

(No Model.)

W. H. DOANE.
WOOD WORKER.

No. 397,113.

Patented Feb. 5, 1889.

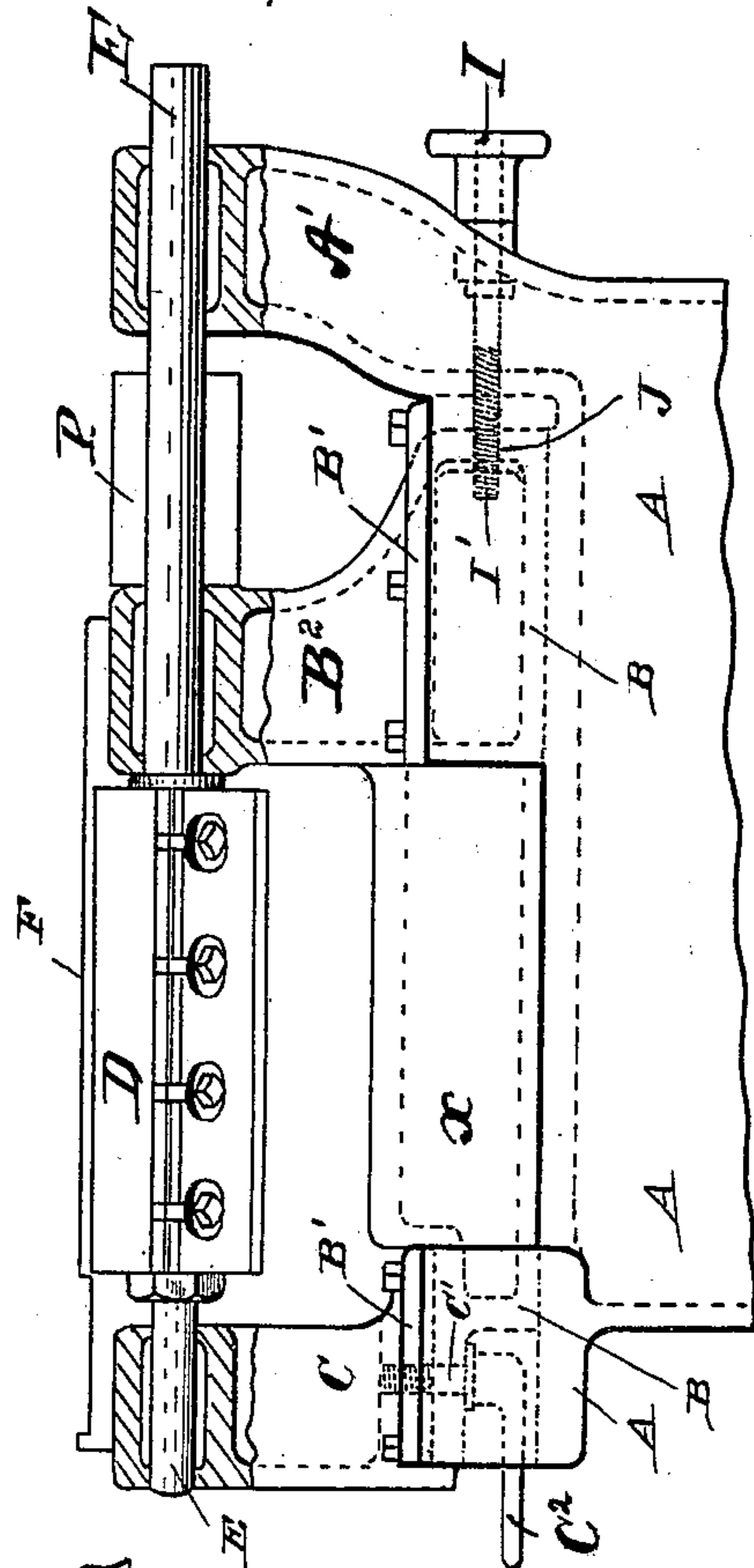


Fig. 2.

