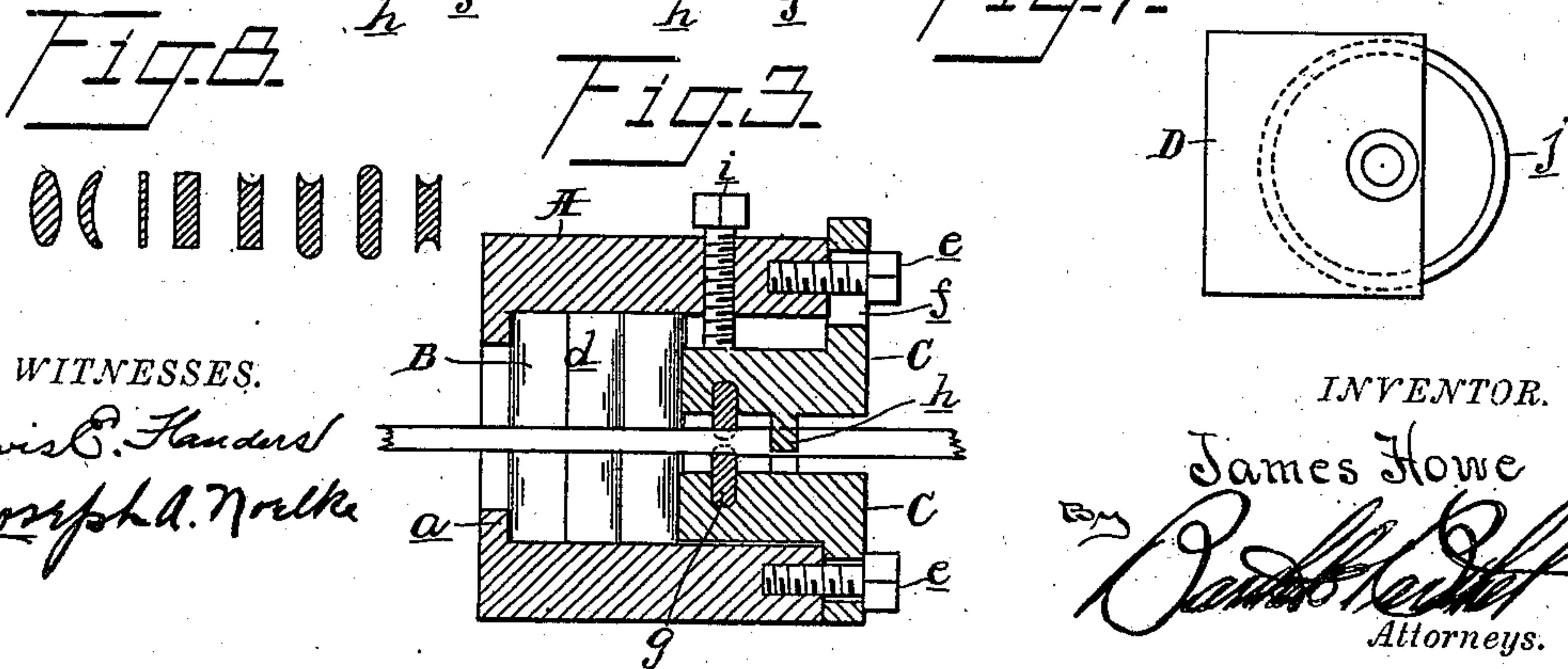
