

J. B. CLARK.

Machine for Upsetting Bolt Blanks.

No. 122,706.

Patented Jan. 16, 1872.

Fig. 1.

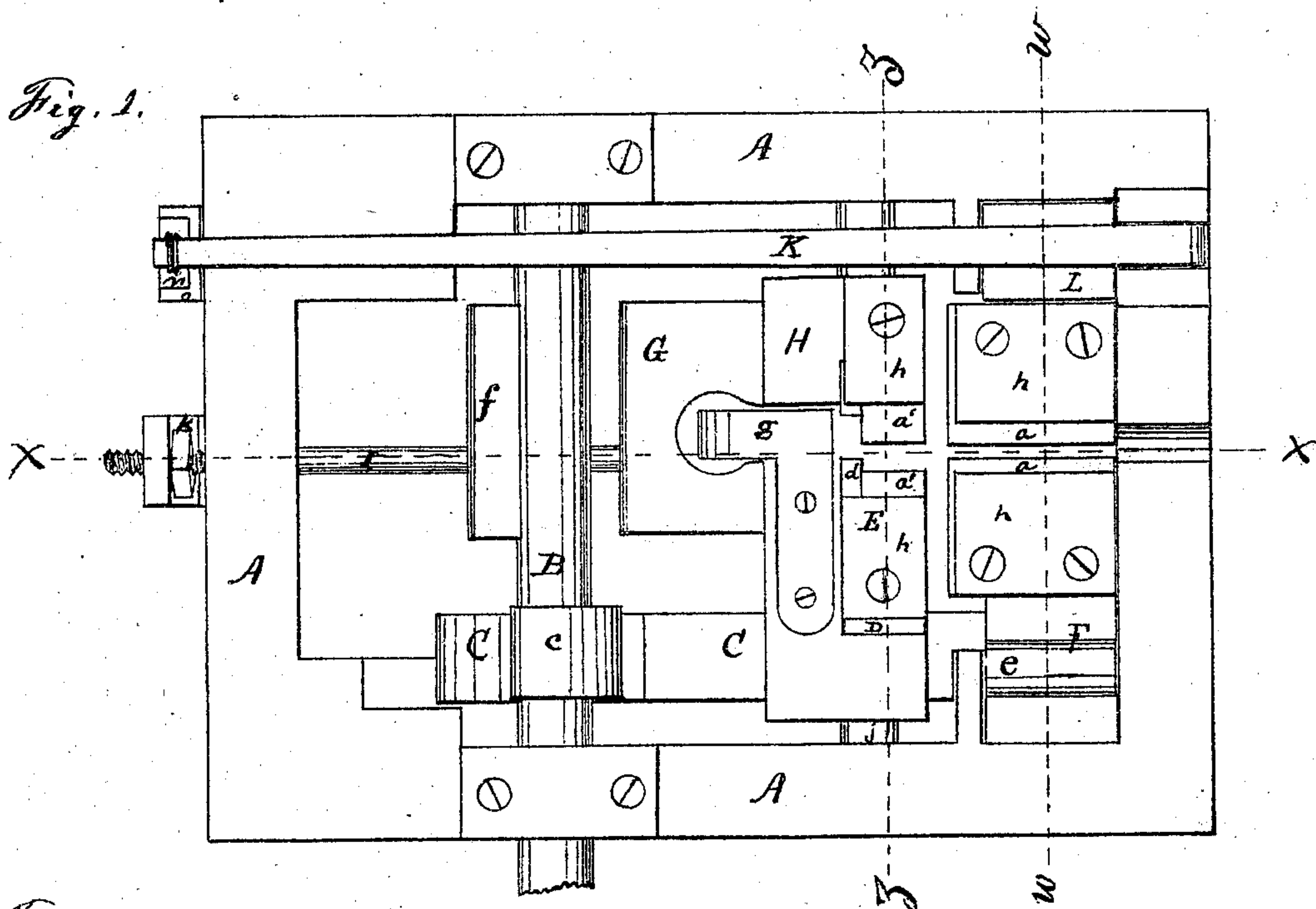
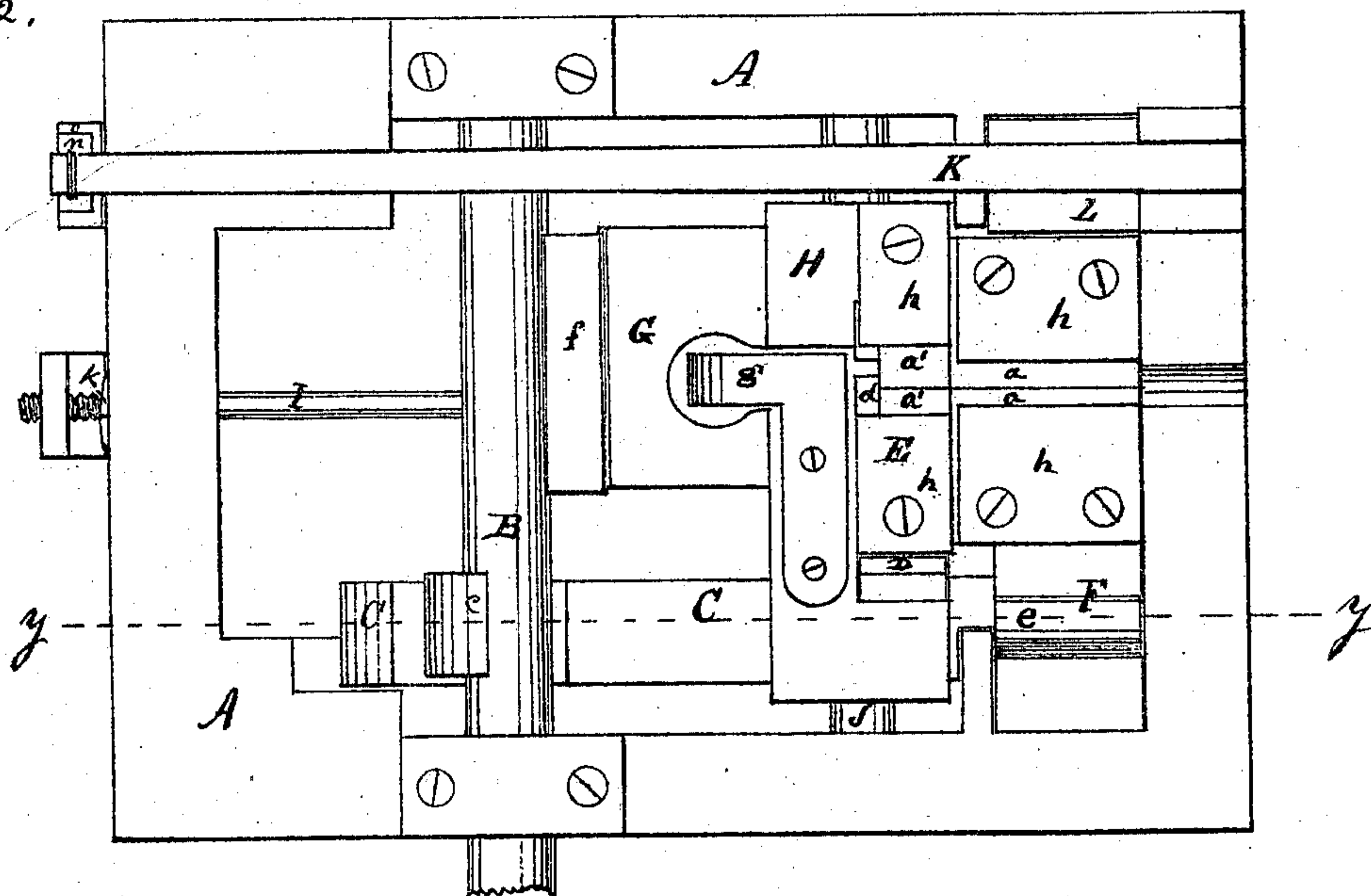


