

(Model.)

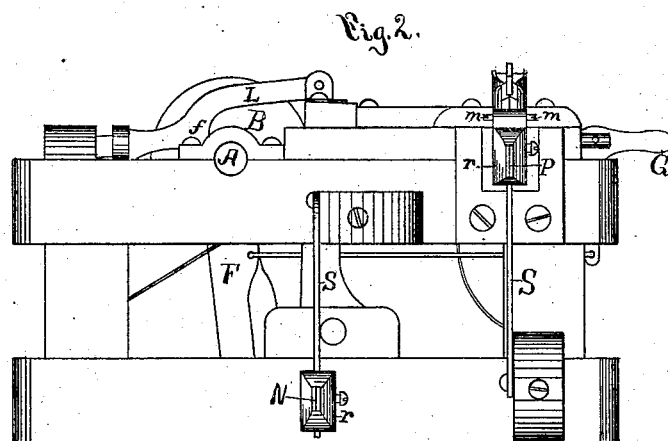
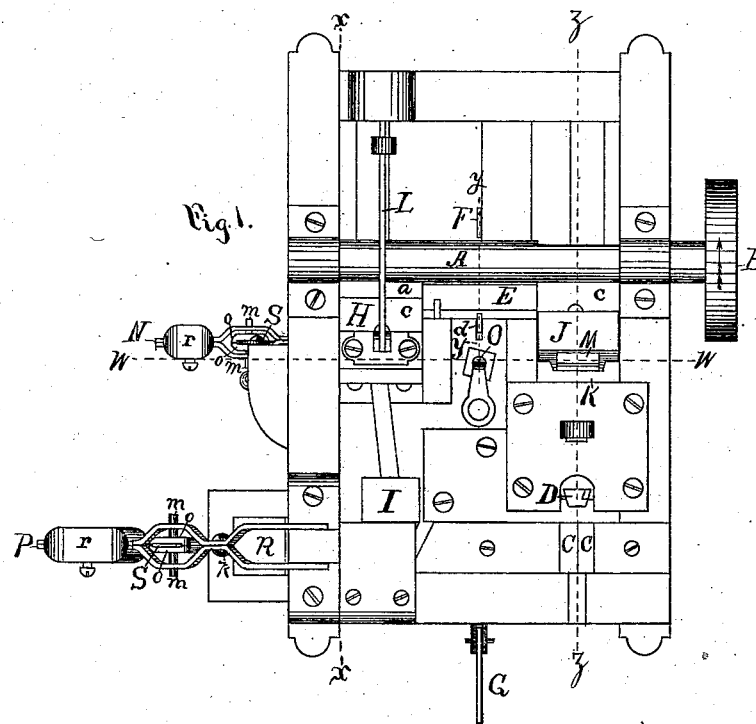
4 Sheets—Sheet 1.

J. B. CLARK.

BOLT HEADING MACHINE.

No. 260,281.

Patented June 27, 1882.



Witnessed.
W. B. Thomson.
L. S. Burr

Inventor.
James B. Clark
By James Shepard Atty.

