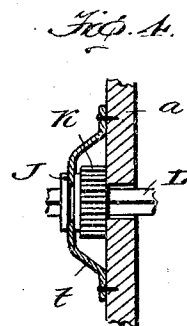
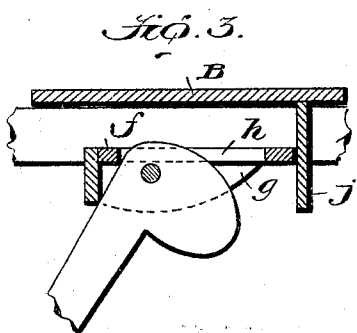
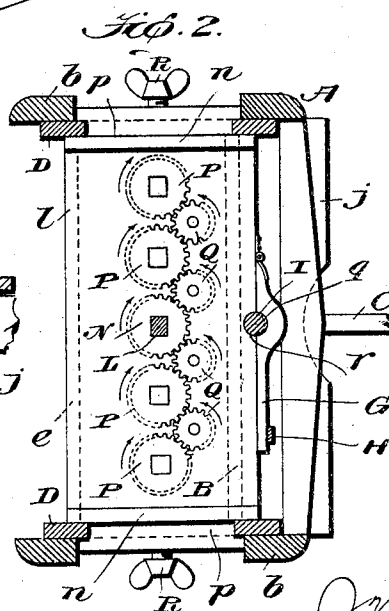
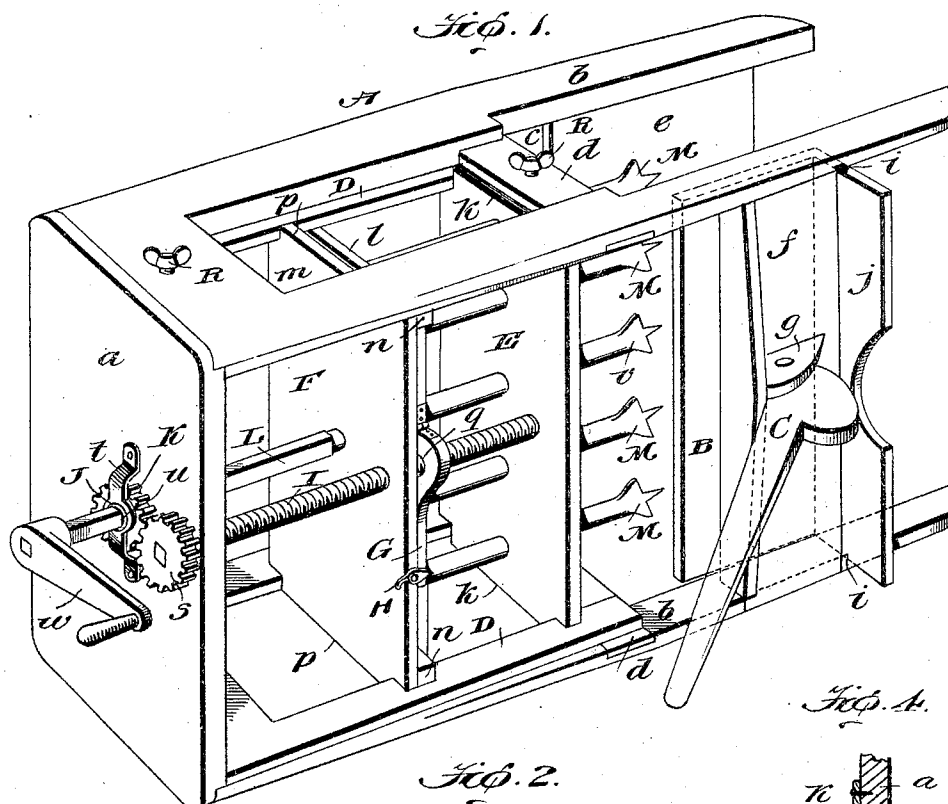


No. 790,823.

PATENTED MAY 23, 1905.

J. M. GARFIELD.
 MULTIPLE BIT BORING MACHINE.
 APPLICATION FILED DEC. 24, 1904.



Inventor

Witnesses

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MULTIPLE-BIT BORING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 790,823, dated May 23, 1905.

Application filed December 24, 1904. Serial No. 238,245.

