

No. 835,255.

PATENTED NOV. 6, 1906.

R. J. RODD.

BOLT TRIMMING MACHINE.

APPLICATION FILED FEB. 16, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

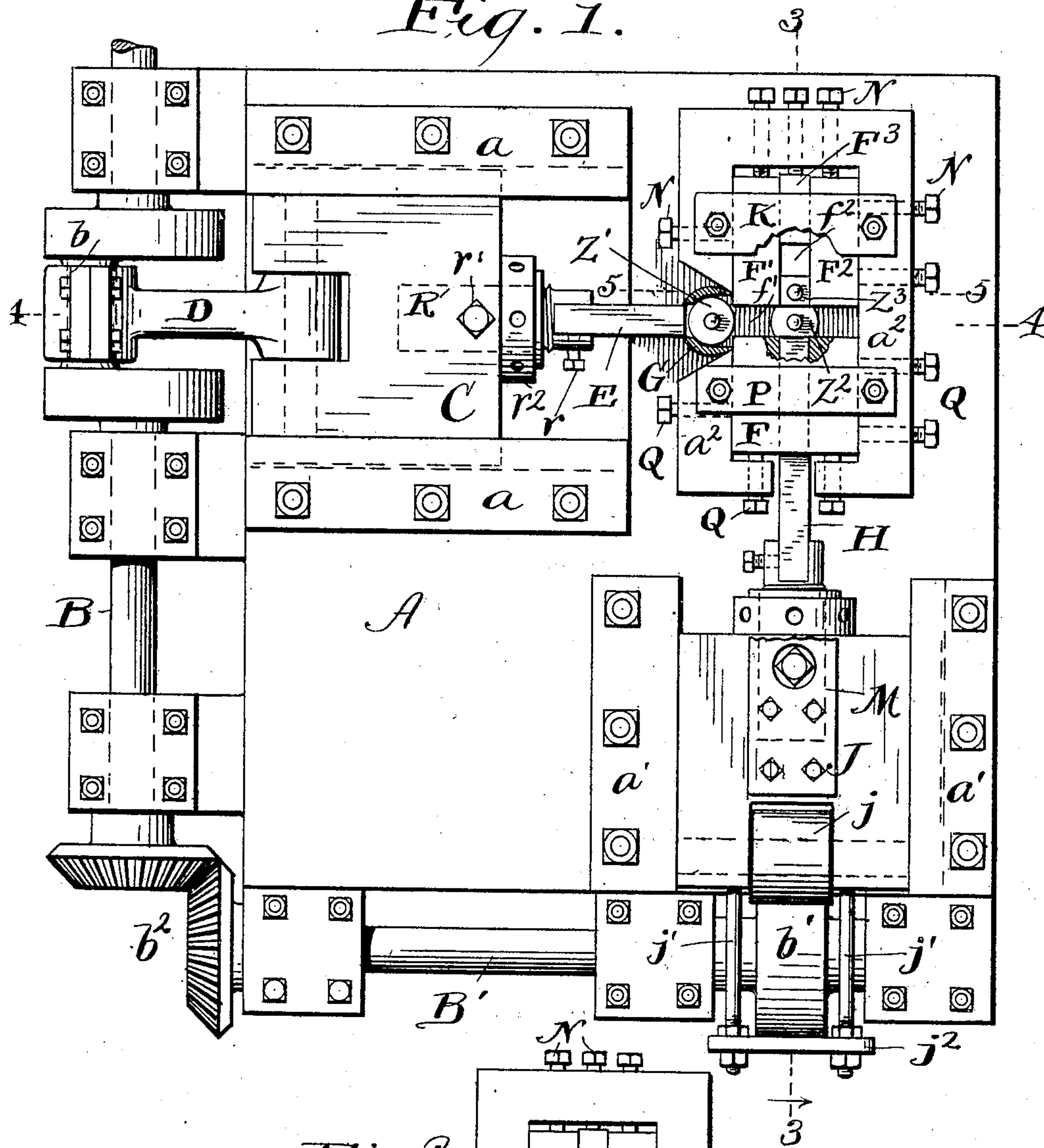
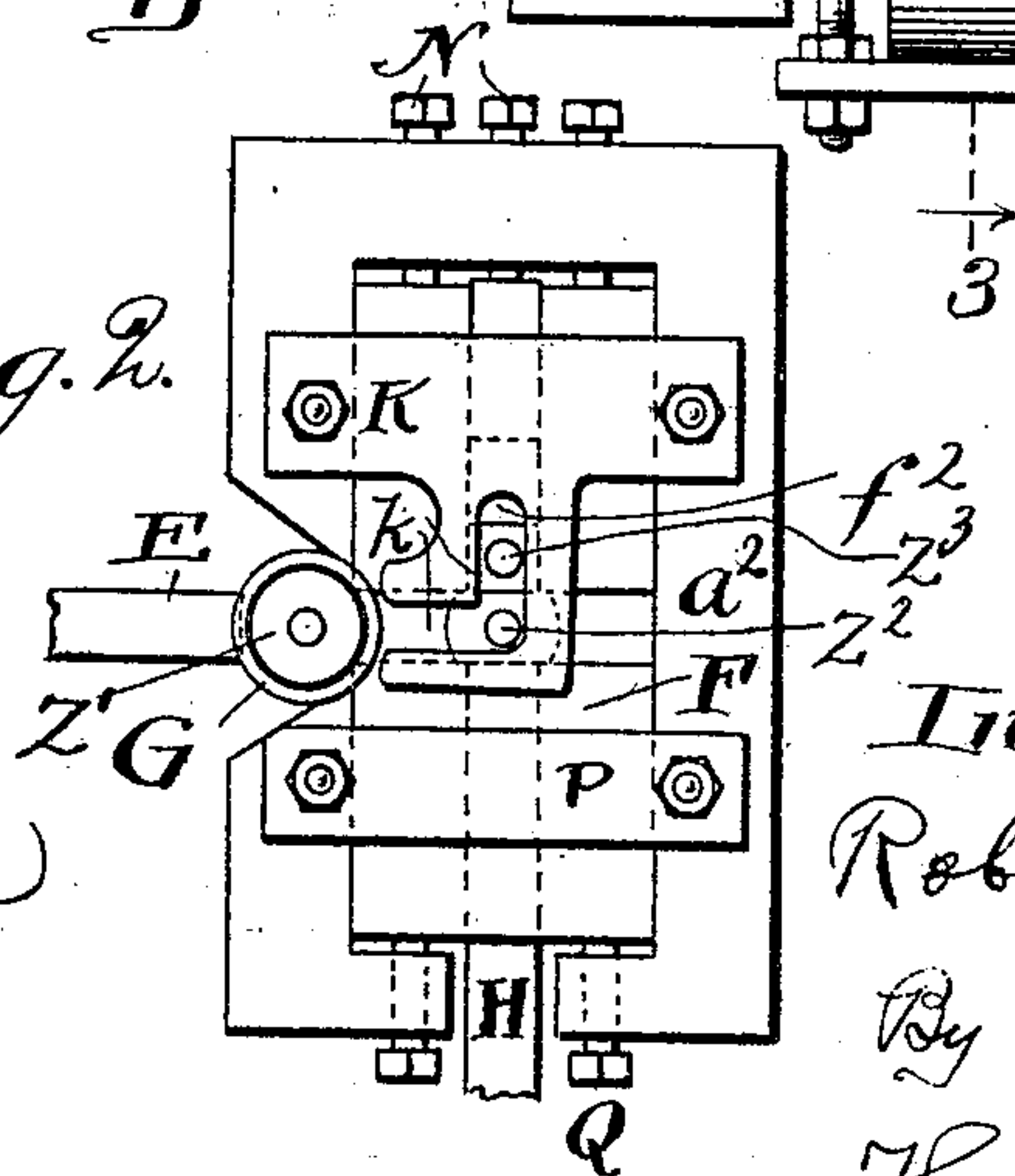


