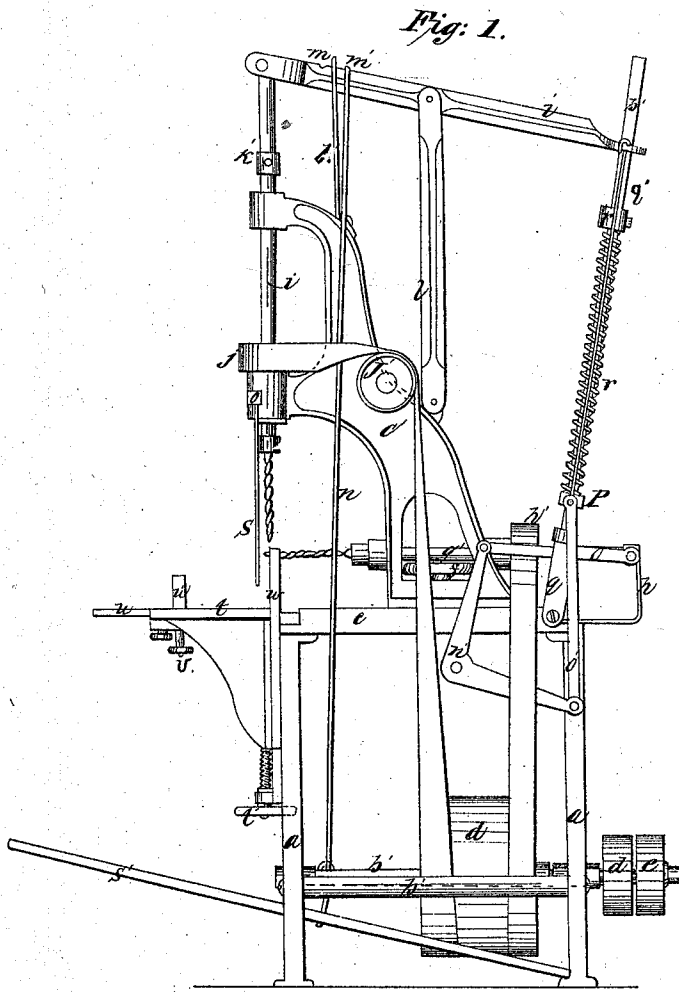


Carey & Harris.  
Boring Machine.

N<sup>o</sup> 106,120.

Patented Aug. 9, 1870.



Witnesses:  
W. W. Gladwin  
Geo. L. Newby.

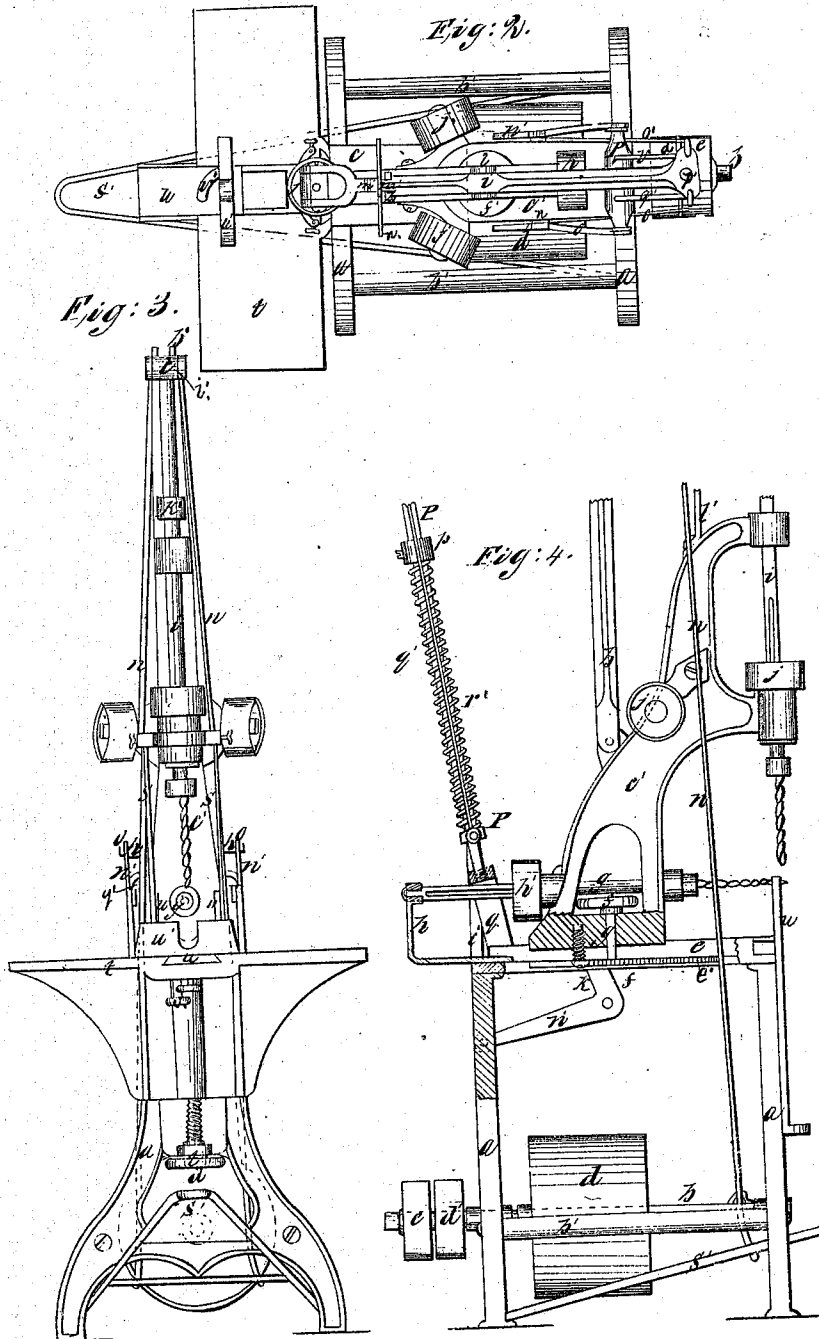
Inventor:  
Wilson W. Carey  
Geo. W. Harris

