

(No Model.)

J. A. BECHER.
BOLT THREADING MACHINE.

No. 377,981.

Patented Feb. 14, 1888.

Fig. 1.

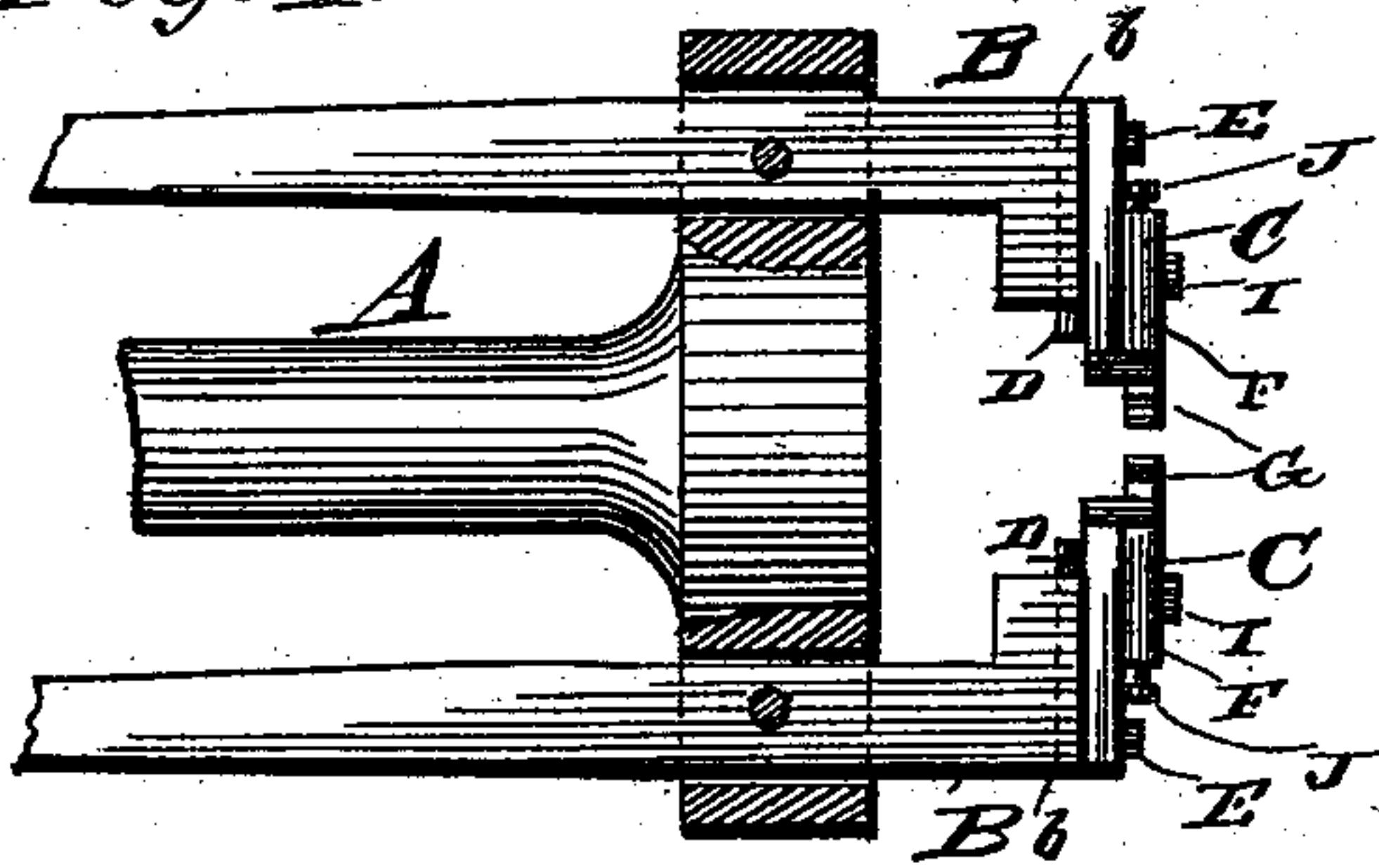


Fig. 2.

