

(No Model.)

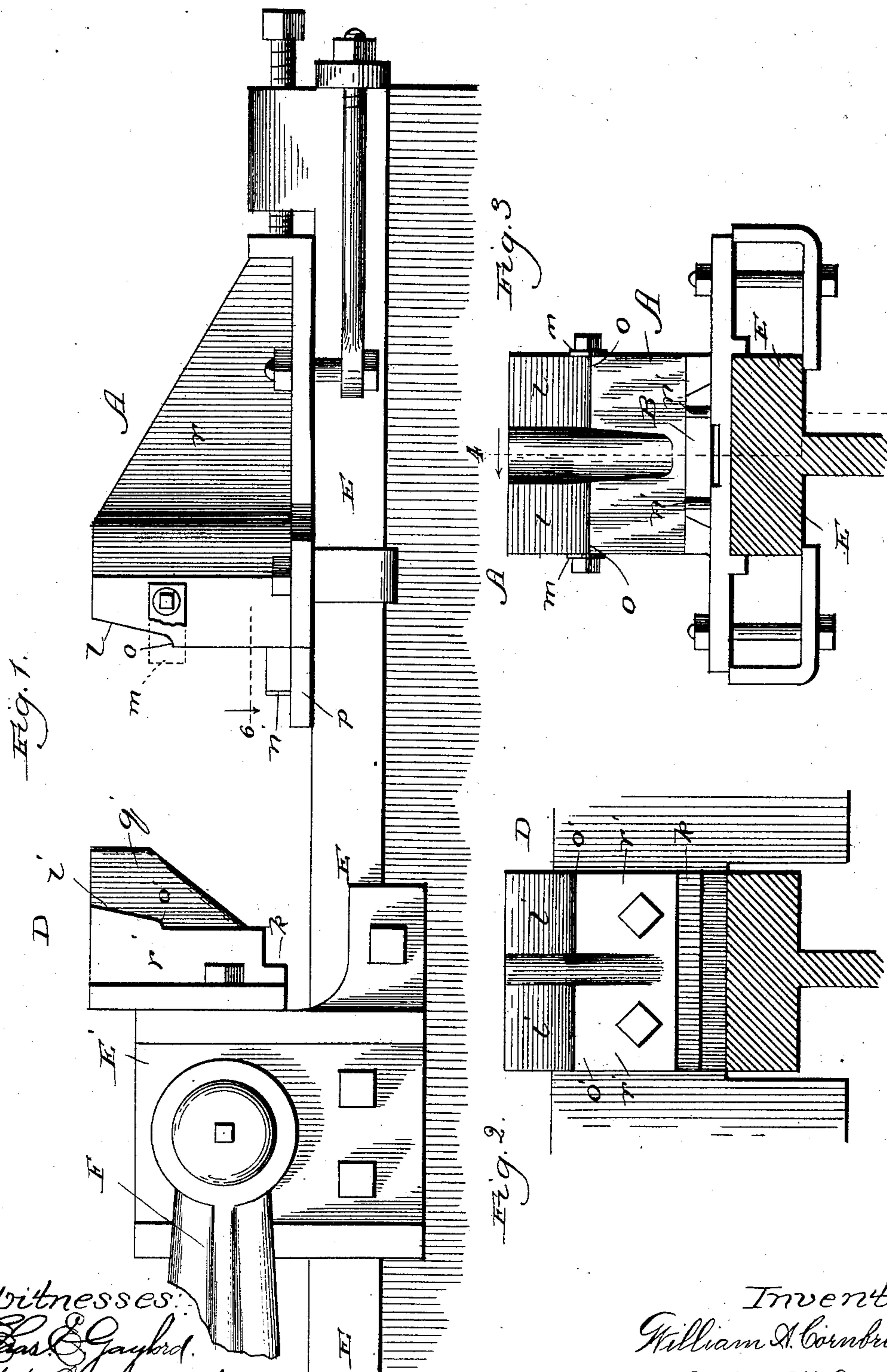
2 Sheets—Sheet 1.

