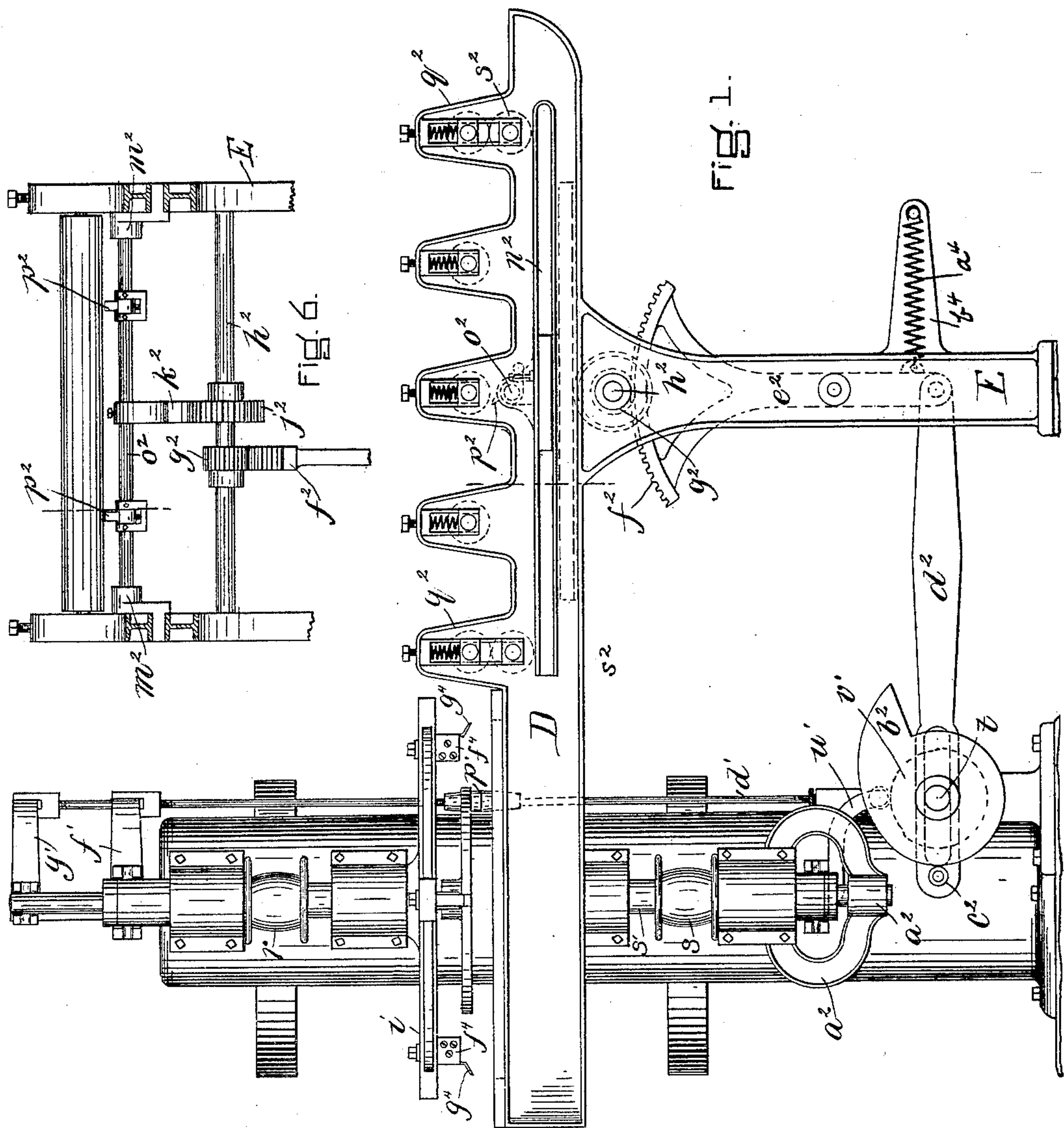


3 Sheets—Sheet 1.

No. 467,899.

Patented Jan. 26, 1892.



Robert Wallace.
C. E. Walter.

