

(No Model.)

J. T. HASTINGS.  
METAL ROLLS.

No. 409,747.

Patented Aug. 27, 1889.

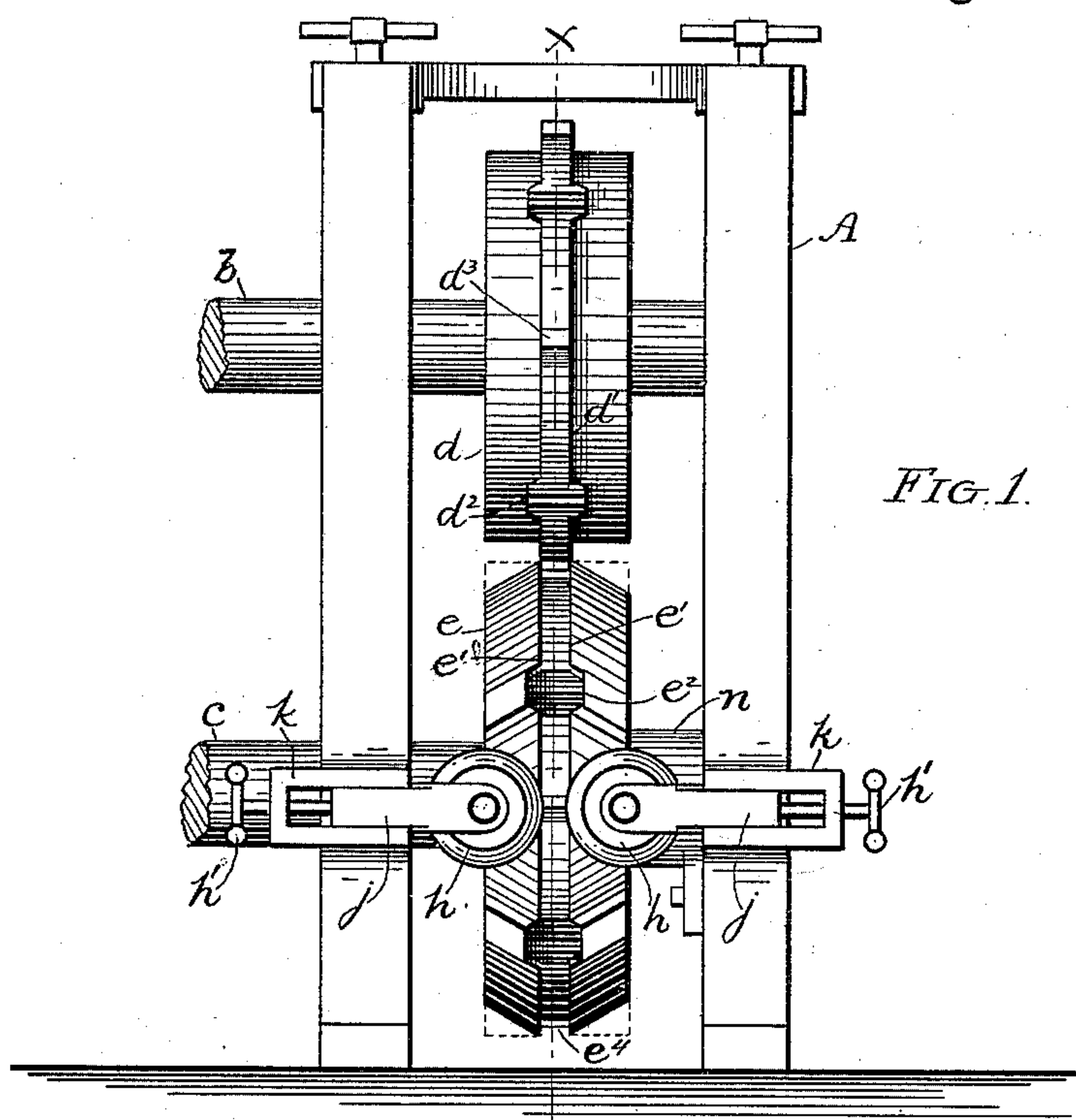


FIG. 1.

