

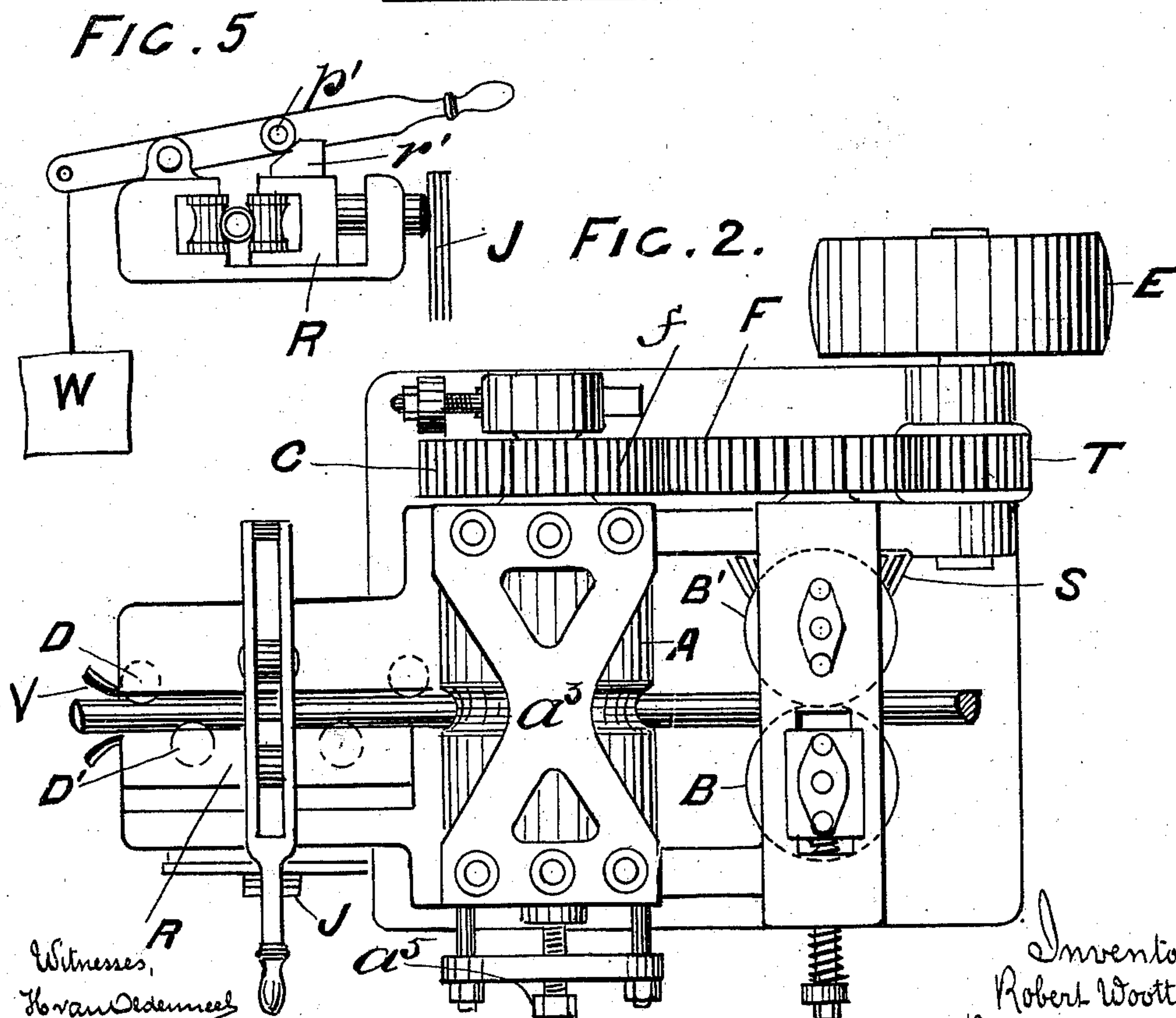
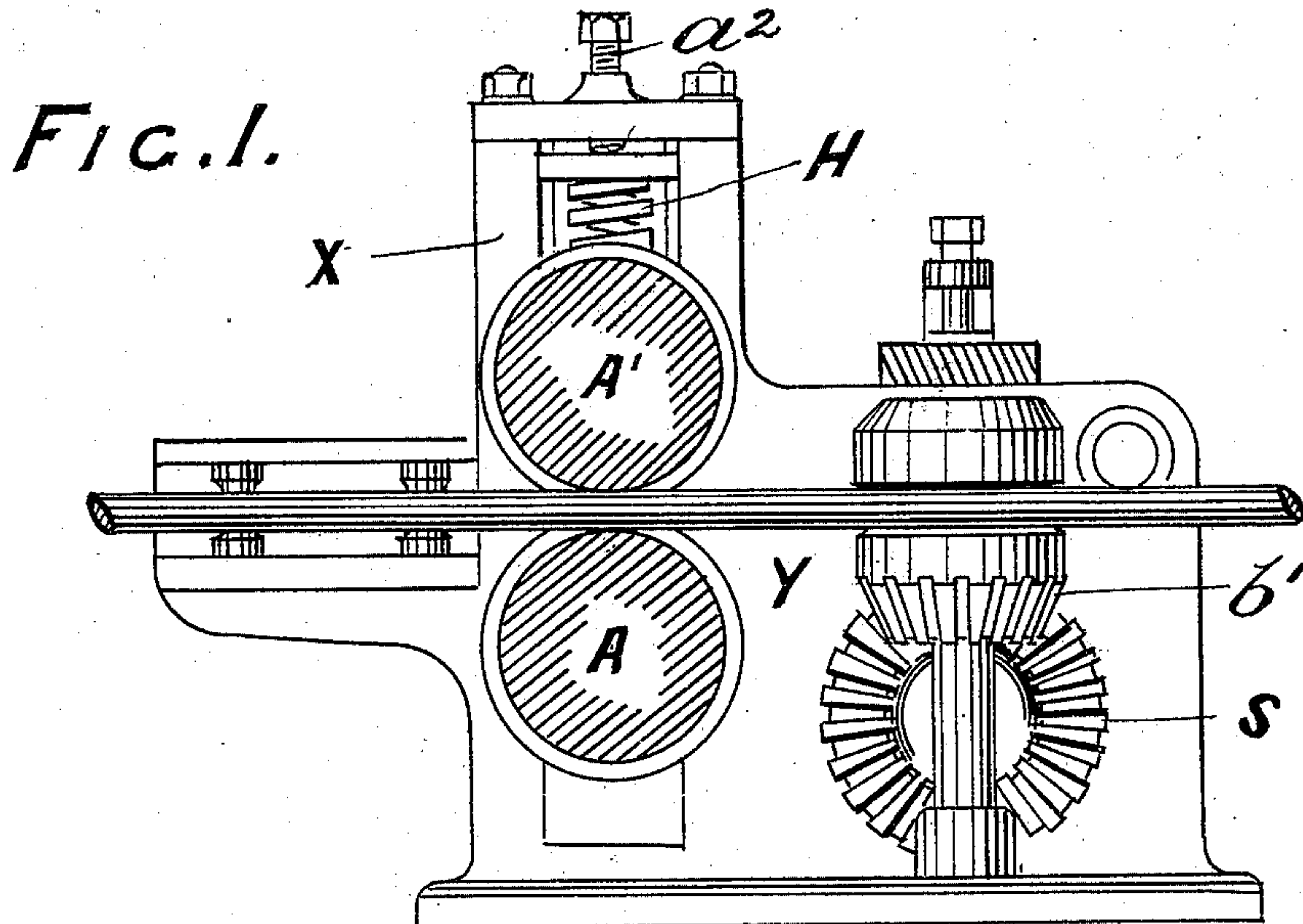
(No Model.)

