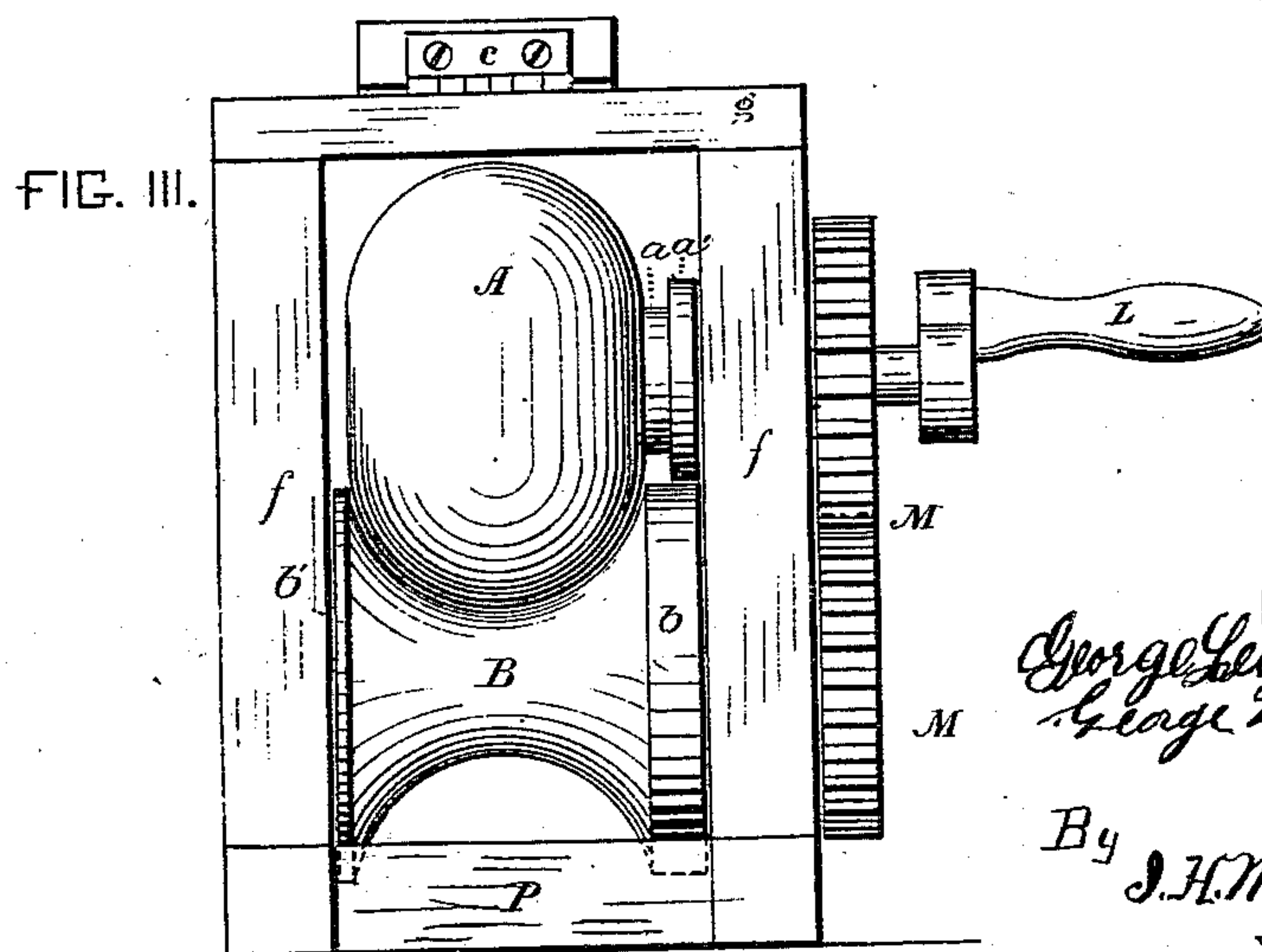
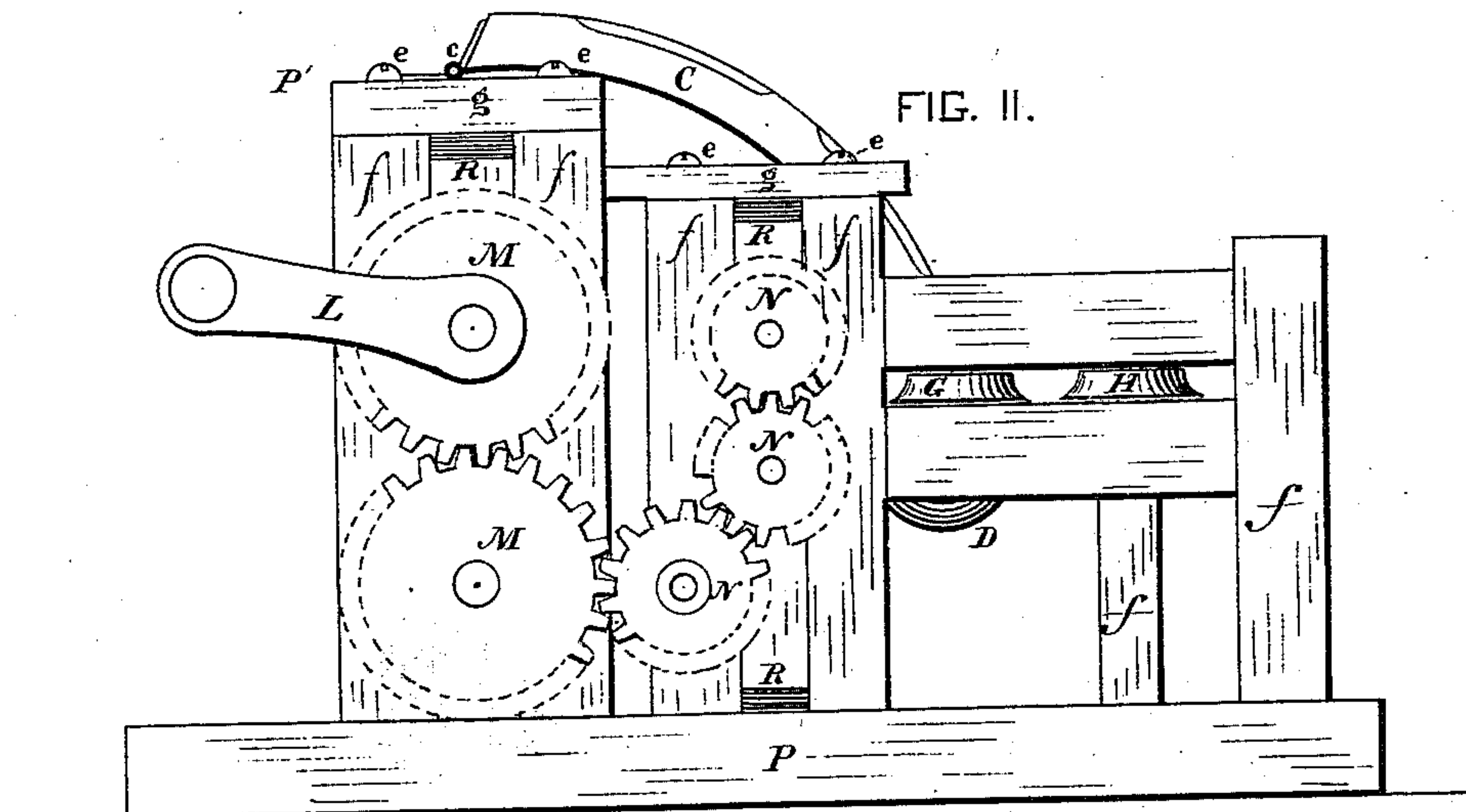
