3 Sheets--Sheet 1.

P. HUFELAND.

Machine for Cutting Fan-Leaves.

No. 164,838. Patented June 22, 1875.

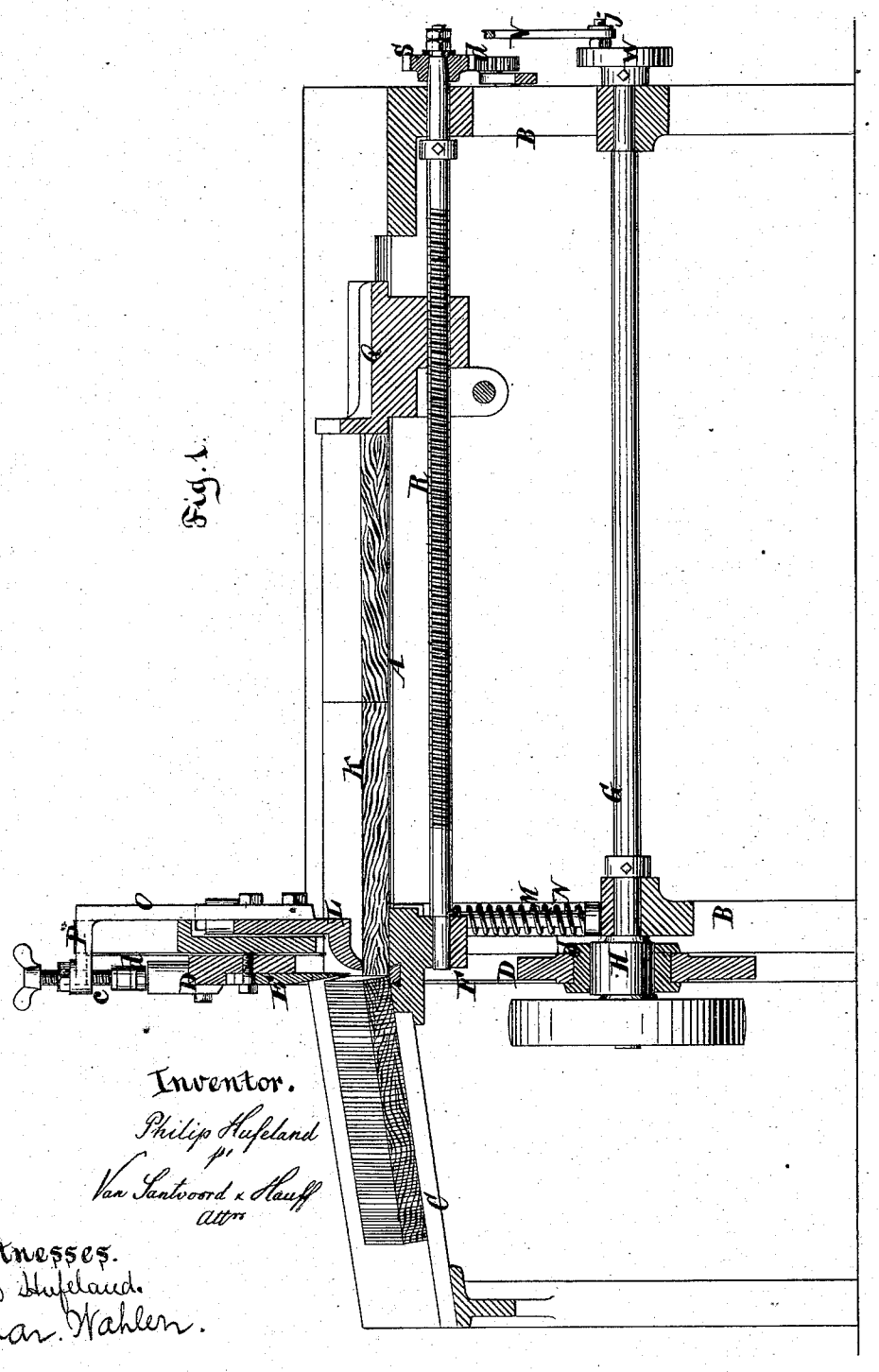

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Fig. 2.

