

(No Model.)

D. R. PROCTOR.
Plow for Cutting Lumber.

No. 234,062.

Patented Nov. 2, 1880.

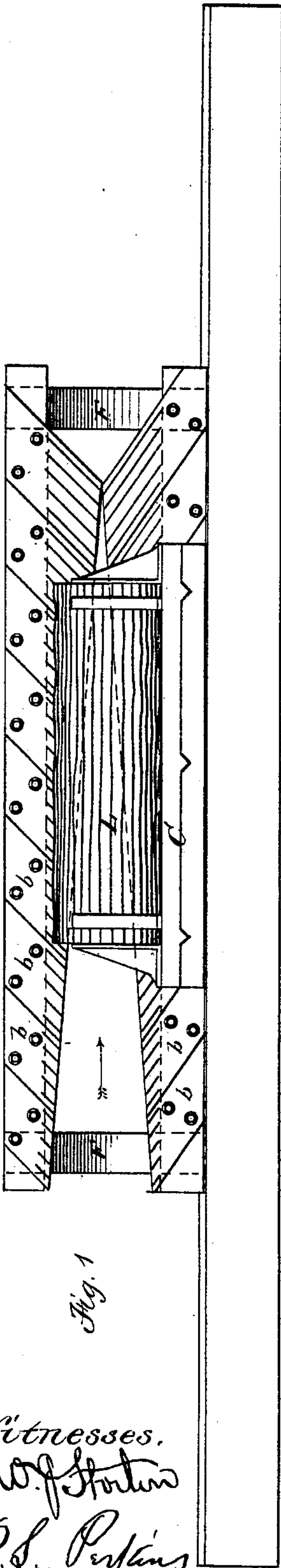


Fig. 1

Witnesses.
W. J. Horton
R. L. Perkins

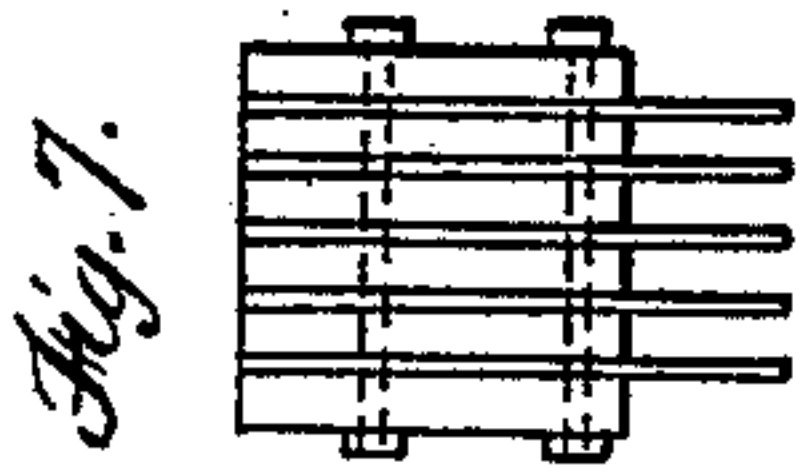


Fig. 7.

