

(No Model.)

2 Sheets—Sheet 1.

W. EVANS.

CLIP FOR VEHICLE SPRINGS.

No. 326,963.

Patented Sept. 29, 1885.

FIG. 1

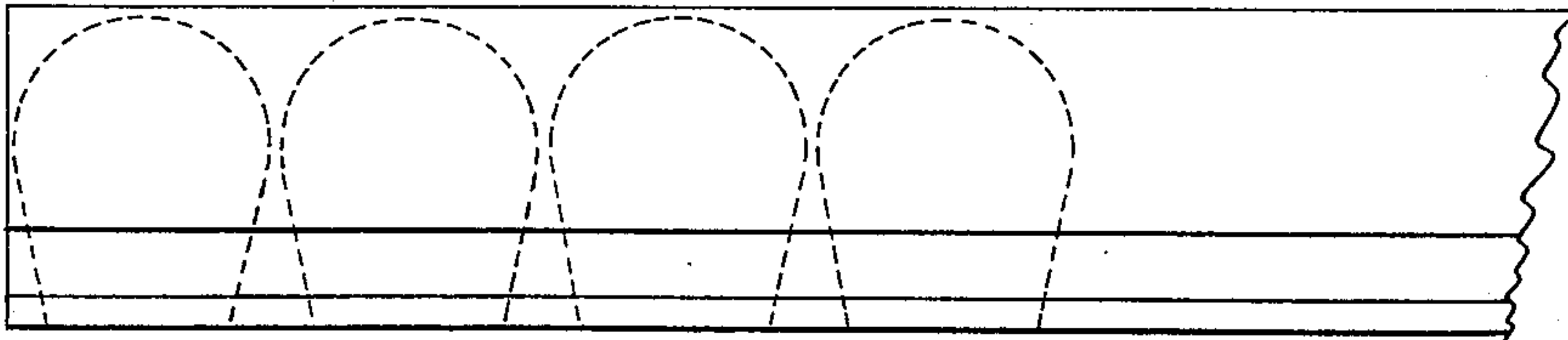


FIG. 2



FIG. 3

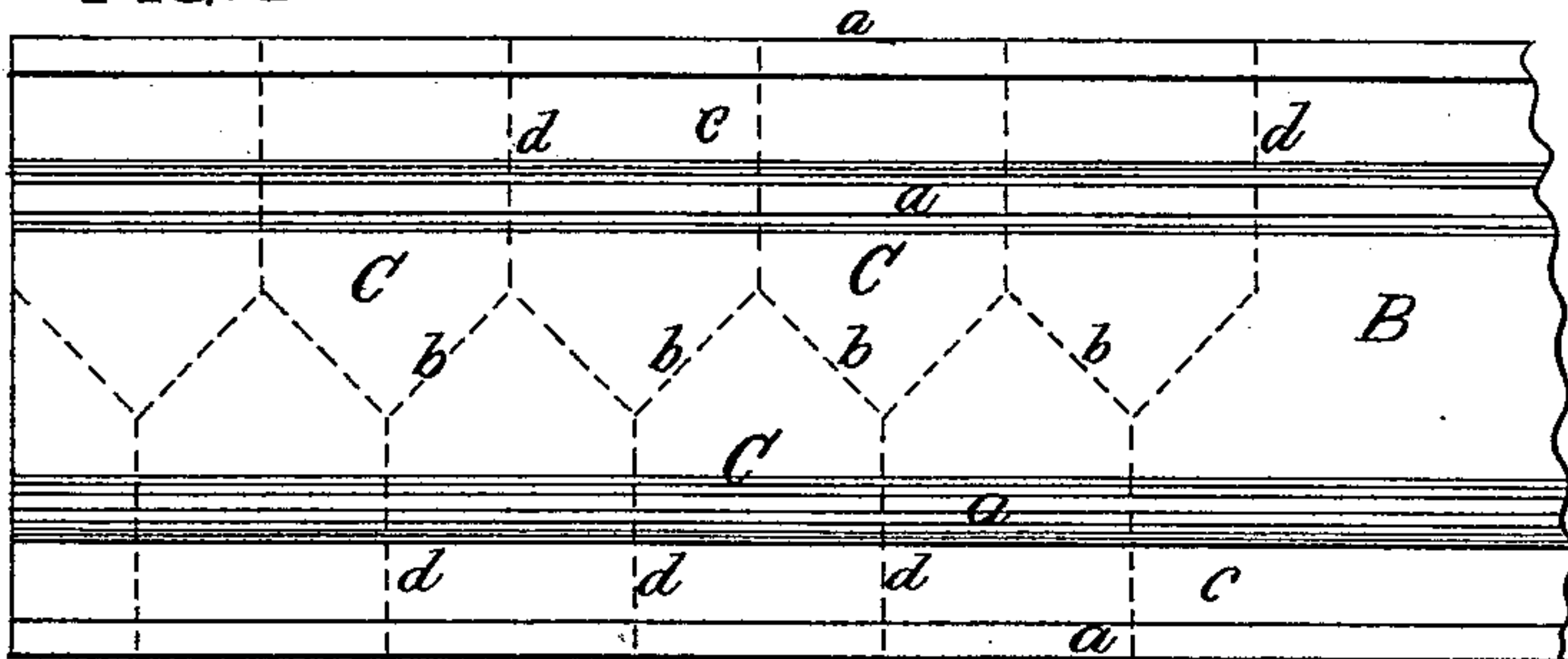


FIG. 4

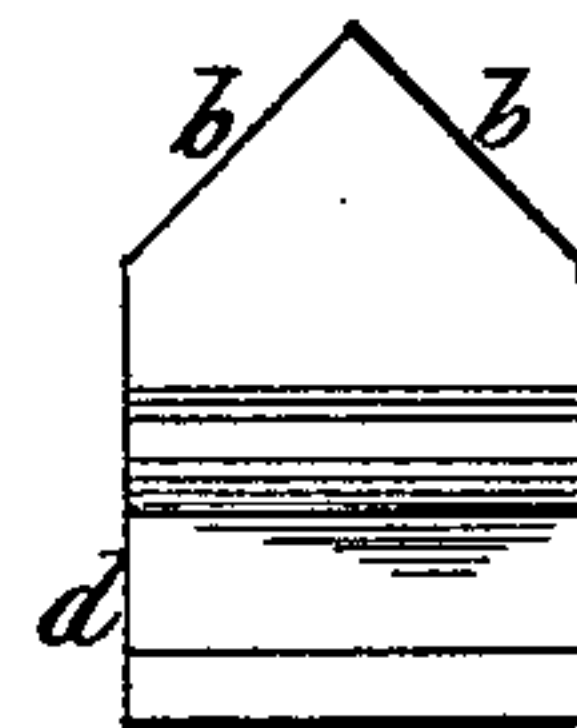