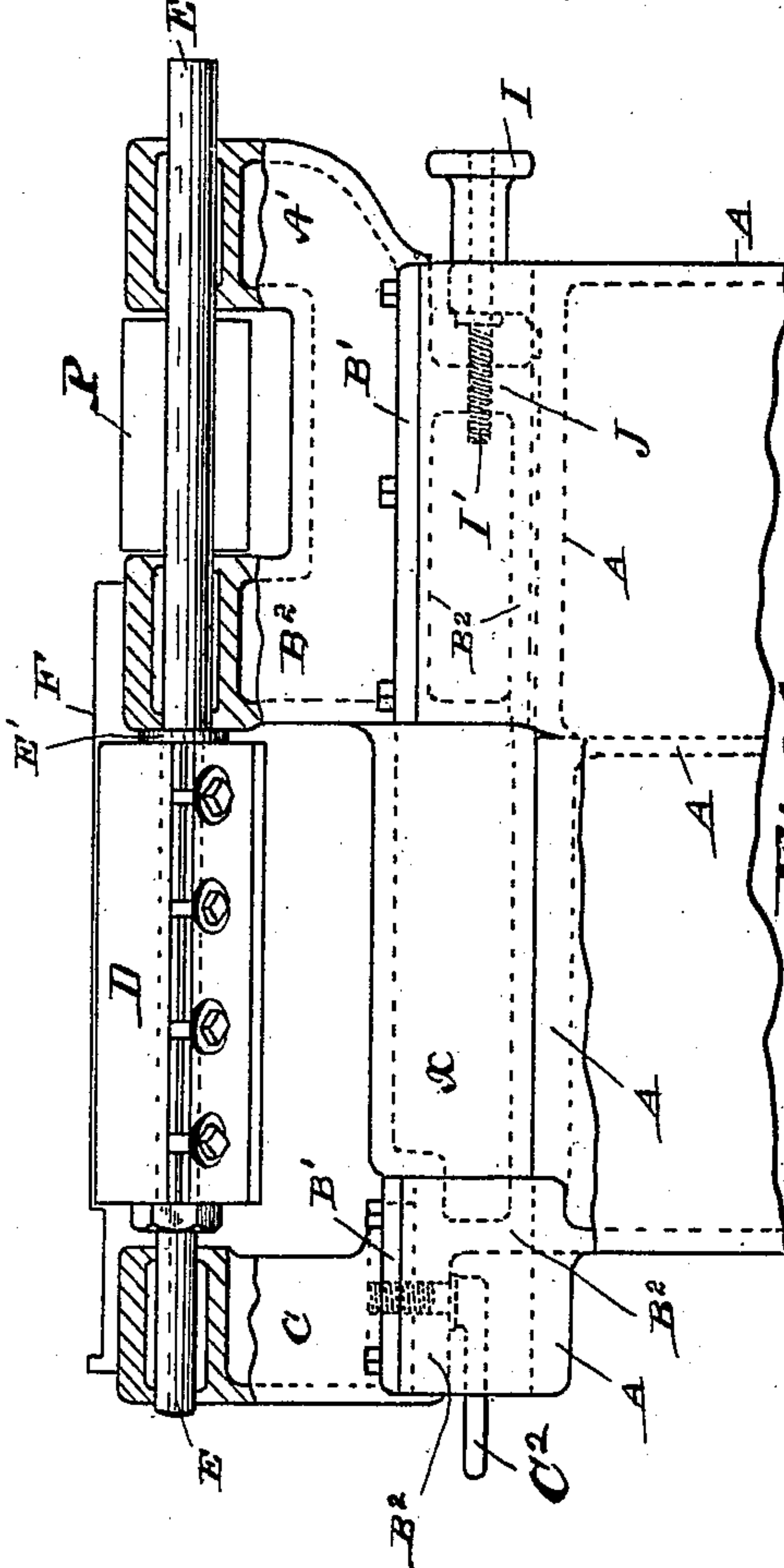


Fig. 1.

