T. F. KELLY.

DEVICE FOR AUTOMATICALLY HOLDING BOLT BLANKS.

APPLICATION FILED DEC. 6, 1910.

1,046,802.

Patented Dec. 10, 1912.

3 SHEETS—SHEET 1.

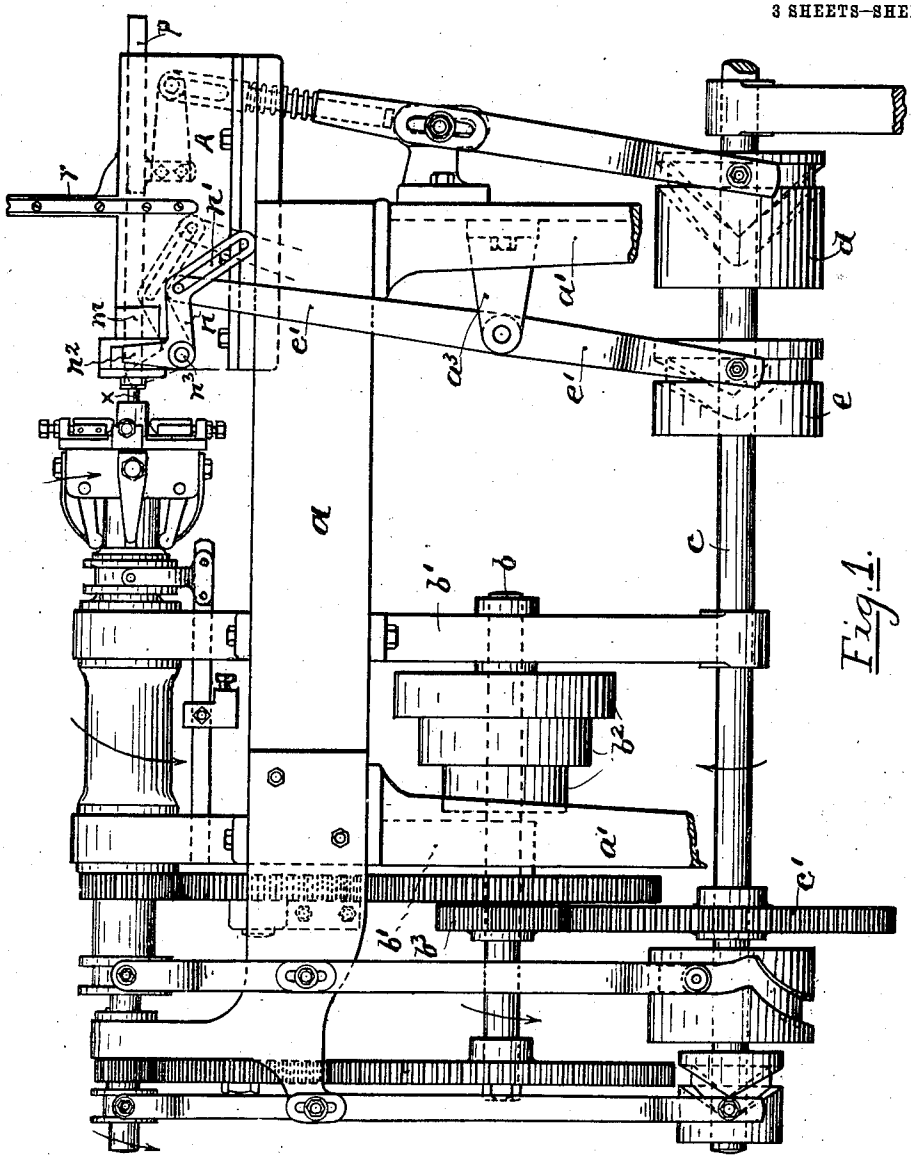


Fig. 1.

Witnesses,

Willard H. Bardsley

Gabriel H. Brown

Inventor,

Thomas F. Kelly.

By Geo. H. Remington.

Atty.

T. F. KELLY.

DEVICE FOR AUTOMATICALLY HOLDING BOLT BLANKS.

APPLICATION FILED DEC. 6, 1910.

1,046,802.

Patented Dec. 10, 1912.

3 SHEETS—SHEET 2.

Fig. 2.

