(No Model.) 2 Sheets—Sheet 1.

C. H. AMIDON.

MACHINE FOR APPLYING HEADS TO BIT BRACES.

No. 348,182. Patented Aug. 31, 1886.

Fig. 1.

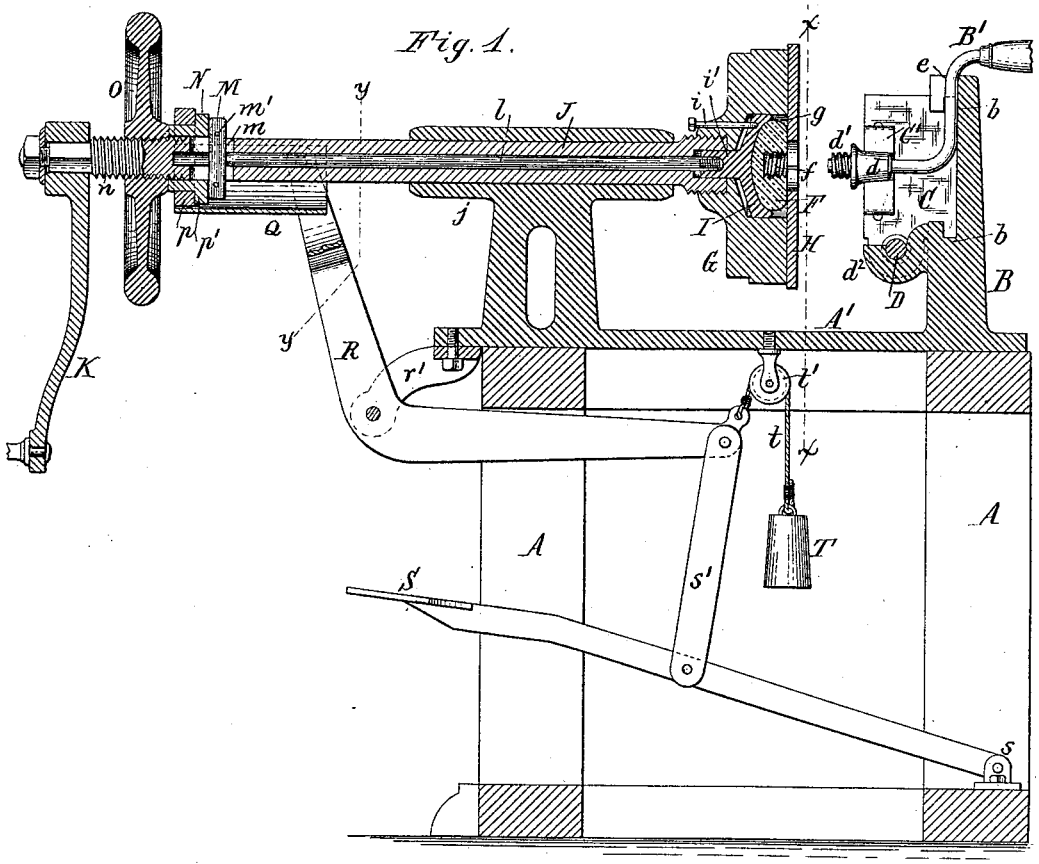
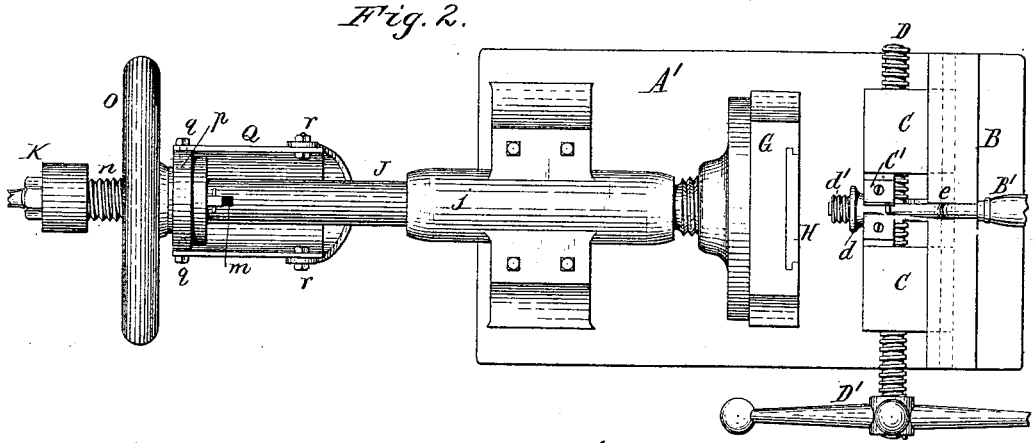


Fig. 2.