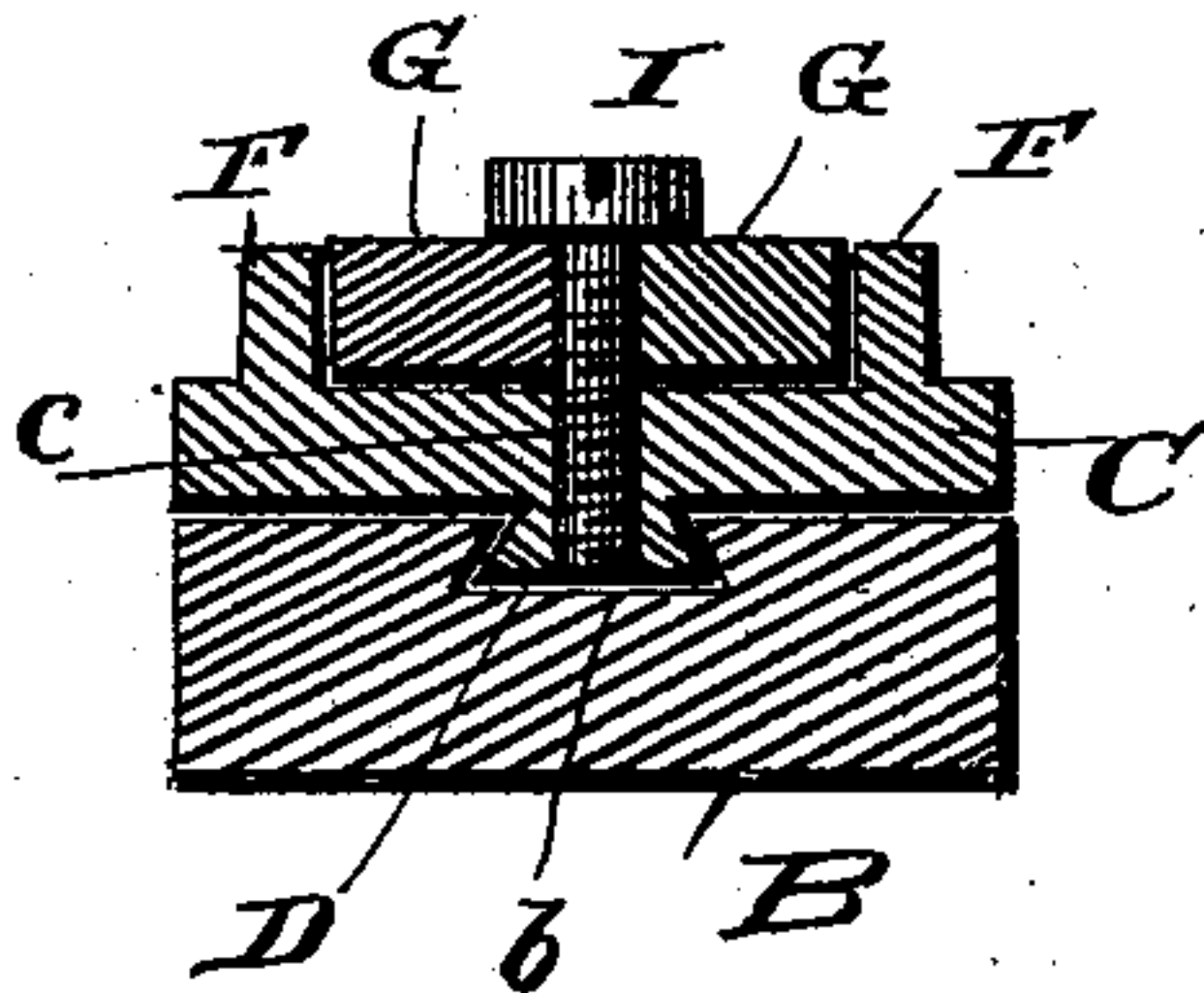


Fig. 3.