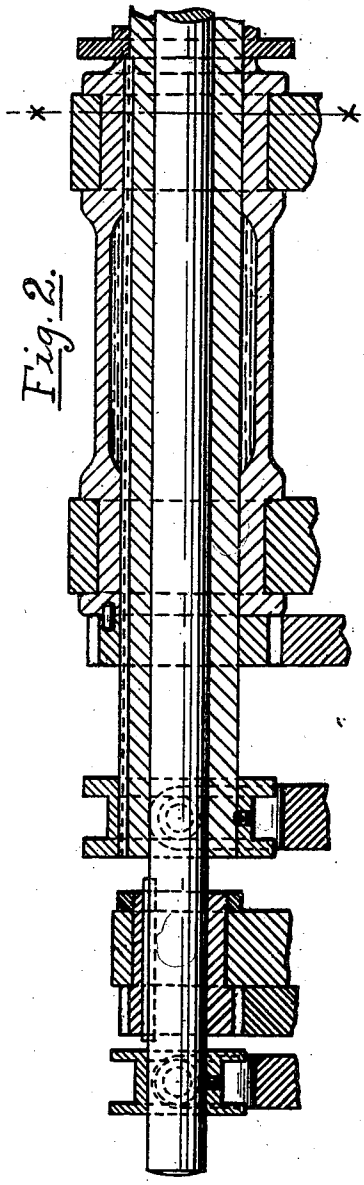
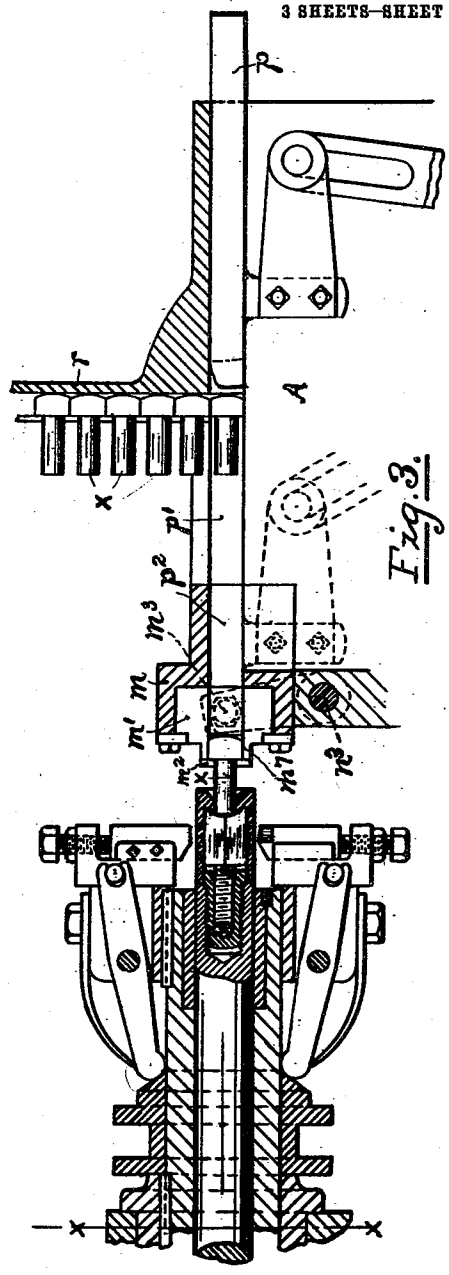


Fig. 3.



Witnesses,

Willard D. Bardsley.

Gabriel K. Burns

Inventor,

Thomas F. Kelly.

By Geo. H. Remington.

Atty.

T. F. KELLY.

DEVICE FOR AUTOMATICALLY HOLDING BOLT BLANKS.

APPLICATION FILED DEC. 6, 1910.

1,046,802.

Patented Dec. 10, 1912.

3 SHEETS—SHEET 3.

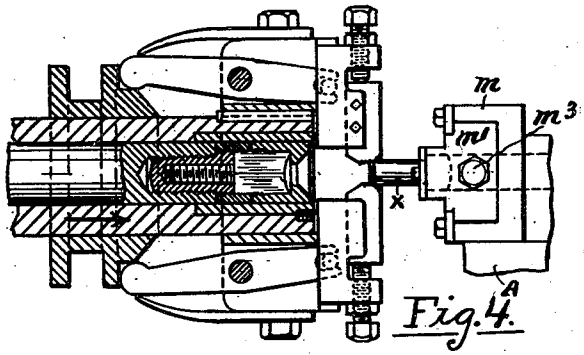


Fig. 4.

