W. BUNTON.

MACHINE FOR ROLLING METAL

No. 188,498. Patented March 20. 1877.

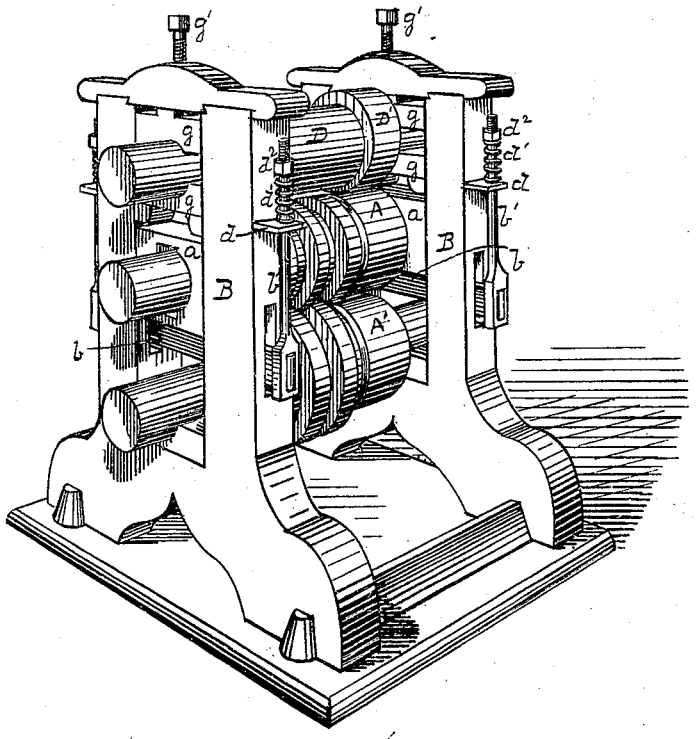

Fig. 1.

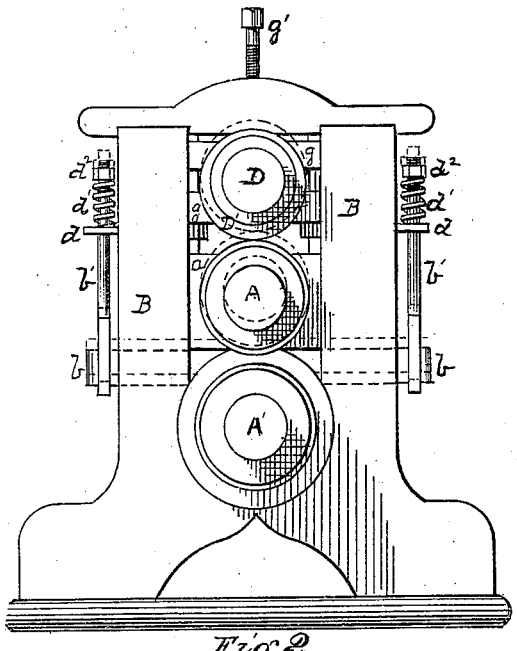

Fig. 2.

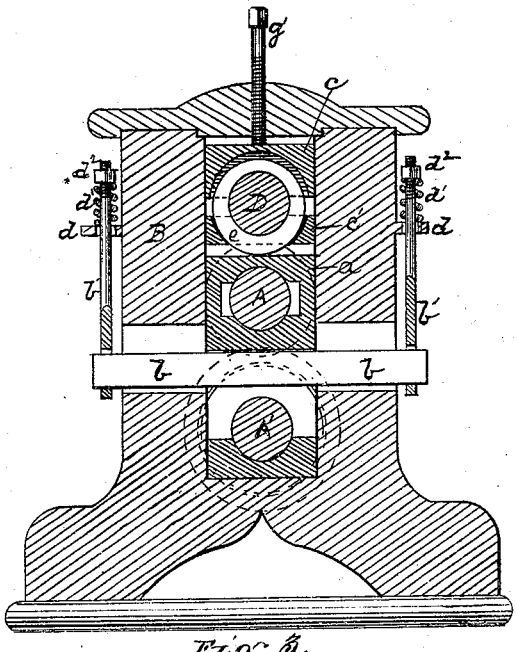

Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

WILLIAM BUNTON, OF PITTSBURG, ASSIGNOR TO HIMSELF AND HUGH McDONALD, OF ALLEGHENY, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR ROLLING METAL.