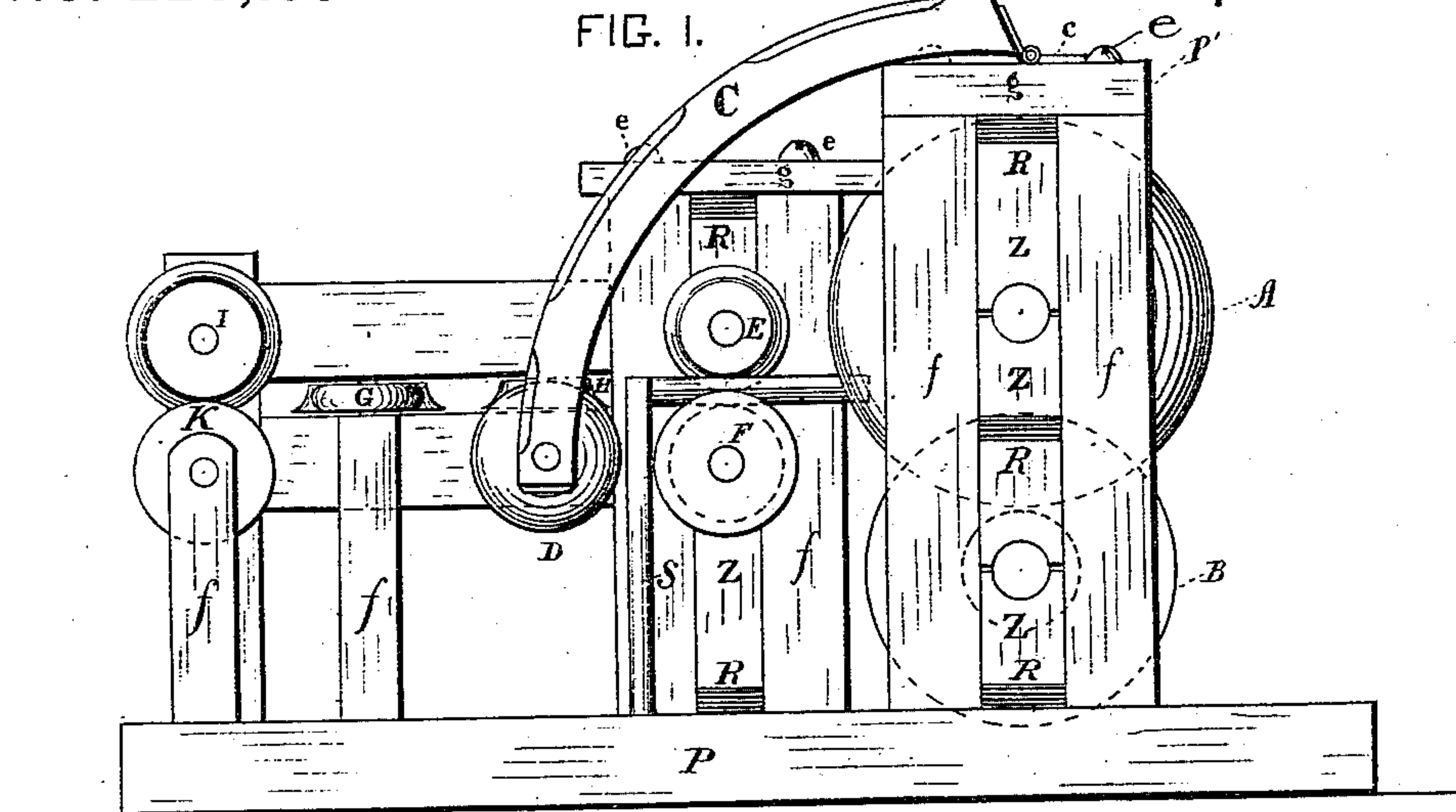


