

(No Model.)

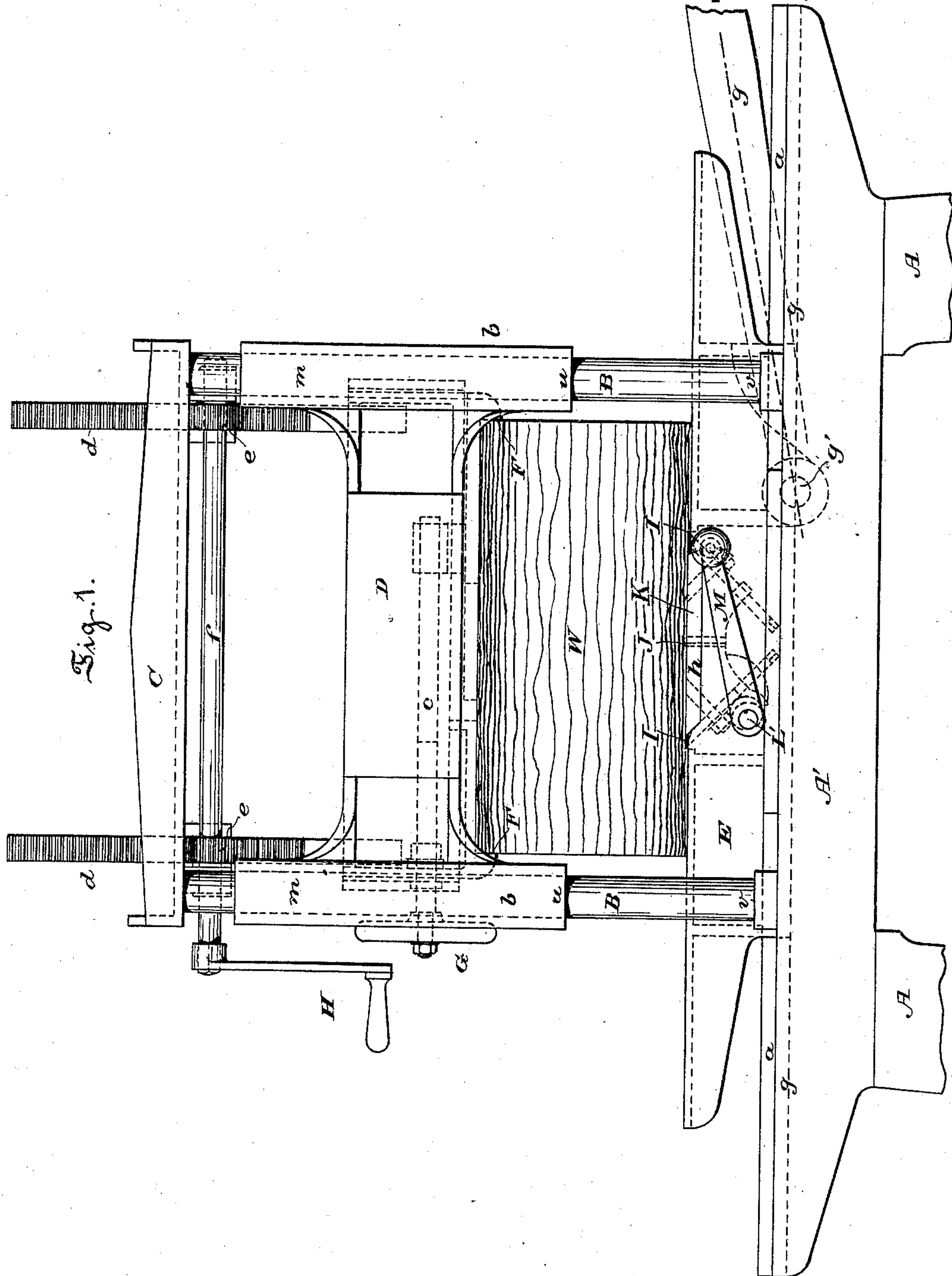
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R. FLECK.

