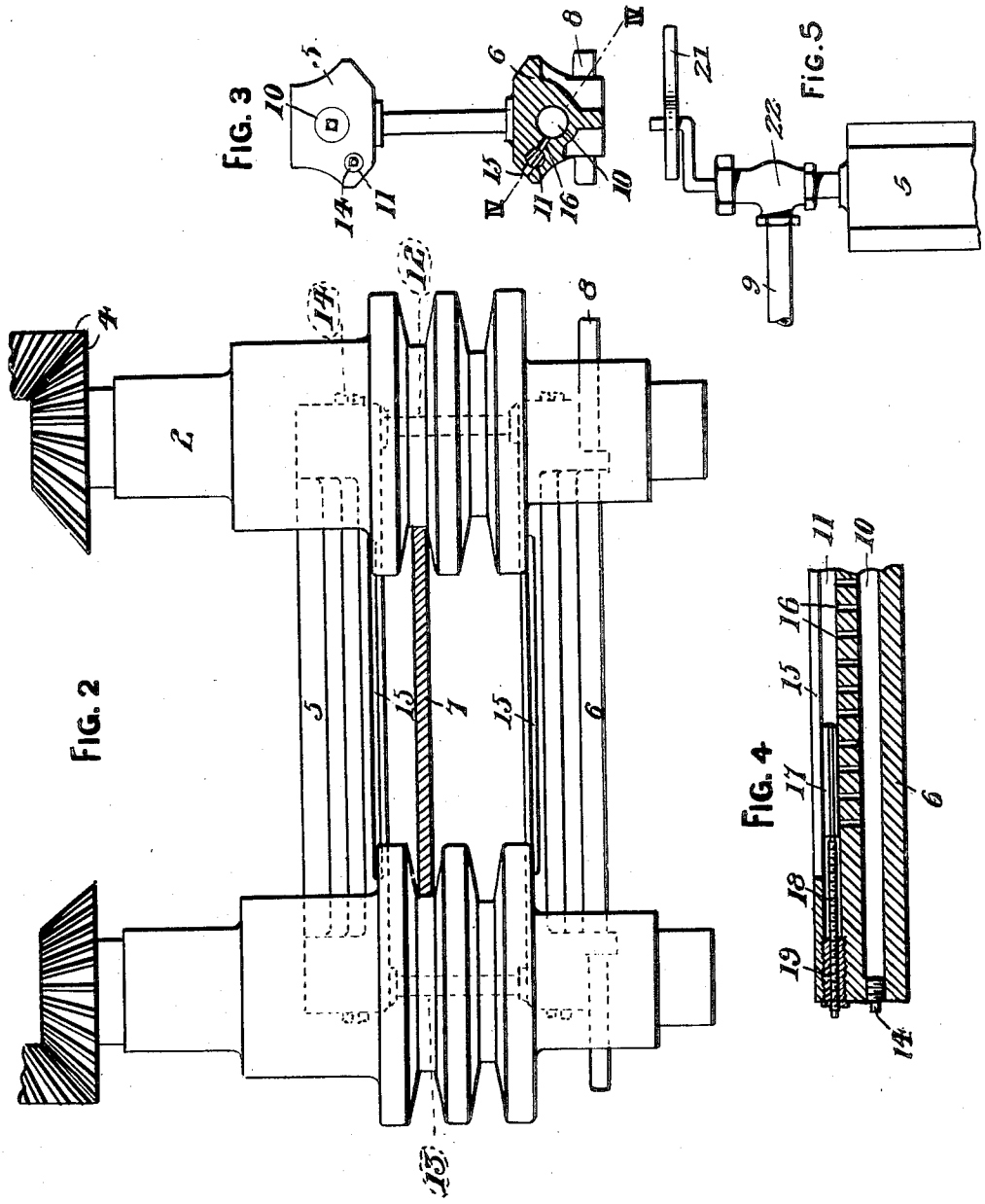
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UNITED STATES PATENT OFFICE.

VICTOR CHARTENER, OF PITTSBURGH, PENNSYLVANIA.

EDGING-MILL.

1,107,493. Specification of Letters Patent. Patented Aug. 18, 1914.

Application filed June 27, 1913. Serial No. 776,085.

To all whom it may concern:

Be it known that I, VICTOR CHARTENER, a citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Edging-Mills, of which the following is a specification.

My invention relates to edging mills whereby metal sheets or flats are rolled with their edges in contact with the rolls in order to bring the sheets or flats to the desired width and to loosen the scale adhering thereto.

It is the principal object of my invention to equip an edging or equivalent mill with means for sprinkling directing jets of water against the sides of the sheets or flats or equivalent product as they issue from the mill in order to remove the scale.

Another object is to provide such means with adjustments by which the line of jets can be varied with the width of the rolled product.

Other minor objects appear hereinafter.

Referring to the drawings, Figure 1 is a vertical longitudinal section of an edging mill equipped with my invention; Fig. 2, an enlarged elevation of the sprinkler with the rolls shown conventionally; Fig. 3, an end view of Fig. 2, the rolls being omitted and a portion being in section; Fig. 4, a section on the line IV—IV, Fig. 3; and Fig. 5 a detail view showing valve 22.

On the drawings, I show a vertical edging mill of well known construction, having the housing 1, and the vertical grooved edging rolls 2, driven by the horizontal shaft 3 connected to the rolls by the two pairs of bevel gears 4.