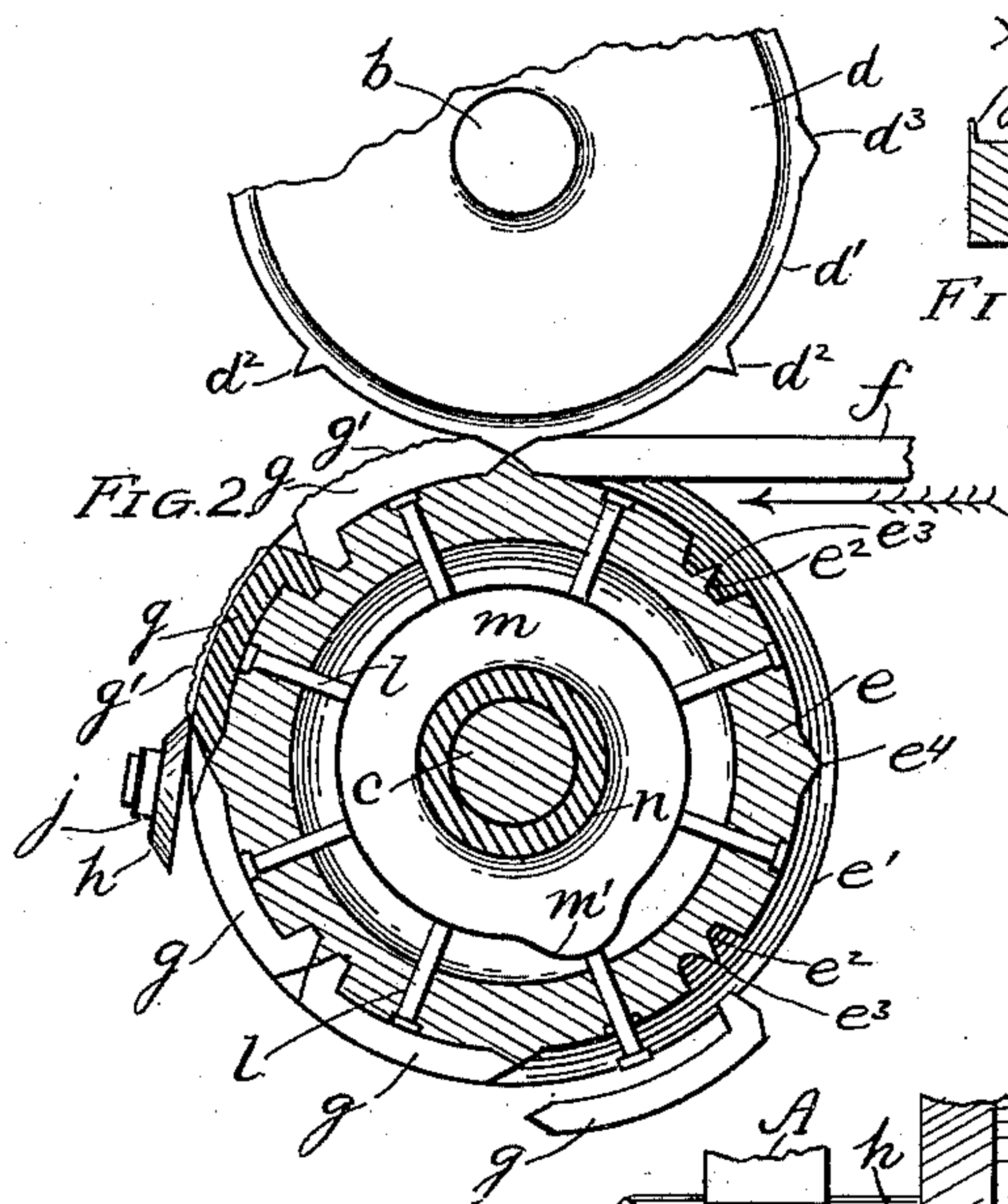


FIG. 2.

