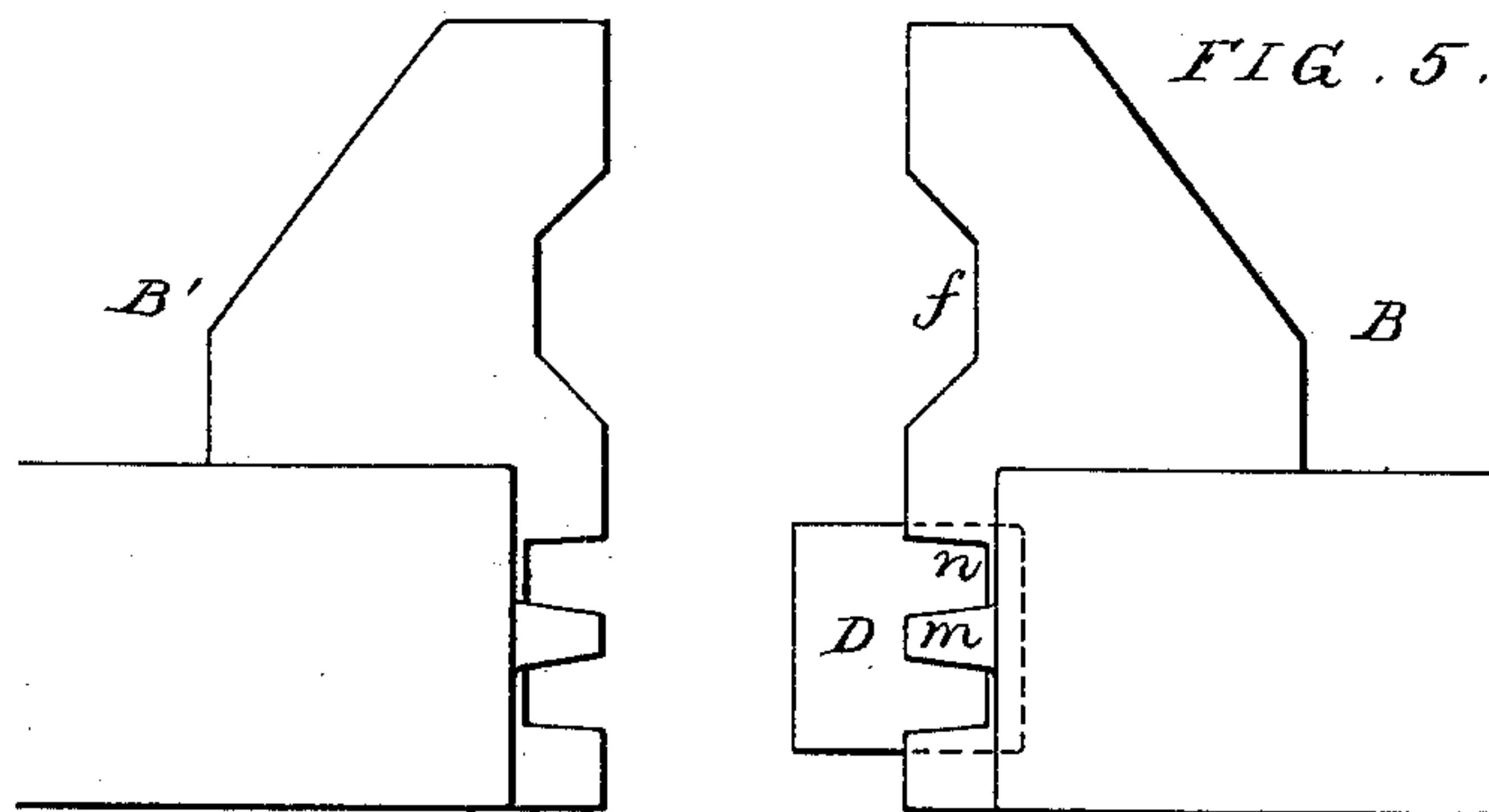
