

(No Model.)

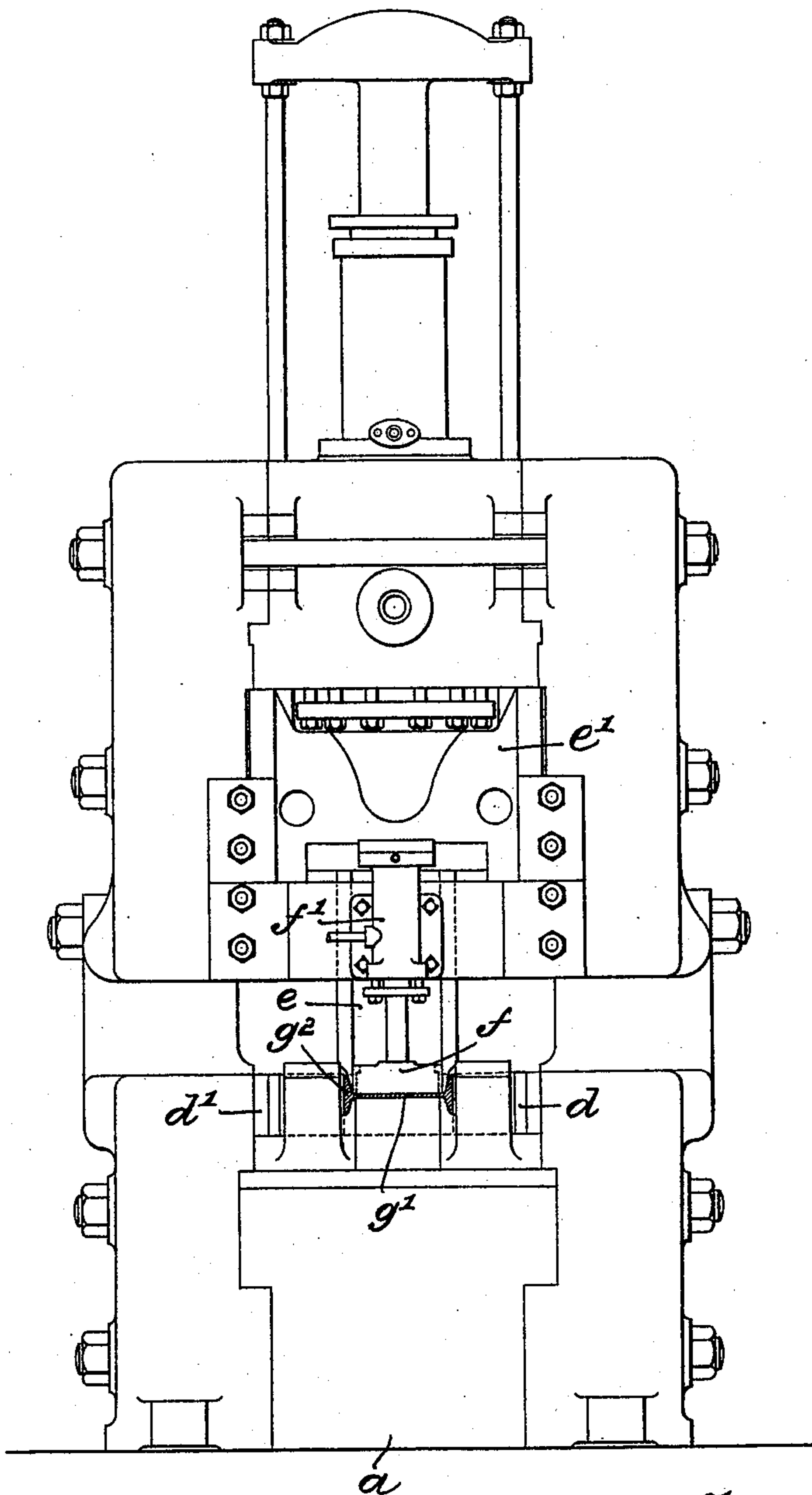
3 Sheets—Sheet 1.

E. A. W. JEFFERIES.
HYDRAULIC COPING OR SHEARING MACHINE.

No. 594,019.

Patented Nov. 23, 1897.

Fig: 1.



Witnesses:
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Richard C. Maxwell.