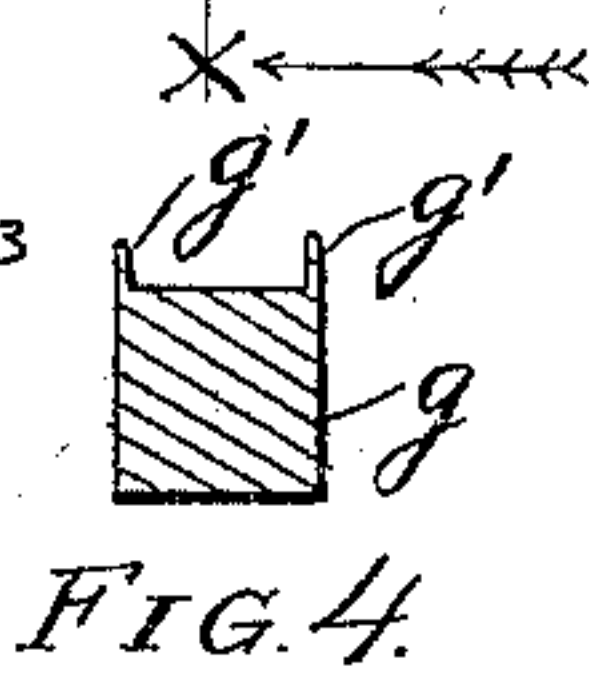


FIG. 4.