Fig. 2.



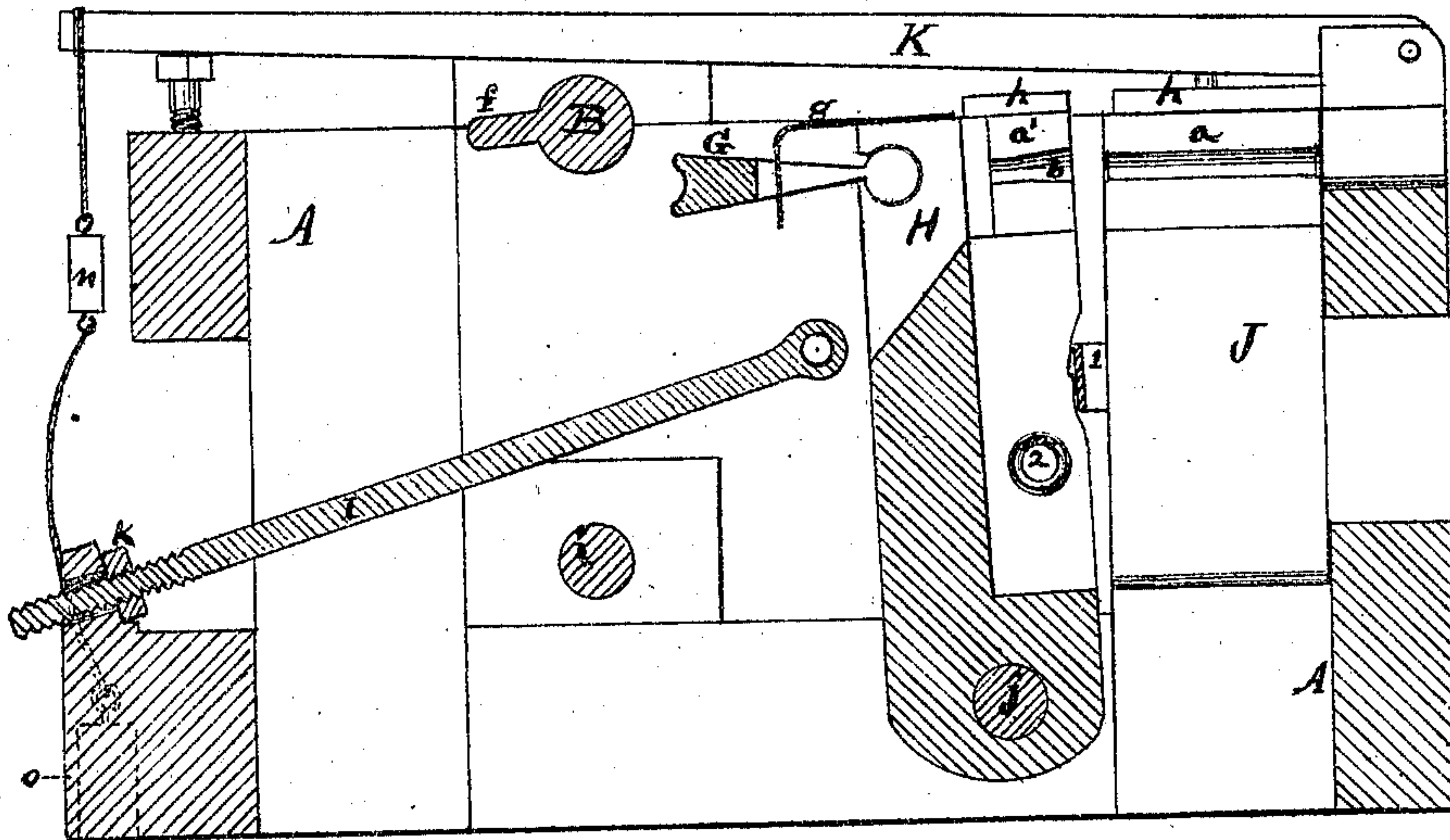
Witnesses.