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By J. Walter Douglas
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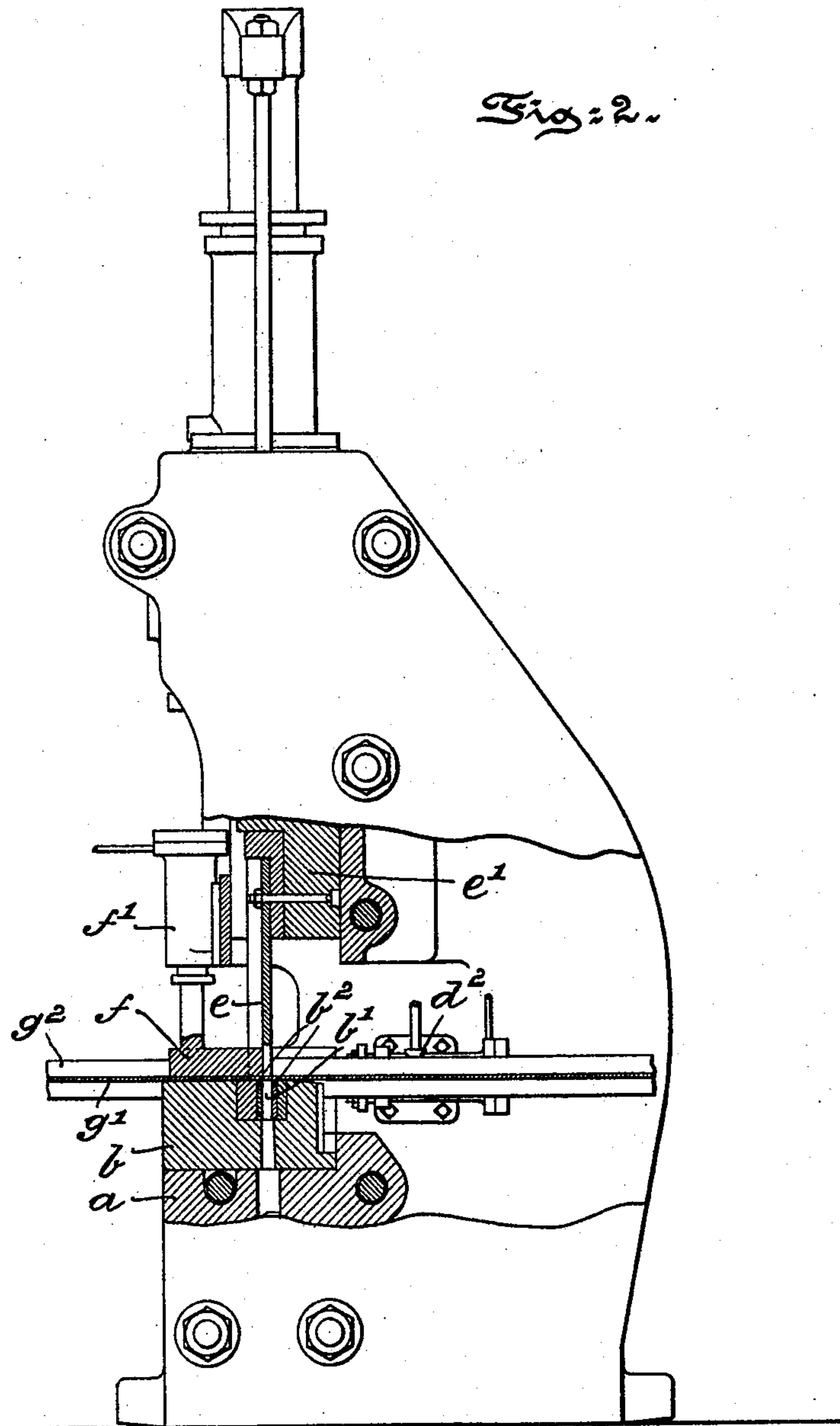
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3 Sheets—Sheet 3.

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Fig:3.

