

R. Wolf.
Dove-Tail Machine.

N^o 75506

Patented Mar. 10, 1868

Fig. 3

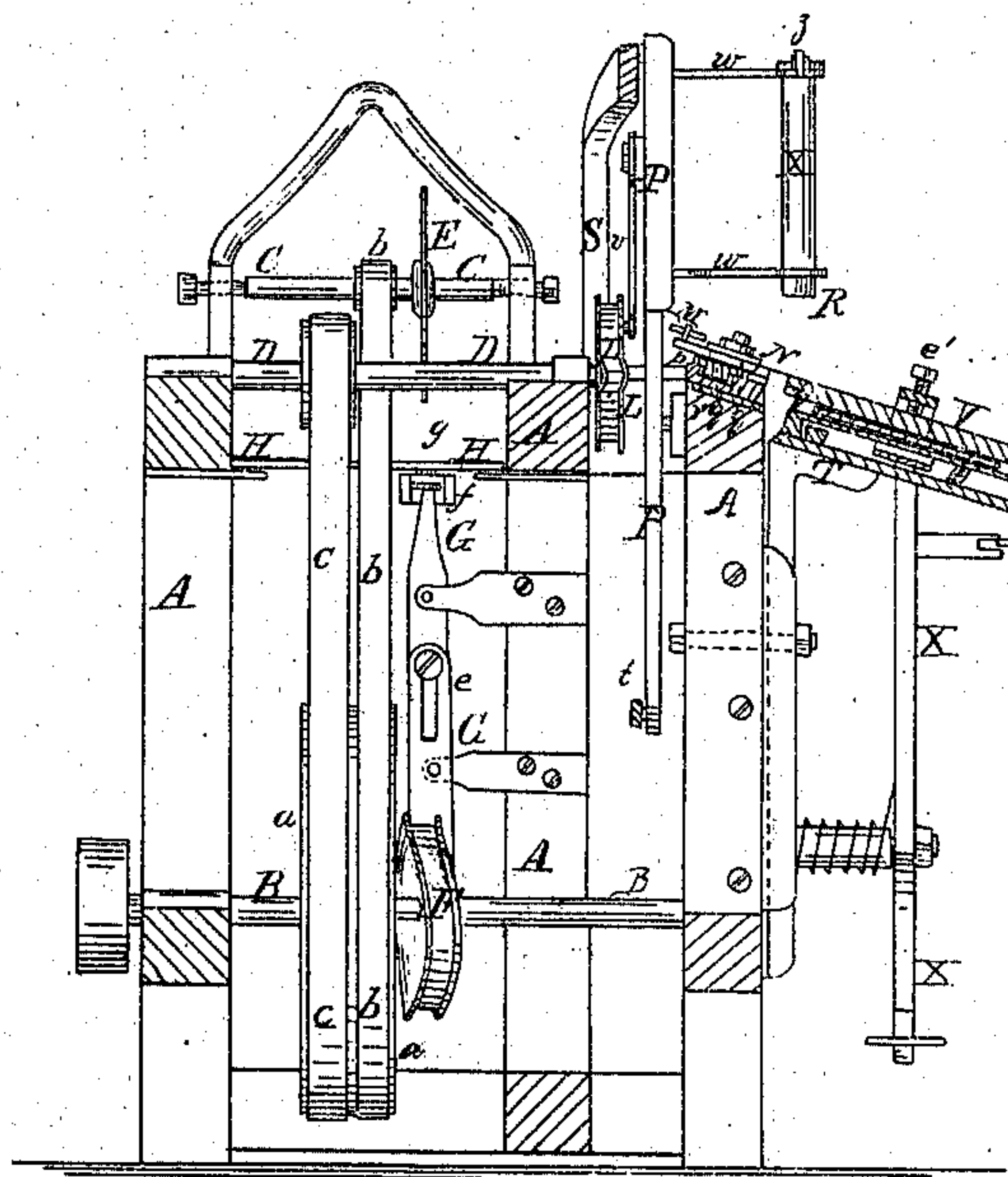


Fig. 1.