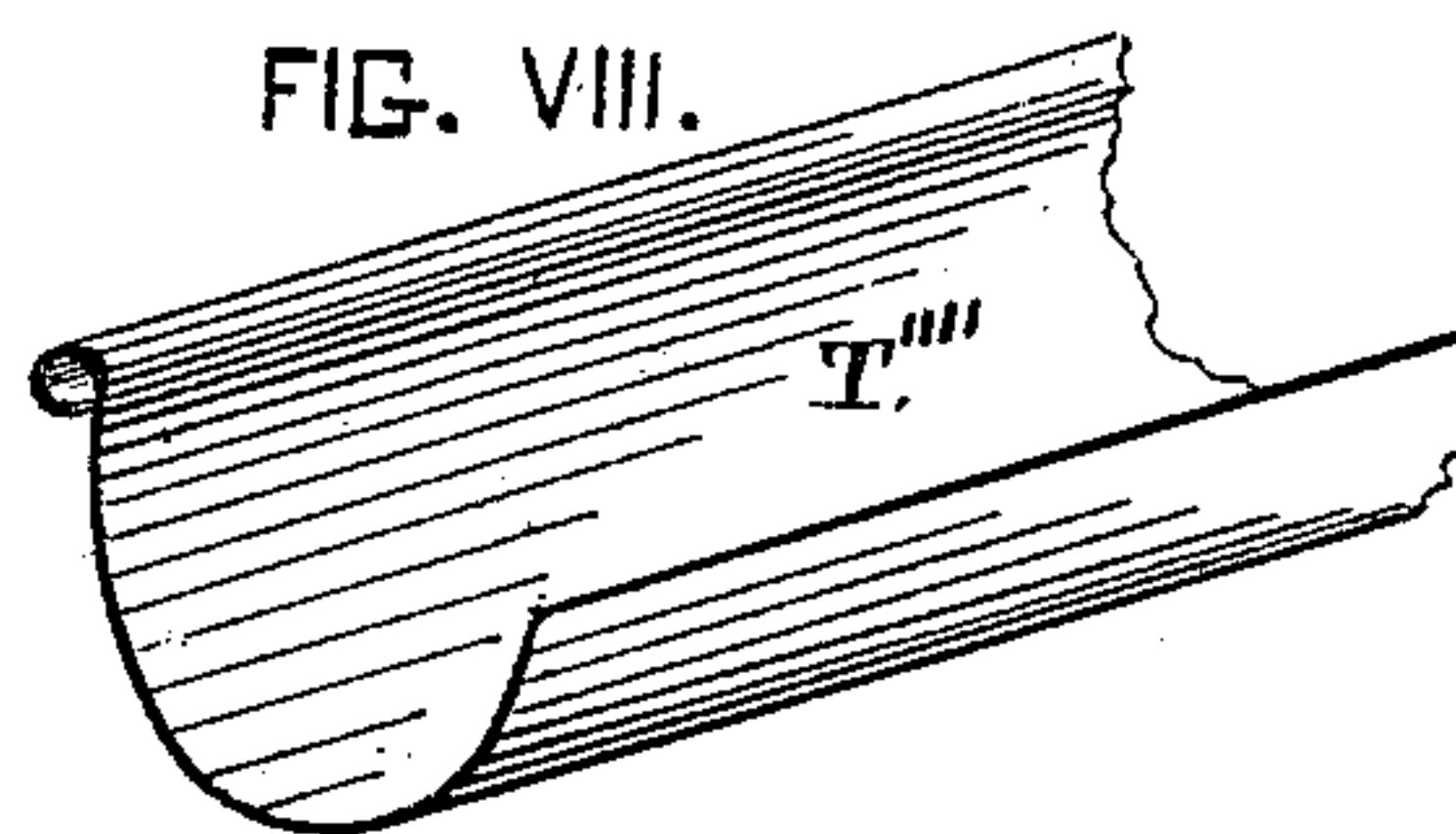
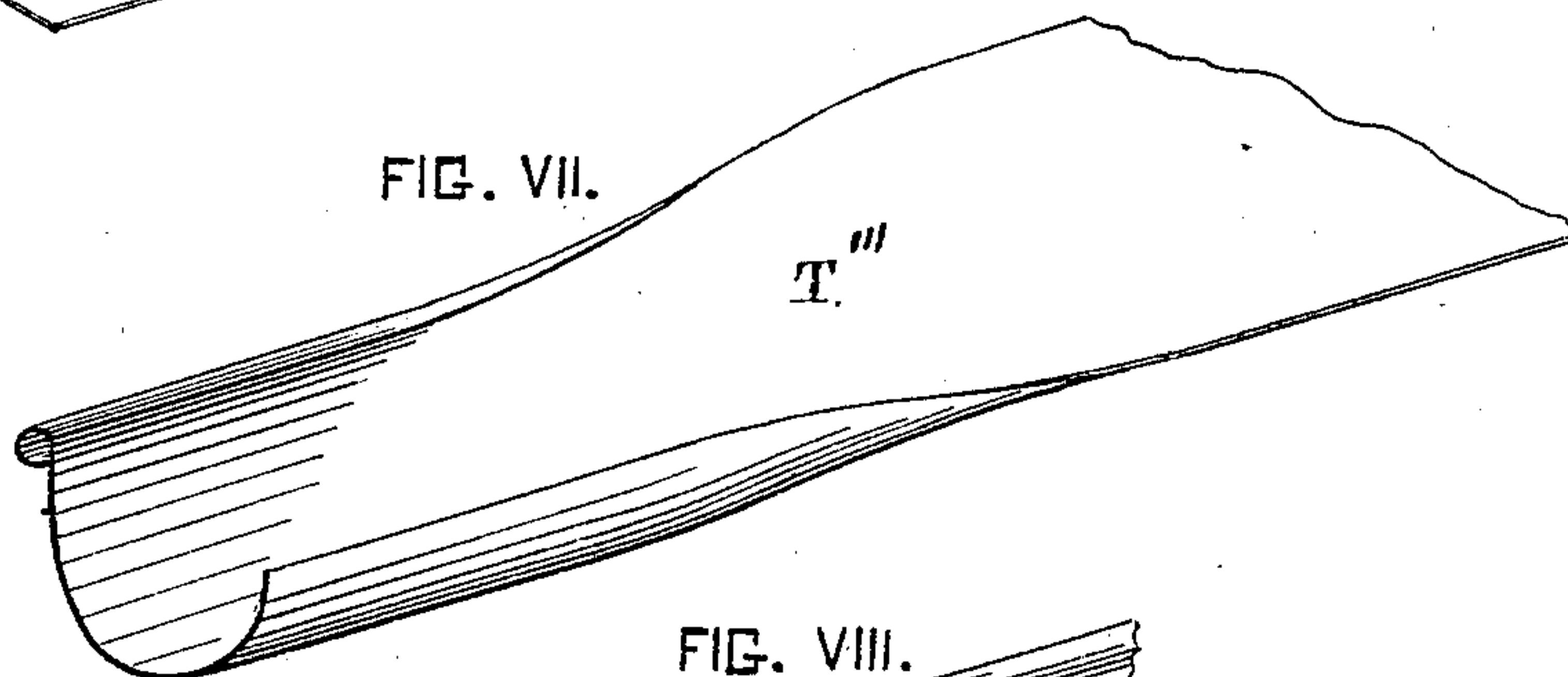