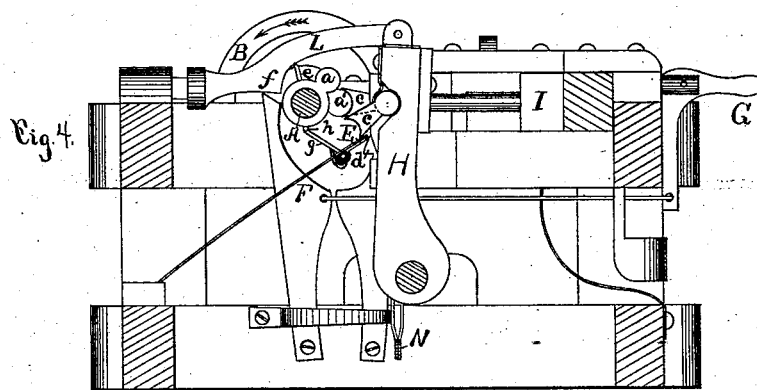
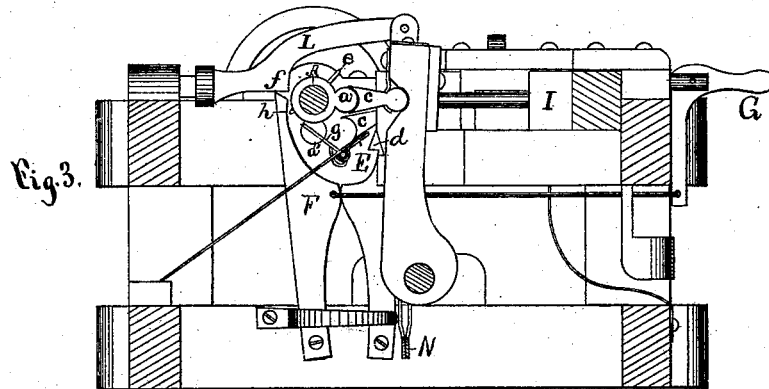
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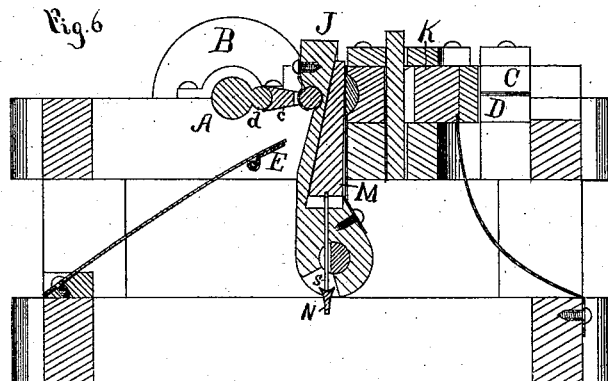
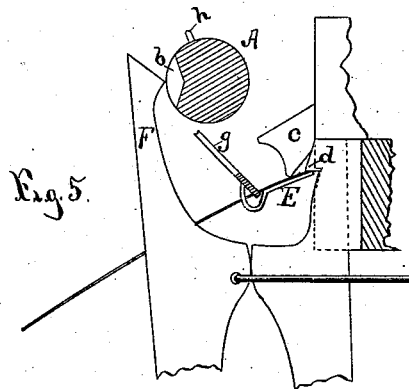
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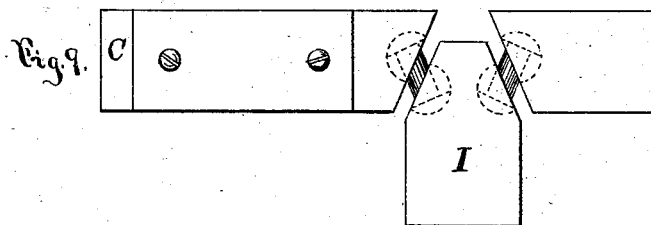
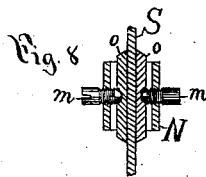
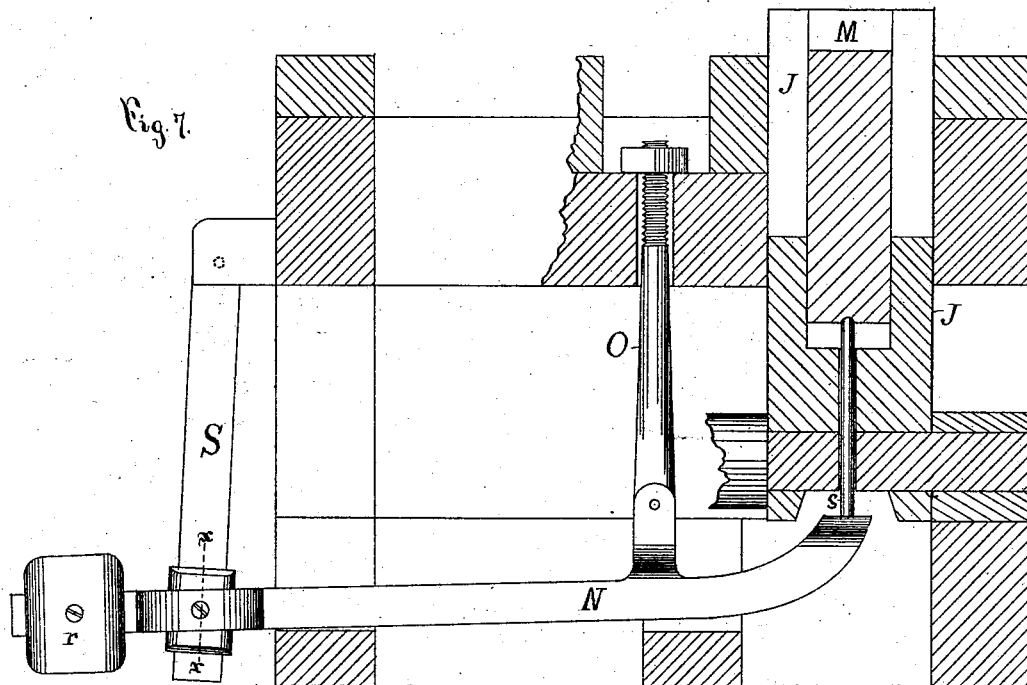
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UNITED STATES PATENT OFFICE.