Fig. 2.



Witnesses.

E. B. Gilchrist

J. S. Kober

Inventor,

Robert J. Rodd,

By his Attorneys,
Thurston & Bates.

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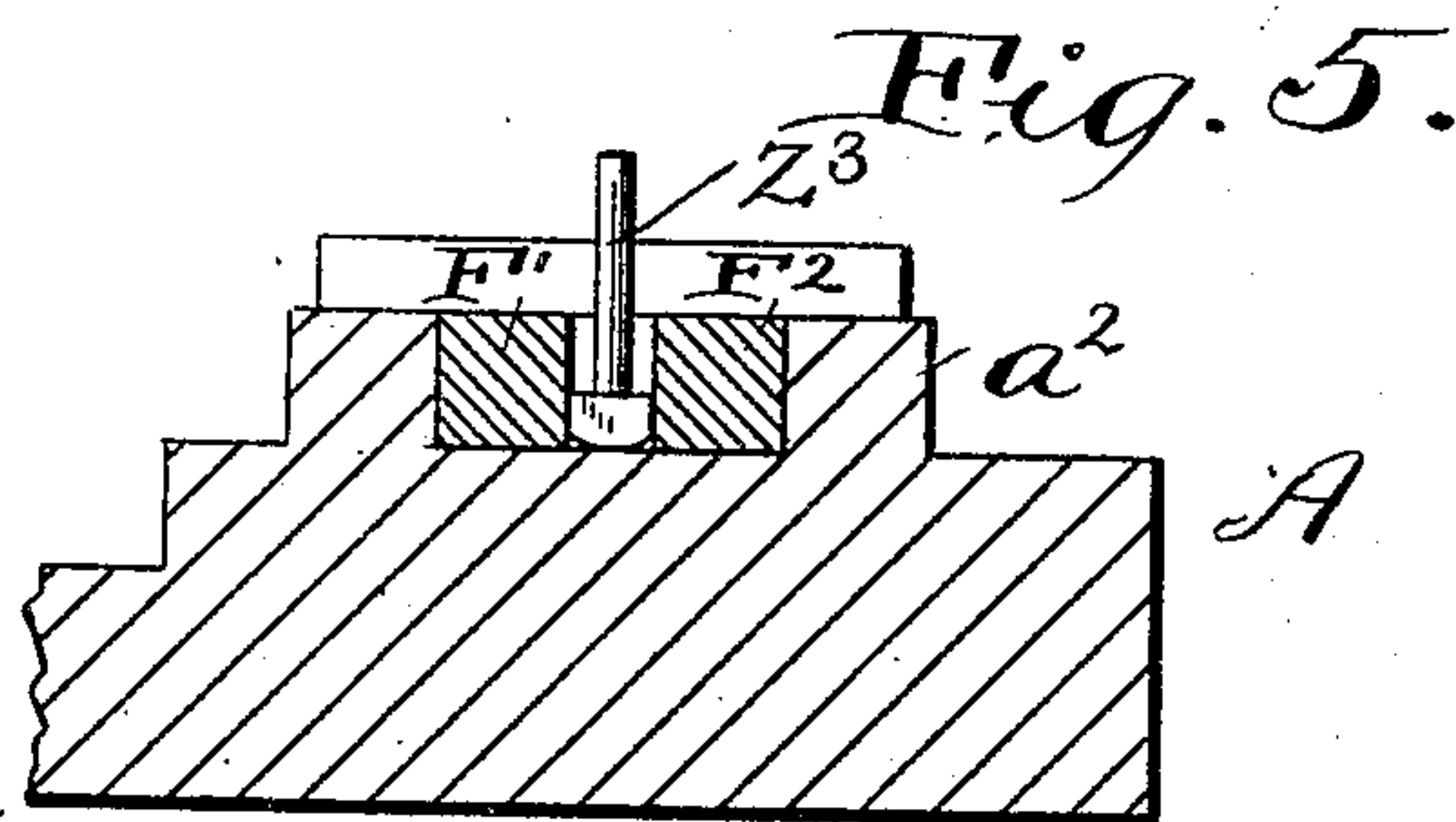
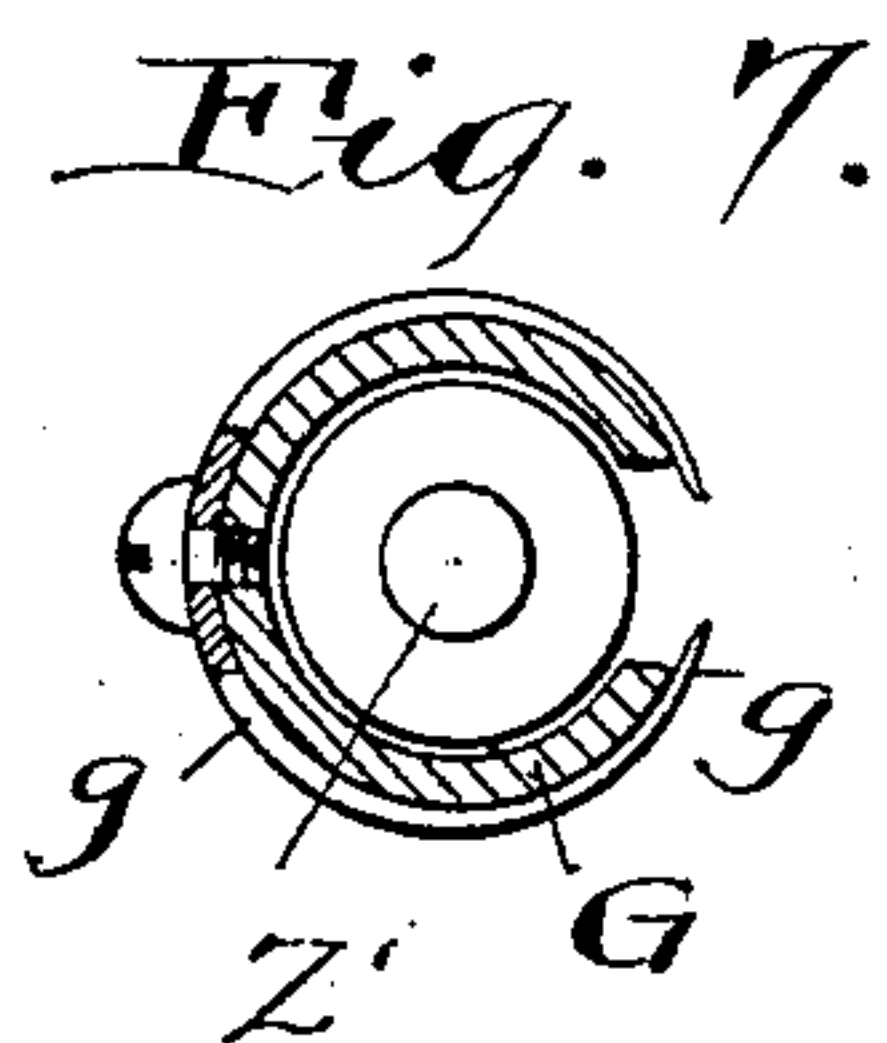
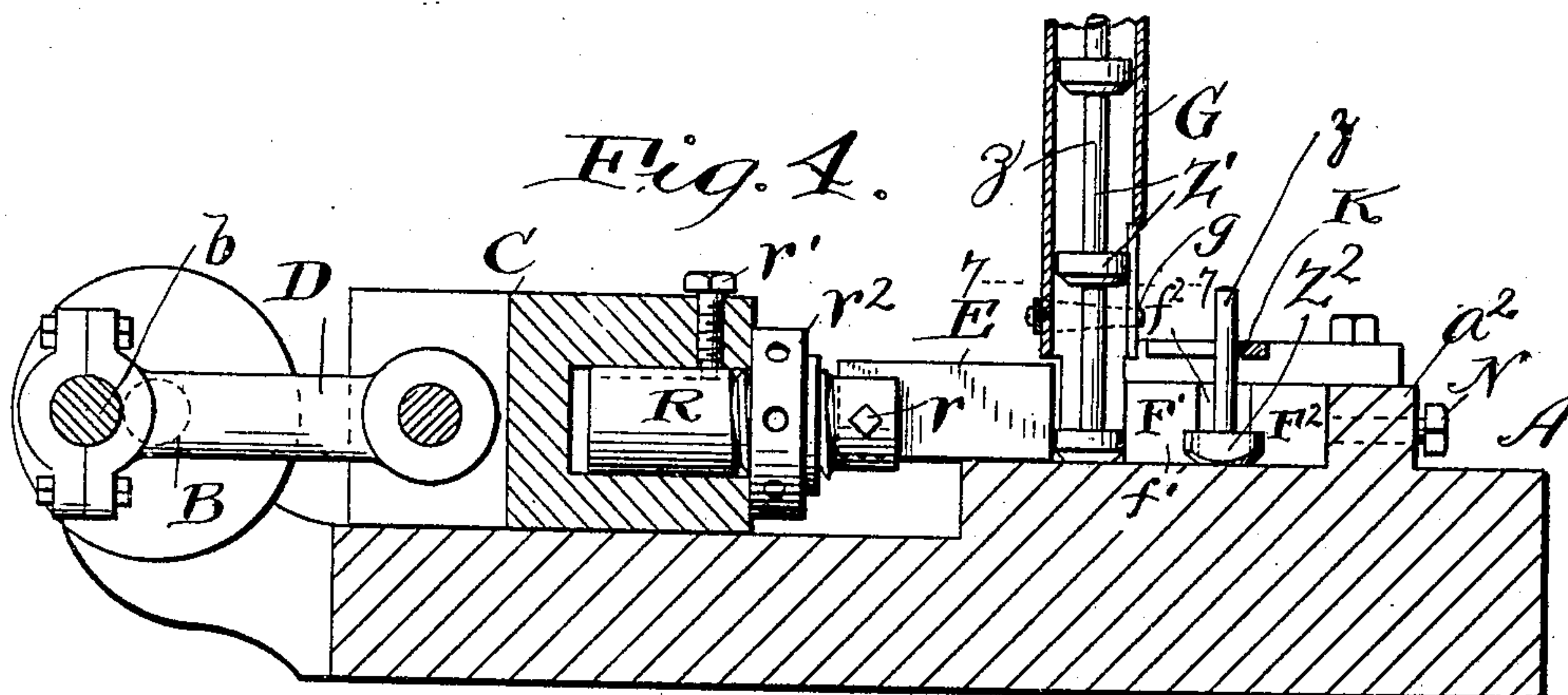
