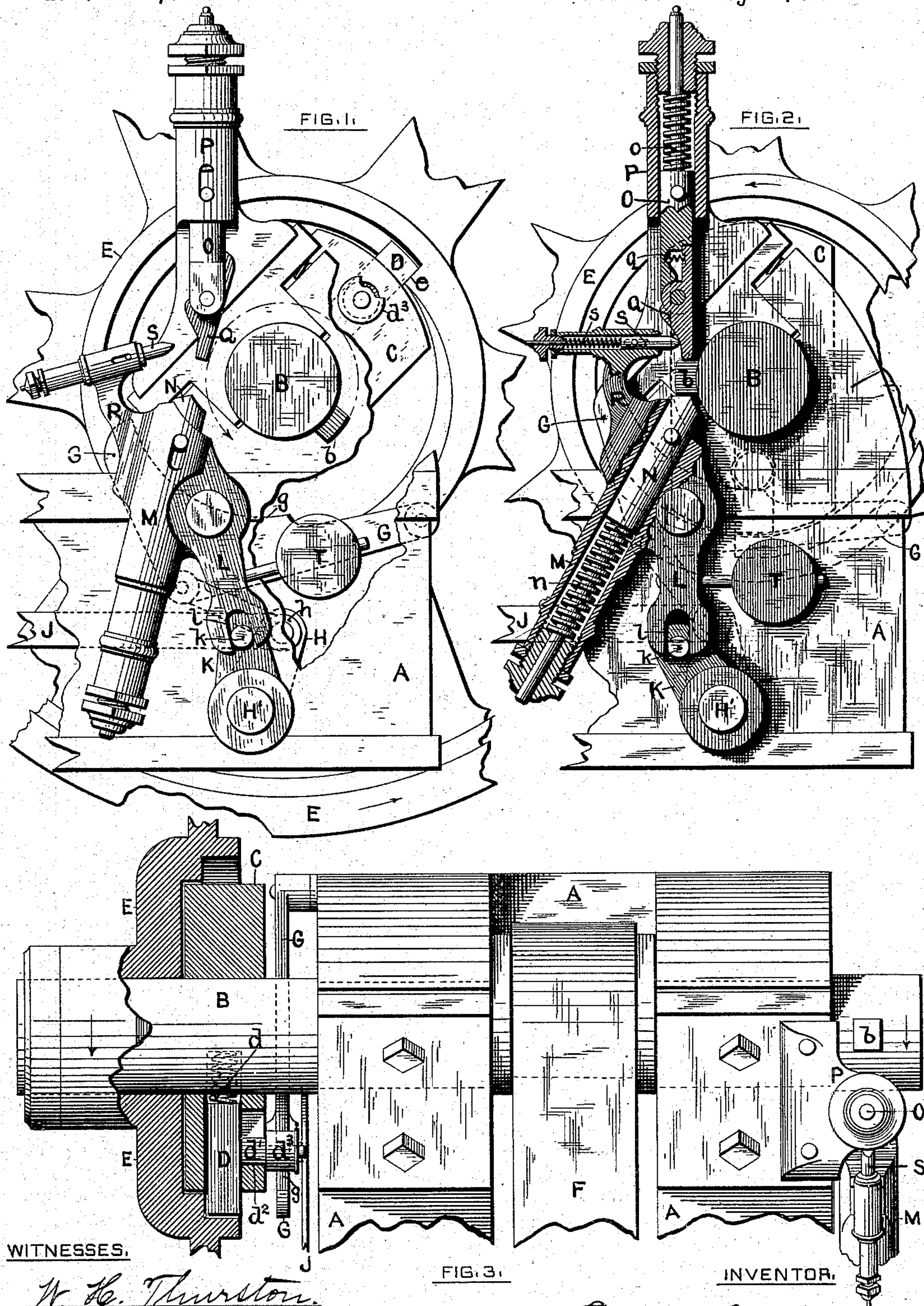


(No Model.)

T. COOPER.
BOLT HEADING MACHINE.

No. 277,010.

Patented May 8, 1883.



WITNESSES.

W. H. Thurston.
I. Knight.

FIG. 3.

INVENTOR.

Theodore Cooper

UNITED STATES PATENT OFFICE.

