H. B. Smith,
Tenoning Machine,

No. 52,219, Patented Jan. 23, 1866.

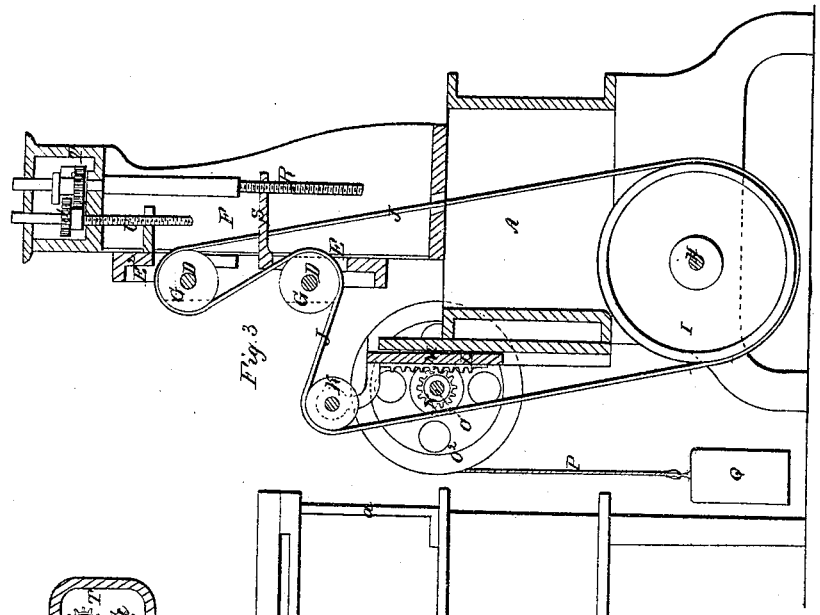

Fig. 3

Fig. 2

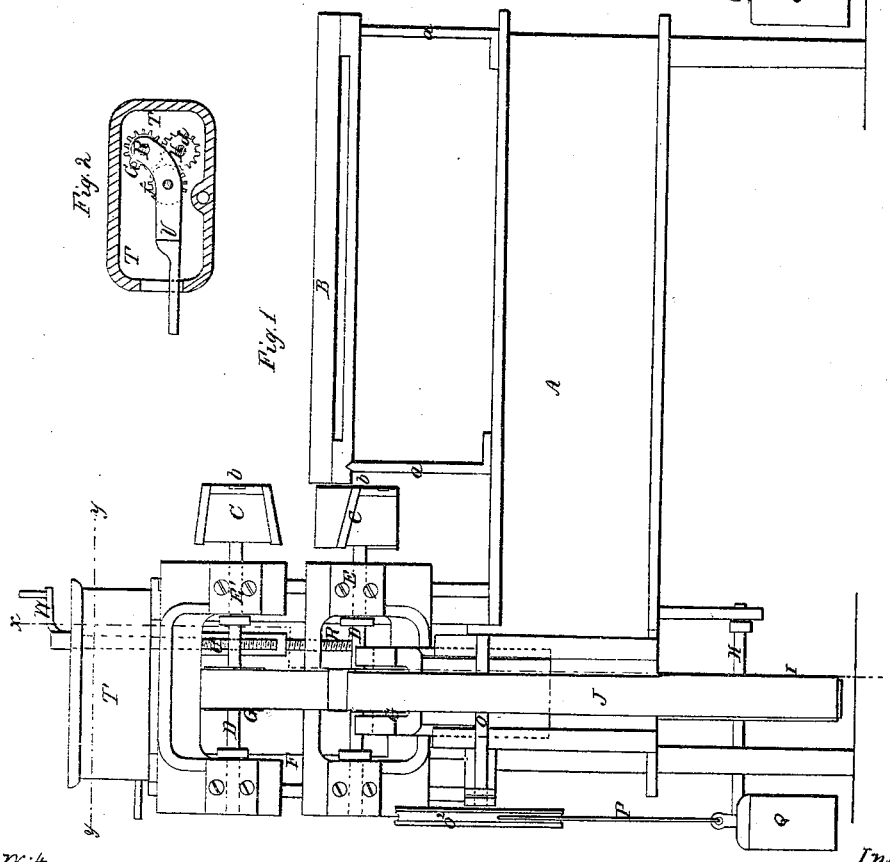

Fig. 1

Witnesses

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H. B. SMITH, OF LOWELL, MASSACHUSETTS.

IMPROVEMENT IN TENONING-MACHINES.

Specification forming part of Letters Patent No. **52,219**, dated January 23, 1866.