MACHINE FOR MAKING WOOD WOOL.

No. 370,461.

Patented Sept. 27, 1887.



WITNESSES:
Arthur Wilton.
M. S. Fowers.

INVENTOR:
Richard Fleck.
By his Attorneys,
Arthur C. Fraser & Co.

(No Model.)

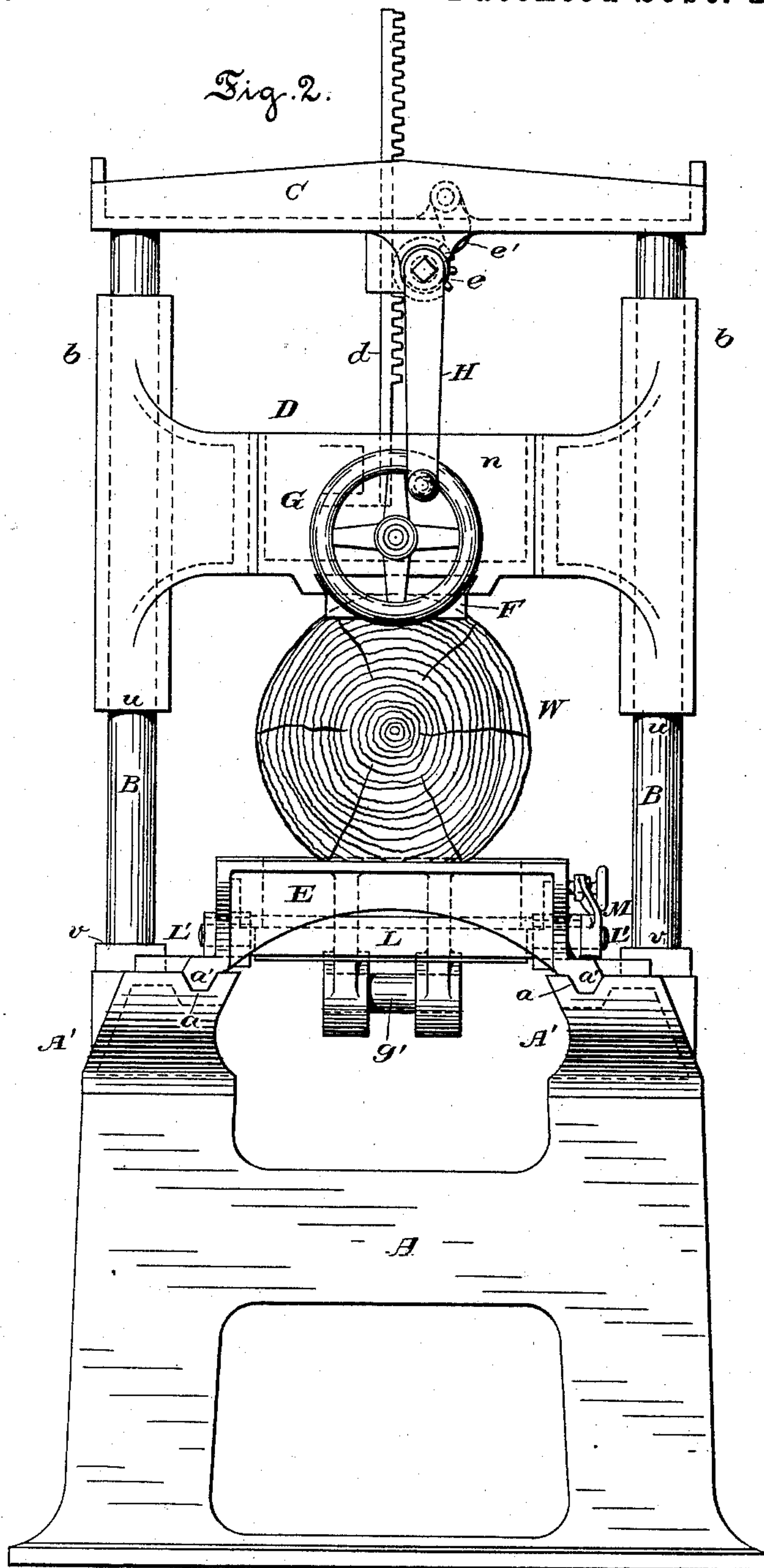
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Arthur C. Brasen & Co.