Fig. 6.

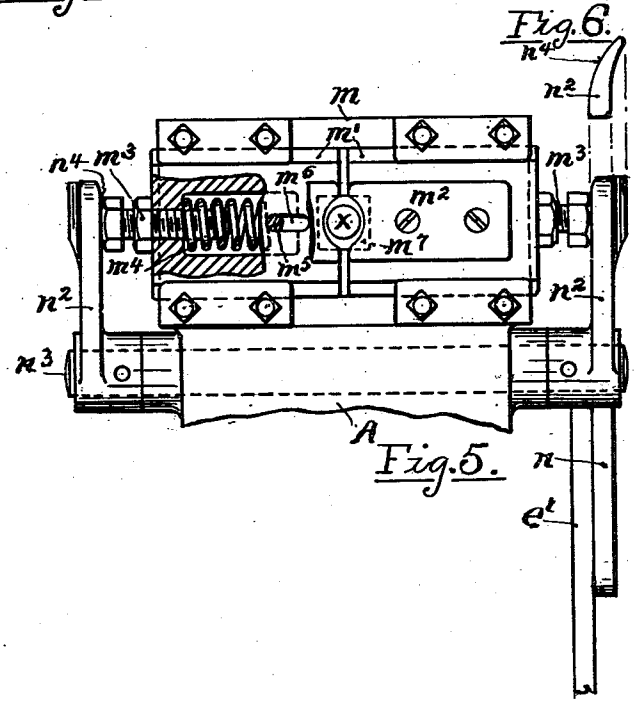


Fig. 5.

Witnesses,

Willard H. Baddley.

Calvin H. Brown

By

Inventor,

Thomas F. Kelly.

Geo. H. Remington.

Atty.

UNITED STATES PATENT OFFICE.

THOMAS F. KELLY, OF PAWTUCKET, RHODE ISLAND.

DEVICE FOR AUTOMATICALLY HOLDING BOLT-BLANKS.

1,046,802. Specification of Letters Patent. Patented Dec. 10, 1912.

Application filed December 6, 1910. Serial No. 595,924.

To all whom it may concern:

Be it known that I, THOMAS F. KELLY, a citizen of the United States, residing at Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Devices for Automatically Holding Bolt-Blanks, of which the following is a specification.

This invention relates more particularly to devices for holding bolt-blanks in machines devised for automatically feeding, pointing and screw-threading bolt-blanks, and it consists in the novel construction and combination of parts or elements hereinafter set forth and claimed.

The objects sought to be attained in the invention forming the subject of this application for U. S. patent are in general to produce a simple and comparatively inexpensive device capable of being successfully operated in connection with such machines and materially faster than analogous devices, thereby producing a correspondingly increased and more perfect complete machines and out-put; and the cost of attendance, maintenance and power are reduced.

In the accompanying three sheets of drawings Figure 1 represents a partial front side elevation of an automatic bolt-pointing and screw-threading machine embodying my improvements. In this figure the machine shows the relation of the parts while the bolt-blank is being pointed. Fig. 2 is a central longitudinal sectional view, in enlarged scale, of the spindle, &c., controlling the movements of the cutting-tools. Fig. 3 is a continuation of Fig. 2 from line x x, the position of the several parts corresponding with Fig. 1. Fig. 4 is a longitudinal sectional view of the die-head and the corresponding end portions of the spindles while the screw-threading dies are in action. Fig. 5 represents an end elevation, in partial section, of the bolt-holder and its head, as viewed from the left. Fig. 6 is a detail plan view of one of the levers.