2 Sheets—Sheet 1.

R. WOOTTON & B. HEWITT.  
MEANS FOR RELEASING TUBES FROM MANDRELS.

No. 547,234.

Patented Oct. 1, 1895.



Witnesses,  
H. van Ouden  
E. H. Stewart

Inventors  
Robert Wootton  
Benjamin Hewitt  
by *Richard R.*  
their Attorney

(No Model.)

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FIG. 3.

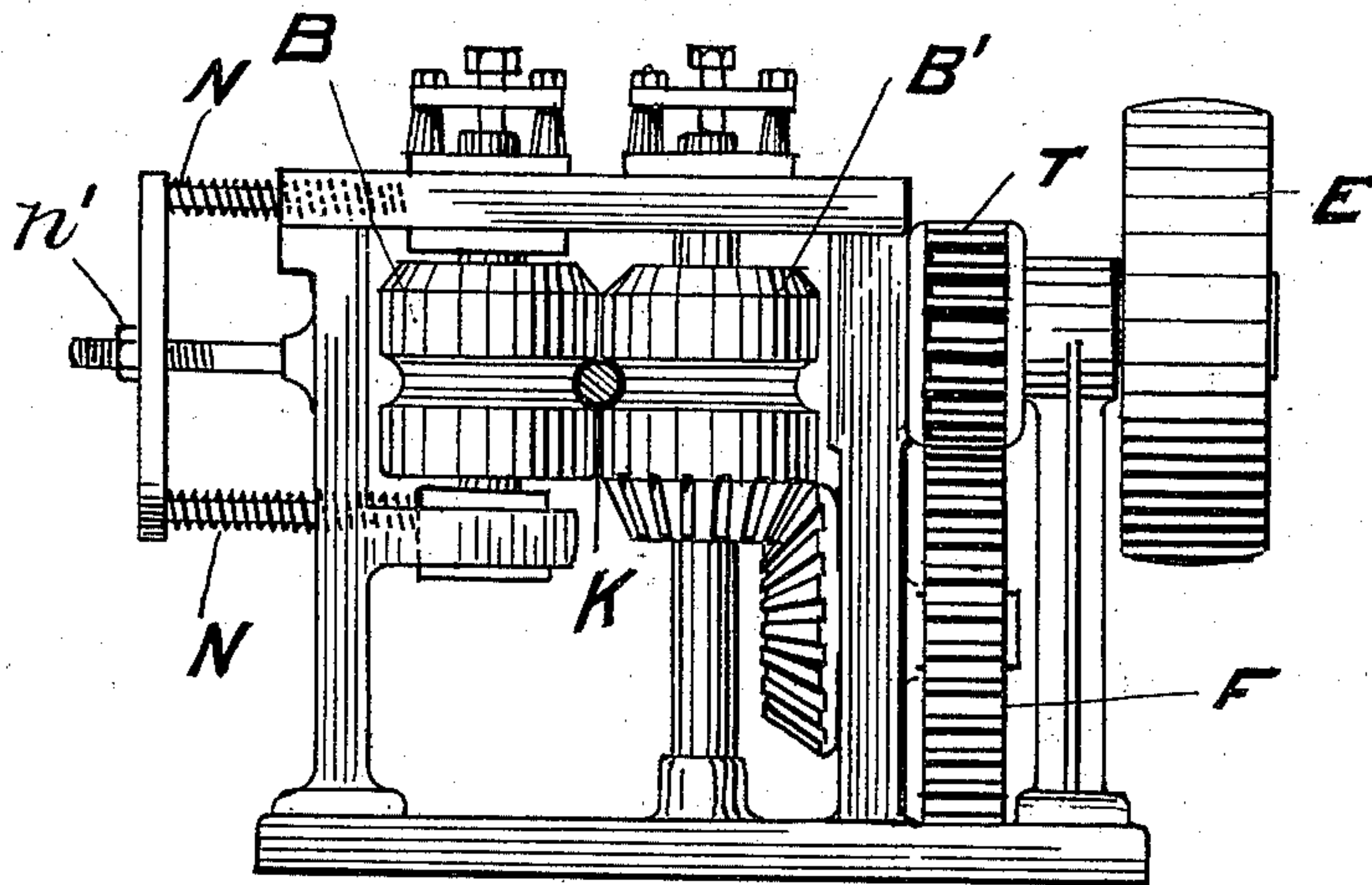


FIG. 6.