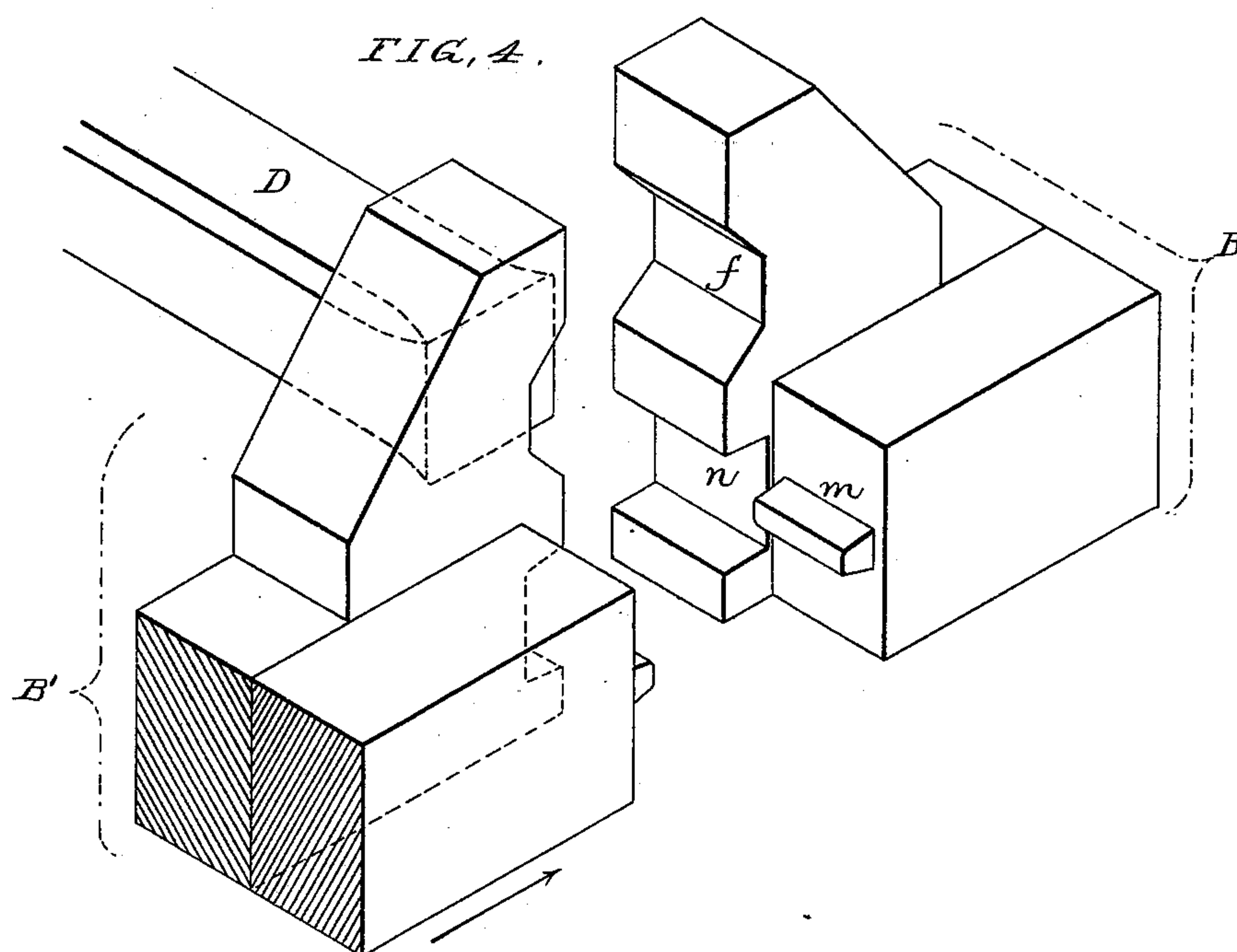
