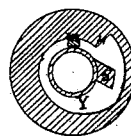
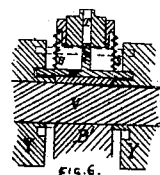
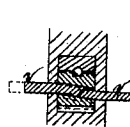
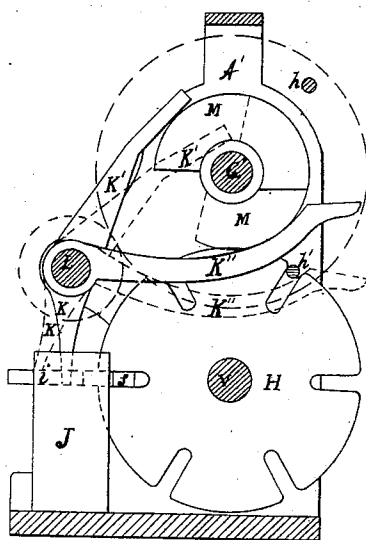
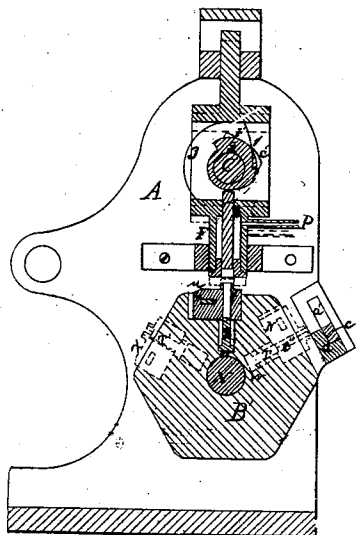
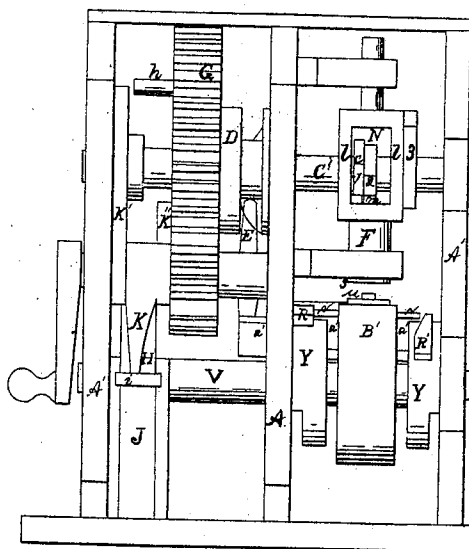
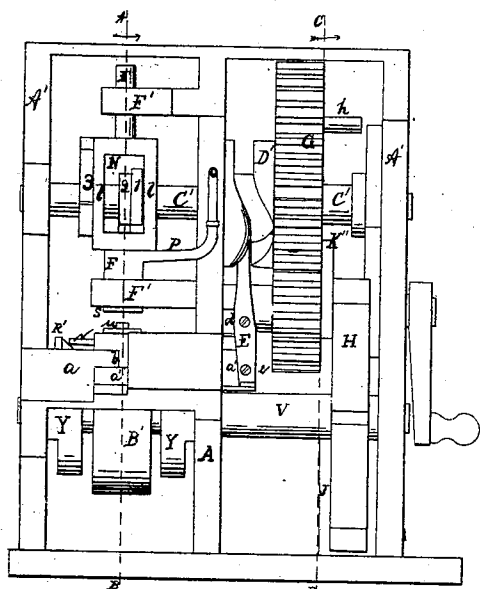


H. Thompson.
Heading Bolts.

Nº 75221

Patented Mar. 3, 1868..



Inventor. *Hiram Thompson.*

Witnesses. Dolly A. Greenleaf.
Hm Greenleaf.

United States Patent Office.

HIRAM THOMPSON, OF WORCESTER, MASSACHUSETTS.

Letters Patent No. 75,221, dated March 3, 1868.

IMPROVED MACHINE FOR HEADING BOLTS.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, HIRAM THOMPSON, of the city and county of Worcester, and State of Massachusetts, have made new and useful Improvements in Machinery for Heading Bolts; and I do hereby declare that the following is a full, clear, and exact description of the operation and construction of the same, reference being had to the annexed drawings, making a part of this specification, the same letters in the several figures denoting the same parts.

Figure 1 is a front elevation of the machine.

Figure 2 is a rear elevation.

Figure 3 is a vertical sectional view, through the section denoted by the line A B.

Figure 4 is also a vertical view, through the section denoted by the line C D.

Figure 5 is a sectional view of the holding-die, showing the device for reciprocating the movable part.

Figure 6 is a transverse section of the die-wheel, showing the discharging-punch, and the manner of its operation.

Figure 7 shows the form of the cams that operate the discharging-punch.