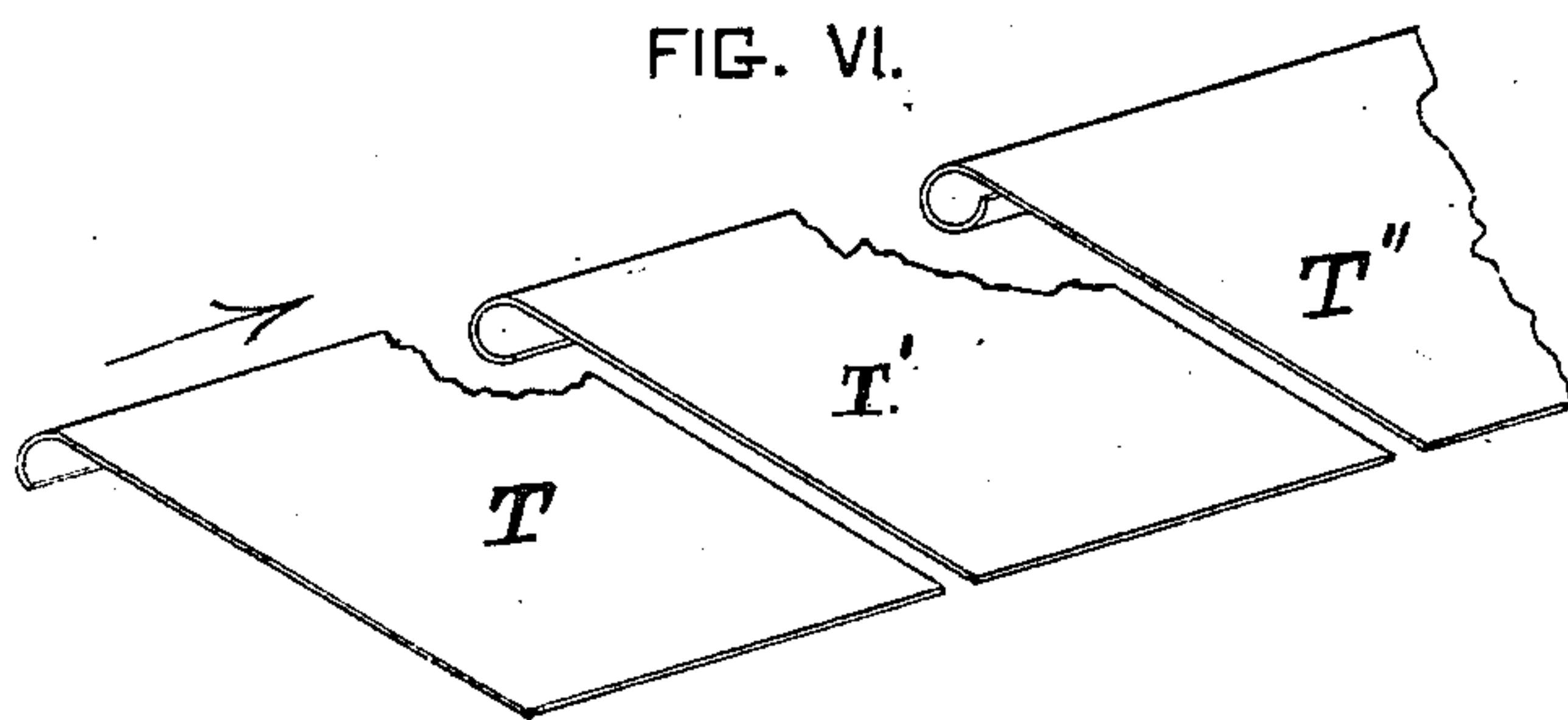
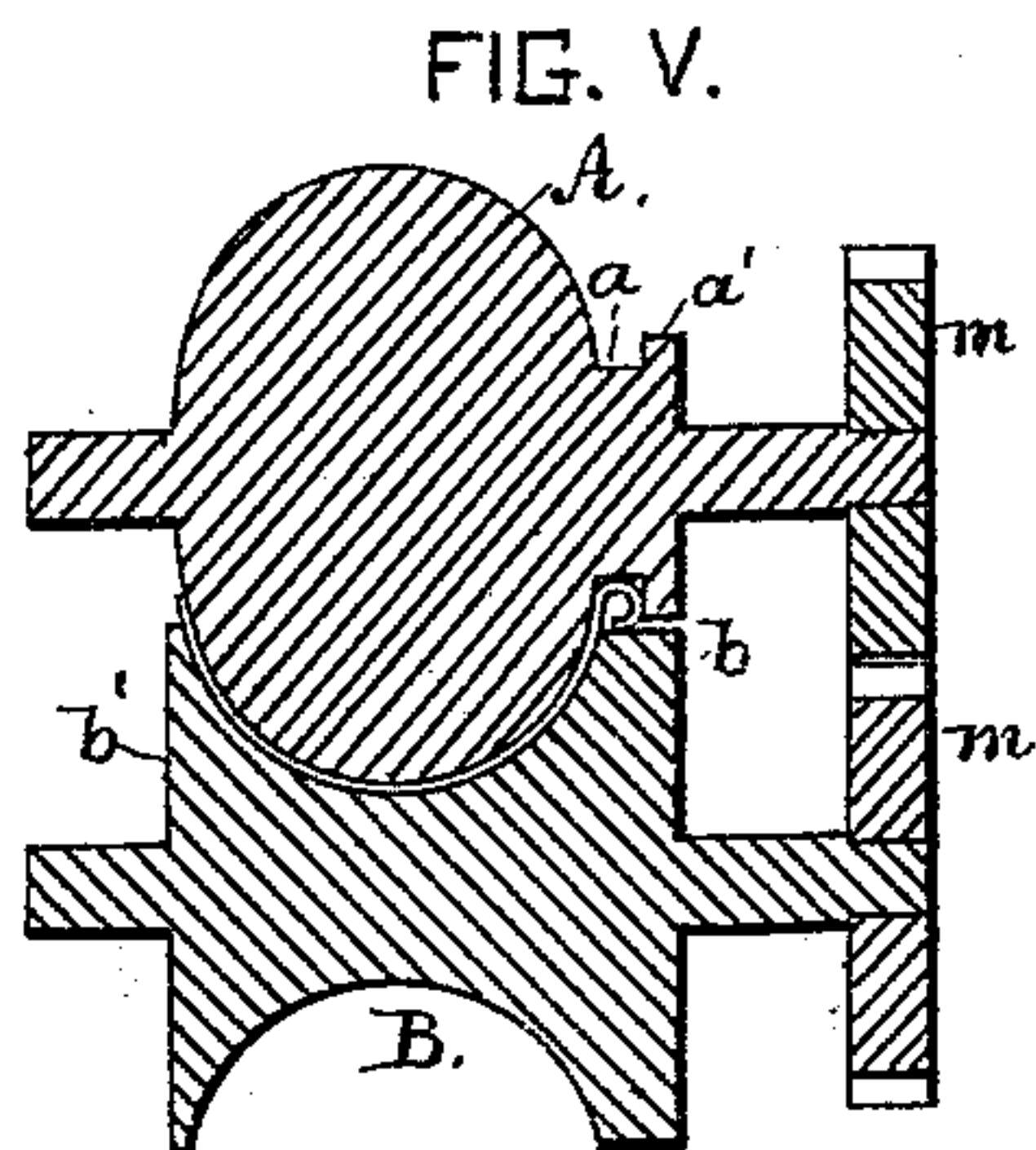