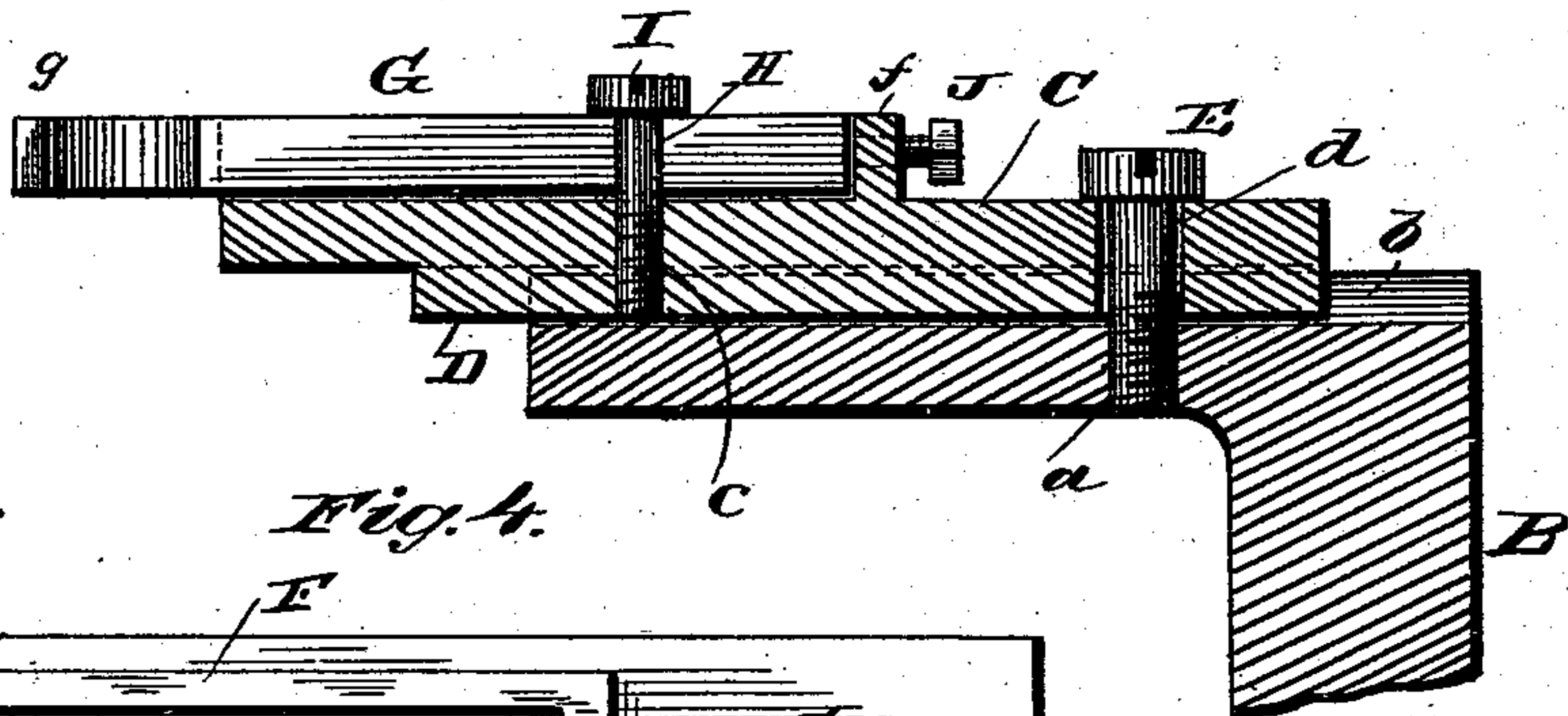


Fig. 4.

