

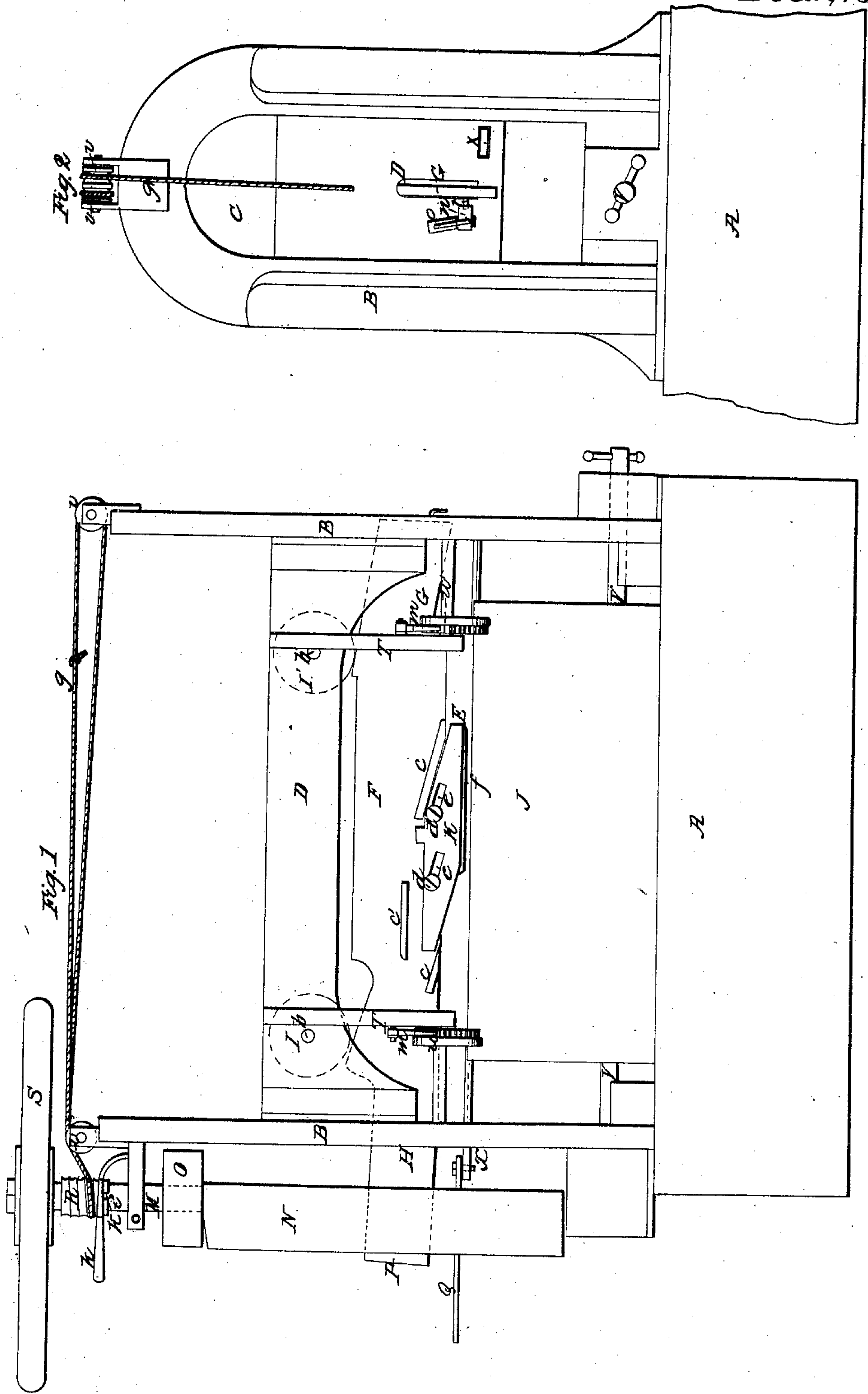
G. W. Tolhurst,

2 Sheets. Sheet 1.

Making Laths.

N<sup>o</sup> 8,584.

Patented Dec. 9, 1851.