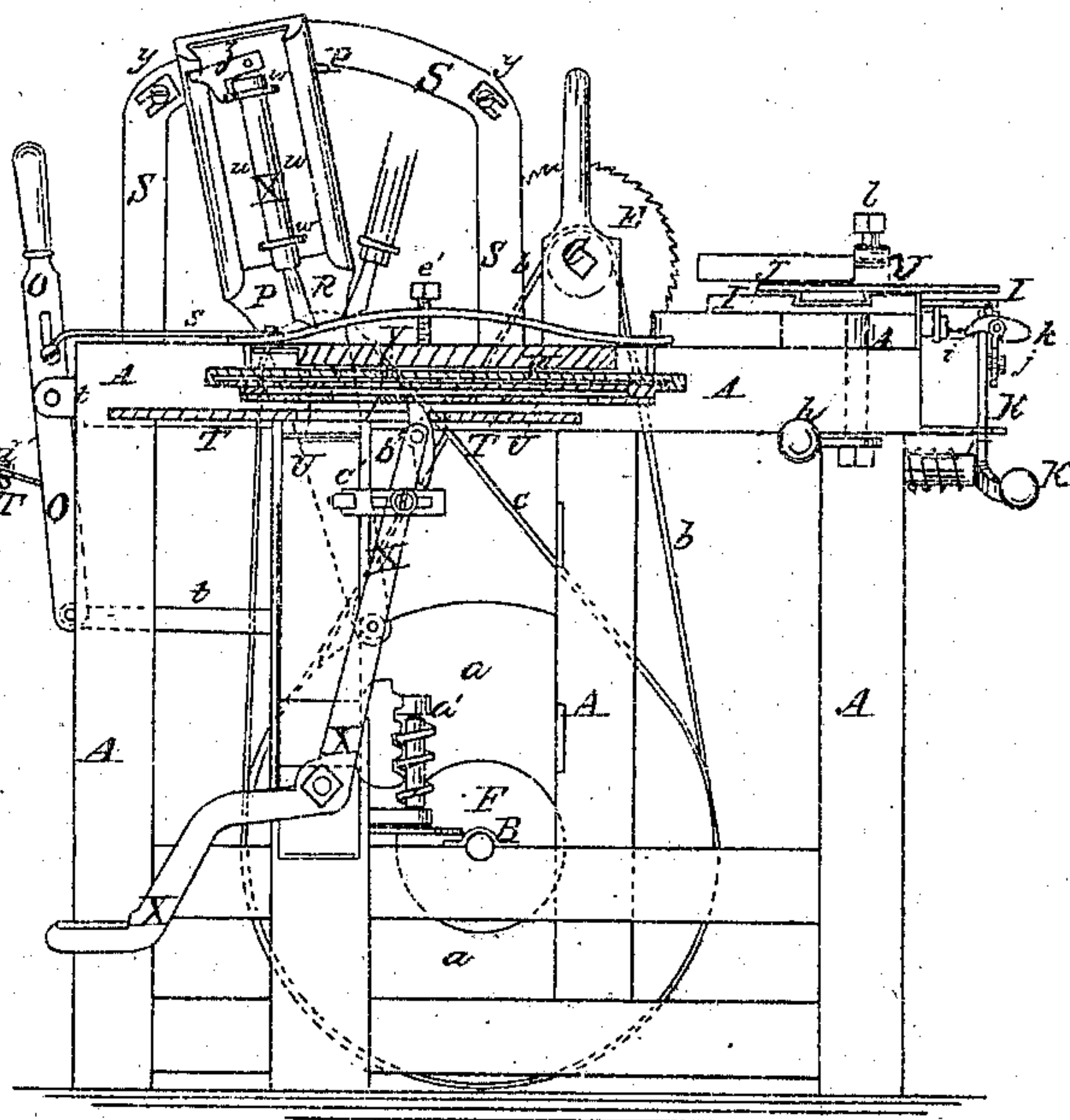


Fig. 2

