

M. H. BROOKSBANK.
Metal-Rolling Machines.

No. 150,130.

Patented April 28, 1874.

Fig. 1

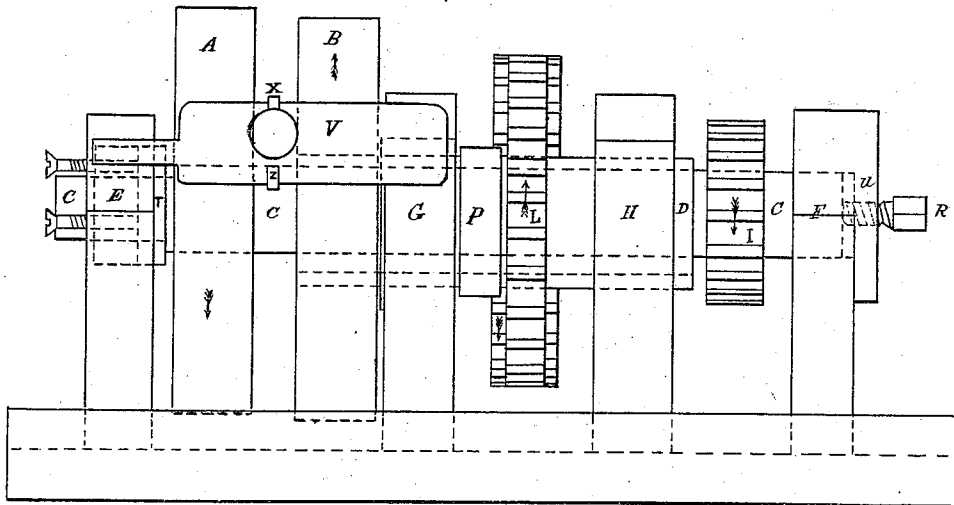
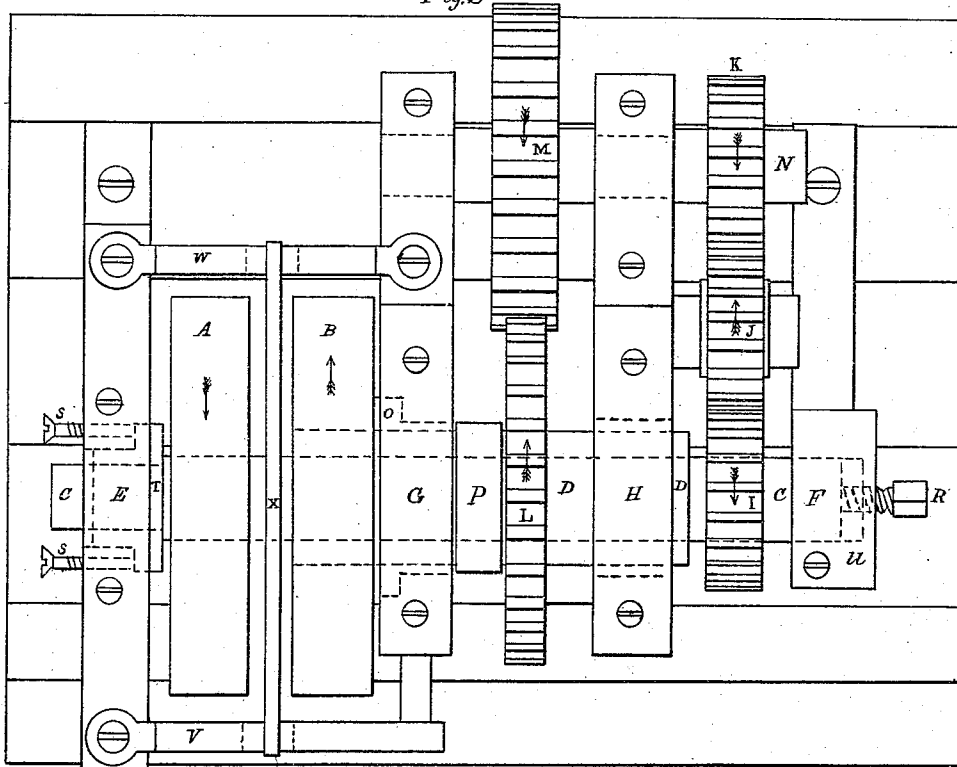


Fig. 2



Witnesses { John D. Phipps.
Wm. S. Henson

Inventor
Matthew H. Brooksbank.