To all whom it may concern:

Be it known that I, JOHN MORRIS GARFIELD, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Multiple-Bit Boring-Machines, of which the following is a specification.

My invention pertains to multiple-bit boring-machines, such as are designed more especially for use in making lock-mortises in doors; and it consists in the peculiar and advantageous construction hereinafter described, and particularly pointed out in the claims appended.

In the accompanying drawings, forming part of this specification, Figure 1 is a perspective view of the machine constituting the present and preferred embodiment of my invention. Fig. 2 is a transverse section taken through the bit-carrying head of the machine. Fig. 3 is a detail section taken in a plane at one side of the cam-lever. Fig. 4 is an enlarged detail section illustrative of the relative-arrangement of the bracket *t*, the disk *J*, the gear *K*, and the shaft *L*.

Similar letters designate corresponding parts in all of the views of the drawings, referring to which—

A is the main frame of the machine, which may be of wood or any other material suitable to the purposes of my invention. The said main frame comprises an end wall *a*, side walls *b*, fixed to and extending at right angles from the end wall and having openings *c* and intermediate cross-bars *d*, extending across the said openings, a bar *e* fixedly connecting the walls *b* at one side of the openings *c*, and a bar *f*, fixedly connecting the walls *b* at the opposite side of the openings *c* and having lugs *g* on its outer side and also having an opening *h* arranged between the lugs, as shown in Fig. 3. The walls *b* of the main frame are also provided in their inner sides at one side of the openings *c* with guideways *i*. In these guideways is arranged and adapted to move an outwardly-directed flange *j* on a clamping-plate *B*, which is designed, in connection with the bar *e*, to fix the machine on the edge of a door or the like. The

plate *B* is engaged at its outer side and is adapted to be clamped against one side of a door by a cam-lever *C*, which is fulcrumed between the lugs *g* on the bar *f* and is designed to work through the opening *h*, as illustrated.

D D are rectangular open frames disposed at the inner sides of the side walls *b* of the main frame *A*.

E is a plate having reduced ends *k* loosely arranged in the open frames *D* and designed to guide the plurality of bits presently described and hold the said bits against lateral deflection while the same are in operation.

F is a movable bit-carrying head, which preferably comprises lower and upper plates *l* and *m*, held apart by spacing-bars *n*, and has reduced ends *p* loosely arranged in the open frames *D*.

G is a lever hinged at one end to one edge of the frame or head *F* and having a semicircular groove *q* in its inner side, which groove is threaded and is designed, in connection with a threaded groove *r* in the edge of the said head *F*, to form a threaded bore.

H is a suitable fastener designed to normally hold the lever *G* in the position shown relative to the head *F*.

I is a feed-screw extending through the said threaded bore of the head *F* and journaled in the end wall *a* of the main frame *A* and provided on its outer end with a gear *s*.

J is a rotatable disk arranged to turn in a bracket *t* on the frame-wall *a* and having an angular aperture *u*.

K is a gear interposed between the bracket *t* and the frame-wall *a* and intermeshed with the gear *s* of the feed-screw *I*.

L is an endwise movable and rotatable shaft extending through the angular aperture *u* of the disk *J* and a similar aperture in the gear *K* and journaled in the movable bit-carrying head *F* and terminating at its lower end in a bit *v*.

M M are bits which in common with the bit *v* are loosely arranged in the guide-plate *E* and are journaled in the bit-carrying head *F*.

N is a gear disposed between the plates *l* and *m* of the head *F* and fixed on the shaft *L*, so as to derive rotary motion from the shaft

L and move with said shaft in the direction of the length thereof.

P P are gears keyed on the upper ends of the bits M and arranged between the plates of the head F, and Q Q are pinions arranged in the head F and intermeshed with the gears N and P, as shown in Fig. 2.

In virtue of the gearing described it will be observed that when the shaft L is rotated through the medium of the crank *w* at its outer end or any other suitable means the bit *v* and the bits M will be rotated in a common direction, also that the feed-screw I will be turned and will move the head F inwardly or outwardly, together with the several bits, according to the direction in which the shaft L is rotated. It will be noticed that the shaft L is free to move endwise incident to rotation thereof. The disk J bears and is adapted to turn with the shaft L in the bracket *t*, and yet said shaft is free to move in the direction of its length through the said disk.