The following is a more detailed description of my improved device:

Referring now to Fig. 1, the several devices or moving parts are or may be mounted on a suitable bed-piece a, in turn supported by standards or legs a^1. The primary driving-shaft b, to which is fixed the belt-driven cone-pulley b^2, is revolubly mounted in bearings in the brackets or hangers b^1 secured to the underside of the bed. Mechanisms about to be described are driven or actuated by means of the spur-gear b^3. The said gear b^3 drives a larger gear c^1 fixed to and rotating the bottom or cam-shaft c. To the latter are secured suitably shaped barrel cams d and e. These cams, each in connection with coöperating levers, &c., are suitably positioned and timed and are employed for actuating and controlling the following operations:—Cam d imparts intermittent endwise movements to the slidably guided plunger p so as to engage the lowermost bolt-blank in the runway r, thereby advancing and positioning it with respect to the pair of spring-pressed jaws m^1 of the bolt-holder; cam e, &c., operate to simultaneously move the jaws inward so as to clamp the head of the blank between them, and also to centralize and hold it stationary while it is being screw-threaded.

I will describe means for automatically positioning the bolt-blanks preliminary to the pointing and screw-threading operations.

In Fig. 1 is represented a runway r for the headed blanks x. From the bottom of the column of blanks in the relatively stationary runway (see also Figs. 1 and 3) the lowermost blank is forced ahead by means of a plunger p slidably mounted in ways formed in the tail-stock A, adjustably secured to the bed a.

In the forward end of the tail-stock A is secured a block m, having a transverse seat formed in its front face or end, in which a pair of oppositely disposed bolt-holding jaws m^1 are slidably mounted. The inner end of each jaw is recessed at m^7 (Fig. 5) and adapted to receive and hold the corresponding part of the bolt-blank's head. A pair of cap-plates m^2, secured to the jaws, prevent the blank from dropping out. Each jaw is longitudinally chambered to receive a spring m^4 and an adjustable pin or bolt m^3, the latter being screwed into and extending through the outer end portion of the jaw to engage an arm n^2 secured to a rod or rock-shaft n^3, arranged transversely of the machine. A pin m^5 fixed to the stationary block m and extending through said chamber and slotted openings m^6, is in continuous engagement with the spring m^4; the normal tendency of these springs is to

force the jaws apart, the maximum outward movement being limited by the engagement of the inner ends of the slots m^6 with the respective pins m^5. A longitudinally extending guide or ways p^1 is formed in the upper part of tail-stock A (Fig. 3) to receive the said plunger p. The shape of the guide portion cross-sectionally may correspond with that of the bolt-head and plunger and extend through the back of the block m, as at p^2, and register with the jaw cavity m^7.

The device shown for actuating and controlling the movements of the bolt-holding jaws m^1 consists of a cam e, secured to shaft c; a lever e^1 having its lower end engageable with the cam and fulcrumed to a stand or bracket a^3; a rock-shaft n^3, before referred to, mounted in the forward end of the tail-stock; a pair of short, upwardly extending, oppositely disposed arms n^2, fixed to the respective ends of the shaft, and a lever n, also fixed to said shaft, having its free end portion extending downward at an angle and provided with a comparatively long slot n^1, engaged by the upper end of lever e^1, all substantially as represented in Fig. 1. The inner face or surface of the upper portion of each arm n^2 is curved or wedge-shaped transversely, substantially as indicated at n^4, Fig. 6, so as to frictionally contact with the outer ends of bolt m^3, adjustably mounted in the corresponding or adjacent jaw m^1. As thus devised, the said members e^1, n^1, n, and n^2, when in the normal position indicated by full lines in Figs. 1 and 5, operate to snugly close the jaws m^1 upon the head of the previously positioned bolt-blank w, thereby centralizing and holding it stationary between them while the bolt is being acted upon by the pointing and threading dies.

I would state that the construction and arrangement of the cams secured to the continuously revoluble shaft c, in coöperation with other parts, are such that the shaft makes one complete revolution while each bolt-blank is being automatically positioned, pointed and screw-threaded and released from the machine.