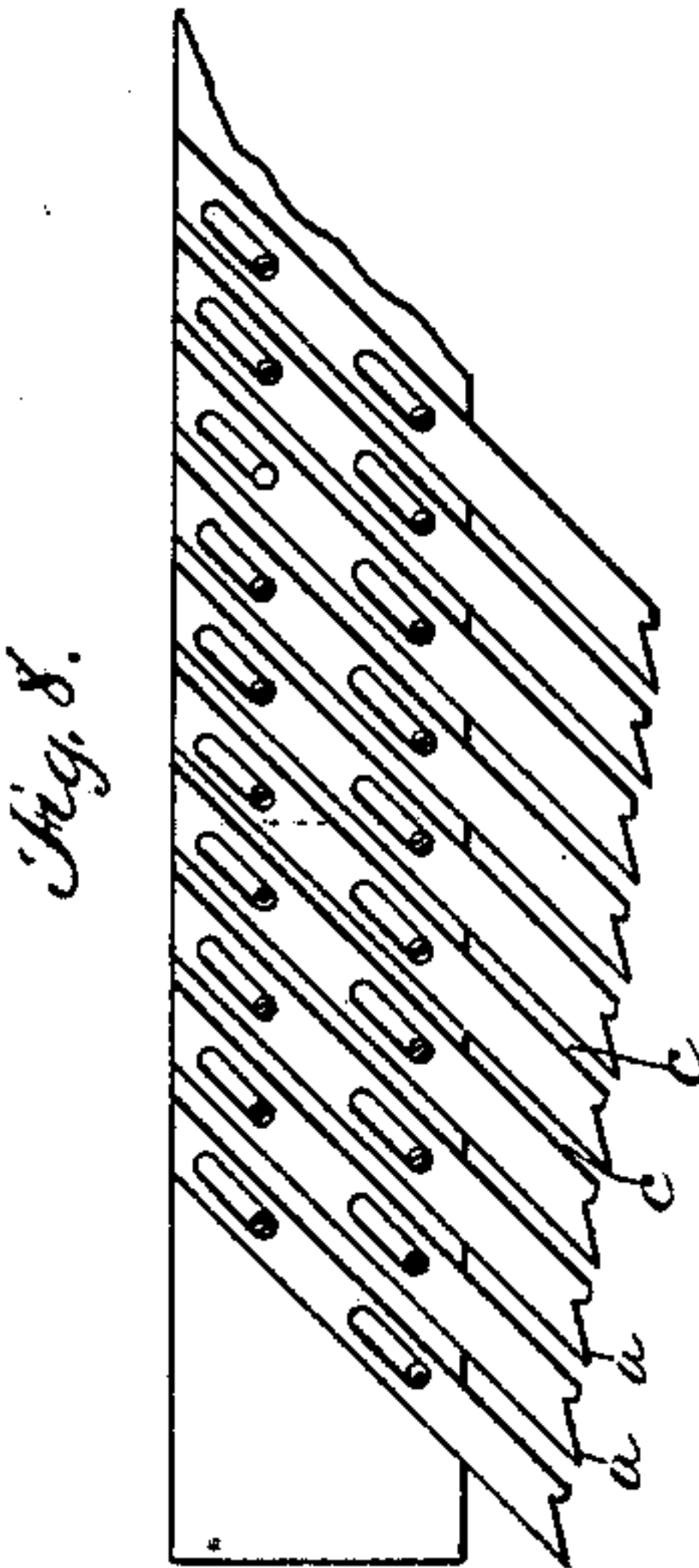


Fig. 8.