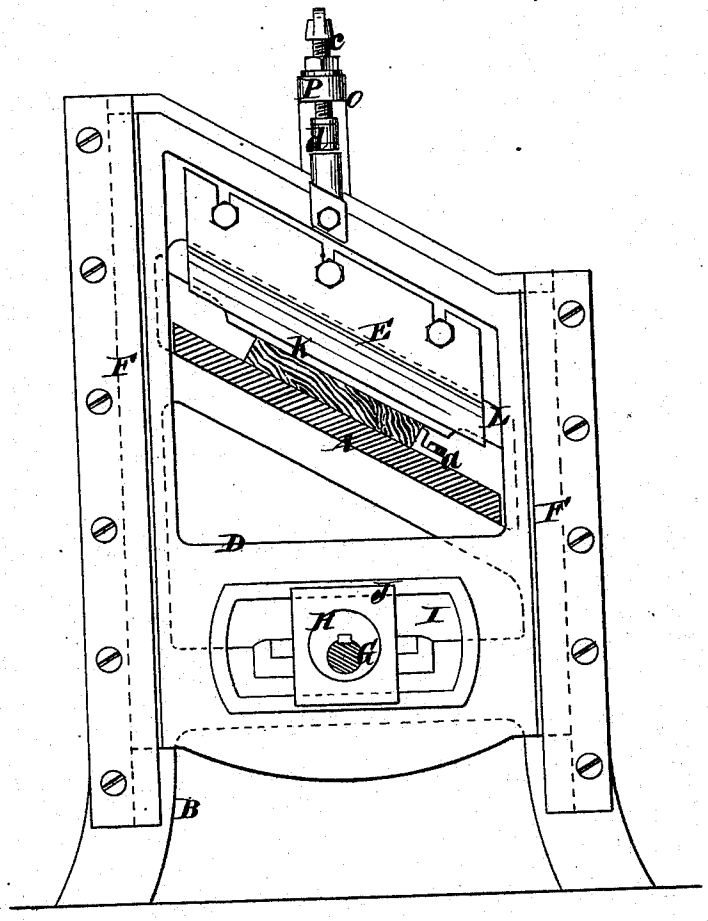

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Fig. 4.

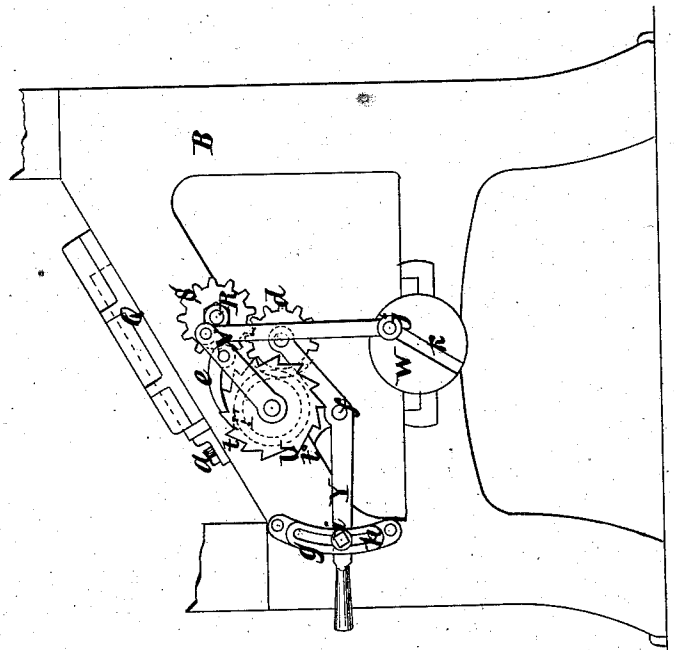
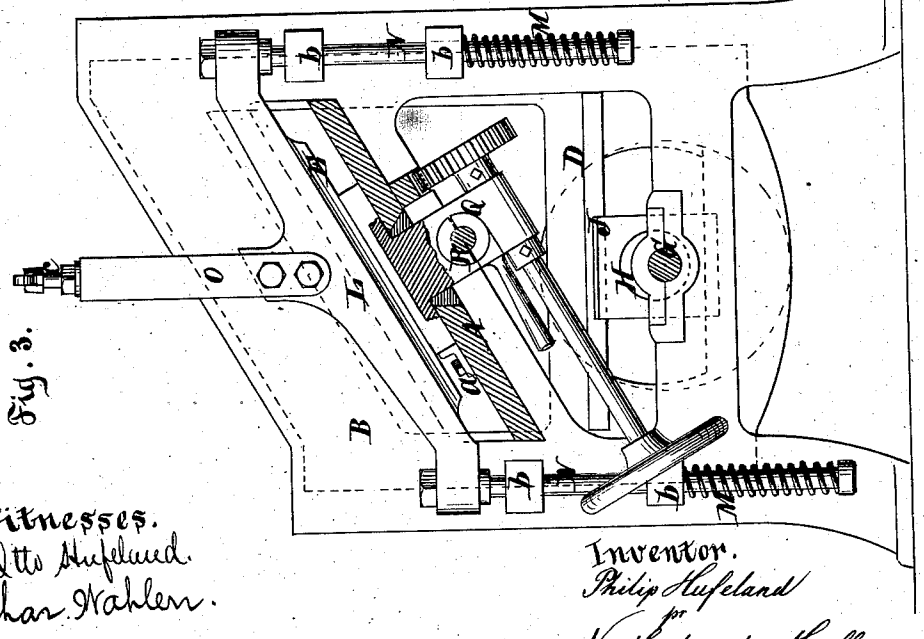