JAMES B. CLARK, OF PLANTSVILLE, CONNECTICUT.

BOLT-HEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 260,281, dated June 27, 1882.

Application filed March 24, 1880. (Model.)

To all whom it may concern:

Be it known that I, JAMES B. CLARK, of Plantsville, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Heading Bolts, of which the following is a specification.

The object of my invention is to furnish a practical and efficient means for relieving the gripping-dies and the header, so as to prevent breakage when more than a certain amount of pressure is brought to bear upon them; also, to time and arrange the mechanism for operating the gripping-dies so that they will be released so soon as the header reaches its most advanced position; also, to furnish a better mechanism for starting the machine; and the invention consists in the peculiar construction and operation of certain parts, and in the combination of devices, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is a plan view of a machine for heading bolts which embodies my invention. Fig. 2 is a side elevation of the same. Figs. 3 and 4 are sectional views of the same on line *xx* of Fig. 1. Fig. 5 is a vertical section of parts thereof on line *yy* of Fig. 1. Fig. 6 is a vertical section of the same on line *zz* of Fig. 1. Fig. 7 is a vertical section of parts of said machine on line *ww* of Fig. 1. Fig. 8 is a section of a detached part on line *xx* of Fig. 7, and Fig. 9 is a detached plan view of parts thereof.

A designates the main shaft, mounted on any suitable frame, and provided with a driving-pulley, B, designed to be driven in the direction indicated by the arrows in Figs. 1 and 4. Upon the shaft are two drivers, *a a'*, the same being rounded on their edge for engagement with a groove in the edge of a swinging piece for moving forward other parts in a well-known manner.

The gripping-dies C C and the header D are the same as those ordinarily employed in bolt-headers, and are operated through the swinging pieces *cc*, which, when not in use, rest upon the spring-actuated table E, as shown in Fig. 5.

In the middle portion of the shaft, and upon one side, there is a recess, *b*, (see Fig. 5,) which at each revolution of the shaft A comes in front of the end of the trip F.

At the front of the machine there is an angle-

lever, G, connected by a wire to the trip F. One arm of the trip F is provided with a catch or hook, *d*, which hooks over the edge of the spring-table E to hold it down. When the handle of the angle-lever G is lifted it draws the trip F forward, so as to disengage its hook from the table, thereby allowing said table to spring upward a little and carry the swinging pieces with it into the position shown in Figs. 3, 4, and 6, when its upward movement is limited by any proper stop.

When the swinging pieces *cc* are thus elevated they are in the proper position to be caught by the drivers *a a'* on the shaft A. These pieces *cc* are mounted on swinging frames, of which H drives the block I, carrying the knuckle or toggle joint (see Fig. 9) for moving one member of the gripping-dies C C, and J drives the slide K, which carries the header D. The driver *a* first acts to close the gripping-dies, as shown in Figs. 1 and 3, the friction of the parts causing the dies to remain closed firm enough to grip the blank until the block I is withdrawn. Soon after the driver *a* passes by the center of motion of its swinging piece the other driver, *a'*, acts to force the header forward. So soon as the header has reached its most advanced position, as represented in Fig. 4, the projection *e* on shaft A engages the shoulder *f* of a slide, L, which is secured to the swinging frame H, and draws said frame, with its block I, back, and thereby opens the holding-dies almost the same moment that the header has done its work, whereas in headers as heretofore made the gripping-dies remained closed upon the hot blank until the header had also retreated. By releasing the gripping-dies, as described by me, they are in contact with the hot blank the shortest possible space of time, whereby less heat is imparted to them than in prior machines. Furthermore, by opening the gripping-dies so soon as possible after the header has done its work the bolt-blank can be removed or turned over for being struck the second time much sooner than in prior machines, and thereby the machine may be run faster.