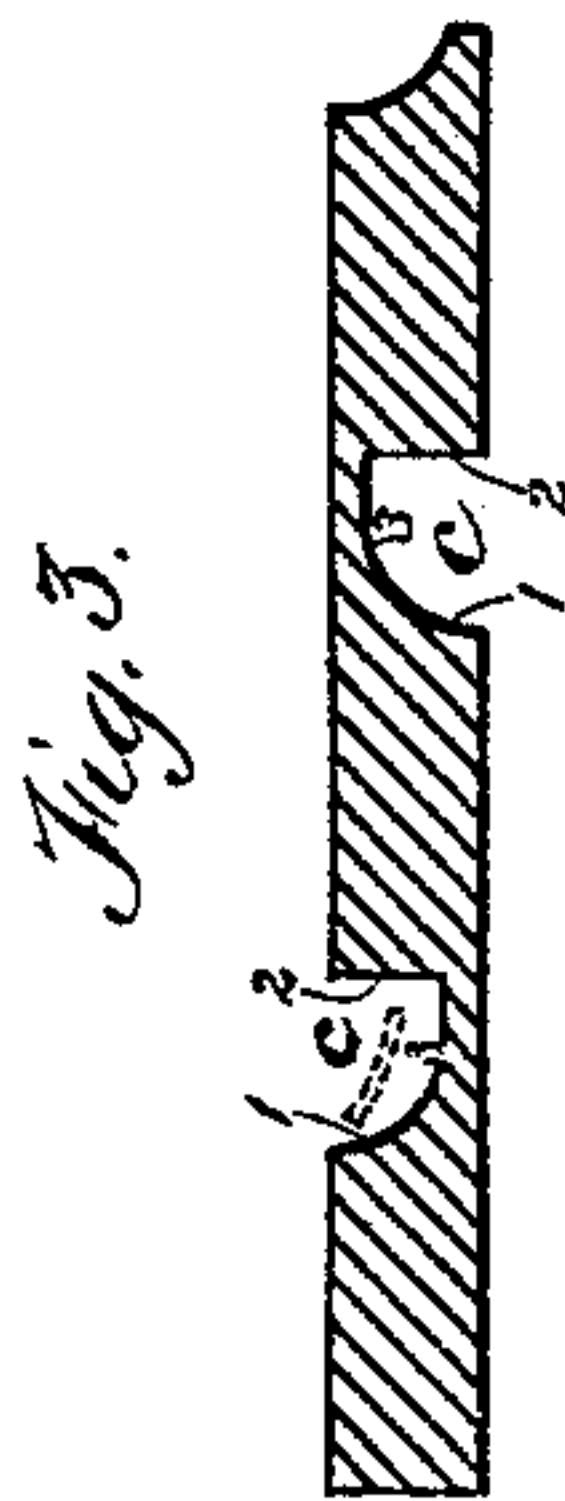


Fig. 3.