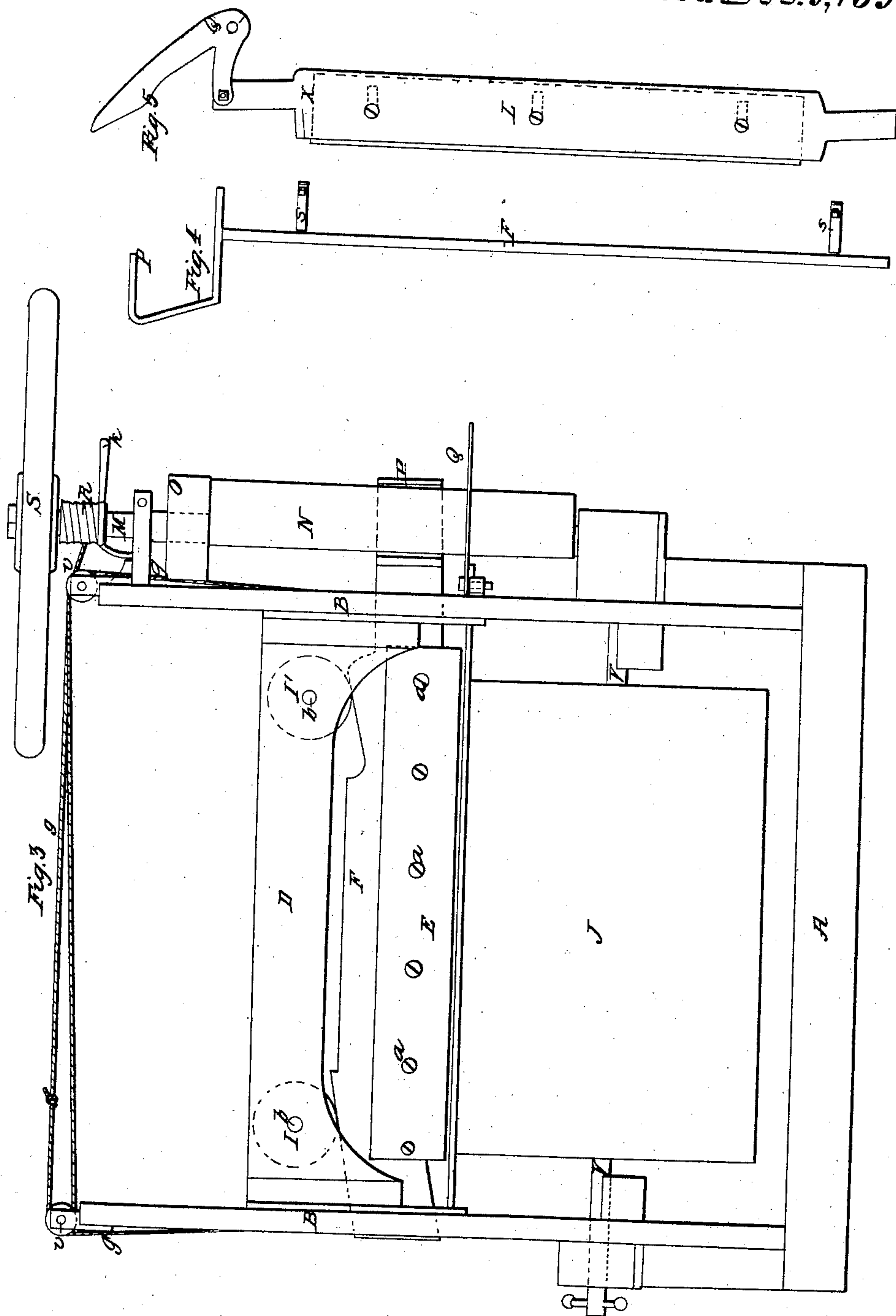


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# UNITED STATES PATENT OFFICE.

G. W. TOLHURST, OF CLEVELAND, OHIO.

## LATH-MACHINE.

Specification of Letters Patent No. 8,584, dated December 9, 1851.

*To all whom it may concern:*

Be it known that I, G. W. TOLHURST, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Lath-Cutting Machines; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part thereof, in which—

Figure 1 represents a front elevation. Fig. 2 represents an end view. Fig. 3 represents a back elevation, and Figs. 4 and 5, the horizontal and vertical knives detached.

Similar letters in the several figures represent the same parts.

The nature of my invention consists, first, in making the centers of the log, from which the lath are to be cut, stationary, and allowing the frame which carries the knives, to rest by its own weight on the log (by means of a rack wheel or otherwise) so as to cause the log itself to act as a guide and support for the cutters, thus dispensing with all the machinery heretofore used, for raising up, or carrying forward, of the log to the knives; and, second, in combining with the knife stock of the vertical cutter, an oblique knife, which is forced into the log at each operation of the machine, and which remains therein long enough, after the cutting knife has commenced raising, to feed up the log for the succeeding cut, by the "throw" which is given to the knife stock for that purpose, dispensing, by this simple means, with the complex and expensive machinery heretofore used, in feeding up the log, in other machines for a similar purpose.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A, represents a wooden frame or base, upon which the machine is supported. The end pieces B, are of cast iron having a large vertical opening C, therein, in which the frame or gate D, carrying the vertical and horizontal knives E, L, may freely move. The vertical knife E, is attached to the stock F, by set screws *a, a*, which may pass through slots in said knife, so as to make it adjustable on the stock, as it is worn away by use, and also for the purpose of adapting it to the various sizes of lath to be cut. One of the shanks of the cutter stock F, is bent downward as seen at G, Fig. 1, for the pur-

pose of allowing the knife to sink down into the wood while in the act of cutting, and raise up, while being drawn back for the purpose of making the next cut, giving thereby to said knife two motions, viz, a reciprocating motion in the line of its length, and an oblique motion downward, so as to produce a "drawing cut." The knife stock F, rests and moves on its shanks or tangs G, H, in slots in the frame or gate D.

