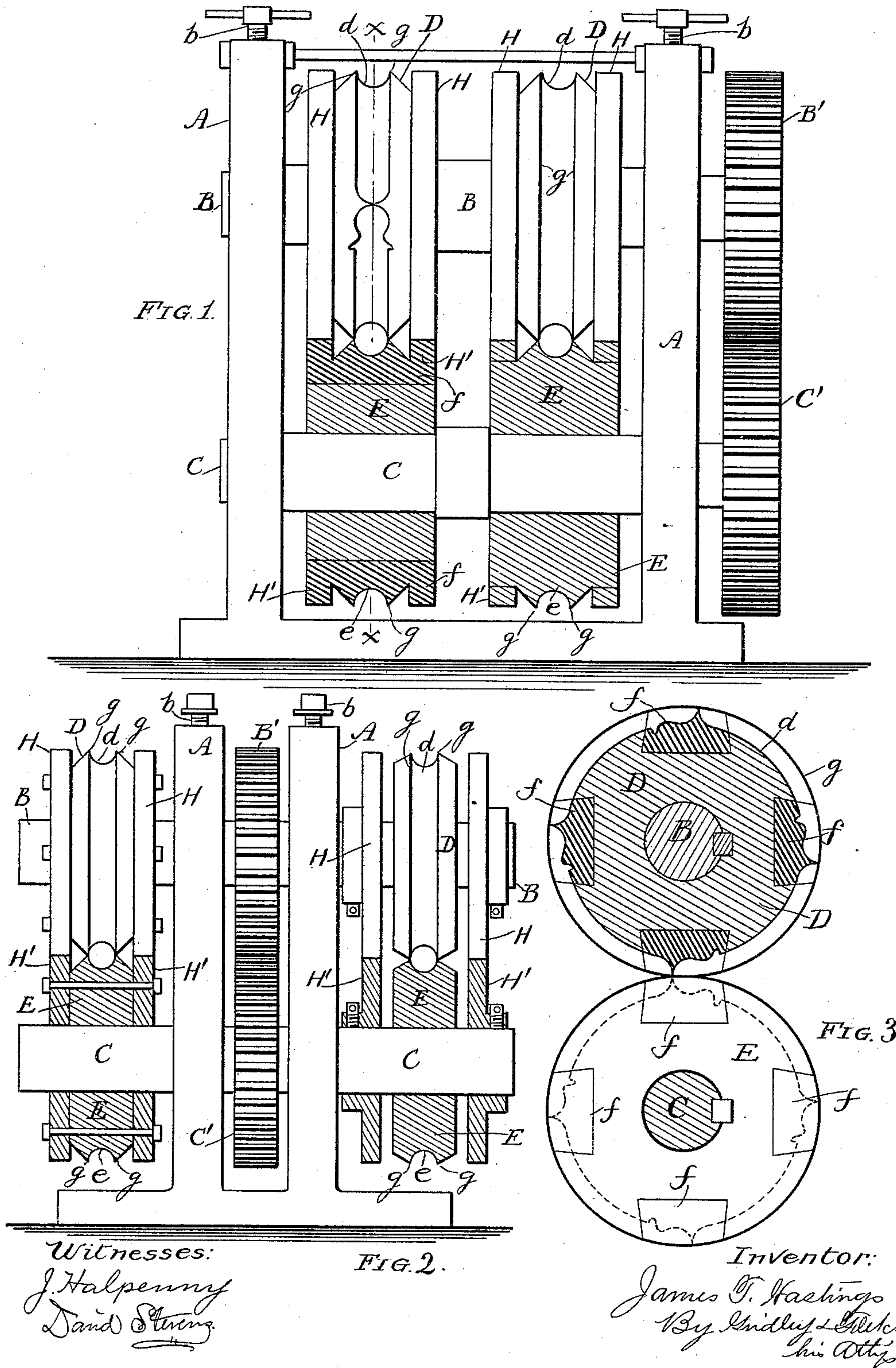


(No Model.)

