2 Sheets--Sheet 1.

CHARLES E. RAMUS.

Improvement in Machines for Cutting Splints.

No. 126,331. Patented April 30, 1872.

Fig. 1

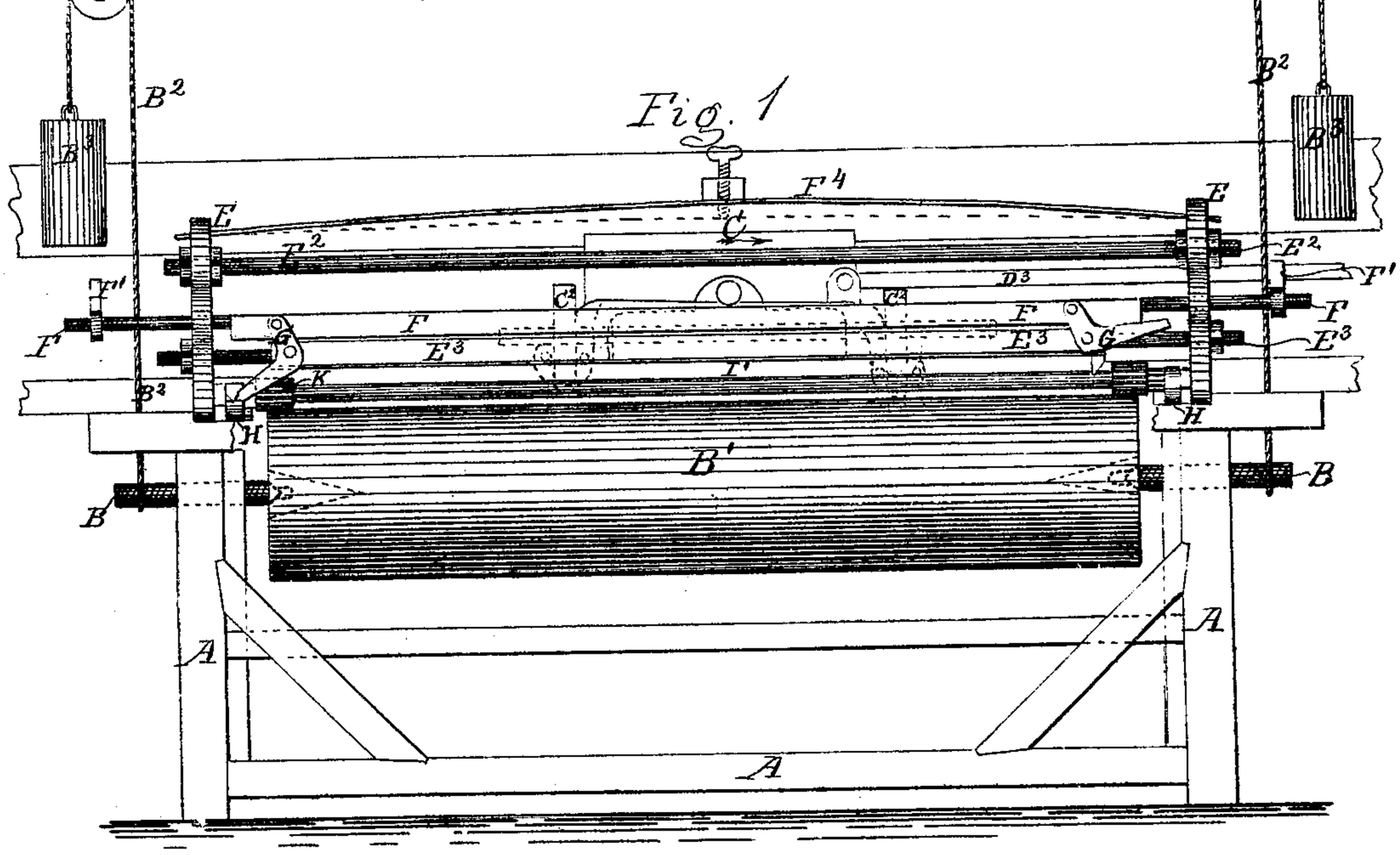


