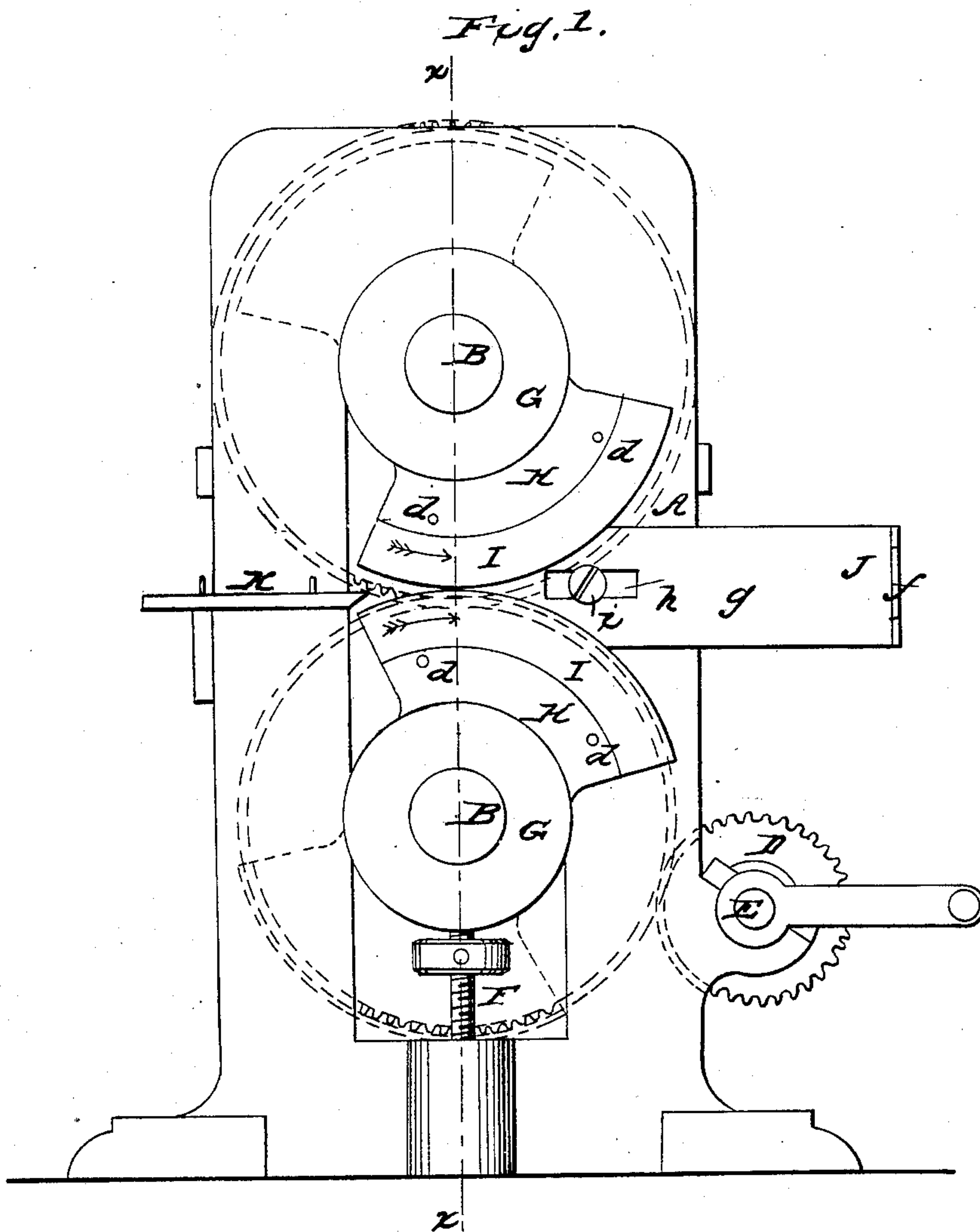


J. YATES.

Machine for Rolling Gun Barrels.

No. 50,869.

Patented Nov. 7, 1865.