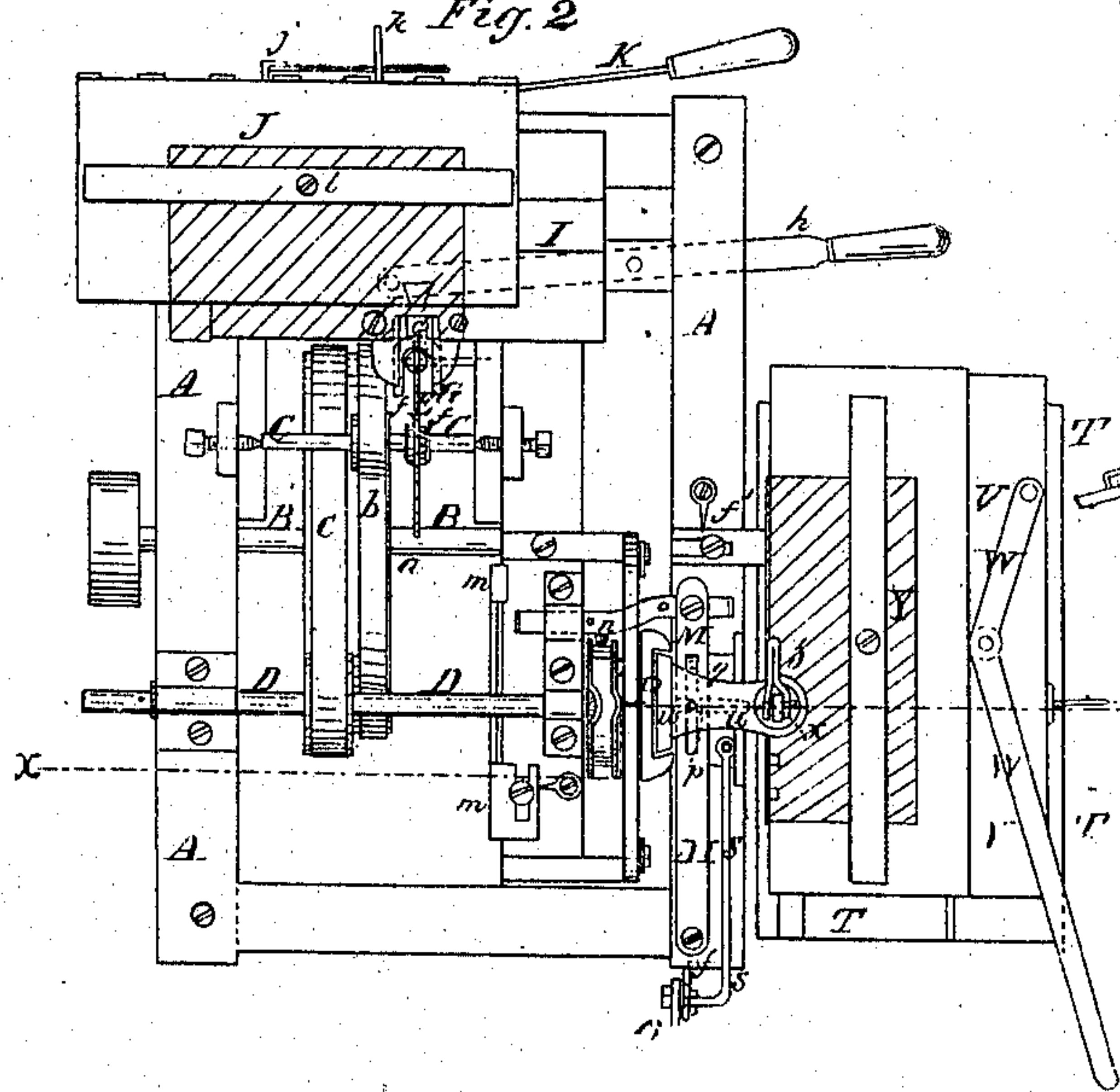
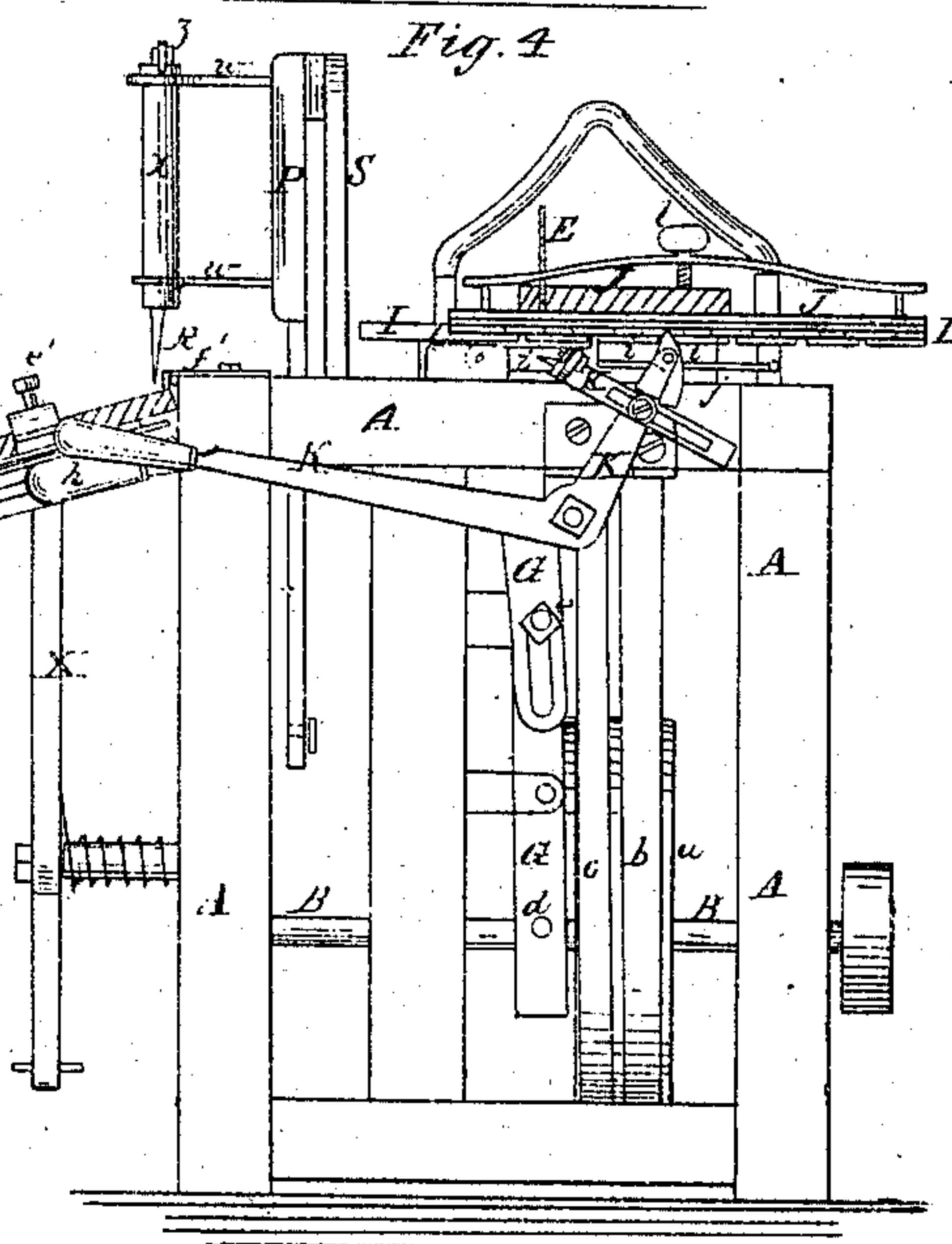