Fig. 4

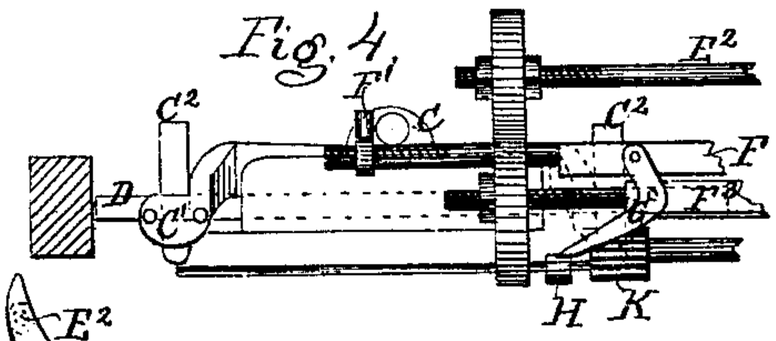


Fig. 2.

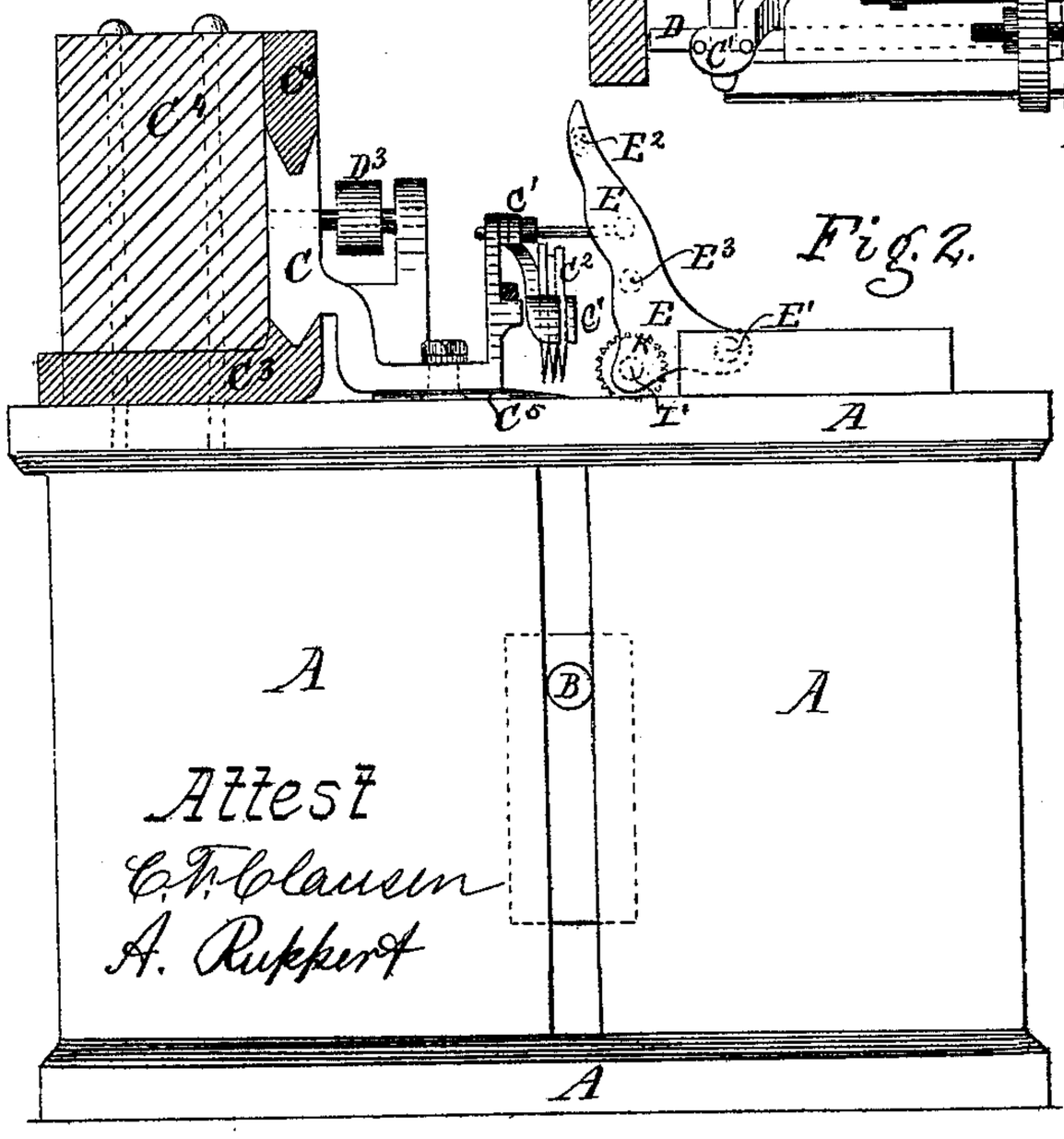
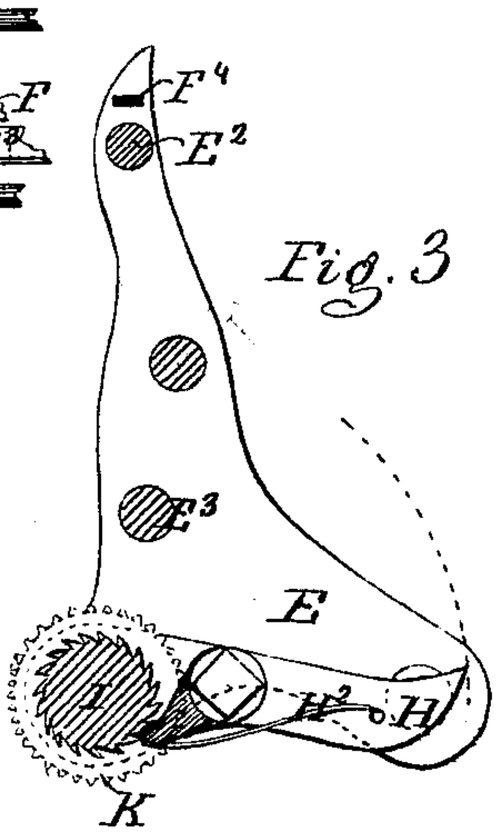