C. A. Shepard  
A. Shepard

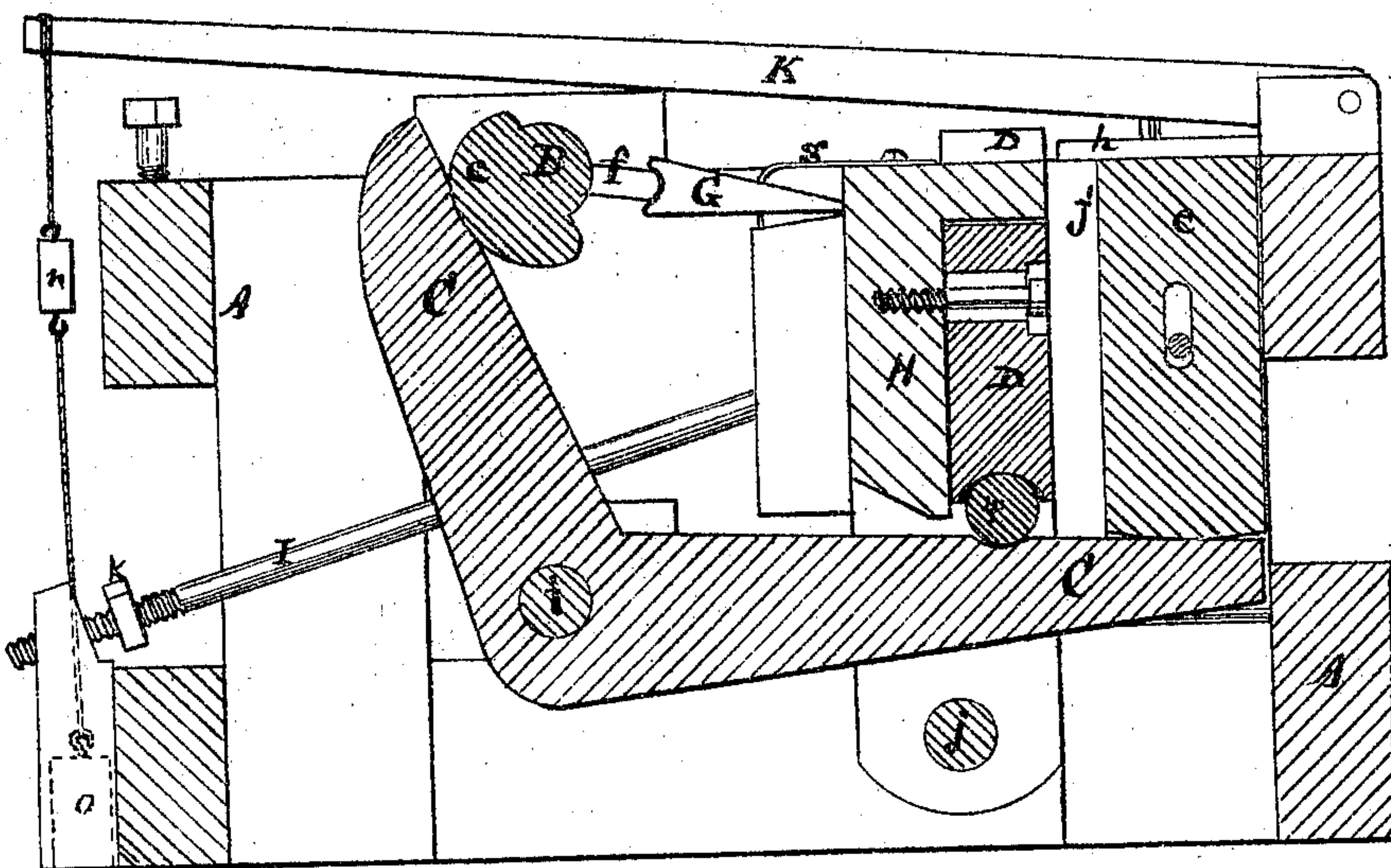
Inventor.

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Machine for Upsetting Bolt Blanks.  
No. 122,706. *Fig. 3.* Patented Jan. 16, 1872.



*Fig. 4.*



Witnesses.

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Fig. 5.