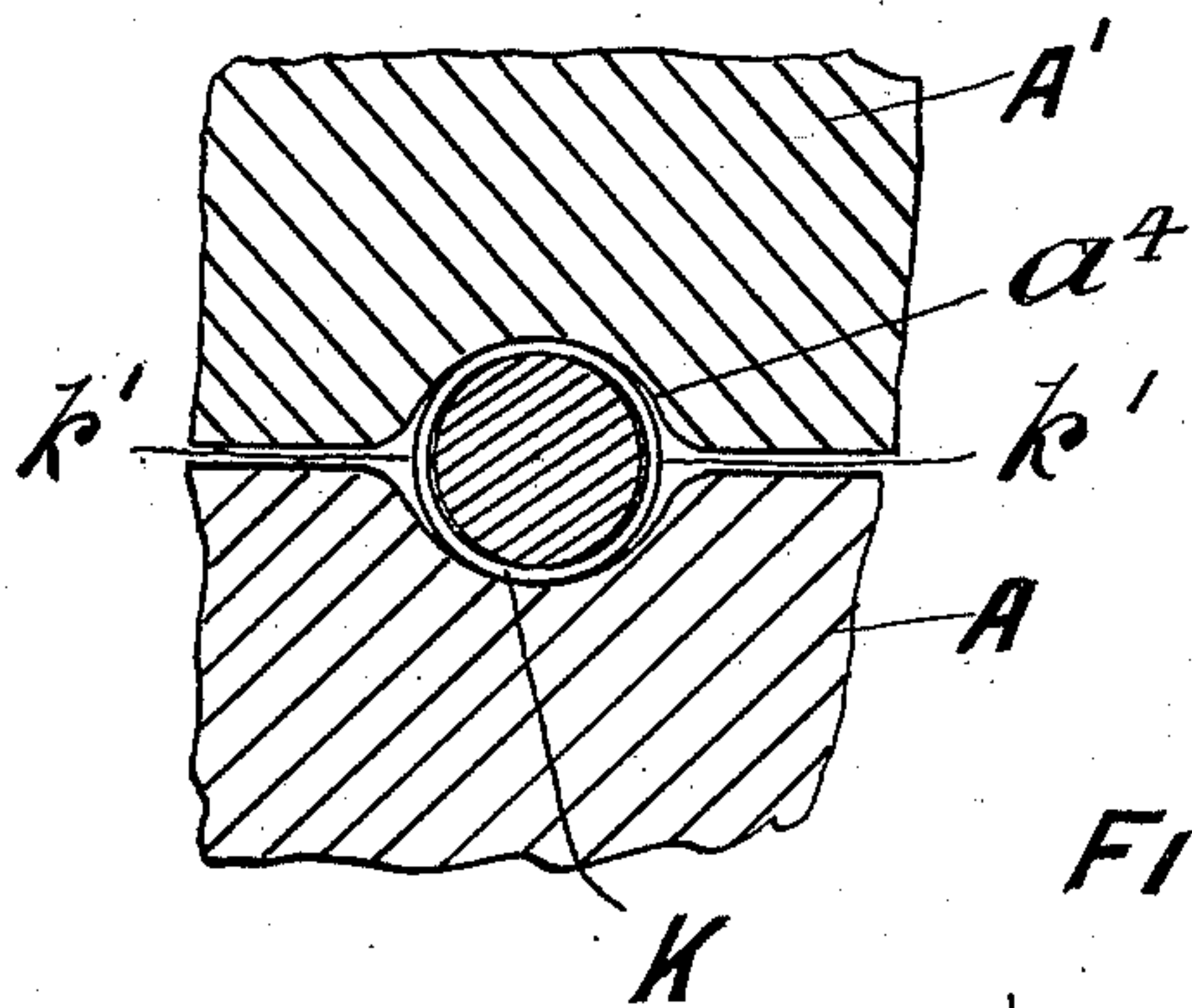


FIG. 7.