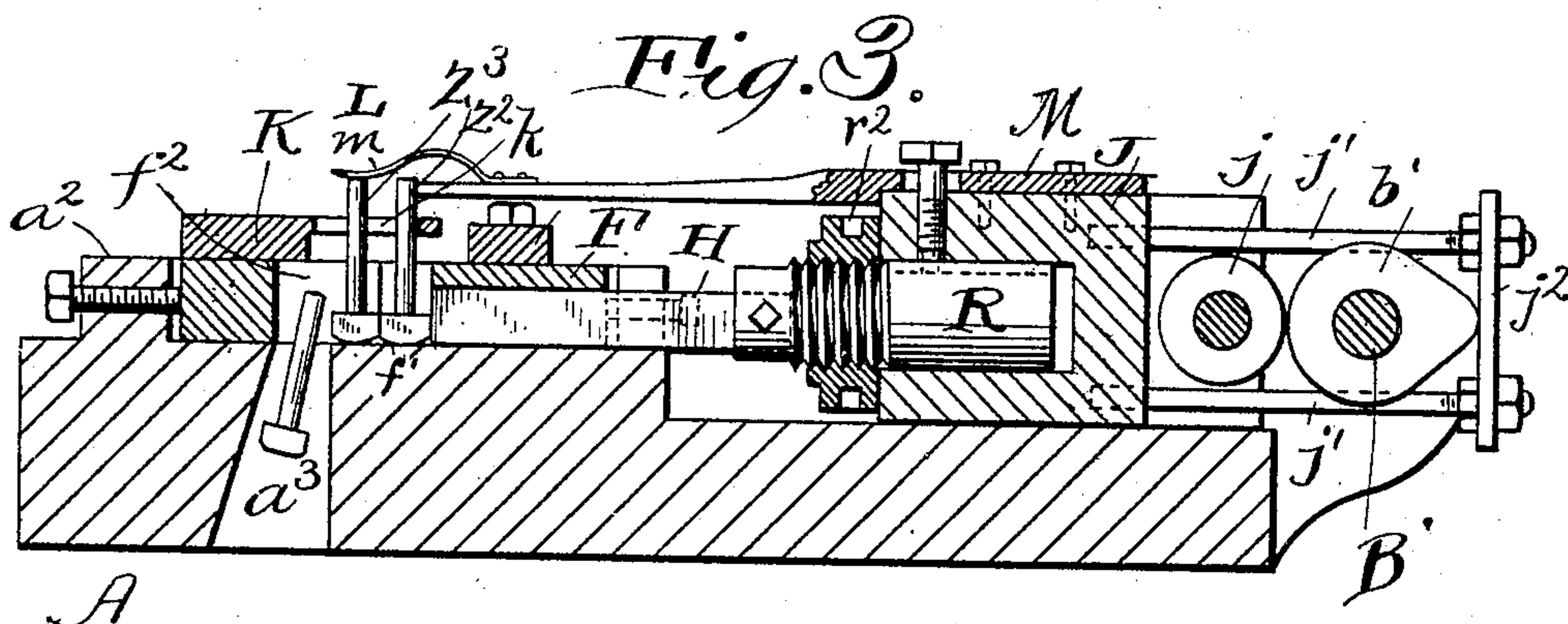
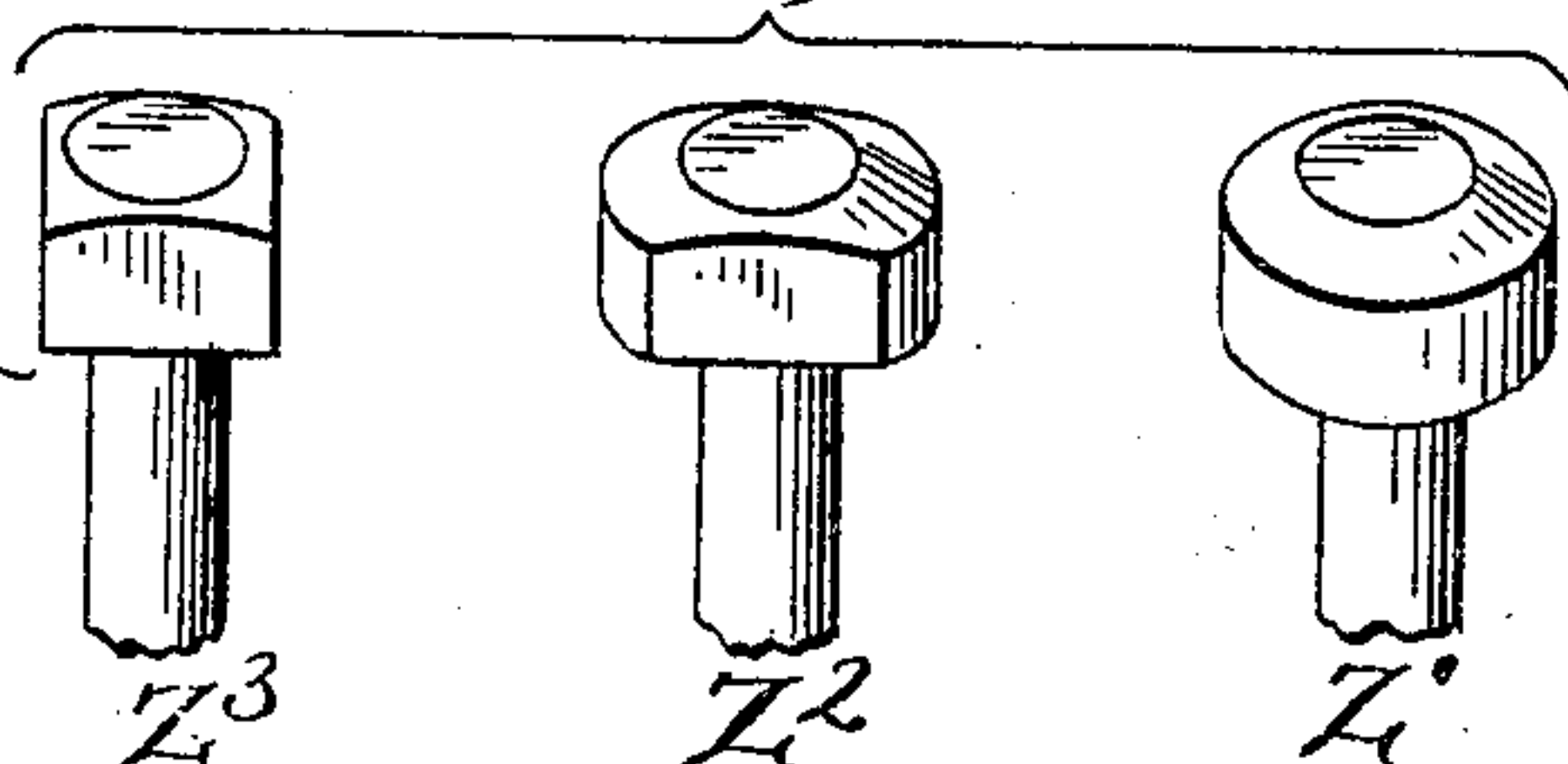