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Fig. 3

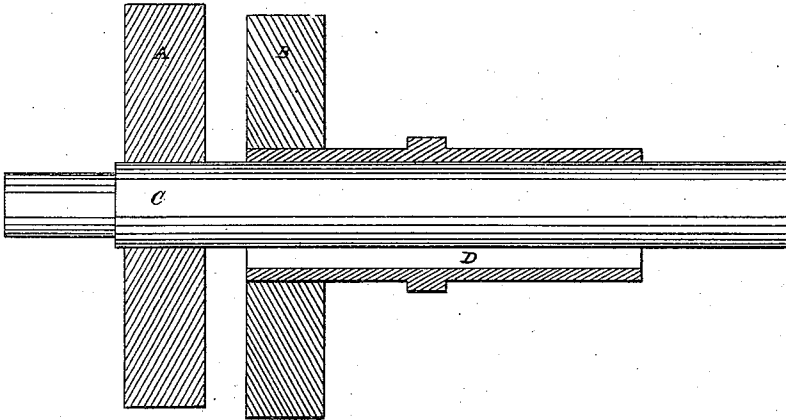
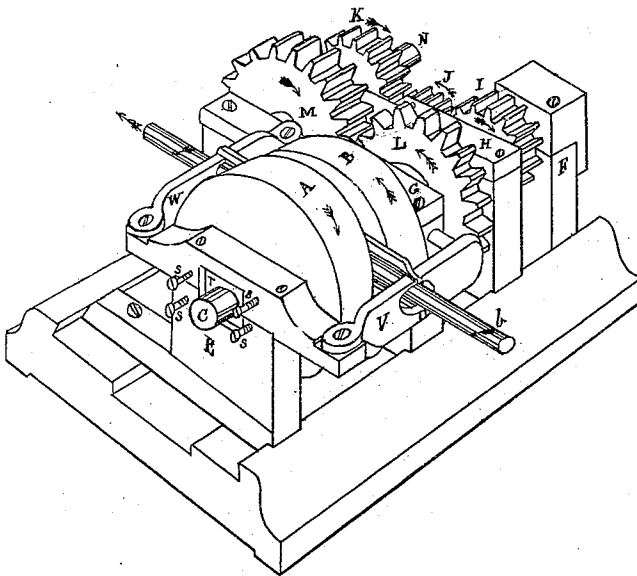


Fig.4



Witnesses { John D. Poppins
Wm S. Henson

Inventor

Matthew H Brookshank.

UNITED STATES PATENT OFFICE.

MATTHEW H. BROOKSBANK, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN METAL-ROLLING MACHINES.

Specification forming part of Letters Patent No. 150,130, dated April 28, 1874; application filed January 31, 1874.

To all whom it may concern:

Be it known that I, MATTHEW H. BROOKSBANK, of the city of Newark, State of New Jersey, have invented certain Improvements in Rolling-Machines for more perfectly rolling and finishing round bars of iron, steel, or other metal, of which the following is a specification:

My invention consists of a new arrangement of that description of rollers which are called disk-rollers, revolving in centers parallel, but not on the same line, and running in opposite directions, for more perfectly finishing and turning round bars of iron, steel, or other metals, by subjecting said bars of iron, steel, or other metals to the peculiar action of plane-faced disks of chilled iron, whose plane faces revolve parallel to each other, but in opposite directions, whereby said bars of metal are reduced to the condition of true cylinders with smooth-finished surfaces, and equal diameters throughout.

Figure 1, Sheet 1, is a front elevation of my improved rollers, showing their relative positions, the frame-work supporting them, and the gearing for driving and connecting them. Fig. 2 is a plan of the same. Fig. 3, Sheet 2, is a sectional front elevation of the disk-rollers and their supporting-shafts. Fig. 4 is a perspective view of the disk-rollers and the gearing by which they are driven and connected, and the general view of the frame for supporting the same.

The same letters have reference to the same parts in all the drawings.

I will now describe the several parts of my improved rolling-machine, and its mode of operation. A and B, Figs. 1, 2, 3, 4, are the two disk-rollers, made of chilled cast-iron or steel, their near faces being turned true planes. The roller A is mounted upon and securely attached to the solid shaft C, and the roller B is mounted upon and securely attached to the hollow shaft D. The shaft C passes through the hollow shaft D, and is supported by the framing at E and F. The hollow shaft D is supported at G and H, Figs. 1, 2, and 4. It will be seen, by referring to Figs. 1 and 3, that the roller A, with its shaft C, is somewhat higher than the roller B and its shaft D, the object of which I will explain presently. The

