2 Sheets—Sheet 1.

J. ROOT.

Bolt Heading Machine.

No. 100,928. Patented March 15, 1870.

Fig. 1.

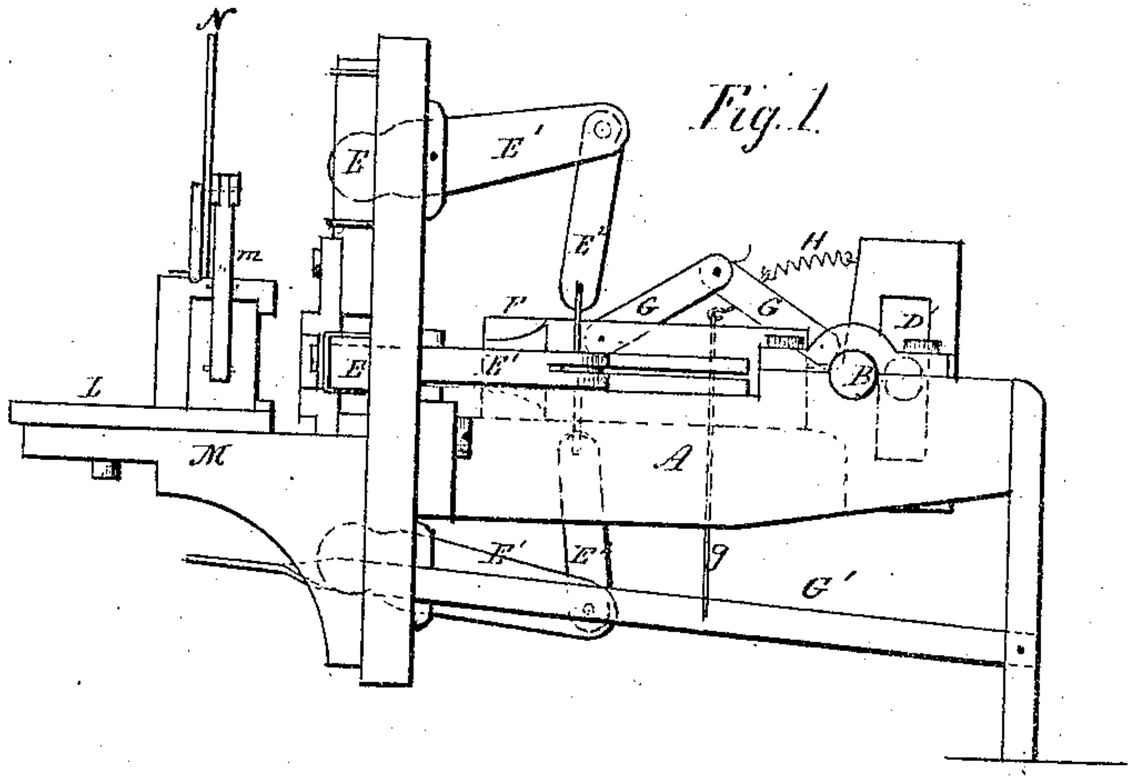


Fig. 2.

