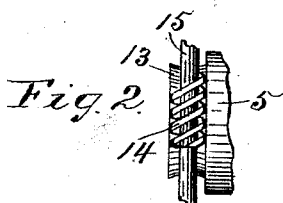
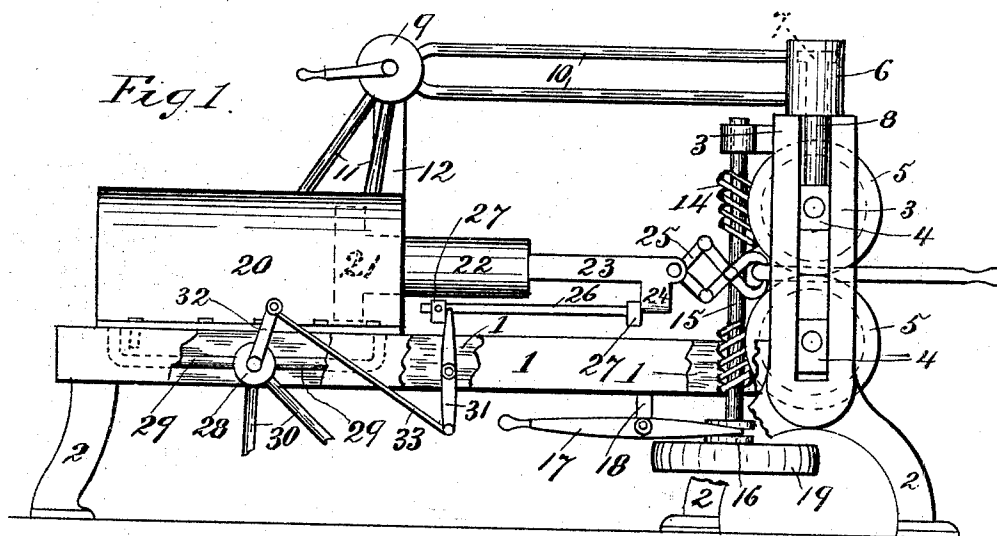


(No Model.)

A. LEFORESTIER.
MACHINE FOR ROLLING AND DRAWING METAL.

No. 497,126.

Patented May 9, 1893.



WITNESSES:

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ALEXANDRE LEFORESTIER, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR ROLLING AND DRAWING METAL.

SPECIFICATION forming part of Letters Patent No. 497,126, dated May 9, 1893.

Application filed September 7, 1891. Serial No. 404,936. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDRE LEFORESTIER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Drawing and Rolling Metals; and I do hereby declare the following to be a sufficiently full, clear, and exact description thereof as to enable others skilled in the art to make and use the said invention.

This invention relates to the drawing and rolling of metal, and has for its object the production in metal, having properties of ductility and tenacity, of forms which are impracticable of production by either mere rolling, or drawing, and the better perfection and easier production of forms now made by either process singly.

Figure 1, is a side elevation of my drawing and rolling mill. Fig. 2, is a rear view of one of the tangent screws, and part of one of the rollers.

1, refers to a frame, having front and rear supporting legs 2. From the front legs is extended a housing 3, for the bearings 4 of the roller 5. These bearings carry the spindles of the rollers 5, and are free to slide vertically in said housing, by means of the hydraulic cylinder 6 located at the top of the housing 3, having a piston 7, and piston rod 8 engaging the top bearing of the rollers, so as to force the bearing and therefore the rollers toward each other, as the metal to be drawn and rolled may require. The piston 7 is controlled and operated by a valve 9 through pipes 10, and the said valve is connected to a fluid accumulator (not shown) by pipes 11; the valve being supported above the frame 1 by a standard 12. The rollers 5 have a worm wheel 13, formed on or secured to one of their ends, which is engaged by tangent screws 14 splined upon the shaft 15 to slide vertically with the rollers. One end of this shaft 15 has a sliding clutch 16 operated by a hand lever 17, pivoted by means of a hanger 18 to the frame 1. This clutch is employed to couple the shaft with a driving pulley 19, which may receive its motive power from a steam engine, or hydraulic motor. In the center of the rear end of the frame 1, is secured a hydraulic

cylinder 20, having a piston 21, and a piston rod 22, which is provided with a rod 23 having a projection or lug 24. The end of this rod 23 is provided with a grapple 25. 26, refers to a bar parallel with, and secured at one end to the lug 24, and is provided with a stop lug 27. The piston 21 is operated by fluid controlled by a valve 28 having parts connected alternately to either end of the cylinder 20, by a pipe 29, the valve being connected to a fluid accumulator containing fluid under pressure, and with a pump well into which fluid is discharged and received from the cylinder 20 through pipes 30. The said valve 28, is operated by means of a lever 31 pivoted to the frame 1. One of the ends being connected to the valve 28 by an arm 32, and rod 33, while the other end of the lever 31 is left free and is engaged by the stops 27, when the piston is in operation.

The combined effect of the simultaneous drawing and rolling operations is that the drawing enforces such a contact with the rollers that the rollers cannot slip, but always propel the bar between them and by such propulsion relieve the bar from such a severe tensile strain as would otherwise tear it apart.

This invention is applicable to rolling tapering rods such as switch points, tapering boiler flues, and gun barrels, and to the tubes required for musical wind instruments also to tubes for ornamental and structural metal works.

Having described this invention, what I claim is—

1. In a machine for drawing and rolling metal, the rollers 5, the hydraulic cylinder 6, having a piston rod which regulates the pressure of the rollers together, the worm wheels, and tangent screws for revolving said rollers, in combination with the metal drawing mechanism consisting of the cylinder 20 its piston and rod, and the grapple connected thereto, the valve 28 and means for operating the valve from the said rod, for the purpose set forth.

2. In a machine for drawing and rolling metal, the rollers 5, the cylinder 6, and the piston 7 adapted to be operated so as to control the vertical adjustment of the said rollers the worm wheels 13, and the tangent screws both formed upon the same driving shaft in

combination with the cylinder 20 its piston rod, and the rod 26, connected to and carried by the piston rod for the purpose set forth.

3. In a machine for drawing and rolling
5 metal, the rollers 5, the worm wheels with which each roller is provided, the shaft 13, the screw 14, and means such as shown for operating the shaft, in combination with the cylinder 20 its piston and rod, and the rod 23
10 having the lug 24, the bar 26 provided with stops 27, and secured to the lug parallel to

the said piston rod, and moving therewith, the valve 28, the pivoted lever 31, having a free end which is engaged by the stops 27, the rod 33, and arm 32 connecting the other end 15 of said lever with the valve, substantially as set forth.

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Witnesses:

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