The frame or gate D, is made of iron, and in the form of a box open at top and bottom; the ends of the frame move in the slots or vertical openings C, in the upright end pieces B, and may be guided therein by grooves, friction rollers, or any other well known device, to prevent it from binding or cramping in said openings, and on the face, or other part of said upright B, may be arranged a stationary rack, into which may play a lever or spring pawl attached to said gate D, for allowing the operator at pleasure to hold up the gate or frame, for the purpose of putting in a log.

The side pieces of the frame or gate D, are sufficiently far apart, to admit the vertical knife E, and its stock F, between them; and on shafts *b*, extending from one side of said frame to the other, are placed the friction and guide rollers I, I', against which the two inclined planes on the upper edge of the knife stock F, play, and in such manner as, to force down said stock, and the knife attached to it into the log J, as it is fed up, and also, to allow the stock to be raised up as it is driven backward, by the inclined shank G before described, working loosely in the slot in the gate D, the inclined planes in the top of the stock being parallel with the bent shank G of the stock.

On the face of the cutter stock F, are placed small projections or guides *c, c, c'*, between which moves the feeding plate K, which has two of its oblique parallel sides resting against, and guided by the projections *c, c*. The feeding plate is attached to the cutter stock by means of the set screws *d, d*, which pass through slots *e*, in said plate, and upon these set screws it may freely move in an oblique direction up and down. To the bottom of the feeding plate K, is attached a knife *f*, which as the cutter stock F, and its knife is brought down against the log, in the act of making the vertical cut, is driven into the log, by means of the projections or guides *c, c, c'*, and remains there



until the cutter stock is raised sufficiently to draw up its knife clear of the log, (the slots *e, e*, admitting of this motion) when by a "throw" of the cutter stock (to be hereafter described) the log is drawn or fed up by the knife on the feeding plate, and after the log is fed up, the knife *f*, on the feeding plate is drawn out by the continued upward motion of the cutter stock to which it is attached, to be again driven into the log at each successive operation of the machine. The knife *E*, is so adjusted as to cut directly into the score previously made by the knife *f*, on the feeding plate, so that about one third, more or less of the vertical cut may be made by the knife which feeds up the log, leaving less work for the knife *E*, to perform. By this simple arrangement, I am able to dispense with all the intricate feeding apparatus heretofore applied to machines for a similar purpose; and instead of losing the power necessary to drive the feeding apparatus, I make it a part of the product of the machine.

The horizontal cutting knife *L*, is attached to a stock *X*, which has its shanks similarly bent with the shank *G*, of the cutter stock *F*, so as to give it a motion to and from the log as it moves forward and back; and the knife *L*, may also be attached to the stock *X*, by set screws passing through slots, so as to make it adjustable. The shanks or tangs of the stock *X*, slide through slots in the frame or gate *D*, and are so arranged that while the knife in the vertical stock is making its cut, the knife on the horizontal stock will be following with its cut just near enough, to prevent the two knives from coming in contact with each other.

In suitable bearings at one end of the machine I arrange the shaft *M*, of a long cam *N*, and upon said shaft is placed a fast pulley *O*, around which may pass a belt leading from any first moving power, to drive the machine. The cam *N*, should be of sufficient length to strike the cam projections *P*, *Q*, on the ends of the cutter stocks *F*, *X* respectively, in any of their positions, as the frame or gate in which they operate is lowered down onto the log, so as to operate the knives at any point in their descent. And on said shaft is also placed a loose pulley *R*, having in it spiral grooves, for taking up the cord *g*, one end of which cord is firmly attached to said loose pulley, and the other end to the cords *g'*, *g'*, which are attached to it and to each end of the frame or gate *D*; said cords passing over friction rollers *v*, *v*. In the bottom of the loose pulley *R*, is cut a slot *h*, and in the shaft *M*, immediately below it is fixed a pin *i*, of suitable size to fit into said slot; and around the bottom of the loose pulley *R*, in a groove cut therein is arranged a spring clutch-lever *k*, which, when it is desired to raise up the frame *D*, for the pur-