At the rear of the rolls and as close thereto as practicable I place the sprinkler constituting the principal part of my invention. The sprinkler comprises a substantially rectangular frame having the horizontal upper and lower members 5 and 6, one vertically over the other, and one above the level of the roll pass and the other below the same. Preferably, these members are parallel to a plane including the axes of both rolls, that is, they are at right angles to the sheet or flat 7 issuing from the roll pass.

The members 5 and 6 are alike, except that the member 6 has the feet or lugs 8 for supporting the sprinkler and the member 5 has the inlet pipe 9 connected thereto. A description of the member 6 will, therefore, be sufficient. The member 5 bears the same reference characters that the member 6 bears for corresponding parts. The member 6 is a casting having therein two longitudinal openings or holes 10 and 11 extending from one end of the casting to the other. The hole 10 lies a little farther away from the rolls 2 than the hole 11, and the latter lies nearer the center line of the roll pass than the former. The member 5 is bottom side up and reversed end for end with respect to the member 6, so that the plane which includes the longitudinal centers of the holes 10 and 11 of one member meets the plane including the longitudinal centers of the holes 10 and 11 between the rollers and the sprinkler. The opposing ends of the holes 10 in the members 5 and 6 communicate with the vertical members 12 and 13 of the sprinkler which members may be ordinary metal pipes. One end of the hole 10 in the member 5 communicates with the inlet pipe 9, and both ends of the hole 11 in the member 6 are closed by the plugs 14.

A slot 15, as long as the maximum width of sheets or flats for which the mill is designed, lies in the plane hereinbefore defined and extends from the upper face of the member 6 to the hole 10, and a number of holes 16 connecting the holes 10 and 11 are drilled, the slot 15 affording access for the drill, and an outlet for water forced from the hole 10 through the holes 16. The width of the slot 15 exceeds somewhat the diameter of the holes 16 so that the jets of water may expand or flare toward the sheet 7. Each end of the holes 11 is provided with a plunger or valve 17. The plungers fit the said holes and are of sufficient length to permit them to keep all the holes 16 closed over which they pass and still leave between their opposing ends in each hole 11 a space at least equal to the minimum width of sheets or flats rolled in the mill. The stem 18 of each valve is threaded and works in the screw plug 19 which closes the adjacent end of the hole 11.

While the hot sheet 7 is passing through the rolls 2, the scale therein is cracked and loosened by the buckling due to the squeezing of the sheet edgewise in the grooves in the said rolls. After the sheet passes the rolls a short distance it is subjected to jets, or practically sheets of water issuing from the slots 15 with considerable force derived

from an accumulator or other source of pressure, not shown, connected to the inlet pipe 9. The sheet 7 being very hot, the particles of water do not remain in contact with the sheet but are converted into steam or surrounded with a film or coat of steam. The water issuing from the slots 15 at the two sides of the sheet 7 converges toward the rolls or the direction from which the sheet comes and removes the scale from the sheet, the water bounding away from the sheet by reason of its velocity and the expansion of the forming steam. The water partially, at least, acts mechanically on the hot metal very much like sand from a sand blast, and the steam in its formation also assists in loosening and removing the scale.

I have shown the lever 21 having its lower end in the path of the sheet 7 and its upper end connected to the valve 22 in the inlet pipe 9 so that the forward end of the sheet 7 will engage the lever and move it from its dotted position to its full-line position, at which latter position it causes the valve 22 in the inlet pipe 9 to open. The weight 23 causes the lever to move to the dotted position and close the valve as soon as the rear end of the sheet passes beyond the lever. The guide 20 serves to direct the sheet or equivalent rolling mill product downwardly in case it should, in traveling from the rolls, move toward the casting or member 5. By applying a wrench or crank to the squared ends of the valve stem 18, the valves 17 may be readily adjusted as required by different widths of material to be rolled.

I desire to cover such changes in the details and combinations shown and described as come within the scope of the appended claims.

I claim—

1. In a mill for treating hot metal, means for buckling the metal by edgewise pressure while hot, and means for causing water to forcibly impinge on the metal while still hot and after the scale has been loosened.

2. In a mill for treating hot metal, a pair of rolls arranged and constructed to buckle the hot metal by pressure between its edges, and means for causing water to forcibly impinge on the metal while it is still hot and after it has been so buckled.

3. In a mill for treating hot metal, a pair of edging rolls, a sprinkler member arranged transversely of the direction of travel of the metal in the rolls, the said member having two holes longitudinally thereof, there being in said member communication between said holes, means for connecting one hole with a source of water supply, and adjustable means for varying the length of the communication between the said holes, the said member having facing the said member an outlet for water passing from the said communication.

4. In a mill for treating hot metal, a pair of rolls, a sprinkler member arranged transversely of the direction of travel of the metal in the rolls, the said member having two communicating holes longitudinally thereof and an open slot facing the said metal and extending to one of the holes and in parallel relation thereto, a plunger valve slidable in the last named hole to vary the length of the communication between the holes, and means for supplying water to the other one of the said holes.

5. In a mill for treating hot metal, a pair of rolls, means at the rear of the rolls for causing water to forcibly impinge on the metal between the said means and the roll-pass, and means controlled by the metal for starting and stopping the flow of the water.

6. In an apparatus for removing scale from hot traveling metal, means for causing water to forcibly impinge on the metal and means controlled by the metal for starting and stopping the flow of the water.

Signed at Pittsburgh, Pa., this 25th day of June, A. D. 1913.

VICTOR CHARTENER.

Witnesses:

ALICE E. DUFF,

F. N. BARBER.