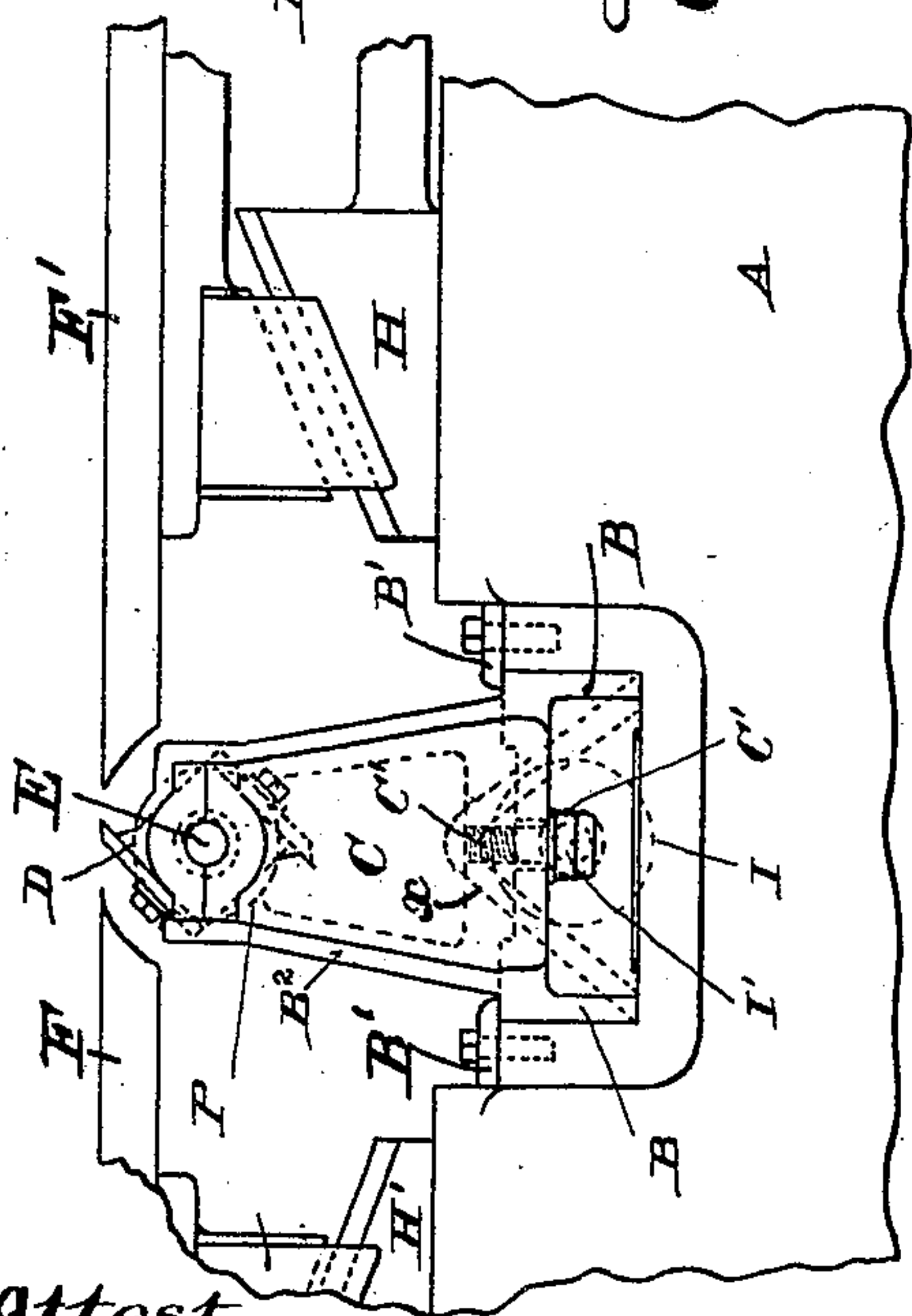


Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM H. DOANE, OF CINCINNATI, OHIO.

WOOD-WORKER.

SPECIFICATION forming part of Letters Patent No. 397,113, dated February 5, 1889.

Application filed July 9, 1888. Serial No. 279,369. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. DOANE, a citizen of the United States, residing at Cincinnati, Ohio, have invented new and useful
5 Improvements in Wood-Workers, of which the following is a specification.

My invention relates to a class of machines usually termed "wood-workers," in which a cutter shaft or arbor is rotated between two
10 adjustable work-carrying tables or platens to operate the cutters upon the under side of the work.

Generally in the construction of such machines the cutter-arbor is carried in two bearings, one at each end of the cutter-head, and the driving-pulley overhangs the supporting-frame upon the outer projecting end of the shaft, giving a tendency to the pulley-bearing of the arbor to heat and cut laterally by reason of the side strain under high speed, producing an unequal and ragged action of the cutters. This disadvantage is intensified where these bearings are made adjustable to shift the arbor and its cutter-head, thereby
20 producing a tendency to lost motion in the sliding parts under the unequal strains.

My invention seeks to remedy this difficulty and produce a construction of the machine which shall preserve the relative rigidity of
30 the cutter-shaft in its bearings, (which is of vital importance,) yet also give adjustability to the cutter-head in relation to the work-platens.

To this end my invention consists in the
35 construction hereinafter described and illustrated, in which a third or outer pulley-bearing for the cutter-shaft is combined with the two remaining bearings at opposite ends of the cutter-head by means of a sliding frame, preferably constructed in box form, operating in a guideway or channel of the supporting-bed, whereby a long and rigid support to the adjustable bearings is afforded by which their proper alignment is preserved without sacrifice of adjustability and the wearing side strains in the pulley-bearings are avoided.
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Mechanism embodying my invention is illustrated in the accompanying drawings, in which—

50 Figure 1 is a side elevation of a wood-worker in which the three journal-bearings of the cutter-mandrel are carried upon a sliding frame

adjustable in guides across the supporting-bed of the machine. Fig. 2 is a modification in which the two immediate bearings of the
55 cutter-cylinder are carried by said frame, the third or pulley bearing being a fixed extension of said supporting-bed. Fig. 3 is a front elevation of either machine, showing the preferred form and construction of the box-frame
60 and its guide-channel.