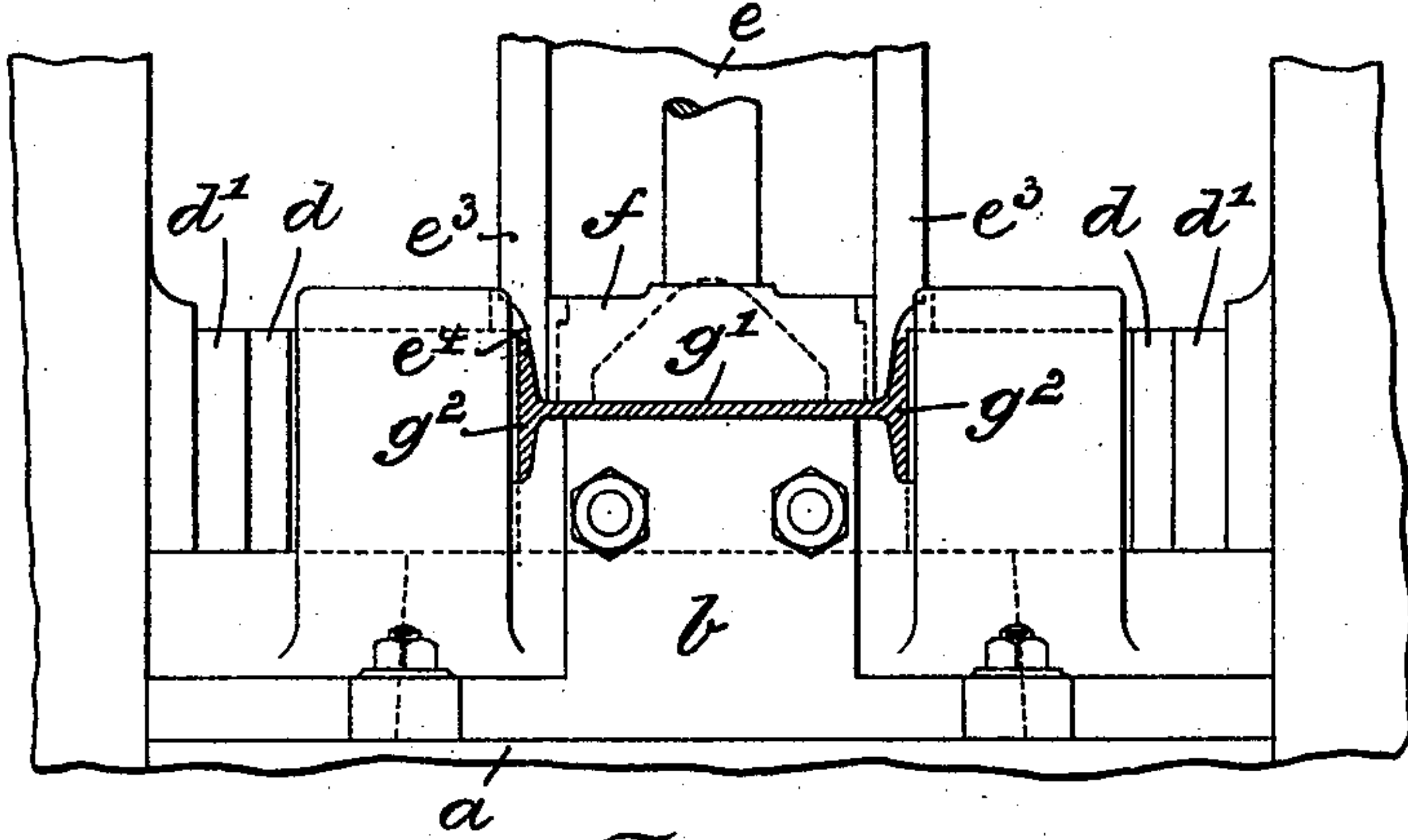


Fig:4.