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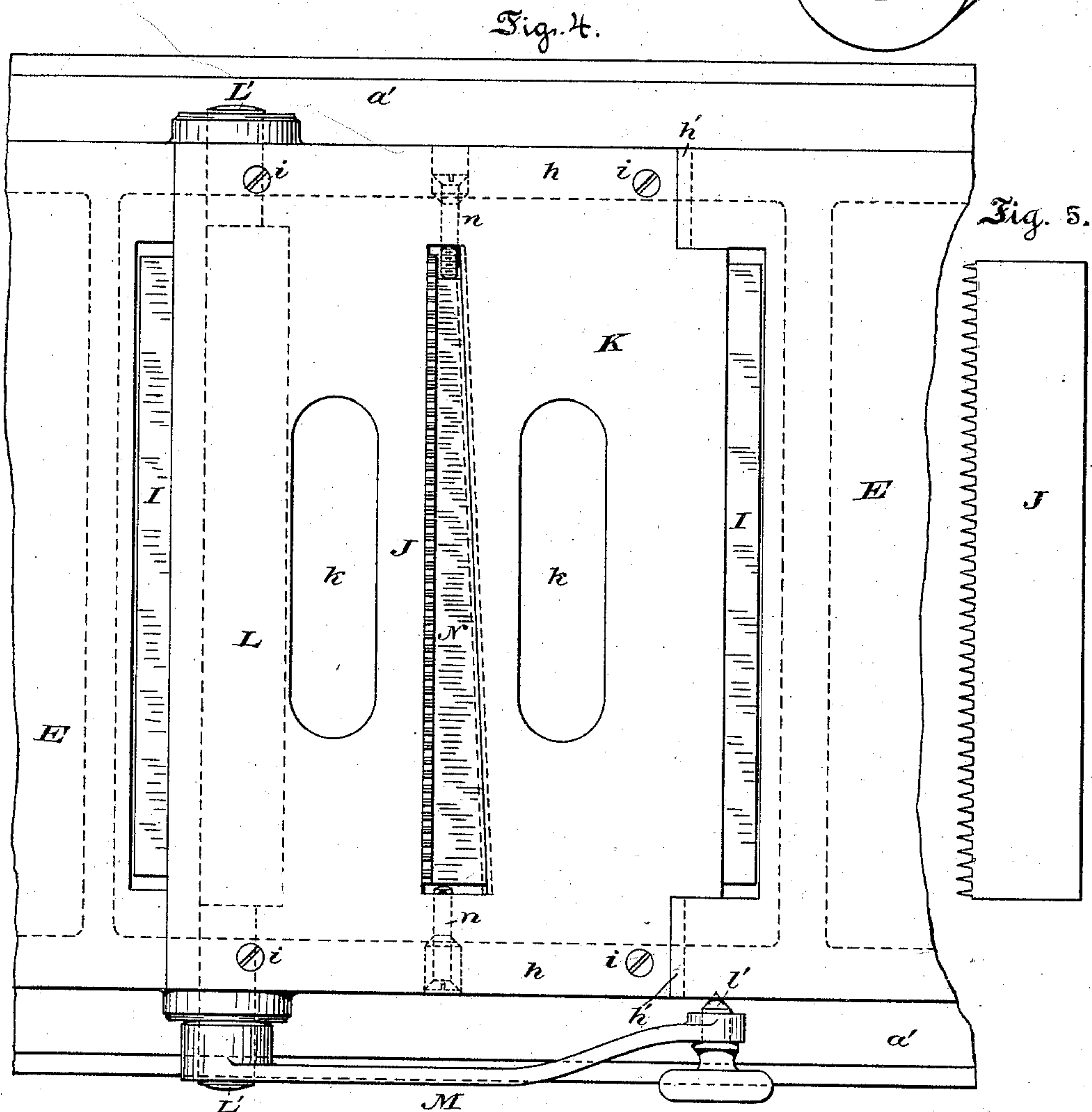