shaft C has a spur-wheel, I, keyed upon it, and connected by means of the intermediate wheel J to the spur-wheel K, and the hollow shaft D has a spur-wheel, L, keyed upon it, and gearing directly into the spur-wheel M. The whole is driven by steam or water-power communicated by another shaft, (not shown,) and attached by suitable couplings to the shaft N; and the wheels M and K being both keyed on the shaft N, when the latter is turned in the direction of the arrows, the other gear-wheels and the two roller-shafts and disk-rolls will all revolve in the direction of the arrows marked upon them. The disk-roller B is firmly held in its position endwise by the box O, let in the frame G, and the collar P, Figs. 1 and 2, and the other disk-roller, A, is held in its position by means of the adjusting-screws S and the box T at one end of the shaft C, and the adjusting-screw R screwing through the end of the box U against the other end of the shaft C. V and W are two pieces serving to tie the two parts of the framing E and G firmly together, and also support the guide-bars X Z, which are firmly supported between the disk-rollers by the tie-pieces V and W. The tie-pieces V and W have apertures or guide-holes, through which the metal shafts to be rolled pass, and the mode of operation is as follows: Assuming that the disk-rollers have been set the proper distance apart for the size of the round metal bars required, then I take a bar, b, partially prepared, either by a hammer or common rough-grooved rolls, and brought to a rounding form and heated red hot, and pass the end through the aperture in the tie-piece V in the direction of the arrows. As soon as the forward end of the bar is forced between the plane revolving faces of the disk-rollers, it immediately commences to revolve and advance in the direction of the arrows. It revolves because the two disk-rollers run in opposite directions, and it advances because the roller B is lower than the roller A. If both rollers were of equal height, the bar would neither advance nor recede; but as the roller B is lower than the roller A, the revolving bar between the disks partakes more of the motion of the circumference of B, and it accordingly advances in that direction; if the roller B were lower, the bar would advance still

more rapidly. Thus the action of the disk-rolls is a peculiar rolling rubbing motion, admirably adapted to impart a finished surface, and a perfect cylindrical form. The two rollers are not necessarily obliged to be exactly the same diameter, but I prefer them to be so. In the drawings one roller only is adjustable endwise, whereas by using similar means it will be evident that both rollers can be made so. It will also be evident that the arrangement of the shafts and gearing can be altered so as to dispense with the hollow shaft, and connect the two disk-rollers by a shaft passing underneath or above, or in the front or the back side; but I prefer the arrangement as shown.

The patent of Jacob Reese, No. 65,832 dated June 18, 1867, described as an improvement in rolling and straightening cylindrical bars and tubes of iron, steel, or other metals, claims the use of conical-faced revolving disks, (not convex-faced, but disks whose faces are true cones or frustums of cones,) the object being to make the line of their bite entirely on one side of the apexes, as he asserts that if the faces were flat, and the line of bite extended across the face on both sides the centers, no valuable results could be secured, whereas I claim that by the use of plane-faced rollers whose faces are parallel, as described, I produce not only true cylindrical forms, but also polished surfaces, by the rolling action of the disks on the first side the center, compressing and straightening the cylinders of metal, while the after action on the opposite side the center polishes the surfaces, and gives a more finished effect.

Treat T. Prosser's patent for an improved screw-threading machine consists of a pair of improved disks mounted upon shafts whose axis, if extended, would be parallel, but not

in the same plane, revolving in opposite directions, said disks having recesses cut transversely across their thread-forming faces for the special purpose of threading screws, which improved disks are arranged to revolve in parallel planes upon shafts set in different horizontal planes, and extending in opposite directions. This is a machine especially intended for facilitating the threading of bolts by providing the means for threading two or more bolts at the same time, and dispensing with the necessity of shifting the dies at each operation, as in a former patented machine. It will be observed that the improved disks, although mounted very similar to my plane disks, have transverse recesses cut across their faces, and the nature of the work they are designed to accomplish is totally different to the plane smooth-faced disks which I use. Prosser's machine, as claimed, being incapable of doing the work which my machine is designed to do, and my machine, as claimed, being incapable of doing the work for which Prosser's machine is adapted, they are, therefore, vitally different in their operation.

I claim--

The combination of two disk-rollers of equal diameter, having true plane faces, made of chilled iron or steel, and revolving in opposite directions, with parallel faces and centers, but not in the same center, driven by gearing, and mounted with adjustments, tie-pieces, and guide-bars, one or both rollers being adjustable, all substantially as described, and for the purposes above mentioned.

MATTHEW H. BROOKSBANK.

Witnesses:

JOHN D. TOPPIN,
WM. S. HENSON.