In virtue of the lever G being adapted to be swung away from the feed-screw I it will be observed that after the several bits have been turned into a door or the like the distance desired the removal of the bits from the door may be greatly facilitated, the same being accomplished by disengaging the said lever G from the screw I and then drawing the bits out of the door through the medium of the shaft L.

In the practical operation of my improved machine the main frame A is first clamped on a door through the medium of the lever C and the plate B, coacting with the bar *e* of the main frame. These several bits are then turned and forced into the door through the medium of the rotary and endwise-movable shaft L and the feed-screw I. With this done the lever G is disengaged from the feed-screw, and the several bits are withdrawn from the door through the medium of the shaft L.

It will be appreciated from the foregoing that through the medium of my improved machine the several holes necessary in making a lock-mortise may be expeditiously bored with but a minimum amount of effort on the part of the operator, also that the machine is simple and compact in construction and is well adapted to withstand the usage to which such machines are ordinarily subjected.

In order to enable the frames D to limit the depth of the holes to be bored by the several bits of the machine, I adjustably fix the said frames D in the main frame A through the medium of set-screws R. These set-screws when turned outwardly permit of the frames D being moved endwise in the main frame to the position desired and when turned inwardly fix the said frames against movement with respect to the main frame, and hence it follows that when the bit-carrying head F brings up against the loose plate E, which bears against the forward ends of

frames D, which in turn bear against the edge of the door in which the mortise is to be formed, further forward movement of the bits will be prevented.

I have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear, and exact understanding of the said embodiment. I do not desire, however, to be understood as confining myself to such specific construction and relative arrangement of parts, as such changes or modifications may be made in practice as fairly fall within the scope of my invention as claimed.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a multiple-bit boring-machine, the combination of a main frame comprising an end wall and side walls fixed to and extending at right angles from the end wall and having openings and intermediate cross-bars extending across said openings, means for fixing the main frame on a device to be bored, open frames arranged at the inner sides of the side walls of the main frame and connected to said walls, a guide-plate loosely mounted in said open frames, a plurality of bits extending loosely through the guide-plate, a bit-carrying head movable in the open frames, means for rotating the several bits in concert, and means for feeding the bit-carrying head and the bits forwardly incident to the rotation of the bits; the latter means being arranged to derive its motion from the means for rotating the bits.

2. In a multiple-bit boring-machine, the combination of a main frame comprising an end wall and side walls fixed to and extending at right angles from the end wall and having openings and intermediate cross-bars extending across said openings, means for fixing the main frame on a device to be bored, open frames arranged at the inner sides of the side walls of the main frame and connected to said walls, a guide-plate loosely mounted in said open frames, a plurality of bits extending loosely through the guide-plate, a bit-carrying head movable in the open frames, intermeshed gears fixed on the bits and carried by the head, a bearing arranged on the end wall of the main frame and having a rotary portion provided with an angular aperture, a shaft, of angular form in cross-section, extending through said rotary portion, a gear keyed on the shaft and interposed between the bearing and the end wall of the main frame, a feed-screw journaled in said end wall and having a gear intermeshed with that on the shaft, a lever hinged to the bit-carrying head and having a threaded portion arranged to engage the feed-screw, and means for normally holding

said lever with its threaded portion in engagement with the feed-screw.

3. In a multiple-bit boring-machine, the combination of a main frame comprising an end wall and side walls fixed to and extending at right angles from the end wall and having openings and intermediate cross-bars extending across said openings, a plate carried by the side walls, at one side of the openings therein, and movable toward and from the portions of the side walls at the opposite side of the openings, a cam-lever mounted in the main frame and arranged to engage the movable plate, open frames arranged at the inner sides of the side walls of the main frame and connected to said walls,

a guide-plate loosely mounted in said open frames, a plurality of bits extending loosely through the guide-plate, a bit-carrying head movable in the open frames, means for rotating the several bits in concert, and means for feeding the bit-carrying head and the bits forwardly incident to the rotation of the bits; the latter means being arranged to derive its motion from the means for rotating the bits.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN MORRIS GARFIELD.

Witnesses:

JOHN BURNS,
FRED SYKES.