E. S. & H. H. BLAKE.
Ore Crusher Frame.

No. 232,669. **Patented Sept. 28, 1880.**

Fig. 1.

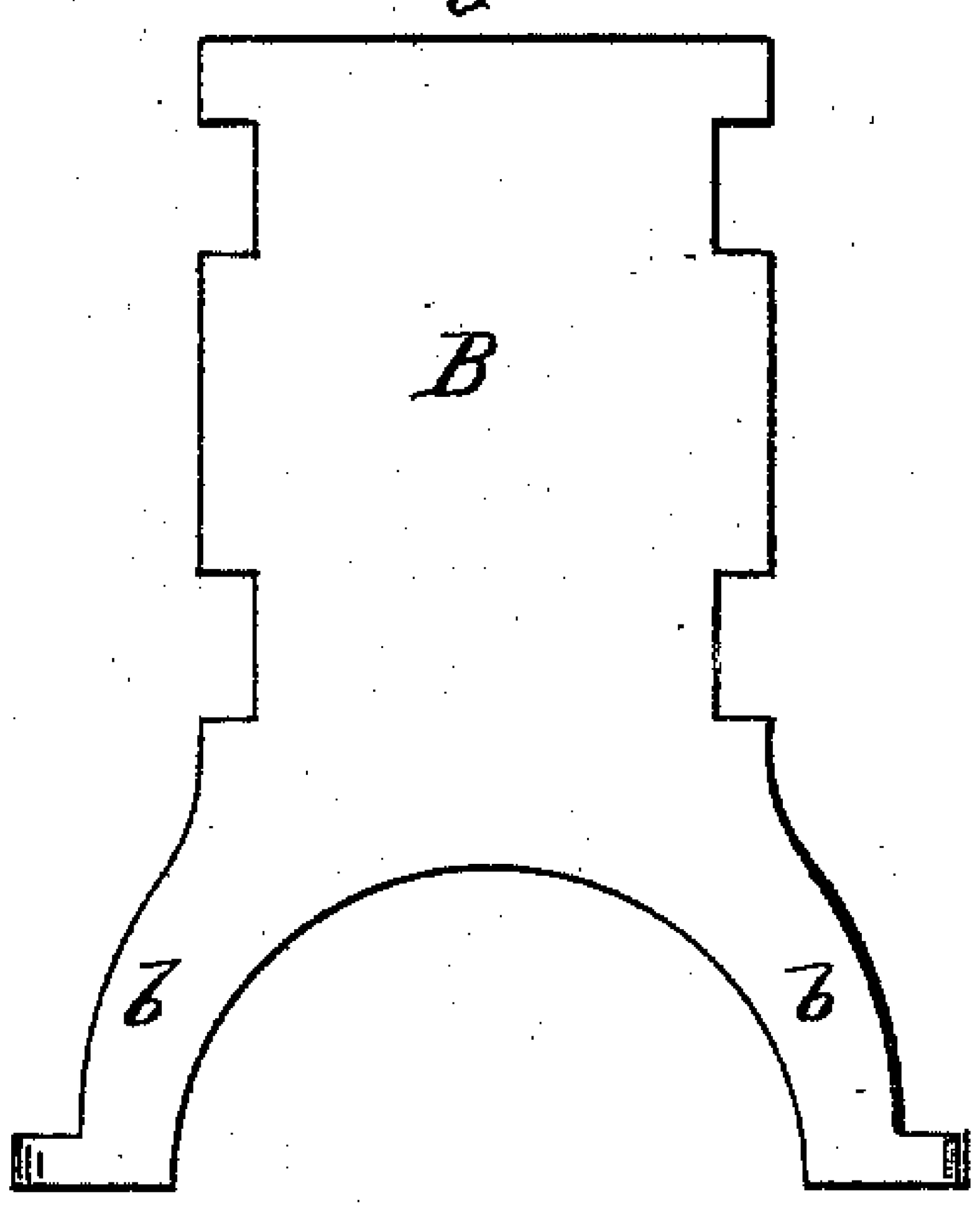


Fig. 2.