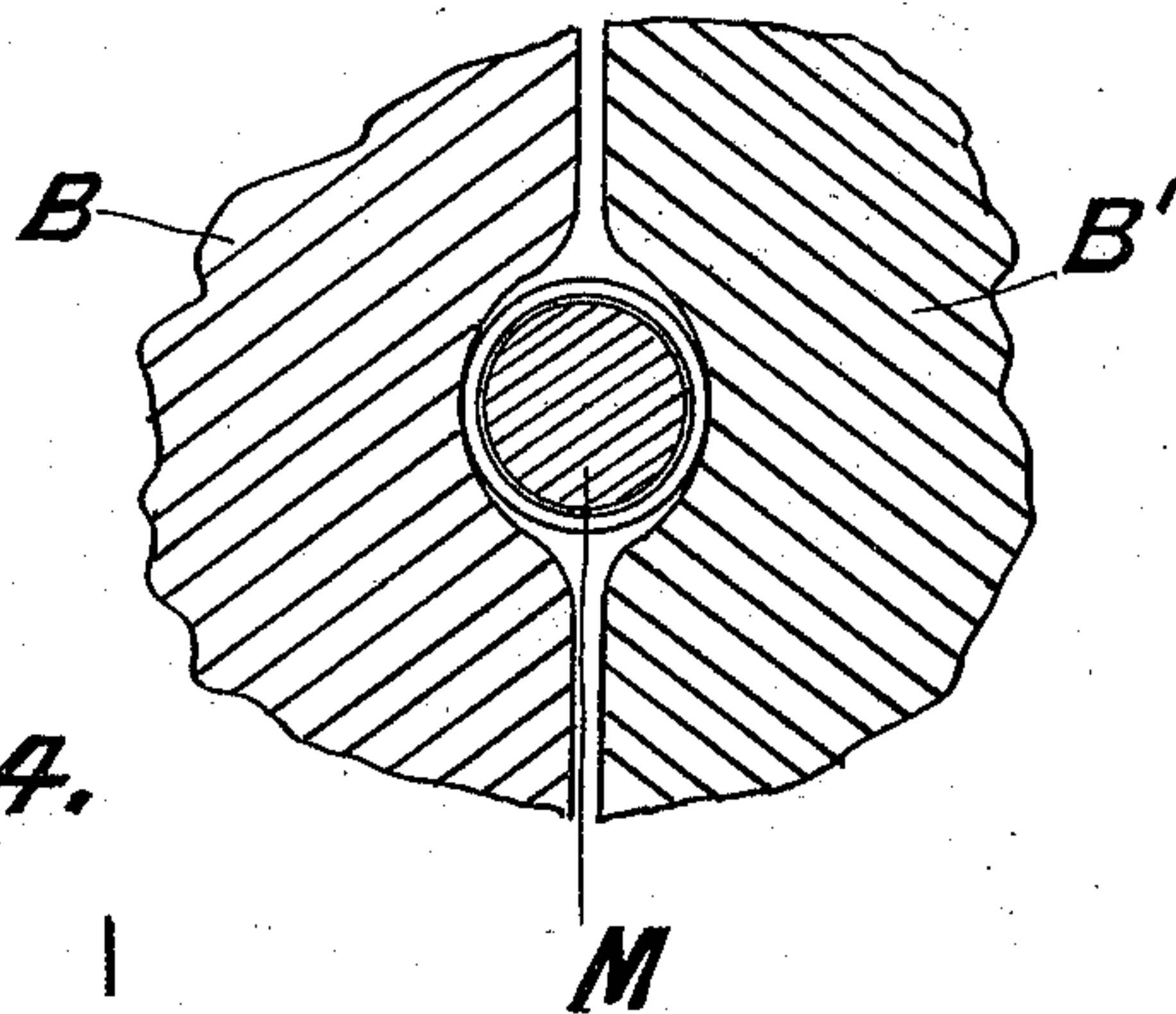
