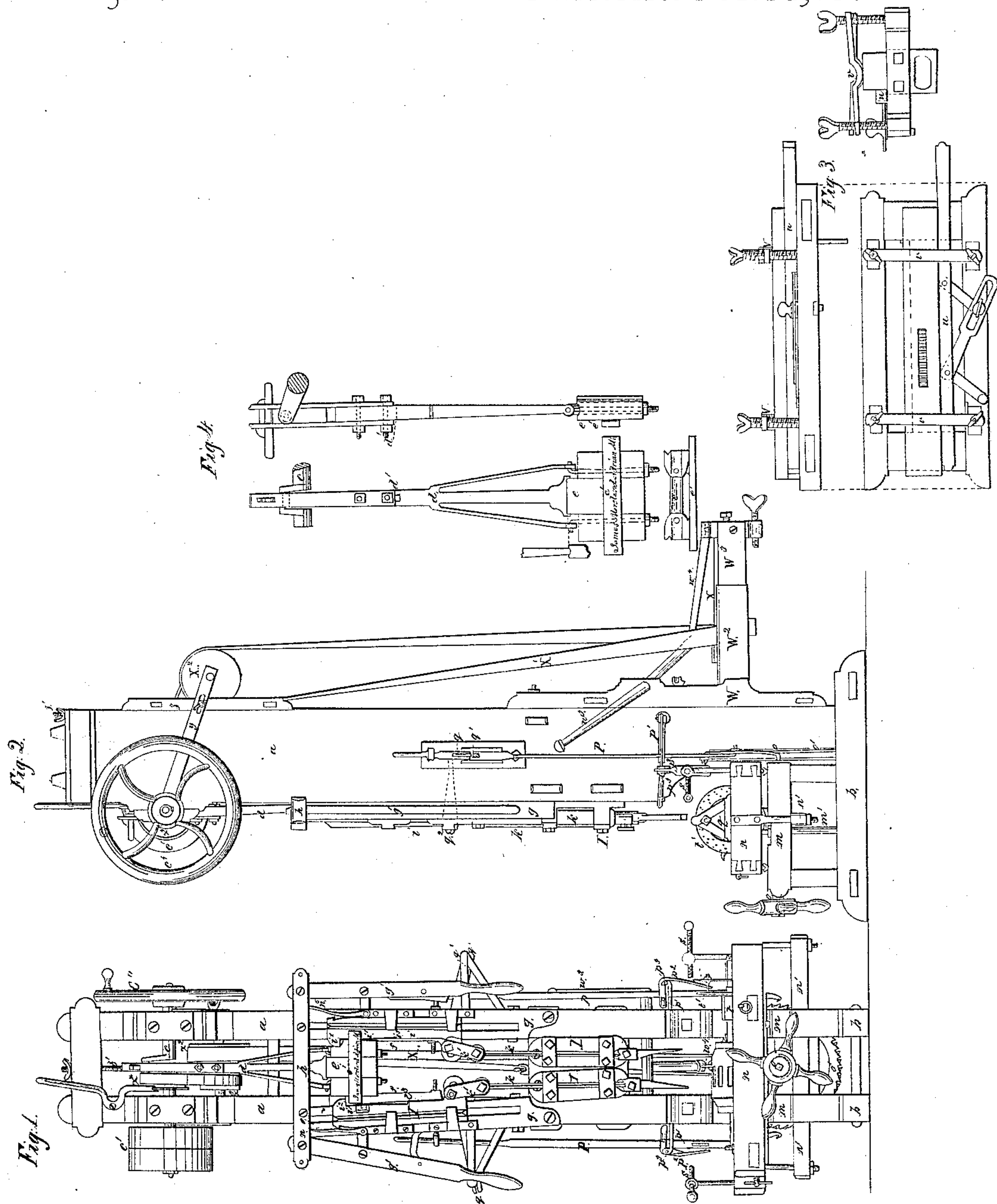


*J. Moreland,
Mortising Machine.*

N^o 9,595.

Patented Feb. 22, 1853.



UNITED STATES PATENT OFFICE.

JAMES MORELAND, OF ADRIAN, MICHIGAN.

MORTISING-MACHINE.

Specification of Letters Patent No. 9,595, dated February 22, 1853.