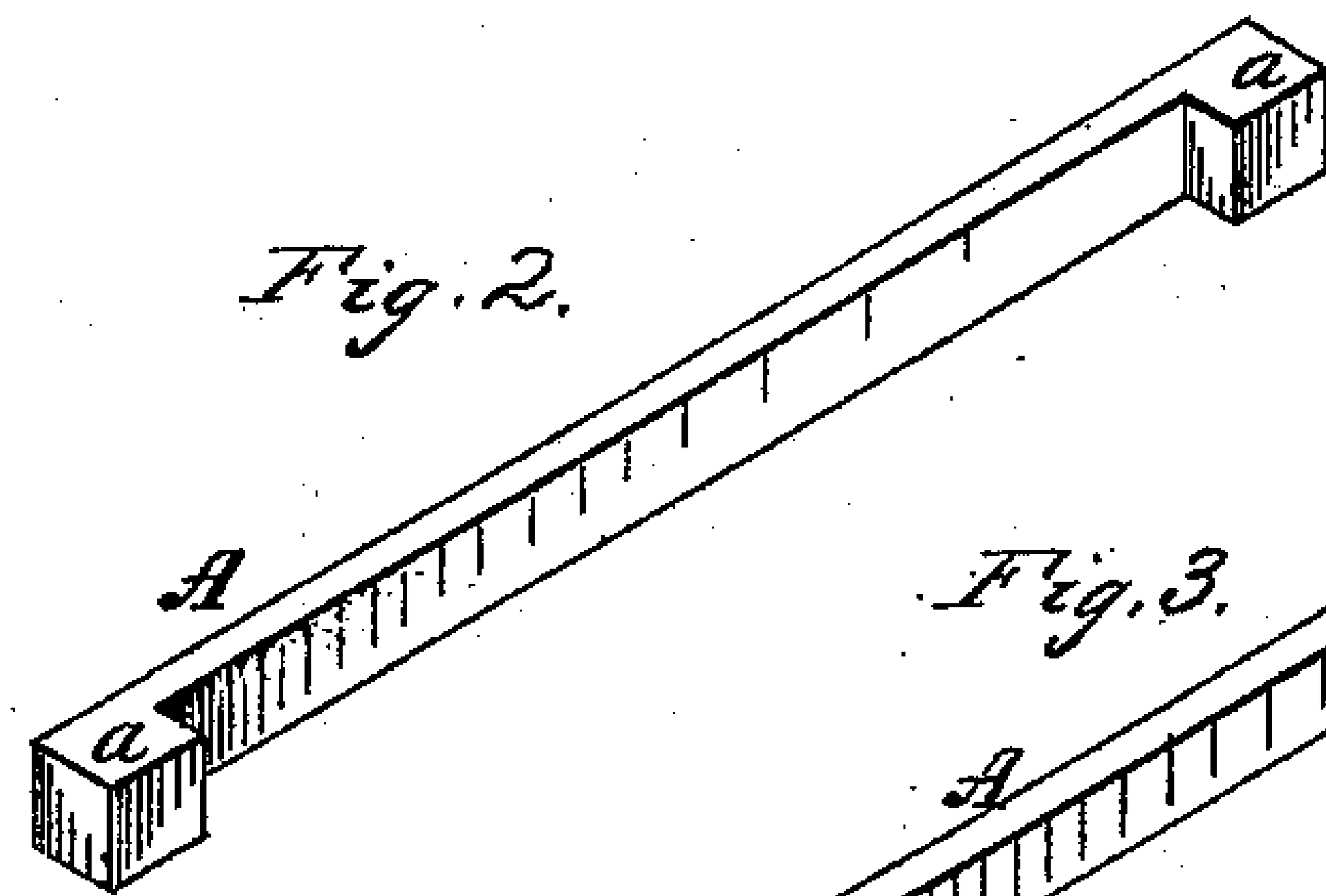


Fig. 3.