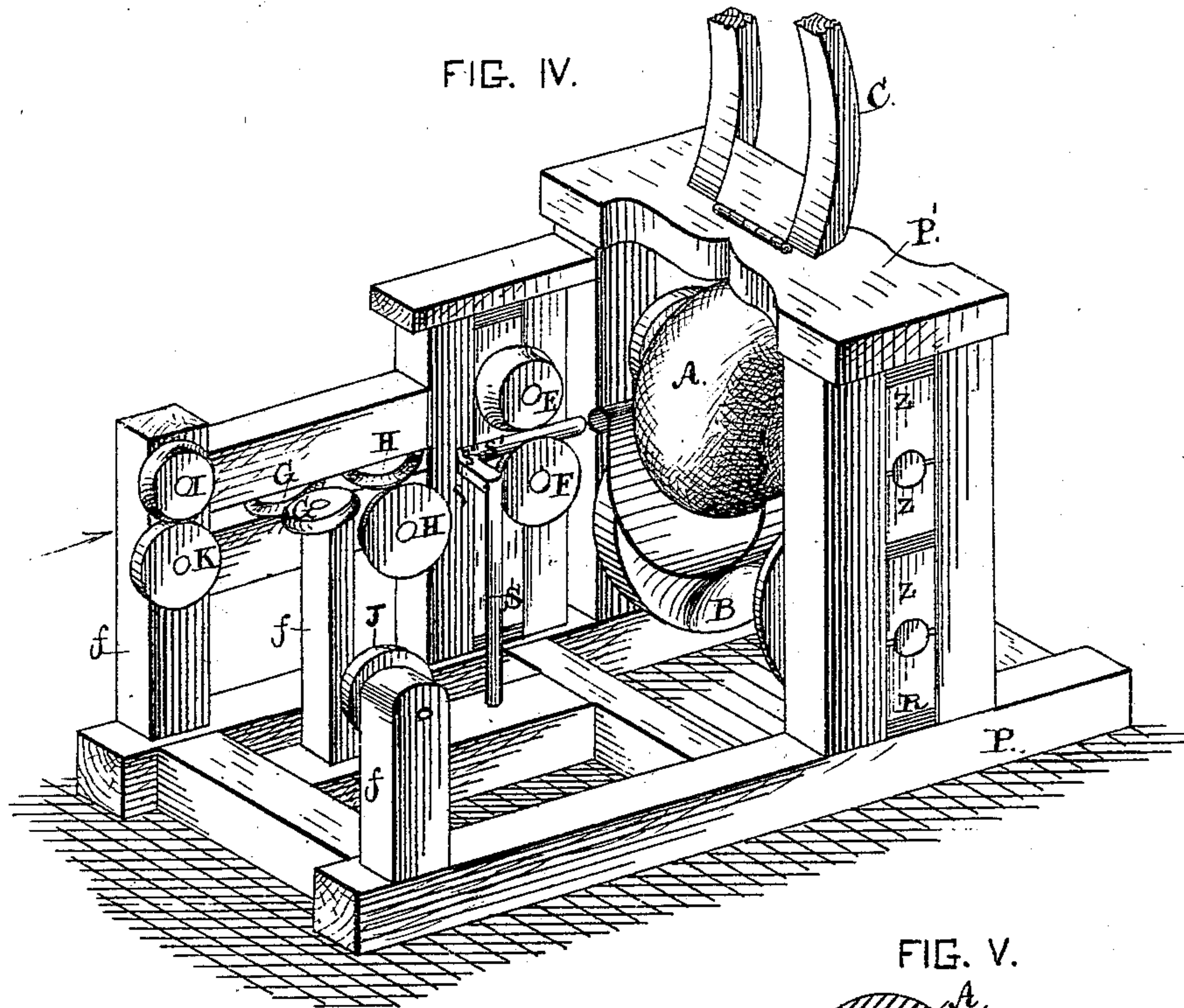
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Machine for Forming Eaves-Troughs.
No. 226,157 Patented April 6, 1880.