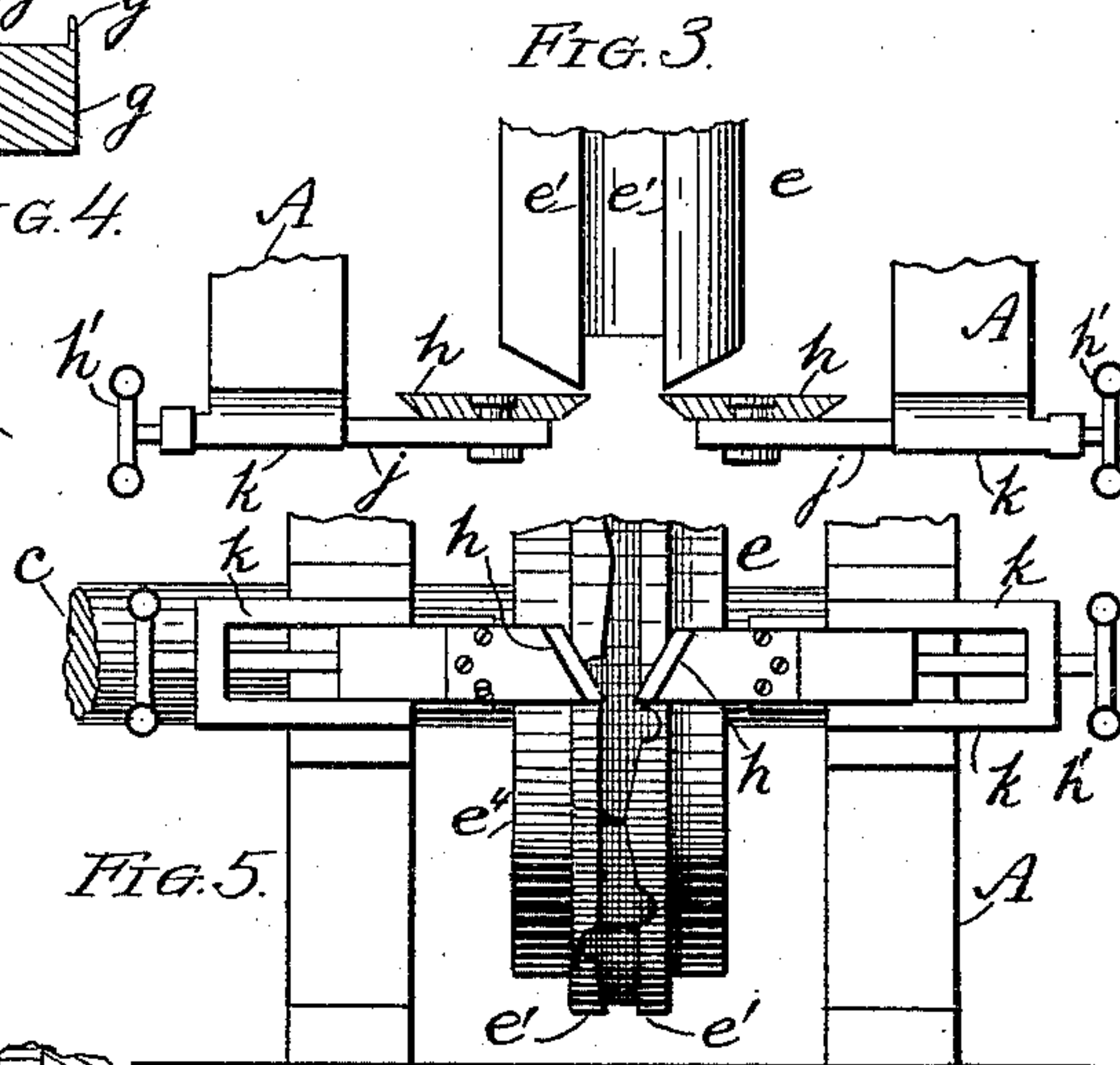


FIG. 5.