Witnesses:
Theo Tusch
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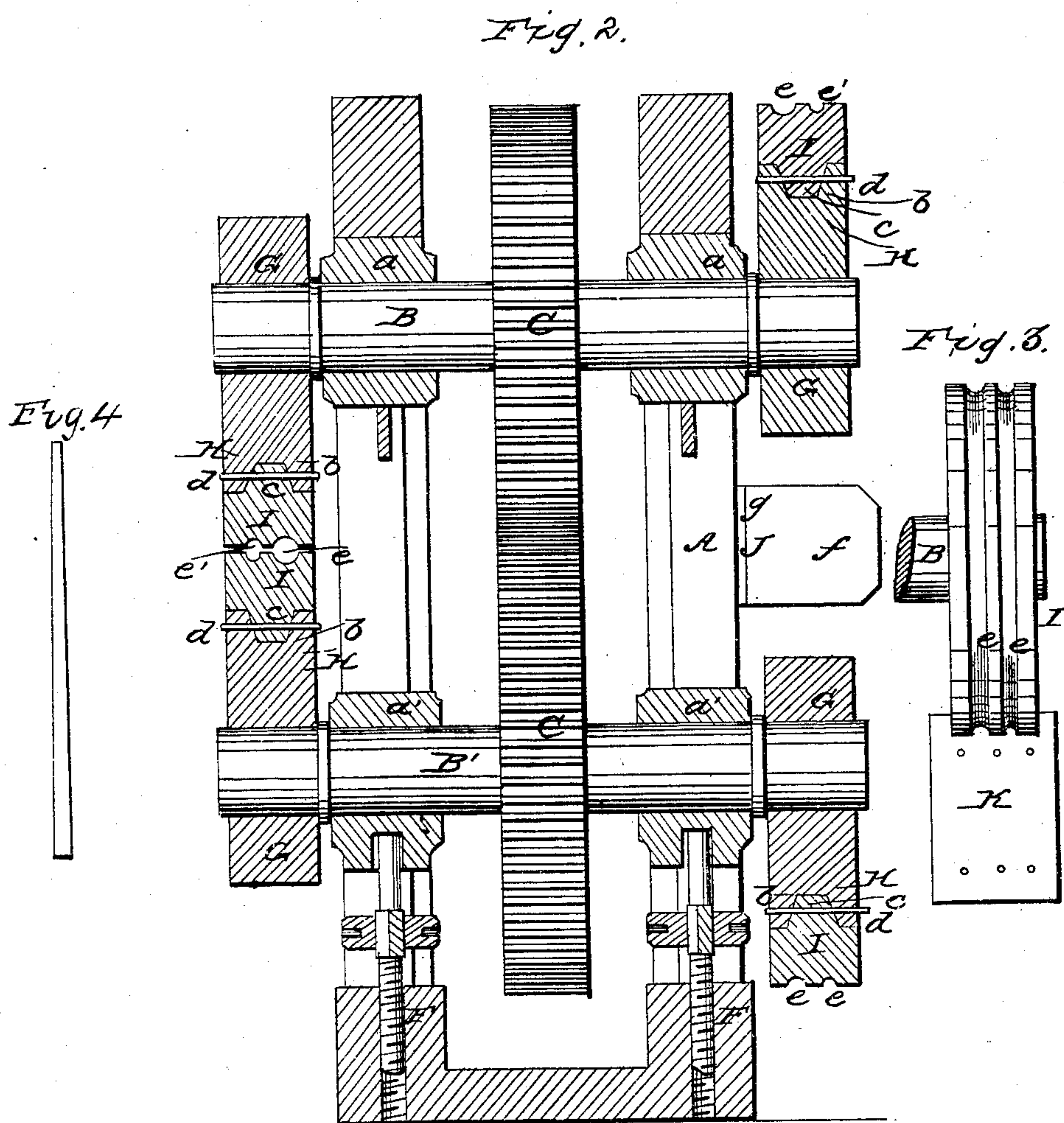
Inventor:
J. Yates
per Munn & Co
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UNITED STATES PATENT OFFICE.

JOSEPH YATES, OF MOTT HAVEN, NEW YORK.

MACHINE FOR ROLLING GUN-BARRELS.

Specification forming part of Letters Patent No. 50,869, dated November 7, 1865; antedated October 25, 1865.

To all whom it may concern:

Be it known that I, JOSEPH YATES, of Mott Haven, in the county of Westchester and State of New York, have invented a new and Improved Machine for Rolling or Drawing Out Gun-Barrels and other Metal Articles in Taper Form; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet No. 1, is a side elevation of my invention; Fig. 2, Sheet No. 2, a vertical section of the same, taken in the line *x x*, Fig. 1; Fig. 3, a plan or top view of one of the rotary dies and a bed-plate; Fig. 4, a view of a gun-barrel rolled or drawn out by my invention.