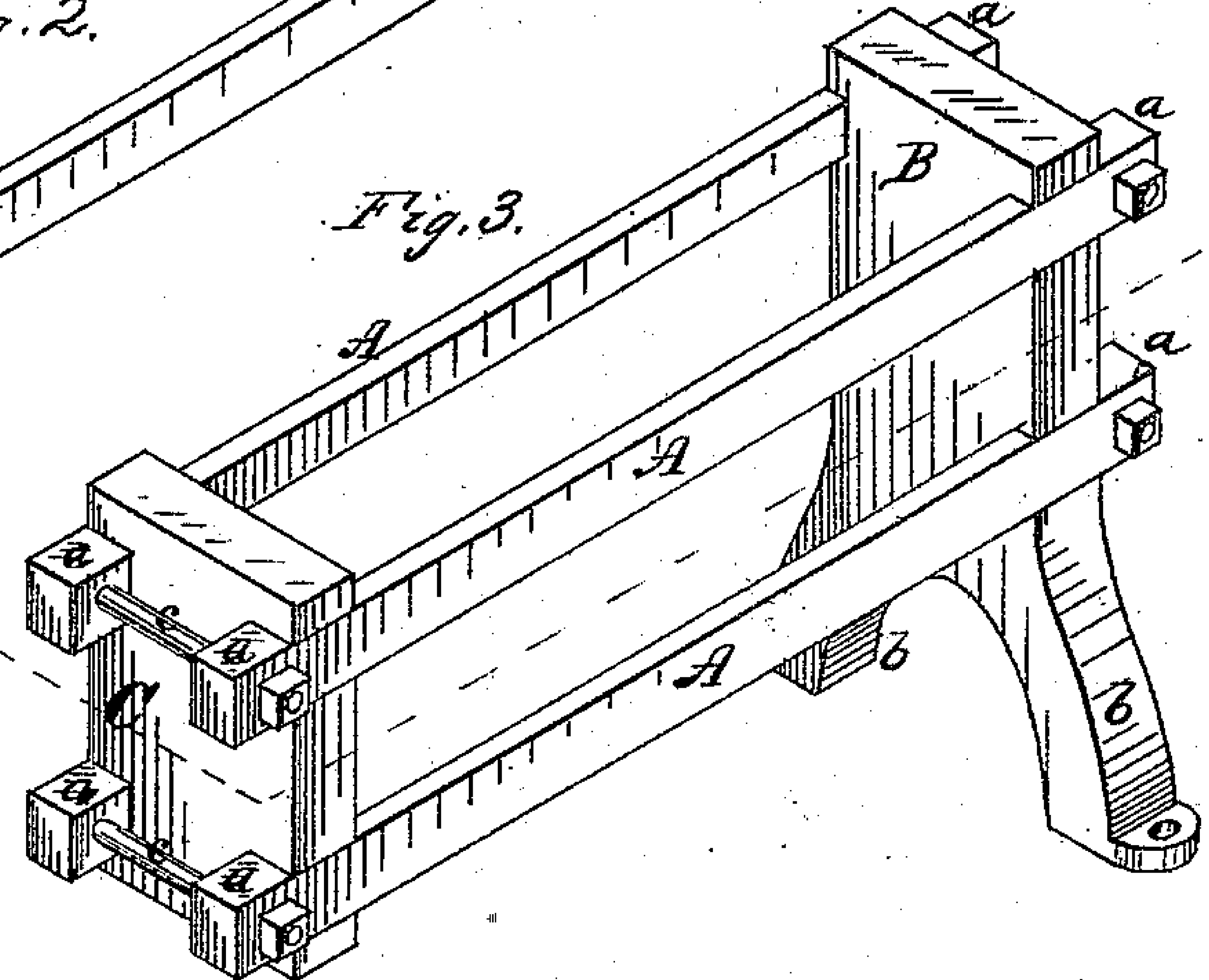


Fig. 4.