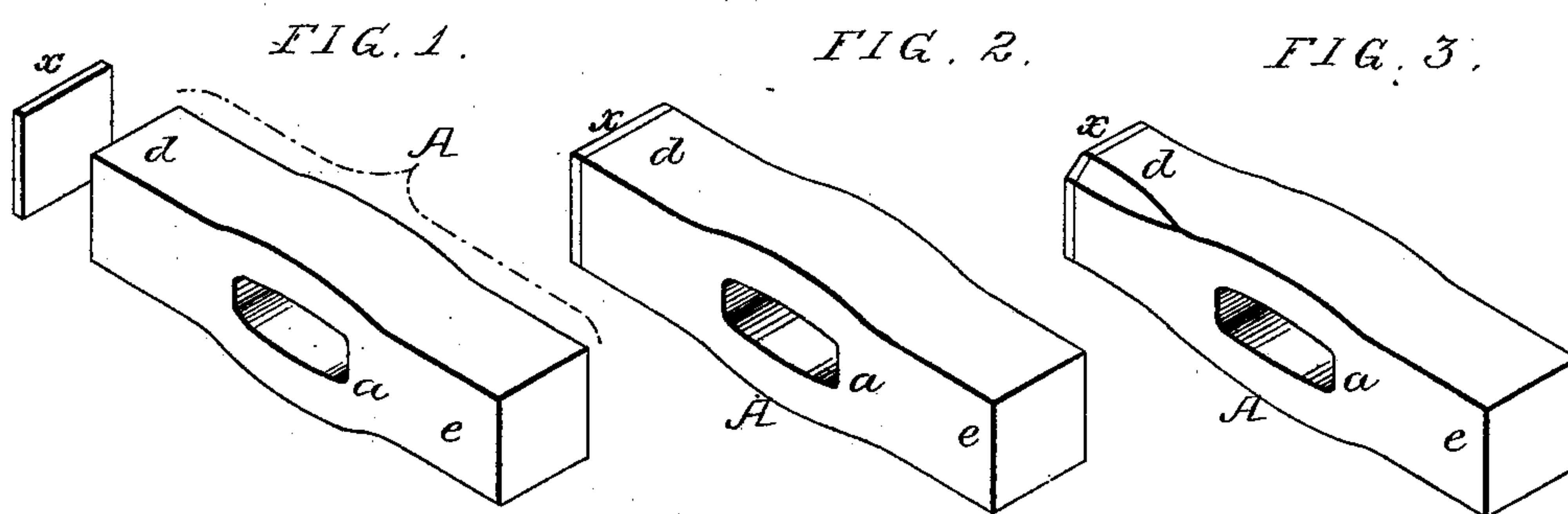