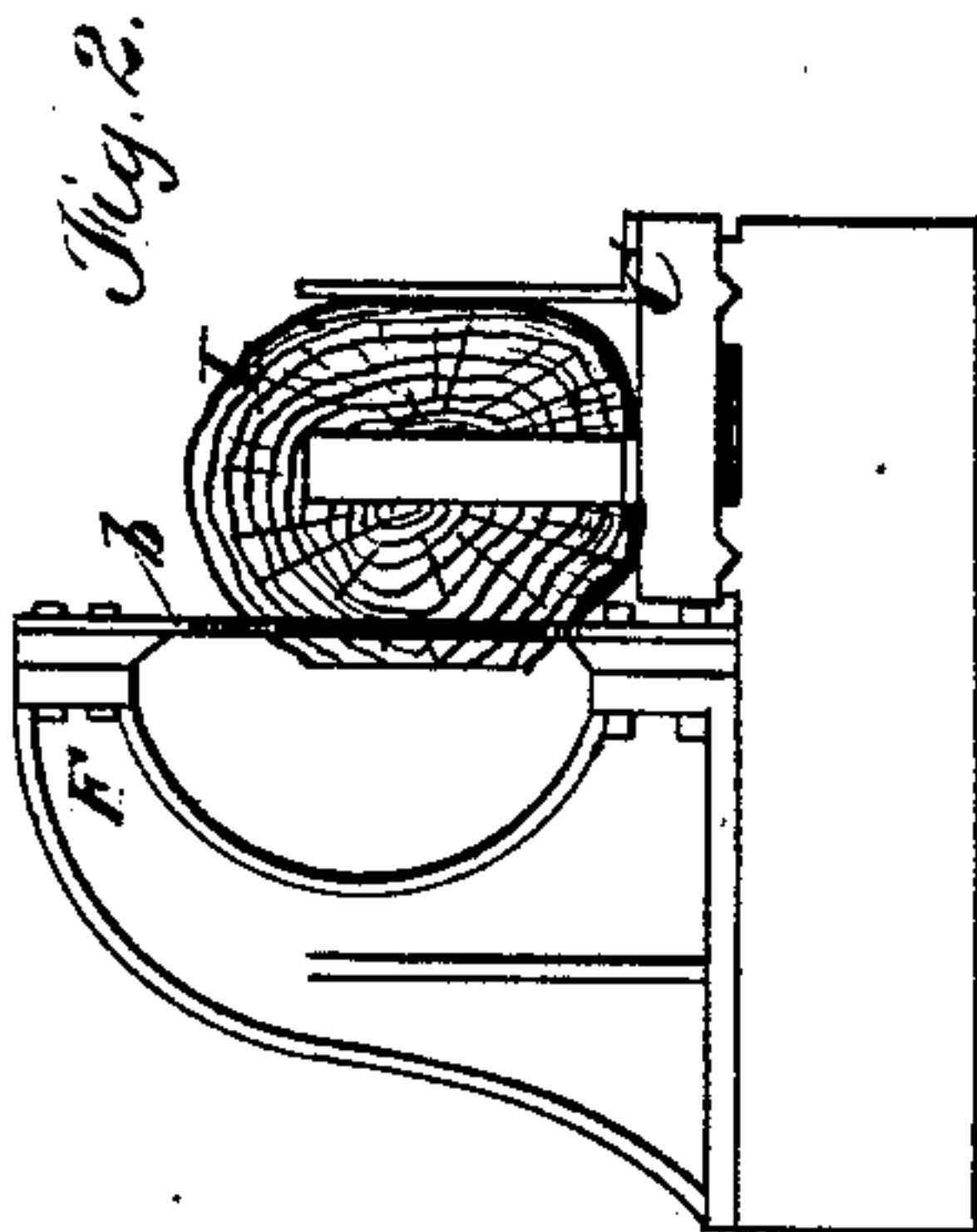


Fig. 2.

Fig. 4.

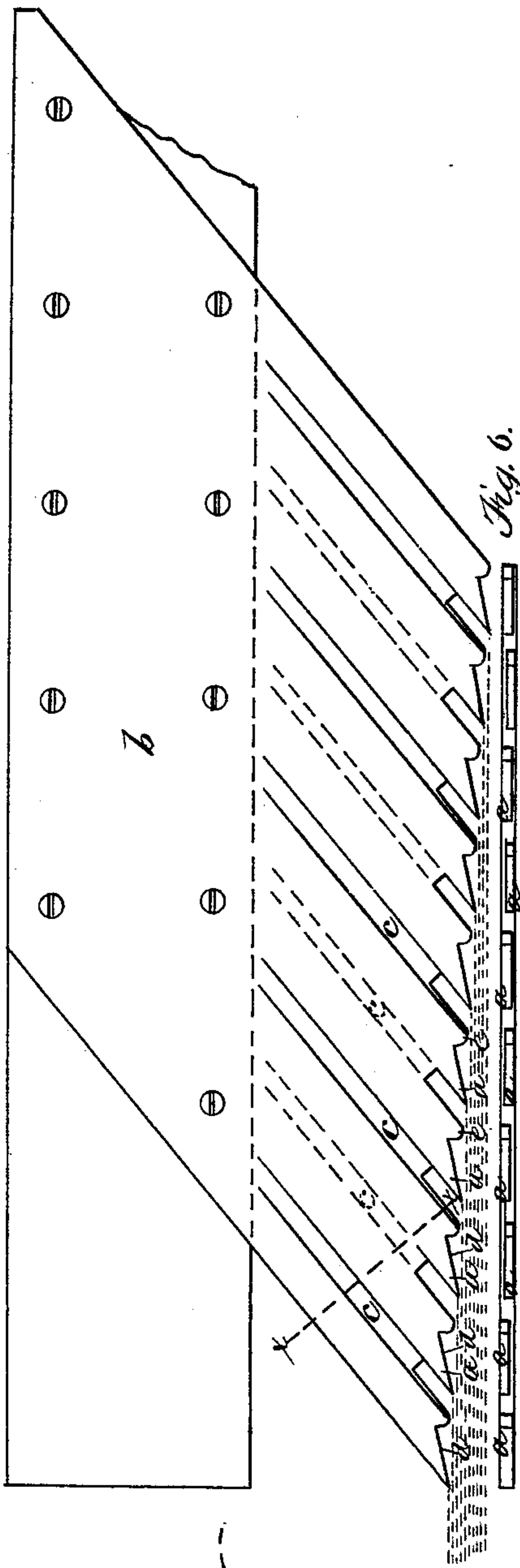


Fig. 6.

