

No. 612,955.

Patented Oct. 25, 1898.

W. L. MORRIS.

WAD CUTTER.

(Application filed Mar. 25, 1898.)

(No Model.)

3 Sheets—Sheet 1

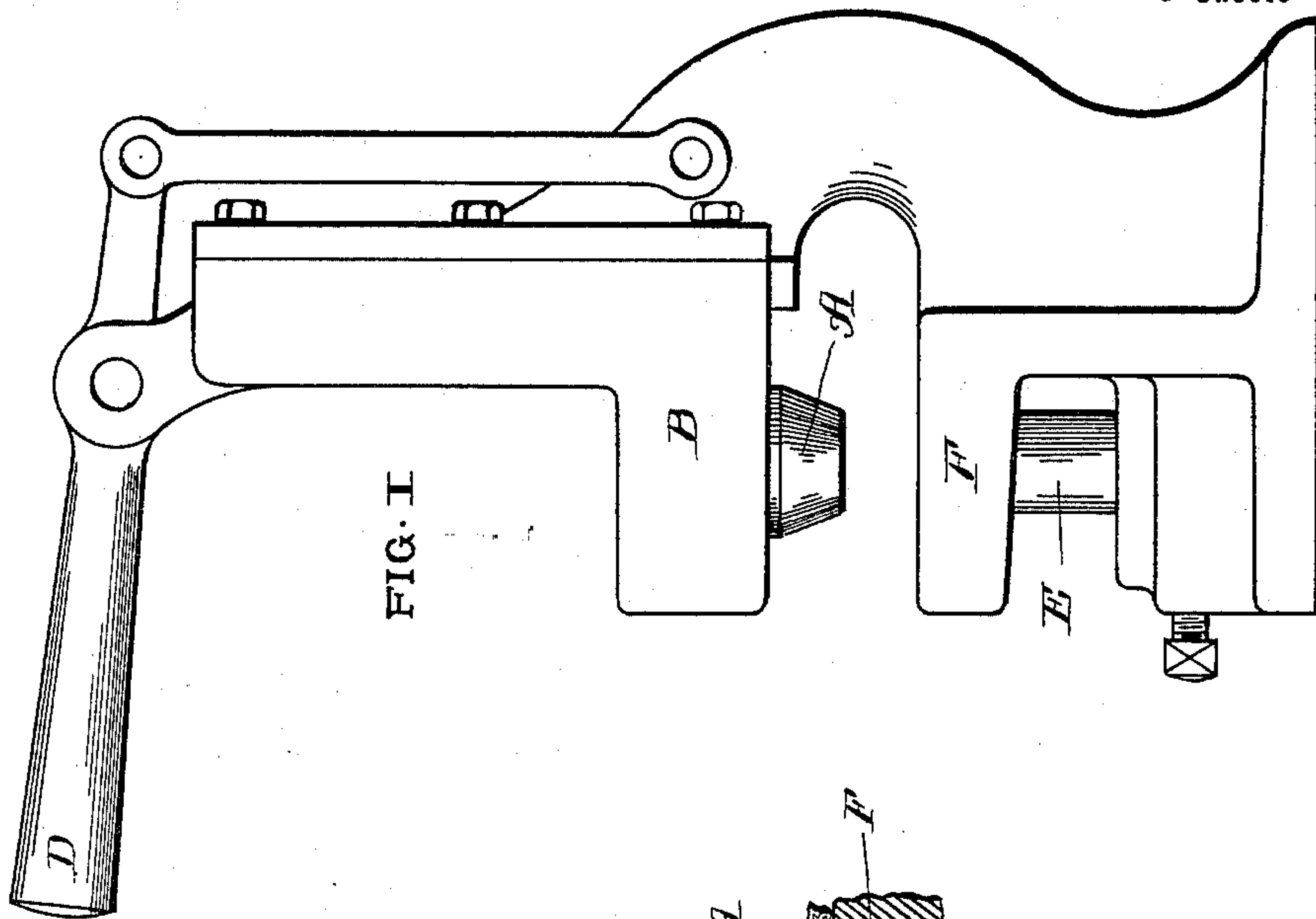


FIG. IX—

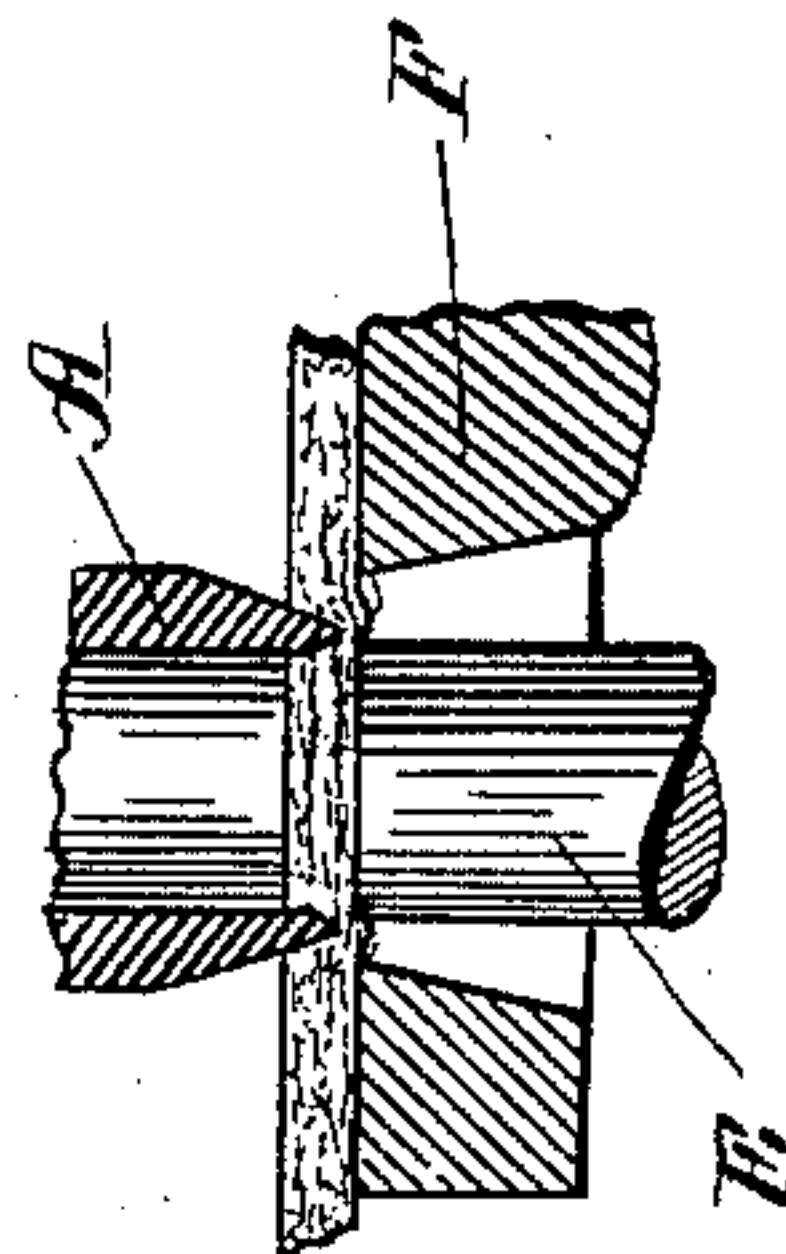
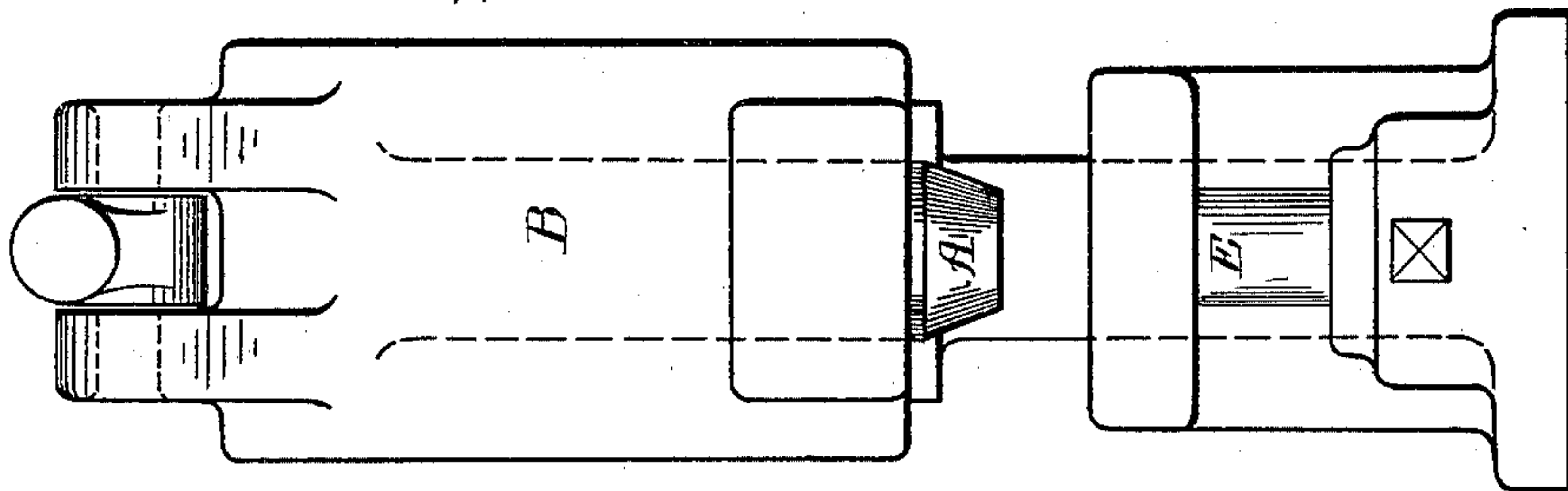