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GEORGE L. CALVERT AND GEORGE W. BLAIR, OF MUNCIE, INDIANA.

MACHINE FOR FORMING EAVES-TROUGHS.

SPECIFICATION forming part of Letters Patent No. 226,157, dated April 6, 1880.

Application filed January 27, 1880.

To all whom it may concern:

Be it known that we, GEORGE LEWIS CALVERT and GEORGE WARREN BLAIR, citizens of the United States, residing at Muncie, in the county of Delaware and State of Indiana, have invented certain new and useful Improvements in Combined Eaves-Trough Former and Beader; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Our invention relates to machines for forming eaves-troughs; and it consists in the novel construction and combination of a pair of rollers for forming the body of the trough with a weighted arm adjustably secured to the machine and a series of rollers for forming the bead or seam, and in details of construction that will be hereinafter more fully set forth in the specification and referred to in the accompanying drawings, in which—

Figure I is a side elevation of our machine, showing the weighted arm adjustably secured to the machine. Fig. II is a side elevation of same, showing the mechanism for operating the rollers; Fig. III, an end elevation, showing the forming-rollers; Fig. IV, a perspective view with the weighted arm raised, and showing the series of rollers for forming the bead or seam; Fig. V, a sectional view of the trough-forming rollers with the annular rims a' b and the shoulder a . Figs. VI, VII, and VIII are detail views of the trough, that will be hereinafter more fully described.

Similar letters of reference refer to similar parts in the several figures.