To all whom it may concern:

Be it known that I, JAMES MORELAND, of Adrian, in the county of Lenawee and State of Michigan, have invented certain new and
5 useful Improvements in Mortising and Boring Machines, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known and of
10 the usual manner of making, modifying, and using the same.

My improvement consists in the peculiar construction of the apparatus, as herein described and claimed.

15 The frame consists of two main uprights (*a*), of proper form and of sufficient magnitude for the purpose for which it is intended to be used, maintaining the general proportions shown in the drawing, but not
20 confining myself thereto exactly: these uprights or cheeks (*a*) are mortised into a sill piece (*b*), that projects in front, and by proper cross ties and a cap at top, they are united; near the top of the frame, in
25 front, are the bearings of the driving or crank shaft (*c*), on one end of which, outside of the frame, is a fast and loose pulley (*c'*); and on the opposite end there is a balance wheel (*c*²); this shaft has a sunk
30 crank at its center, to which is connected a pitman, or connecting rod (*d*), which extends down and is jointed to a noddle iron (*e*): the pitman is peculiar in its construction in the following particulars—just be-
35 low the gib connecting it with the wrist, the pitman is divided with a strap extending down from the upper part, either side of the lower part, in which latter are elongated holes (*d'*), through which, and holes in the
40 straps, screw bolts pass, which firmly unite the two, and admit of the elongation of the pitman.

The space between the upper and lower portions of the connecting rod may, if found
45 necessary, be filled with a gib; this enables me to use up the chisels several inches before they are renewed; below this extension portion the pitman divides into three branches, the center one extending down to
50 the noddle iron, or sliding cross head (*e*), on which it rests in a knuckle joint; the two outer branches are spread out, and are connected to the cross head by a hook joint, by means of which the cross head is steadily
55 drawn up, while the center portion serves

for the downward pressure: this arrangement insures a perfectly parallel steady motion, and is susceptible of long wear without getting out of order; the cross heads slide up and down on V-shaped ways (*f*);
60 it has a bar (*e'*) across its front, and securely fastened to it, that projects a little beyond it at either end; to this bar the slides working the chisel, mandrels are connected or disconnected at will. On the front side
65 of either cheek there is a guide frame (*g*) fastened thereto at its lower end by a bolt, and being allowed a lateral motion at its upper end, where it moves under a cap piece (*h*); this guide piece is moved back and
70 forth by a hand lever (*g'*), clearly shown in the drawing; Figure 1, where one of the guide frames is shown moved out, and the other is in; two slides (*i*) work up and down in a right line in these guides when in
75 operation: they are caused to move by the bar (*e'*), entering a notch (*i'*) in the side of the slide when pushed up toward it, and then by the movement of the noddle iron up and down, they move with it: to arrest
80 their motion they must be moved back, as shown at the left hand in Fig. 1, by which they are detached from the bar (*e'*); at the upper end of this slide there is a projection (*i*²), which always causes the slide to rise
85 to a certain point, when detached, before it stops, which insures the withdrawing of the chisel from the work before coming to a state of rest, as will hereafter be again referred to; a similar projection below, at
90 (*i*³), prevents the slide from being carried so high that the bar (*e'*) cannot be made to enter the notch (*i'*): this forms a ready, strong, convenient, and permanent mode of
95 attaching and detaching either or both chisels at pleasure, while the machine is running. To the lower end of each slide (*i*) the mandrel (*k*) of the chisel is connected by a shackle (*k'*) by which it ob-
100 tains its movement; the mandrel (*k*) is caused to slide in ways (*l*) which are capable of being set vertical, or at any convenient angle for the purpose required; the chisels are of ordinary construction, and
105 fitted into sockets in the mandrel in the usual way. At a proper distance above the sills before named, are two adjustable caps or adjustable sills (*m*), supported upon up-
rights in such a way that they can slide to or from the cheeks (*a*); and when so moved 110

