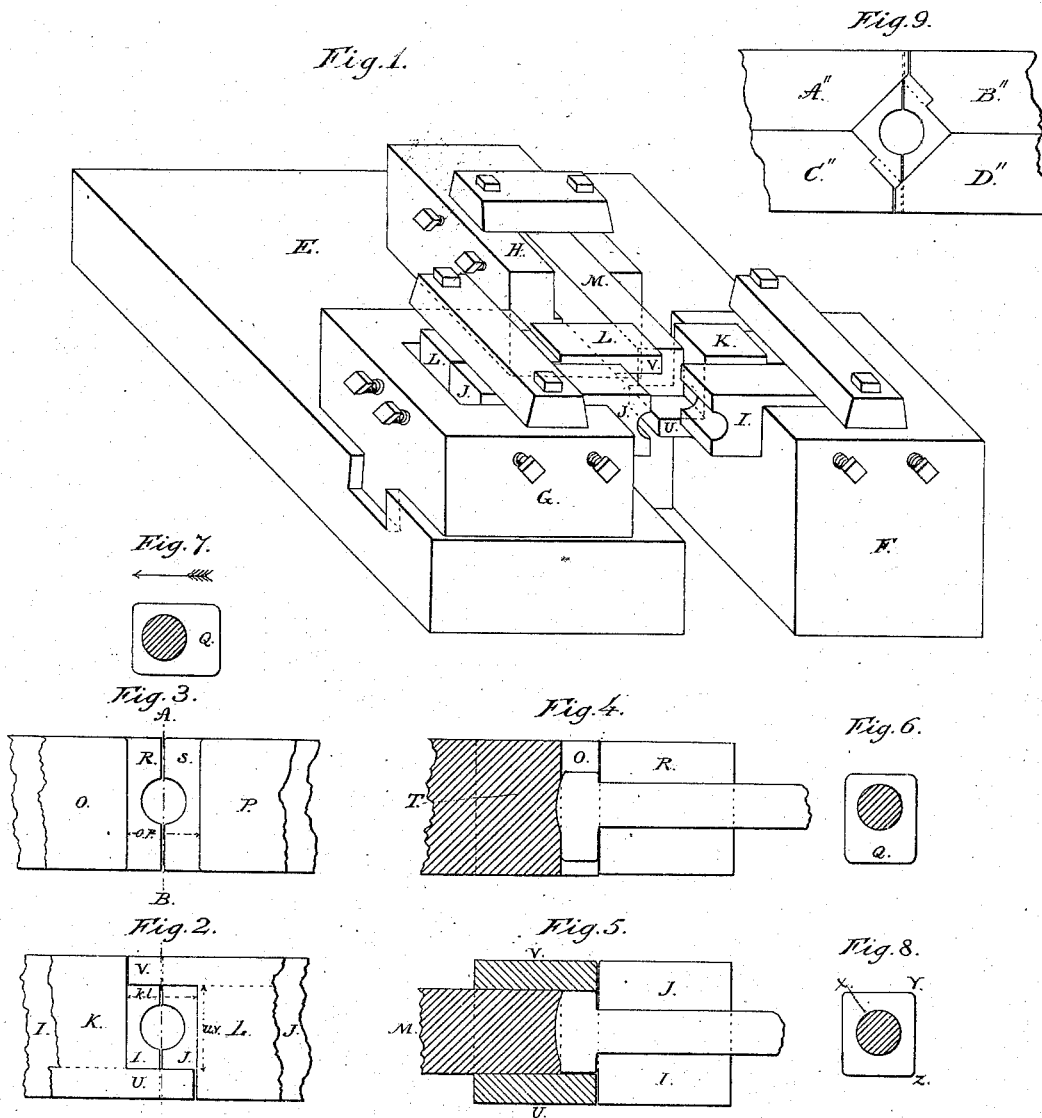


*C. Kane*

*Bolt-Heading Machine.*

*N<sup>o</sup> 54,738.*

*Patented May 15, 1866.*



Witnesses:

*A. D. Plumb*  
*A. J. Guzman*

Inventor:

*Charles Kane*

# UNITED STATES PATENT OFFICE.

CHARLES KANE, OF PITTSBURG, PENNSYLVANIA.

## IMPROVEMENT IN DIES FOR HEADING BOLTS.

Specification forming part of Letters Patent No. 54,738, dated May 15, 1866.