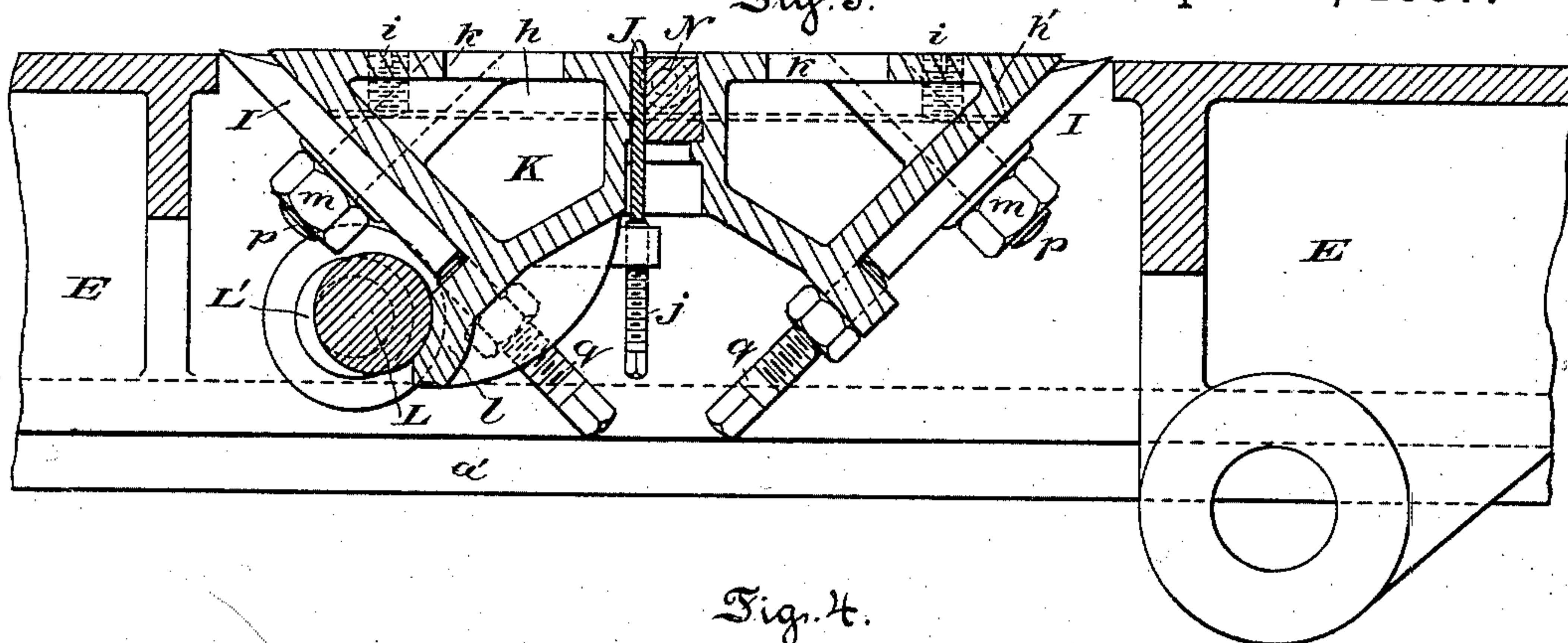
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Arthur C. Fraser & Co.