W. A. CORNBROOKS.

DIE FOR FORMING RAIL BRACES.

No. 367,503.

Patented Aug. 2, 1887.



Witnesses:
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J. W. Dyrenforth.

Inventor:
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Attys

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Fig. 4.

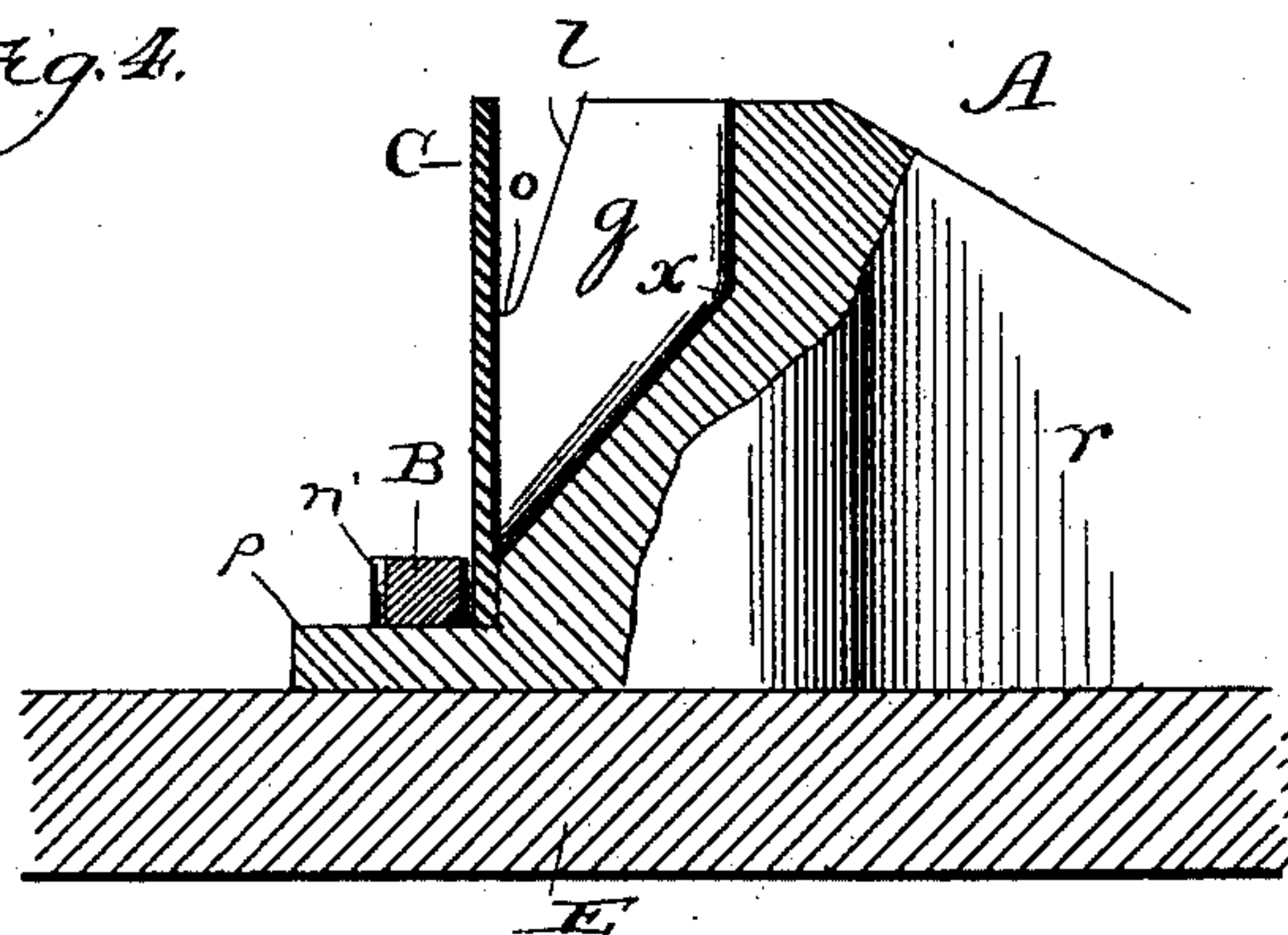


Fig. 5.