Witnesses.
Chas. J. Buchheit.
George E. Pitman.

Chas. H. Amidon Inventor.
By Wilhelm & Bonner
Attorneys.

(No Mod.

C. H. AMIDON.

2 Sheets—Sheet 2.

MACHINE FOR APPLYING HEADS TO BIT BRACES.

No. 348,182. Patented Aug. 31, 1886.

Fig. 3.

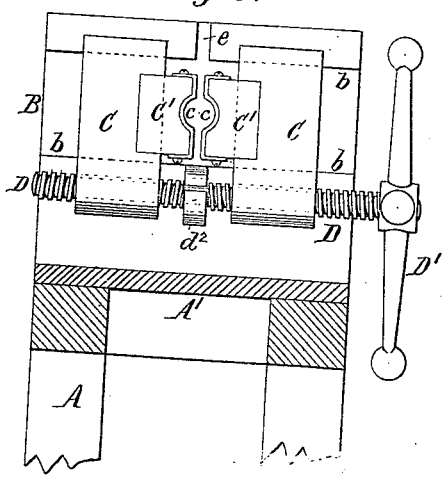


Fig. 4.

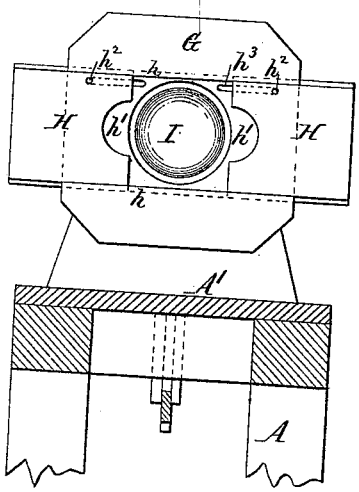


Fig. 5.

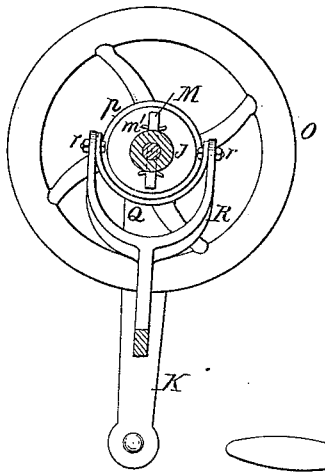
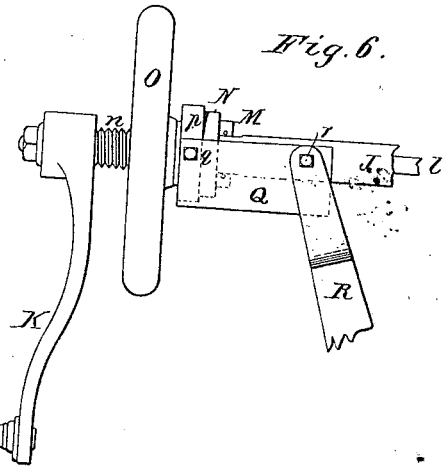


Fig. 6.



Chas. J. Buchheit.
George E. Pitman. } Witnesses.

Chas. H. Amidon Inventor;
By Wilkens & Banner
Attorneys.

UNITED STATES PATENT OFFICE.

CHARLES H. AMIDON, OF BUFFALO, NEW YORK.

MACHINE FOR APPLYING HEADS TO BIT-BRACES.

SPECIFICATION forming part of Letters Patent No. 348,182, dated August 31, 1886.

Application filed July 3, 1883. Serial No. 99,932. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. AMIDON, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Machines for Applying Heads to Bit-Braces, of which the following is a specification.

The object of this invention is the construction of a machine whereby the heads can be secured to the screw-threaded ends of bit-braces more quickly and satisfactorily than heretofore.