UNITED STATES PATENT OFFICE.

RICHARD FLECK, OF BERLIN, GERMANY.

MACHINE FOR MAKING WOOD WOOL.

SPECIFICATION forming part of Letters Patent No. 370,461, dated September 27, 1887.

Application filed October 9, 1886. Serial No. 215,769. (No model.) Patented in Germany May 5, 1886, No. 38,040, and in Austria-Hungary April 21, 1887, No. 47,586 and No. 15,241.

To all whom it may concern:

Be it known that I, RICHARD FLECK, a subject of the Emperor of Germany, residing at Berlin, in the Kingdom of Prussia, German Empire, have invented certain new and useful Improvements in Machines for Making Wood Wool, of which the following is a specification.

This invention is the subject of patents in Germany, No. 38,040, dated May 5, 1886, and in Austria-Hungary, No. 47,586 / 15,241, dated April 21, 1887.

Machines already exist for making wood wool, or thin narrow wood shavings or threads, known as "excelsior," which is used as a packing material and for other purposes. The machines for making this wood wool operate by cutting or scoring a block of wood with parallel longitudinal incisions, and then planing a thin shaving from its surface, and repeating this operation until the entire block is cut away.

My invention seeks to provide an improved machine for this purpose which shall operate easier, require less motive power, and produce a superior quality of wood wool and in greater quantity than by the machines heretofore existing.

To this end my invention consists of several improvements in the construction of machines for this purpose, as will be fully described.

Figure 1 of the accompanying drawings is a side elevation of the machine, the lower portion being broken off. Fig. 2 is a front elevation. Fig. 3 is a longitudinal vertical section of the knife-box on a larger scale. Fig. 4 is a plan of the knife-box on the same enlarged scale, and Fig. 5 is a side view of the scoring-knife removed.

Let A designate the base or main frame of the machine; A' A', two longitudinal bed-frames thereon; and a a, Fig. 2, two slideways thereon. Four vertical posts, B B, project from the base, A, and a top plate, C, is fixed on their upper ends. D is the head for carrying the block of wood, W, to be cut up, and E is the reciprocating cutter table or slide which carries the cutting-knives, and which has runners a' a', which slide longitudinally in the ways a a.

The head D has four tubular guides, b b, which slide on the posts B B, so that the head

may rise and fall vertically. The block W is clamped to the head by claws F F, which slide against the underside of the head, and are drawn together against the ends of the block by a screw, c, Fig. 1, turned by the hand-wheel G. The head D is raised by means of racks d d, fixed to it, which gear with pinions e e on a shaft, f, mounted in bearings on the top plate, C, and turned by a crank, H, to lift the head. The pinions e may be caught by a pawl, e', Fig. 2, in order to temporarily suspend the head.

The table or slide E is reciprocated by a crank, (not shown,) the pitman g of which, Fig. 1, engages a stud, g', Fig. 2, beneath the slide.

I I are the planer-knives, and J is the scorer knife or blade. These are all mounted in a knife-box, K, as best shown in Figs. 3 and 4. This box has a flat upper surface, which constitutes a bearing surface or plate, and is set in the table E with this bearing-surface projecting above the surface of the table a thickness equal to that of the shavings to be cut from the block of wood. The middle portion of the box projects down into the table E; but at its ends it has flanges h h, which enter recesses in the sides of the table. Screws i i in these flanges rest upon the sides of the table, and may be turned to lift or lower the box, and thus to vary the thickness of the shavings to be cut. The flanges h h project at one side under an undercut seat, h' h', formed in the table E in order to hold the box down, and at the other side the box is held by an eccentric, L, on a shaft, L', which has bearings in the table, and which, when turned as shown, bears against a projection, l, on the box and presses the box downward and to the right, thereby forcing the flanges h h against the undercut seats h' h', and thus securing the box immovably to the table. The shaft L' is turned by a crank, M, which is held from turning backward by a pointed screw, l', on the crank entering a depression in the table, and being held therein by the elasticity of the crank-arm. The reverse movement of the crank turns back the eccentric and liberates the box, so that it can be lifted out of the table. Hand-holes k k are provided in the box to lift it by. The lifting out of the box removes by one manipulation all the knives from the machine,

and enables convenient access to be gained to them for adjusting their position or for connecting or disconnecting them.