FIG. 5



FIG. 6

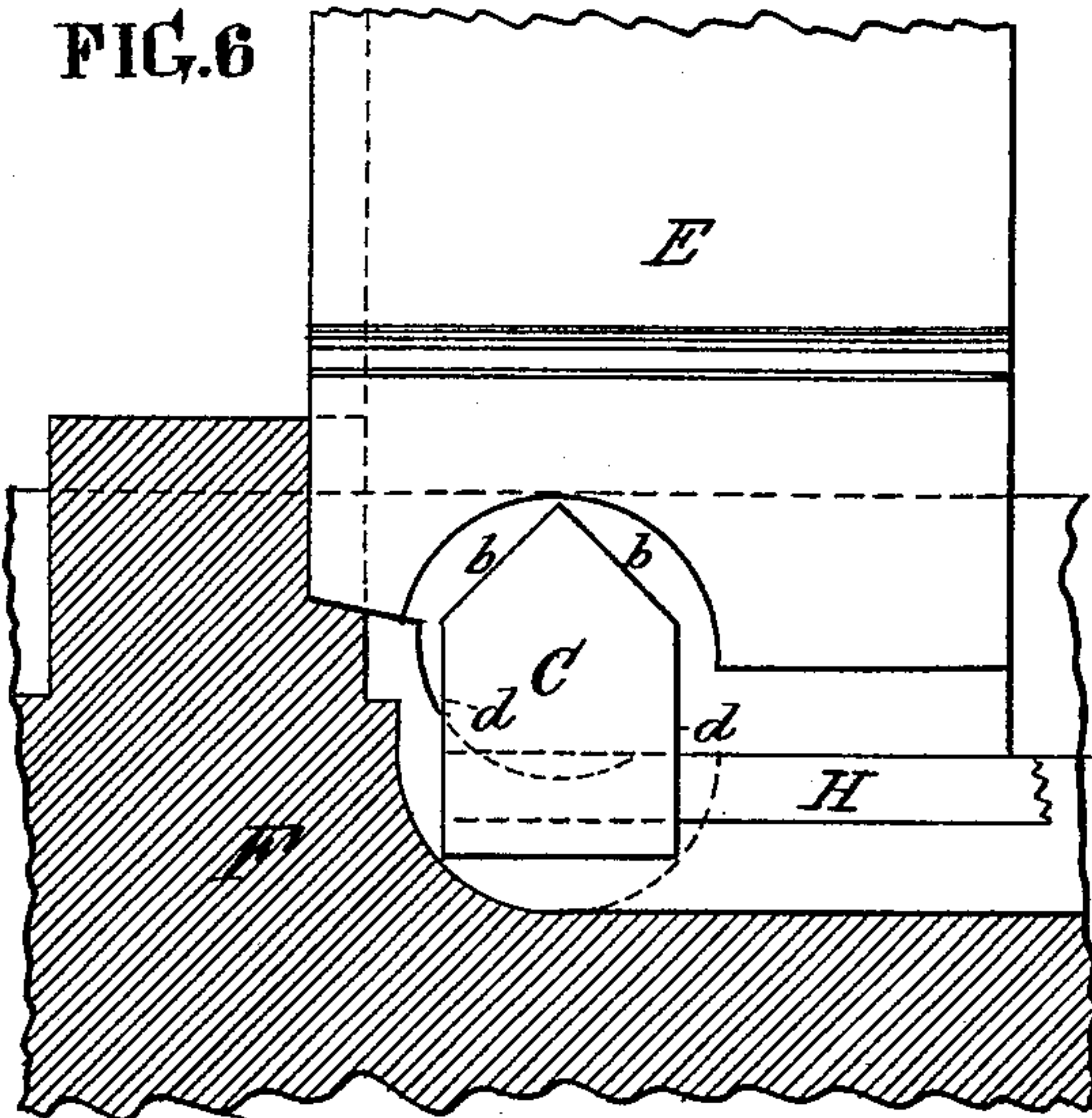
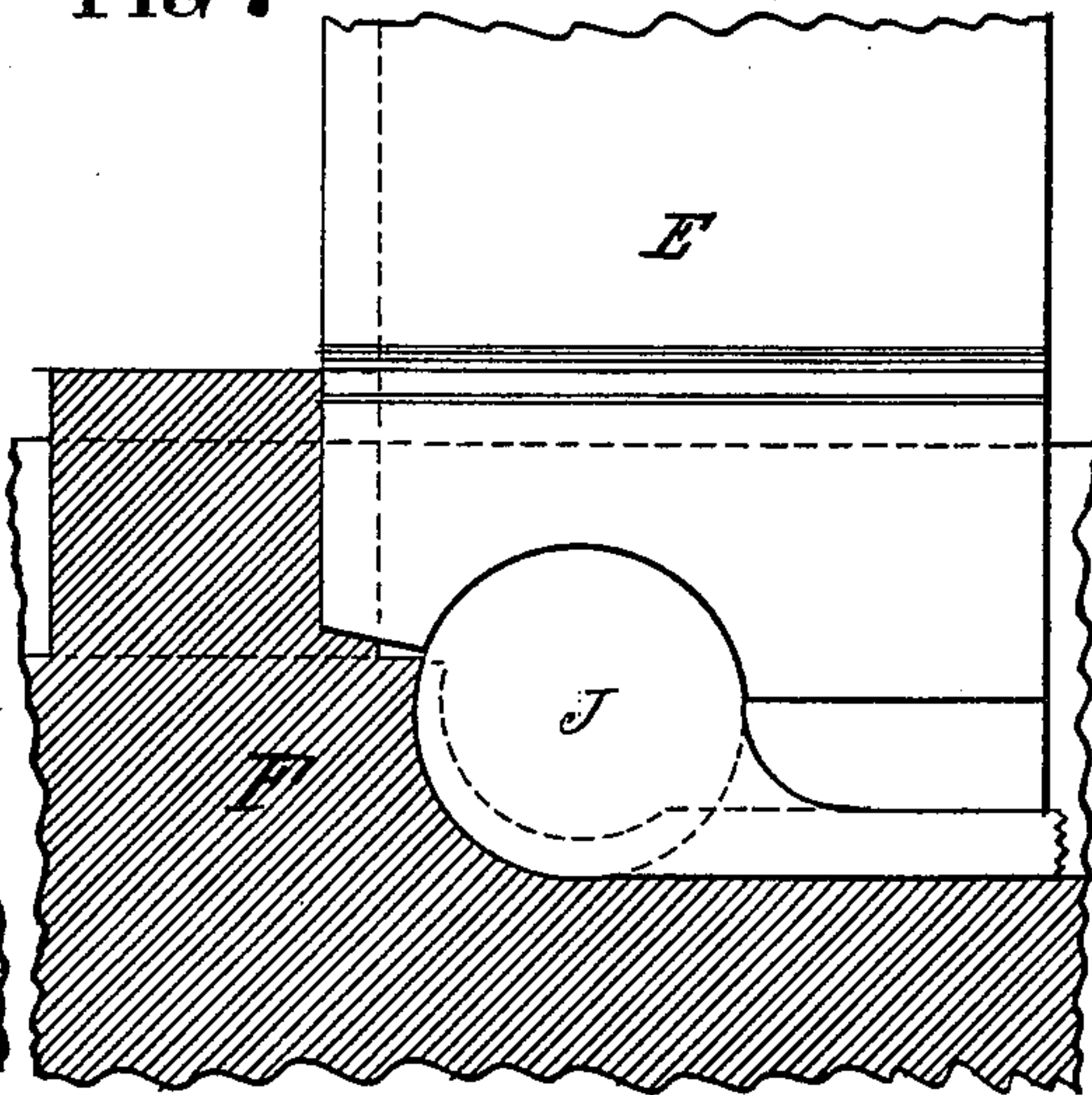


FIG. 7



Witnesses.