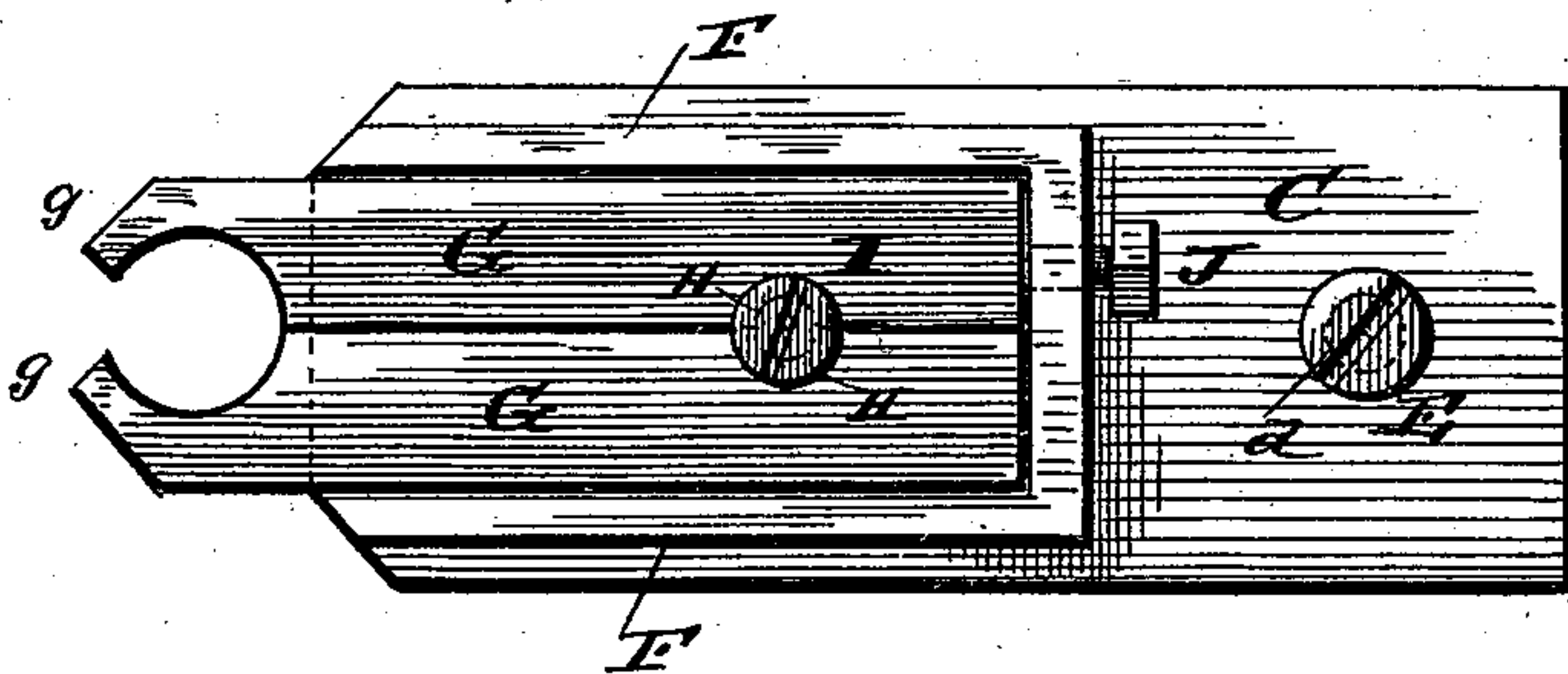
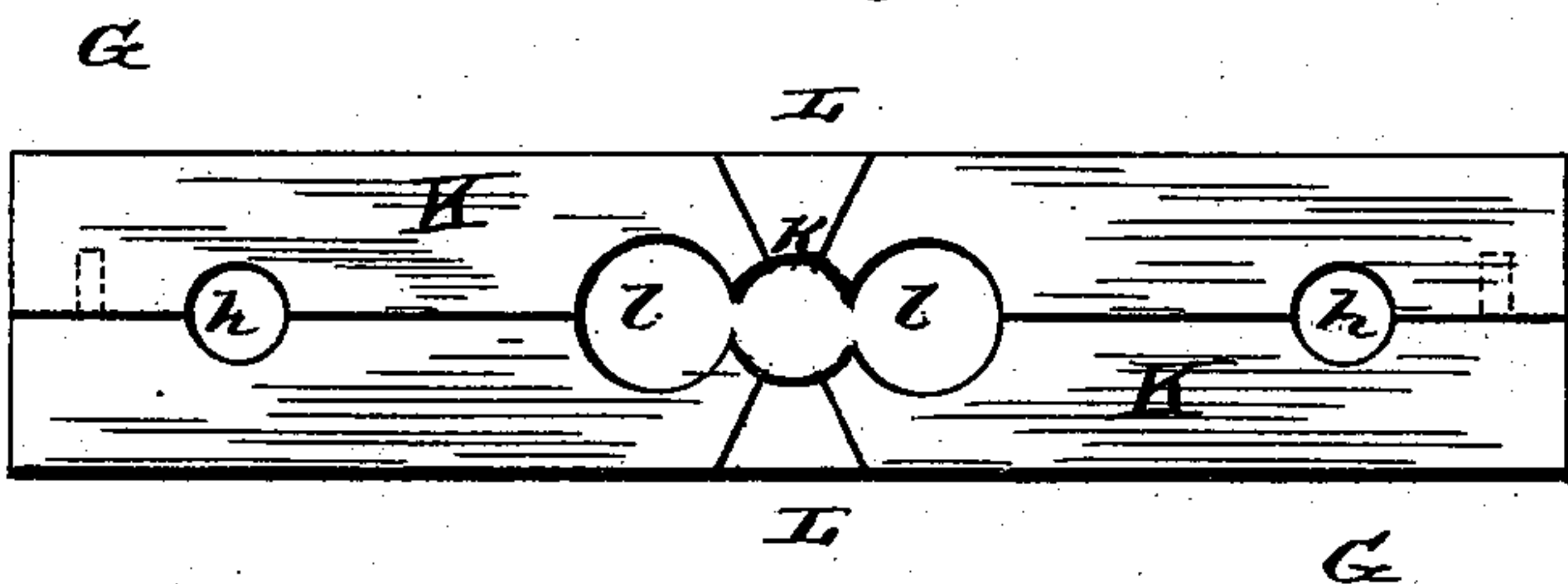


Fig. 5.