The spring-table E is provided with a weighted and swinging arm, *g*, hung by means of any suitable stop-hinge, so as not to fall beyond a certain point. Suitable short projections, *h*, on shaft A engage said arm *g* (just af-

ter the driver *a'* has engaged its swinging piece) and force the spring-table downward against the power of its spring and under the hook *d* of the trip *F*, so as to be again held down, and the drivers will not again engage the swinging pieces until the spring-table is released by the trip *F*. When the trip *F* is at rest its point is close to the periphery of the shaft *A*, so that it cannot be moved forward, except when the recess in the shaft is in front of said point, whereby the table is always tripped at the point when the drivers on the shaft are in the position to properly engage the other parts.

Instead of driving the header *D* forward with a positive and unyielding mechanism, I interpose a wedge, *M*, (see Fig. 6,) between the swinging frame *J* and slide *K*, which carries the header, and this wedge I hold in position by means of a weighted lever, *N*, so that in case any extra amount of stock, by accident or otherwise, comes between the header and its anvil the wedge will be forced downward to lift the weight instead of breaking the machine. This lever is hung upon an adjustable standard, *O*, passing through a portion of the frame and having an adjusting-nut on its upper end.

The lever *N* and wedge *M* are connected by a rod, *s*, the lower end of which rests in a rounded socket on the end of the lever, (see Fig. 6,) in which socket it can rock to accommodate the necessary movement of the wedge with the header.

The downward movement of the lever *N* at its weighted end is limited by the frame, as shown in Fig. 7. By raising the standard *O* and that end of the lever higher the wedge will be forced in farther, and vice versa.

Instead of making the fulcrum of the lever adjustable, the same result may be accomplished by having the weighted end rest upon an adjustable stop, as shown for a similar weighted lever, *P*, and its stop *k*, Fig. 1, in connection with the gripping-dies *CC* and wedge *R*.

It has been found in practice that when such pressure was brought to bear on the wedges as to start the weighted levers they would start very suddenly with a bound, so that some frictional or yielding device is desirable in order to properly control said levers and prevent too great a movement.

I make the levers double at one point, and with sides thin enough to spring flatwise a little, and I provide each side with a set-screw, *m*. The free end of an arm, *S*, hinged or otherwise properly secured to the frame, passes through said double portion of the levers and between the set-screws *m m*.

I place a shoe, *o*, between the end of each screw and the sides of the arm *S*, and turn up the screws to get the desired amount of friction, which should never be so great as to prevent the lever from being forced downward under the influence of its weight *r*. The friction thus created has been found sufficient to

prevent any violent rebound of the lever when started by the wedge.

I am aware that a weighted lever and wedge have been used to hold gripping-dies in position, with a chance to yield under undue pressure, and I hereby disclaim the same; but I am not aware that the same was ever combined with a header, which combination is essentially different from that disclaimed, in the fact that the wedge or its equivalent has to be adapted for operation in a movable part of the machine, instead of a stationary part.

I am also aware that a prior patent shows a bolt-heading machine having, in combination, gripping-dies, header, mechanism for reciprocating the header, and a shaft having a projection which acted alternately to close and to open the gripping-dies by engaging two different parts of a slide; but said projection and slide were so located with reference to the mechanism which drove the header that the shaft made fully one-sixth of a revolution after the header had done its work before the projection began to move the slide for opening the gripping-dies. Such a machine is hereby disclaimed.

I claim as my invention—

1. The shaft *A*, having drivers *a a'*, projections *h*, and recess *b*, in combination with the swinging pieces *c c*, spring-table *E*, having arm *g*, and the trip *F*, substantially as described, and for the purpose specified.

2. In a heading-machine, the combination of the gripping-dies, the header, mechanism for reciprocating the header, the shaft *A*, the driver *a* for acting upon the mechanism which closes the gripping-dies, and the projection *e* for acting upon the mechanism for opening the gripping-dies, the projection *e* being located on the shaft *A* relatively to the mechanism for moving the header forward to act so soon as the header reaches its most advanced position, substantially as described, and for the purpose specified.

3. In a heading-machine, the combination, substantially as shown and described, of the wedge *M* and the weighted lever with the mechanism which carries the header, as and for the purpose specified.

4. The combination of the weighted lever for releasing parts of the machine from undue strain, the arm *S*, secured against longitudinal movement, and mechanism for connecting said arm and lever with frictional contact to check a rapid movement of said lever, substantially as described, and for the purpose specified.

5. The weighted lever, made double, with spring sides for a portion of its length, and provided with set-screws *m m*, in combination with the arm *S* and shoes *o o*, substantially as described, and for the purpose specified.

JAMES B. CLARK.

Witnesses:

JOS. N. COWLES,
LUCAS C. CLARK.