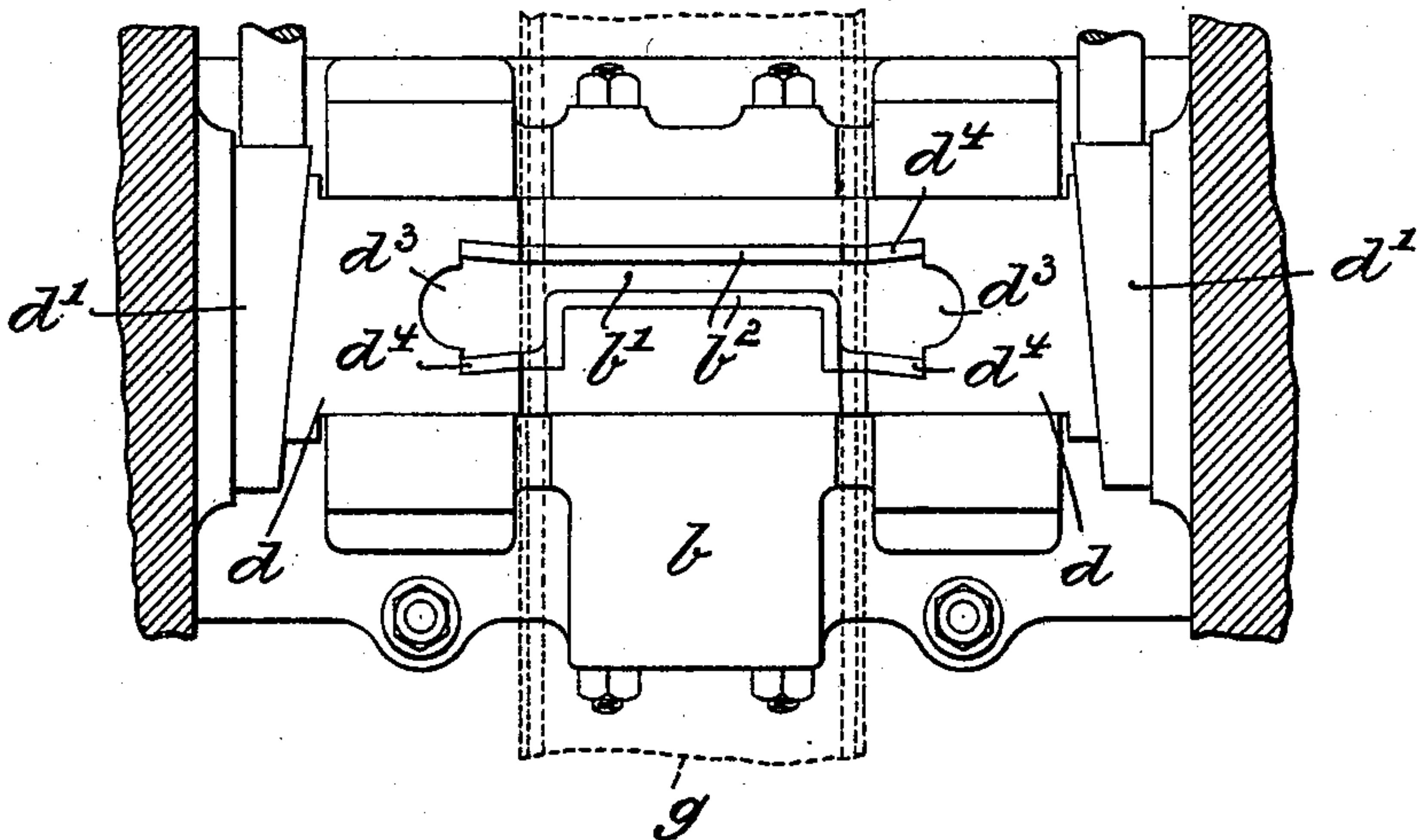


Fig:5.