WITNESSES

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JAMES A. BECHER, OF MISHAWAKA, INDIANA.

BOLT-THREADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 377,981, dated February 14, 1888.

Application filed May 9, 1887. Serial No. 237,610. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. BECHER, of Mishawaka, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Bolt-Threading Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form part of this specification, in which—

Figure 1 is a top view of a bolt-threader stock having my improvements applied. Fig. 2 is a detail enlarged cross-sectional view of one of the cutter-heads attached to its jaw. Fig. 3 is an enlarged central longitudinal section of the same. Fig. 4 is a view of one of the detachable heads. Fig. 5 is a detail view showing the manner of making the cutters.

This invention relates to improvements in bolt-threading machines; and it has for its objects to provide means whereby the machine can be quickly and readily adapted to cut threads of varying depth and pitch and to form the cutters proper in such manner that they can be sharpened without drawing their temper; and to these ends the invention consists in the novel construction and arrangement of parts, hereinafter described, illustrated in the drawings, and particularly specified in the appended claims.

The invention is especially applicable to thread-cutting machines in which the dies or cutters are mounted on the ends of a series of angular lever arms or jaws pivoted to the spindle on the stock of the machine and operated by suitable means to set the cutters farther in or out to vary the depth of cut, or to suit varying sizes of bolts.

Referring to the accompanying drawings by letter, A designates the spindle or stock of a bolt-threading machine, provided with the lever-jaws B, as usual. These parts are of common construction, and further description thereof is unnecessary, premising, however, that instead of employing three or more jaws B, two only are required by the use of my improvements, as shown in the drawings, so that the cost of the machine is reduced, although the usual number of jaws may be employed, if desired.

In the outer face or head of each jaw B is

formed one or more grooves, *b*, which may be dovetailed in cross-section, if desired, or of other convenient form, and which grooves are made on lines radiating from the axial line of the rotation of stock A.

a designates a threaded recess formed vertically in the head of jaw B at the bottom of groove *b*, near the outer end thereof, and hereinafter referred to.

CC designate the cutter-holding heads, which are removably secured on jaws B. Each head consists of a rectangular body, which is preferably of greater length than the heads of jaws B, but corresponds thereto in width, and has its inner corners beveled off, so that when secured to jaws B they will not impinge against adjoining heads when the jaws are set inward to thread a small bolt.

On the under surface of each head C is formed a central longitudinal rib, D, corresponding in cross-section to the grooves *b* of the jaws and adapted to be engaged therewith, and near the outer end of the head and passing through rib D is formed a vertical opening, *d*, through which passes the shank of a bolt or screw, E, which engages the opening *a* in the jaw upon which its head C is placed, and securely locks the head on the jaw, the rib D preventing side displacement and the bolt E lateral or vertical displacement of the head in relation to its jaw.

On the front upper surface of head C is formed the cutter-seat by the two opposite parallel ribs F F and connecting transverse rib *f*, which is situated near the opening *d*, the front space between the ribs E E being left open.

c designates a screw-threaded opening in head C below the cutter seat, and hereinafter referred to.

G G designate the cutters, two of which are mounted on each head. These cutters are similar, but face in opposite directions. Each consists of a rectangular bar having its outer front corners beveled off, and having on its inner face, below this bevel, a semicircular recess, so that an arm, *g*, is formed at the front end of each cutter, the face of the arm *g* standing at right angles to the body of the cutter and being suitably marked or scored to produce the threads on the bolts, as shown.

H designates semicircular notches formed in the cutters G on the same side as the notches

below heads *g*, so that when placed in their seats on heads *C* the notches *H* will coincide with each other, forming an opening, through which is passed a screw-bolt, *I*, engaging the opening *c* in the heads and firmly locking the cutters on their seat, as shown in Figs. 2, 3, and 4.