It has been customary to secure the head, which is provided with a screw-threaded recess, to the screw-threaded end of the brace by turning the head by hand; but this operation consumes much time, and is not always satisfactory, because when the head is not started properly on the screw-thread the internal screw-thread of the wooden head is injured or destroyed and the head rendered useless.

My invention is designed to obviate this difficulty by providing a machine whereby the head is properly presented to the threaded end of the brace and screwed upon the same; and it consists of the improvements in the construction of the machine, which will be hereinafter fully set forth, and pointed out in the claims.

In the accompanying drawings, consisting of two sheets, Figure 1 represents a sectional elevation of my improved machine. Fig. 2 is a top plan view thereof. Fig. 3 is a cross-section in line *x x*, Fig. 1, looking to the right, and giving a face view of the clamp in which the brace is held. Fig. 4 is a similar cross-section, looking to the left, and giving a face view of the holder in which the head is secured. Fig. 5 is a cross-section in line *y y*, Fig. 1. Fig. 6 is a side elevation of the hand-crank and connecting parts whereby the head-holder is revolved.

Like letters of reference refer to like parts in the several figures.

A represents the supporting-frame of the machine, and A′ a metallic bed-plate secured to the upper side thereof.

B represents the standard of the clamp in which the brace B′ is held. This standard is cast on or otherwise secured to the rear portion of the bed-plate A′, and provided on its front or face side with transverse horizontal ways or grooves *b*.

C C are movable clamps fitted in the grooves *b* so as to slide therein horizontally, and C′ C′ are clamping-jaws formed on or secured to the inner faces of the clamps C, and provided on their adjacent sides or faces with semicircular depressions *c*, adapted to seize the neck *d* of the brace in rear of the screw-threaded end *d′*.

D represents a right-and-left-hand screw working in threaded openings in the lower portions of the clamps C C, and held against longitudinal movement in a lug, *d²*, cast on the standard B, or by other suitable means, so that, upon turning the screw D by means of a hand wheel or spider, D′, with which it is provided, the clamps C C can be caused to approach each other or to recede from each other, as may be desired.

e represents a notch or depression formed on the front or face side of the standard B, above and centrally between the clamping-jaws C′ C′, for the purpose of receiving and holding the bent portion of the brace, as represented in Fig. 1.

F represents a wooden brace-head provided with a screw-threaded recess, *f*, adapted to be secured to the threaded end *d′* of the brace.

G represents the holder, in which the brace-head F is held for screwing it upon the threaded end *d′* of the brace. The holder G is provided on its side facing the clamps C C with a recess or cavity, *g*, of sufficient size to receive a brace-head, F, and a device whereby the brace-head is held in the holder. The cavity *g* is partially closed by two slides, H H, which move in ways or grooves *h*, formed transversely in the face of the holder G, and provided in their adjacent edges with semicircular notches or openings *h′*, made somewhat smaller than the brace-head F, but larger than the recess *f* of the brace-head. The movement of the slides H H is limited by pins *h²*, which project into horizontal grooves *h³*, formed in the face of the holder G.

I represents a disk, arranged centrally in the cavity *g* of the holder G, and made concave on its front side, to conform to the convex rear

side of the brace-head F. The disk I is made movable in the cavity *g*, so that upon pressing the disk against the head F, the slides H H being closed, as represented in Fig. 1, the head F will be clamped between the disk I and the slides H, and thereby securely held in the holder G, and at the same time centered by the concave face of the disk I. The latter is prevented from turning in the holder G by a bolt, *i*, which is secured in the holder and projects into an opening in the disk.

J represents a hollow shaft, to one end of which the holder G is secured, and which turns in a bearing, *j*, cast on or secured to the front portion of the bed-plate A'.

K represents a hand-crank secured to the opposite end of the shaft J, for turning the same in the bearing *j*.

l represents a rod, which is arranged axially in the shaft J, and connected at one end with a hub or boss, *i'*, formed on the rear side of the disk I. The opposite end of the rod *l* projects into a slot, *m*, formed in the shaft J, and bears against a cross-bar or key, M, which extends through the slot *m*, and is capable of movement in the slot in the direction of the axis of the shaft J. The key M is retained in the slot *m* by pins or projections *m'*, secured to the key on opposite sides of the shaft J.