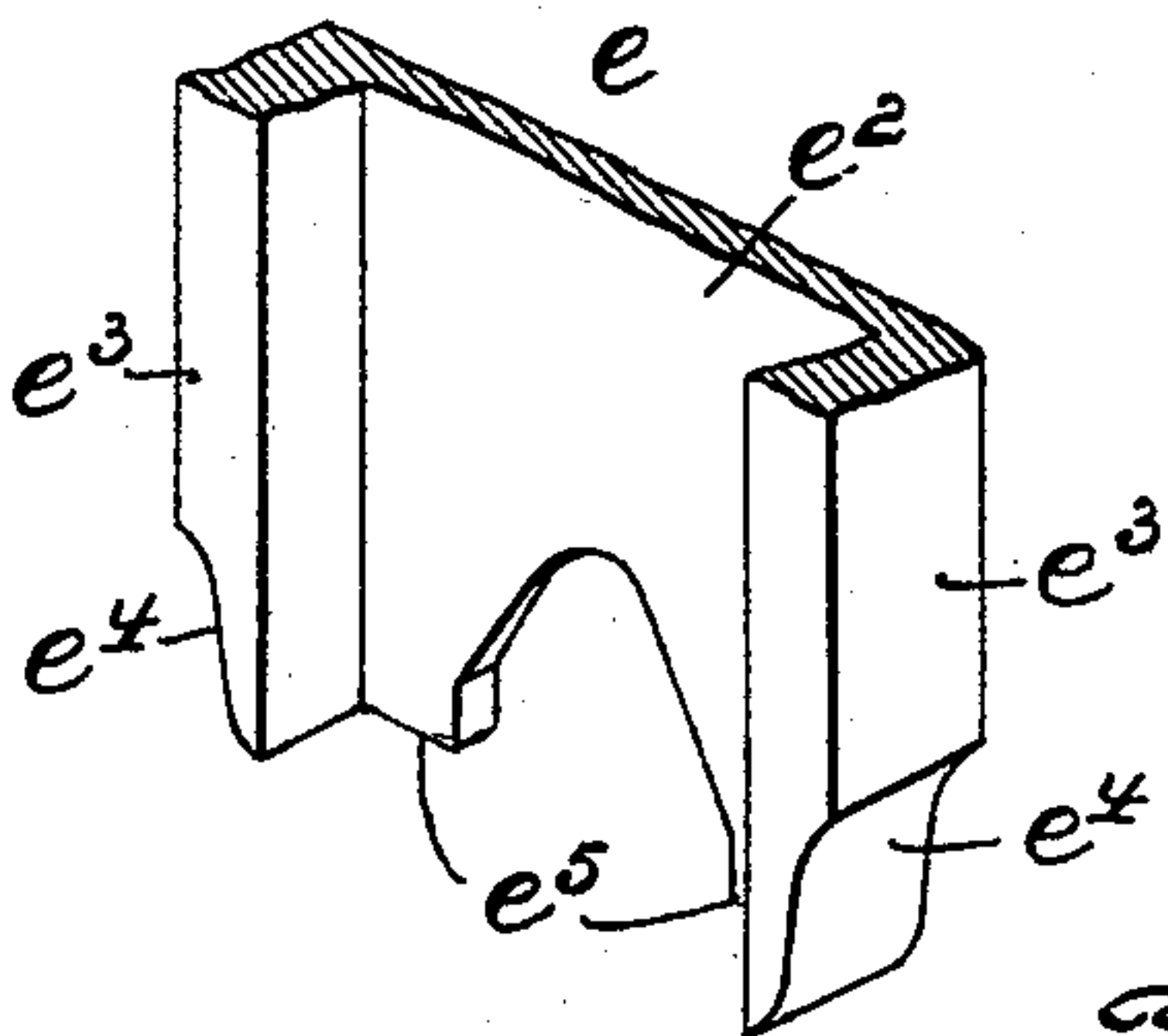


Fig:7.