J designates a set screw passing through a threaded opening in rib *f* and abutting against the base of a cutter *G*, so that a slight longitudinal adjustment can be given the cutters, and they can be thereby additionally locked against bolts *I*.

The manner of making cutters *G* is as follows: I take two bars, *K K*, of steel of proper width and thickness for forming heads *G*, and dowel them together lengthwise, as shown in Fig. 5. I then bore a small opening, *k*, in the line of junction of bars *K K*, so that half of said opening will be in each bar. Then on each side of opening *k*, I form larger openings, *l l*, and at proper distances from openings *l* are made similar openings, *h*. These openings *l* and *h*, being bored on the line of junction of bars *K K*, will lie equally in each bar, as is evident. These series of openings are formed in the bars at proper distances apart, the distance between openings *k k* corresponding to the length of two cutters *G*, the bars being properly notched transversely and centrally between openings *k* to separate the sections from each other. After the bars *K K* have been thus bored and notched throughout their length, the openings *k* are bored with proper taps to form the cutting-edges of the cutters.

The V-shaped notches *L L* are made in each bar *K* opposite to and terminating at opening *k*, as shown. The bars are then separated from each other and divided at the various notches, presenting the completed cutters *G*, as described. By this method of forming the cutters they can be made readily, cheaply, and quickly, and flaws in the cutters can be avoided by properly matching and selecting bars *K*. The holes *h*, formed in bars *K K* while united when the bars are separated form the notches *H* of the cutters, and the notches *L* and openings *l* and *k* give the proper shape to heads *g*.

It will be observed that when the cutters become dull from use they can be removed from heads *C* and properly ground on the outer or inner edges of their heads *g* by an ordinary grindstone or emery-wheel, obviating the necessity of special tools for this purpose.

The operation of the device is obvious from the foregoing.

In practice it is proposed to provide a pair of heads *C* with the proper cutters *G* for the varying pitches of threads to be cut, the cutters being properly adjusted on the heads *C* and rigidly locked thereon, as described, so that when it is desired to change the pitch of the thread or to thread varying sizes of rods the heads *C* can be detached from jaws *B* and others substituted, so that the only time lost will be the little required to substitute the heads *C*, as the tool will be properly adjusted

to suit each pair of heads bearing the proper cutters. The opposite cutters in each pair, or the cutters on the opposite heads, may be so adjusted in relation to each other that one pair or cutter will make the rough cuts and the following pair the finishing cuts, so that the bolt will come from the machine properly dressed and finished.

Having described my invention, I claim—

1. In a bolt-threading machine, the combination, with the spindle-shank and the jaws secured thereto, of detachable sliding heads removably mounted on said jaws and the cutters secured on said heads, all substantially as and for the purpose described.

2. In a bolt-threading machine of the character described, the combination, with the pivotal jaws *B*, having the radial slots in their outer faces, of detachable cutter-bearing heads having ribs on their under surfaces engaging the slots in the jaws, and means for locking the heads in these slots, substantially as set forth.

3. In a bolt-threading machine, the combination, with the spindle-shank and its jaws, of detachable sliding cutter-bearing heads secured on said jaws and detachable cutters adjustably secured on said heads, all substantially as specified.

4. The combination, in a bolt-threading machine, of the jaws *B*, having grooves *b* in their outer faces, heads *C*, removably secured to the jaws and having ribs *D* engaging the grooves *b*, with detachable cutters *G*, secured to the heads *C*, all constructed substantially as and for the purpose described.

5. In combination with the cutter-bearing heads of a bolt-threading machine, substantially as described, the cutters *G*, constructed and arranged to operate substantially in the manner and for the purpose set forth.

6. The combination, with jaws *B* and detachable heads *C*, mounted thereon and having the upstanding flanges *F*, *F*, and *f*, forming the cutter-seat, of the cutters *G*, having heads *g*, notches *H*, and suitable means for retaining them in their seats on heads *C*, all constructed and arranged to operate substantially in the manner and for the purpose specified.

7. In a bolt-threading machine, the combination of the detachable heads *C*, having ribs *F*, *F*, and *f*, forming the cutter-seat, opening *c* in said seat, and adjusting-bolt *J*, with the similar opposite cutters, *G*, having heads *g g*, and adjoining notches *H H*, and the bolt *I*, passing through notches *H H* and engaging in opening *c* of the cutter-head, all constructed and arranged substantially as and for the purpose described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES A. BECHER.

Witnesses:

JAMES DUSHANE,
JEANIE ANDERSON.