INVENTOR.
James H. Reed
by Wm. H. Macleod.
his Atty

(No Model.)

3 Sheets—Sheet 2.

J. H. REED.
WOOD WORKING MACHINE.

No. 467,899.

Patented Jan. 26, 1892.

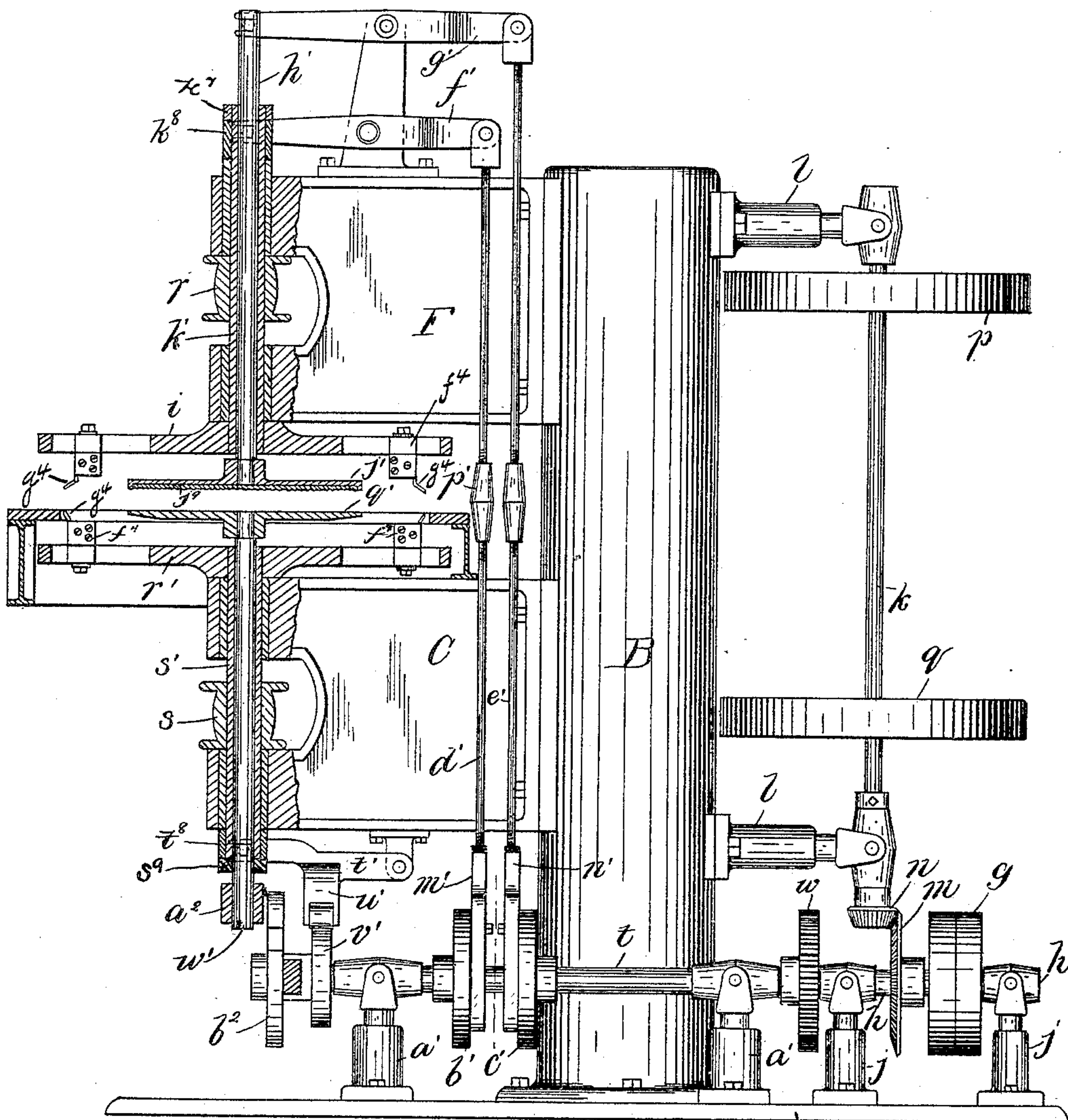
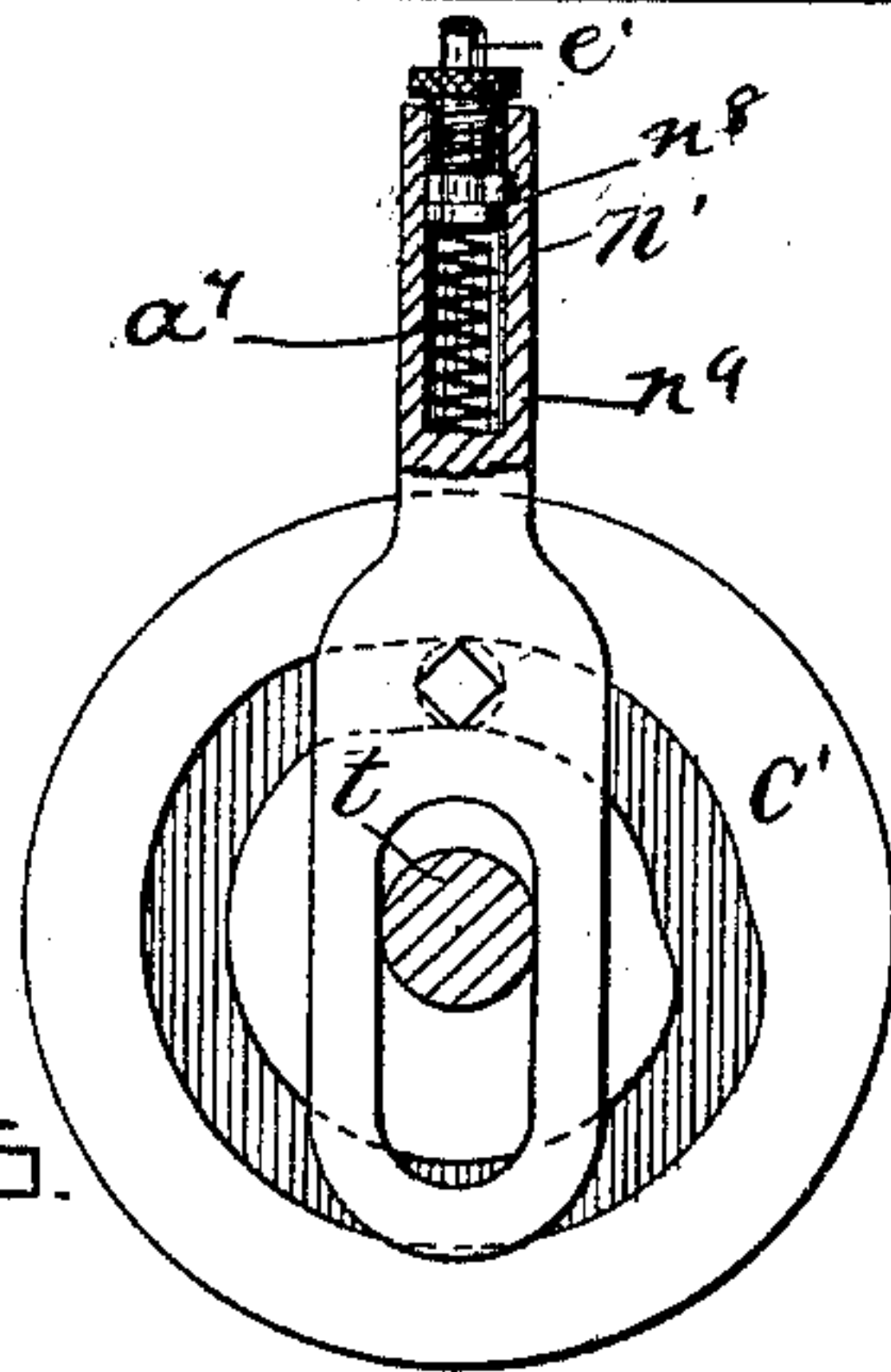


Fig. 2.



WITNESSES:

Robert Wallace, Fig. 5.