FIG. II



WITNESSES

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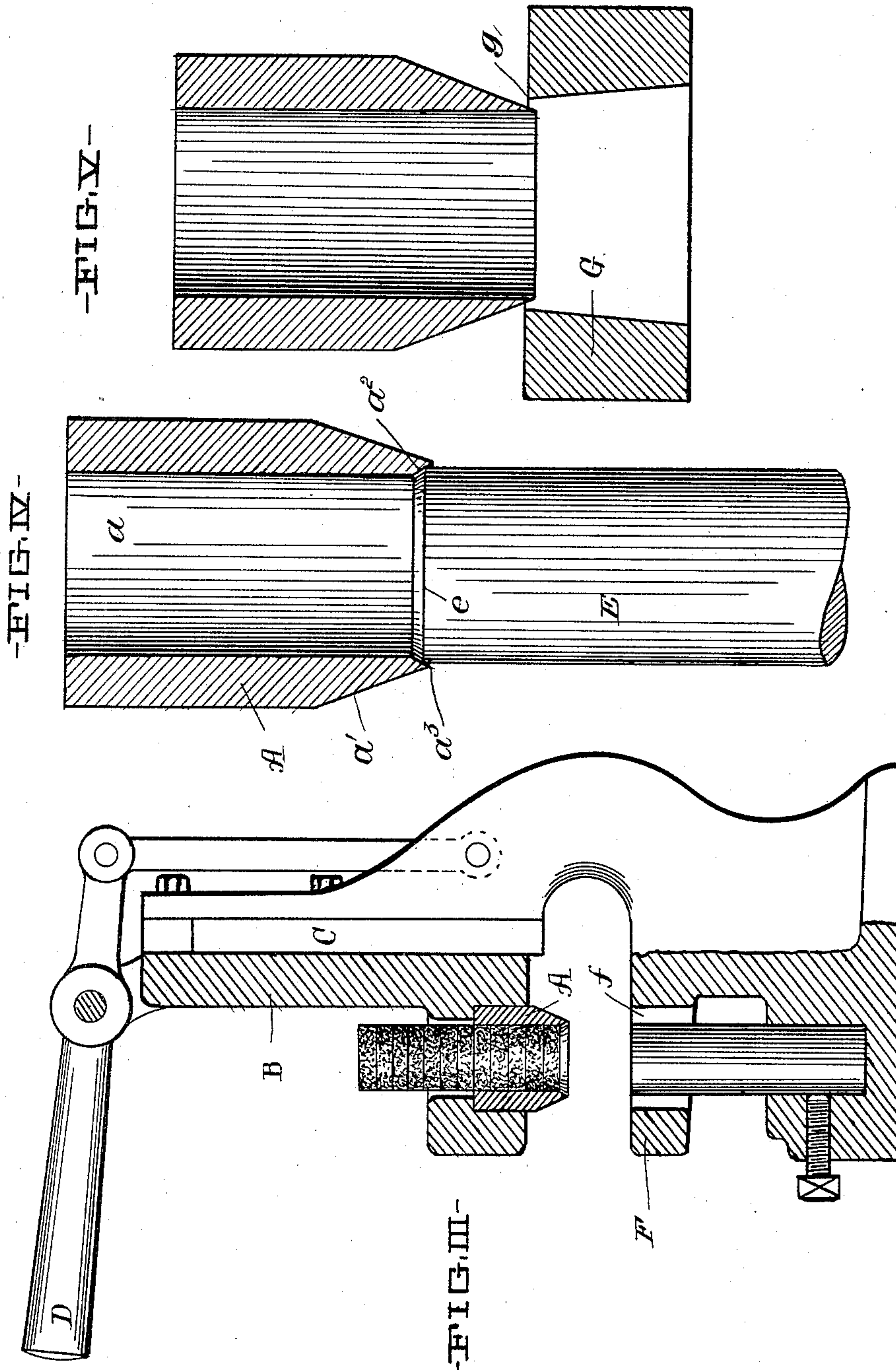
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