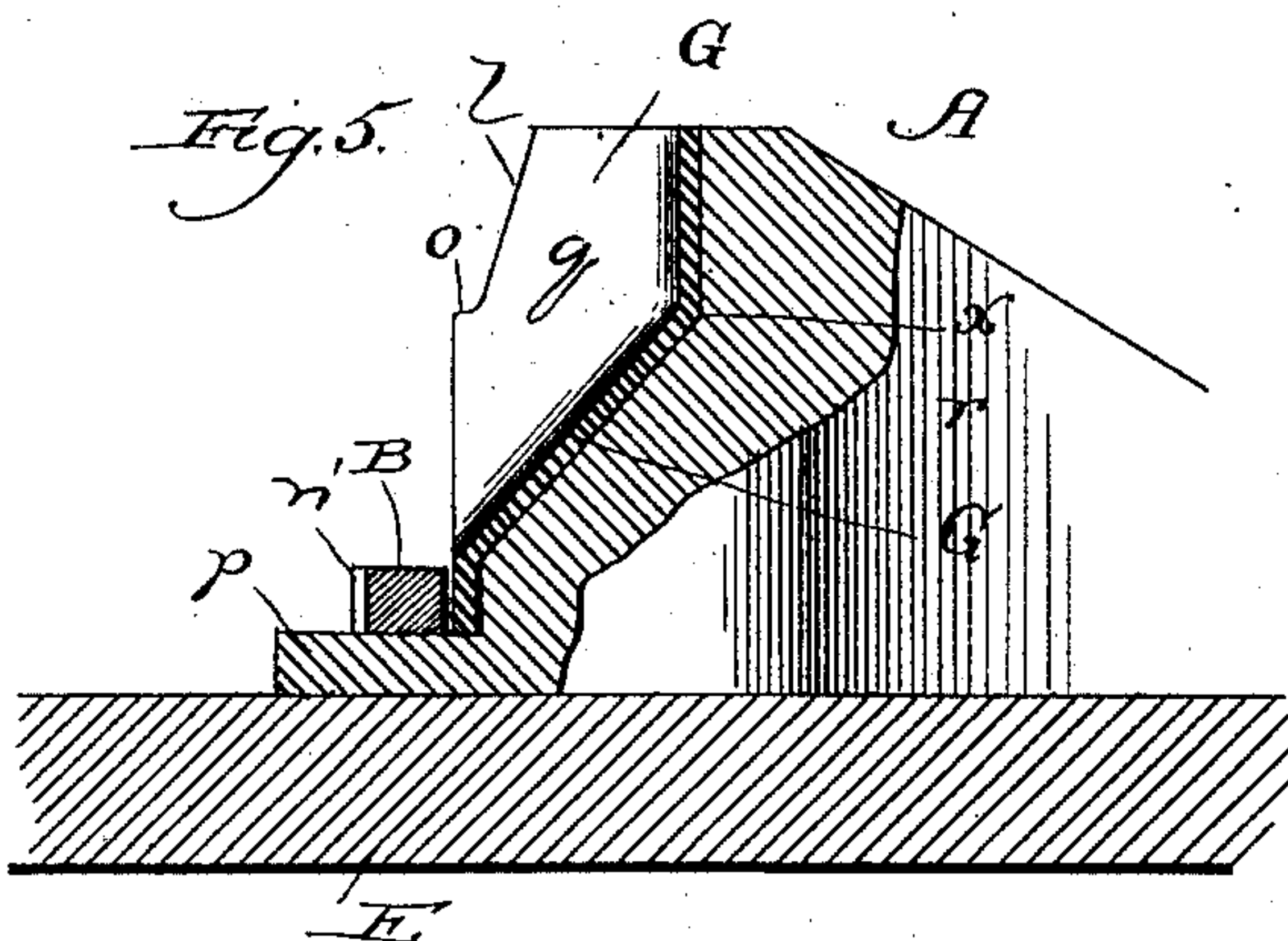


Fig. 6.

