D. M. CUMMINGS & P. C. CAMBRIDGE, Jr.

BORING AND MORTISING MACHINE.

No. 18,535. Patented Nov. 3, 1857.

Fig. 1

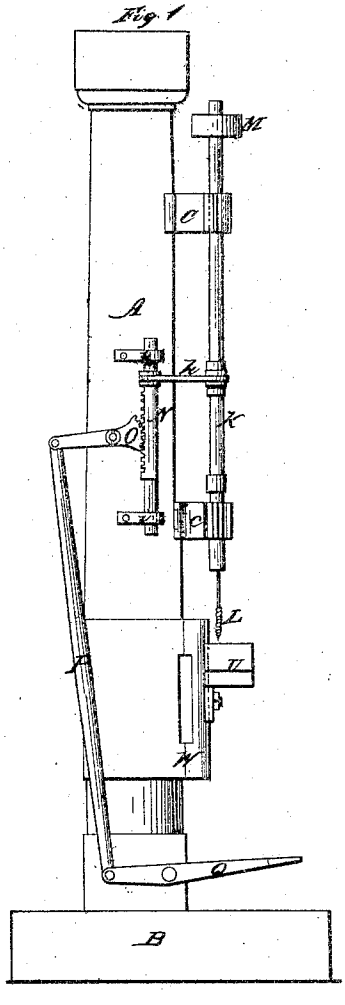


Fig. 2

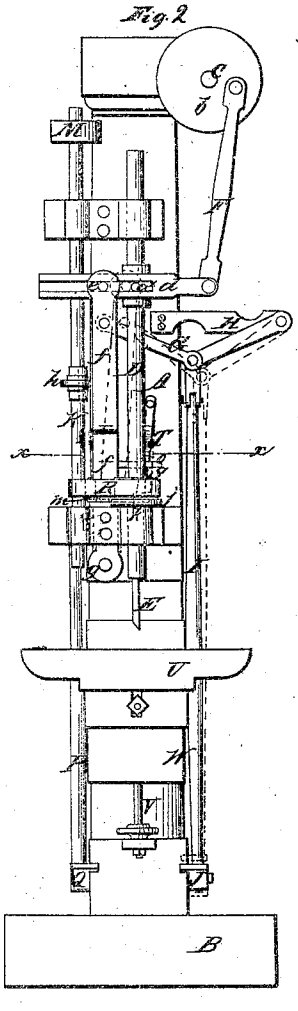


Fig. 3

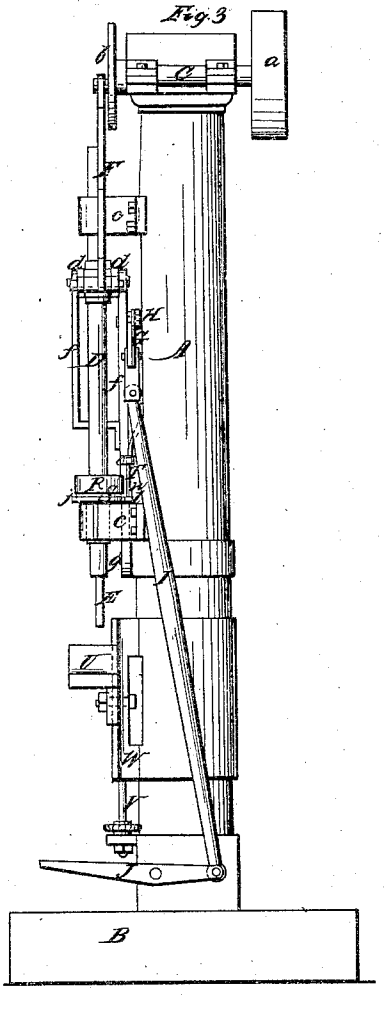
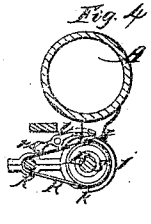


Fig. 4



UNITED STATES PATENT OFFICE.

D. M. CUMMINGS AND P. C. CAMBRIDGE, JR., OF NORTH ENFIELD, NEW HAMPSHIRE.

METHOD OF REVERSING THE CHISEL IN MORTISING-MACHINES.

Specification of Letters Patent No. 18,535, dated November 3, 1857.

To all whom it may concern:

Be it known that we, D. M. CUMMINGS and P. C. CAMBRIDGE, Jr., of North Enfield, in the county of Grafton and State of New Hampshire, have invented a new and Improved Boring and Mortising Machine; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1, is a side elevation of our improvement. Fig. 2, is a front elevation of ditto. Fig. 3, is a side elevation of ditto, the latter view being the opposite of the one shown in Fig. 1. Fig. 4, is a horizontal section of ditto taken in the line (*x*) (*x*) Fig. 2.

Similar letters of reference indicate corresponding parts in the several figures.

