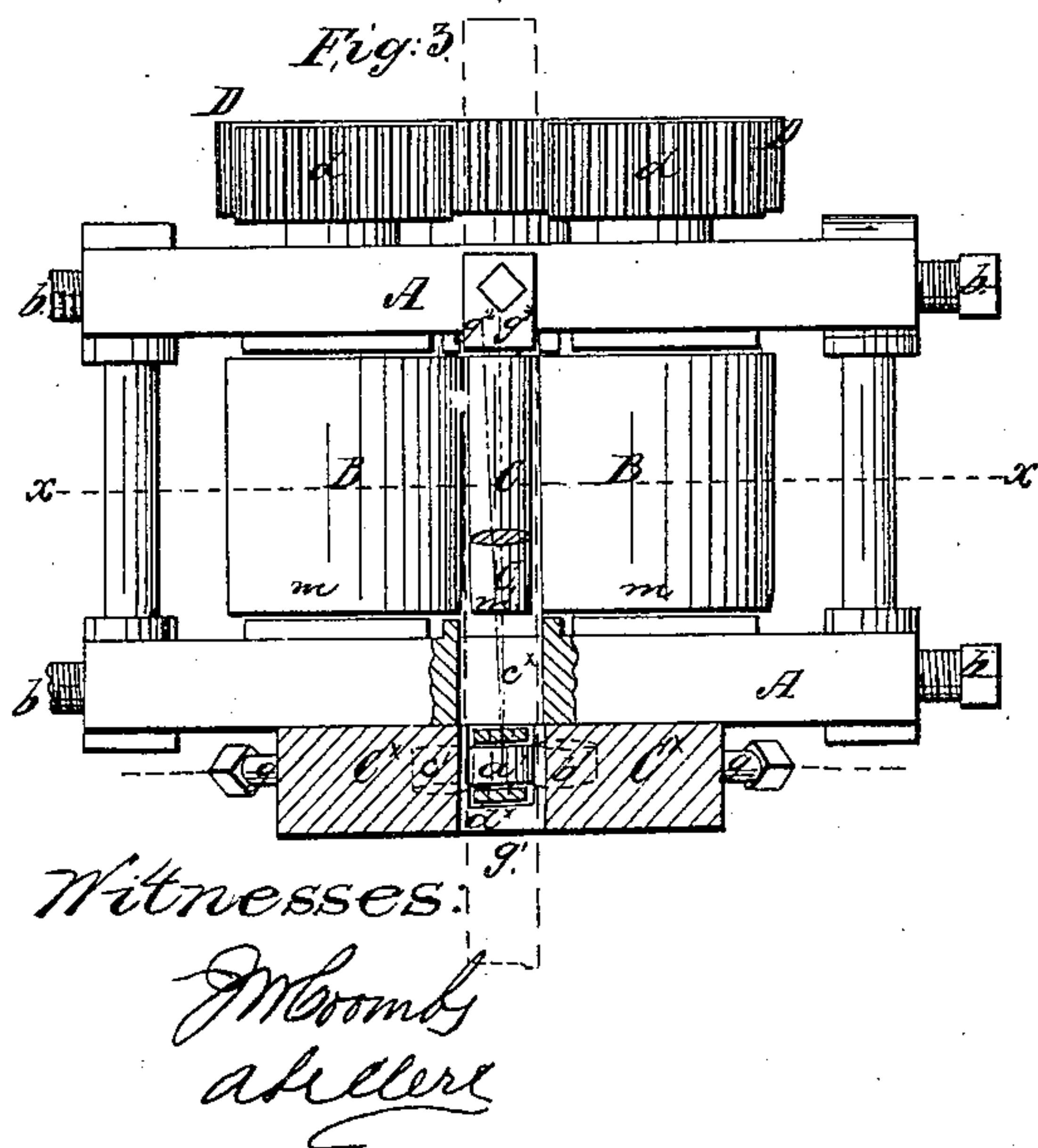
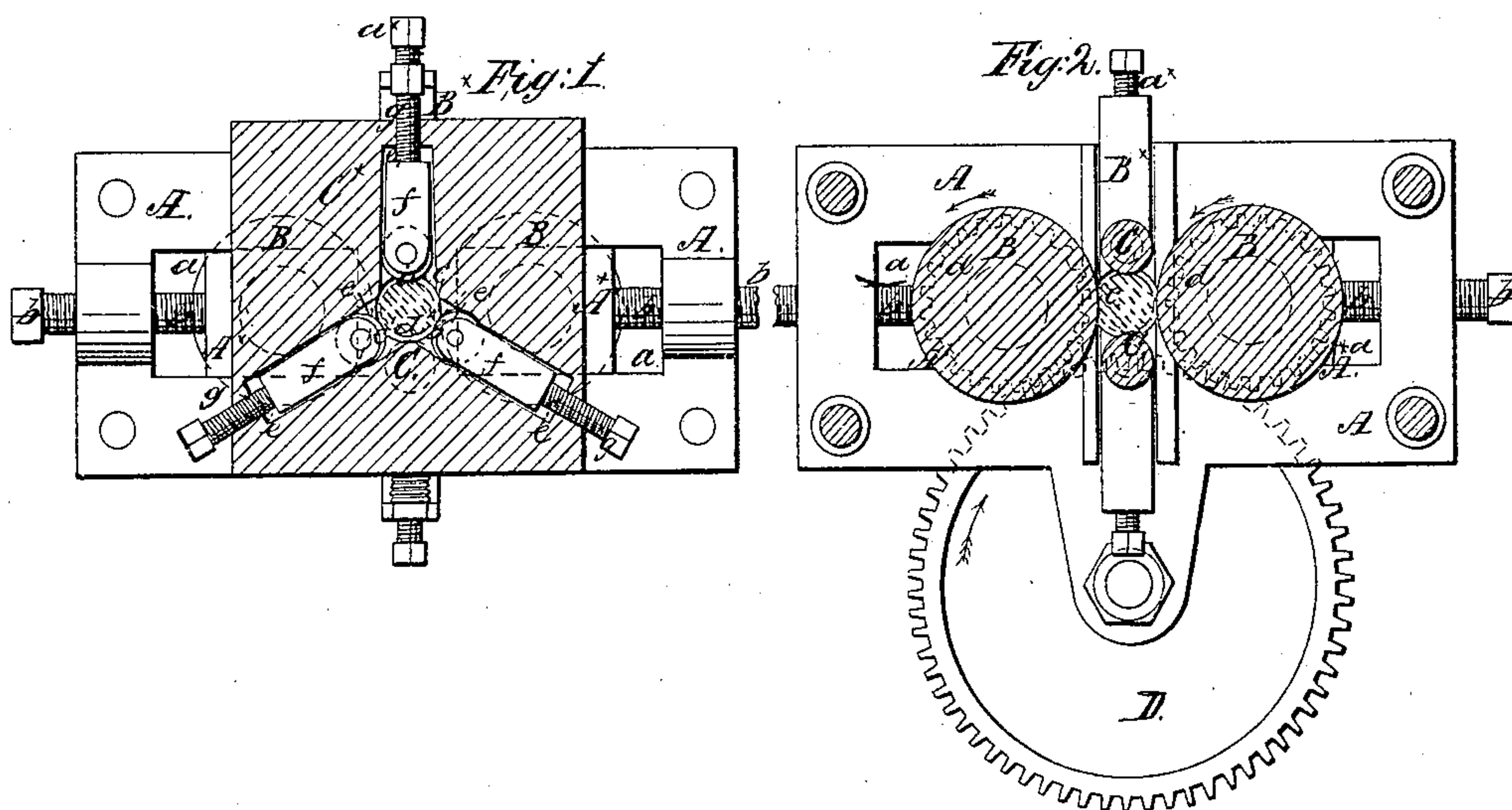