Fig. 6.

Witnesses.
E. B. Gilchrist
J. H. Hoke



Inventor:
Robert J. Rodd,
By his Attorneys,
Thurston & Bates

UNITED STATES PATENT OFFICE.

ROBERT J. RODD, OF CUYAHOGA FALLS, OHIO.

BOLT-TRIMMING MACHINE.

No. 835,255.

Specification of Letters Patent.

Patented Nov. 6, 1906.

Application filed February 15, 1905. Serial No. 245,657.

To all whom it may concern:

Be it known that I, ROBERT J. RODD, a citizen of the United States, residing at Cuyahoga Falls, in the county of Summit and State of Ohio, have invented a certain new and useful Improvement in Bolt-Trimming Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to a machine for trimming the heads of bolts to make them square.

Bolt-heads are usually formed by the process of upsetting. Sometimes this upsetting is done with a square die. This leaves a flash at the base of the head, which requires subsequent trimming. Better work is obtained by upsetting the head in a disk form and then trimming it square, for any unevenness at the outer edge of the upset is thus entirely removed.

The object of this invention is to provide a very simple and efficient machine to trim bolt-heads to remove either the flash or the surplus of the disk-like upset to produce a square head.

The invention comprises, broadly, a pair of plungers and coöperate dies at right angles to each other, so that two opposite sides of the head are first trimmed off and then the other two.

Other features of the invention will appear from the following more detailed description and the essential characters will be set out in the claims.

In the drawings, Figure 1 is a plan of the machine, omitting the driving-pulley and omitting the guide for the bolt as it travels through the dies. Fig. 2 is a plan of that portion of the machine immediately adjacent to the dies. Figs. 3 and 4 are vertical cross-sections on the lines 3 3 and 4 4 of Fig. 1. Fig. 5 is a vertical cross-section across the dies on the line 5 5. Fig. 6 shows in perspective the stock in its three stages, (reading from right to left)—namely, its form as it enters the machine, its intermediate stage during progress through the machine, and its completed form as delivered from the machine. Fig. 7 is a cross-section on the line 7 7 of Fig. 4.

In the drawings, A represents a suitable bed which carries by means of brackets the main driving-shaft B. On the bed A are guides *a*, between which slide the cross-head C. This cross-head is connected by a pitman

D with a double crank *b*, which forms a portion of the driving-shaft.

Carried by the cross-head C is a plunger E, the face of which is of the same width as the head of the finished bolt. Opposite the plunger E is a female die composed of the blocks F and F'. In front of these blocks is a vertical tube G, adapted to contain the stock Z' to be acted upon. The lower end of this tube is slotted to allow the entrance of the plunger E and the passage of it and the stock into the slot *f'* of the female die. Such movement of the plunger caused by the crank shears off the two opposite sides of the bolt-head, as shown at Z². A spring-clip *g*, secured around the tube G, chokes the exit therefrom sufficiently to prevent the bolts accidentally falling out. Guided in a recess in the block F is a plunger H, carried by a cross-head J, which slides in guides *a'* and is operated by a cam *b'* on the shaft B', which is shown as connected with a shaft B by bevel-gears *b*². At the time the plunger E shoves the stock between the blocks F and F' the forward end of the plunger H is flush with the face of the block F. The plunger E carries the stock nearly across the die F', leaving it directly between the plunger H and an opening *f*² between the die-blocks F' and F². The width of this opening and the width of the plunger H is the same as that of the opening *f'* and the plunger E. As soon as the plunger E ceases its forward movement the plunger H begins its forward movement under the influence of the cam *b'* bearing on the roller *j*, carried with a cross-head J. This forward movement of the plunger H immediately binds the bolt-head in position so that it cannot stick to the plunger E, which returns idly. During the return movement of the plunger E the plunger H is moved forward, forcing the bolt-head into the space *f*² between the blocks F' and F² and trimming off the other two sides to produce the complete product of the square-headed bolt, as shown at Z³. The plunger J is drawn back to idle position by means of the cam *b'* acting on a yoke carried by the cross-head. This yoke is shown as consisting of four bolts *j'* and a plate *j*² carried thereby.

The completed bolt remains in the space *f*² until the succeeding bolt is shoved onto this space by the plunger H. This movement advances the foremost bolt farther into the space *f*², whereupon its lower end passes over an opening *a*³, into which the

completed bolt drops. The bolt is shown as trimmed, with its shank z extending upward from the head, and in such position the shank is guided by means of an L-shaped slot k in a cap-plate K, which is secured to the frame a^2 , which carries the dies. Carried by the cross-head J is a bar M, (broken away in Fig. 1,) which engages this shank of the bolt when the plunger H engages the head. Mounted near the end of this bar is a leaf-spring M, which bears down on the upper end of the shank of the finished bolt Z^3 and forces the bolt down into the opening.

The blocks F' and F^2 are preferably made separate, being held apart by the distance-piece F^3 . The blocks are square in cross-section, as shown in Fig. 5. These blocks are held in place by the cap-plate K and by a number of set-screws N. Owing to the blocks F' and F^2 being separate, they may be removed and turned over to present new shearing edges when the ones in use become worn. It will be seen that by reason of the blocks being square in section each one has eight shearing edges—that is, four at each end—which can be used successively. The block F, which is grooved to receive the plunger H, is held in place by the cap-plate P and the set-screws Q. This block may be turned end for end to present a new shearing edge when desired.