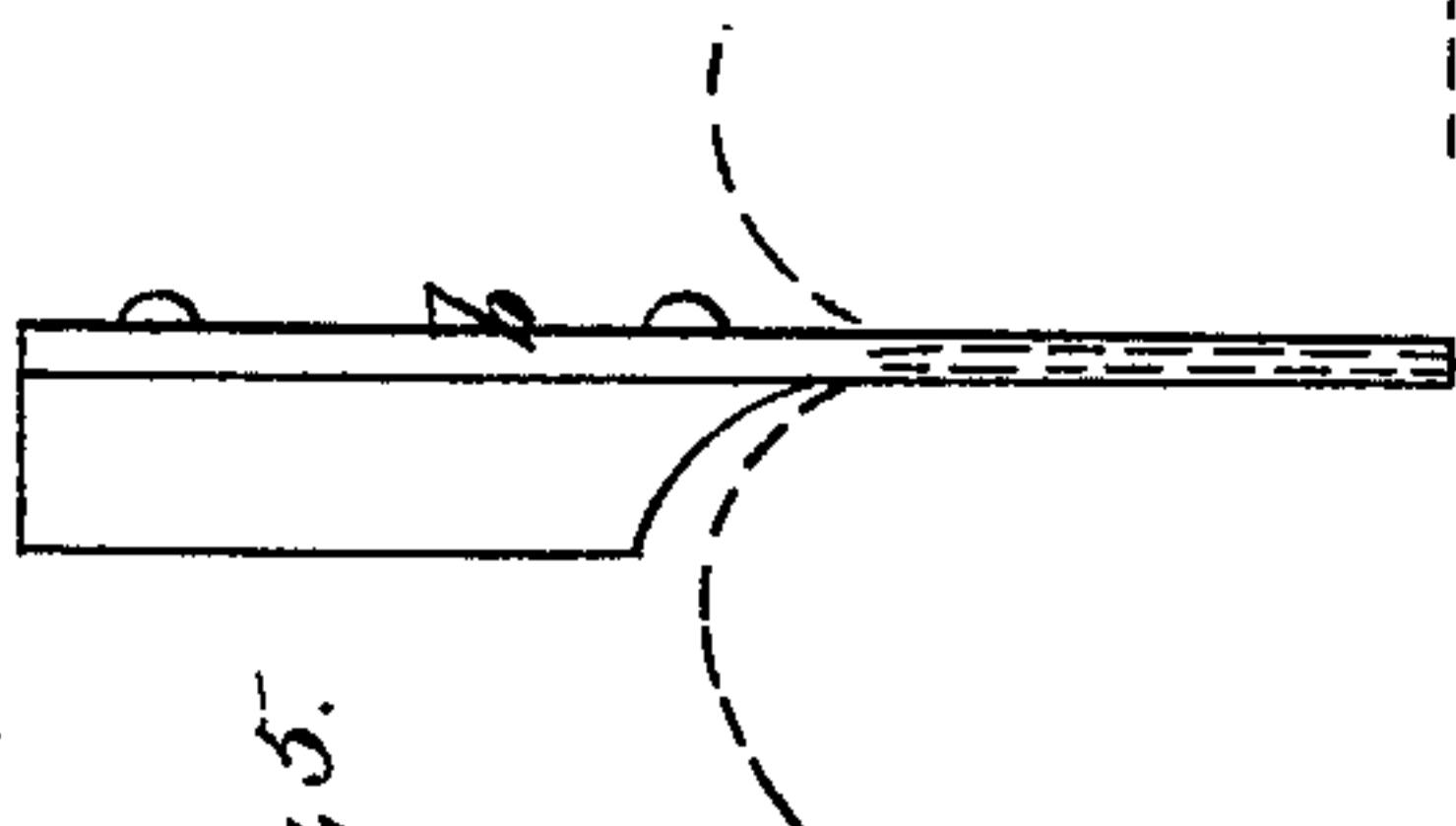


Fig. 5.

