

# D. L. WEATHERHEAD. Bolt Heading Machine.

No. 6,438.

Patented May 8, 1849.

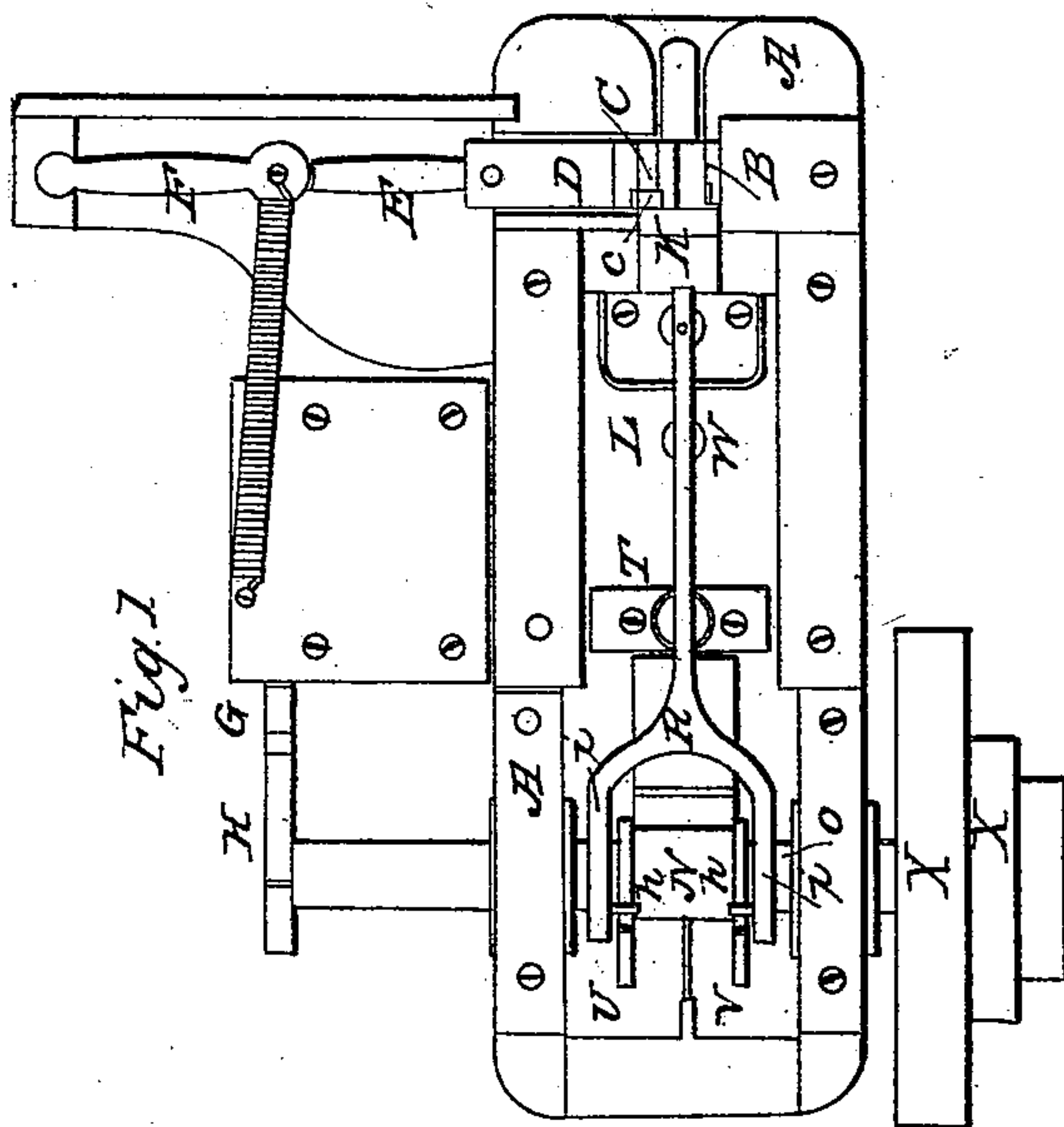
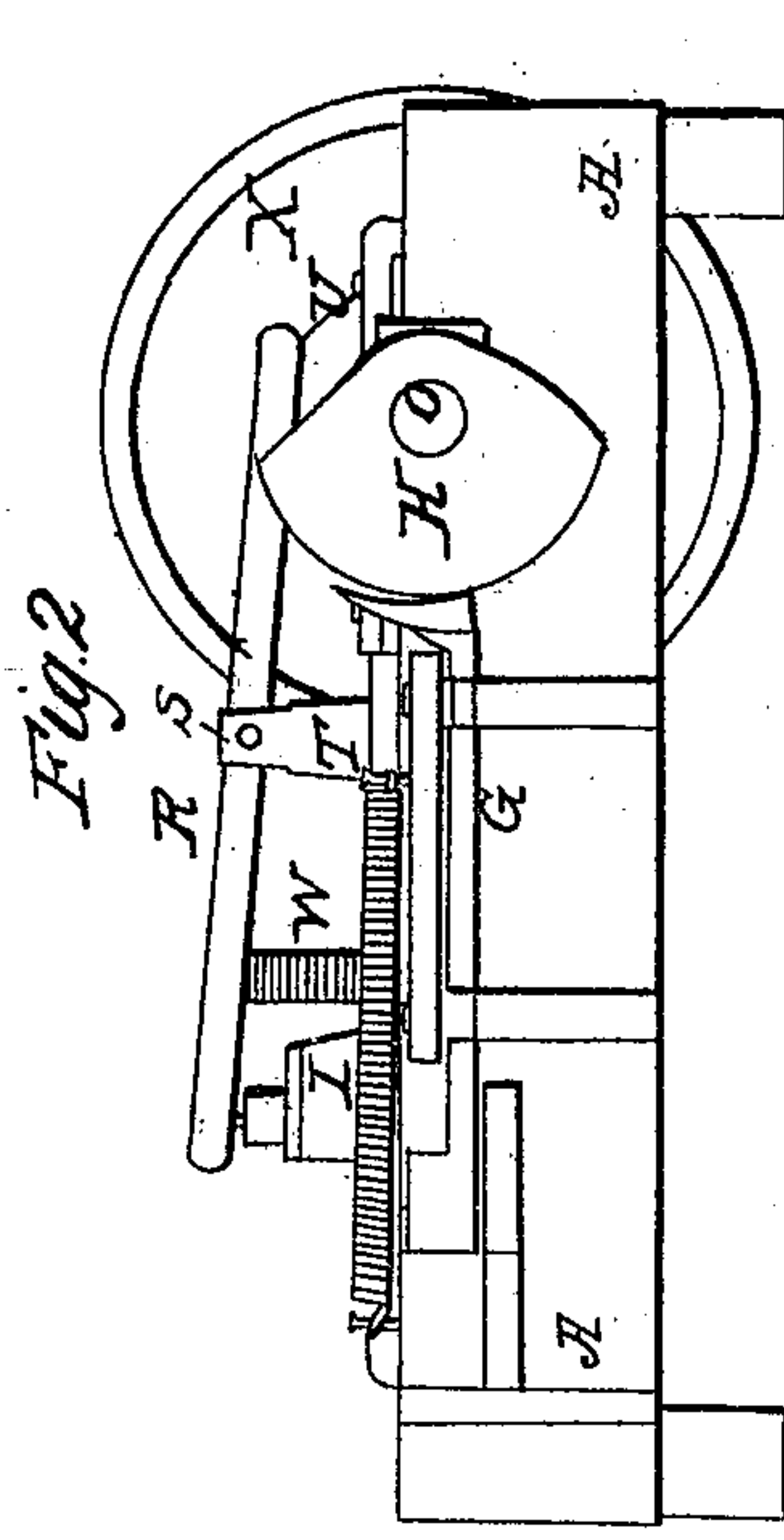