THEODORE COOPER, OF PAWTUCKET, RHODE ISLAND, ASSIGNOR TO THE
WILLIAM H. HASKELL COMPANY, OF SAME PLACE.

BOLT-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 277,010, dated May 8, 1883.

Application filed December 21, 1882. (No model.)

To all whom it may concern:

Be it known that I, THEODORE COOPER, of Pawtucket, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Bolt-Heading Machines; and I do hereby declare that the following specification, taken in connection with the accompanying drawings, forming a part of same, is a full, clear, and exact description thereof.

In bolt-heading machines of the variety known as "hot-forging" machines it is necessary that the revolution of the shaft shall be stopped, and the swaging action upon the head of the blank thereby cease, in order that the headed blank may be removed from the machine and a fresh rod be inserted to be headed. It is also necessary that the shaft be stopped at a definite point in its path of revolution, and that it shall be held at that point, in order that certain parts of the machine may be in position to allow the blank to be freely discharged and a new rod to be inserted.

As usually constructed the shaft of the machine is provided with one member of a clutch, which member is in the form of a block or plate having a latch or tooth projecting from one of its sides and held in an extended position by a spring, and the driving-pulley is loosely mounted on the shaft, and its hub is provided with the other member of the clutch, which member is in the form of a notch or shoulder adapted to engage the latch or tooth, and thereby drive the shaft. The stopping of the shaft has been effected by unclutching it from the pulley and moving a pivoted arm into the path of revolution of a lug projecting radially from the shaft. The engagement of the arm and lug would stop the forward rotation of the shaft, and the tendency for the shaft to rebound was attempted to be overcome by causing the shaft to run with considerable friction. The objections to a machine thus constructed are that, friction being constantly applied to the shaft, greater power is required to run the machine, and the bearings wear very fast and require to be constantly tightened to make them effective for the purpose of preventing a recoil of the shaft when it is stopped, and the pivoted arm, or the frame of the machine, would

be broken if by any accident the shaft were not fully disconnected from the driving-pulley.

This invention relates to means for stopping and preventing the recoil of the driving-shaft; and it consists in a stop arranged to be swung into the path of movement of the lug on the shaft, which stop will arrest the forward movement of said shaft if it has been unclutched from the driving-pulley and will yield and allow the shaft to continue to revolve without damage to the machine if the unclutching has not been effected.

The invention also consists in providing the machine with a stop to prevent a recoil of the arrested shaft, and in making said stop yielding so that no damage can occur thereto in the event that the shaft continues to revolve.

Referring to the drawings, Figure 1 represents in side elevation a portion of a bolt-heading machine embodying my invention, the two stops being shown in rearward position. Fig. 2 shows the same in partial section, the stops being in position to hold the shaft. Fig. 3 represents a top view and partial section of a portion of the machine.

A is the frame of the machine, in and upon which the various parts are mounted.

B is the shaft, and *b* a lug projecting radially therefrom.

C is a block or plate forming a part of one member of the clutch, which is secured to the shaft. As shown in Figs. 1 and 3, this block is provided with a latch or tooth, D, which is normally projected beyond the edge of the block by a spring, *d*, the amount of projection being determined by the engagement of a pin, *d'*, secured to the latch with the end of a slot, *d²*, as shown in Fig. 3. The outer end of the pin *d'* bears a roller, *d³*.

E is the continuously-revolving driving-pulley, the hub of which is chambered to admit the block C, and is provided with a shoulder, *e*, to engage the latch D, as shown in Fig. 1. The pulley is loosely mounted on the shaft B, but will continue to drive the shaft so long as the shoulder *e* engages the latch D, and will thereby cause the ram F to perform its work of swaging the head upon the blank.

For disconnecting the shoulder *e* and latch D, for the purpose of stopping the revolution

of the shaft B, the machine is commonly provided with a lever, G, having a curved cam-face, *g*. This lever is pivoted to the frame of the machine, and is connected by a link, *h*, to an arm, H, upon one end of a rock-shaft, H'. Also connected to the arm H is a rod, J, which is extended to a convenient point and attached to a lever to be operated by the attendant of the machine. The normal position of the cam-face *g* on the lever G is below and without the circle described by the roller *d*³ during its revolution with and around the shaft B, the position being that shown in Fig. 1. By moving forward the rod J the lever G is elevated to the position shown by dotted lines in Fig. 2, so that the roller *d*³ will come in contact with the cam-face *g* and will be gradually raised, and the latch D thereby be withdrawn until it no longer engages the shoulder *e* on the pulley-hub.