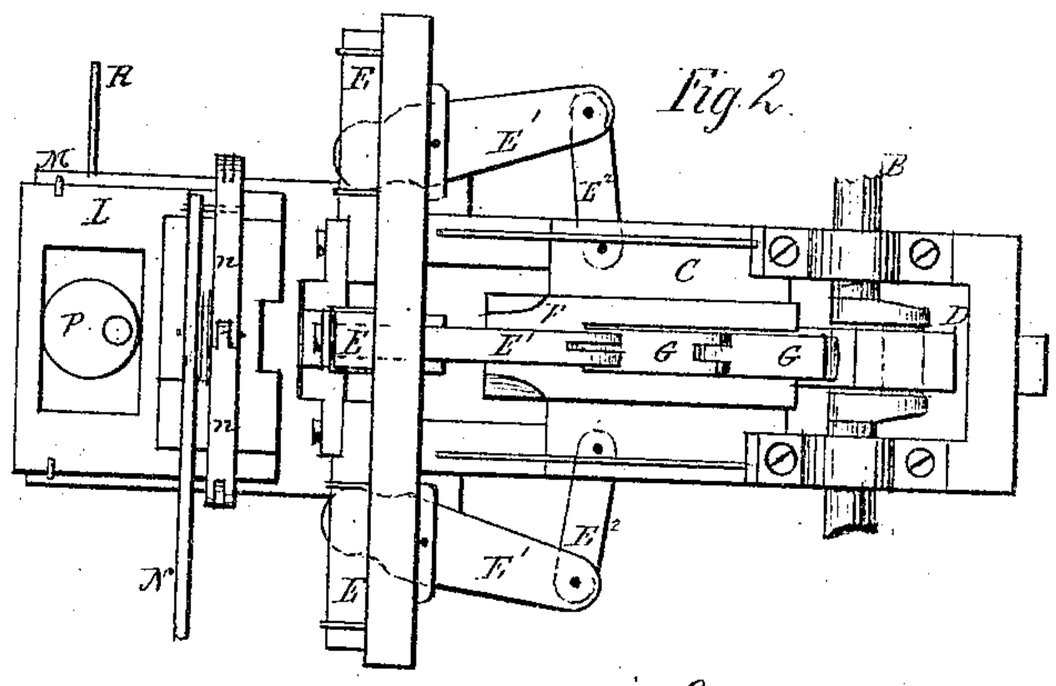
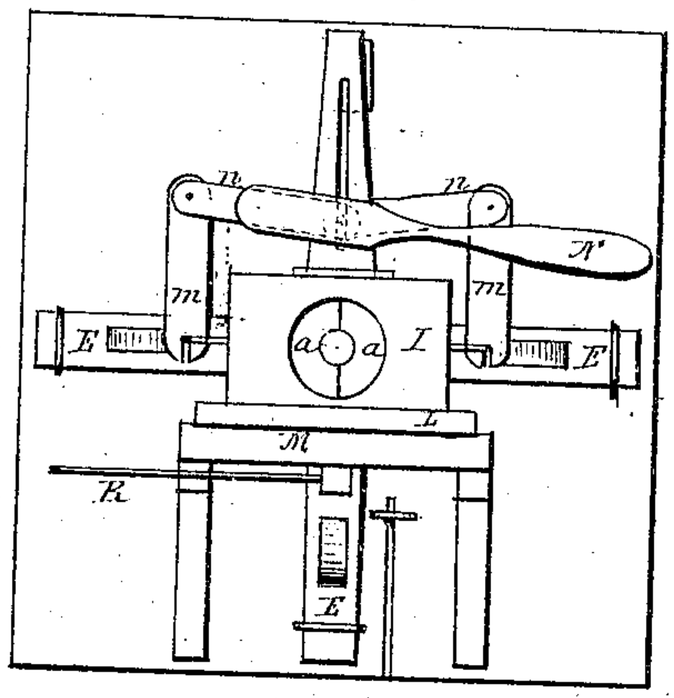


Fig. 3



Witnesses.

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John Root.

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Inventor

By Attorney.

Jno. E. Earle

2 Sheets—Sheet 2.

J. ROOT.

Bolt Heading Machine.