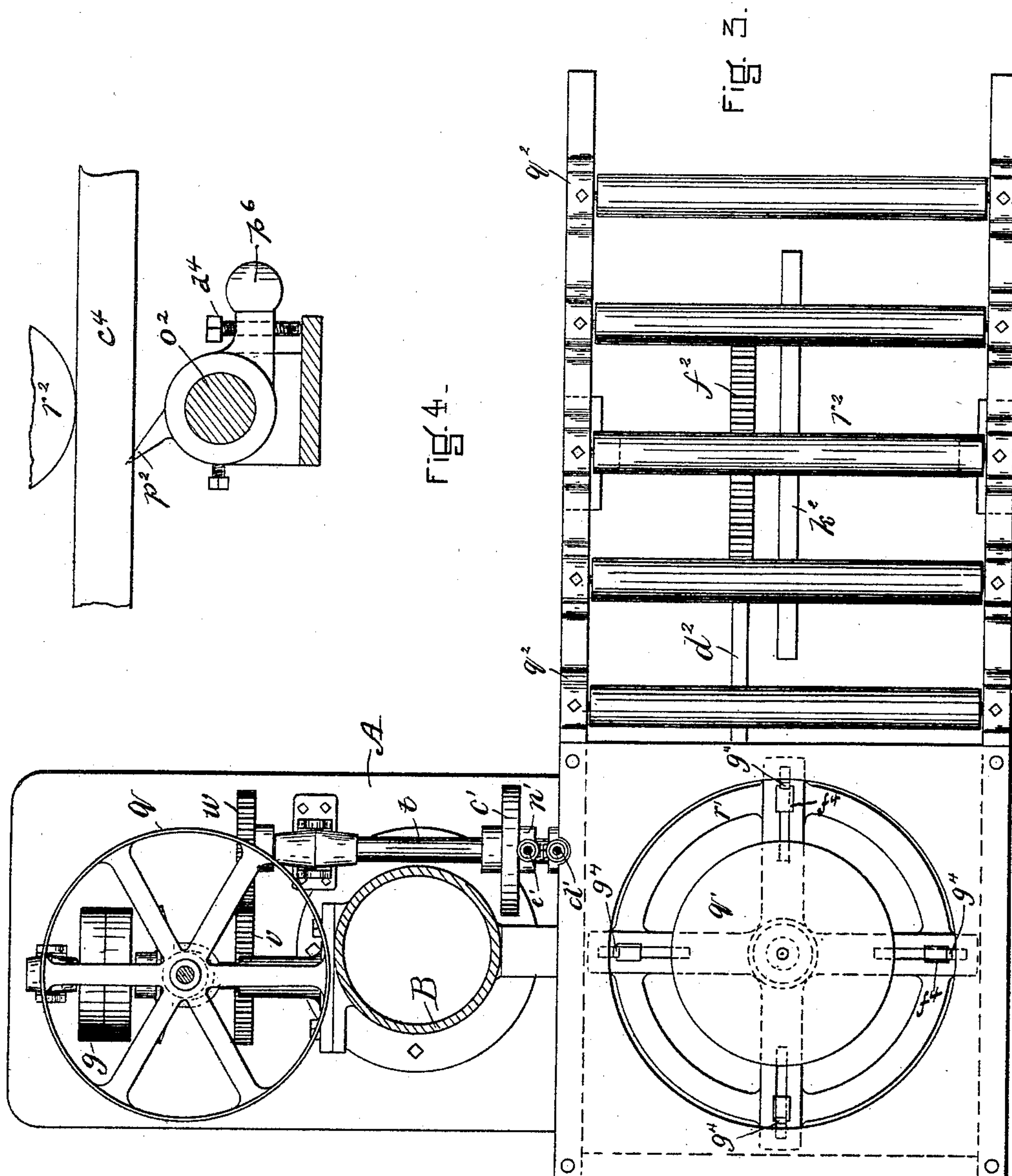
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

JAMES H. REED, OF LYNN, MASSACHUSETTS, ASSIGNOR OF ONE-HALF TO
JOHN McLAY, OF SAME PLACE.

WOOD-WORKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 467,899, dated January 26, 1892.