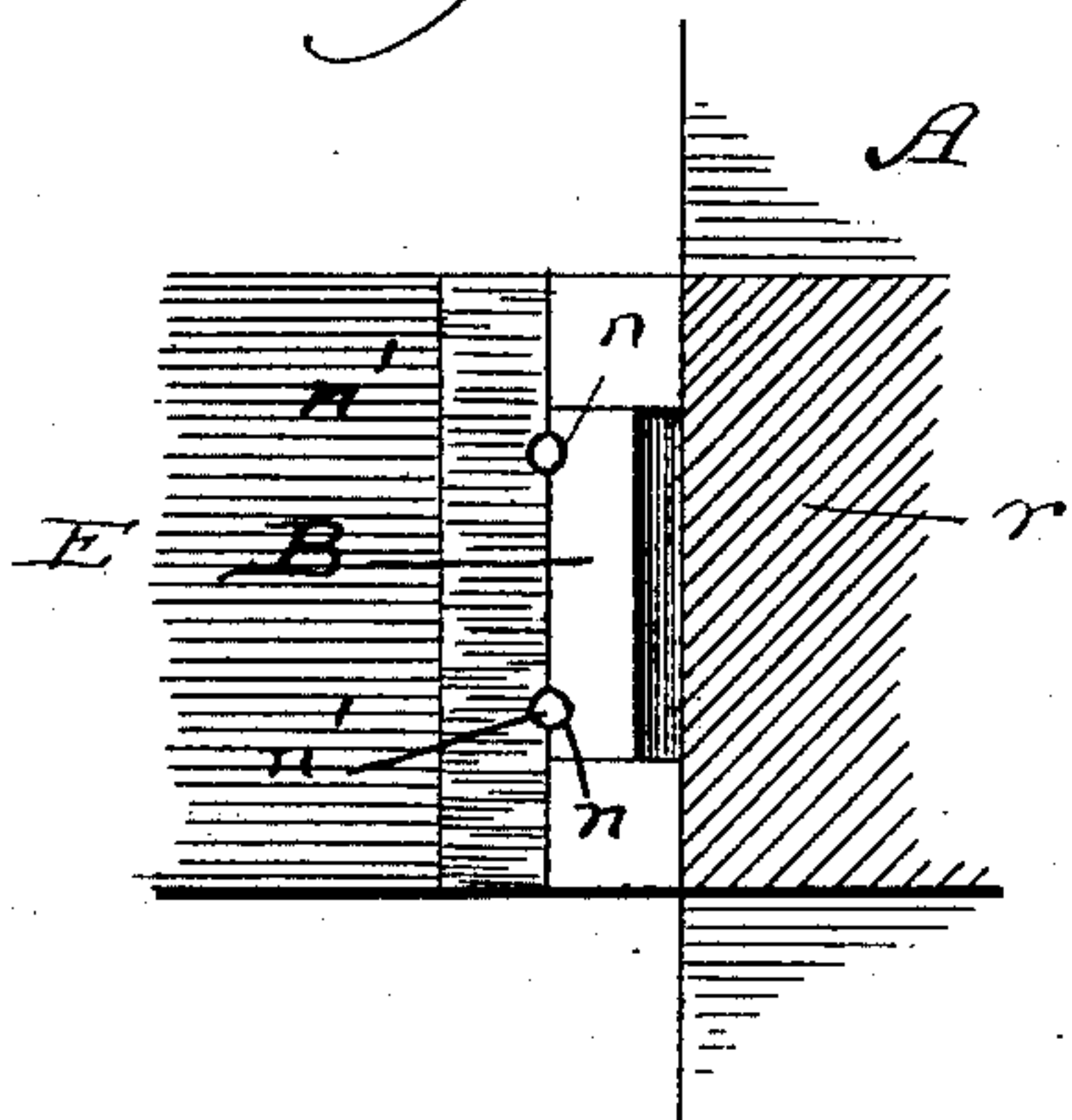