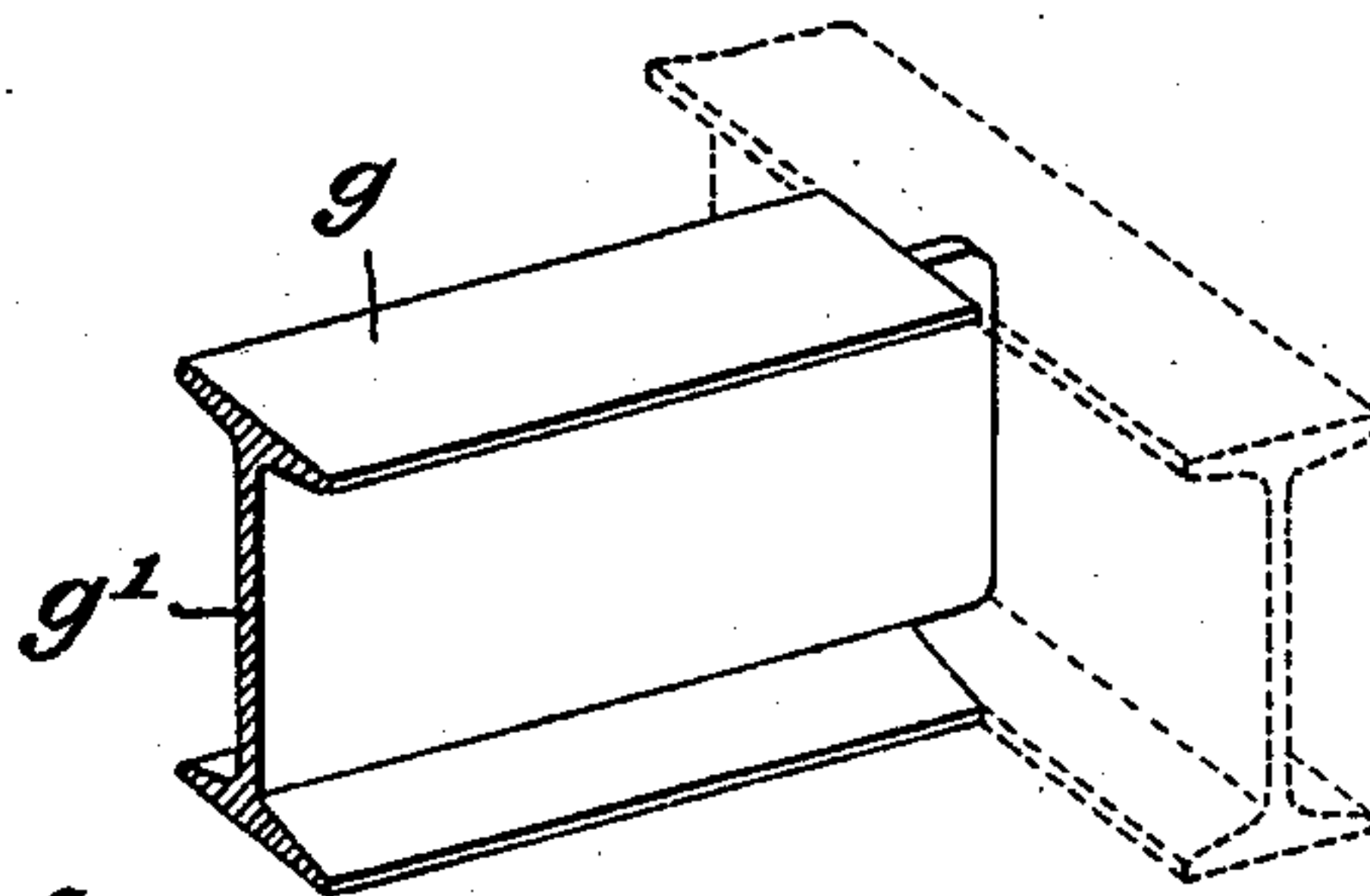


Fig:6.



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UNITED STATES PATENT OFFICE.

EBENEZER A. W. JEFFERIES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR
TO WALTER WOOD, OF SAME PLACE.

HYDRAULIC COPING OR SHEARING MACHINE.

SPECIFICATION forming part of Letters Patent No. 594,019, dated November 23, 1897.

Application filed March 30, 1897. Serial No. 629,894. (No model.)

To all whom it may concern:

Be it known that I, EBENEZER A. W. JEFFERIES, a citizen of the United States, residing at the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Hydraulic Coping or Shearing Machines, of which the following is a specification.

My invention has relation to a machine for coping metal beams—that is to say, it relates to a machine preferably operated by hydraulic pressure—wherein the flanges of the metal beams may be sheared or coped by one operation in contradistinction to a series of operations, as heretofore, and in order to permit the web of the beam thus unflanged to fit in between the flanges and abut against the web of a similar beam placed at right angles to the coped beam.

My invention, stated in general terms, consists of a machine for coping metal beams constructed and arranged in substantially the manner hereinafter described and claimed.

The nature and scope of my invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, in which—

Figure 1 is a front elevational view of a hydraulic coping-machine embodying main features of my invention. Fig. 2 is a side elevational view, partly sectioned, of said machine. Fig. 3 is an enlarged front elevational view illustrating in detail the tool or die, the anvil or block, the side blocks, the upper vertical movable block, and the metal beam, all in position, so that the beam may be coped or sheared. Fig. 4 is a top or plan view of Fig. 3, certain parts being removed and broken away to show the construction and arrangement of the anvil and side blocks. Fig. 5 is a perspective view, enlarged, of the lower end of the coping tool or die. Fig. 6 is an underneath plan view of the tool or die, illustrating the cutting-face of said tool or die; and Fig. 7 is a perspective view of an I-beam after the same has been coped and illustrating in dotted lines another I-beam arranged at right angles to the coped beam and

in position to be connected to the coped I-beam.