Application filed November 28, 1890. Serial No. 372,777. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. REED, of Lynn, county of Essex, State of Massachusetts, have invented certain new and useful Improvements in Wood-Working Machines, of which the following is a specification, reference being had to the drawings accompanying and forming a part hereof, in which—

Figure 1 is a side elevation of my machine. Fig. 2 is a front elevation with the cutter-heads, the clamps, and the shafts in section. Fig. 3 is a plan view looking downwardly from a point immediately above the upper cutter-head. Fig. 4 is a detail of the feed mechanism. Fig. 5 is a detail of the cam which operates the movable clamp. Fig. 6 is a detail showing part of the feed-actuating mechanism.

The machines at present in general use which employ revolving cutter-heads for the purpose of cutting from boards or planks disks or circular forms, like barrel-heads, tub and pail bottoms, and the like, are so arranged that it is difficult or impossible to feed the stock easily to the machines, and mechanism more or less complicated is required to take the waste, as also the disks or circular forms which have been cut, away from the machines. It is also necessary in these machines, so far as known to me, for the best results to glue, dowel, or otherwise secure the boards or planks together when a disk is to be cut of greater diameter than the width of a single board—that is to say, the boards or planks cannot, without securing them together, be laid side by side in the machine and the disk cut. This is due largely to the clamping mechanism and to the arrangement of the machines.

My invention has for its object to obviate these difficulties and to produce a wood-working machine, by means of which circular forms, as barrel-heads and the like, may be cut easily and speedily; and it consists in the details of construction and arrangement hereinafter set forth, and particularly pointed out in the claims which are appended hereto and made a part hereof.

I have shown my invention as embodied in the best form now known to me in the accom-

panying drawings, and I will describe the same, having reference thereto.

A is the base of the machine.

B is a cylindrical upright which forms the main support of the machine and to which auxiliary supports for the various parts of the mechanism are secured.

C is one of the auxiliary supports, in which the lower cutter-shaft is journaled and upon which one end of the table D rests, the other end thereof being supported by legs E.

F is another auxiliary support, in which the shaft of the upper cutter-head is journaled.

The machine is driven from a pulley *g*, mounted on the horizontal shaft *h*, which is supported on uprights *j*, set on the base-piece A. A vertical shaft *k*, which is journaled in bearings on the projections *l*, which are secured to the standard B, is connected with the shaft *h* by means of a beveled gear and pinion *m n*. The vertical shaft *k* is provided with upper and lower belt-pulleys *p q*, respectively, from which the vertically-arranged cutter-head shafts *k' s'* are driven by belts, which are not shown, and which pass over the pulleys *r s* on the upper and lower cutter-head shafts. When a board is cut, the cutters must be given a vertical movement, in order that the disk be severed from the board or plank. It is also necessary that one or both of the movable members of the clamp should have a similar movement and that the said clamp should operate inside the path described by the cutters. It will be noted that I have located the cutter-heads and clamp members in horizontal planes, which enables me to lay the boards flat on the horizontal table D and feed them forward in this position to the cutters. In this way the stock, as also the waste and the disks when formed, are more readily and easily handled. The vertical movements of the cutter-heads and the movable member of the clamp are obtained from the horizontal secondary shaft *t*, which is driven by means of the gears *v w* (see Fig. 3) from the main shaft *h*. The shaft *t* is mounted in uprights *a'*, secured to the base-piece A, and is provided with disks *b' c'*, in which are cut cams which operate the vertical connecting-rods *d' e'*, respectively.