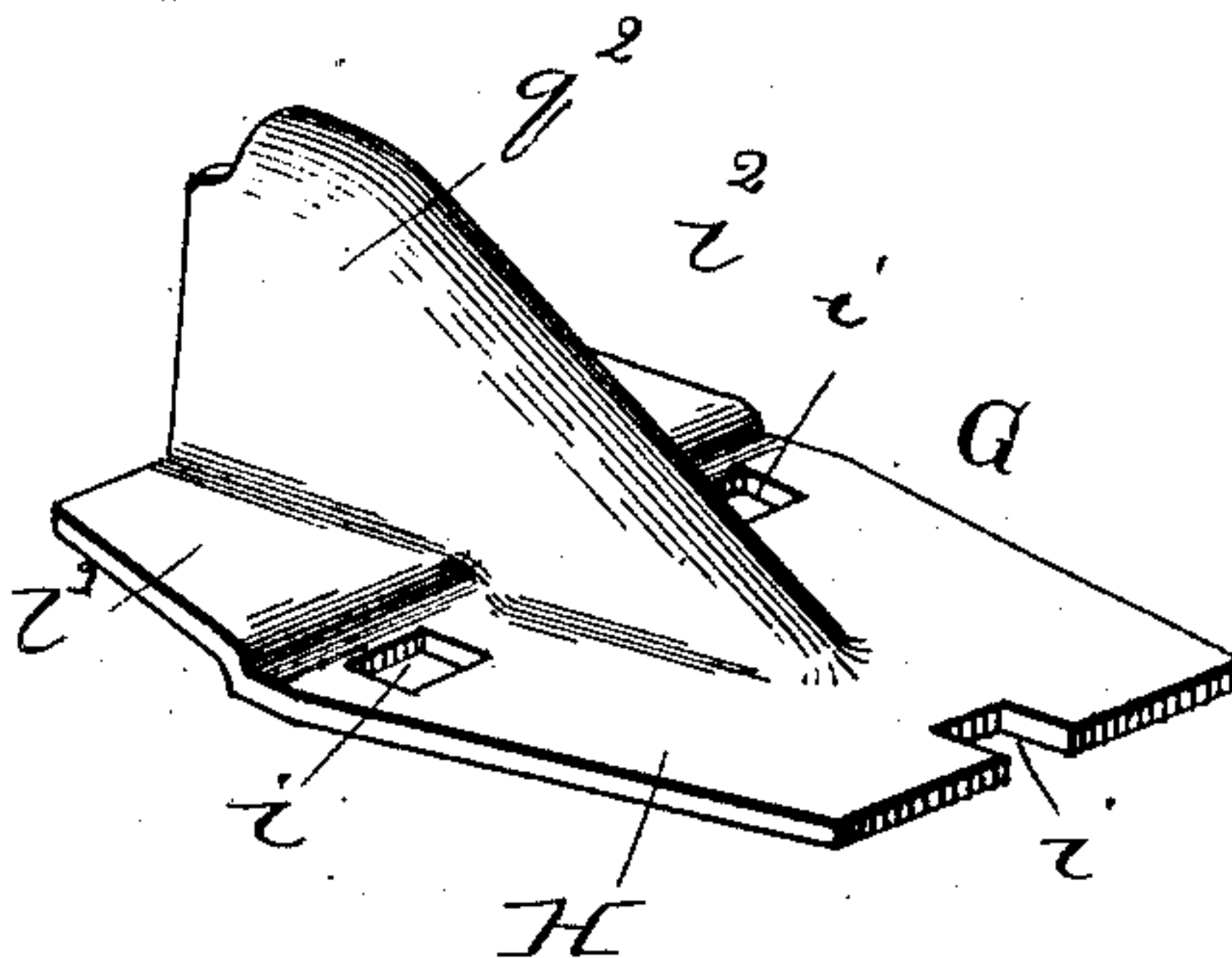


Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM A. CORNBROOKS, OF MOLINE, ASSIGNOR TO PETTIBONE, MULLIKEN
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DIE FOR FORMING RAIL-BRACES.

SPECIFICATION forming part of Letters Patent No. 367,503, dated August 2, 1887.

Application filed May 25, 1887. Serial No. 239,322. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. CORNBROOKS, a citizen of the United States, residing at Moline, in the county of Rock Island and State of Illinois, have invented a certain new and useful Improvement in Dies; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates particularly to a die for forming rail-braces by forging them from blanks to produce a hollow abutment rising from a base, thereby producing a very strong brace with the least possible material.

My invention consists in the general construction of my improved forming-die; and it further consists in details of construction and combinations of parts, all as hereinafter more fully set forth.

In the drawings, Figure 1 shows my improvement in side elevation, the female die being stationary and adjustable and the male die horizontally reciprocating on a bed. Fig. 2 is a broken sectional view showing the male die in front elevation; Fig. 3, a similar view showing the female die in front elevation; Fig. 4, a section taken on the line 4 of Fig. 3, viewed in the direction of the arrow, and showing the blank in position to be operated upon by the male die; Fig. 5, a similar view showing the blank in the female die into which it has been forced by the male die; Fig. 6, a section taken on the line 6 of Fig. 1, viewed in the direction of the arrow, and illustrating a detail; and Fig. 7 a perspective view of a rail-brace of the form produced by the forging operation with the forming dies.

A is the female die or portion of the die, comprising a metal body, r , provided in its face with a recess, q , slanting into the block upward and backward from a point above the ledge p in front of it, and thence vertically upward, as shown, to the upper surface of the block. The recess widens slightly toward its upper end and the sides converge somewhat in an inward direction, and the base of the recess is concave. The face of the body r recedes to afford backwardly-inclined surfaces l , on opposite sides of the recess q , from concave or depressed shoulders o on the same plane with the angle x of the oblique and vertical portions of the recess.

B is a metal block in the form of an oblong square dovetailed into the ledge p to extend across the face of the body r , and of a height or thickness to cause its upper surface to coincide with the lowest extremity of the oblique portion of the recess q , and on its rear side are provided near opposite ends recesses n , to receive stationary vertical pins n' in line with them in or on the ledge p and in line with each other parallel to the face of the body r a distance from the face of the die exceeding the width of the block B to an extent that will permit ready insertion and a loose fit of the blank C, Fig. 4, when adjusted between the die and adjacent side of the movable block B, to which adjustment it is guided by means of ears m , projecting forward from opposite sides of the body A.

D is the male die or portion of the die, comprising a metal body, r' , having a head, q' , to fit into the recess q in the female die, and with which it corresponds in form, the cross section of the head q' being of course such with reference to that of the recess as will leave a space between their adjacent surfaces sufficient to accommodate the thickness of the blank. On opposite sides of the head q' , to coincide with the receding surfaces l and concave or depressed shoulders o , are forwardly-inclined surfaces l' and convex or protruding shoulders o' , and the face of the body r' on opposite sides of the head q' and below the shoulders o' coincides with the flat surface of the face of the body r on opposite sides of the recess q and below the shoulders o . Below the head q' the body r' is recessed out, as shown at k , to a height and width that will prevent obstruction by the block or bar B to the advancement of the die D to the extreme limit of its forward stroke.

Both dies A and D are supported on a machine of old construction, and therefore not illustrated further in the present connection than is required to indicate the operation of actuating the dies to forge blanks into rail-braces G of the form shown in Fig. 7. The female die A is secured rigidly upon the bed E of the machine, being, however, adjustable thereon by means of set-screws, as shown, and the die D is secured to a reciprocating head, E' , on the bed E, in a manner to cause its parts to coincide with those of the female die, the

head E' being reciprocated through the medium of pitmen F on opposite sides.