The scoring or clefting knife J is a single blade with teeth formed upon one edge, as shown in Fig. 5, instead of a great number of separate blades, as heretofore. The scoring-knife J is secured in the middle of the box K in a vertical plane, and the planer-knives I I are fastened to the oppositely-inclined front and rear faces of the box, as best shown in Fig. 3, so that their cutting-edges diverge. It is common in wood-wool machines to arrange a clefting-knife between two planer-knives the cutting-edges of which converge; but this arrangement necessitates the use of mechanism for alternately retracting the planer-knives during the back-stroke—a complication which is avoided by my invention. The scoring-knife is adjusted vertically by one or more screws, *j*, Fig. 3, and should be set to such height that its cutting-teeth project above the upper face or bearing-plate of the box, as shown. When adjusted to the proper height, it is clamped firmly in place by a wedge, N, which is moved endwise in either direction, to clamp or release the knife, by screws *n n*. This wedge lies against the knife longitudinally thereof, nearly filling a tapered recess in the top of the box.

The planer-knives I I are fastened to the inclined sides of the box by nuts *m m*, screwing on screws *p p*, fixed to the box, and which project through slots in the knives. The knives are adjusted with their cutting-edges flush with the top surface of the box. This adjustment is effected by inclined screws *q q*, (shown in Fig. 3,) which bear against the lower edges of the knives.

The machine being adjusted and ready for operation, the heavy head D is elevated and suspended, and a block of wood is clamped to its under surface. The table E is then set in motion and the head lowered (by releasing the pawl *e'* and turning back the crank H) until the wood rests upon the table, being pressed down firmly thereupon by the weight of the head. The planing or cutting then commences at once, the shreds or threads of wood passing through the box K and falling beneath the machine. After each cut the wood block is fed downward by its weight and that of the head D, and a true and equal feeding is insured by the head being guided by the long bearings *b b*, whereby all tilting or wobbling is prevented. The knife J scores the wood each time as deep as or deeper than the thickness of the shavings, and at each reciprocation one or other of the knives I I cuts off a shaving, which, as it is cut, divides itself into separate threads. The block of wood rests during each cut with that portion from which the shaving is already cut upon the top face or bearing-plate of the box K, and with that portion not yet cut upon the top face of the table E, so that the block is firmly supported, and any tendency to tilt it is reduced to the minimum. It is es-

sential to perfectly attain this result that the planer-knives be adjusted with their cutting-edges flush with the top surface of the box, as otherwise the bearing of the block will be uneven. When the block is so far cut away that to make any further cuts would bring the knives against the claws F F, the downward feed of the block is automatically arrested by the lower ends, *u u*, of the tubular guides *b b* encountering stops or shoulders *v v* at the bottoms of the posts B B, whereupon the head D comes to rest, allowing the table E to continue its reciprocation without doing any damage. By this simple expedient the injuring of the knives or the breaking of any parts of the machine is prevented.

The adjustment of the machine for making different qualities or grades of wood wool is readily effected. The adjustment of the thickness of the shavings or shreds is effected by raising or lowering the box K by turning the screws *i i*. This raises or lowers the cutting-edges of the planer-knives relatively to the top surface of the table without affecting the adjustment of the knives relatively to the top surface of the box. The adjustment of the width of the threads of wood is effected by removing the clefting-knife J and replacing it with one having finer or coarser teeth, as the case may be.

It is to be remarked that several clefting-knives should be kept on hand having teeth of different degrees of fineness or coarseness, according to the widths of wood wool that may be required to be made. The substitution of one knife for another is very quickly effected.

Those features of my invention which relate to the setting and adjustment of the knives and the construction of the knife-box are equally applicable whether the knives are reciprocated against a stationary block of wood or the wood is moved past the knives. The relative movement might even be rotary instead of reciprocating without entirely departing from my invention.

I claim as my invention, in machines for making wood wool or for other analogous purposes, the following defined novel features or combinations, substantially as hereinabove set forth, namely:

1. The combination, with means for holding the block of wood and a cutter-table movable relatively thereto, of a clefting-knife borne by said table, a bearing-plate, also borne thereby and having its top surface projecting above the surface of the table a distance equal to the thickness of the shavings to be cut and adjustable vertically to vary the thickness of the shavings, and a planer-knife mounted upon said bearing-plate and provided with means for adjusting it relatively to said plate.