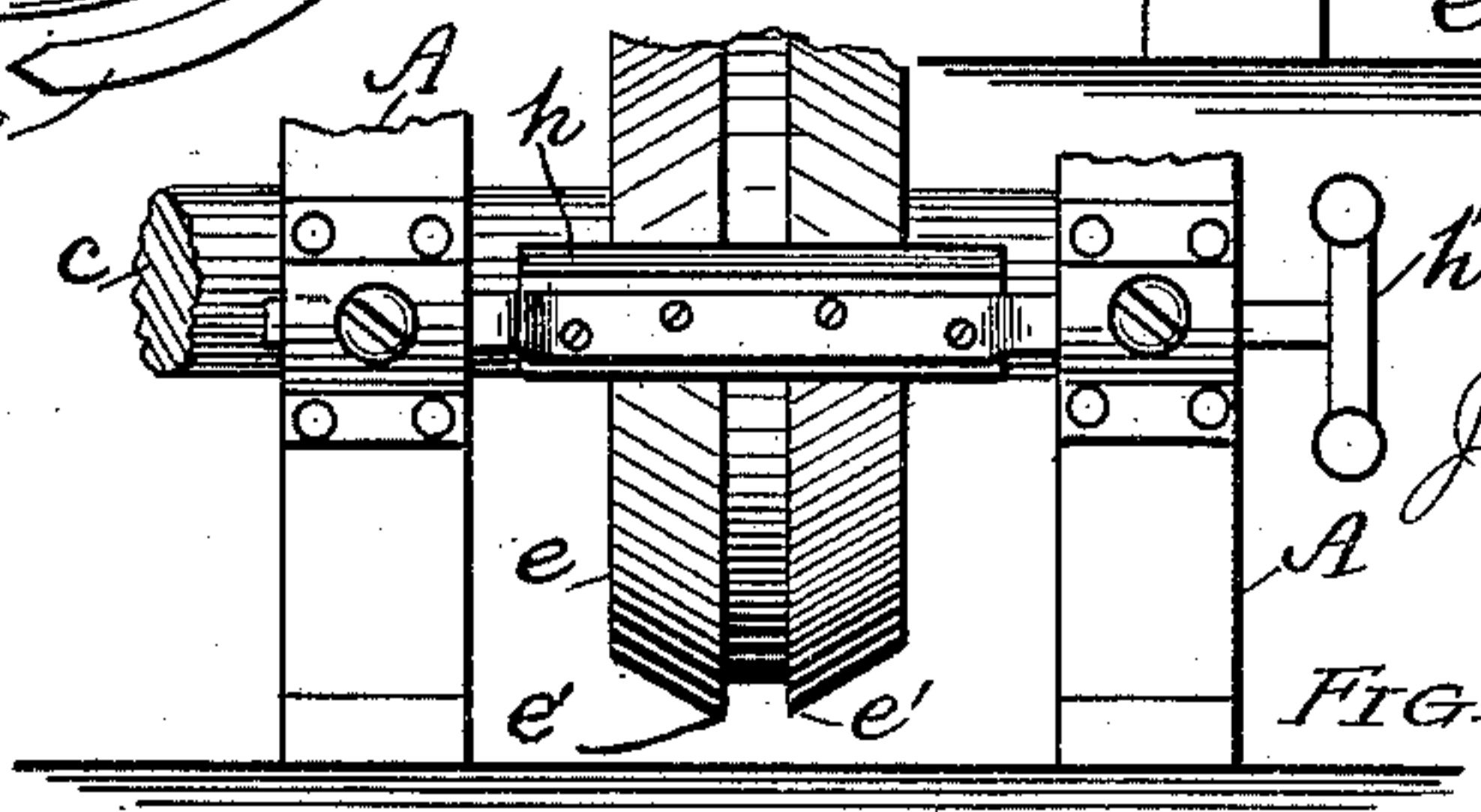


FIG. 6.

Witnesses:  
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# UNITED STATES PATENT OFFICE.

JAMES T. HASTINGS, OF CHICAGO, ILLINOIS.

## METAL-ROLLS.

SPECIFICATION forming part of Letters Patent No. 409,747, dated August 27, 1889.

Application filed January 25, 1889. Serial No. 297,538. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES T. HASTINGS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Metal-Rolls, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in which like letters of reference in the different figures indicate like parts.

My invention relates to metal-rolls, and more particularly to that class of rolls which are employed in making irregular forms, such as shaft-keys, railway-spikes, coupling-pins, horseshoe-nails, or any articles of irregular form which may be rolled from a continuous rod or bar of metal by means of rolls having male and female dies.

Heretofore it has been found that in the use of male and female rotary dies the metal is pressed outwardly between the sides of the male and the lips of the female die or matrix, thus leaving two "fins" upon the outer face of the article formed, which mars its symmetry and greatly lessens its value.

The object of my invention is to provide means for removing said fins simultaneously with the forming of the article rolled, thus making a product so nearly complete as to merely require straightening to render it fit for use. I accomplish said object in the manner hereinafter more particularly described and claimed.

Figure 1 in the drawings is a front view of a machine, showing my improvement combined therewith. Fig. 2 is a side view in detail of said rolls, one of which is shown in section; said rolls being shown in the act of forming railway-spikes from a single bar. Fig. 3 is a plan view in detail of the roll containing the female dies, with the rotary cutters in operative connection with said roll. Fig. 4 is a sectional view of a piece of metal formed in said rolls, showing the fins formed thereon. Fig. 5 is a face view in detail of a modified form of roll, showing stationary cutters in connection therewith; and Fig. 6 is a like view showing a still further modification in the form of cutter employed.