F. H. LAFORGE & W. GEDDES.
MACHINE FOR STRAIGHTENING AND ROUNDING SHAFTING.
No. 76,781. Patented Apr. 14, 1868.



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UNITED STATES PATENT OFFICE.

FREDERICK H. LAFORGE AND WILLIAM GEDDES, OF WATERBURY, CONN.

IMPROVEMENT IN MACHINES FOR STRAIGHTENING AND ROUNDING SHAFTING.

Specification forming part of Letters Patent No. 76,781, dated April 14, 1868.

To all whom it may concern:

Be it known that we, FREDERICK H. LAFORGE and WILLIAM GEDDES, both of Waterbury, in the county of New Haven and State of Connecticut, have invented certain new and useful Improvements in Machines for Straightening and Rounding Shafting; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a portion of this specification, in which—

Figure 1 is a side view and partial vertical section of a machine made according to our invention. Fig. 2 is a vertical longitudinal section taken in the line *xx* of Fig. 3. Fig. 3 is a plan view and partial horizontal section of the same.

Similar letters of reference indicate corresponding parts in all the figures.

This invention is designed for straightening iron shafting, rods, &c., and also for bringing the same into a nearly or quite round or cylindrical condition, thereby wholly dispensing with the ordinary operation of turning.

The invention consists in the combination, with the pressure-rollers, which act upon the shaft or rod to straighten and shape or round the same, of feed-rolls arranged obliquely to the axis of such shaft or rod while the same is passing between the pressure-rollers, whereby the requisite feeding of the shaft or rod to the pressure-rollers is effectually secured.

The invention further consists in so combining two supporting-rolls with the pressure-rollers and feed-rolls, all of which being made adjustable toward a common center, that the shaft or rod, as it passes inward from the feeding-rolls, will be held in such relation with the pressure-rollers as to insure the most efficient operation of such rollers thereon.

The invention further consists in so beveling or tapering the ends of the pressure-rollers and supporting-rolls and arranging the same with reference to the feeding mechanism that the introduction of the shaft or rod to be manipulated to or between such rollers and rolls is effectually provided for.

To enable others to understand the nature and construction of our invention, we will proceed to describe it with reference to the drawings.