The invention consists in a novel means employed for turning the chisel-mandrel automatically from the auger-mandrel as hereinafter shown.

To enable those skilled in the art to fully understand and construct our invention we will proceed to describe it.

A represents a standard or upright which is attached to a proper base B, and C is a driving shaft placed at the upper end of the upright, said shaft having a driving pulley (*a*) at one end and a crank pulley (*b*) at the other.

To the upright A there are attached two lateral projecting bars (*c*) (*c*) at the outer ends which are the bearings of a vertical mandrel or arbor D which is allowed to work freely up and down in its bearings. In the lower end of the mandrel D, a chisel E is secured and two bars (*d*) (*d*) are pivoted to the mandrel D at opposite sides of it as shown at (a^x) one end of said bars being attached to a connecting rod F which is attached to the crank pulley (*b*).

The outer side of each bar (*d*) is grooved longitudinally and each groove receives a pin (*e*) said pins being attached to the inner sides of uprights (*f*) (*f*) which are connected at their lower ends and work on a pivot (*g*). The upper part of one of the uprights (*f*) is connected to one end of a toggle G the opposite end of said toggle being attached to an arm H, secured to the upright or standard A. To the toggle G a rod I is attached the lower end of said rod being connected to a treadle J.

K is a vertical mandrel the bearings of which are also at the ends of the bars (*c*) (*c*). An auger L is fitted in the lower end of this mandrel, and a driving pulley M is placed on its upper end. A horizontal arm (*h*) is also attached to said mandrel, the outer end of said arm being attached to a rack bar N, which is fitted in guide (*i*) attached to the standard A. A toothed segment O, gears into the rack bar N, said segment being pivoted to the standard or upright and having its outer end attached to a rod P the lower end of which is connected to a treadle Q.

R is a belt which passes around the mandrel K and also around a pulley S on the chisel mandrel D. The lower part of the pulley S has a flanch (*j*) projecting from it, said flanch having two notches (*k*), (*k*), made in it at opposite points, see Fig. 4. A lever (*l*) which is attached to the lower bar (*c*) on the standard A has a friction roller (*m*) attached to one end of it, and the opposite end of said lever has a small spur (*n*) on it which spur is acted upon by a lever T the upper end of which is attached to the standard, said lever being moved with the uprights (*f*) (*f*) in consequence of passing through an eye (*o*) which is attached to one of them.

U represents the bed on which the stuff to be mortised is placed. This bed is rendered adjustable by means of a screw rod V by turning which the bed may be raised or lowered, the bed being fitted to a guide plate W.

The operation is as follows:—The stuff is placed on the bed U, motion is given the auger mandrel K by means of a belt passing around its pulley M, and a reciprocating motion is given the mandrel D by means of a belt passing around the pulley (*a*) the rod F crank pulley (*b*) and rods (*d*) (*d*) actuating said mandrel. The rod I is to be sufficiently heavy to keep the treadle J elevated and also to keep the pins (*e*) to the inner ends of the grooves in the bars (*d*) so that the fulcrum of the bars (*d*) will be quite near the pivot (a^x) and the stroke or play of the mandrel D quite short, the operator however depressing the treadle J with the foot gradually throws the uprights (*f*) (*f*) off or further from the pivot (a^x) and the stroke or play of the mandrel is gradually increased for the distance between the fulcrum pins (*e*) and point of attachment (a^x) is

gradually increased, consequently it will be seen that the chisel E may be gradually fed to its work of the stroke of the mandrel increased corresponding to the gradually increasing depth of the cut or mortise. The auger L is fed to its work by depressing the treadle Q it being understood that the stuff at the parts where the mortise is to be made is first bored and the remaining wood removed by the chisel. The auger mandrel K rotates continually but this continuous motion is not communicated to the mandrel D by the belt R, for said belt is slack at all times except when the roller (*m*) is pressed against it, which is done by the lever (*l*) operated by the lever T, when the treadle J, ascends, the lower end of said lever striking the spur (*n*). The lever T is moved by one of the uprights (*f*) and throws one end of the lever (*l*) out for an instant from one of the notches (*k*) in the flanch (*j*) of pulley S and at the same time presses the roller (*m*) against the belt so that said belt may rotate the mandrel D one half of a revolution and consequently change the position of the chisel. This turning of the chisel may be done at any time by just removing the foot from the treadle J, when the end of the lever is thrown out from one of the notches (*k*) the lever is caught by the other notch, the lever being operated by the inner upright (*f*) which throws the end of said lever against the flanch (*j*).

Having thus described our invention what we claim as new and desire to secure by Letters Patent, is,

Rotating the chisel mandrel D from the auger mandrel K, when desired by means of the lever (*l*) with pressure roller (*m*) attached and spur (*n*) in connection with the lever T, operated by the upright (*f*) as described.

D. M. CUMMINGS.
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Witnesses:
J. F. Patton,
Convers G. Morgan.