Fig. 3.



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UNITED STATES PATENT OFFICE.

PHILIP HUFELAND, OF MOUNT VERNON, NEW YORK.

IMPROVEMENT IN MACHINES FOR CUTTING FAN-LEAVES.

Specification forming part of Letters Patent No. **164,838**, dated June 22, 1875; application filed April, 9, 1875.

To all whom it may concern:

Be it known that I, PHILIP HUFELAND, of Mount Vernon, in the county of Westchester and State of New York, have invented a certain new and useful Improvement in Machines for Cutting Fan-Leaves, of which the following is a specification:

This invention is illustrated in the accompanying drawing, in which—

Figure 1 shows a longitudinal section. Fig. 2 is an end elevation, showing the knife-carriage; Fig. 3 is a transverse section; Fig. 4 is an end elevation, showing the feed mechanism.

Similar letters indicate corresponding parts.

This invention relates to a machine designed mainly for cutting leaves, such as are used in the construction of fans, and consists in the combination of a reciprocating knife and its carriage, a spring-clamp, and an intermittent feed mechanism, the spring-clamp being capable of a reciprocating motion, and allowing of an intermittent feeding of material under the knife, whereby I obtain a machine adapted for cutting leaves of uniform thickness. The intermittent feed mechanism is adjustable as to its extent of motion, and by this arrangement leaves of any desired thickness can be cut by my machine.

The spring-clamp receives a reciprocating motion through the medium of the knife-carriage, being provided with a lateral projection with which the carriage comes in contact in its ascent, and through the action of its springs, which have a tendency to hold it in contact with the material to be cut. The intermittent feed mechanism is constructed of a "feeder," mounted on a screw-shaft, which is combined with driving-gear and a ratchet-wheel that receives an intermittent motion through a pawl attached to a vibrating lever, which is connected eccentrically to a driving-wheel. The vibrating lever is connected to the driving-wheel by means of a set-screw, which is adjusted in a radial groove on the wheel, whereby the lever is adapted to be connected at any distance from the center of the wheel, in order to regulate the extent of feed motion.

In the drawing, the letter A designates the bed-plate of my machine, which is supported by frame-pieces B B, at or near the respective ends, and to one end of which is secured a delivery-board, C. The bed-plate as well as the delivery-board are inclined, in transverse section, and the bed-plate is provided with a rib, *a*, that forms both a guide and stop for the material laid thereon. D designates the knife-carriage, which is located at or near one end of the machine, and to which is fastened a suitable knife, E. The vertical edges of the knife-carriage D are fitted in ways F, formed on opposite sides of the approximate frame-piece B, and in which ways the carriage is guided in its reciprocating movement. G designates the driving-shaft of my machine, on which is mounted an eccentric or cam, H, which works in a slot, I, Fig. 2, formed on the lower part of the knife-carriage. The eccentric is preferably arranged in a box, J, that is fitted to the slot I. When a revolving motion is imparted to the driving-shaft, and through it to the eccentric, the latter imparts a reciprocating motion to the knife-carriage and knife. K designates a log of wood or other material, which I have shown as resting on the bed-plate A, and as being fed under the knife.