(No Model.)

2 Sheets—Sheet 1.

J. YERKES.

Manufacture of Hammers and Hatchets.
No. 235,326. Patented Dec. 7, 1880.



WITNESSES.

James F. Tobin.
Henry Howson Jr.

INVENTOR.

Jonathan Yerkes.
by his Attorneys
Howson and Son

(No Model.)

2 Sheets—Sheet 2.

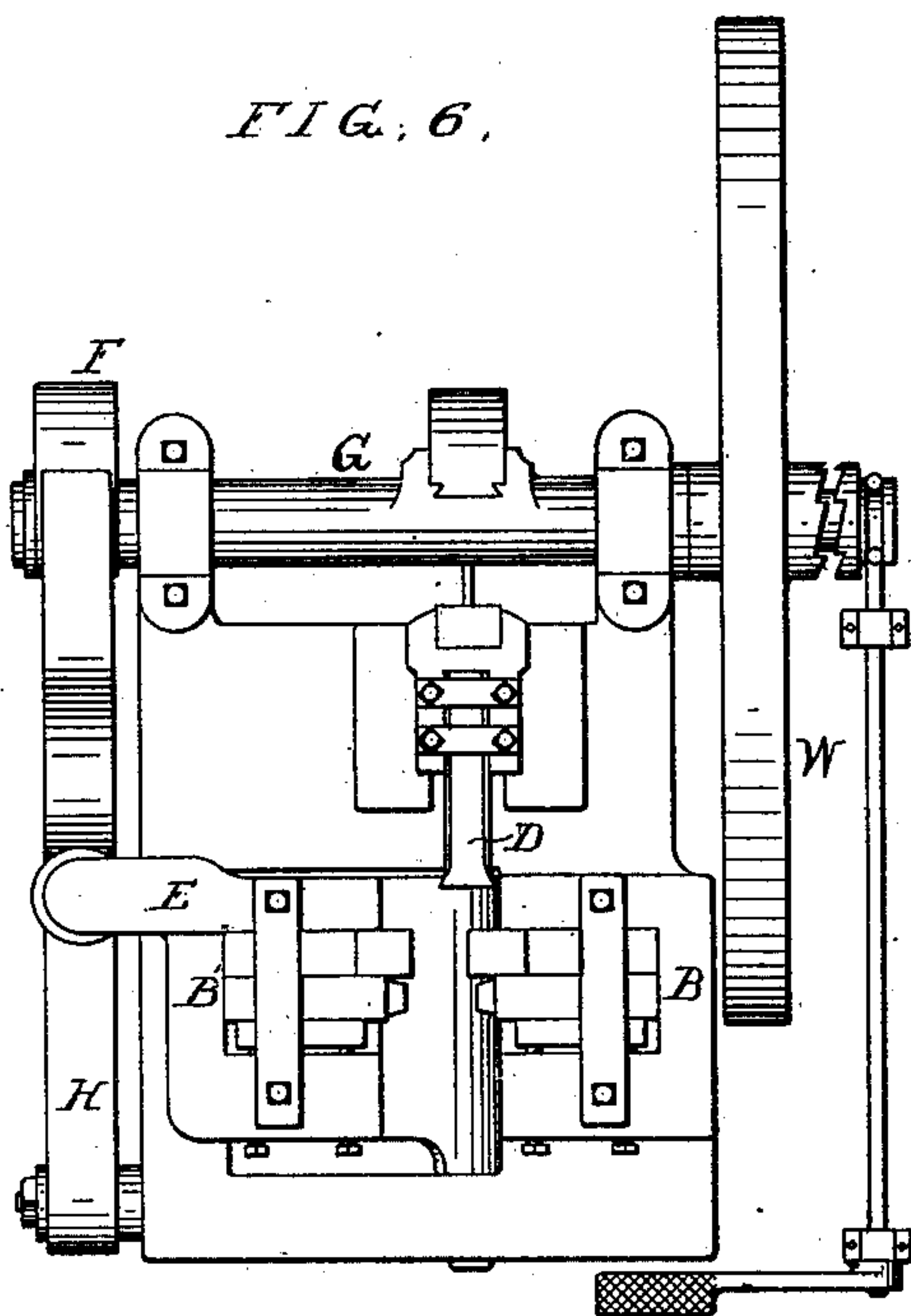
J. YERKES.

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FIG. 6.



WITNESSES:

James F. Tobin.

Henry Howson Jr.

INVENTOR:

Jonathan Yerkes.

by his Attorneys.

Howson and Son

UNITED STATES PATENT OFFICE.

JONATHAN YERKES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO
HIMSELF AND FAYETTE R. PLUMB, OF SAME PLACE.

MANUFACTURE OF HAMMERS AND HATCHETS.

SPECIFICATION forming part of Letters Patent No. 235,326, dated December 7, 1880.

Application filed September 27, 1880. (No model.)

To all whom it may concern :

Be it known that I, JONATHAN YERKES, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented an Improvement in the Manufacture of Hammers and Hatchets, of which the following is a specification.

My invention consists of certain dies, fully described hereinafter, for welding pieces of steel to the blanks of hatchets and hammers, the main aim of my invention being to effectually retain the blank while the welding is effected, all of which is fully described hereinafter.