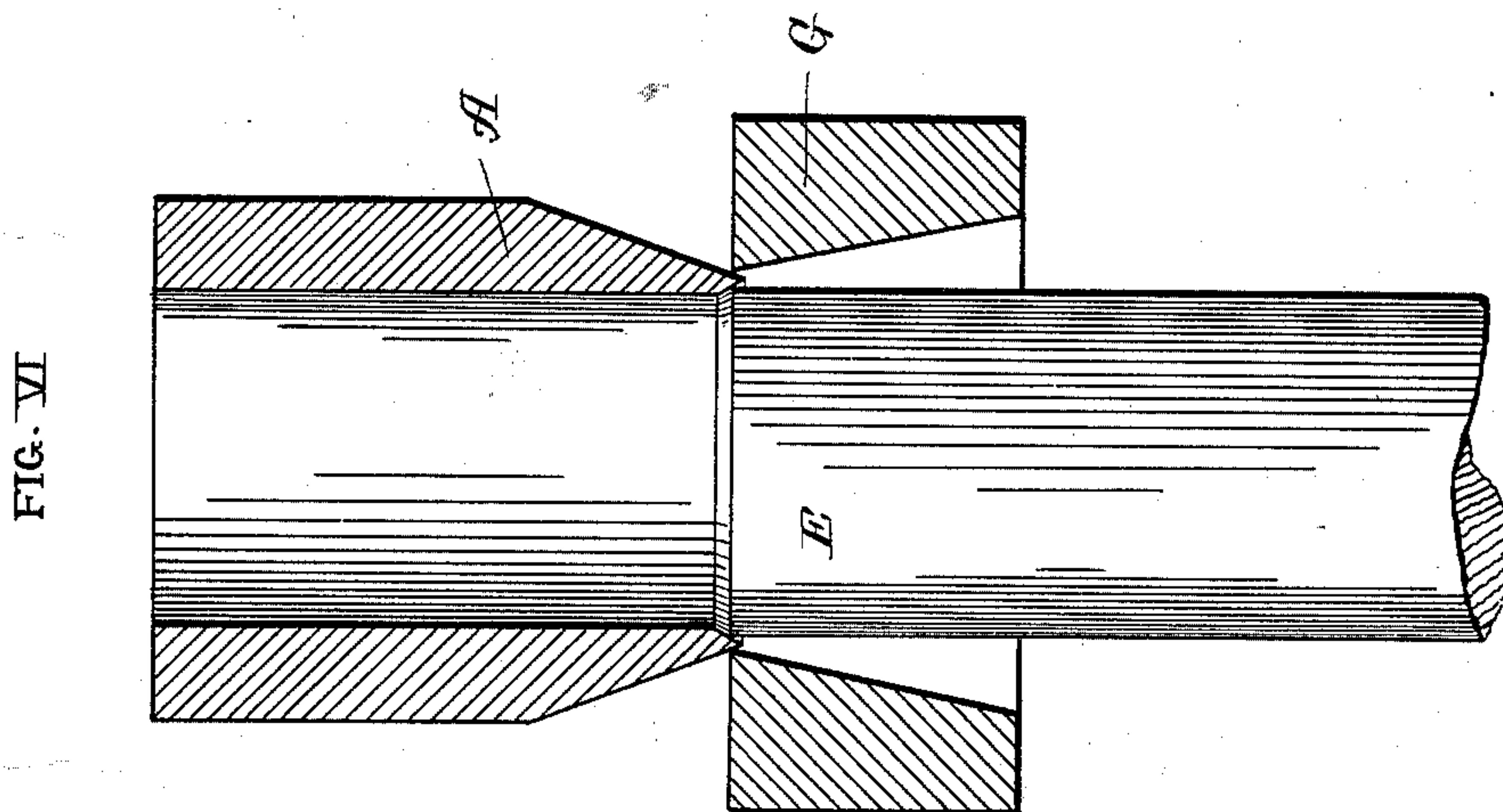
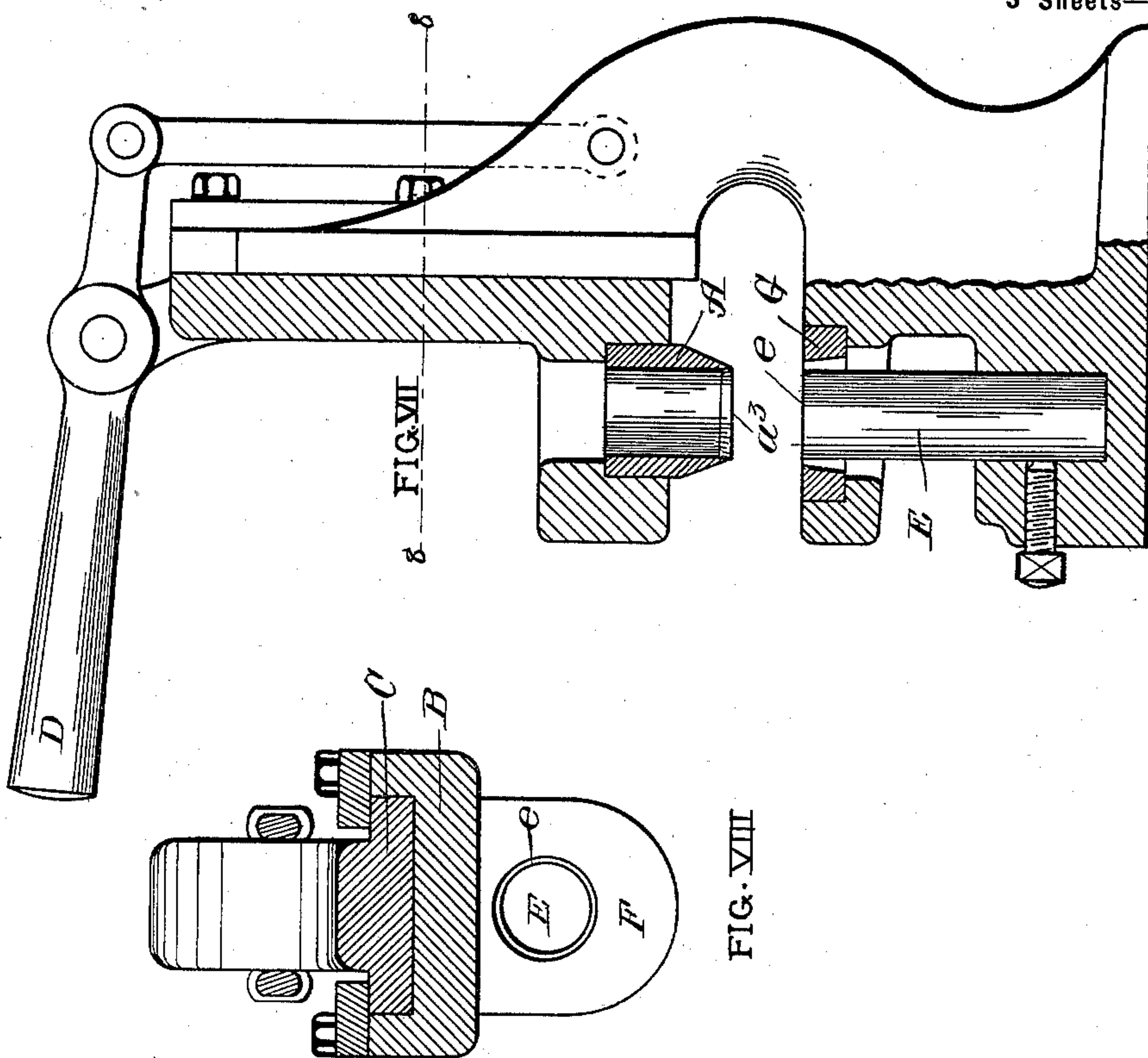
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3 Sheets—Sheet 3.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM L. MORRIS, OF CLEVELAND, OHIO, ASSIGNOR TO THE AUSTIN CARTRIDGE COMPANY, OF SAME PLACE.