Referring now to the drawings, A designates the fixed supporting-base of the machine. The adjustable platens F F' and their adjusting supports G H are partially indicated in
65 the drawings; but no further reference to them is requisite, as they form no part of my present invention, except as defining the class of machines to which my invention is applied.

A' B C designate, respectively, the rear, middle, and front blocks or pedestals forming, with the caps, the bearings of the cutter shaft or arbor E, the supporting frame or bed of the machine being extended laterally to give a support for the third or outer bearing. The
75 cutter-head D and the driving-pulley P are spaced apart upon the arbor by the intervening middle bearing, B, and the cutter-head is held in fixed longitudinal relation to the said middle bearing.
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The supporting-frame is preferably cast with a channel or guideway, as indicated in Fig. 3, extending entirely across the supporting-frame A, in which is gibbed a slide-frame, B², by gibs B', all being planed to a sliding fit.
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Through a down-projecting web or tongue, J, of the slide-frame is threaded a screw-shaft, I', passing horizontally outward through a socket of the main frame A, and provided with an exterior hand-wheel, I, by which it is
90 rotated and the position of the sliding frame and the cutters adjusted and determined.

The front block or pedestal, C, is attached to the slide-frame B² by bolts, and is removable for the purpose of substituting a new
5 cutter-head upon the mandrel. When in position, it is held relatively fixed by a screw-clamp, C', operated by a lever-handle, C, by which it is securely clamped to the frame.

In the modified construction shown in Fig. 2 the outer bearing, A', is an upward extension of the supporting-frame A, and the guideway or channel extends thence across the supporting-frame to the opposite side. In this
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case the slide-frame is correspondingly shortened and contains only the bearings B C, the front bearing, C, being removably secured thereto, as in the case last described, and the slide-frame being adjusted by the hand-wheel, as before.

Both constructions thus described accomplish the same end—viz., allow the adjustment of the cutter-head laterally in relation to the work-platens, while preserving the relatively-fixed bearings of its arbor at each side of the driving-pulley and of the cutter-head. In both cases the central bearing, B, maintains a relatively-fixed longitudinal relation to the mandrel, the latter being in the latter case shifted longitudinally in its rear terminal bearing, and in the former case maintained in a fixed relation to all its bearings, all the terminal bearings being shifted without changing the relation of the mandrel thereto.

The slide-frame B², it will be observed, is preferably constructed of rectangular cross-section, the object being to obtain a sliding bearing at its bottom and sides upon the planed bottom and sides of the guideway or channel of the supporting-frame, whereby its movement in adjusting the arbor involves, practically, no wear or lost motion by reason of the equal distribution of strains over large surfaces in different planes. The guide-surfaces of the slide-frame are not continuous, but separated by a blank interval corresponding with that between the front and rear walls of the base frame or bed. This blank portion of the slide-frame is connected across by a "hip-roof" connection, *a*, by which the cuttings produced in the operations of the cutter are deflected outward and away from the guides. In this construction are preserved the advantages of the three bearings for the mandrel, so necessary in the modern use of this class of machines, and the consequent rigidity of the mandrel and pulley, upon

which the proper alignment of the cutter depends. At the same time the cutter-head is freely adjustable in relation to the work, and the front bearing is removable for substituting other cutters as desired. These advantages are especially important in view of the varied and extensive use to which such machines are put in the increasing demands of the trade, since they increase the efficiency, accuracy, and durability of the machine many fold.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. In a wood-worker of the character described, having adjustable platens at the sides of the cutter-head, a supporting frame or bed formed with a guideway or depression beneath and parallel with the cutter-arbor, in combination with a slide-frame adjustable in and guided thereby, and carrying bearings for the cutter-arbor, substantially as set forth.

2. In a wood-worker of the character described, a slide-frame adjustable in guides across the supporting-bed of the machine, parallel with and beneath the arbor, and carrying three bearings for said arbor, two of said bearings being fixed and one removable, substantially as set forth.

3. In a wood-worker, in combination with the cutter-arbor, its cutter, and driving-pulley, an adjustable slide-frame carried in guides across the supporting-bed beneath the arbor, having bearings integral therewith at both sides of the pulley, and a third or front bearing for the arbor beyond the cutter removably attached thereto, substantially as set forth.

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

WILLIAM H. DOANE.

Witnesses:

L. M. HOSEA,
L. E. HOSEA.