

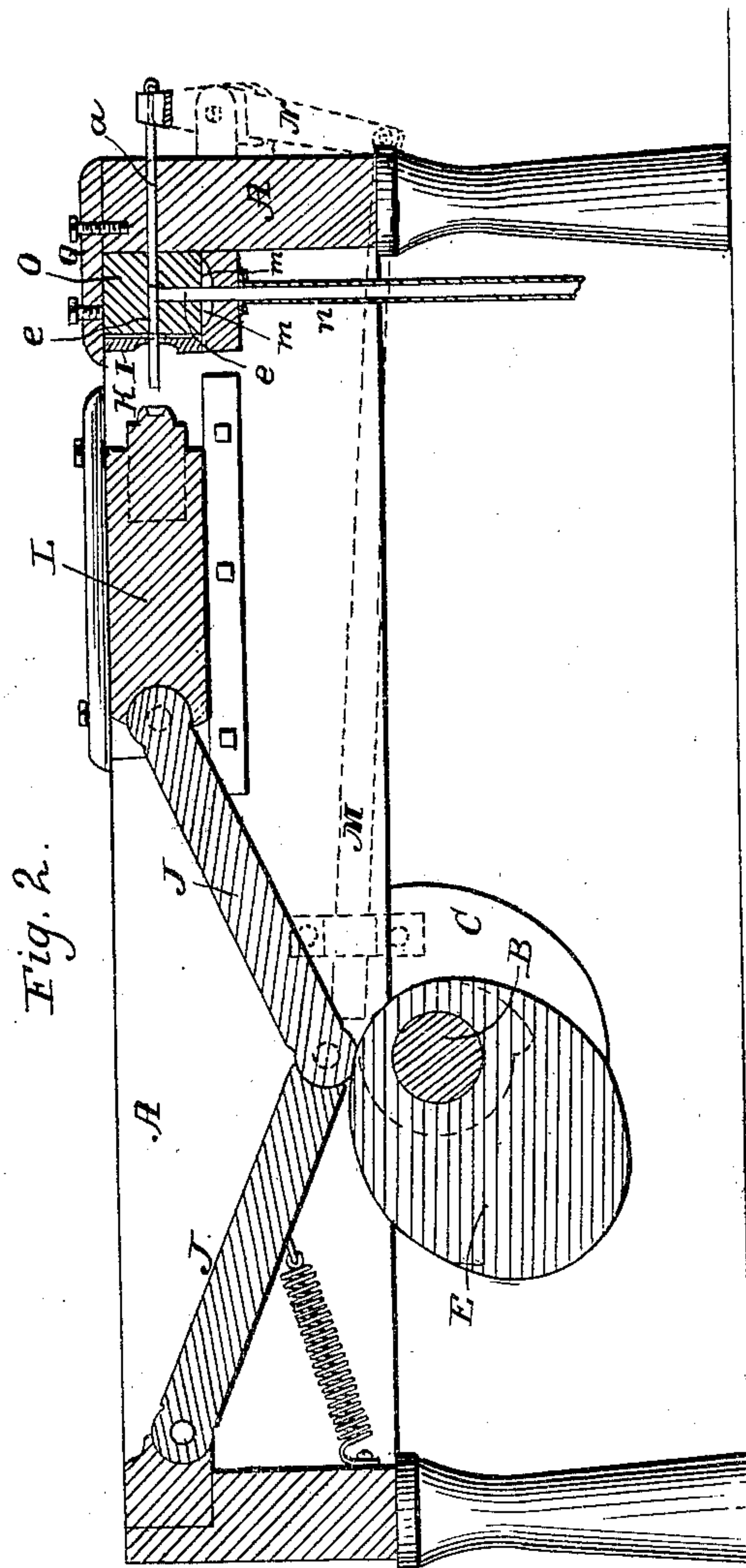
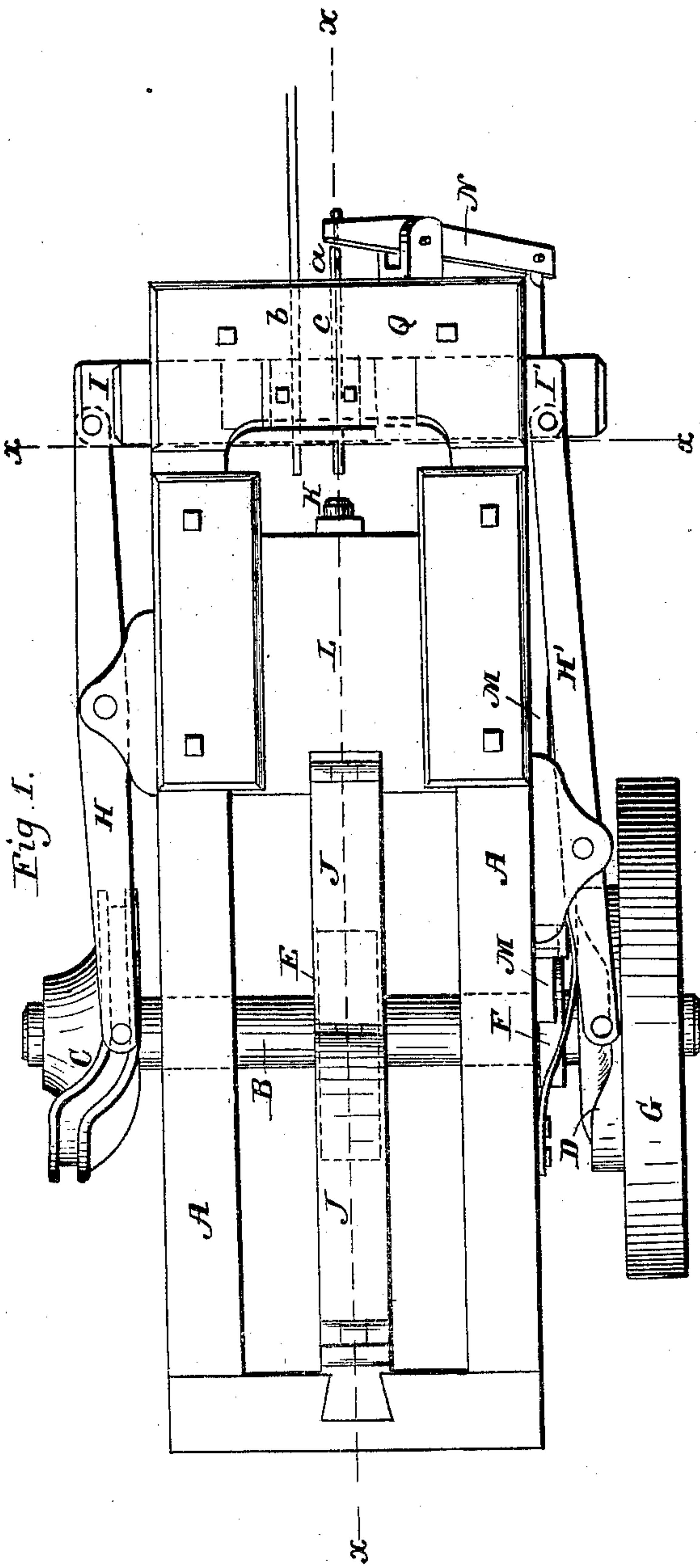
D. L. WEATHERHEAD.