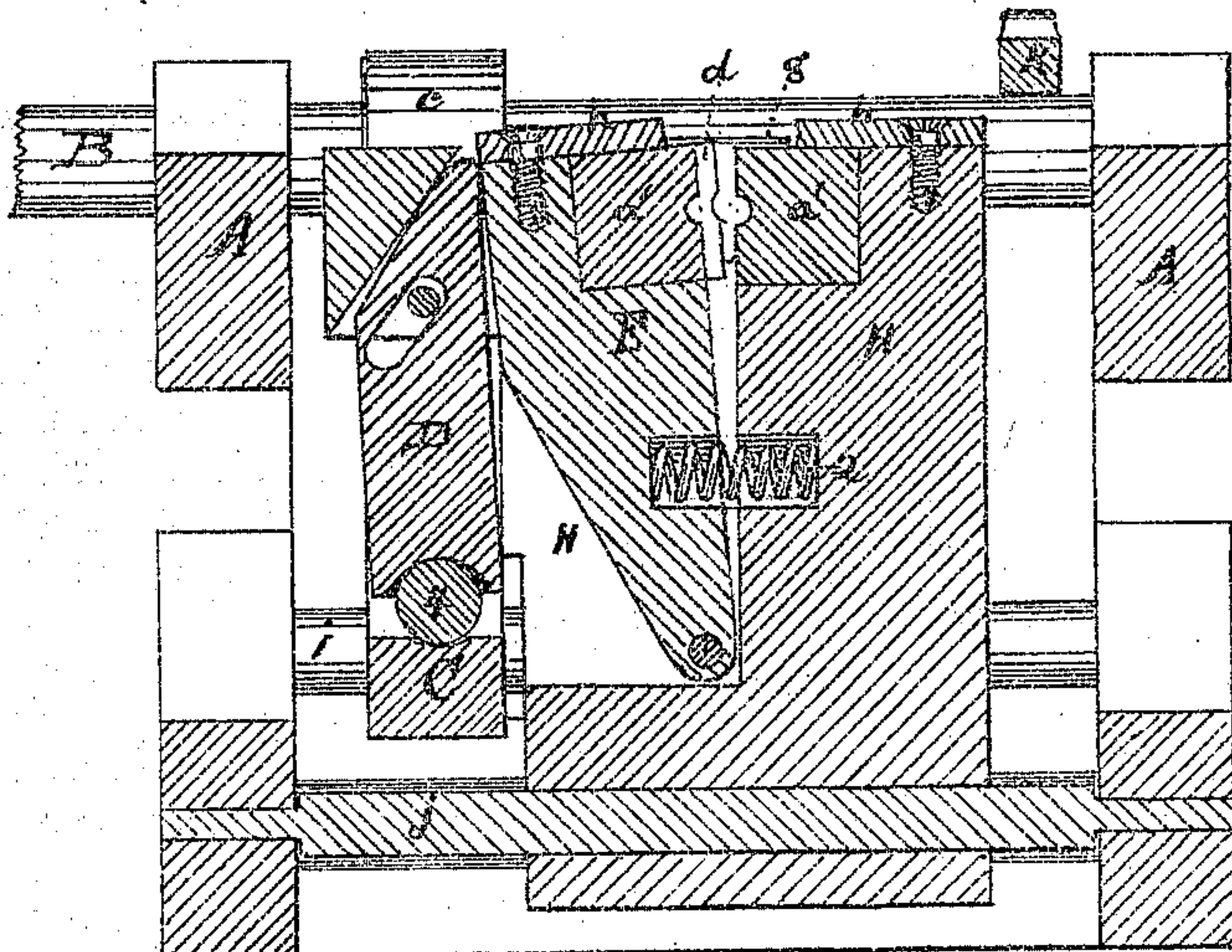
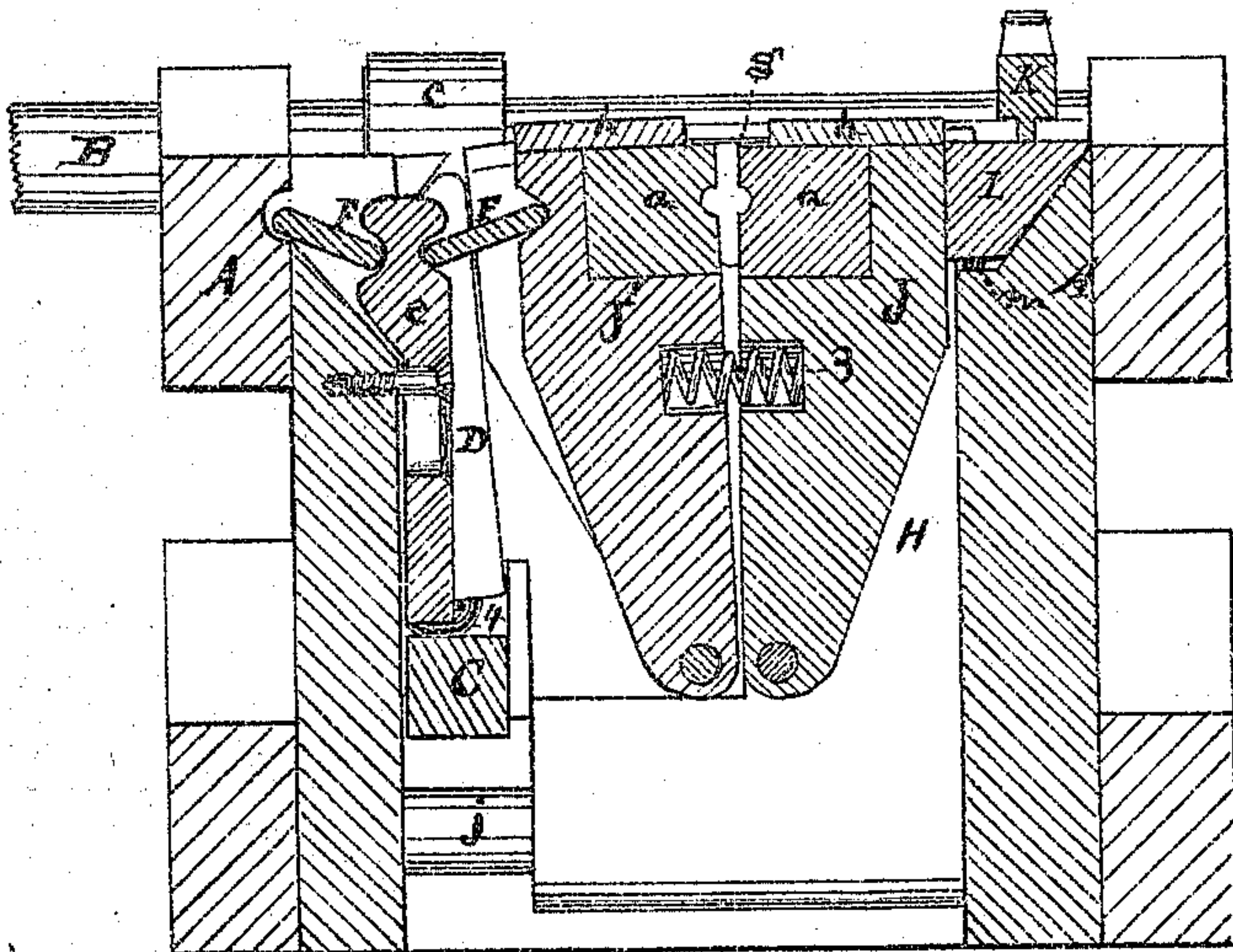