A represents a strong frame-work, in each side of which is provided two slots, *a*. In the

slots of each side are placed two sliding bearings, *A**, which may be adjusted at a greater or less distance from each other by means of set-screws *b*. These bearings *A** receive the journals (shown in dotted outline in Figs. 1 and 2) of two pressure-rollers, B.

C indicates two rolls, the journals of which work in vertical bearings *B**, made adjustable by means of screws *a**, and which are situated one above and one below the space at *c*, immediately between the pressure-rollers.

Each of the pressure-rollers is furnished with a spur-pinion, *d*, the two pinions being acted upon by a driving spur-wheel, D, to rotate the two rollers in the same direction, as indicated by the arrows in Fig. 2.

Formed in one of the sides of the frame-work A, in line with the space at *c*, between the rollers, is a hole or opening, *c**. Secured to the same side of the frame-work, at the outer surface thereof, is a box, *C**, and communicating with the opening *d** thereof are three radial recesses, *e*, rectangular in their cross-section, and having placed in them a corresponding number of blocks, *f*, which are made adjustable longitudinally within the recesses by means of screws *g*, which extend into the inner or closed ends of the recesses through the adjacent parts of the box *A**. The ends of the blocks *f*, toward the opening *d**, are hollowed out to receive the feed-rolls, (marked respectively *a' b' c'*), the feed-rolls being pivoted transversely in such ends.

The line *g' g** in Fig. 3 indicates the axis of the shaft or rod to be manipulated when such shaft or rod, in passing between the pressure-rollers and the several feed-rolls, instead of being placed with their axes in lines parallel therewith, are situated obliquely thereto, as follows: The upper roll, *a'*, has its axis in a horizontal plane parallel with the line *g' g**, but inclined laterally with reference to such line, as shown by the line *g' g²* in Fig. 3. The axis of the roll *b'* is situated in a vertical plane parallel with the line *g' g**, but is inclined, with its inner end raised or elevated to a degree corresponding to the lateral inclination of the roll *a'*. The remaining roll, *c*, has its axes in a similar vertical plane, but with its inner end depressed to give it an inclination corresponding in degree to the inclination in the opposite direction of the roll *b'*. The feed-rolls, being thus all arranged in a corresponding oblique manner relatively to the axis of

the shaft or rod as it passes between the pressure-rollers, are enabled to communicate a longitudinal movement to the shaft or rod to feed the same to the pressure-rollers, as hereinafter further explained.

Those end portions of the pressure-rollers and of the supporting-rolls adjacent to the feed-rolls just described have their peripheries tapered or beveled for a short distance, as shown at *m* and *m'*, respectively, in such manner as to facilitate the introduction of the end of the shaft or rod between the pressure-rollers preliminary to manipulating the same.

In using the machine the pressure-rollers B and supporting-rolls C are adjusted at a suitable distance apart, and the shaft or rod to be straightened or rounded is thrust through the opening *d**, between the feeding-rolls *a' b' c'*, and thence through the hole *e**, with its end entering the space at *e*, and forced snugly between the tapered end portions *m* and *m'* of the rollers B and rolls C, which being done, the feed-rolls are tightened upon or around the shaft or rod by means of the screws *g*, acting on their blocks *f*, and a rotary motion, as hereinafter explained, is given to the rollers B, whereupon the rollers bite upon the shaft or rod between them and communicate thereto a rotary motion around its axis. As the shaft or rod thus rotates it causes the feed-rolls to revolve, so that the edges of the feed-rolls, brought in contact therewith from the oblique position of such rolls, operate to feed the shaft or rod inward to and between the pressure-rollers, the rollers just mentioned and the oblique feed-rolls together causing the shaft to have, as it were, a spiral movement in passing between the rollers, during which the pressure of the parallel inner sides of the rollers upon the shaft or rod not only effectually

straightens the same, but, by continuously subjecting it to pressure while turning upon its longitudinal axis, brings it into a nearly or quite perfectly round or cylindrical form, thereby wholly dispensing with the operation of turning ordinarily employed in fitting shafting, &c., for use, and also renders it, as near as may be, of uniform diameter throughout its length.

While the shaft or rod is being thus operated upon by the pressure-rollers it is supported in proper position between such rollers by the supporting-rolls C.

When desired, two or more shafts or lengths of shafting may be connected at their ends by a male and female screw, and thus connected, be subjected to the operation of the machine in lieu of being fed separately thereto.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The obliquely-arranged feed-rolls, in combination with the pressure-rollers, substantially as and for the purpose specified.

2. The combination of the guide-rolls C, the pressure-rollers B, and the obliquely-arranged feed-rolls *a' b' c'*, provided with their respective means of adjustment, all arranged and operating substantially as set forth.

3. The construction of the pressure-rollers and supporting-rolls with beveled or tapering end portions, *m m'*, arranged in relation with the mechanism which feeds the shaft or rod to the pressure-rollers, substantially as and for the purpose specified.

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Witnesses:

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F. H. CHATFIELD.