S. E. W. Bewley.  
Clarence P. Levy.

Inventor

William Evans.  
per Thomas J. Bewley, Att'y.

(No Model.)

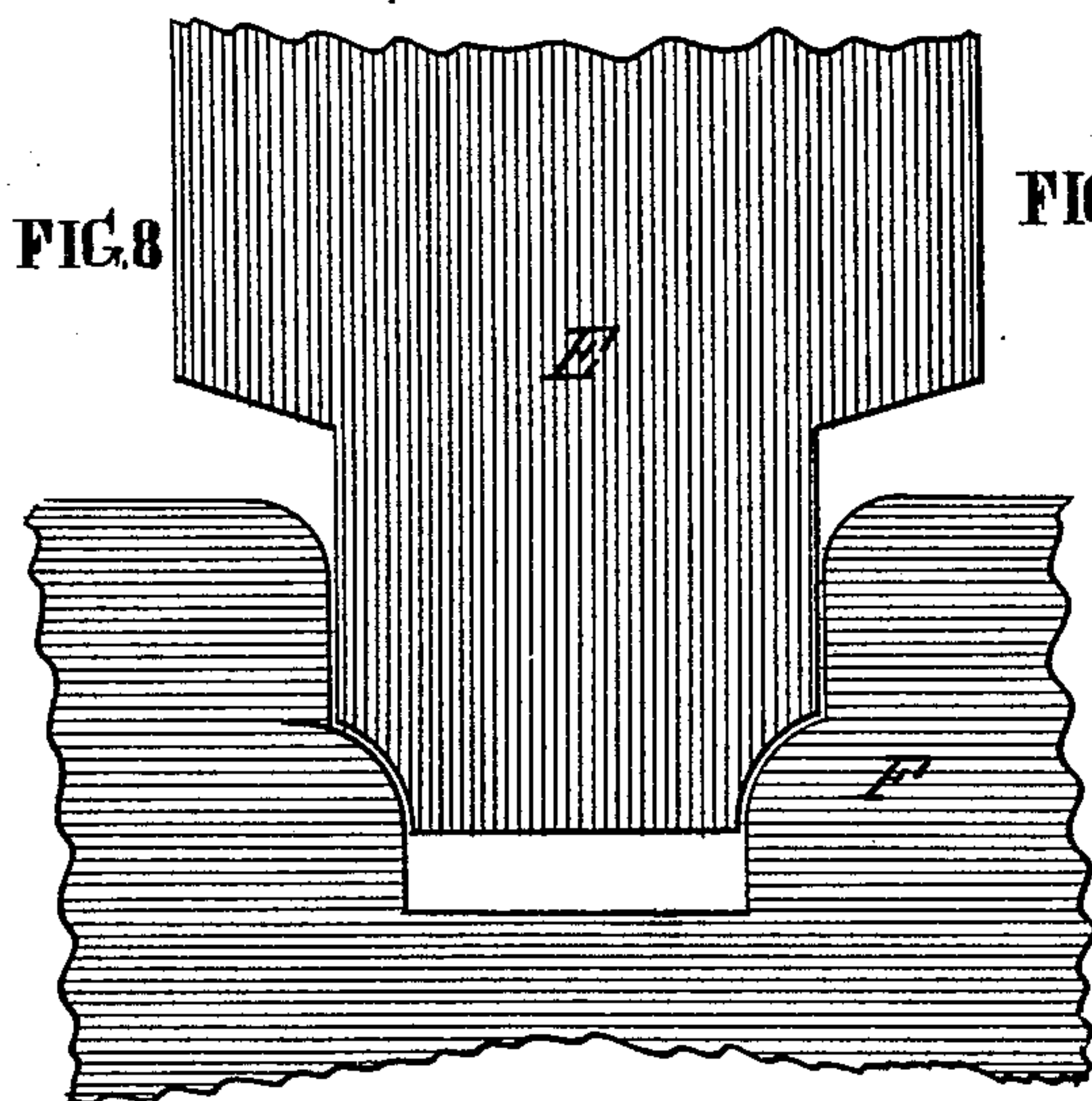
2 Sheets—Sheet 2.