In the accompanying drawings, Figures 1, 2, and 3, Sheet 1, are views of hatchet-blanks as they appear in different stages of the manufacture; Fig. 4, a perspective view of the dies used in operating on the blanks; Fig. 5, a side view of the said dies; and Fig. 6, Sheet 2, a plan view of a machine to which the dies may be applied.

In Fig. 1, A is a hatchet-blank, having the usual elongated eye *a*, *d* being the portion of the blank which has to be converted into the hammer-head portion of the hatchet, and *e* the portion which has to be forged into a blade by the usual operation, with which my invention has no connection, the latter being restricted to the welding of the steel plate *x* to the end of the portion *d* of the blank.

B, Fig. 4, is the fixed die, and B' the movable die, and each of these dies is, in the present instance, made in two parts, as they can be more conveniently manufactured in that way than by making the die in one piece. The die B has a projection, *m*, of such dimensions that it will pass freely into the eye *a* of the blank, and there is in the said die B a recess, *n*, bearing the relation shown in Figs. 4 and 5 to the projection *m*. The die B' is constructed in a precisely similar manner, and has a projection, *m*, and recess *n*, similar to those of the die B.

The character of the dies will be still better understood by the following description of their operation in connection with the welding-die D: The patch of steel *x*, Fig. 1, is first applied to the end *d* of the blank A, and the two are then brought to a welding-heat. The blank A is

then so adjusted to the fixed die B that the projection *m* shall enter the elongated opening *a* of the said blank, the portion *d* of the blank being adjusted in the recess *n*, a portion of the end of the blank, however, projecting beyond the rear face of the die B. When the movable die B' has been moved in the direction of the arrow, Fig. 4, until it is nearly in contact with the die B the blank will be firmly gripped within the recesses of the two dies and the projections *m m* of the same will have entered the eye of the blank, the patch *x*, of steel, resting against the exposed end of the blank, which projects beyond the dies. The welding-die D, which is arranged to slide in a direction at right angles to the die B', moves suddenly forward, and as suddenly retreats after striking the steel a sufficiently hard blow to weld it to the end of the blank, after which the die B' retreats from the die B, and the blank, which is reduced to the condition Fig. 2, is released. The projections *m* of the two dies play an important part in the operation, for, the blank being at a welding-heat, the metal would yield too freely under the action of the die D but for these projections, which, entering the eye of the blank, serve to maintain the integrity of the same under the blow imparted by the welding-die. The projections, moreover, act as guides in the proper adjustment of the blank to the dies.

When the blank has to be reduced to the condition Fig. 3, a three-sided recess, *f*, is formed in each die, and the combined effect of these recesses will be to reduce the corners of the blank. This feature, however, forms no special point of my present invention, as in many hammer-blanks this corner reduction is not required, and hammer-blanks are often of such a character that the shape of the recesses *n n* of the dies must be altered. The blank for a shoe-maker's hammer, for instance, would require rounded instead of rectangular recesses *n n*.

Although the dies may be applied to different kinds of machines, and although the mechanism for holding and operating the dies forms no part of my present invention, I have shown in Fig. 6 a plan view of an ordinary rivet and bolt-heading machine, in connection with which

the dies may be used. The die B is secured to a fixed portion of the machine-frame, and the die B' to a pivoted frame, E, which is actuated by a cam, F, on a driving-shaft, G, through
5 the medium of a lever, H, acting on a projection of the pivoted frame, the welding-die D being adapted to guides on the frame and being actuated by a cam on the driving-shaft and by a spring, which serves to retract the
10 die. The driving-shaft is driven, in the present instance, by a belt passing round a pulley, W, and the shaft is provided with a clutch, controllable by a treadle, for stopping and starting the machine.

I claim as my invention—

The dies B and B', each having a recess, *n*, adapted to the body of hatchet or hammer blank, and a projection, *m*, adapted to the eye of the said blank, in combination with the welding-die D, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JONATHAN YERKES.

Witnesses:

JAMES F. TOBIN,
HARRY SMITH.