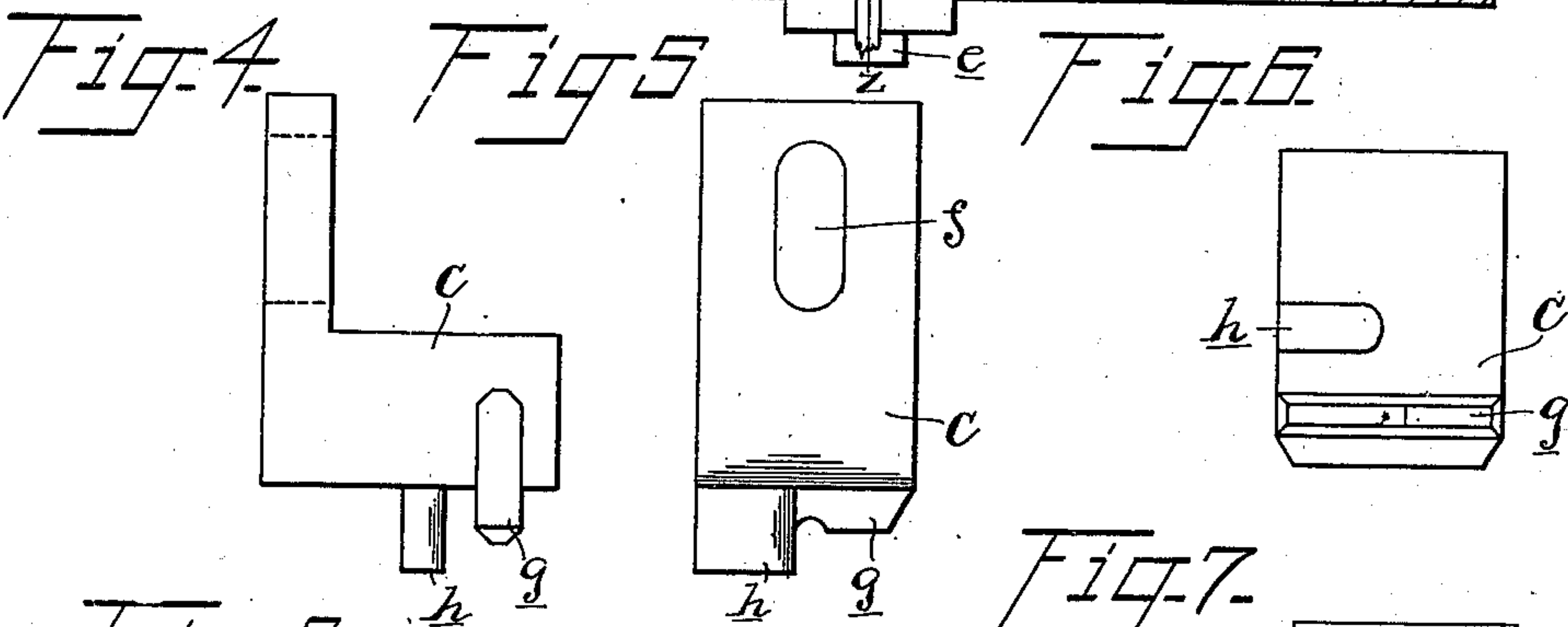
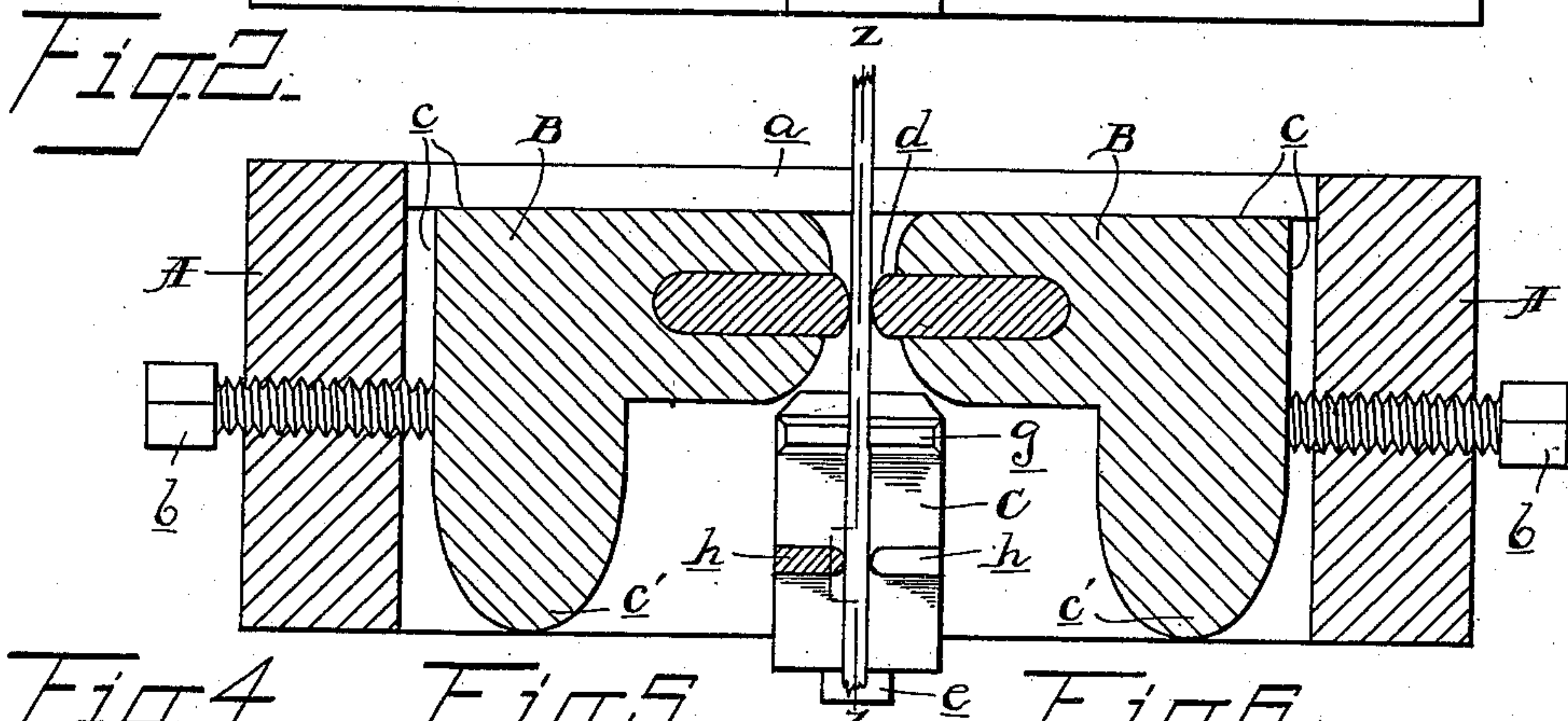