Fig. 6.



Witnesses.

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# UNITED STATES PATENT OFFICE.

JAMES B. CLARK, OF PLANTSVILLE, CONNECTICUT.

## IMPROVEMENT IN MACHINES FOR UPSETTING BOLT-BLANKS.

Specification forming part of Letters Patent No. 122,706, dated January 16, 1872; antedated January 8, 1872.

I, JAMES B. CLARK, of Plantsville, in the county of Hartford and State of Connecticut, have invented new and useful Improvements in Machine for Upsetting Bolt-Blanks, of which the following is a specification:

In the accompanying drawing, Figure 1 is a top view of a machine embodying my invention with the dies open. Fig. 2 is a similar view of the same with the dies closed. Fig. 3 is a vertical section of the same on line *x x*, Fig. 1. Fig. 4 is a vertical section of the same on line *y y*, Fig. 2. Fig. 5 is a transverse vertical section of the same on line *z z*, Fig. 1; and Fig. 6 is a similar view of the same on line *w w*, Fig. 1.

A designates the frame of the machine, and *a a a'* the dies. The face of the dies *a a* are simply provided each with a semicircular groove, Figs. 3, 5, and 6, of a size suitable to receive and hold the wire or rod to be upset. The dies *a'* are provided with a similar groove, a portion of which is enlarged at *b*, Fig. 3, to the size and of the form which it is designed to leave the upset portion of the bolt-blank. A straight rod of cold iron is placed between the several dies when they are in the position shown in Figs. 1, 3, 5, and 6, and with its end passing a short distance through the dies *a'*. By any of the ordinary devices and power motion is imparted to the main shaft B, when the cam *c* strikes one arm of the knee-lever C, when the other arm of said lever throws up the wedge D, Figs. 4 and 5, which closes the pivoted jaw E, which jaw carries one of the dies *a'*. On the back side of one of the dies *a'* is a cutter, *d*, which, with the end of the opposite die *a'*, forms a shear that cuts off the end of the rod as the dies *a'* are closing. Simultaneously with the closing of the dies *a'* the arm of the knee-lever C also throws up the slide *e*, which operates the toggle-joint F and closes the dies *a a*. The face of the cam *c* is of such form as to hold the dies closed while the shaft B revolves a part of a revolution, during which time the cam *f* strikes the "follower" or "pitman" G, which throws the swinging frame H (which frame carries the pivoted jaw E and dies *a'*) forward until the dies all meet each other, as shown in Figs. 2 and 4. This action of the dies causes all that portion of the rod which is between the pair