Now assuming the several devices and parts of my improved machine for automatically feeding, and positioning bolt-blanks to be constructed, combined, positioned and timed substantially as herein shown and further assuming that the action of the feeding mechanism has supplied the vertical runway r with a number of superimposed blanks, the manner of operation may be described as follows: The plunger p is advanced to its limit of movement, thereby transferring the guided bottom-blank endwise from the column to the then open, spring-pressed jaws m^1; the latter immediately move inward through the medium of levers n, n^2, bolts m^3, etc., to firmly clamp and hold the head of the thus positioned blank between them; the plunger is then retracted past the column of blanks and temporarily stops. At the completion of the threading operation, the cam e, its lever e^1 working in the slot n^1 of lever n, in turn keyed to shaft n^3, moves lever n upward (see dotted line position in Fig. 1), thereby correspondingly swinging arms n^2 toward the left from the bolts or pins m^3 of the jaws m^1, at which instant the released jaws spring apart and release the now completed bolt, which then falls into a receptacle w below.

While I have represented my improved device as being employed with a machine for pointing and screw-threading headed bolt-blanks, it is obvious that it is also equally well adapted for other analogous uses where an automatically operated holding means for bolt-blanks or other analogous articles such as short rods or studs, is desired.

What I claim as my invention and desire to secure by U. S. Letters Patent is:—

1. In a machine of the general character described, the combination with a jaw-block and means for positioning a bolt-blank therein, of a pair of oppositely disposed, spring-pressed clamping-jaws slidably mounted in said block, and means, including a pair of arms or levers having cam-shaped faces engageable with members adjustably mounted in the outer ends of the jaws, for closing the same upon the said blank.

2. In a machine of the general character described, provided with a bed or frame and a tail-stock adjustably secured thereto, the combination of a stationary jaw-block mounted in the tail-stock, a pair of slidable, oppositely disposed blank-clamping-jaws mounted transversely of the machine in the front end or face of said block member, springs for normally separating or opening the jaws, stops for limiting the extent of the last-named movement, and means for simultaneously forcing the jaws inward toward each other, for the purpose set forth.

3. In a machine of the general character described, the combination of a pair of alining, slidably mounted, oppositely disposed, spring-pressed jaws, adapted to yieldingly engage and hold a blank, a horizontal rock-shaft, a lever secured to each end of the shaft, each having its upper portion cam-shaped and constructed to frictionally engage the outer end of the corresponding or adjacent jaw, a revoluble cam, and means co-operating with the latter for oscillating said shaft.

4. A device of the class described comprising a block, clamping jaws slidably-mounted therein, adjustable members in the

outer ends of said jaws, a pair of cam-faced levers engageable with said members, and means for actuating the said levers.

5. In a device of the class described provided with a bed, the combination of a stationary jaw block, a pair of slidable blank clamping jaws transversely mounted in the front portion of said block, springs adapted for normally separating the jaws, adjustable members in the outer ends of said jaws, a pair of levers, cam faces upon said levers engageable with said members and adapted for closing the jaws, and means for actuating the said levers.

6. In a device of the class described provided with a frame and a tail-stock adjustably secured thereto, the combination of a stationary jaw block mounted in the tail stock, a pair of oppositely-disposed slidable blank clamping jaws transversely mounted in the front portion of said block, spring members adapted for normally separating said jaws, stop members adapted for limiting the movement of said jaws, a horizontal rock shaft, a lever secured to each end of said shaft, each of said levers having a cam-shaped upper portion adapted for frictional engagement with said jaws, a revoluble cam, and means coöperating with the latter for oscillating said shaft.

7. In a device of the class described having a bed plate and a tail stock adjustably-mounted thereon, the combination with a jaw block mounted in the tail stock, and means for positioning a bolt-blank therein, a pair of oppositely disposed alining blank clamping jaws slidably-mounted in the forward portion of said block and adapted for yieldably-engaging and holding a blank, spring-members mounted in said blocks contacting said jaws and adapted for limiting the movement of said jaws, adjustable members mounted in the outer ends of the jaws, a horizontal rock shaft positioned transversely of the device and below said jaws, a lever secured to each end of the shaft, each lever having its upper portion cam-shaped and adapted for frictionally engaging the outer end of said adjustable members, a revoluble cam, a rocker arm upon one end of said shaft and having an angular terminal portion provided with a longitudinal slot therein, a pivoted lever having one end in engagement with said cam and its other end engaging with said slot and adapted for oscillating said shaft and simultaneously oscillating the said jaws.

In testimony whereof I have affixed my signature in presence of two witnesses.

THOMAS F. KELLY.

Witnesses:
GEO. H. REMINGTON,
CALVIN H. BROWN.