The lower ends of the rods $d' e'$ are secured to the yoke-shaped pieces $m' n'$, which are cut away centrally, as shown, Fig. 5, the shaft t passing through the aperture, and which are provided with cam-rolls which travel in the cam-paths in the disks $b' c'$. The lower ends of the rods $d' e'$ are headed and are received in sockets a' in the yokes $m' n'$, a spring n^9 being placed in the socket underneath the head n^8 on the end of the rod, the rod passing through a tubular screw in the bore at the upper end of the yoke. By this means the movable clamp and the upper cutter, should they meet an obstacle in their downward movement, are prevented from injury, as the throw of the cam will be taken up by the springs in the sockets a' . The connecting-rods $d' e'$ are each provided with a right and left hand adjusting-screw, as shown at p' , and are pivoted at their upper ends to the levers $f' g'$, respectively. These levers are pivoted to an upright piece secured on top of the support F. (See Fig. 2.) The outer end of the lever g' is connected by means of a slot-and-pin connection with the rod h' , upon the lower end of which is secured the movable clamp member j' . The rod h' passes through an aperture lengthwise of the shaft k' , to which the cutter-head is attached. The end of the lever f' is secured by a similar slot-and-pin connection with the sleeve k^8 surrounding the hollow shaft k' between pulley r and ring k^7 , the pulley r being rigidly secured upon the shaft k' . It will be clear that by means of this mechanism the upper cutter-head i and clamp j' will be moved vertically in proportion to the throw of the cams $b' c'$. The lower clamp member or bed q' does not require to have a vertical movement, and I prefer to make it rigid; but the lower cutter-head r' requires to be moved vertically in order to bevel the lower side of the disk, which is cut at the edges. The lower cutter-head is mounted on a hollow shaft s' , upon which the pulley s is fast. This shaft s' is arranged to move vertically, and for the purpose of moving it vertically I provide a sleeve t^8 , surrounding the shaft s' between pulley s and ring s^9 on the shaft A. Lever t' (see Fig. 2) has a forked end which engages with pins on the sleeve t^8 . This lever is pivoted to a lug on the support C, and is provided with a downwardly and forwardly projecting curved arm u' , (see Fig. 1,) the lower end of which carries a roll which bears on the periphery of the cam-wheel v' . It will be clear that as the cam v' revolves the cutter-head will be moved vertically. Inside the hollow shaft s' is the rod w' , to the upper end of which is fastened the bed or lower clamp member q' . The lower end of the rod w' is rigidly mounted in the curved yoke-shaped frame a^2 . On the end of the shaft t and beside the cam v' is secured the feed actuating cam b^2 , which co-operates with a roll c^2 , set on the end of the connection d^2 , said connection being slotted, as

shown, Fig. 1, where the shaft t passes through it, the shaft serving to support the connection d^2 and hold it in place relatively to the actuating-cam b^2 . The other end of the connection d^2 is pivoted to a vertical lever e^2 , which is pivoted on a cross bar or rod extending between the legs E of the table. The upper end of the lever e^2 is branched, as shown, Fig. 1, and is provided with a toothed sector f^2 , which co-operates with a pinion g^2 , fast on a shaft h^2 , which is journaled at either end in the legs or supports E. The shaft h^2 is provided with a gear j^2 , (see Fig. 6,) which co-operates with a rack k^2 , which is fast to the horizontal rod o^2 , which is secured at either end in the sliding blocks m^2 . These blocks are each provided with a flange adapted to fit a slot or groove n^2 in the side of the table D, and are connected together rigidly by means of said cross-rod o^2 . On the cross-rod o^2 are pivoted tilting feed-dogs p^2 , (see Fig. 4,) having pointed or sharpened ends adapted to seize the under side of the boards or planks and hold them while they are fed forward. A series of projections or upright supports q^2 on either side of the table D are provided with yielding sliding bearings for the rolls r^2 , under which the boards or planks pass and which hold them in position. The roll r^2 at the front of the table and that at the other end thereof have each a companion roll s^2 mounted in bearings beneath the same. The end of the board or plank is inserted between the first roll r^2 and its companion s^2 as it is fed into the machine. The plank is shoved forward until its end passes between the shaft o^2 and the yielding presser-roll directly above it, at which point it is in position to be seized by the feed-dogs p^2 . By means of the feed-cam b^2 the connection d^2 is moved toward the left, Fig. 1, moving the sector f^2 in the opposite direction and by means of the rack and pinion causing the feed-dogs to feed the stock forward between the last roll r^2 and its companion roll s^2 . To move the feed mechanism in the opposite direction a spring a^4 is employed, which is secured at one end to the lower part of the lever e^2 and at the other to a projection b^4 from the leg E. As the feed-dogs point forward—that is, in the direction in which the board c^4 is to be fed, (see Fig. 4)—the reverse movement of the feed mechanism frees the dog from its hold in the board, and as the dogs are pivoted on the rod o^2 they tilt slightly and pass back freely under the board until the forward feed movement again commences, when they once more seize the board and feed it forward. The rear ends p^6 of the dogs are weighted sufficiently to hold their points up against the wood and are provided with adjustable screw-threaded stop-pins d^4 , by means of which the bite of the feed-dogs may be regulated, as will be clear from Fig. 4. By having two or more dogs mounted on the rod o^2 the machine is fitted to feed forward together two or more planks or boards.