of dies *a a* and the pair *a' a'*, and that which passes through the enlarged recess *b*, to be upset and fill the recess *b*. As the shaft B revolves onward, the cams *c* and *f* release their hold, and the dies are thrown open by the action of the several springs 1, 2, and 3. The rod is then passed on through the dies until stopped by the gauge *g*, with the upset portion of said rod and sufficient additional length for a blank projecting beyond the dies *a' a'*, which is cut off as the dies repeat their operation and upset another blank, as before. The advantage of placing the cut-off *d* at the rear of both dies is, that it removes all obstructions from in front of the dies; that the blank is formed before it is cut from the rod, and therefore is readily removed from between the dies; and that when the blank is finally severed from the rod it falls at the rear of the dies without any liability of being caught or of dropping between them. *h h h h* designate caps for securing the dies in place. The knee-lever C swings upon shaft *i*, while the ball 4 is to remove friction and also allow the wedge D to swing freely with the frame H, which swings upon the shaft *j*. By adjusting the nut *k* upon the shaft I, which is secured to the frame H, said frame with the dies *a' a'* may be set back more or less, and therefore throw more or less stock into the upset portion of the bolt-blank, as may be desired. The dies *a a* are set in pivoted or swinging jaws J' J, Fig. 6. The jaw J' is operated by the toggle-joint F, while the jaw J is operated by the weighted lever K and wedge L. In the frame A, immediately under the wedge L, is one or more screws, *m*, Fig. 6, which may be raised or lowered, so that the wedge L will push the jaw J more or less to the left. On the end of lever K are two weights, *n* and *o*, weight *n* being simply heavy enough to throw the jaw J sidewise, but not to rigidly hold it in place. The weight *o* is so attached to the lever K that it (weight *o*) will rest upon some suitable support without bearing upon the lever K, (see Fig. 3,) until the dividing line of the dies *a' a'* and *a a* are on the same line, as shown in Fig. 2. The power of the weight *o* will then bear upon the lever K, (see Fig. 4,) and will secure the dies *a a* sufficiently firm to hold the rod which is being gripped between them; but if, by accident, a larger rod,



or a large place in the rod, comes between the dies *a a*, the weight *o* will allow the dies to yield a little so as to prevent doing injury to any of the parts of the machine. The design of the weight *o* is simply to throw the dies *a a* out of line with the dies *a' a'* when opened, which will aid in removing the upset portion of the rod from the dies *a' a'*, and bring said rod nearly central between the dies *a' a'* when open, and therefore facilitate in passing the rod between them. If not desired to thus throw the dies out of line, the weight *o* would be dispensed with, in which case the jaw *J* would be stopped with the dies *a a* and *a' a'* in line. The cutter *d*, after cutting off the rod, forms a support for the end of the rod, which remains in the dies *a' a'*, and prevents the rod from slipping endwise through the dies as the blank is upset.

In order to make the parts operate with less friction, the movement of the dies herein described is an oscillating movement; but the dies are placed so remote from their axis of motion, and the distance that they swing is so small, that practically the effect is substantially the same as if the dies moved on a straight line.

Although this machine is designed for up-

setting bolt-blanks, it may be adapted for upsetting any other article in which the upset portion is formed at a distance from both ends of said article.

I claim as my invention—

1. The combination of the dies *a a'*, wedge *L*, lever and weights *K n o*, and mechanism for operating said dies, as described.
2. The wedge *L* and weighted lever *K*, in combination with and operating as a relief for the dies *a' a'*, substantially as described.
3. The combination of shaft *B*, cam *c*, lever *C*, wedge *D*, jaw *E*, and frame *H*, substantially as and for the purpose described.
4. The combination of the dies *a a' a'*, cutter *d*, jaws *J J' E*, frame *H*, pitman *G*, cam *f*, shaft *B*, cam *c*, lever *C*, wedge *D*, slide *e*, and toggle-joint *F*, the whole operating together substantially as described.
5. The combination of the parts named in claim four with the wedge *L*, weighted lever *K*, rod *I*, and adjusting-nut *k*, the whole constructed and operating together in the manner and for the purpose described.

JAMES B. CLARK.

Witnesses:

HEBER S. IVES,  
JAMES SHEPARD.

(14)