W. EVANS.

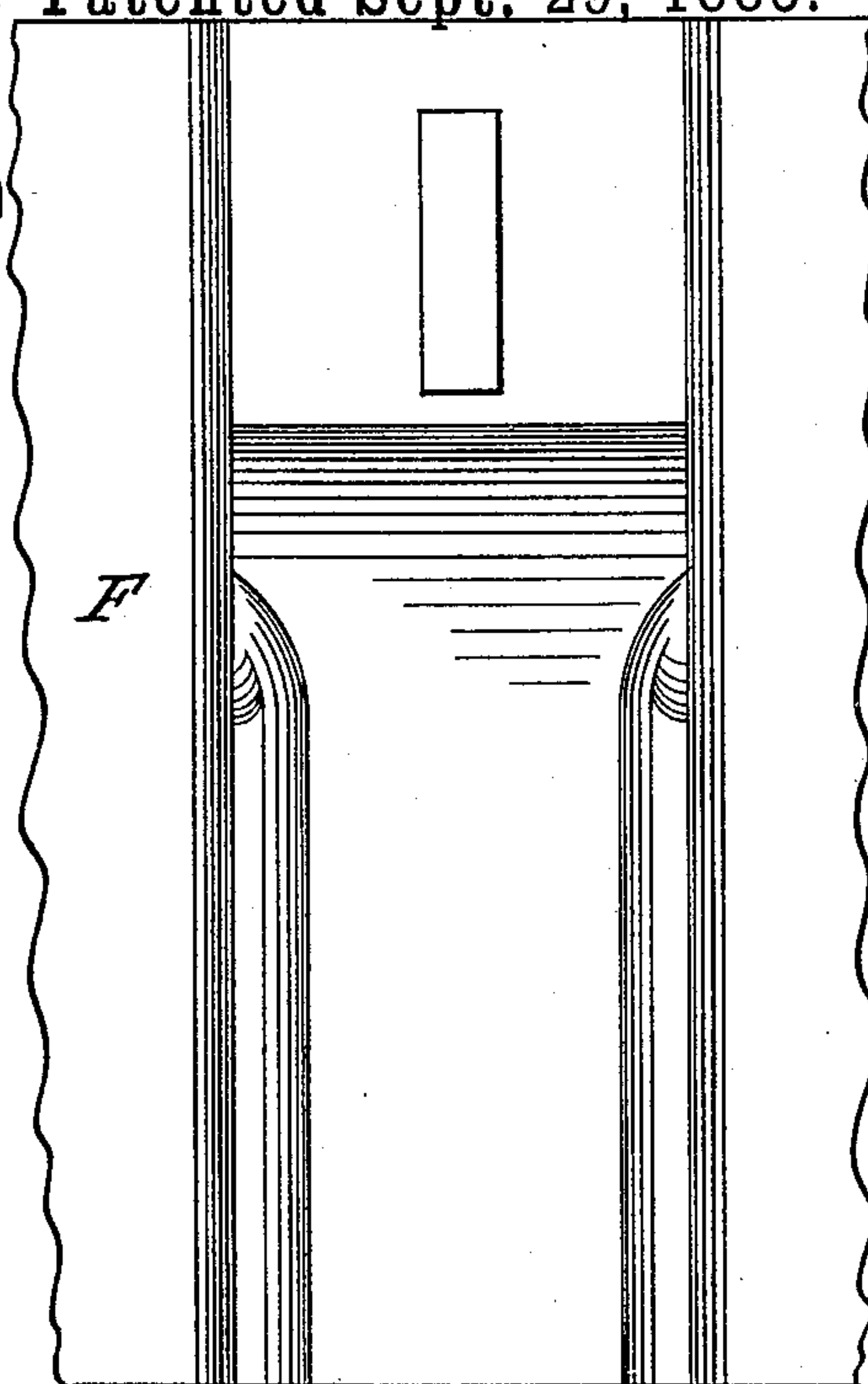
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