P represents the base of the machine, supporting the standards $f f$, in which are seated the journals of the rollers. At one end of the machine are two trough-forming rollers, A B. The upper one, A, has an elliptical form and convex bearing-surface, and is provided with an annular rim, a' , and shoulder a . The lower roller, B, has a concave surface to receive the convex bearing-surface of the upper roller. Motion is imparted to these rollers by a hand-

crank, L, secured to the shaft-extension of the roller A.

A set of gear-wheels, M M, on the shaft-extensions of the two rollers are also operated by said hand-crank, and these wheels in turn mesh with and impart motion to a set of wheels, N N, which actuate the rollers E F.

I K, G G, H H, and E F are rollers for forming the bead or seam of the trough. The roller J acts simply as a rest for the outer edge of the sheet-tin as it is being operated upon by the several rollers.

C is a weighted arm hinged to the top plate, P', of the machine. It may, however, be secured thereto in any other suitable manner. This arm has a weight, D, secured to it, either rigidly, or journaled in the branches of the arm. The function of the weighted arm is to rest on the tin and prevent buckling or crimping as the bead and trough are being formed.

The journals of the rollers A B are seated in blocks Z Z, placed between the sides of the standards $f f$. Elastic or spring packing-pieces R R are placed above and below each journal-seat, and render the rollers automatically adjustable for different thicknesses of tin, and thus obviate the necessity for adjusting-screws for adjusting the distance between the rollers A B. The upper roller has a shoulder, a , and an annular rim, a' , formed on it, so that an open space is left between the face of the roller and its rim a' . The lower roller, B, also has an annular rim, b , which forms a support for the bead or seam as the trough is being formed and passes between the rollers. This is more clearly shown in Fig. V.

The operation for forming a trough is as follows: The sheet-tin is first pushed or started by hand between the rollers I K. These rollers bend the edge of the tin down to about a quarter of a circle, as shown at T, Fig. VI. Then it is pushed between the rollers G G, which turn the edge to a half-circle, as shown at T', Fig. VI; then between the rollers H H, which turn up the bent edge to three-fourths of a circle, as shown at T''. The bent edge of the seam is then passed under and around a rod, s' , whose elbow s'' is made thinner than the horizontal branch s and vertical branch S, for the purpose of allowing the seam or bead to

pass under and around the rods and the main body of the tin to pass over the elbow s'' . The rod s acts simply as a guide for the tin as it moves between the rollers E F, which give the bead a complete bend and form the edge or seam into a circle, as shown at T''' , Fig. VII. The tin then passes between the rollers A B, and the body of the trough formed or shaped as shown at T^{iv} , Fig. VIII, the bead during this operation passing through the opening left between the face of roller A, the shoulder a , and annular rim a' , and will rest on the rim b of roller B, as shown in Fig. V.

During the operation above referred to the arm C and its weight have been instrumental in keeping the tin from crimping or buckling. When the tin runs through smoothly the weight D simply rolls in its journals over the tin, acting, of course, to keep the tin down; but if buckling should take place the weight and the arm would be raised more or less to compensate for the buckling or crimping, and resume its normal position after the buckling has ceased.

It will be understood that if no weight or force was used to hold the tin when buckling takes place there would be liability of the tin jumping from between the bead-forming rolls, and if the force exerted or the weight applied so heavy and rigid as not to yield some with the tin as it buckles the sheet and the seam would be liable to be bent; but by making the arm C adjustable we compensate for the buckling and strain on the tin.

We are aware that eaves-trough machines have been made with convex and concave forming-rollers cut away on the sides to start the

bead, and with a series of bead-finishing rollers, and we therefore do not claim such forms of construction. We are not aware, however, that one has been heretofore made or used in which the main rollers have an annular rim on each and a shouldered space between them for the passage of the bead, nor with an adjustable weighted arm, as set forth.

What we claim, therefore, as new, and desire to secure by Letters Patent, is—

1. In an eaves-trough machine, the combination of the two rollers A B, having the annular rims a' b , and the shoulder a on the roller A, whereby a space is provided between the inner face of the upper roller and the annular rims for the passage of the bead of the trough, substantially as described.

2. In an eaves-trough machine, the combination of the bead-forming rollers and the weighted arm C, adjustably secured to the machine.

3. In an eaves-trough machine, the combination of the bead-forming rollers and the adjustable arm C with the rollers A B, as described.

4. In an eaves-trough machine, the combination of the rollers A B, automatically adjustable, the bead-forming rollers, and mechanism for operating the rollers, with an adjustable weighted arm, C, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

GEORGE LEWIS CALVERT.

GEORGE WARREN BLAIR.

Witnesses:

D. B. McDONALD,

CHAUNCEY S. MEDEKER.