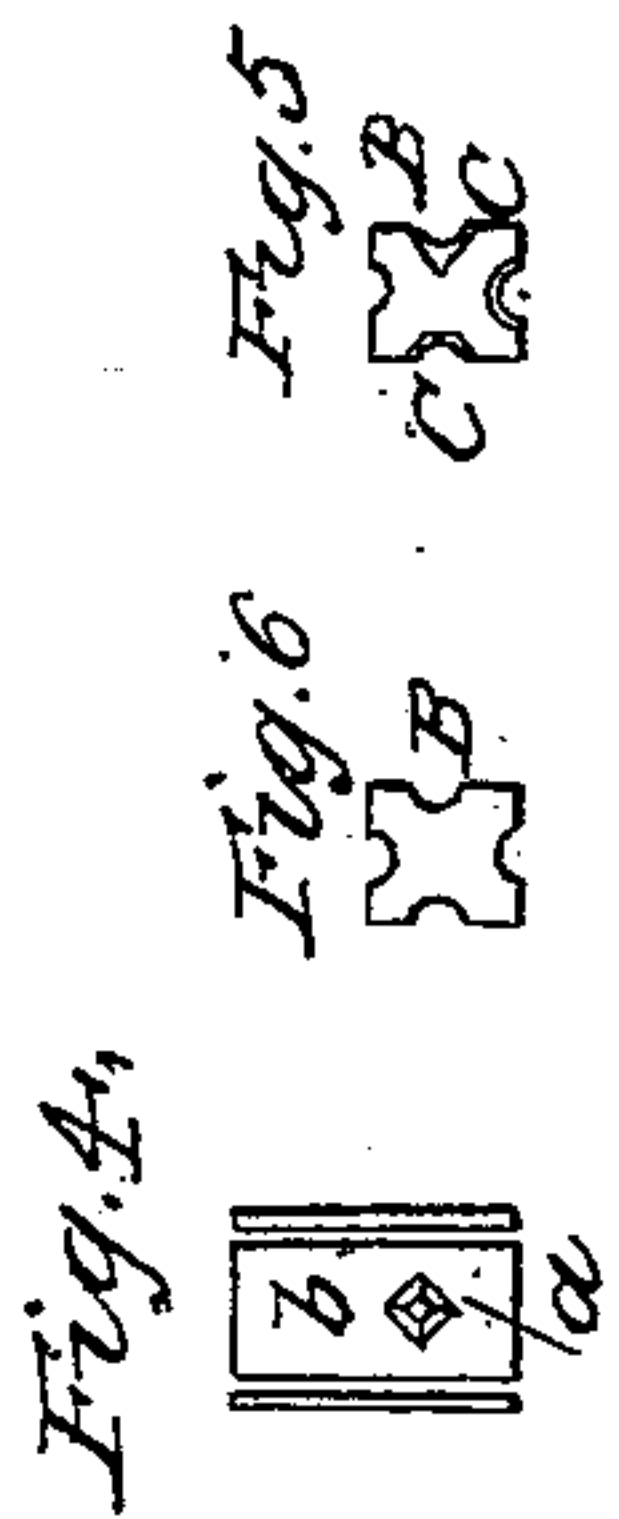
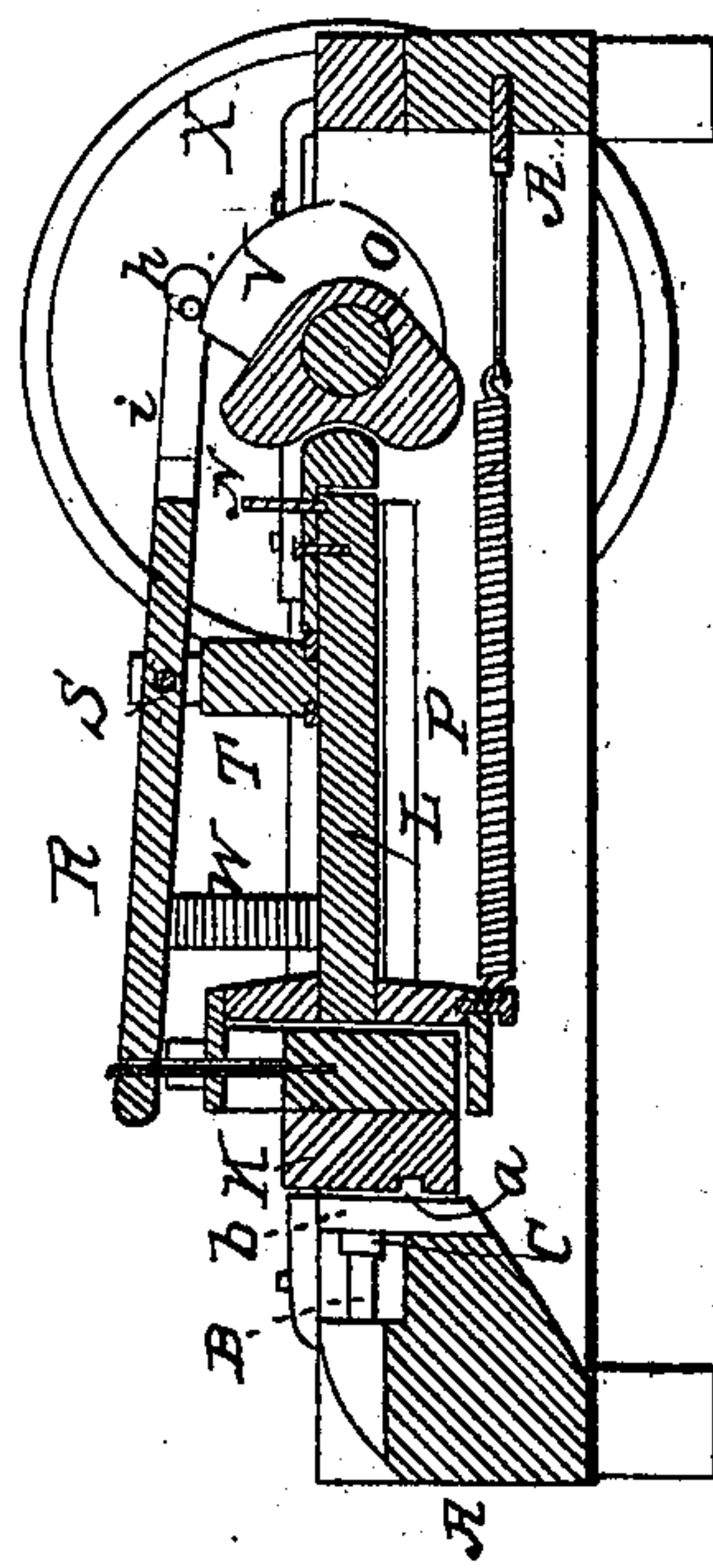