When the stock has been fed forward between the upper and lower cutters, it rests on the lower member q' of the clamping device. The upper or movable clamp is then moved
 5 downwardly and the wood is firmly secured between the clamps $j' q'$. The contact-face of the clamp member j' is preferably covered with a rubber facing j^9 , which is roughened or corrugated or provided with downwardly-pro-
 10 jecting points which compress under pressure and which serve to hold the wood firmly in place. This rubber facing is of sufficient thickness and is sufficiently compressible to accommodate itself to boards of unequal thick-
 15 ness, so that two boards placed side by side and of unequal thickness may be firmly clamped between the upper and lower clamp members $j' q'$. After the clamp members have seized the wood the cutters approach and pass
 20 into it, one of the cutters acting in advance of the other, so that the knives will not come into contact, and the disk is severed. The cutters and clamp members then separate, the wood is again fed forward, and the cutting
 25 operation repeated. The feeding forward of the wood shoves the disks which are cut, as also the waste stock, off the table and clear of the machine. The cutter-heads and cutters are so constructed that the cutters may
 30 be adjusted to cut disks of varying diameters. This will be clear from Figs. 2 and 3. The cutter-head is preferably a wheel with as many spokes (see Fig. 3) as there are cutters. On each of the spokes or connecting portions be-
 35 tween the rim of the wheel and its hub is mounted a knife-block f^4 , which is set in a slot in the wheel and secured by a set-screw, so that the block may be slid in its slot and the distance from the center of the cutter-
 40 head varied, thus varying the diameter of the disk which is cut. The knife-blocks f^4 have secured to them in any suitable manner the knives g^4 , said knives being preferably se-
 45 cured by screwing the flat shank of the knife to the block. Any bevel or slant desired on

the edge of the disk may be obtained by varying the bevel or slant of the knife.

What I claim is—

1. A wood-working machine comprising a horizontal table or bed upon which the wood 50 is supported while it is being cut, a vertically-movable clamp member co-operating with the said table or bed, two vertically-movable cutter-heads, means for rotating the said cutter-heads, vertical rods carrying the movable 55 clamp member and horizontal table or bed aforesaid, vertical sleeves carrying the cutter-heads and surrounding the said rods, levers operatively connected with the said sleeves and the rod of the movable clamp member, 60 rods $d' e'$, yokes $m' n'$, cams $b' c'$ in engagement with said yokes, and cam v' , acting upon the lever connected with the sleeve of the lower cutter-head, and horizontal shaft t , carrying the said cams, substantially as described. 65

2. The combination, in a wood-working machine, with a horizontal bed for the wood, of a vertically-movable rotary cutter-head and cutters, mechanism for rotating said cutter-head and moving the same vertically, a vertically- 70 movable clamp member for holding the wood and actuating mechanism therefor, with a sliding cross-bar and feed-dogs thereon, and actuating mechanism for said cross-bar, whereby after a disk is cut and the clamp is withdrawn 75 the wood will be fed forward to subject another portion thereof to the cutters, substantially as shown and described.

3. The combination, in a wood-working machine, with a horizontal bed for the wood and 80 clamping and cutting mechanism therefor, of the cam b^2 , the connection d^2 , the vertical lever e^2 and its sector, the gear g^2 , the rack and pinion $k^2 j^2$, and the cross-frame and feed-dogs pivoted thereon, substantially as shown and 85 described.

JAMES H. REED.

Witnesses:

WM. A. MACLEOD,
 ROBERT WALLACE.