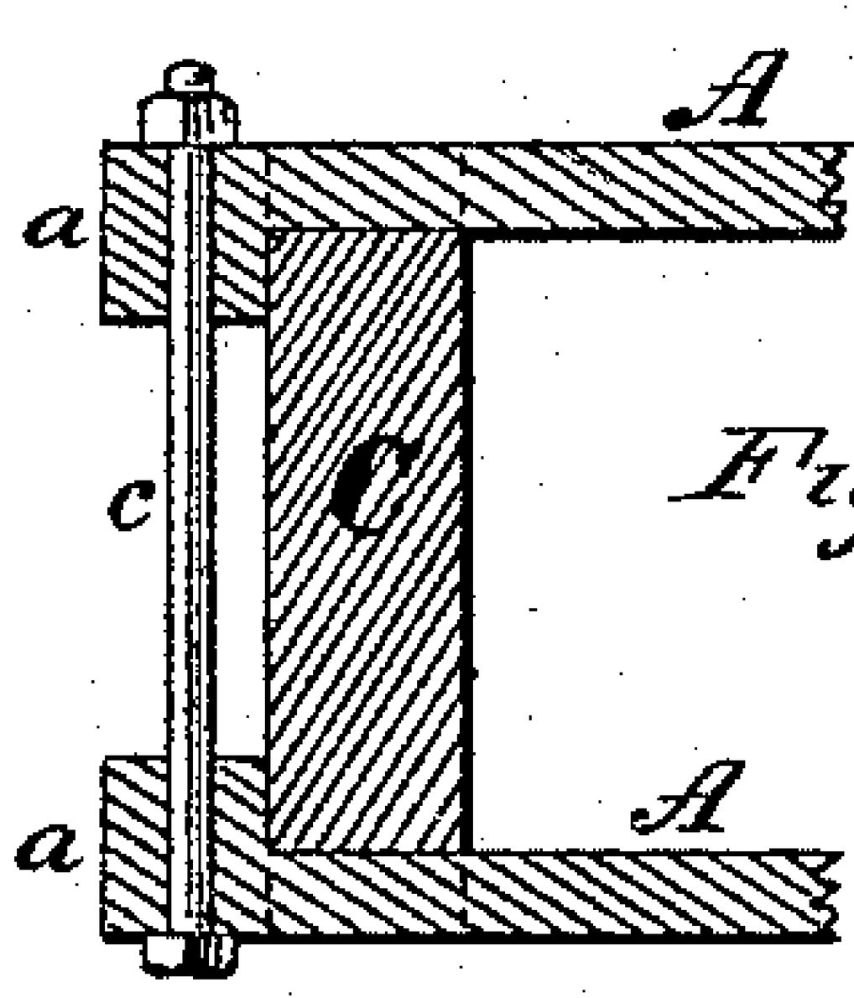


Fig. 5.

