No. 649,108.

Patented May 8, 1900.

W. RACHALS.

ROLLING MILL.

(Application filed Feb. 17, 1899.)

(No Model.)

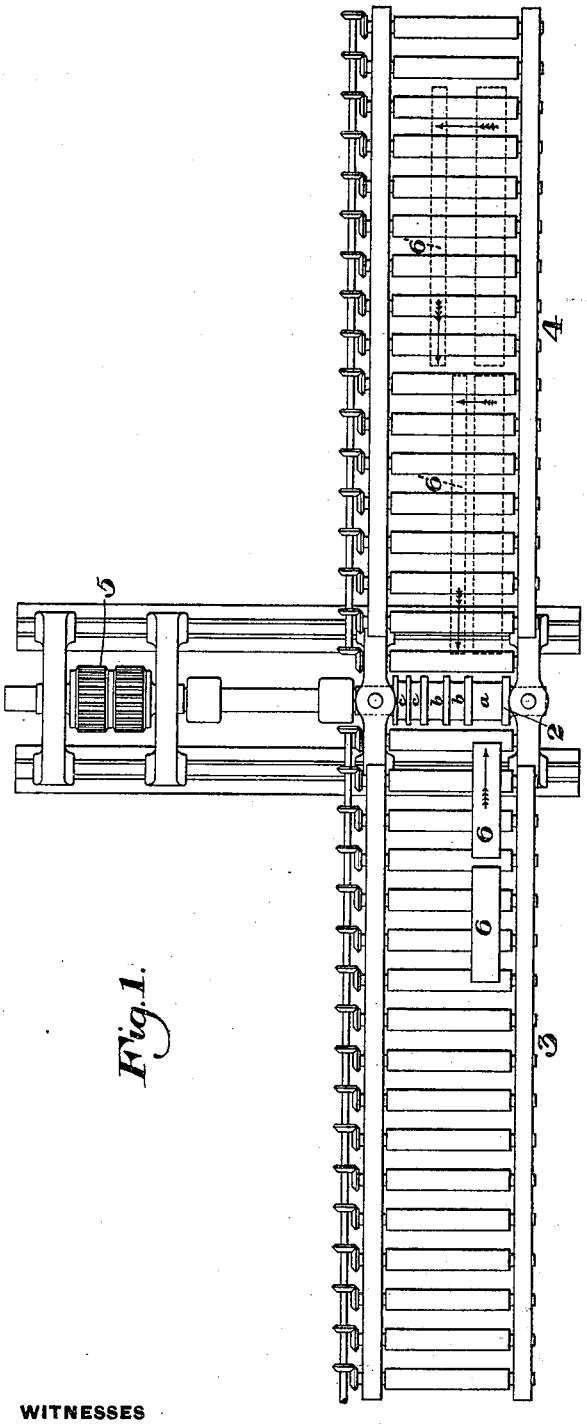

Fig. 1.

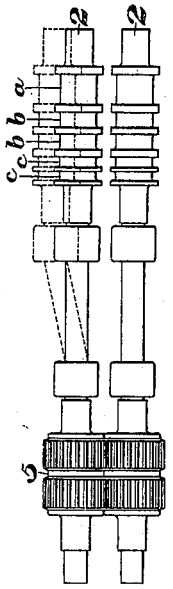

Fig. 2.

WITNESSES

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UNITED STATES PATENT OFFICE.

WALTER RACHALS, OF YOUNGSTOWN, OHIO, ASSIGNOR OF ONE-FOURTH TO RUDOLPH G. BEKER, OF SAME PLACE.

ROLLING-MILL.

SPECIFICATION forming part of Letters Patent No. 649,108, dated May 8, 1900.

Application filed February 17, 1899. Serial No. 705,813. (No model.)

To all whom it may concern:

Be it known that I, WALTER RACHALS, a citizen of the Empire of Germany, residing at Youngstown, in the county of Mahoning and State of Ohio, 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 shows in plan view a rolling-mill constructed in accordance with my invention and feed-tables in conjunction therewith, and Fig. 2 shows the rolls and their pinions in elevation.