Fig. 4



Witnesses

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ROBERT WOLF, OF BURLINGTON, IOWA.

Letters Patent No. 75,506, dated March 10, 1868.

IMPROVEMENT IN DOVE-TAIL MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ROBERT WOLF, of Burlington, in the county of Des Moines, and State of Iowa, have invented a new and improved Dove-Tailing Machine; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a side elevation of my improved dove-tailing machine.

Figure 2 is a plan or top view of the same.

Figure 3 is a vertical sectional view of the same, the plane of section being indicated by the line *x x*, fig. 2.

Figure 4 is a front elevation of the same.

Similar letters of reference indicate corresponding parts.

This invention relates to a new machine for dove-tailing the side-pieces, as well as the front and back pieces of drawers, boxes, and other articles; and consists of two parts, one for sawing the side-pieces, and the other for chiselling the front and back-pieces.

The machine for dove-tailing the side-pieces consists of a revolving circular saw, and of an oscillating-carriage, upon which the board is placed. The oscillating motion of the carriage can be regulated so that a recess, with more or less inclined sides, may be cut. When the saw is in contact with the edge of the board to be dove-tailed, the motion of the latter will bring so much of the edge within reach of the saw, that the same will be enabled to cut a tapering recess out of the board. When one recess is cut, the board is moved sideways, so as to bring it in position for having the next recess cut.