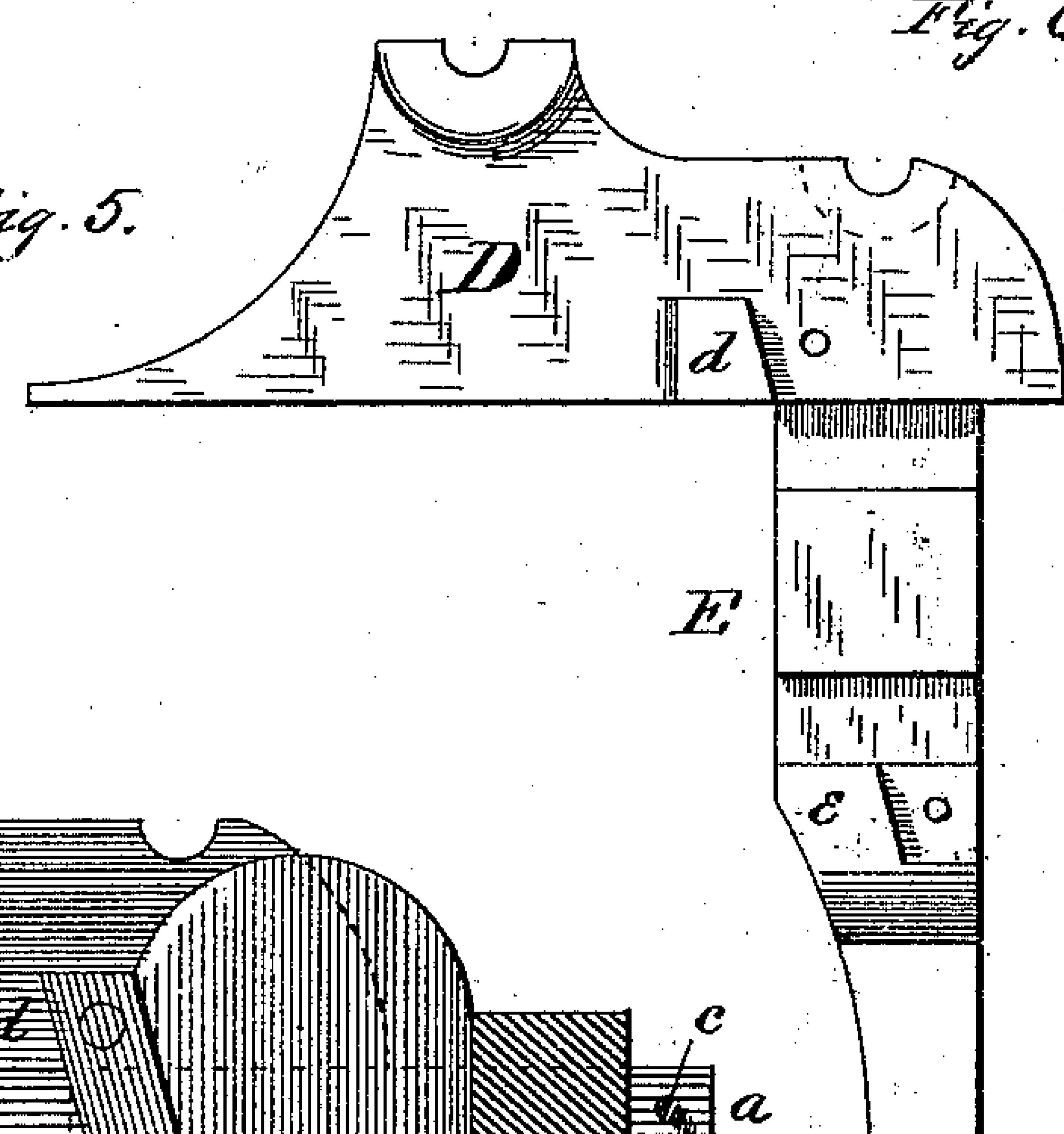


Fig. 6.