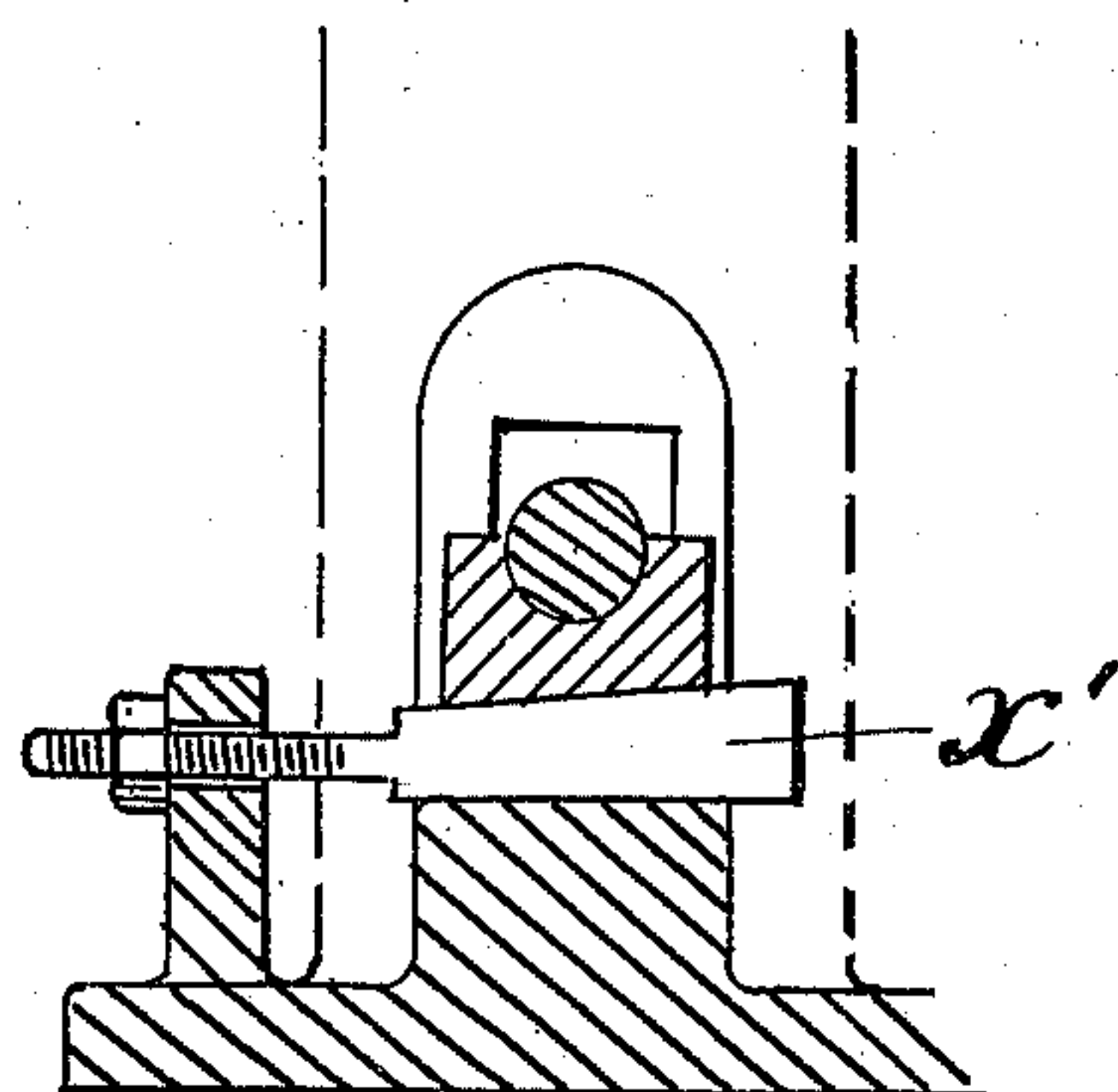