Fig. 3



Charles E. Ramus
Inventor
by
Holloway & Co
his attys

2 Sheets--Sheet 2.

CHARLES E. RAMUS.

Improvement in Machines for Cutting Splints.

No. 126,331. Patented April 30, 1872.

Fig. 5

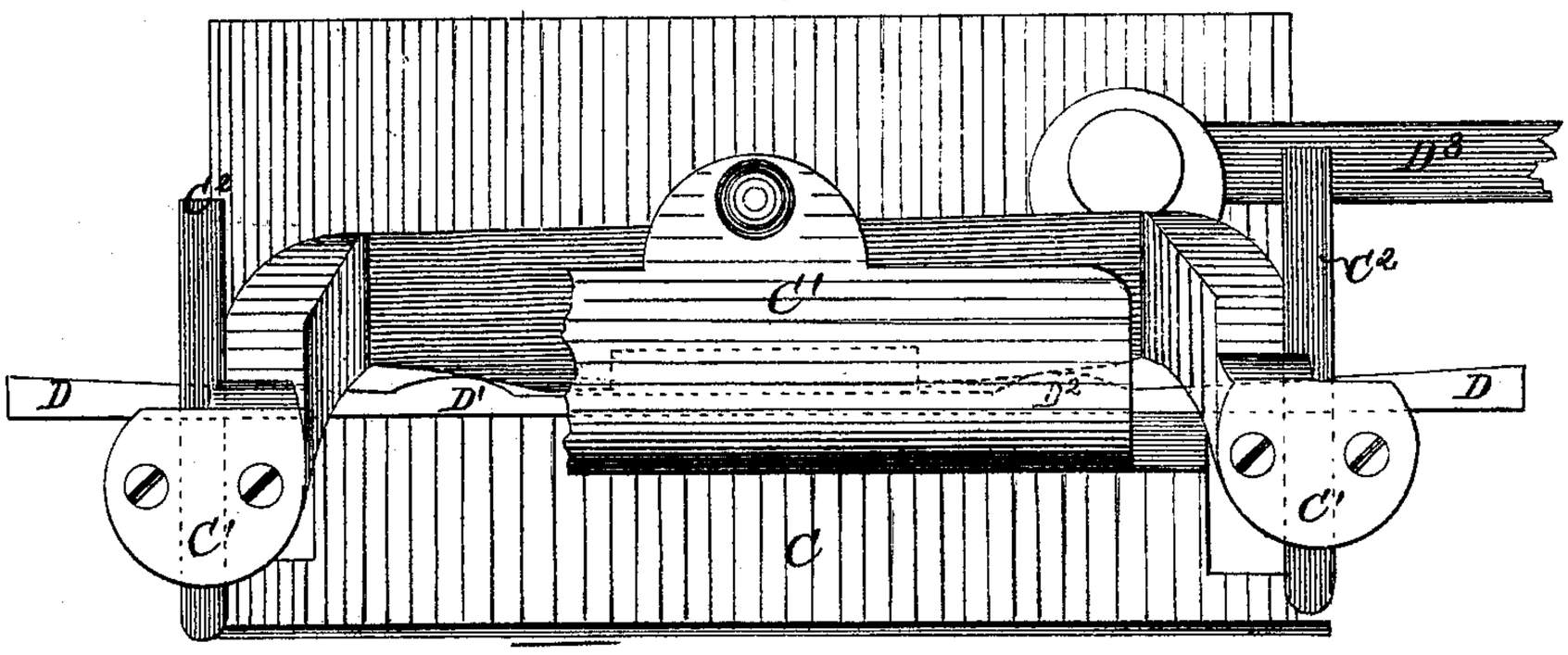


Fig 6

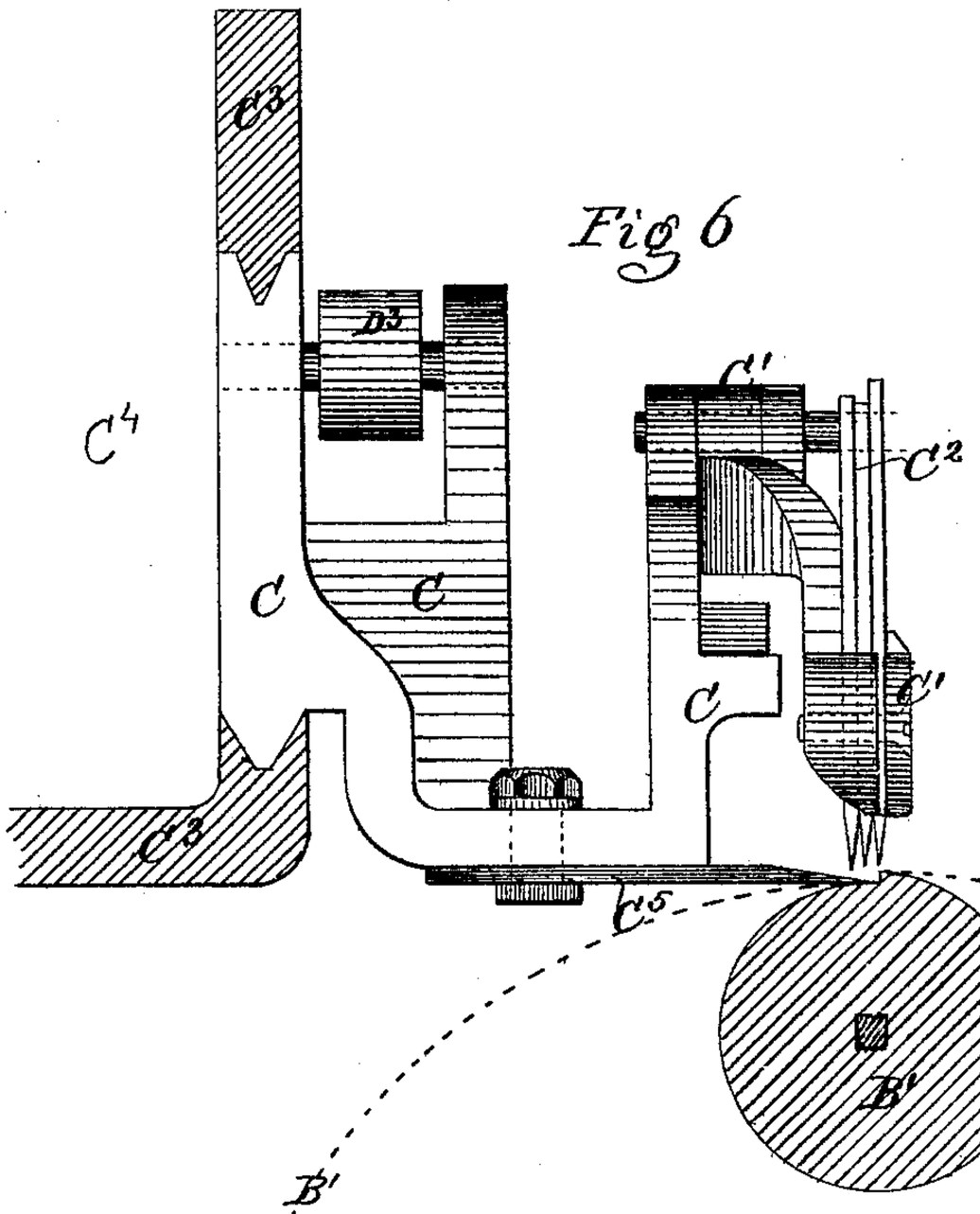
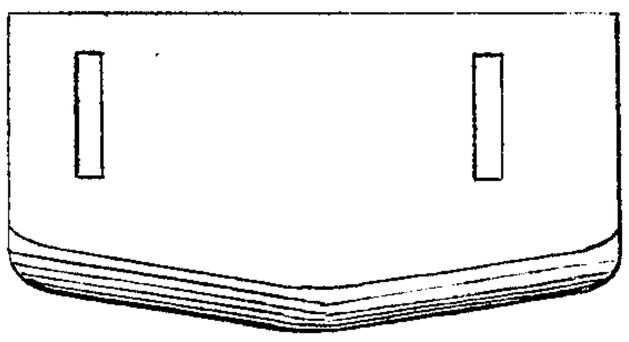


Fig. 7



Attest
C. F. Clausen
A. Ruppert.

Chas. E. Ramus
Inventor
by
D. C. Holloway & Co.

UNITED STATES PATENT OFFICE.

CHARLES E. RAMUS, OF LAWRENCE, KANSAS.

IMPROVEMENT IN MACHINES FOR CUTTING SPLINTS.

Specification forming part of Letters Patent No. 126,331, dated April 30, 1872.

Specification describing certain Improvements in Splint-Cutting Machines, invented by CHARLES E. RAMUS, of Lawrence, in the county of Douglas and State of Kansas.