In the drawings it will be seen that the present invention has been embodied in a hydraulic shearing-press of ordinary type; but it will be readily understood that my invention may also be applied to any shearing-press, whether operated hydraulically or otherwise, without departing from the spirit of the invention, since any modifications necessary in the construction of other machines will readily suggest themselves to the skilled mechanic.

Referring now to the drawings, *a* represents the bed of the machine, on which is supported in any suitable manner a bottom block or anvil *b*, having an opening *b'*, the edges *b²* of which are sharp and of a hard material, such as steel. At either side of the anvil *b* is arranged a horizontally-movable block *d*, adapted to be shifted inward toward the center of the anvil and outward from said center by means of wedges *d'* or other suitable mechanism, which is preferably controlled by hydraulic pistons or rams *d²*, as shown in Fig. 2. Each block *d* has an opening *d³* in that side nearest the anvil *b*, and this opening *d³* has sharp edges *d⁴*, of preferably hard steel, to form a cutting or knife-like face, for a purpose hereinafter described. Above the anvil *b* is arranged a tool or die *e*, adapted to slide vertically toward or away from the anvil *b* and operated by a ram or piston *e'*. This tool or die *e* consists of a blade *e²*, having at either end a flange *e³* arranged, preferably, at right angles to the blade, which flange is tapered or beveled, as at *e⁴*, on its outer face. The blade *e²* has also a recessed cutting-face *e⁵* of a width corresponding to the width of the web which is to remain upon the beam to be cut. Sliding vertically within the flanges *e³* is a clamping-block *f*, operated by a ram or piston *f'* and adapted to approach or recede from the anvil *b*.

In operation a beam *g* is introduced into the machine with its web *g'* lying flat upon the anvil *b* and its flanges *g²* pressed toward the sides of the anvil *b* by the side blocks *d*. In this position the clamping-block *f* is moved downward against the upper face of the web

g' to clamp the web tightly down upon the anvil, as shown in Figs. 1 and 3. In this position the tool or die e is moved downward, the flanges e^3 , in connection with the edges d^4 of the side blocks, cutting off the flanges g^2 of the I-beam, and the blade e^2 , in connection with the edges b^2 of the anvil, cutting off the web g' until the I-beam is coped by one and the same operation, as illustrated in Fig. 7. In the cutting off of the flanges g^2 of the beam the tapered flanges e^4 of the tool, as the tool descends, crowds the flanges g^2 against the sharp edges of the knives on the side blocks d and shears them off by a transverse action rather than by a vertical action, such as the blade e^2 makes in cutting off the web g' of the beam, and this it is to be understood is by one and the same operation of the machine.

It will be manifestly obvious that the tool e may be employed for shearing channeled beams as well as I-beams and still be within the scope of my present invention.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a machine for coping metal beams, a bed supporting an anvil having an opening provided with sharp edges, a block provided with an opening having sharp edges, said block adapted to be shifted inward toward the center of said anvil and outward therefrom, a tool or die consisting of a blade having flanges, and a recessed cutting-face in

width corresponding to the web to remain upon the beam to be cut, and a clamping-block adapted to approach and recede from said anvil, the construction being such that said blade is adapted to shear the web of the beam by passing vertically through the same and the flanges to sever the flange of the beam by a transverse action at one and the same operation, substantially as and for the purposes described.

2. In a machine for coping metal beams, a bed supporting an anvil having an opening provided with sharp edges, a horizontal block provided with an opening having sharp edges, said block adapted to be shifted inward toward the center of said anvil and outward therefrom by means controlled by a piston or ram, a tool or die adapted to slide vertically toward or away from said anvil and consisting of a blade having tapering or beveled flanges at right angles thereto and a cutting-face of a width corresponding to the width of the web to remain upon the beam to be cut, and a clamping-block adapted to slide vertically within said flanges and to approach or recede from said anvil, substantially as and for the purposes described.

In testimony whereof I have hereunto set my signature in the presence of two subscribing witnesses.

EBENEZER A. W. JEFFERIES.

Witnesses:

J. WALTER DOUGLASS,
RICHARD C. MAXWELL.