The machine for dove-tailing the front and back-pieces consists of two chisels, of which one is in a horizontal, the other in an inclined upright position. Both chisels receive reciprocating motion. The upright chisel cuts the backs of the recess by its cutting-edge, and makes the inclined face of the recess by its own inclined position. The horizontal chisel determines the depth of the recess, and prevents the splitting of the board. The carriage to which the board is secured, receives lateral as well as longitudinal motion, and by the former the distance between the recesses cut, by the latter the length of the recesses, is determined.

The main object of this machine is to do away with the measuring of boards, and of the tedious process of dove-tailing by hand, which is now used for dove-tailing boards. When the machine has once been adjusted, it will make all dove-tails alike, and equally apart, so that no drawing or measuring is required.

A represents the frame of the machine. B is the driving-shaft, carrying a pulley, *a*, from which, by means of belts *b* and *c*, motion is imparted to two horizontal shafts, C and D, respectively. E is a circular saw, mounted on the shaft C. On the shaft B is mounted a drum, F, which is provided with a cam-groove around its periphery, as shown in fig. 3. Into this cam-groove fits a pin, *d*, which projects from a jointed lever, G, that is pivoted to stationary lugs projecting from the frame A. The two jointed ends of the lever G are slotted, and are connected by a pin and nut, *e*, so that by lowering or raising the pin, the upper part of the lever may receive more or less oscillation, as may be desired, for a purpose to be hereinafter set forth. The upper end of the lever G is held between a fork, *f*, which is secured to a vertical pin, *g*, that passes through a sliding frame, H, (see fig. 3.) The frame H rests on suitable guides formed on the frame A, and can be moved towards or from the saw by means of a lever, *h*. I is a carriage, resting upon the sliding frame H, and pivoted to the same by means of the pin *g*, so that it is connected with the fork *f*. The face of the carriage I has a recess, for the saw to play in when the machine is in operation. Upon the carriage I is secured a sliding bed, J, which is, by means of a dove-tail tenon and groove, secured to the carriages, as indicated in fig. 1. On the under side of the plate J are teeth or holes, equally far apart from each other, to receive the end of a spring-catch, *i*, which is pivoted to the carriage I, and which locks the bed J to the carriage I. To the outer end of the frame A is pivoted a lever, K, which carries two cams, *j* and *k*, respectively. The cam *j* does, when the lever K is depressed, fit over a cam on the spring-catch *i*, and depresses the same, so as to release the bed J, which is, at the same time, moved in a lateral direction, by means of the cam *k*, which catches between teeth on the back edge of the plate J, as shown in figs. 2 and 4.

The operation is as follows: The board to receive the dove-tail recesses is secured upon the bed J by means of a clamp-screw, *l*, and then the frame H is, by means of the lever *h*, moved towards the saw. By the revo-

lution of the shaft B the lever G is oscillated, whereby an oscillating motion is also imparted to the fork *f*, which, as it is connected by the pin *g* with the carriage I, imparts similar oscillating motion to the latter, and to all its appendages. Thus, as the frame H carries the board gradually forward, and the carriage I oscillates it, the saw is caused to cut in an oblique direction, so as to produce the required dove-tail. As soon as the frame H strikes against an adjustable stop, *m*, (fig. 2,) the dove-tail is cut to the required length. The frame is then drawn back, and the bed J is, by means of the lever K, moved laterally for one tooth, and then the frame is moved forward again, when a second dove-tail, precisely similar to the first, will be cut.

In order to make the dove-tail more or less oblique, the screw *e* in the lever G is arranged, which, the higher it is set, causes the upper end of the lever G to make larger oscillations, and thus a broader dove-tail will be produced. The shaft C, carrying the saw, is hung in adjustable screw-bearings, as shown in figs. 2 and 3, so that the saw may be laterally adjusted whenever desired. By varying the distance of the holes or teeth at the under side and back edge of the bed J, the distance between the dove-tails will also be varied.