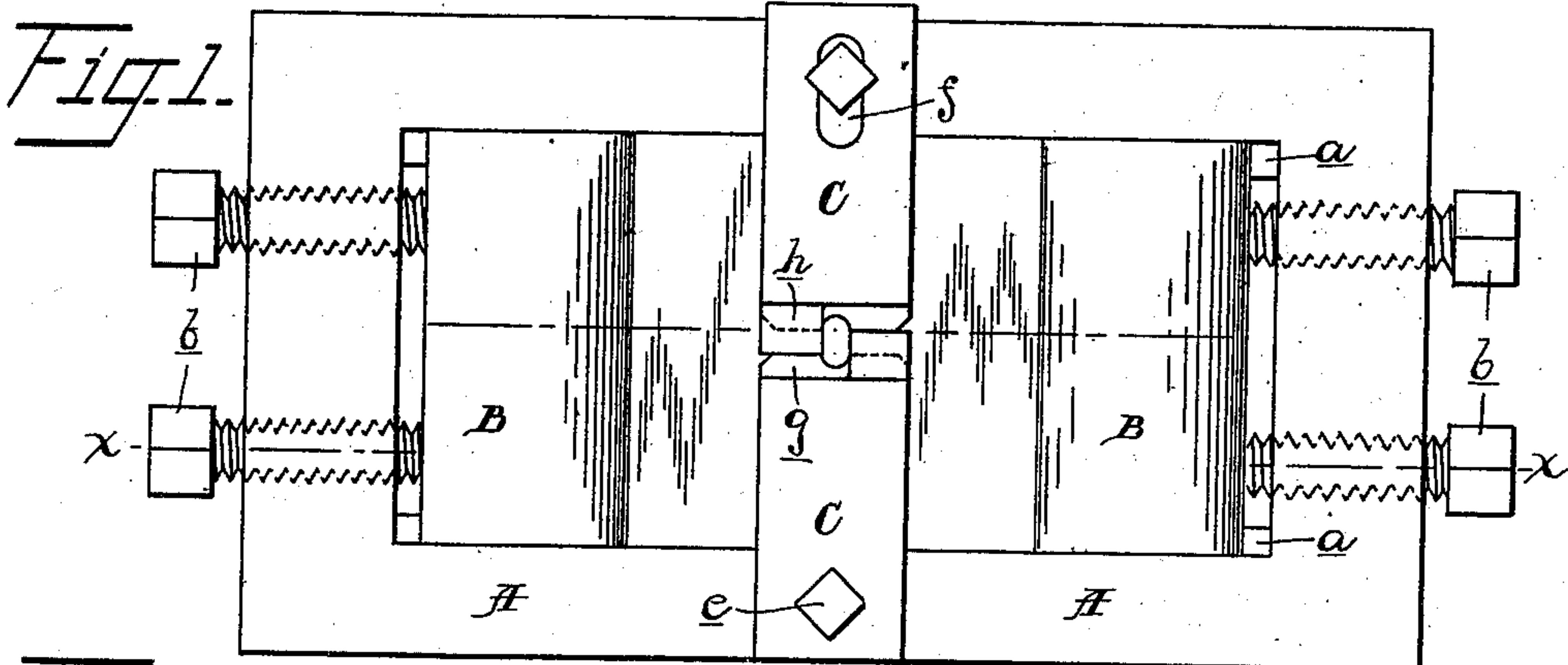