To forge a rail-brace G, the blank C, of suitable shape, having the bolt-openings *i*, provided and previously heated, is placed during the back-stroke of the head E' against the face of the female die A in the position represented in Fig. 4. When the male die D advances against it, the head *q'* forces the center of the blank into the recess *q*, forming the hollow abutment *q''*, Fig. 7, the bar B is pressed firmly against the blank toward its lower edge to hold it rigidly, the inclined surfaces *l* and *l'* form the upwardly-inclined parts of the base H to fit against the upper surface of a rail-flange, and the vertical flat surfaces of the opposing dies produce the horizontal portion of the base H.

When forged as described in this, (the forming or shaping die,) the brace G is removed to be acted upon by the upsetting-die, which forms the subject of a separate concurrent application for Letters Patent.

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

1. In a die for forging rail-braces G, the combination of a female portion, A, having a recess, *q*, and a male portion, D, having a head, *q'*, substantially as and for the purpose set forth.

2. In a die for forging rail-braces G, the combination of a stationary female portion, A, having a recess, *q*, and a reciprocating male portion, D, having a head, *q'*, substantially as and for the purpose set forth.

3. In a die for forging rail-braces G, the combination of a stationary adjustable female portion, A, having a recess, *q*, and a horizontally-reciprocating male portion, D, having a head, *q'*, substantially as and for the purpose set forth.

4. In a die for forging rail-braces G, the combination of a female portion, A, having a recess, *q*, provided with a backwardly-inclined base, and a male portion, D, having a head, *q'*, to enter and conform to the recess *q*, substantially as and for the purpose set forth.

5. In a die for forging rail-braces G, the combination of a female portion, A, having a recess, *q*, provided with a partly-inclined and partly-vertical base, and a male portion, D, having a head, *q'*, to enter and conform to the

recess *q*, substantially as and for the purpose set forth.

6. In a die for forging rail-braces G, the combination of a female portion, A, having a recess, *q*, widening toward the upper end and provided with a partly-inclined and partly-vertical concave base, and with sides converging toward the said base, and a male portion, D, having a head, *q'*, to enter and conform to the recess *q*, substantially as and for the purpose set forth.

7. In a die for forging rail-braces G, the combination of a female portion, A, having a recess, *q*, a movable bar, B, and a male portion, D, having a head, *q'*, to enter and coincide with the recess *q*, and a recess, *k*, substantially as and for the purpose set forth.

8. In a die for forging rail-braces G, the combination of a female portion, A, having a recess, *q*, and inclined surfaces *l* at opposite sides of the recess, and a male portion, D, having a head, *q'*, to enter and conform to the recess *q*, and inclined surfaces *l'* at opposite sides of the head *q'* to coincide with the inclined surfaces *l*, substantially as and for the purpose set forth.

9. In a die for forging rail-braces G, the combination of a female portion, A, having a recess, *q*, inclined surfaces *l* at opposite sides of the recess, and concave shoulders *o*, and a male portion, D, having a head, *q'*, to enter and coincide with the recess *q*, inclined surfaces *l'* at opposite sides of the head *q'*, and protruding shoulders *o'*, substantially as and for the purpose set forth.

10. A die for forging rail-braces G, comprising, in combination, a female portion, A, having a recess, *q*, provided with a partly-inclined and partly-vertical base, inclined surfaces *l* at opposite sides of the recess, and concave shoulders *o* below the said inclined surfaces, a movable bar, B, and a male portion, D, having a head, *q'*, to enter and coincide with the recess *q*, inclined surfaces *l'* at opposite sides of the head *q'*, protruding shoulders *o'* below the inclined surfaces *l'*, and a recess, *k*, substantially as and for the purpose set forth.

WILLIAM A. CORNBROOKS.

In presence of—

S. W. SKINNER, Jr.,
L. A. THOMPSON.