N represents a collar, which surrounds the shaft J and bears against the outer side of the key M.

n represents an external screw-thread formed on the shaft J between the slot *m* and the hand-crank K.

O represents a hand-wheel or screw-nut working on the screw-thread *n*, and bearing against the outer side of the collar N.

p represents a ring, which surrounds the collar N, and which bears against the outer side of an annular flange or shoulder, *p'*, formed on the same.

Q represents a trough-shaped or semicircular connecting-piece pivoted at one end by horizontal pivots *q* to the ring *p*, and at the other end by horizontal bolts *r* to the bifurcated upper arm of a bell-crank lever, R. The latter is pivoted in a bearing, *r'*, secured to the front end of the bed-plate A', and extends with its lower arm backwardly underneath the bed-plate.

S represents a treadle, which is pivoted to the supporting-frame at *s*, and connected by a rod, *s'*, with the rear end of the bell-crank lever R.

T represents a weight, which is connected with the rear end of the bell-crank lever by a rope, *t*, running over a pulley, *t'*, secured to the under side of the bed-plate A', so as to hold the treadle S in an elevated position, as represented in Fig. 1.

The brace is supported in the stationary clamp by seating its bent portion in the notch *e* of the standard B and closing the jaws C' against its neck *d*. The semicircular recesses *c* in the jaws C' are so arranged that the threaded end of the brace is held in line with the axis of the holder G and shaft J. The holder G is placed with the slides H in a horizontal position, as represented in Fig. 4, and the brace-head F is then placed against the concave face of the disk I, when the slides H are closed. The hand-wheel O is now turned in the proper direction to move the collar N toward the holder G, whereby the cross-bar M is moved in the same direction and caused to move the rod *l* and the disk I, secured thereto, toward the slides H, until the head F is firmly clamped between the disk I and the slides H. The holder G is now moved toward the brace clamped between the jaws C' by depressing the treadle S, the movement of the treadle being transmitted to the holder G by the rod *s'*, bell-crank lever R, connection Q, ring *p*, collar N, cross-bar M, rod *l*, and disk I. The openings *h'* in the slides H expose the recess *f* in the head F, and permit the end of the threaded portion *d'* of the brace to enter the recess *f*. The shaft J is now turned in the proper direction by means of the hand-crank K, to screw the head F upon the threaded portion *d'* of the brace. When this has been accomplished, the slides H are opened and the treadle released, whereby the holder G is withdrawn from the head F, which remains attached to the brace. The latter is then removed from the stationary clamp, and the disk I pushed back into the rear portion of the recess *g*, when the machine is again ready for operation.

By the device hereinbefore described the head is always properly presented to the threaded end of the brace to be screwed upon the same, thereby insuring good work and a saving of time, and the heads are more firmly secured to the brace by reason of the leverage afforded by the hand-crank in screwing the head home. A belt-pulley may be substituted for the hand-crank K, so that the shaft J can be turned by an endless belt running around said pulley, the application of the power being regulated by a belt-tightener which is under the control of the operator.

I claim as my invention—

1. The combination, with the holder G, provided with a cavity, *g*, of a clamping-disk, I, and slides H H, substantially as set forth.

2. The combination, with the holder G, provided with a cavity, *g*, of movable face-plates H H, a clamping-disk, I, provided with a rod, *l*, a hollow shaft, J, and means whereby the rod *l* can be moved toward the face-plates H H, substantially as set forth.

3. The combination, with the holder G, having a hollow shaft, J, and a cavity, *g*, of a clamping-disk, I, a rod, *l*, a cross-bar, M, movable in a slot, *m*, in the shaft J, a collar, N, and a screw-nut, O, substantially as set forth.

4. The combination, with the holder G, having a shaft, J, provided with a slot, *m*, and a

clamping-disk, I, provided with a rod, *l*, of a cross-bar, M, collar N, ring *p*, bell-crank lever R, and treadle S, substantially as set forth.

5. The combination, with the holder G, having a shaft, J, provided with a slot, *m*, and screw-thread *n*, of the clamping-disk I, provided with a rod, *l*, cross-bar M, collar N, ring *p*, screw-nut O, and mechanism whereby the ring *p* can be moved in the direction of the axis of the shaft J, substantially as set forth.

CHARLES H. AMIDON.

Witnesses:
CHAS. F. GEYER,
JNO. J. BONNER.