Attached to the opposite end of the rock-shaft H' is an arm, K, which is provided with a pin, *k*. This pin engages a slot, *l*, in the end of an arm, L, which arm is pivoted to the frame of the machine, and is attached to a barrel, M, containing a stop-latch, N, which is seated on a spring, *n*, as shown in Fig. 2, in order to make it yielding. The normal position of the upper end of the stop-latch N is without the path of revolution of the lug *b* on the shaft B, as shown in Fig. 1; but when the shaft H' is rocked by a movement of the lever J, to bring the lever G into position to unclutch the shaft from the driving-pulley, the arm L, barrel M, and contained stop-latch N are swung into the position shown in Fig. 2, so that the upper end of the latch N will be in position to arrest the rotation of the shaft B, by the engagement of the lug *b* therein with the latch N.

As the machine is organized, the unclutching of the shaft from the driving-pulley is fully effected just as the lug *b* comes in contact with the latch N. If, however, the attendant should not have moved the rod J sufficiently to properly elevate the lever G, and the unclutching should not be fully effected, the spring *n*, upon which the latch N is seated, will allow said latch to yield and be forced rearward by the revolving lug *b* without damage to the machine.

For preventing a recoil of the shaft B there is arranged vertically on the frame of the machine a spring-latch, O, which is cushioned on a spring, *o*, located in a bracket, P. The lower end of the spring-latch O is provided with a pivoted finger, Q, the upper end of which is normally pressed outward by a spring, *q*, in order that the lower end of the finger shall be without the path of revolution of the lug *b*, as shown in Fig. 1, during the normal revolution of the shaft B.

Secured to the barrel M is a bracket, R,

which contains a rod, S, seated on a spring, *s*, in order that it may be yielding. When the barrel M and its latch N are swung forward the bracket R and its rod S are also moved forward. This brings the rods S into contact with the lower end of the finger Q, and the spring *s* being much stronger than the spring *q* the finger is moved from its normal position shown in Fig. 1 to the position shown in Fig. 2, in readiness to prevent the recoil of the shaft after the lug *b* shall have come in contact with the latch N. Before this contact can be effected, however, the finger Q will be swung rearward by the moving lug *b*, since the finger is now in its path of revolution. The spring *s*, however, will allow of such movement of the finger, and it will promptly return the finger to the position to prevent the recoil of the shaft so soon as the lug *b* passes out of engagement with the finger, as shown in Fig. 2. The shaft B therefore will be positively held in a definite position by the stop-latch N and the stop-latch O Q until such time as the stop-latch N is moved rearward and out of engagement with the lug *b* by a rocking of the shaft H'.

While the shaft B is held between the stop-latches the headed bolt-blank is discharged from the machine and a new rod upon which a head is to be swaged is placed therein. The rod J is now moved by the attendant to retreat the stop-latch N and rod S, and to retreat the lever G in order that the latch D may be projected to be engaged by the shoulder *e* on the revolving driving-pulley, and the shaft thereby be again put into revolution.

As shown in Figs. 1 and 2, a weight, T, is preferably employed to balance the barrel M and its contents, and thereby enable these parts more readily to be moved into position.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of a revolving shaft provided with a lug, as described, means for unclutching said shaft from its source of motion, a spring stop-latch for arresting the motion of the shaft, and suitable means, as described, for moving said latch into a position to arrest the movement of the shaft and for retreating the latch, substantially as set forth.

2. The combination of a revolving shaft provided with a lug, as described, means for unclutching said shaft from its source of motion, a spring stop-latch for arresting the motion of the shaft, a spring stop-latch for preventing a recoil of the shaft, and suitable means, as described, for bringing said latches into action and for retreating the same, substantially as set forth.

THEODORE COOPER.

Witnesses:

W. H. THURSTON,
I. KNIGHT.