2. The combination, with means for holding the block of wood and a cutter-table movable relatively thereto, of a clefting-knife borne by said table, a knife-box borne by said table and constructed with a bearing-plate which projects above the surface of the table a distance equal to the thickness of the shavings

to be cut, a planer-knife connected to said box, and adjusting devices for adjusting said box vertically in order to vary the thickness of the shavings.

5 3. The combination, with means for holding the block of wood and a cutter-table movable relatively thereto, of a knife-box borne by said table, with its upper or bearing surface projecting above the surface of the table a distance equal to the thickness of the shavings to be cut, a clefting-knife borne by said box, a planer-knife borne by said box, and adjusting devices for adjusting said box vertically in order to vary the thickness of the shavings.

15 4. The combination, with means for holding the block of wood and a cutter-table movable relatively thereto, of a knife-box borne by said table and having a flat upper surface or bearing-plate for supporting the portion of the block from which a shaving has been cut, a planer-knife adapted to be fastened to said box with its cutting-edge substantially flush with said bearing-surface, and a clefting-knife fastened to said box, with its serrated edge projecting through and above said bearing-surface.

20 5. The combination, with means for holding the block of wood and a cutter-table movable relatively thereto, of a knife-box borne by said table and having a flat upper surface or bearing-plate for supporting the portion of the block from which a shaving has been cut, a planer-knife adapted to be fastened to said box, with its cutting-edge substantially flush with said bearing-surface, a clefting-knife borne by said box, with its serrated edge projecting through and above said bearing-surface, and adjusting-screws for raising or lowering said clefting-knife.

30 6. The combination, with means for holding the block of wood and a cutter-table reciprocating relatively thereto, of a knife-box borne by said table, having a flat upper surface or bearing-plate for supporting the portion of the block from which a shaving has been cut, a clefting-knife arranged with its serrated edge projecting through said bearing-surface, and two inclined planer-knives fastened to said box on opposite sides of the clefting-knife, with their cutting-edges diverging.

45 7. The combination, with means for holding the block of wood and a cutter-table movable relatively thereto, of a knife-box borne by said table, the clefting and planer knives

borne by said box, and a locking device for fastening said box, consisting of undercut seats on the table, flanges on the box taking under said seats, and a moving part reacting, respectively, against said box and table, and by the movement of which the box is crowded into firm engagement with said seats.

8. The combination, with means for holding the block of wood and a cutter-table movable relatively thereto, of a knife-box borne by said table, the clefting and planer knives borne by said box, and a locking device for fastening said box, consisting of undercut seats on the table, flanges on the box taking under said seats, and an eccentric adapted, when turned, to crowd said box into firm engagement with said seats.

9. The combination, with means for holding the block of wood and a cutter-table movable relatively thereto, of a knife-box borne by said table, the clefting and planer knives borne by said box, and a locking device for fastening said box, consisting of undercut seats on the table, flanges on the box taking under said seats, an eccentric adapted, when turned, to crowd said box into firm engagement with said seats, a crank-arm for turning said eccentric, and means for engaging said arm with the table when the box is locked to prevent its accidental displacement.

10. The combination, to form a wood-wool machine, of a horizontally-sliding cutter-table, a fixed frame-work consisting of horizontal slideways therefor and vertical guides extending above said table, a vertically-sliding head engaging said guides, means borne by said head for securing the block of wood thereto, clefting and planer knives borne by said table, whereby, as the table reciprocates beneath the block of wood and the knives cut shavings from the under side thereof, the head and block descend by their own weight, and stops or abutting shoulders on said head and frame, respectively, constructed to arrest the descent of the head before the wood is so far cut away as to bring the knives in contact with said head, whereby injury of the knives is avoided.

This specification signed by me this 14th day of September, 1886.

RICHARD FLECK.

Witnesses:

B. ROY,

CARL F. BURCHARDT.