This invention relates to that class of machines which are designed for cutting splints from which to make matches, and for other purposes for which splints may be required; and it consists in the construction, combination, and arrangement of some of the parts of which it is composed, as will be more fully explained hereinafter.

Figure 1 is a front elevation of my improved machine, showing the frame for holding the operating parts, the log from which the splints are cut, the weights for raising the same, the feed motion for turning it, and the sliding cutting-head with its knives in dotted lines. Fig. 2 is an end view, showing a frame and the ways upon which the cutting-head slides, said head being in position with the horizontally-cutting and vertically-cutting knives attached to it, and an end view of a portion of the feed mechanism. Fig. 3 is an end view of the oscillating arm which carries the feed mechanism, the ratchet-wheel and pawl for rotating said mechanism, together with the fluted roller which rests upon the log and moves it. Fig. 4 is a front elevation of a portion of the feed mechanism and of the sliding cutting-head, showing the sliding bar with its adjustable stop, the dog which gives motion to the fluted rollers, and the abutment against which the sliding head strikes at each stroke. Fig. 5 is a detached elevation of the cutting-head, showing the oscillating bar which carries the vertical knives, the sliding bar which oscillates the head, and a portion of the connecting-rod which moves the head. Fig. 6 is an end view on an enlarged scale, showing the guides for the cutting-head, the oscillating knife-bar, the cutting-head with the horizontally-cutting knife attached, and the log from which the splints are to be cut, it being shown as of large diameter in dotted lines, and of small diameter in full lines. Fig. 7 is a plan view of the horizontally-cutting knife.