### *To all whom it may concern:*

Be it known that I, CHARLES KANE, of the city of Pittsburg, in the county of Allegheny, in the State of Pennsylvania, have invented a new and Improved Combination of Dies for Pressing Square-Head Bolts; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of part of the bolt-press, showing the relative position of the different dies. Fig. 2 is a view of the pressing-dies and of the griping-dies in elevation, seen from the back of the press. Fig. 3 is a similar view of the dies now in use. Fig. 4 is a sectional view through the line A B of the set of dies now in use, with a bolt just pressed. Fig. 5 is a similar view through the line C D of my improved dies. Fig. 6 is an end view of a bolt pressed in Fig. 4. Fig. 7 is an end view of a bolt pressed by the old dies, Fig. 4, transferred to that part of the drawing to illustrate its relation with the pressing-dies on the second operation. Fig. 8 is an end view of a bolt pressed by my improved dies in Fig. 5; and Fig. 9 is a modification of my dies K and L, which can be used in their place and made to answer the same purpose.

My invention consists in a combination of dies so constructed as to insure the staving of heads of bolts being always in the center of the bolt, whereby the fibers of the iron are not destroyed and the bolt is made much superior in strength and neatness than any now made by machinery, as they can never be galled in my improved dies.

To enable others skilled in the art to make and use my invention, I will proceed to describe it in detail.

E is the die-bed plate. F is the stationary head. G is the movable head of the griping-dies and pressing-dies. H is the movable head of the staving and heading dies. I is the stationary griping-die. J is the movable griping-die. K is the stationary pressing-die. L is the movable pressing-die, and M is the staving and heading die, plunger, or snap.

Before proceeding farther with the description of my improvement I will describe the combination of dies now in use in the bolt-presses, in order to illustrate the difference between them and my improved set of dies.

In the bolt-presses now in use, O and P are the pressing-dies, R and S are the griping-dies, and T is the staver or header. When the griping-dies are closed as in Fig. 3, the two pressing-dies P and O are brought near each other, and only leaving between their ends the space *o p*, equal to the side of the square head desired, so that when the staver T comes forward and staves the heated bar it is impossible for the heated iron to spread sidewise, as it is confined on both sides; but, as it is not confined top and bottom, if the iron is in the slightest degree hotter on one side than on the other, it is staved all on one side, and as is represented by Figs. 4 and 6. Now, when the piece of iron is turned one-quarter round, as in Fig. 7, to be placed once more in the dies and held fast by the griping-dies, the projection Q will strike the die P, and the iron will be driven in the direction of the arrow; but, as the round part of the iron is held stationary in the griping-dies, the fibers of the iron will be strained or destroyed by the displacement of the head which takes place, and the bolt is what is termed "galled."

In my improved combination of dies the pressing-dies K L are made with ledges or projections U V. These ledges or projections are either made all of one piece with the die, or they are made separate and firmly held in place. This is a thing optional with the constructor of the machines, and can be made one way or the other; but they are so proportioned or placed that when the griping-dies I J are closed, Fig. 2, the pressing-dies will leave between them a parallelopipedic space, in which the heading-die M will work as close as possible, the distance *k l* being equal to the side of the square head desired, and the distance between the two ledges U and V is a little longer, so that if a figure were drawn with these two distances as measure for two of the sides, and they were placed at right angles, it would form a parallelogram having its breadth equal to the square of the head desired, and its length greater.

The plunger or staver has for cross-section precisely the parallelogram above referred to, and it works in between the faces of the dies K and L and the ledges U and V as a piston.

The operation in my combination of dies is as follows: The dies being open, a heated bar

of iron is introduced between the gripping-dies, which gripe it in the usual way. The staving-die or plunger M now comes forward and staves the metal in all directions; but as it is confined on the four sides it cannot be staved crooked or lop-sided, as in the machines now in use. The iron is shaped as in Figs. 5 and 8, having the side X Y of the desired dimension and the side Y Z a little larger, allowing of it being perfected by the next operation of the pressing-dies, as by turning it one-quarter around the dies L K, in coming together, will form the head perfectly square.

I do not confine my claim to the angle at which the pressing and confining surfaces are placed relatively to the center of motion of the dies, as this is not material to the successful working of the principle.

The dies represented by the figure 9, which can be solid dies with planes at forty-five degrees with the center of motion of the dies, will answer to work my improvement. They can be solid dies having a V cut at their end, or four dies, A'' B'' C'' D'', arranged in combination with each other.

I do not wish to be understood as claiming

any novelty in dies for pressing bolt-heads either with plane surfaces at right angle with the center of motion or with plane surfaces at forty-five degrees with the center of motion, as I know they have been used; but in one case they are used to confine the metal only on two of its sides, and in the other they are formed so as to leave a square space between them, leaving no room for expansion and excess of heated metal, which in one case is the cause of the galling of the bolt and in the other of forming an imperfect square head.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

The heading or staving die M, when its cross-section is a parallelogram, in combination and made to correspond with and fit a rectangular space left between the pressing-dies, the dimension of which is greater from ledge to ledge, as above described.

CHARLES KANE. [L. S.]

Witnesses:

H. P. GENGEMBRE,  
A. L. FLEURY.