On the shaft D is mounted a drum, L, which is provided, around its periphery, with a circular groove, having a short projecting cam, as shown in fig. 2. A pin, *n*, projecting from a sliding lever, *o*, which is pivoted to a lever, M, fits into the groove of the drum L. The lever M is pivoted to the face of the frame A, and is slotted, as shown in fig. 2, a pin, *p*, projecting from a sliding bed, *q*, fitting through the slot. To the bed *q* is adjustably secured a chisel, N, which, by the action of the cam L upon the lever M, receives a short percussive motion once during every revolution of the cam L, or as often during that period as there are projecting portions on the cam-groove. The bed *q*, to which the chisel N is secured, is, by means of a dove-tail tenon and groove, connected with a sliding bed, *r*, which is enabled to move laterally by the slot in the lever M, and which is, by means of a rod, *s*, connected with a lever, O, as shown. The lever O is, by another rod, *t*, connected with the lower end of a plate, P, which is pivoted to the frame A, and which can, by means of the lever O, be swung to the right or left, as may be desired. Between flanges projecting from the face of the plate P, is held a block, *u*, which is, by means of a rod, *v*, connected with a crank on the shaft D, the pin which connects the rod *v* with the block *u*, passing through a slot in the plate P. Oscillating motion is thus imparted to the block *u*. From the block *u* project arms *w w*, in which an axle, *x*, is held, as shown, which, at its lower end, carries a chisel, R. The lower oscillating edge of the chisel R is inclined, as shown, and the whole body of the chisel is also brought into an inclined position, by the action of the lever O. Adjustable stops, *y y*, on a stationary projecting frame, S, regulate the inclined position of the chisel. The holder *x* can be turned in the arms *w*, and is fastened by means of a catch, *z*, it being necessary that the longer edge of the chisel be always on the outside, as shown in fig. 1.

T is an up-and-down adjustable table, which can be raised and lowered by means of a screw, *a'*, as shown in fig. 1, and which carries on its face a laterally-adjustable carriage, U, which slides on it, and can be moved by means of a lever, X, having cams *b'* and *c'*, which operate in a similar manner on a spring-catch, *d'*, and on the toothed or perforated carriage U, as the lever K, with its cams, acts on the bed J. Upon the carriage U is placed a bed, V, which can be moved towards or from the chisels, by means of a lever, W, as shown in fig. 2.

The board to be dove-tailed is secured upon the bed V by means of a clamp-screw, *e'*, and is then fed towards the chisels, an adjustable stop, *f'*, arresting its forward motion, and thereby indicating the length of the recess to be cut, while, by the height of the table T, the depth of the recesses is regulated. When the board is fed towards the chisels, the chisel N will be pushed into it, and the chisel R will then be inserted, in an inclined direction, into the surface of the board, so as to gradually take off portions of the wood, until the required length is obtained. The inclined position of the cutter R will make the side of the hole cut by it inclined, while the back edge will be vertical, and the bottom, if one is left, will be parallel with the surface of the board, owing to the position of the chisel N, which is parallel with the board. After the board has been thus cut, it is drawn back, and then the position of the chisel R is reversed by means of the lever O, and the chisel is also turned in the arms *w*, as indicated in fig. 1. When, then, the board is again brought forward, the other inclined side of the dove-tailed recess will be cut. Then the board is again drawn back, and is, by means of the lever X, set laterally, ready to receive the next recess.

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

1. The combination of the cam F and jointed lever G with the fork *f*, pin *g*, and carriage I, all made and operating so that a suitable oscillating motion is imparted to the carriage I, substantially as and for the purpose herein shown and described.

2. The longitudinally-movable frame H, in combination with the oscillating carriage I, and laterally-movable bed J, all made as described, and operating with the saw E, substantially as and for the purpose herein shown and described.

3. The combination of the lever K, pawl *j*, slotted adjustable pawl *k*, spring-catch *i*, and bed J, all constructed, arranged, and operating substantially as described.

4. The combination of the oscillating plate P, slide *u*, levers M O, and chisel N, substantially as described for the purpose specified.

5. The levers *o* M and chisel N, in combination with the cam L, operating substantially as described for the purpose specified.

6. The combination of the bed T, tripping-levers *b' c'*, sliding rack U, and the slide V, constructed and operating substantially as described for the purpose specified.

The above specification of my invention signed by me, this day of

, 1867.

ROBERT WOLF.

Witnesses:

CHARLES FRANKEN,
WM. FRANKEN.