Corresponding letters refer to corresponding parts in the several figures.

In constructing machines of this character I use any suitable frame-work, A, of wood or of metal, it being constructed with reference to the reception and support of the operating parts of the machine, and having formed in it at the proper place a groove for the journals B B, which suspend the log B′, to slide in. The manner of cutting the splints from the log—which may be of any length desired—is clearly shown in Fig. 6, where it will be seen that a sliding cutting-head, C, is made to move upon ways C^3 C^3, which are secured to a suitable beam, C^4, of the frame, grooves being formed in said head to receive the edges of said ways. From the front side of the sliding head an arm or flange projects, which is curved downward, in which direction it extends far enough to cause its lower surface to be about on a line with the upper surface of the log from which the splints are being cut, from which point it extends forward for some distance, and then upward, as shown. To the under surface of the horizontal portion of this head the horizontally-cutting knife is attached, which knife has a double-beveled edge, as shown in Fig. 7, in order that, as it is moved backward and forward, it may easily cut the wood, the whole length of one of its beveled surfaces being used for that purpose in order that when cotton-wood, bass-wood, or any other species of tough fibrous wood is used it may be cut smooth, which would not be the case if a single point of the knife was required to do all of the cutting. It will be seen that the cutting-edges of this knife are at a right angle to the edges of the knives, C^2 C^2. To the upwardly-projecting portion of the head C there is pivoted a lever, C^1, the ends of which are adapted to receive a series of knives, C^2 C^2, as shown. These knives may be of the form shown in Figs. 5 and 6 when square or rectangular splints are being cut, but which, when it is desirable to cut round matches, may be replaced with knives which will cut that form, the large or horizontally-cutting knife being dispensed with at such time. The knives C^2 are held in position in the ends of the lever C^1 by means of a cap and screws, or in any other suitable manner; and there may be one or more in each end of said lever, as desired, it being feasible, when soft straight-grained wood is being used, to employ three or more—the only limit being the depth to which the horizontally-cutting knife can be made to penetrate the wood, and the size of the log from which the splints are being cut.

The lever C^1 being pivoted at its center to the sliding head C, is rendered capable of having imparted to it an oscillatory movement, which is given to it in order that the knives in one of its ends may cut off the splints when it is being moved in one direction, and those in its opposite end perform the same function when it is moving in the opposite direction; and in order that the proper movement may be imparted to it, a bar of metal, D, is placed in the sliding head directly under the lever, which bar has formed upon it suitable projections, D^1 D^2, as shown in Fig. 5; and as it is moved to and fro with the cutting-head its ends are brought in contact with a stop arranged upon the frame of the machine, as shown in Fig. 4, in order that when it has completed its stroke in one direction the knives which were in contact with the wood shall be elevated, and the ones which are in the opposite end of the lever shall be depressed and brought into position for use when the movement of the cutting-head is reversed. This oscillating movement is produced by the projections upon the bar D acting upon inclined planes upon the lever C^1 placed there for the purpose, so that when the movement of the bar is arrested by coming in contact with the stop, and the movement of the brace is continued for a short distance, the projections will slide upon the planes and oscillate the lever.

The necessary motion may be imparted to the cutting-head by a pitman or connecting-rod, D^3, as shown; or it may be done by attaching a rack to it, which shall be driven by a pinion.

In order that the log, as it is diminished in size, may be fed up to the knives, it is suspended by having inserted in its ends a metallic center-piece, of the form shown, into which the pins or journals B may be centered by screwing them through the frame. Around these journals or pins ropes B^2 B^2 are looped, which are passed over pulleys, their opposite ends being furnished with weights B^3 B^3, which will keep the log up against the fluted rollers K K, soon to be described.