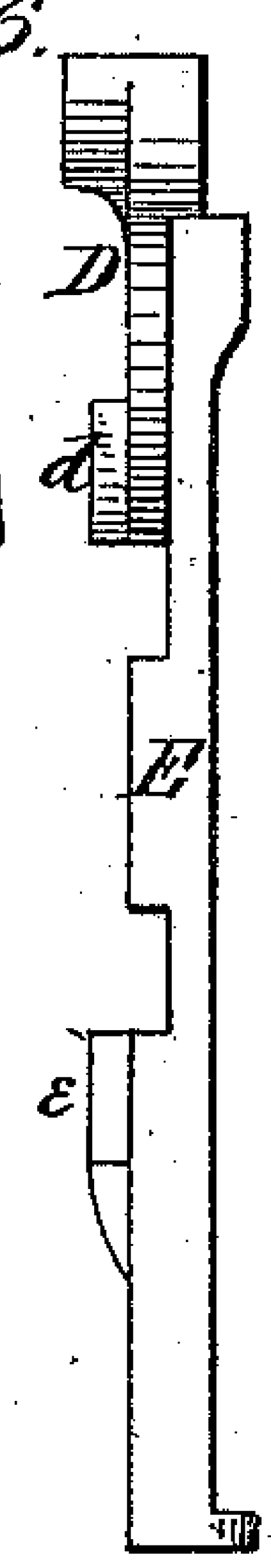
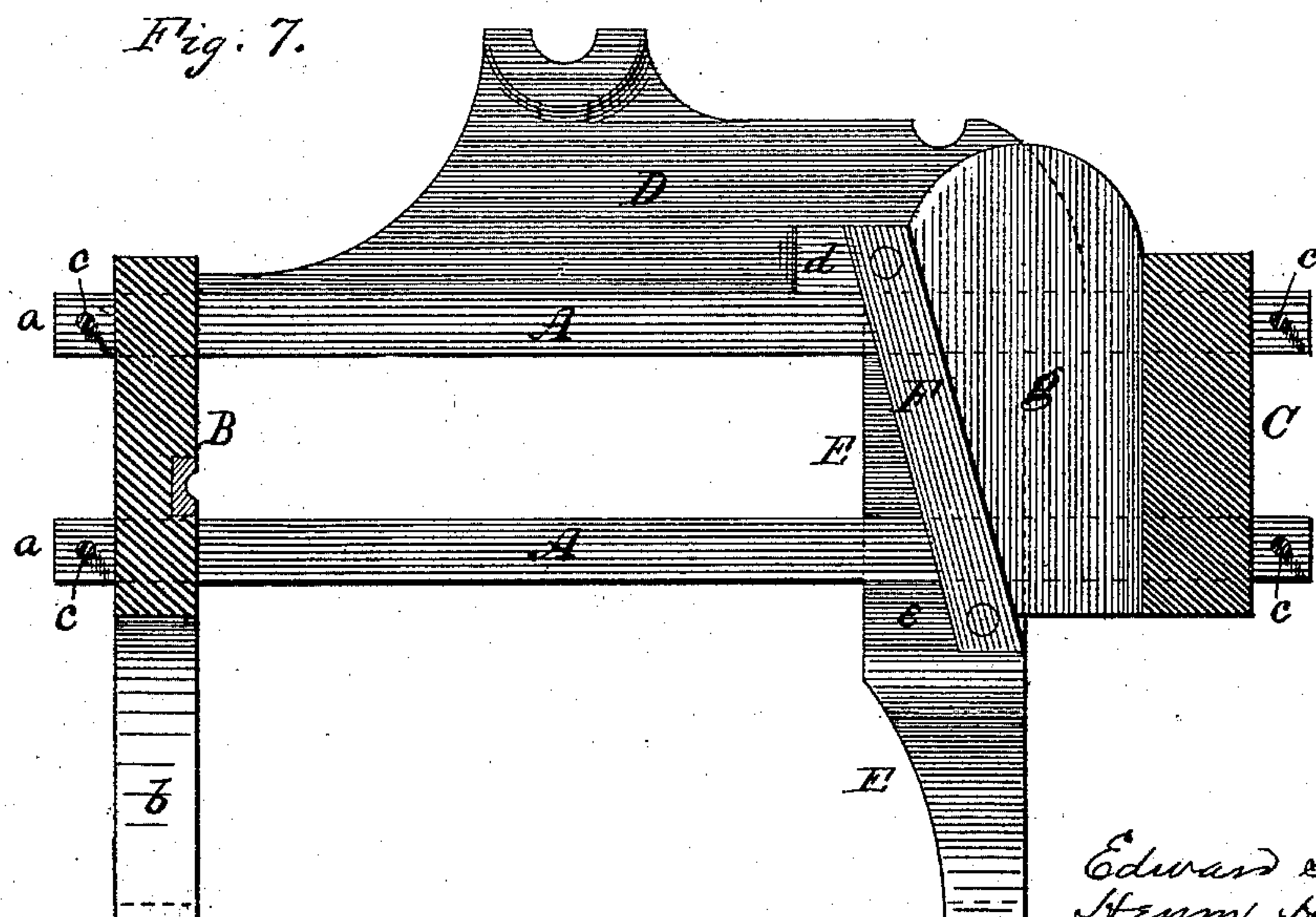


Fig. 7.



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UNITED STATES PATENT OFFICE.

EDWARD S. BLAKE AND HENRY H. BLAKE, OF PITTSBURG, PA.

ORE-CRUSHER FRAME.

SPECIFICATION forming part of Letters Patent No. 232,669, dated September 28, 1880.

Application filed December 29, 1879.

To all whom it may concern:

Be it known that we, EDWARD S. BLAKE and HENRY H. BLAKE, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Crusher-Frames; and we do hereby declare that the following is a full, clear, and exact description of the invention, that 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 the letters of reference marked thereon, which form a part of this specification.