Referring to the drawings, A represents the roller-frame; b c, the roller-shafts, which are

mounted in suitable bearings in said frame, and d e the rolls upon which respectively are formed the male and female dies. Upon the roll d is formed the male die d', with a series of sharp-edged projections d<sup>2</sup> d<sup>3</sup>, which, in conjunction with similar features, as hereinafter stated, in the matrix-die, serve to sever the articles formed from the bar from which they are made. The female die e is provided with lips e' e' and depressions e<sup>2</sup>, for the purpose of forming enlargements upon the articles rolled, and sharpened projections e<sup>3</sup> e<sup>4</sup>, conformatory in position to the projections d<sup>2</sup> d<sup>3</sup>, so that as the rolls are revolved said projections upon the opposite dies serve to cut the articles formed from the bar and shape their respective ends as fast as they are passed into the rolls.

In Fig. 2 I have shown the dies constructed for the formation of railway-spikes. In said view, f represents the bar from which said spikes are formed, while g indicates the spikes themselves, the heads of which are formed in the depressions e<sup>2</sup>, while they are severed from each other by means of the knife-edged projections named, acting conjointly with each other. As the bar f is fed to the rolls the metal is pressed upwardly into the spaces between the sides of the male and the lips e' e' of the female die, thereby forming what are known as "fins" g' g', Figs. 2 and 4, thereon.

In order to remove said fins I provide one or more cutters h, either rotary or stationary, which are placed in a plane substantially parallel to the axis of the roll.

In Figs. 2 and 3 I have shown rotary cutters attached to rests j j, loosely secured in bearings k k, attached to the frame and fitted to slide accurately therein. Set-screws h' permit said cutters to be adjusted to any desired position. As the roll e is revolved said rotary cutters engage with the fins g', are revolved thereby, and thus sever said fins from the body of the spike or other article. It is obvious that said cutters should be placed in close proximity to the periphery of the lips of the female die, as clearly shown in the drawings.

In Fig. 5 the cutters h are shown as having beveled and obliquely-formed edges, and are adjustably secured in the sliding bearings.



In Fig. 6 a single stationary cutter is represented, having its cutting-surface in a plane at right angles to the plane of the die.

In Fig. 2 I have indicated the well-known method of removing the spikes or other articles *g* from the die. This consists of a series of pins *l*, arranged loosely and radially within the die, in connection with a stationary cam *m*, attached to a sleeve *n*, (see Fig. 1,) in which the shaft *c* revolves. The projection *m'* upon the cam engages with the pins as the roll is revolved and pushes out the spikes, which are curved to conform to the roll and only require to be straightened to be ready for use.

In most of the figures I have shown the lips of the matrix-die brought to a knife-edge; but this is, obviously, not essential. In Fig. 5 they are shown to be flat-faced, which shape is also indicated in dotted lines in Fig. 1.

As it is customary to place the axes of the rolls in a horizontal plane, the fins described formed upon the rolled product would be vertical when formed. Upon this assumption I term them "vertical" fins, as distinguished from the lateral fins formed by rolls, the dies of which do not mesh into each other.

Having thus described my invention, I claim—

1. The combination, with rotary dies, of a cutter placed in operative proximity to the periphery of the matrix-die, whereby the vertical fins formed upon the article rolled may be severed at a single operation, substantially as shown and described.

2. The combination, with rotary dies, male and female, of an adjustable cutter placed in operative proximity to the periphery of the female die, substantially as shown and described.

3. The combination, with rotary dies, male and female, of one or more cutters placed in operative proximity to the periphery of the female die, and means for adjusting said cutters with relation to the lips of said female die, substantially as shown and described.

4. The combination, with male and female revoluble dies, of cutters placed in operative proximity to the periphery of the female die, sliding rests secured in the frame for sustaining said cutters, and set-screws for adjusting the position of said cutters, substantially as shown and described.

5. The combination, with rotary dies, male and female, of an adjustable cutter arranged in operative proximity to the periphery of the female die, and in a plane substantially perpendicular to that of the roll, substantially as shown and described.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 19th day of January, 1889.

JAMES T. HASTINGS.

Witnesses:

D. H. FLETCHER,  
J. HALPENNY.