Specification forming part of Letters Patent No. **188,498**, dated March 20, 1877; application filed August 22, 1876.

To all whom it may concern:

Be it known that I, WILLIAM BUNTON, of Pittsburg, county of Allegheny, State of Pennsylvania, have invented or discovered a new and useful Improvement in Metal-Rolls; and I do hereby declare the following to be a full, clear, concise, and exact description thereof, reference being had to the accompanying drawing, making a part of this specification, in which—like letters indicating like parts—

Figure 1 is a perspective view of my improved rolls. Fig. 2 is an end elevation of the same, one housing being omitted; and Fig. 3 is a sectional view through one of the housings, showing an additional feature of my invention.

My improvement relates to that class of metal-rolls in which a taper form of product is produced by making the upper roll movable vertically to and from the lower roll; and the nature of it consists in the features of construction, substantially as hereinafter described and claimed, whereby the movable roll is held up against the cams or eccentrics above, so that its shaping action or operation shall be governed wholly or chiefly by the cams or eccentrics, which operate to force it downward at intervals.

In the drawing, A A′ represent a pair of metal-rolls, which may be grooved and collared, as shown, or plain, or of any form or construction, such as are suitable for the working or reducing of metals passing through. They are mounted in any suitable housings, B. The lower roll A′ rests in the usual bearings or boxes. The bearings *a* of the upper roll A are movable vertically in the housings or frame B, and are supported from beneath by cross-bars *b* and stirrups *b′*, the stems of the latter passing through lugs *d*, and springs d^1, with nuts d^2 bearing against the upper ends of the springs. These springs are of such stiffness and elasticity that they will yield sufficiently to allow the roll A to be forced down to its work, as presently to be described, and, on removal of such force, will carry it up again and away from the lower roll. Above these rolls, in the same housing, and in the same plane, I arrange a roll, D, having eccentrics D′ (or equivalent cams) thereon, in such position and so arranged that, being properly geared, the faces of the eccentrics D′ will bear against the top side of the upper roll A, and, as the full sides of the eccentrics come into action, will force it down into closer proximity to the lower roll A′, and consequently the iron or other malleable metal passing through between A and A′ will be gradually and progressively reduced in thickness, so as to take on the form of a taper.

As the full side of the eccentric passes around and up, the roll A being relieved of the downward pressure, and being carried up by the springs d^1, or partly by said springs and partly by the resistance of the metal to its reducing action, a reverse taper will be formed, or if such be not desired, the roll A will come back to the proper position for commencing the rolling of a new taper.

Preferably, the springs are made to carry the entire weight of the roll A, so that it shall always be held up against the eccentrics above.

Suitable bearings *g* and adjusting-screws *g′* may be added.

This construction is suitable where each single taper is to be made not longer than the semi-diameter of the rolls; but where tapers of different lengths are desired, or of lengths greater or less than the semi-diameter of the rolls employed, I prefer to arrange the eccentrics as illustrated in Fig. 3, so that, instead of bearing directly on the upper roll, they shall bear on its boxes or bearings. To this end I hollow out or groove the boxes *c c′* of the eccentric roll, and arrange the eccentrics *e* on such roll so that they shall play in such grooves, and also through the groove of the lower box *c′* and against the box or bearing *a* of the upper movable roll. The gear-wheels are then so proportioned or driven that the eccentric roll will revolve faster or slower than the working-rolls, so as thereby to give the movable roll A a quicker or slower vertical movement during its revolution, or during a part thereof. The quicker this motion, other things being the same, the shorter will be the taper formed between the rolls A A′, and the slower the motion the longer the taper. I

deem it unnecessary to show such gearing in detail, since the skilled mechanic will know how to make, apply, and run the same for the purpose of securing the results named.

I claim herein as my invention—

1. In combination with movable roll A, the cross-bar *b*, stirrups *b'*, and springs d^1, to support it from below, and an eccentric roll above, substantially as set forth.

2. The eccentrics *e*, arranged in the grooved or hollow boxes *c c'* so as to play through the groove or hollow of the lower box and against the box or bearing *a* of the upper movable roll, the combination being substantially as described.

In testimony whereof I have hereunto set my hand.

WILLIAM BUNTON.

Witnesses:

JNO. A. WILSON,

GEORGE H. CHRISTY.