The plungers E and H are each removably carried by their respective cross-heads in a similar manner. Thus each plunger is secured by a set-screw r within the bifurcated forward end of a holder R. This holder fits within a socket in the cross-head and is clamped thereto by a set-screw r' . The holder is adjusted forward and back by reason of a nut r^2 screwing onto it and bearing against the forward end of the cross-head. The set-screw r' extends into a groove in the holder, wherefore when loosened slightly it acts as a guide for that member, preventing its rotating.

By the above-described means the plungers are adjusted to have the proper effective position. The plunger E is so adjusted that at the end of its stroke it leaves the stock exactly in front of the plunger H. Any excess of movement upon the plunger E takes place before it engages the stock. On the other hand, the plunger H stands normally with its face in line with the front of the block F, and any excess of movement of this plunger takes place after it has engaged the stock and shoved it into the opening f^2 .

I claim—

1. In a trimming-machine, the combination of two sets of dies and plungers relatively positioned so that one plunger may cause the delivery of its blank in front of the other plunger for the further operation thereof, and a grooved block forming by its groove a guide for one of the plungers and by its face

one of the walls of the die for the other plunger.

2. In a trimming-machine, the combination with a suitable frame of two blocks and a shorter distance-piece between them constituting by the space between the blocks one die and by the adjacent ends of the blocks a wall of another die, means constituting the other wall of the last-mentioned die, and plungers cooperating with the two dies.

3. In a trimming-machine, the combination with a suitable frame, of two blocks, means for holding them separated whereby the space between the blocks constitutes one die and the adjacent ends of the blocks the wall of another die, means constituting the other wall of the last-mentioned die, and plungers cooperating with the two dies, said blocks being square in cross-section whereby they may be turned over on their sides to present new shearing edges.

4. In a trimming-machine, in combination, a frame having a rectangular recess, a pair of blocks and an intermediate distance-piece adjustably held therein, a die-wall opposite and some distance from the ends of said blocks, a plunger operating into the space between said blocks and said die-wall, and another plunger operating across such space to the opening between the two blocks.

5. In a trimming-machine, the combination of a grooved block, a plunger guided therein, the end of the block and the end of the plunger being adapted to make a continuous wall of a die, means constituting the opposite wall of the die, said latter wall having a recess opposite said plunger, and another plunger adapted to cooperate with the die which is made by said two walls.

6. In a bolt-trimming machine, the combination with a plunger and a die, of an upright tube adapted to carry the stock and discharge it in front of the plunger, said tube being slotted to allow the passage of the bolt-shank, and an incomplete ring embracing the tube and having its ends projecting yieldingly across the slot to restrict the passage-way therethrough.

7. In a bolt-trimming machine, the combination of a pair of dies at right angles to each other, a pair of plungers cooperating therewith, means for operating one plunger to move the stock into the first die opposite the second plunger, means for operating the second plunger to move the stock into the second die, and a guide having an L-shaped slot extending above the two dies for directing the shank of the bolt.

8. In a bolt-trimming machine, the combination of a pair of dies at right angles to each other, a pair of plungers cooperating therewith, means for operating one plunger to move the stock into the first die opposite the second plunger, means for operating the second plunger to move the stock into the sec-

ond die, there being an opening leading downward from the rear end of the second die, and a member engaging the upper end of the bolt-shank and adapted to force the
5 bolt downward into said opening when the second plunger brings it above the opening.

9. In a bolt-trimming machine, the combination of two sets of dies and plungers relatively positioned so that one plunger may
10 cause the delivery of its blank in front of the other plunger for the further operation thereof, and a pusher-bar carried with the second plunger and adapted to engage the shank of the bolt.

15 10. In a bolt-trimming machine, the combination of two sets of dies and plungers relatively positioned so that one plunger may cause the delivery of its blank in front of the
20 other plunger for the further operation thereof, there being an opening leading downward from the rear portion of the second die, and a spring member movable with the second plunger and adapted to engage the shank of the bolt to force the same endwise out of
25 the second die into such opening.

11. In a bolt-trimming machine, the combination of a pair of dies at right angles to each other and one leading from the other, a pair of plungers operating to engage the
30 heads of the bolts and shove them along their respective dies, and means for guiding the shank of the bolt during such movement.

12. In a trimming-machine, the combination of two sets of dies and plungers relatively positioned so that one plunger may
35 cause the delivery of its blank in front of the other plunger for the further operation thereof, a block forming a guide for one of the plungers and forming also one of the walls of the die for the other plunger, and means
40 for adjusting said block in a direction parallel with the movement of the plunger it guides.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

ROBERT J. RODD.

Witnesses:

EMORY A. PRIOR,
FRANK T. MOLONEY.