FIG. 4.



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# UNITED STATES PATENT OFFICE.

ROBERT WOOTTON AND BENJAMIN HEWITT, OF BIRMINGHAM, ENGLAND.

## MEANS FOR RELEASING TUBES FROM MANDRELS.

SPECIFICATION forming part of Letters Patent No. 547,234, dated October 1, 1895.

Application filed November 14, 1894. Serial No. 528,729. (No model.) Patented in England June 21, 1894, No. 12,012.

*To all whom it may concern:*

Be it known that we, ROBERT WOOTTON, gentleman, residing at Harborne Road, Edgbaston, and BENJAMIN HEWITT, engineer, residing at 72 Wiggin Street, Icknield Port Road, Birmingham, county of Warwick, England, subjects of the Queen of Great Britain, have invented certain new and useful Improvements in Means for Releasing Tubes from the Mandrel or Solid Bar upon which they are Drawn, of which the following is a specification.

The invention has been patented in England, No. 12,012, dated June 21, 1894.

Our invention has for its object improvements in means for releasing tubes from the mandrel or solid bar upon which they are drawn, by which we readily render the removal of such mandrels or bars easy of accomplishment, and this without in any way marking the tubes in the process.

In carrying our invention into effect we run the tubes containing the mandrel or solid bar through two horizontal rolls, which are so shaped that they press upon the tubes upon two sides only in such a manner that they roll the tube into a slightly-oval shape, the bulge taking place on each side of the tube which is not under the pressure of the rolls. These rolls are so geared as to feed the tube into two vertical rolls of a similar shape to those of the horizontal rolls which have their pressure upon those two sides of the tubes in which the bulge was made by the previous rolls, thus pressing it in and causing the reverse two sides which had been previously pressed to slightly bulge out from the mandrel or bar, by which means the tube is slightly enlarged without in any way altering its shape or marking it, as the rolls in each case are round, so that they present a perfectly-smooth surface to the tube. It will readily be seen that after the tube has been by these means slightly enlarged the removal of the mandrel or bar will be easy to accomplish, and in case of tubes other than those that are round in section we vary the shape of the rolls to suit the shape of the tube, so as to press or bite it first on two sides or at two points, and afterward upon the other two sides or two points, as before

described. One of the section pair of rolls may be geared to revolve, the other one revolving by friction, or the second pair of rolls may revolve entirely by friction.