J. T. HASTINGS.  
METAL ROLLS.

No. 409,679.

Patented Aug. 27, 1889.





# UNITED STATES PATENT OFFICE.

JAMES T. HASTINGS, OF CHICAGO, ILLINOIS.

## METAL-ROLLS.

SPECIFICATION forming part of Letters Patent No. 409,679, dated August 27, 1889.

Application filed March 12, 1889. Serial No. 302,999. (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, in which like letters of reference indicate like parts.

As is well known, in the rolling of metal a certain portion thereof is pressed laterally between the contiguous faces of the rolls, thereby forming a thin lateral film or flange, to prevent which I have formed a knife-edge adjacent to the matrix of the die which severs the film from the article rolled; but it is difficult in practice to adjust the rolls with sufficient accuracy in relation to each other, and careless workmen are liable to press them too closely together, and thus injure the cutting-edges and render them worthless. My object is to overcome this difficulty and to provide means whereby the dies may be adjusted with accuracy and without injury thereto. I accomplish this object in the manner hereinafter more particularly described and claimed.

Figure 1 in the drawings represents a front elevation of a machine embodying my improvements and showing two of the rolls in transverse section. Fig. 2 is a like view showing a modification thereof; and Fig. 3 is a view taken upon the line  $x x$ , Fig. 1.

Referring to the drawings, A represents the frame of the roller-mill, in which are journaled shafts B C, connected by means of the usual gears B' C'. Set-screws  $b b$ , connected with the usual sliding journal-boxes, serve to adjust said shafts with relation to each other.

D E indicate the rolls in which are formed dies  $d e$  of any desired shape. Such parts of the dies as require irregular forms I prefer to make in detachable sections and insert them in the rolls, as shown at  $f$ , Fig. 2. Upon each side of the dies  $d$  are formed knife-edges  $g$ , which, it is obvious, if pressed too closely together by means of the set-screws  $b$  would be injured. To prevent this I provide guard-rolls H H', preferably upon both sides of each of said die-rolls; but it is obvious that but one pair of guard-rolls need be used. Said guard-rolls are preferably made of the exact diameter of the die-rolls in the plane

of the said knife-edges  $g$ , and are of course concentric therewith, so that when the peripheries of said guard-rolls upon the respective shafts are brought into contact said opposite knife-edges are made to merely touch each other, but not with sufficient contact to cause injury thereto.

It is obvious that the diameter of the respective guard-rolls may vary so long as they are concentric with the adjacent forming-rolls. Said guard-rolls may be made integral with the forming-rolls, as shown upon the left in Fig. 1; they may be formed in rings and shrunk upon shoulders, as shown upon the right in said figure; they may be bolted to the respective sides of the roll, as shown at the left in Fig. 2; or they may be attached to the shafts independently of the rolls, as shown at the right in said last-named figure. In either event they enable the forming-rolls to be adjusted with absolute accuracy by simply tightening the set-screws  $b b$ , while the lateral film which is severed by the knife-edges is free to discharge itself between said guard-rolls and the beveled edges of the forming-roll.

Having thus described my invention, I claim—

1. The combination, with metal forming-rolls having cutting-edges adjacent to their matrices, of guard-rolls concentric therewith and fitted to be brought into peripheral contact with each other, substantially as shown and described.

2. The combination, with metal forming-rolls in which a cutting-edge is formed adjacent to the die-matrix, of guard-rolls concentric with said forming-rolls, respectively, and arranged to be brought into peripheral contact with each other, and means for adjusting the relative positions of the roller-shafts, substantially as shown and described.

3. The combination of the rolls D E, cutting-edges  $g$ , guard-rolls H H', and set-screws for adjusting the roller-shafts, substantially as shown and described.

In testimony whereof I have signed this specification, in the presence of two subscribing witnesses, this 9th day of March, 1889.

JAMES T. HASTINGS.

Witnesses:

D. H. FLETCHER,  
J. HALPENNY.