J. HOWE.  
DIE FOR DRAWING WIRE.  
APPLICATION FILED OCT. 4, 1901.

NO MODEL.





# UNITED STATES PATENT OFFICE.

JAMES HOWE, OF DETROIT, MICHIGAN.

## DIE FOR DRAWING WIRE.

SPECIFICATION forming part of Letters Patent No. 723,873, dated March 31, 1903.

Application filed October 4, 1901. Serial No. 77,540. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES HOWE, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Dies for Drawing Wire, &c., of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to new and useful improvements in dies for drawing wire, and more particularly relates to that class of wire-drawing dies for flattening wire and light bars of brass, copper, and German silver and drawing the same into rectangular, concavo-convex, and other fancy forms.

The invention has for its object to make a die and die-holder whereby two sets of dies may be adjustably secured in relation to each other upon the same common die-holder and whereby each set of dies may be individually adjusted or removed and other dies substituted in lieu thereof without necessitating the removal of the wire or the adjustment of the other set of dies.

The invention further consists in making the main dies reversible, in providing guide-lugs for the wire upon the secondary dies, and in the peculiar construction, arrangement, and combination of parts, all as more fully hereinafter described and claimed in the specification and shown in the accompanying drawings, in which—

Figure 1 is a front elevation of the dies and die-holder. Fig. 2 is a horizontal section on line *xx*, Fig. 1. Fig. 3 is a vertical section on line *zz*, Fig. 2. Fig. 4 is a side elevation of one of the edge-drawing dies. Fig. 5 is a front elevation thereof, and Fig. 6 a plan view thereof. Fig. 7 shows a modified construction of die in which a roll is used, and Fig. 8 shows various cross-sections of wire drawn through my die.

As shown in the drawings, A is the die-holder, B the side-drawing or main dies, and C the edge-drawing or secondary dies.

*a* represents transverse ledges formed on the die-holder, against which the dies B are adapted to abut, and *b* are set-screws in the opposite ends of the die-holder for adjusting the main dies toward each other.

The dies B are made with the two faces *c*

at right angles to each other, so that either end of the die may be used, the rounded end *c'* being used for breaking down the wire to approximately the desired size and form and the opposite end for finishing the wire accurate to size and form. I preferably put hardened-steel pieces *d*, which can be renewed from time to time, in one or both ends of the die B, so as to lengthen the life of the die, and as these pieces are reversible two distinct forms can be drawn with each pair of dies, thus doing away with the necessity of carrying a large stock of dies on hand. It is evident that these pieces *d*, being removably fitted in their sockets in the dies B, may be readily removed and turned end for end to bring the other face into operative position.

C represents the secondary or edge-drawing dies, secured to the top and bottom of the die-holder by tap-bolts *e*, one or both of said dies being formed with slotted apertures *f*, so as to permit a limited vertical adjustment from and toward each other.