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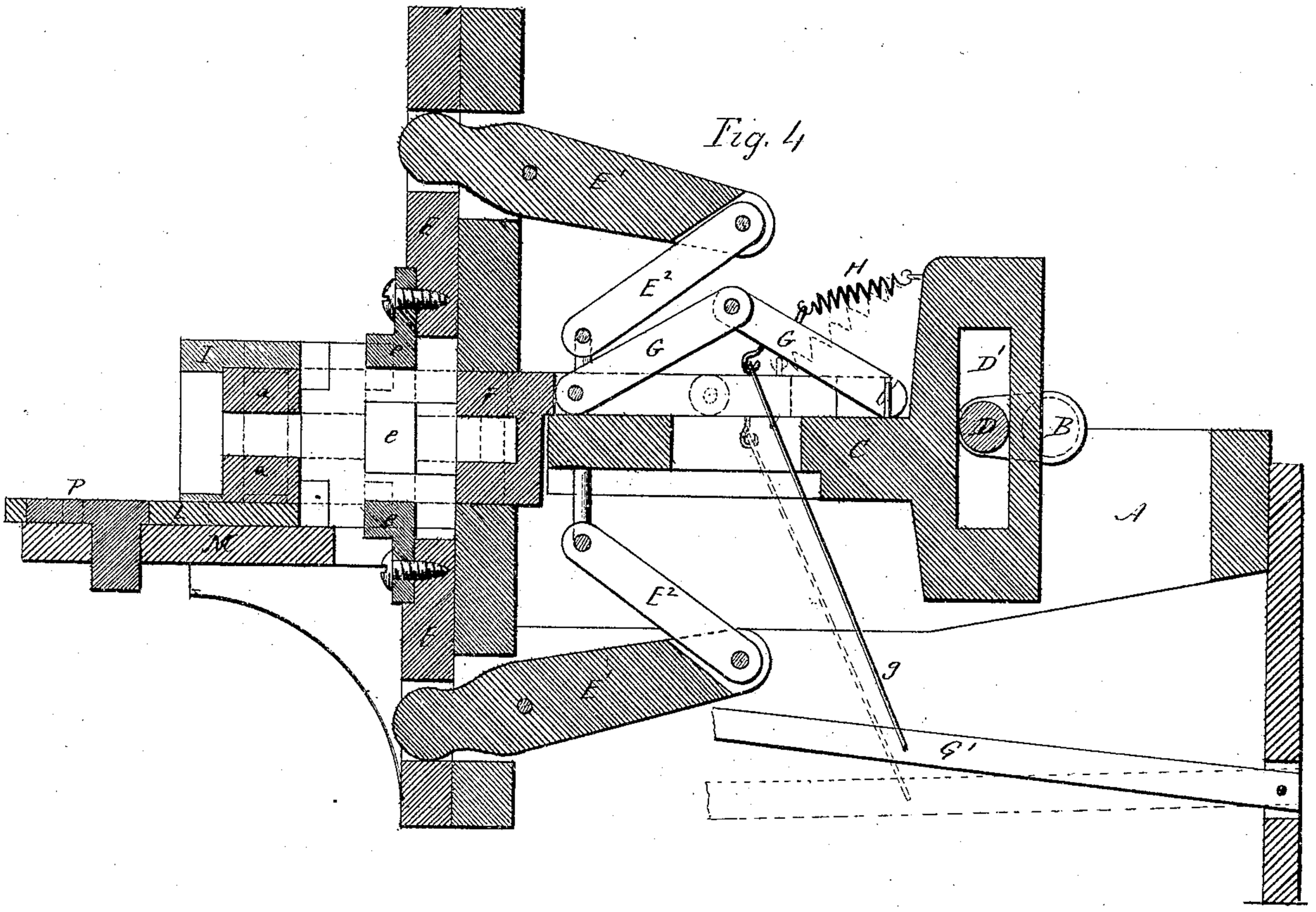
Fig. 4



Witnesses.

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United States Patent Office.

JOHN ROOT, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO HIMSELF AND McLAGON & STEVENS, OF SAME PLACE.

Letters Patent No. 100,928, *dated March* 15, 1870.

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, JOHN ROOT, of New Haven, in the county of New Haven, and State of Connecticut, have invented a new Improvement in Bolt-Heading Machine; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent in—

Figure 1, a side view;

Figure 2, a top view;

Figure 3, a view from the front end; and in

Figure 4, a longitudinal central section, enlarged.

This invention relates to an improvement in machines for forging or heading bolts, the object of the invention being to avoid the necessity of disconnecting the power after the heading of each bolt, and thus save the power and time lost in starting and stopping; to this end

My invention consists—

First, in the arrangement of the upsetting-die on its carriage, so that it may be thrown back so far that the movement of the carriage will not carry the die forward sufficiently to strike the end of the bank, and yet so that, when desired, the die may be thrown forward, so that when its carriage advances, the die will strike and upset the head of the blank.