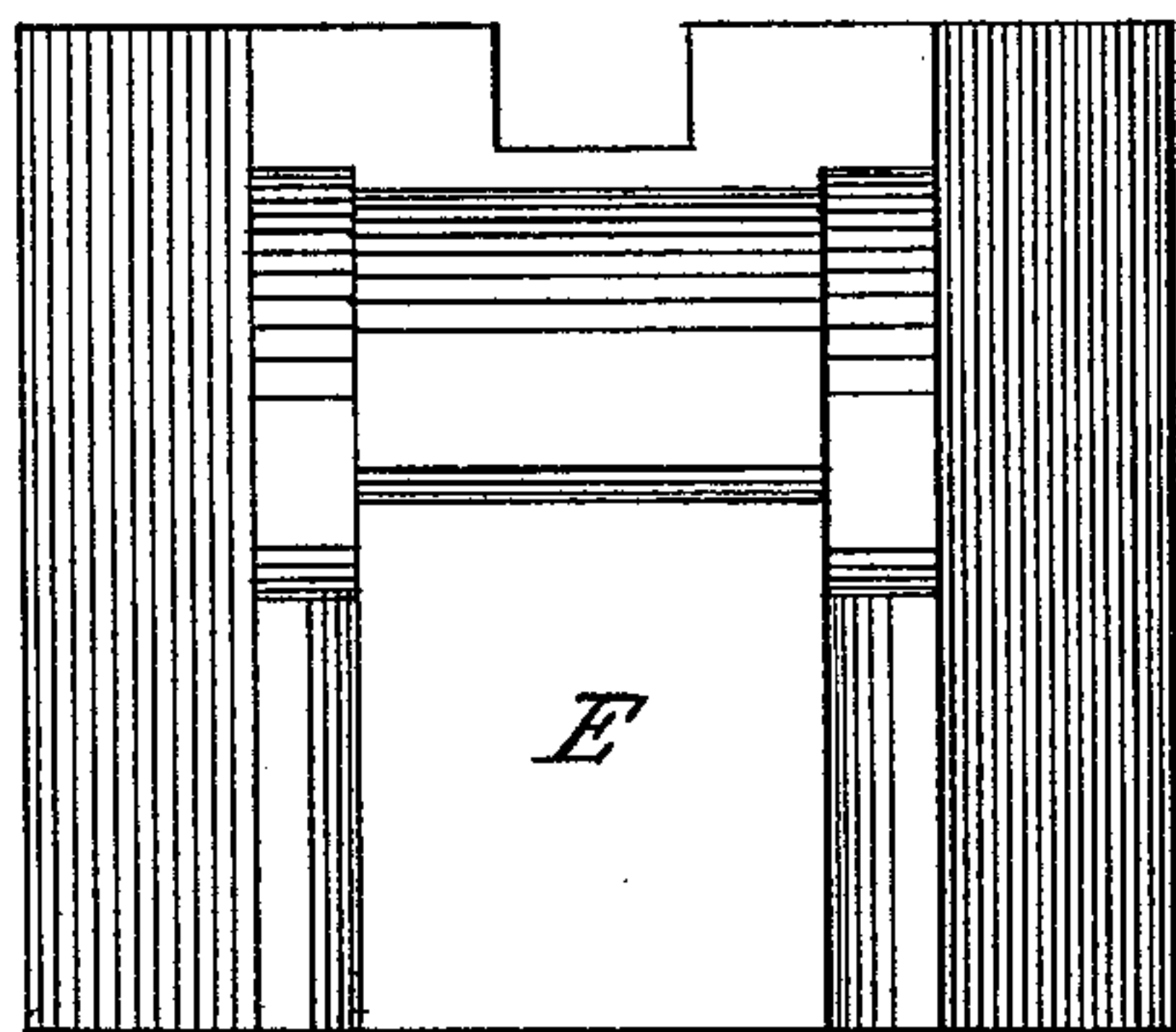
Patented Sept. 29, 1885.