*g* represents hardened-steel pieces let into the meeting faces of the dies and conforming to the shape of the edge of the article to be drawn, which pieces are reversible in the same manner as the pieces *b* and can be renewed from time to time, and *h* represents lugs formed on the dies C in front of the pieces *g*, adapted to guide the wire or other article to be drawn through the die.

*i* is an adjusting-screw adapted to bear against the inner end of the upper die C, so that by easing up on the bolt *e* and setting up on the screw *i* the upper die can be accurately adjusted, said screw also acting to prevent the inner end of the die from vibrating under extra heavy strains. These dies constitute flattened or breaking-down dies, and the wire in its passage therethrough is flattened.

In Fig. 7 I have shown a modified construction of die in which the die-block D is provided with a roll *j*, which I have found is better where it is desired to draw very fine flat strips, as the danger of breakage is not so great. This die-block, with its roll, is to be used in lieu of the other die above described, the wire being placed in contact with the roll, as will be readily understood.

In Fig. 8 I have shown various cross-sec-



tions of wire adapted to be drawn with my improved die, and it will be seen that my die is adapted to draw any form of fancy brass, copper, and German-silver strips now so much  
5 used by the manufacturing and electrical trade.

Having thus fully described my invention, it is adapted to operate as follows: The dies all being properly adjusted, the wire is drawn  
10 through a number of these flattening or breaking-down dies until about the size desired, and it is then drawn through the finishing-die described, which die, by reason of having two sets of dies operating at right an-  
15 gles to each other, finishes the article to a uniform scale on all four sides.

One great feature of my invention is that in flattening the wire it still remains of a uniform width, which would not be the case  
20 if simply passed through rolls as ordinarily done; but by reason of having two sets of dies operating at right angles to each other all four sides are finished accurately to scale, and I have found that with my construction  
25 I can draw various cross-sections of wire down to one one-thousandth part of an inch, as actually measured upon a micrometer-gage. I have also found that a reduction of six num-  
30 bers is about the limit of practical reduction at one pass through the die, and where a greater reduction is required I preferably run the wire or other article to be drawn through a number of dies until the desired size is ob-  
35 tained, after which it is run through the finishing-die and made accurate to scale. As this fancy or flattened wire is all contracted for at specified sizes by the manufacturing trade, the necessity of having a die which will accurately finish a wire of this kind on all  
40 four sides at one pass will readily be seen by those skilled in the art.

What I claim as my invention is—

1. In combination with a die-holder, the main dies adjustable from and toward each  
45 other and detachably secured within the die-holder, a second die-holder having a set of dies adjustably secured therein in front of the main die at substantially right angles

thereto, and means secured to the second die-holder for guiding the article to be drawn  
50 through the dies.

2. In combination with a die-holder, the main dies adjustably secured within the holder, and the secondary dies at right angles thereto and secured in front thereof, guide-  
55 lugs formed on the secondary dies and means for adjusting said dies and holding the same when in their adjusted positions.

3. In combination a pair of reversible dies having two working faces at right angles to  
60 each other, a die-holder for said dies formed with side abutments against which said dies are adapted to rest, set-screws in the opposite ends of said holder for adjusting said  
65 dies toward each other, and a second set of dies at right angles to the aforesaid dies and in front of the same.

4. In combination with a pair of main dies, of a die-holder formed with a ledge against which said dies are adapted to abut within  
70 the holder, means in the side of the die-holder for adjusting said dies toward each other and a second set of dies within the holder in front of the main dies secured to the front of the  
75 holder at top and bottom, guide-lugs carried by said dies in front of the die proper, one of said dies having a limited vertical adjust-  
80 ment in the holder and an adjustable stop for the inner end of said die said stop being carried by the die-holder.

5. In a device of the character described, a die-section formed with two working faces at right angles to each other, one of which is provided with a removable die-piece.

6. In a device of the character described, a  
85 die having a removable reversible hardened piece held in one face and a guide-lug formed on said die in front of and parallel with said removable piece, as and for the purpose speci-  
90 fied.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES HOWE.

Witnesses:

OTTO F. BARTHEL,  
JOSEPH A. NOELKE.