WAD-CUTTER.

SPECIFICATION forming part of Letters Patent No. 612,955, dated October 25, 1898.

Application filed March 25, 1898. Serial No. 675,065. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. MORRIS, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Wad-Cutters, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention has for its object the cutting of wads for shotgun-shells, such cutting to be accomplished with greater cleanness and accuracy than has heretofore been obtained.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings, Figure I represents a side elevational view of my improved cutter, illustrating a form designed for the application of hand-power. Fig. II represents a front elevation. Fig. III represents a partial vertical central transverse sectional view of the mechanism as illustrated in Fig. I. Fig. IV represents an enlarged and exaggerated axial sectional view of the cutter proper. Fig. V represents a similar view of a modified form of said cutter. Fig. VI represents a similar view of a second modification. Fig. VII represents a partial vertical central transverse sectional view of the mechanism embodying the modification of the cutter proper shown in Fig. VI. Fig. VIII represents a horizontal cross-sectional view taken upon line 8 8 of Fig. VII, and Fig. IX represents a detail view illustrating one stage in the cutting operation on a piece of wad material.

A cutter member A is suitably mounted in a retractible carriage B, sliding upon guides C and operated by a hand-lever D, and is formed with a central bore a . The outer surface of the lower end of said cutter member is given a conical or bevel surface a' , inclining downwardly toward the cutter-axis. The inner surface of the said end is also given the form of a conical or bevel surface forming a

cutting-surface a^2 , inclining upwardly toward said axis, the said axis being coincident with the cone-axes. The said two surfaces intersect in a circle the surface a^2 , hence terminating in a cutting edge a^3 .

A plug E of cylindrical form is secured in the lower part of the machine-frame and projects perpendicularly into an aperture f , formed in a table portion F of the said frame. The upper surface or base of said plug is located in the plane of the table-surface, and the plug-axis is in the same straight line with the axis of cutter member A. The upper edge e of the plug forms a circular cutting edge whose diameter is less than that of a circle having the edge a^3 for its circumference and greater than that of a circle having the upper extremity of said surface for its circumference. The plane of edge e is made perpendicular to the plug-axis and the direction of the motion of the upper member A is parallel to said axis. The downward movement of the carriage may hence cause the surface a^2 to impinge upon the edge e , the edge a^3 passing through the plane of said edge e .

In the operation of the cutter illustrated in Fig. IV the edge a^3 passes through the wad material, as shown in Fig. IX. The distance of projection below the plane of edge e is such that the edge a^3 completely severs the material. Such severing occurs before the surface a^2 is caused to impinge upon edge e , and on examination of the wad it is found that the lower edge has not been cleanly cut, but on the contrary exhibits a shredded or ragged appearance. The surface a^2 now impinging upon the edge e such ragged or shredded portion projecting beyond edge e is cleanly cut off, thus leaving the entire surface of the wad even and smooth.

In practice the difference in diameter between the plug and the bore a is made very small, so that the wads may be successively pushed up through cutter member A, as shown in Fig. III, with little compression.

Where it is desired to apply my invention to the cutting of smooth holes, the form of the member A is varied, as shown in Fig. V, and a die G, having a cutting edge g , is introduced in the table F, the operation being

the same as above described, the edge *g* taking the place of edge *e* of the plug.

When it is desired to cut both wad and hole smooth, the plug, die, and form of upper member shown in Fig. III are used, both the inner and outer conical surfaces being caused to impinge a cutting edge, respectively that of the plug and that of the die. Such arrangement is illustrated in Fig. VII.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed provided the means covered by any one of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a cutter the combination of a cutting edge, a cutting-surface terminating in a cutting edge, and means for causing said surface to impinge upon said first-named edge, substantially as set forth.

2. In a cutter the combination of a cutting edge, a cutting-surface terminating in a cut-

ting edge, and means for causing said surface to impinge upon said first-named edge, and said second-named edge to pass through the plane of said first-named edge, substantially as set forth.

3. In a cutter the combination of a cutting edge, a cutting-surface inclined to the plane of said edge and terminating in a second cutting edge and means for causing said surface to impinge upon said first-named edge, substantially as set forth.

4. In a cutter the combination of a circular cutting edge, a conical cutting-surface terminating in a second circular cutting edge coinciding with the circumference of a circle greater in diameter than that of a circle whose circumference is said first edge, and means for causing said surface to impinge upon the latter, substantially as set forth.

Signed by me this 23d day of March, 1898.
WILLIAM E. MORRIS.

Attest:

D. T. DAVIES,
A. E. MERKEL.