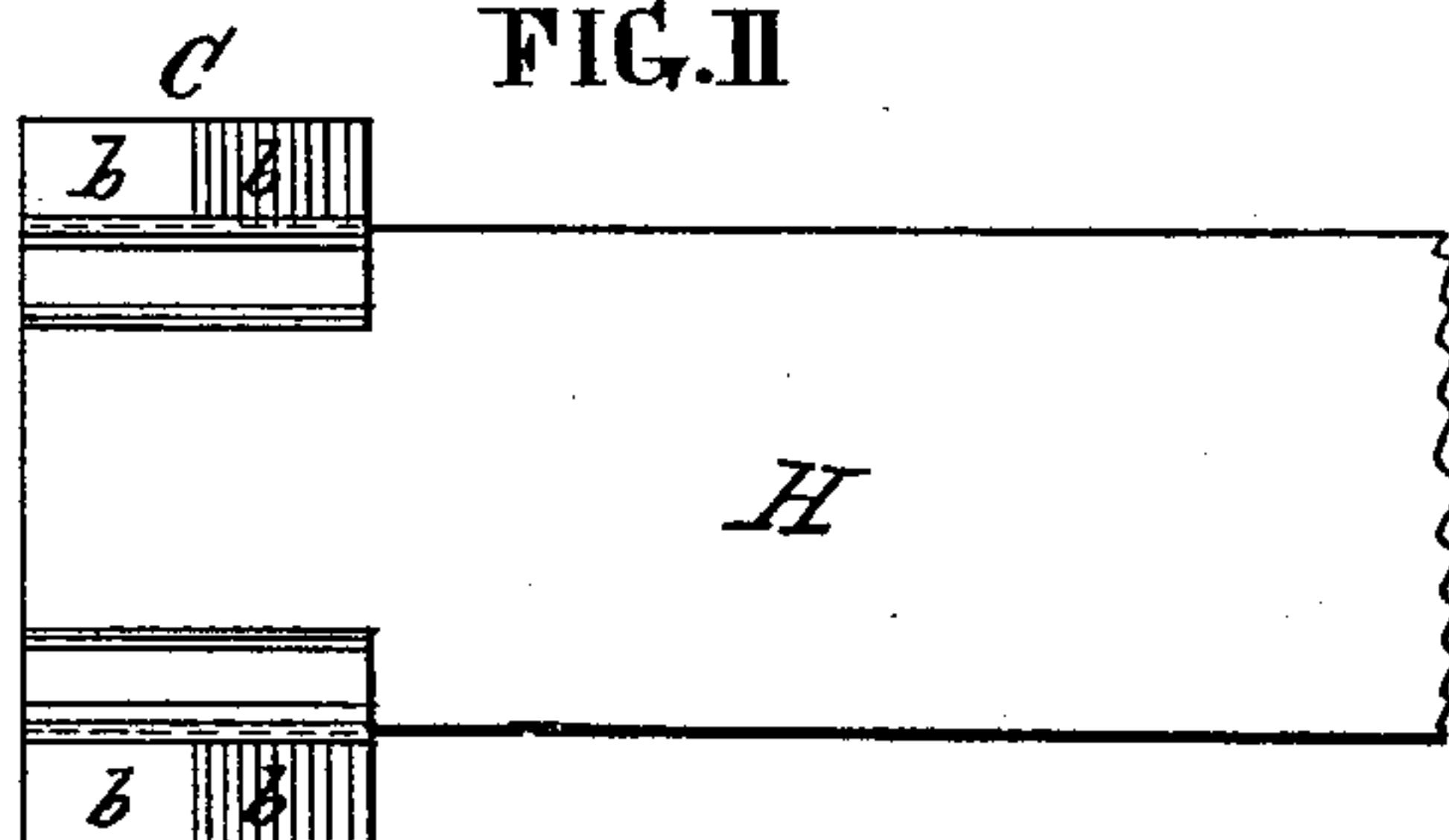
**FIG. 9**



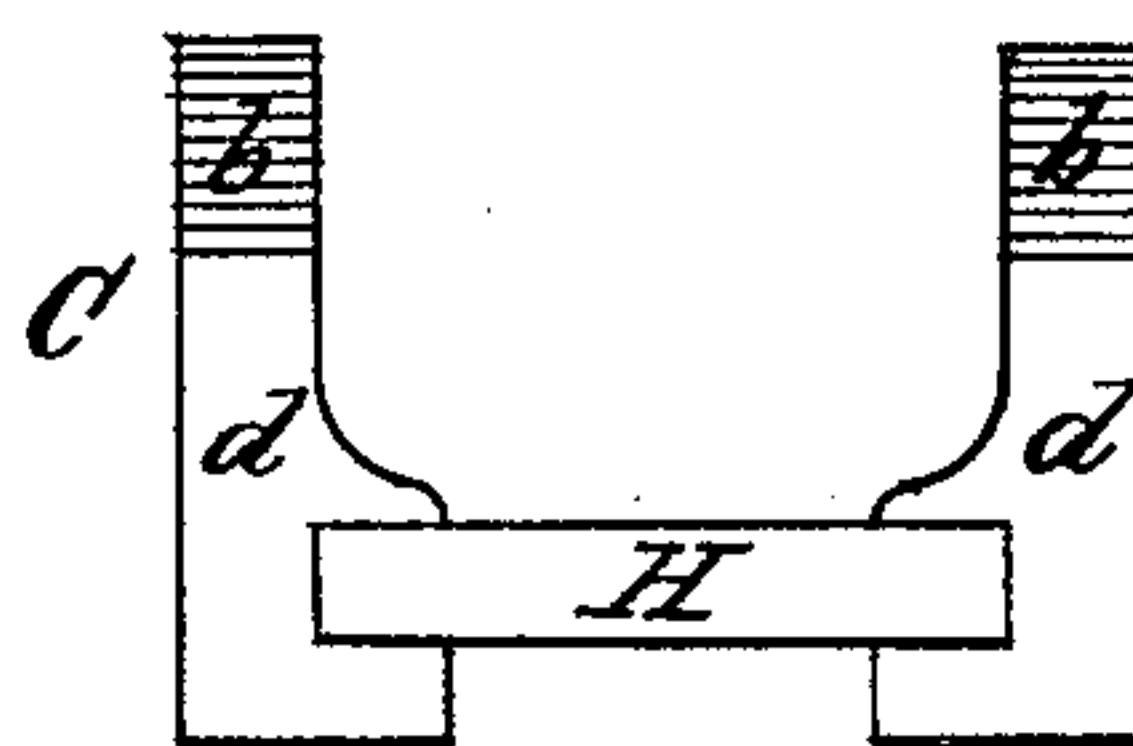
**FIG. 10**



**FIG. 11**



**FIG. 12**



Witnesses.