The object of my invention is to provide for the rolling of metal blooms, slabs, and billets with economy of power and with rapidity.

In the drawings, 2 represents the rolls of my improved mill, and 3 4 the feed-tables on opposite sides of the rolls, provided with the usual mechanism for driving the rollers and for shifting the metal piece laterally therein. The rolls themselves are driven by suitable pinions 5 5, geared with a reversing-engine. The rolls 2 2 have a pass *a*, adapted to receive pieces initially fed thereto in tandem, and succeeding the pass *a* is a group of two or more passes *b b*, each of the same cross-section and adapted to receive and reduce like metal pieces. Succeeding the group of passes *b b* is or may be a group of passes *c c*, of smaller cross-section than the passes *b b*, but of equal cross-section with reference to each other.

In the operation of the rolls two ingots or blooms 6 6 are introduced in tandem, as shown by the arrow in Fig. 1, to the first pass *a* of the rolls, and having passed therethrough in tandem into the position shown by dotted lines on the table 4 they are turned and shifted laterally, so as to be brought into the positions indicated at 6′ 6′ by dotted lines, where they are opposite, respectively, to the passes *b b* of the rolls. The feed-rollers are then reversed, so as to carry the metal pieces in the direction of the arrows to the passes *b b* onto the feed-table 3, and when on this table they are shifted laterally, so as to be brought into position side by side opposite the passes *c c*, respectively, and when the rolls and feed-rollers are reversed they are carried through these passes *c c* of the rolls side by side and simultaneously.

It will be understood that the principle of my invention may be extended so that there may be any desired or convenient number of successive grooves of equal passes.

By the use of my invention it will be seen that the metal when it is thick in cross-section and requires more power in rolling is carried through the rolls in tandem, so as not to put an undue strain upon the driving-engine of the rolls, and afterward, when their cross-section is reduced and they occasion less strain upon the engines, they are rolled side by side or in passes which are side by side.

In mills as heretofore commonly constructed there has been considerable difficulty experienced by the engineer in gaging the amount of steam required for driving the rolls in the different stages of the reduction of the metal, much more steam being required in the initial stages of the reduction with the heavy passes of metal than in the later stages of reduction when the load is less. With my invention, however, the work of the engine is made more uniform, the later stages of reduction, involving the passage of two or more metal pieces through the rolls simultaneously, requiring no more, or but little more, work than in the earlier stages, where the metal pieces are rolled in tandem. The number of reversals of the engine is also reduced by my invention, for the engines need be reversed only one for each two reductions. This saves steam and makes the power consumed during the process of reduction more uniform. There is also less wear and tear upon the parts of the apparatus by reason of the less number of reversals. These advantages and the advantage due to the greater capacity of a mill constructed in accordance with my invention will be appreciated by those skilled in the art.

It will be understood that within the principles of my invention the rolls may be modified. For example, there may be two or more of the passes *a*, each successively smaller in cross-section than the other. As will be noticed in the drawings, I prefer to make the several passes of the rolls of substantially

the same depth, but to make each group of grooves successively narrower than the preceding group.

I claim—

1. A two-high reversing blooming or slabbing mill, having at the first pass a groove arranged to receive and roll the ingots or pieces in tandem, and succeeding passes in the same two rolls and formed by similar grooves arranged in groups to roll pieces of like cross-section side by side; substantially as described.

2. A two-high reversing blooming or slabbing mill, having driven feed mechanism, the said two rolls having a groove forming the first pass and arranged to receive the metal ingots or pieces in tandem, and having succeeding passes formed by grooves of like configuration arranged in groups to receive the pieces side by side, each group being narrower than those of the preceding pass; substantially as described.

In testimony whereof I have hereunto set my hand.

WALTER RACHALS.

Witnesses:
R. G. BEKER,
H. STACHOW.