A' denotes the frame of the machine; B' denotes an intermittent rotary wheel, in which holding-dies are placed and operated.

In these drawings, the wheel approximates a hexagonal form, and is designed for six dies, three of which are shown in fig. 3. *a a'* denote an arrangement for cutting the iron for the bolt, which, after being heated in the bar, is placed between the blades *b c* and run down to the bottom of the holding-die *c'*, while the wheel B' is at rest.

C' is a rotating shaft, to which cam D' is fixed; E is a lever; *d* is its fulcrum, and is connected at *e* with the slide *a'*, to which one blade of the shears is fixed. As the cam D' revolves, the lever E moves the slide *a'* towards the stationary blade *b*, which cuts the iron. The slide *a'* is then drawn back by the same cam.

The wheel B' is moved forward so as to bring the blank under the header F by a pin, *h*, in the gear G, which is fixed to the shaft C'. The pin *h* at each revolution of the gear G enters one of the slots in the wheel H, and carries it and the die-wheel B', which is fixed to the same shaft, forward one space, thus bringing, at each successive motion, one of the holding-dies in wheel B' under the header F.

Figures 1, 2, and 3 show one of the dies under the header.

The die-wheel B' is held firmly in this position, while the head is being made, by the slide *i*, which is driven into the slot *f* of wheel H. The mode of operating this slide is shown in fig. 4. J is the stand in which the slide *i* operates; K K' K'' is a forked lever, which is fixed to a fulcrum at some convenient place, L. The arm K is attached to the slide *i*. When the pin *h* strikes the arm K'' it is carried to the position *h''*, which throws the slide *i* out of the slot *f* in wheel H, and thus remains while the wheel is moved forward, as above described.

When the cam M' comes in contact with the arm *h'* it is raised to the position K', which throws the slide *i* into the slot coinciding with it.

The external construction of the header F is shown in figs. 1 and 2. It has support at each end in boxes F'. Through the middle part is an opening, N. Through the sides *l l* are slots, through which the shaft C' passes. The internal construction is shown in fig. 3. F denotes the external part, which has a steel die, S, fixed in its lower end. *m* is the upsetting or heading-die, which is also steel. The external form of die *m* is the same as the internal form of die S. These dies can be removed, and replaced by others of any form desired. The header is operated by the cams 1, 2, and 3, fixed to the shaft C'. When the projection *c'* on cam 1 arrives at the bottom of opening N, the external part F is carried nearly to the top of the holding-die *u*, where it stops, when the upsetting-die *m* is forced, by cam 2, upon the blank, pressing it down, thus forming the head within the die S. *m* now stops, while F again moves down over the upper end of die *u*, the external form of which coincides with the internal form of die S, and trims off the burr from the head, which may press out between the dies S and *u* by the pressure of die *m*. This motion is produced by the projection *b'* on cam 1. F is then raised by the cam 3, while *m* is still held firmly upon the bolt by cam 2 until F is raised to the top of the head, when both are raised together by cam 3 and a cross-head or pin attached to die *m*.

When the header is raised and another hot blank is placed in the die *c''*, the wheel B' is then moved forward,

as above described, bringing c'' into position u , and carries u to x . While the wheel B' is traveling, the die c'' is closed by the wedge v , which is driven in by the incline R ; and die u is opened by the same wedge, which is driven back by the incline R' . The bolt is discharged at x by the punch T , the operation of which is shown in figs. 6 and 7. W is a cross-bar, to which the punch T is fixed. This bar extends, through slots z in wheel B' , into the cams Y . When the bar W is in the position shown in fig. 7, the punch T is in the position marked T in figs. 3 and 6. When it passes the point 4, fig. 7, the punch T is raised to the position T' , figs. 3 and 6, by the springs S' . Should the springs S' fail to throw the punch out, the next movement of the wheel B' will bring the bar W in contact with the incline 5, carrying T out to T' .

n , fig. 3, is a chamber in F , encircling the heading-die m , for the purpose of admitting a cooling-element, (water, oil, or wind,) which enters the chamber through the pipe P , and is discharged at O . By this arrangement a current of cold water, or oil, or wind is brought into close proximity to that part of the header which comes in contact with the hot iron. The object of this is to keep the header cool.

That which I claim as my invention, and desire to secure by Letters Patent, is—

1. I claim the improved machine as a whole, arranged as specified, with or without the cutting-attachment.
2. I claim the hollow die S , in combination with the holding-die u , and die m , for the purpose specified, when the dies S and m are operated by the means and in the order specified.
3. I claim the chambered die-stock F , constructed as described, in combination with the dies S , m , and u , when said parts are arranged as and for the purpose specified.
4. I claim, as means for operating the discharging-punch, the cross-bar W , incline 5, and cams Y combined.

HIRAM THOMPSON.

Witnesses:

WM. GREENLEAF,

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