Fig. 3





# UNITED STATES PATENT OFFICE.

D. L. WEATHERHEAD, OF PROVIDENCE, RHODE ISLAND.

## METHOD OF CONSTRUCTING AND OPERATING THE HEADER IN BOLT-MACHINES.

Specification of Letters Patent No. 6,438, dated May 8, 1849.

*To all whom it may concern:*

Be it known that I, DAVID L. WEATHERHEAD, of Providence, in the county of Providence and State of Rhode Island, have invented a new and useful Improvement in Machinery for Heading Bolts; and I do hereby declare that the same is fully described and represented in the following specification and accompanying drawings, letters, figures, and references thereof.

Of the said drawings, Figure 1, denotes a top view of my improved machine for heading bolts, Fig. 2, is a side elevation of it. Fig. 3 is a longitudinal, vertical, and central section of it. Fig. 4, is a view of the front of the double heading die, or header, to be hereinafter described. Fig. 5 is a front end view of one of the gripping dies. Fig. 6, is a view of the opposite end thereof.

In the said drawings A, exhibits the frame of the machine.

B, is the stationary gripping die.

C, the movable gripping die, which is attached to a slider or carriage D, moved toward and away from the stationary gripping die by means of a pair of toggle joints or progressive levers E, F, a pitman G, a cam H, and a retractive spring I, or other suitable machinery; the whole being arranged or applied to one another as seen in the drawings.