Second, in the arrangement of the holding-device upon a carriage, so that it may be moved away from the forging-dies, and the blank inserted, then carried up to the forging-dies, so as to present the blank while the machine is running.

A is the bed of the machine.

B, the driving-shaft, arranged in suitable bearings, and to which power is applied to operate the machine.

C is a slide or carriage, arranged in suitable guides, to move longitudinally on the machine, and is here represented as being moved by a crank-pin, D, working in a slot, D′, on the slide C, as seen in fig. 4.

E E E E are slides, set in suitable guides, radially from a common center, each carrying dies *e*, and moved-toward or from such common center by levers E^1, through a connection, E^2, with the slide C, so that as the slide moves back and forth, the slides E, with their respective dies, are moved radially to and from a common center, in similar manner as common bolt-headers.

Heretofore in this class of machines it has been the usual practice to arrange the upsetting-die upon the slide C, fixed so as to move always to a certain defined point, for the purpose of upsetting the head; consequently, it is necessary to stop the movement of the operative parts of the machine when a new blank is introduced. This consumes considerable time, which by my invention is saved.

To this end, I arrange the upsetting die F, (see fig. 4,) upon the carriage C, so as to have a longitudinal movement, independent of the said carriage.

This independent movement of the upsetting-die is designed to allow the said die to be drawn back, so that when the slide moves forward the upsetting-die will not advance far enough to strike the blank until the operator so desires, at such time the die may be thrown forward, and this I accomplish by connecting the slide or upsetting-die F to the carriage C, by a toggle-joint, G G, (see fig. 4,) and the said toggle-joint to a treadle, G^1, by means of a rod, *g*.

When the treadle is free, the toggle is raised, as denoted in fig. 4, by means of a spring, H, or other suitable device, but when the treadle is depressed, so as to draw the toggle down, as denoted in broken lines, fig. 4, then the die F will be thrown forward, as denoted in broken lines, fig. 4, thus carrying the die forward by so much as the extension of the toggles; hence, the die being thrown back, as denoted in fig. 4, the blank inserted while the machine is running, and secured in the holding-die in the proper position, then the die F thrown forward, as before described, will strike and upset the head and withdraw, so that the upset portion may be operated upon by the dies *e* in the usual manner, then so soon as the head is formed the die F is released, and the return of the toggle draws the die back to its first position.

Another advantage of thus operating the upsetting-die arises from the fact that it is often desirable to make several blows by the heading-dies, after the operation of the upsetting-die.

To do this by this construction, the operator has only to release the treadle, and the die F may fall back to allow as many actions of the heading-dies as desirable.

To further facilitate the introduction of the blank while the machine is in motion, I arrange holding-dies *a a* in a head, I, fixed upon a slide, L, the said holding-dies being operated by a lever, N, through a toggle, *n*, (see fig. 3,) and connecting-levers *m*.

The said slide L is arranged so as to move longitudinally on a bed, M, and is so moved by an eccentric, P, working in a slot in the said slide, as seen in fig. 2, and a lever, R, attached to the eccentric by which it may be turned to throw the slide with the holding-dies toward or from the heading-dies, the said position being denoted in broken lines, fig. 4.

Therefore, when desired to introduce a blank, draw back the slide L into the position denoted in figs 2 and 4, insert the blank into the holding-dies, and there clamp it in the proper position, then turn the

eccentric P, so as to throw the holding-dies forward and the blank into the machine, as denoted in broken lines, fig. 4. for the operation of the dies, then, when the head is formed, the holding-dies may be withdrawn for the purpose of removing the headed bolt, and inserting a new blank.

I claim as my invention—

1. The combination of the upsetting-die F, carriage C, crank-pin D, toggle G G, and lever G′, arranged as described, and operating in the manner and for the purpose set forth.

2. The combination and arrangement of the holding-dies *a a*, slide I, and eccentric P, as and for the purpose described.

JOHN ROOT.

Witnesses:

A. J. TIBBITS,

JOHN H. SHUMWAY.