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# UNITED STATES PATENT OFFICE.

WILLIAM EVANS, OF PHILADELPHIA, PENNSYLVANIA.

## CLIP FOR VEHICLE-SPRINGS.

SPECIFICATION forming part of Letters Patent No. 326,963, dated September 29, 1885.

Application filed August 16, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM EVANS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Cutting Clips for Forming the Ends of Vehicle-Springs, of which the following is a specification.

My invention relates to an improved method of cutting clips for forming the ends of vehicle-springs from a bar or skelp of steel or iron that has been previously rolled into the requisite shape, with flanges and intervening grooves upon each edge, whereby to economize metal, and also an easier cut and less work for the die, as hereinafter fully described.

In the accompanying drawings, which make a part of this specification, Figure 1 represents a face view of a rolled bar or skelp, on which the outlines of the clips now used are marked in dotted lines, illustrating the waste of metal. Fig. 2 is an end view of the same. Fig. 3 is a face view of a rolled bar or skelp, B, from which my improved clip is cut, the outlines of the clips being indicated by the dotted lines. Figs. 4 and 5 are an inner face and an edge view of one of my improved clips, C, cut from the skelp B. Fig. 6 is a side elevation of the swaging-dies E and F, the die F being in section to show the clips C on the end of the spring H ready to commence welding. Fig. 7 is a like view of the same dies with the parts swaged down, forming the button-head end. Fig. 8 is a front elevation of the same dies. Fig. 9 is a plan view of the lower die, F. Fig. 10 is a view of the lower end of the upper die, E. Figs. 11 and 12 are a plan and end views of two clips in connection with the spring H.

Like letters of reference in all the figures indicate the same parts.

Considerable waste of metal is caused by cutting clips of the shape now in use, as shown in Fig. 1, in which the parts surrounding the clips are estimated as being about one-fifth of the bar or skelp, which is of necessity thrown into the scrap-waste, thereby entailing considerable loss; besides, the cutting-die is expensive to make, difficult to repair, and subject to a great strain consequent upon the shape of the

clip. To obviate this loss of metal and to overcome these difficulties is the object of this invention.

In Fig. 3 is shown a face view of a rolled bar or skelp, B, having the longitudinal ribs *a a* and intervening groove, *c*, on each edge. The dotted lines on the face of the bar represent the outlines of the clips C to be cut therefrom, there being but the waste of one-half of a clip at each end of a skelp.

Figs. 4 and 5 show a clip, C, cut from the said bar, having the parallel sides *d* the greater portion of its length, and the angles *b b* at the upper end.

The bar or skelp B is started in the press, and the upper cutting-die cuts one parallel edge *d* and one side *b* of the angle. It is again fed forward, and the next stroke cuts out the clip, as shown in Fig. 4. At the same time the die forms the parallel side and one side of the angle of the next succeeding clip, and so on until the skelp is cut into clips. It will readily be seen by this formation of the clip that none of the bar is wasted, and a much narrower skelp can be used than by the old method. Another result obtained by this shape of the clip is, that less strain is exerted upon the cutting-die by having but one parallel edge and one side of the angle to cut at each stroke. It also avoids crowding of the metal and irregular shape, giving better products than by the old method; also, the die is much easier kept in order, having straight edges in lieu of circular, as heretofore.

The operation of welding the clips to the end is not new, and a particular description thereof is not necessary to give in this specification, the views given of the dies serving to illustrate better how a clip with an angular end may be formed into what is known as a "button-head end."

In Fig. 6 the clips C and end H of the spring are shown as inserted between the upper and lower swaging-dies, E F, (the lower die being in section,) ready to commence welding.

In welding the clips and spring end to each other the angular portion *b b*, together with the corners, are crowded down while hot, said angular part forming the upper portion and

the corners *c c* the lower portion of the button-head end J, (seen in Fig. 7,) the lower die being in section to more clearly illustrate.

I claim as my invention—

5 1. The clip C, cut from a rolled bar, having the angles *b* and parallel sides *d*, substantially as shown and described.

2. The clip C, as shown, cut from a rolled bar or skelp in such a manner that the punch-

ing-die cuts one side of the angular end and one parallel side of the clip at each stroke alternately from the opposite parallel sides of the skelp, substantially in the manner described, and for the purpose set forth.

WILLIAM EVANS.

Witnesses:

THOMAS J. BEWLEY,  
ROBERT EVANS.