In order that our invention may be clearly understood and more easily carried into practice, we have appended hereunto two sheets of drawings, upon which we have fully illustrated the nature of our said improvements.

Figure 1 is a cross-section through our machine. Fig. 2 is a plan of same. Fig. 3 is a part end elevation of the rolls B. Fig. 4 is a section through the housing of the lower rolls A. Fig. 5 is a front elevation of the straightening device at the entrance to the rolls B. Fig. 6 is an enlarged section of nip of the rolls A A'. Fig. 7 is an enlarged section of nip of the rolls B B'.

Our machine for the releasing of the tubes from the mandrel or solid bar upon which they are drawn consists of the horizontal rolls A A', mounted in suitable housings X, which also support the brackets Y or other suitable means for the pair of vertical rolls B B'. The rolls A A' are geared by the wheels C and are driven by the pulley E through the train of wheels T, F, and f', while the pinion F drives the vertical roll B by means of the intermediate bevel-wheels S and b'.

Straightening-rollers D and D' are provided at the entrance to the first pair of rolls A, the tube being guided in between same by a suitable trumpet-mouth V. The rollers D' are mounted upon the sliding block R, upon which the wedge-shaped block r' is mounted, the lever P being provided, so that upon being pressed its roller p' acts upon the block and forces it sufficiently far back for the tube to be easily inserted, after which upon the handle being released the block is retained with its pressure tight upon the tube, the pressure being obtained by any suitable spring, such as J. The lever P is retained out of action by the weight W. The pressure upon the rolls A A' is provided by the set-screw a<sup>2</sup> acting upon the intermediate springs H. The lateral adjustment of the rolls A A' is effected by the screw-pin a<sup>5</sup>, while the means for adjusting the nip of the rolls vertically is provided by means of the wedge-shaped blocks x', Fig. 4. This ar-



rangement allows of the nip of the two pairs of rolls A A' and B B' being brought exactly to a true line.

The pressure upon the vertical roll B is obtained by the nut *n'* through the intermediate springs N.

In releasing the tubes from the mandrel or solid bar upon which they are drawn we run the said tubes through the horizontal rolls A A', which are provided with the grooves *a*<sup>4</sup>, which are so shaped that they press upon the tubes K on two sides, as shown at Fig. 6, and thus roll the said tube into a slightly-oval shape, the bulge taking place at *k'* on each side. These rolls A A' feed the tube into the vertical rolls B B', which are of a similar shape to the horizontal rolls, but have their pressure upon the reverse sides of the tube, so as to slightly bulge out the sides which had been previously pressed, as shown at Fig. 7, the two pair of rolls being so made adjustable one to another, as before described, that the nip or pressure of the second pair of rolls is exactly at right angles to the nip or pressure of the feeding pair A A'. After the tube has been enlarged in this manner it will be seen that the removal of the mandrel or bar M is a comparatively easy matter. The roll B' may be geared instead of running by friction, as shown. The tube as it enters the rolls A A' is drawn through the rollers D D', and is thereby straightened by the process.

The rolls B B' may be formed with a groove

formed to the segment of a true circle, so as to bring the tube perfectly round in section. 35

We claim—

1. In combination the pairs of rollers A, A' arranged to press on the top and bottom of the tube leaving the sides free and the second pair of rollers B, B' arranged at right angles to the first set and in rear thereof to receive the tube after leaving the first set, said rollers being adapted to press on the sides of the tube leaving the top and bottom thereof free, all of said rollers being geared together to operate in unison and to feed the tube between them, substantially as described. 40 45

2. The improved machine for releasing tubes from solid mandrels composed of the horizontal rolls A A' and vertical rolls B B' geared together and set in the frame work and provided with the adjusting spring H regulated by the screw A<sup>2</sup> in combination with the spring N adjustable by the nut N' the whole being capable of adjustment in the self-containing frame work as herein set forth and shown. 50 55

In testimony that we claim the foregoing as our own we affix our names in the presence of two witnesses.

ROBERT WOOTTON.  
B. HEWITT.

Witnesses:

REGINALD LEW MORGAN,  
ALBERT NEMEY.