To all whom it may concern:

Be it known that I, H. B. SMITH, of Lowell, in the county of Middlesex and State of Massachusetts, have invented a new and useful Improvement in Wood-Tenoning Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

The present invention consists in so arranging the cutter-heads of a wood-tenoning machine that while they can be adjusted with regard to each other to any thickness of tenon which it is desired to form, they can be after such adjustment brought to any position with regard to the end of the board or plank upon which they are to operate without disturbing their relative position with regard to each other as previously adjusted.

In accompanying plate of drawings my improvement is illustrated, Figure 1 being an elevation of one side of a wood-tenoning machine having it applied thereto; Fig. 2, a transverse vertical section taken in the plane of the crooked line *x x*, Fig. 1, and Fig. 3 a horizontal section in plane of line *y y*, Fig. 1.

Similar letters of reference indicate like parts.

A in the drawings represents the ordinary frame of a wood-tenoning machine, and B the platform or carriage upon which the wood to be tenoned is placed, it sliding upon upright ways or guides *a a* of the frame of the machine, and arranged in any proper manner to allow the wood to be brought to bear against the revolving cutter-heads C C. These cutter-heads are of the ordinary construction used, and therefore need no particular description herein, each cutter-head being attached to a separate horizontal shaft, D, hung and turning in bearings of separate frames E E^2 arranged in a vertical position upon the same side of the upright frame F of the main framework of the machine, so that they can be moved up and down upon the same, the cutter-heads being in the same vertical plane, one above the other, and with their outer faces or ends, *b b*, in the same line with each other.

On each cutter-head shaft D is fixed a pulley, G, around which, and in the manner shown, to and around a pulley, H, of the driving-shaft I of the machine, passes an endless driving belt or band, J, this belt passing over a guide-pulley, K, of a vertical sliding frame, L, upon one side of the machine, having a toothed rack, M, with which interlocks the pinion-gear N of a horizontal shaft, O, turning in fixed bearings of the machine, and having a balance wheel or pulley, o^2, to which is hung, by a cord, P, a weight, Q, by means of which weight so hung the said endless belt is always maintained at the proper tension to drive the cutter-heads, in whatever position they may be adjusted with regard to each other or to the board or wood to be tenoned, to be presently explained.

R is a vertical screw shaft or rod passing through and screwing into the projecting arm S of the lower cutter-head frame, E, and turning loosely in the bottom of the box T, attached to the upright frame F of the machine hereinbefore referred to, with a pinion-wheel, *e*, at or near its upper end, U, a vertical screw-shaft, R, similarly arranged, in connection with the upper cutter-head frame, E^2, to that above described for the screw-shaft R and frame E, and having at or near its upper end a similar pinion-wheel, *d*, but in a horizontal plane above that of the pinion *e* of the shaft R, so as not to interlock therewith, as plainly shown in Fig. 2.

V is an arm hung upon the upper end of the shaft R, so as to swing thereon, this arm projecting outside of the box T and having a pinion-gear, *f*, of suitable shape and size, that when the arm is swung in one direction it will be interlocked with both pinions, *e* and *d*, of the said shafts R and U, and thus form a connection between them, and when turned or swung in the opposite direction such connection will be destroyed or cut off.

From the above description it is obvious that, first, having swung the arm V in the proper direction to bring its pinion out of gear with the two pinions *e* and *d* of the cutter-head-frame screws R and U by then attaching to either one or both of the said screw-shafts R and U a winch, W, or other suitable shaped handle, the cutter-heads can be either raised or lowered at pleasure by simply turning the said handle accordingly, and thus brought to any desired distance apart, be it more or less,

so as to correspond to the thickness of tenon to be formed upon the wood, when, having thrown the pinion of the swinging arm V into gear with the two shaft-pinions *c* and *d*, and there holding it by turning either one or the other of their shafts R and U with the handle W, the two cutter-heads can be then raised or lowered together, as the case may be, without in the least degree disturbing their relative position with regard to each other, as previously adjusted, thereby enabling the cutter-heads, after having once been set for the proper thickness of tenon, to be easily and readily brought to any desired position with regard to the board or wood to be tenoned without disturbing their position with regard to each other, the advantage and importance of which, in wood-tenoning machines, are obvious.

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

1. So arranging the cutter-heads of a wood-tenoning machine, and upon the frame of the same, that while they can be set or adjusted to any desired distance apart, according to the thickness of the tenon to be cut, they can be, after such adjustment, either raised or lowered, as may be desired, and thus brought to any position with regard to the board or wood to be operated upon, without in the least degree disturbing their relative position with regard to each other, substantially in the manner described.

2. Hanging the cutter-heads in sliding frames E and E^2 of the machine, each having a screw-shaft, R and U, with pinions *c* and *d*, in combination with the swinging arm V and pinion-gear *f*, arranged with regard to the said pinions *c* and *d*, and all arranged together, so as to operate substantially in the manner and for the purpose specified.

The above specification of my invention signed by me this 26th day of October, 1865.

H. B. SMITH.

Witnesses:

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