Inventor,
D. R. Proctor.
by Wright & Brown
Attys.

UNITED STATES PATENT OFFICE.

DAVID R. PROCTOR, OF GLOUCESTER, ASSIGNOR TO HIMSELF, CLIFTON E. WING, CHARLES H. WING, DAVID HUNT, JR., AND JAMES F. BLISS, OF BOSTON, AND E. B. WELCH, OF CAMBRIDGE, MASSACHUSETTS.

PLOW FOR CUTTING LUMBER.

SPECIFICATION forming part of Letters Patent No. 234,062, dated November 2, 1880.

Application filed March 8, 1880. (No model.)

To all whom it may concern:

Be it known that I, DAVID R. PROCTOR, of Gloucester, in the county of Essex and State of Massachusetts, have invented certain Improvements in Plows for Cutting Lumber, of which the following is a specification.

This invention has for its object to rapidly convert logs or other bodies of wood into lumber of any desired size and leave such lumber with true surfaces which will require but little or no planing.

To this end my invention consists in a series of cutters arranged and adapted to cut through a log lengthwise thereof and parallel with the grain, each cutter operating on the principle of a carpenter's plow and cutting a shaving the entire length of the log, the series of cutters being arranged in a descending scale, so that each cutter after the first will enter the log more deeply than the cutter preceding it.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a side view of an apparatus embodying my invention. Fig. 2 represents an end view of the same. Fig. 3 represents a section on line *x x* of Fig. 4. Fig. 4 represents an enlarged side view of a portion of the apparatus shown in Fig. 1. Fig. 5 represents an end view of the part shown in Fig. 4. Fig. 6 represents an edge view of a plate containing several cutters. Fig. 7 represents an end view, and Fig. 8 a side view, of a modification.

The same letters of reference indicate the same parts in all the figures.

In carrying out my invention I provide a series of cutters, *a a a a*, of any desired number, each cutter being adapted to cut a shaving of any desired width and thickness from end to end of a log, either by being held stationary while the log is being moved against it or by being moved along the log. Each cutter after the first is lower than the preceding cutter by the thickness of the shaving to be cut, and therefore the number of cutters employed determines the depth of the cut. The cutters may be of any suitable construction. I prefer at present to make them on plates *b b*, as shown in Figs. 1 and 4, each

plate being of steel and provided in its sides with diagonal grooves or channels *c c c* and on its lower edge with inclined surfaces *d d* and projections or heels *e e*, the cutters being formed by the meeting of the surfaces *d* and the rear sides of the grooves. The grooves extend diagonally from the cutters toward the opposite edge of the plate far enough to enable the shavings removed by the cutters to pass away from the log through said grooves. The cutters *a a* are thinner than the body of the plate *b*, and one side of every alternate cutter is flush with one side of the plate *b* and the opposite sides of the other cutters are flush with the opposite side of the plate, as shown in Fig. 6. This arrangement of cutters is essential when several are made on a single plate, it being necessary that the body of the plate be thicker than the teeth, in order that the grooves *c* (which must be equal in depth to the thickness of the teeth) may be cut in the plate. The grooves are therefore formed alternately on opposite sides of the plate, as shown.

The heels *e e* form bearing-surfaces, each bearing upon the bottom of the groove formed by the preceding cutter, and each heel is on the same level as the cutter immediately preceding it, and forms a guard or guide to limit the depth of the cut made by said cutter.

I prefer to arrange the plates *b b* in two series, as shown in Fig. 1, one series arranged to cut into the upper and the other series into the lower surface of the log, as shown in Figs. 1 and 2, the two series being on the same plane and converging to meet at their rear ends and forming a single cut.