The log is held in place during the operation of cutting by means of a clamp, L, which acts under the influence of springs M, Fig. 3. The springs M are made of wire, which is coiled on vertical rods N, fastened to the clamp, one end of the springs bearing against or being fastened to the rods, while the other end bears against lugs *b*, of the approximate frame-piece B, as seen in Fig. 3. This spring-clamp L is attached to a stock, O, which has a lateral projection, P, extending in the direction of the knife-carriage. Through the projection P passes a screw, *c*, which is so located that it is in a vertical line with the knife-carriage D, and when the carriage, in its reciprocating movement, ascends, it strikes against the screw and thus carries the clamp L with it against the action of the springs M, while when the carriage descends the springs cause the clamp to return to its normal position. The relative position of the knife-carriage and clamp are such that the clamp returns to its contact with the log K before the knife begins to cut, so that the log is firmly held during this operation.

Between the screw P and the clamp is interposed a spring, *d*, of india-rubber or other suitable material, for the purpose of counteracting any irregularity in the surface of the log K. The clamp is guided in the reciprocating movement imparted to it, as before described, by its rods N, sliding in the lugs *b*.

It is obvious that, as often as the clamp L rises, the log K may be fed or moved forward under the knife, in order to cut therefrom repeatedly. This movement is effected by means of the feeder Q, which traverses a slot in the bed-plate A, and bears against the tail end of the log K, being arranged to move the log at uniform intervals, as well as to uniform distances, varying with the thickness of leaves to be cut. The feeder Q is made in the form of a nut, and is mounted on a shaft, R, which is provided with a screw-thread for nearly the whole of its length. The feeder is preferably divided into two parts, which can be taken apart, in order that the feeder may be moved from one to the other end of the shaft.

The outer end of the shaft R contains a gear-wheel, S, which connects by a pinion, *d*, with a second gear-wheel, T, shown in Fig. 4 in dotted outline. The arbor of the wheel T has its bearing in the approximate frame-piece B, and carries a ratchet-wheel, U, together with one arm of an elbow-lever, V, the other arm of which is connected to an eccentric portion of the driving-wheel W. To the elbow-lever V is pivoted a pawl, *e*, and at such a portion thereof that it is adapted to engage with the teeth of the ratchet-wheel. The driving-wheel W is mounted on the driving-shaft G, and when this wheel is given a revolving motion the lever V is vibrated and the pawl *e* successively engages the several teeth of the ratchet-wheel U. By these means the ratchet-wheel is intermittingly moved to the extent of one of its teeth, which motion is thence communicated to the driving-gear and to the feeder Q. The ratchet-wheel U is provided with a series of teeth, *t*, of uniform length, and two t^{o}, the length of which is nearly equal to the two of the teeth *t*.

The throw of the pawl *e* is just equal to the length of the teeth t^{o}, so that for each throw it takes only one of the teeth *t*, or one of the teeth t^{o}. By the long teeth t^{o} the block is fed a sufficient distance for the covers of a fan, while the feed motion produced by the short teeth is for the fasteners. The number of teeth on the ratchet-wheel corresponds to the number of leaves required for each fan.

The pinion *d* is supported by a lever, Y, pivoted at *f* to the frame-piece B, and which moves within a guide-plate *g*, having a slot, *h*, in which moves a set-screw, *i*, connected with the lever. By this arrangement the lever Y can be adjusted and retained in any position, and so as to connect or disconnect the driving-gear by bringing the pinion *d* in or out of gear.

The elbow-lever V carries a set-screw, *j*, by means of which it is connected to the side of the driving-wheel W, the set-screw catching in a groove, *k*, (or in a slot,) formed in the wheel. The object of this arrangement is to allow of connecting the lever to any portion of the wheel W—that is to say, at any distance from the center of the wheel—and thereby the extent of the motion of the lever and of the entire feed motion may be regulated so as to cut any desired thickness of leaf.

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

1. The combination of an adjustable intermittent feed mechanism, a reciprocating knife-carriage, a spring-clamp for holding the work, the whole being constructed for operation, as herein shown and described.

2. The combination, with the reciprocating knife-carriage and spring clamp L, of the feed mechanism, consisting of the feeder Q, screw-shaft R, driving gear S T, ratchet-wheel U, eccentric V, and pawl *e*, substantially as and for the purpose described.

In testimony that I claim the foregoing I have hereunto set my hand and seal this 3d day of April, 1875.

PH. HUFELAND. [L. S.]

Witnesses:

W. HAUFF,

E. F. KASTENHUBER.