they are fastened in place by a bolt (m'), through the center of each, that passes down through the sill (b), below; these caps (m) support a carriage (n), that has a motion at right angles to them, and is guided by them, its course being regulated by the adjustment of the sliding caps, a matter of great importance, as will be afterward seen; a bar (n') passing under the caps, and attached to either end of the carriage, holds it to its place; a shaft (o), rests in the frame under the carriage, and carries on its inner end a double ratchet wheel (o'), capable of being moved either way; on the front end of the shaft (o) projecting beyond the frame, there is a hand wheel (o^2), by which it can be turned by hand; under the inner side piece of the carriage there is a rack into which a pinion on shaft (o) gears, so that by the revolution of said shaft the carriage is caused to move laterally the required distance: this can be effected by the hand wheel at any time, or it can be fed by the machinery itself: the apparatus for this is a perpendicular bar (p), outside of the frame, having an adjustable pawl affixed to its lower end, that takes into the ratchet wheel (o'), and this moves the carriage; the movement of the bar (p) is effected by means of a lever (q), that runs through a slot in it, having its fulcrum at (q'), supported by brackets attached to the cheek (a); this lever passes through an opening in the cheek, and is connected with the slide (i), by an arm (q^2), that extends back from it for that purpose. In consequence of the length of the slot through which the lever (q) works, the bar (p) only moves at intervals, permitting the carriage to remain in a state of rest while the chisel is entering and being withdrawn from the work. The lower end of the sliding pawl bar (p) is in a movable guide (p'), which by means of a spring (r), holds the pawl off from the ratchet wheel when the carriage is not to be moved: to put the carriage in motion, this movable guide (p') has a handle by which it is moved to a point where the pawl acts on its wheel, and there the guide is caught on a notch in its rest; a bent lever (p^2), having its horizontal arm connected with the guide, and its fulcrum at (p^3), with its other arm hanging down, serves to throw the pawl out when the carriage has moved a proper distance, by bringing the set screw (s) upon the carriage against it, which throws the guide (p'), out of the notch, and the spring (r) forces it back, the length of the mortise to be made will thus be accurately determined.

To mortise hubs in this machine, there is a frame (t), that just fits into the carriage frame, and is firmly attached to it; this frame has a mandrel head, with an index wheel (t') in it, to which is connected a

mandrel bearing the hub in a horizontal position, so that it can be readily turned:—the index determining the number of mortises to be made, and their position. When square or other timber is to be mortised, the hub frame is removed, and its place occupied with the straight mortising frame, shown at Fig. 3, detached: this frame is oblong; it has upon its upper side a movable parallel guide (u), and extending across it; at two points there are clamp bars (v), having perpendicular screws at each end; these have a curve downward; at the center or mortising line, they pass over the timber to be mortised, and bear down upon it at the right point, the curved downward projection only resting upon the timbers, and thus remedying any defect in turning the holding screws unequally, and always holding the article steady.

The boring apparatus is attached to the back of the frame, and is composed of an adjustable frame (w), that can be secured by bolts to the cheeks (a) at any desired height, this height is regulated by a screw bolt (w'), by which it is raised and lowered. To the frame (w), are affixed ways (w^2) in which the boring frame is made to slide horizontally back and forth; the auger and drill stock has a long pulley (x) on its axis, by which it is turned by a band (x'), passing over a pulley (x^2), in a sliding frame (z) above, there being another pulley (x^3) on the same shaft, connected by a band with a pulley (x^4) on the main driving shaft (c) to which it can be clutched or not, at will: to keep these two last named pulleys always equidistant, there are two arms (y), centering on the driving shaft (c), that extend back and support the shaft of pulleys (x^3); the sliding frame (z) supports the arms (y), and by it they are drawn up as the frame (w) is elevated, so as always to make belt (x') sufficiently tight. The mode of elevating the upper frame (z) is by a screw bolt (z'), like that employed for frame (w); the auger is forced forward by a lever (w^3), on an axis from which projects an arm downward, having a connecting bar (w^4), that unites it with the sliding boring carriage. There has been found, in practice, much difficulty, when the chisels are stopped while down in the mortise, to raise them out; often in green timber requiring great force to be employed therefor: but by the simple device of the projection on the slide, the chisel is always drawn out before it stops, without regard to the point at which it is thrown off; and by placing two light springs at (n^6), with notches therein, and a small catch on the slide, when it is thrown back it is held up to the highest point it is carried by the cross head. The sliding sills or cap pieces are also of the utmost impor-

tance to adjust the carriage, so as to mortise with either chisel in perfect line with the other.

5 Having thus fully described my improved apparatus, what I claim therein as new and desire to secure by Letters Patent is—

The combination of the cross bar *e'* on the cross head with the projecting dog *i*² on

the movable way for the purpose of withdrawing the chisel from the wood on the 10 back motion of the cross head substantially as set forth.

JAMES MORELAND.

Witnesses:

J. G. BRUFF,

I. S. SMITH.