The plates *b b* are secured to a strong frame, *F*, of any suitable construction, and as said frame and plates are of considerable weight, I prefer to make them stationary and move the log on a suitable carriage, *C*, in the direction indicated by the arrow in Fig. 1, *L* representing the log.

If desired, each cutter and its heel may be formed on an independent plate, as shown in Fig. 8, in which case the channels *c* for the escape of shavings will be the spaces left between the plates. I prefer, however, to arrange several cutters on a single plate for con-

venience of application, renewal, and adjustment. The cutters may be arranged in gangs, if desired, as shown in Fig. 7.

In the operation of the machine the log is moved with considerable rapidity against the cutters. The first cutter that touches the log planes a shaving along the surface, the next a second shaving, and so on, each cutter making the longitudinal incision deeper until, when the log reaches the end of the series, a board or plank is entirely severed from it, and the sides of the scarf made are left so nearly true that the lumber requires but little or no planing. The shavings slide freely through the grooves or channels out of the log. When said grooves or channels are made in the sides of a plate, as shown in Figs. 3 and 4, the width of the grooves is made greater than their depth, and the front wall or side, 1, of each groove is curved to join the bottom 2 of the groove without an angle, as shown in Fig. 3. This curve causes the shaving to turn as it passes up the groove, as indicated in dotted lines in Fig. 3, so that its cross-section will extend from the front 1 to the back 3 of the groove, instead of extending across the depth of the groove, or, in other words, from the bottom 2 to the side of the scarf through which the cutters are moving. As before stated, the groove is wider than it is deep, so that the shaving, arranged as shown, has ample room in which to move, and its edges will not bind against the walls of the groove in passing out.

The described method of cutting logs into lumber may be aptly termed "slicing," as it virtually slices the log and with great rapidity. The cutters may be made vertically adjustable, if desired, so that a log of large size can be cut by two or more operations, the cutters being set to enter the log more deeply after each cut.

Practical tests have demonstrated that in making lumber by plowing or cutting, as described, about two-thirds less power is required than in sawing, which is necessarily cutting across the grain. My apparatus also effects a saving of about one-third of the material usually converted into sawdust in sawing, for the reason that the scarf formed by my cutters is only about two-thirds of the width of the scarf formed by an ordinary saw. Moreover, the material removed in forming the scarf by my

apparatus, being in the form of shavings, has much more commercial value than sawdust. Furthermore, as the planing of the saw-marks necessitated by the old method subjects the lumber to an additional waste of nearly or quite one-eighth of its bulk, the great advantages of my machine, which saves all of this waste, as well as the expense of planing, will be more clearly apparent.

A machine for forming tongues and grooves on boards by means of a series of descending cutters or planes has long been known; but, so far as I know, neither this form of machine nor any like it has up to this time been adapted to convert logs into lumber.

I claim—

1. A plate having a series of inclined grooves formed alternately in its opposite sides and a series of cutters formed on its edge at the ends of the grooves, each cutter being substantially equal in thickness to the depth of each groove, said cutters being narrower than the thickness of the plate, and so arranged that one side of every alternate cutter is flush with one side of the plate, and the opposite sides of the other cutters are flush with the opposite sides of the plate, substantially as specified.

2. A plate having a series of cutters thinner than the body of the plate, one side of every alternate cutter being flush with one side of the plate and the opposite sides of the other cutters with the opposite sides of the plate, and a series of inclined grooves or channels formed alternately on the opposite sides of the plate and extending from the points of the cutters to conduct the shavings out of the log, as set forth.

3. A plate having a series of cutters and a series of grooves extending alternately on opposite sides from the cutters, each groove being wider than it is deep and having its forward edge curved to join its inner side, as and for the purpose specified.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 4th day of March, A. D. 1880.

DAVID R. PROCTOR.

Witnesses:

C. T. BROWN,
J. P. COLLINS.