In cutting splints from round pieces of timber or from a log it is necessary that, as each splint or series of splints is cut off, it should be rotated far enough to bring the highest portion of such log in contact with the knives, as shown in Fig. 6; and it is also necessary that the feeding mechanism, which performs the function of rotating said log, should be so pivoted as that, when the log has been considerably reduced in size, it shall be able to retain its hold upon the same. To provide for accomplishing the last-named purpose arms E E are pivoted to some part of the frame at each end of the feeding device, as shown at E^1, Fig. 2. Passing from one of these arms to the other are bolts E^2 and E^3, which are supplied with nuts or nuts and collars for determining the distance between said arms. Between the arms E E there is placed a bar of metal, F, the ends of which are rounded so as to allow them to pass through holes in said arms, the outer round ends of said bar being provided with screws for the reception of stops F^1 F^1, which are screwed thereon, and thus made adjustable, so that a pin which projects from the sliding cutting-head may come in contact therewith at different points to move the fluted feeding-rollers; or levers may be attached to the frame and the stops F^1 passed through them, while their outer or free ends shall receive the pin in the sliding head against the edges, and thus the bar F be caused to move. However this movement is imparted, it gives motion to dogs G G, which are pivoted to the flattened portion of bolt F, which is between the arms E E, and thus the outer or free ends or arms of the dogs are alternately brought in contact with arms H H, which are made to work upon the shaft I′ which carries the feed-rollers. Upon the inner side of arms H H there are placed pawls, which engage the teeth of ratchet-wheels which are fast upon the shaft I′, and, in this case, between the arms H and the fluted rollers K. This pawl is held in contact with the ratchet-wheel by means of a spring, H^2, as shown in Fig. 3. Upon each end of the shaft I′, or on such portion thereof as will bring them near the ends of the log to be cut, there is secured a fluted feed-roller, K, and these last-named parts, which have been denominated the feed-motion, are so combined and arranged that, as the cutting-head reaches the terminus of its movement in either direction, some portion of it or some projection upon it shall come in contact with one of the stops F^1 or with a lever connected with such stops, and thus cause the bar F to be moved in the oscillating arms E, which movement will give a downward movement to the outer free end of the arms H, and the pawl upon its side will cause the shaft I′ with its fluted feed-rollers to be partially rotated, and as said rollers constantly bear upon the log to be cut it will be rotated the required distance by each movement of the rollers, which movement will be imparted at each end of the stroke or movement of the cutting-head.

To insure the proper contact of the rollers above alluded to with log, and to prevent the possibility of their being raised off from it when the knives are cutting, a spring, F^4, may be placed above the rod E^2, its ends passing through the arms E, a set-screw being placed over its center in a stationary nut, so that it may be turned and thus caused to press the rollers K upon the log.

The feed-motion, or the parts which compose it, being pivoted to the frame, as above described, it follows that a considerable portion of the weight thereof rests upon the log through the feeding-rollers, and this, together with the weights B^3 B^3, keep up the contact to an extent sufficient to insure the proper movement of the log; and as it is reduced in diameter the feed mechanism turns upon its pivot, and thus insures the contact of the rollers therewith without reference to the size thereof.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The oscillating feed-mechanism, it consisting of pivoted arms or frames E E, a sliding bar, F, stops F^1 F^1, dogs G G, arms H H, shaft I′, ratchet-wheels and feed-rollers, the parts being constructed and arranged to operate substantially as and for the purpose set forth.

2. The vibrating knife-bar C, operated by the sliding bar D and suitable stops upon the frame of the machine, substantially as shown and described.

3. The combination of the horizontally-cutting double-beveled knife C^5, the cutting-head C, and vertically-cutting knives C^2, operated by bar D, the whole being arranged to operate substantially as and for the purpose set forth.

4. The combination of the herein-described feed-mechanism with the sliding cutting-head, substantially as and for the purpose set forth.

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

CHARLES E. RAMUS.

Witnesses:

R. MASON,

A. RUPPERT.