Similar letters of reference indicate like parts.

This invention relates to a new and improved machine for rolling or drawing out gun-barrels and other articles of metal which require to be of taper form.

The invention consists in the employment or use of rotary dies of segment form arranged in one or more pairs, and with gages and bed-plates, to operate as hereinafter set forth.

A represents an upright framing, in which two horizontal shafts, B B', are placed, one directly over the other, each shaft having a toothed wheel, C, keyed upon it, and said wheels gearing into each other, as shown clearly in Fig. 2. The wheel C on the lower shaft, B', gears into a pinion, D, on a shaft, E, at one side of the framing A. The power which drives the machine is applied to this shaft. The bearings *a* of the upper shaft, B, are fixed, but the bearings *a'* of the lower shaft, B', are adjustable, and are regulated by screws F, both of which are shown clearly in Fig. 2. The shafts B B' project beyond the sides of the framing A, and on one or both ends of these shafts there are keyed cylindrical heads G. In Fig. 2 heads G are shown at both ends of the shaft. These heads G are of cast-iron, and they are cast with a segment-projection, H, which extends around about one-quarter of the circumference of the heads, and have each a groove, *b*, made longitudinally in their upper surfaces, to receive the tongues *c* of dies I, which are of segment form, and are secured to the pro-

jections H of the heads G by means of pins *d*, which pass through the tongues *c* and projections H, as shown clearly in Fig. 2. The faces of the dies I are provided with two circumferential grooves, *e e'*, (shown in Figs. 2 and 3.) These grooves, when designed for rolling gun-barrels, are of taper form longitudinally, corresponding to the taper designed to be given the barrels. The groove *e* is of elliptical form in its transverse section, being of greater width than depth; but the groove *e'* is of semicircular form in its transverse section. (See Fig. 2.) The heads G G of each pair are keyed on their shafts B B' in such a position relatively with each other that the peripheries or faces of the dies I I will, as the shafts B B' are rotated, have their face sides work or pass opposite each other, as will be understood by referring to Fig. 1, the arrows indicating the direction of the movement of the dies and shafts. The grooves *e e'* of each pair of dies are in line with each other, as shown in Fig. 2.

J J represent gages attached one to each side of the machine. These gages may be constructed of a flat metal plate bent at one end, *f*, so as to form a right angle with the main portion *g*, the latter having oblong slots *h* made in them, through which screws *i* pass into the framing. By this means the gages may be adjusted as desired, the ends *f* forming the stops for the work, and, by the adjustment above specified, being brought nearer to or farther from the dies I I, as circumstances may require, the gages being in line with the "bite" of the dies.

K K are bed-plates, attached horizontally to the framing A, one at each side, and in line with the bite of the dies I.

In rolling or drawing out gun-barrels the rods are cut into pieces of the requisite length, and then heated to a requisite degree and placed on the plates K K, a workman being at each side of the machine, one to each pair of dies. The rods are first inserted in the grooves *e* of the dies I, and are at each revolution of the dies rolled or drawn out, commencing at the inserted end. Three revolutions of the dies are requisite to complete the first operation, the grooves *e* simply tapering and drawing out the rods to a form approximating to the one desired. The rods are then

inserted into the grooves *e'*, which complete the operation and give a finish to the barrels. The rods are shoved or fed forward by the attendants after each bite of the dies on the rods, the dies having a continuous rotary motion.

The shape of the grooves *e e'* of the dies of course vary, according to the shape of the article to be rolled or drawn out.

The dies I may be of chilled cast-iron, and, owing to the manner of attaching them to the heads *G G*, they may be readily removed from and applied to the machine, dies adapted for different work being used on the same machine.

This machine possesses the advantage of being extremely simple, far more so than those in which rollers are employed, besides possessing the advantage of enabling different kinds

of articles being rolled or drawn out by simply changing the dies, which may be done with the greatest facility.

The pinch or bite of the dies I may be regulated as desired by adjusting the screws *F*.

I claim as new and desire to secure by Letters Patent—

The arrangement of the segmental rolls *C* upon the extremities of the two shafts, and securing the dies to said rolls in the manner described, in combination with the adjusting-screws *F*, the gages *J*, and bed-plates *K*, as and for the purpose set forth.

JOSEPH YATES.

Witnesses:

JOHN L. BURNETT,

GEORGE MELLER.