# Carey & Harris.

## Boring Machine.

N<sup>o</sup> 106,120.

Patented Aug. 9, 1870.



Witnesses:

W. W. Gladner  
Geo. L. Avery.

Inventor:

Wilson W. Carey  
Geo. W. Harris

# United States Patent Office.

WILSON W. CAREY AND GEORGE W. HARRIS, OF LOWELL, MASSACHUSETTS.

Letters Patent No. 106,120, dated August 9, 1870.

## IMPROVEMENT IN BORING-MACHINE.

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

To all whom it may concern:

Be it known that we, WILSON W. CAREY and GEORGE W. HARRIS, of Lowell, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Boring-Machines; and we do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of our invention consists in—

First, providing a boring-machine with an adjustable table having a pivoted gauge-bar, a slide, and clamp-screw, as described.

Second, in the device for adjusting and operating the perpendicular and horizontal bits of a boring-machine.

Figure 1 represents a side elevation of our improved boring-machine.

Figure 2 represents a plan of the same.

Figure 3 represents a front elevation of the same.

Figure 4 represents a side elevation of the same, with parts broken out, showing the operation of the adjustable head-stock.

Similar letters in the different figures indicate corresponding parts.

We construct the frame of our improved boring-machine of suitable end-pieces *a a*, which are provided with boxes and the requisite caps, through and in which the driving-shaft *b* revolves.

These end-pieces *a a* are secured together by the girts *b' b'* and *c*, the girt *c* forming the top of the frame, which is finished off true and smooth, and provided with a suitable slot on and in which the adjustable head-stock *c'* slides and rests, the bottom side of which being finished to correspond with the top of the frame.

Through the bottom of the head-stock *c'* a suitable stud, *g*, passes, which is provided with a wheel, *f'*, and pinion *f*, this pinion gearing into the rack *e'*, which is secured to the under side of the girt *c*.

By this device the head-stock *c'* is adjusted as desired. When the head-stock *c'* is required to be used permanent, it is secured to the girt *c* by suitable bolts or screw *k*.

Between the end-pieces *a a* of the frame, and secured to the driving-shaft *b*, is the adjustable pulley *d*, which is adjusted and secured in the required location by means of a set-screw.

Outside of the frame, and secured to the driving-shaft *b*, are the tight and loose pulleys *d'* and *e*, from which motion is imparted to the entire machine.

Passing through the head-stock *c'*, and running in the bearings which are located the required distance from the top of the frame, is the horizontal shaft *g'*, one end of which is supplied with a suitable device for

holding the bit, the other end of which is provided with a guide, *h*, which forms a support for the end of the shaft *g'* when in operation, by being connected to the same by a suitable bearing.

Between the guide *h* and the adjustable head-stock *c'*, and sliding on the shaft *g'*, is the pulley *h'*, which connects with the adjustable pulley *d* by a belt, and is provided with a suitable spline, which is secured to the same, this spline sliding in the slot in the shaft *g'*, this adjustable head-stock *c'* being constructed of the required size and shape, in the front of which, at a suitable distance apart, is provided with boxes, which form bearings for the upright or perpendicular shaft *i*, on one end of which is formed a suitable device for the purpose of holding the bit, the other end being secured to the swinging lever *i'* by a socket bearing.

Between the bearings, and running on the shaft *i*, is the pulley *j*, which connects with the adjustable pulley *d* by a suitable belt, which passes over the binders *j' j'*, which are secured to the adjustable head-stock *c'* in the desired location. This pulley *j* is provided with a spline, which slides in the slot made in the shaft *i*.