pose of putting in a log, or for any other purpose, is pressed down by the operator, this forces the slot *h*, in the loose pulley down onto the pin *i*, in the shaft, and by turning the hand wheel *S*, causes the pulley *R*, to turn with the shaft, and winds up the cord *g*, thereon, drawing up the frame or gate *D*, to any required height, and which may be held in such position by a ratch and pawl arranged as before described, or any other well known device until ready to be let down again onto the log. By releasing the spring lever-clutch *k*, it will raise up the pulley *R*, from the pin *i*, and allow it to turn again freely on the shaft *M*, as the cord is unwound by the gradual lowering of the frame or gate *D*, as the log upon which it rests is cut away. Instead of the long cam *N*, I can use sliding cranks on the shaft *M*, and which may be permanently attached to the cutter stocks, and rise and fall with them; or, I may use a cam on each of the cutter stocks, that will be constantly in contact with the cam *N*, but the only advantage in such substitution would be in avoiding the noise the separated cam makes in striking the cam projections on the cutter stock.

To the front of the frame or gate *D*, are attached two bearers *T*, *T*, in the lower ends of which are placed the rack and friction wheels *U*, *U*, which rest on the log, and into which wheels play the pawls *m*, *m*, so arranged that while the log is drawn forward to be fed up to the cutters, the pawls will slip over the racks, and the wheels turn upon their axles; and when the log is fed up, and the feeding knife *f* withdrawn, the serrated edges of the wheels together with the ratch and pawl holds it firmly in place and prevents it from falling back. These wheels *U*, *U*, also serve for another very important purpose viz: the frame carrying the cutters rests, by means of these wheels directly on the log, and causes the log to act as a guide and support for them, and keeps them in the precise position in which they are required to be operated, without depending upon the arbitrary movement of other parts of the machine to place the knives in their proper position, relatively, to the log. In machines heretofore constructed for this purpose the log is fed up to the cutters or knives, which requires considerable gearing and power. The feeding motion also in these machines was intricate, and at the speed required, was very liable to become disarranged. In my machine, it will be perceived that, I dispense with all manner of cog gearing, making the log support and guide the knives, and the knife in turn, to feed up the log.

The log *J*, is hung on permanent centers *V*, and has but one motion, namely, on its axis, this gives it great firmness in its position, while it may freely turn on its cen-



ters, and consequently it supports firmly the frame carrying the cutters which rests on it until entirely cut away to the core. When a hard knot presents itself to the vertical cutter, the frame being free to rise, the knife will not be driven into it with its full force, but will rather yield to, than enter the knot, which saves the knife from breakage,—a common occurrence where the knives are in fixed stocks, and the feed of the log is continuous. The horizontal knife which cuts underneath the knot has no opportunity to yield, it consequently cuts away the nobby parts as presented to it, and keeps the periphery of the log true.

There is a small hinged cam *n*, hung to each of the uprights B, near to where the shanks of the cutter stock F pass through said uprights, which are kept in place by means of springs *o*, *o*, and upon each of said shanks is a pin *r*, which as the cutter stock is moved forward, swing back said hinged cams, and in returning the pins *r*, striking against the inclined sides of said cams, throws the knife stock backward, carrying with it the feeding plate K, the knife of which still remains in the log. This backward "throw" of the stock, draws or feeds up the log to the knife for the next cut, where it is held firmly by the serrated edges of the friction and guiding rollers U, and their pawls *m*, before described.

Resting against the back of the cutter stock F, at each end, are placed the springs *s*, *s*, which allow the stock to yield to the action of the cams *n*, and pins *r*, and when the pin *r*, passes said cam, the stock is immediately thrown forward again in proper position for the next cut by the action of said springs. The pins *r*, may be made adjustable, so as to strike the cams *n*, farther

up or lower down on their inclined surfaces, thus giving more or less "throw" to the cutter stock, and consequently feeding up the log a greater or less distance. In the ends of the springs *s*, *s*, may also be arranged friction rollers, so as to allow the cutter stock to move with more freedom back and forth. There may be also various ways devised for giving the "throw" to the vertical stock, but which would all involve the principle of feeding up the log by the throw of the knife.

Having thus fully described the nature of my invention, what I claim therein as new and desire to secure by Letters Patent, is—

1. So arranging the frame that carries the reciprocating or chopping knives and feeding apparatus as that while cutting, it shall at all times rest by its own weight on the bolt or log, in advance of the portion thereof which is being cut, in combination with the mode as herein described of giving to the knives carried in said frame an alternating drawing movement toward and from the log, independent of the downward motion or position of the frame, by which means the block may be entirely reduced to laths while the whole weight of the knife frame is resting on it to keep it firm and solid.

2. I also claim in combination with the cutter stock the feeding plate, for feeding up the log to the cutters, a "throw" being given to said stock for that purpose; and this I claim whether the same is accomplished by the means herein specially set forth, or by any other means essentially the same.

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Witnesses:

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S. C. DUNN.