Figures 1 and 2 are details. Fig. 3 is a view of the skeleton of frame; Fig. 4, a horizontal section of same; Figs. 5 and 6, details; Fig. 7, a longitudinal vertical section of frame complete.

Our invention has for its object the construction of a crushing-machine in which those parts subjected to the greatest strain shall be of wrought-iron or steel, whereby the net weight of the machine can be very greatly reduced without taking from its strength or durability.

The invention consists in the method we adopt of combining and uniting wrought-iron side bars and cast-iron ends to form the main body of a crusher-bed; further, in the manner of arranging the said side bars and cast-iron legs, whereby the side bars are supported and stiffened; further, in the combination of the legs with the check-guards or curbs, and of the guards with the checks and frame, and in the construction and arrangement of parts, all as hereinafter fully described.

In practicing our invention we proceed as follows: Two or more wrought-iron or steel side bars, A, are made, each having the lateral end lug or shoulder, *a*. These bars may be flat, square, round, or other shape. A heavy casting, B, with or without the legs *b*, is made with notches in its side edges corresponding in shape to the section of the side bars, A, and this casting constitutes the rear end of the machine. A casting, C, similarly formed, but without legs, forms the front end of the machine, and constitutes, wholly or in part, the fixed jaw of the crusher. The side bars, A, are laid in the notches with the shoulders *a* respectively resting against the front and rear sides of the cast-iron end pieces, and are either bolted together by rods *c*, as shown in Figs. 3 and 4, or are held by screws or bolts passing into the castings or through them. We thus have that portion of the frame which receives the heaviest strains composed of wrought-iron bars, and it may be easily and rapidly put together by any ordinary mechanic.

As we prefer to make the front casting, C, without legs, we provide for the support of that end of the frame in the following manner, while securing the other objects of our invention: We make a single casting comprising the side D, which forms the support for the main shaft and vibrating jaw, the side leg, E, having notches in its inner face corresponding to the location of the side bars, A, a lug, *d*, and a lug or shoulder, *e*, all as shown in Figs. 5, 6, and 7. Two such castings are employed, the lower edge of sides D resting upon the upper side bars, A, and the rear end abutting against the casting B, as shown. Leg E passes down outside the bars A, which rest in the notches therein. In front of and bearing against the two lugs *d* and *e*, which we prefer to locate in a diagonal line, is a transverse bar, F, which passes down on the inside of side bars, A, and is fixed by bolts passing through the legs E and sides D, preferably with countersunk heads inside and nuts outside. Thus arranged, the bars F serve to hold the casting D E in position with reference to the side bars, and also constitute curbs for the cheeks *g*, which slide down between them and the front casting, C. Thus the cheeks *g*, having rear edge inclined, form the stiffening or wedging pieces between the castings B, D, and C, insuring the utmost firmness and compactness, so that no jarring or rattling can take place when the crusher is in operation.

The frame is light, portable, and very strong, and the strains are distributed to the best possible advantage. The longitudinal strains are borne by wrought-iron bars, whose lateral shoulders must be sheared off by the strain before the jaws can yield. This in ordinary or even extraordinary practice cannot occur, as these machines usually have a break-down point, which gives way to any such excessive strain. The vertical strains upon the shaft and jaw-bearings come upon the castings D, from which they go to the bars A and become

transverse strains; but, being distributed over the bars along the whole length or at several points thereon, the strains do not materially affect said bars, but pass to the notched castings C, B, and E.

While we have described the parts D and E as being integral, we do not exclude from our invention two pieces cast and joined to form the whole, as they may be fitted so as to be practically the same as one. We prefer, however, the construction first referred to.

We claim as our invention—

1. In a crusher-frame having the ends B C and the side bars, A, the combination therewith of the combined shaft-supporter and legs D E, substantially as specified.

2. The crusher-frame comprising, in combination, the shouldered bars A, ends B C, supports D E, and bars F, arranged and constructed substantially as specified.

In testimony that we claim the foregoing we have hereunto set our hands.

EDWARD S. BLAKE.
HENRY H. BLAKE.

Witnesses:
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