My invention has no relation to the mode of operating the gripping dies, except that the double heading block or die constituting the same, is made to twice move forward toward the said gripping dies, while they are closed upon the bar of iron placed between them; or in other words, moved up twice in order to form and complete the head of the bolt.

The movable double header or die is seen at *h*, Figs. 1, and 3. It is so applied to one end of a horizontal sliding carriage L, as to be capable of being raised and lowered vertically. The front face of the die, or that by which in conjunction with the front face of the gripping dies the head of the bolt is formed, is made with a depression *a*, and a plane face *b*, above the same; the said depression *a*, being made at its mouth in transverse section of a shape to correspond with that of a cross section of the bolt head. From the said mouth it diminishes in size, as it deepens, until the lower part of it is about of the size of a cross section of the

shank of the bolt, in which the head is to be made.

From the above it will be seen, that the cavity or space *a*, is the counterpart of a frustum of a pyramid, its depth being made somewhat greater than the head to be formed. This cavity is used to first upset the end of the bar or rod which is held or grasped between the gripping dies and projects beyond them. It so upsets the same as to make it either the frustum of a pyramid, or that of a cone, according to the shape of the cavity. This being done, the cavity or die *a*, is withdrawn from the rod, and depressed below it far enough to allow the plain die or surface *b*, to be forced up against the pyramidal frustum or end of the rod, and to upset or press it down into the head recess *c, c*, of the gripping dies. The peculiar shape first given to the end of the rod by the die or cavity *a*, renders it very easy to compress the end into the regular form it afterward receives from the action of the plain die *b*. The combined operations of the sunken and plain dies of the header and the gripping dies enables me to make a head much more perfect in form, and with much more ease than it is usually made by the plain header usually employed.

The carriage L, which supports the header K, is moved forward toward the gripping dies, by the action of a cam N, affixed on the rotary driving shaft O, on the outer end of which the cam H, hereinbefore mentioned is affixed. The retraction of the said carriage is effected by means of a spring P, one end of which is affixed to the main frame, while the other end is attached to the underside of the carriage. This carriage should be made to advance toward the gripping dies twice during the time the said gripping dies are closed upon a rod inserted between them.

The heading block K, is suspended to the end of a forked lever R, which rocks vertically on a fulcrum or pin S, extending through the upper part of a post T. Two small studs *h, h*, are made to project inwardly from the two prongs *i, i*, of the forked lever, and to rest respectively upon two similar cams V, V, fixed upon the main shaft O. These cams being so formed as to elevate the rear end of the lever, or that directly over them, and thereby depress the heading block immediately after its recess or die *a*, has performed its office; the eleva-



tion of the block being afterward produced, by means of a spring W, placed between the front arm of the lever R, and the carriage of the block.

5 The driving shaft has one or more pulleys or drums X, X, affixed to it, the same being for the purpose of receiving the endless band which proceeds from the driving drum or power.

10 The rod to be headed is previously placed between the gripping dies, and forced forward a sufficient distance for the formation of the head with the necessary thickness; the said rod being generally heated to red-  
15 ness before its introduction between the dies.

I claim the above described improvement in the heading machinery or in other words, I do not claim a single header operating by one or more blows or movements toward the  
20 gripping or holding dies, but that which I do claim as my invention is—

The double header, constructed with an

upsetting hollow frustum recess *a*, and a plane or projecting plane face, surface, or die *b*, and made to operate with respect to 25 the gripping dies substantially, in manner, as hereinbefore specified; that is to say by the action of the recess frustum die to first form a frustum on the end of the rod, and next by the action of the plain die *b*, to up- 30 set the same into the head space of the gripping dies, and thereby give to the head the form required; the sunken or recessed die having in the meantime been depressed in such manner as to bring the flat die *b*, into 35 the proper position for the completion of the head.

In testimony whereof I have hereto set my signature this twenty fourth day of February A. D. 1849.

D. L. WEATHERHEAD.

Witnesses:

R. M. EADY,

F. GOULD.