Located between the top bearing and swinging lever *i'*, on the shaft *i*, is the adjustable collar *k*, which regulates the depth of the hole to be bored, more or less.

*l* is an arm, which is pivoted to the adjustable head-stock *c'* at one end, the other end connecting with and hinging to the swinging lever *i'*.

Between this arm *l* and adjustable head-stock *c'* is the slotted guide *l'*, in and through which the lever *i'* moves.

On the top of this lever *i'*, each side of the guide *l'*, are the notches *m* and *m'*, which keep the rod *n* in its required position when in operation, the rod *n* being placed in the notch *m* when the horizontal bit is used, and in the notch *m'* when the perpendicular bit is used, this rod *n* connecting with the foot-treadle *s*, which is hinged at the bottom to the back part of the frame.

*n' n'* are elbows, which are secured to the frame, and connect with the strap *o* and *o'*, the strap *o* connecting with the guide *h*, the strap *o'* connecting with the spring seat *p*, through which the rod *p'* passes, and is connected to the swinging strap *q* at the bottom, the other end passing through the swinging lever *i'*, the strap *q* being pivoted to the girt *c* on both sides, the spring seat *p* being connected to the lever *i'* by suitable rods *q' q'*.

*r* is an adjustable collar, which slides on the rod *p'*, regulating the tension of the spring *r'*, which is placed on the rod *p'*, between the collar *r* and spring seat *p*.

*s s* are adjustable rods used when operating the upright bit for keeping the work in its required place.

*t* is the adjustable table, which is raised and de-

pressed at pleasure by aid of the thumb-screw *t*, this table *t* sliding on suitable ways *w*, which are secured to the front of the frame,

The table *t* is provided also with an adjustable slide, *u*, which slides in a dovetail, operating at right angle with the front of the table *t*.

Secured to this adjustable slide *u* is the rest *u'*, which swings on a pivot attached to the slide *u*, and is held in any angular position by aid of the thumb-screw *v* and circular slot *v'*.

The boring-machine being thus constructed and arranged, and its several parts adjusted in position, is then ready for use.

For upright boring or using the upright bit, the operator disconnects the straps *p'o'* from the spring seat *p*, places the wood to be bored on the table *t*, between the rest *u'* and the ways *w*, securing the same to the table *t* by sliding down the adjustable rods *s s*, and securing the same by aid of the thumb-screws, thus holding down the piece of wood to be bored.

Power is then applied to the tight pulley *d'*, which communicates motion to the pulley *j* by the belt passing over the binders *j'j'* around the adjustable pulley *d*.

The upright bit being in motion, the operator, with his foot, presses down the treadle *s*, which depresses the shaft *i* by aid of the rod *n*, which connects with the treadle *s* and swinging lever *i'*, the depth of the hole to be bored having previously been determined and gauged by the adjustable collar *k*.

The operator then relieves the treadle *s* from the pressure, which, by aid of the spring *r'*, draws the bit from the hole, discharging the chips, and the shaft *i* resumes its former position. A weight could be substituted for the spring *r'*, producing the same result.

By repeating this operation, any number of holes can be bored on this line parallel with the front of the table *t*.

When the holes come irregular, or more than this one line, which comes directly in under the bit, by operating the wheel *f'*, aided by the pinion *f*, which

gears into the rack *e'*, the adjustable head-stock *c'* is adjusted back or forth at will. At the same time the adjustable pulley *d* can be adjusted as desired, and secured by a set-screw. This adjustable head-stock *c'* can be secured, if required, by the screw *k*, thus bringing the bit over any point desired.

For horizontal boring, the straps *o'o'* are connected to the spring seat *p*, and the shaft *i* is disconnected from the swinging lever *i'*, and the rod *n* is slid from the notch *m'* into the notch *m*. The adjustable rods *s s* are elevated and secured. The piece to be bored is placed on the table *t*, between the rest *u'* and ways *w*, the rest being firmly secured by the thumb-screw *v*, thus securing the piece to be bored in its desired location. Then the same operation is required to bore horizontally as in upright boring.

When holes are to be bored angular, the rest *u'* is turned on its pivot, bringing the wood to its required angle, and firmly secured by the thumb-screw *v*.

Thus it will be seen that upright, horizontal, and angular boring can be accomplished by this one machine, where heretofore it has taken two distinct machines. Also, the adjustable head-stock *c'* can be permanently secured to the frame, or adjusted nicely and accurately, as required, so as to bring the upright bit over any point desired.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The arrangement of the slide *u*, the pivoted gauge-bar *u'*, clamp-screw *v*, and table *t*, in the manner and for the purpose shown and described.

2. The lever *i'*, arm *l*, rod *p'*, spring seat *p*, spring *r'*, rods *q' q'*, adjustable collar *r*, in combination with the arbor *i*, rods *n n*, and foot-lever *s'*, all constructed and arranged as described, for the purposes specified.

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GEO. W. HARRIS.

Witnesses:

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GEO. E. PEVEY.