2 Sheets—Sheet 1.

Making Rivets.

No. 9,735.

Patented May 17, 1853.

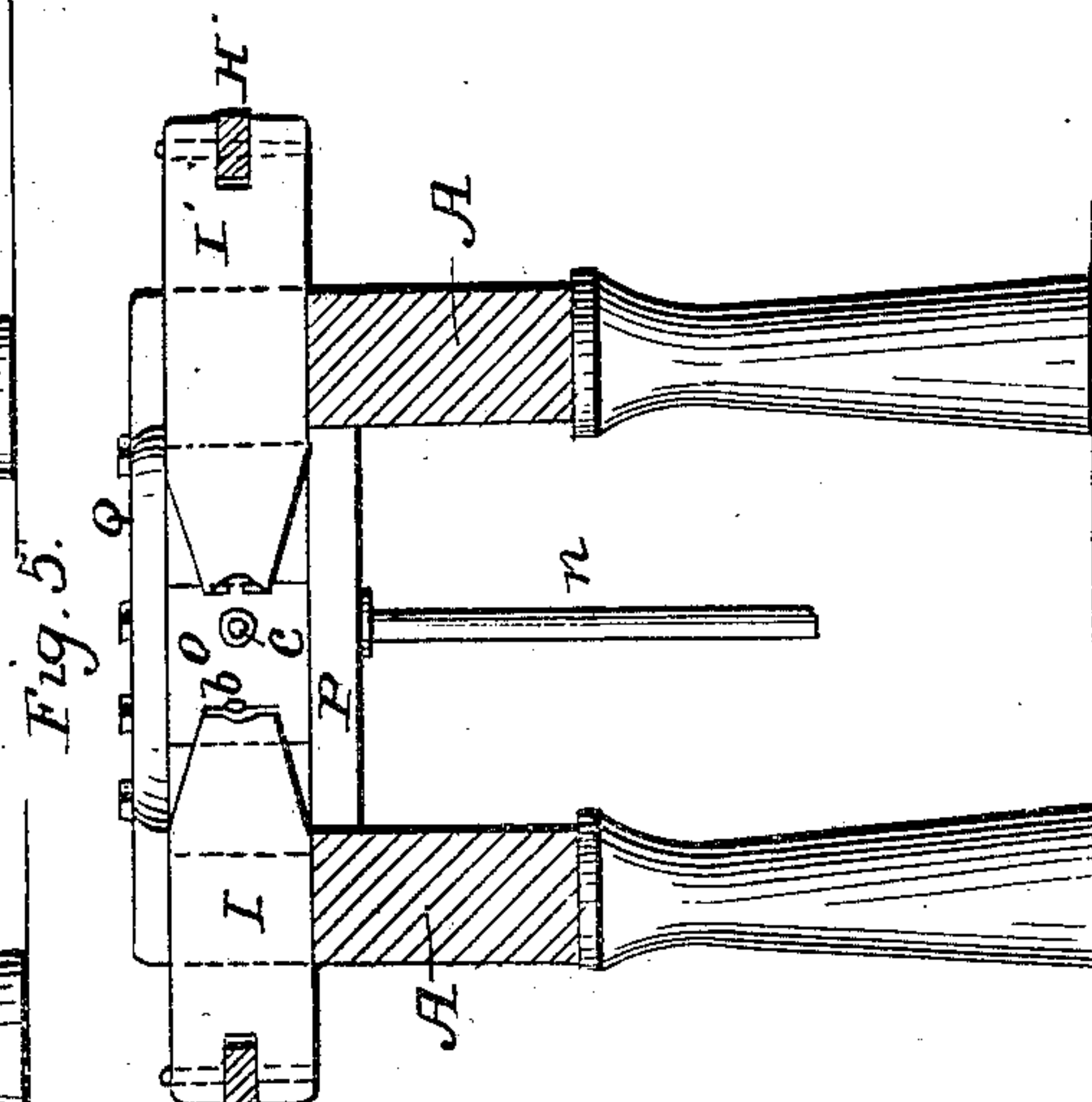
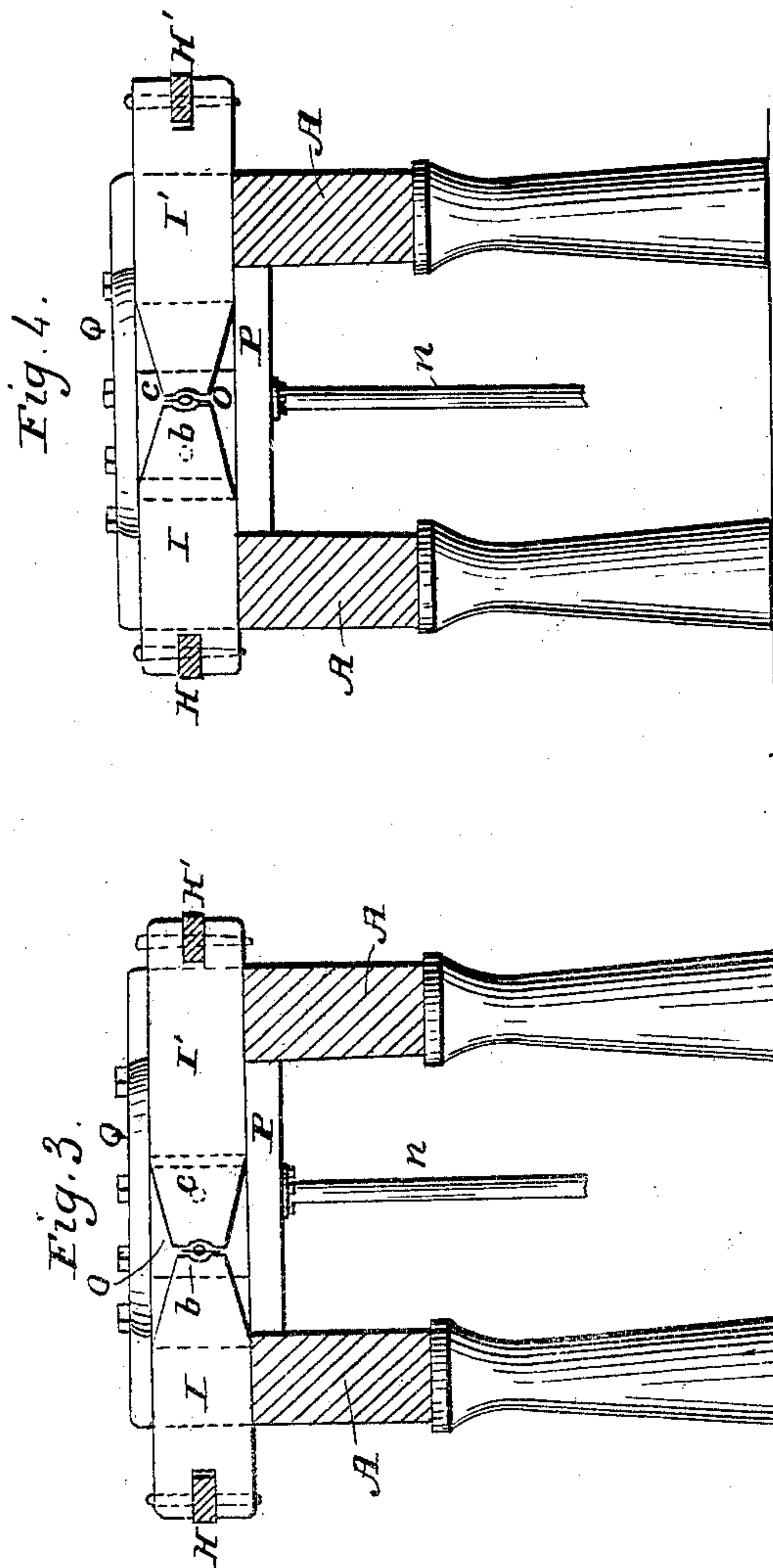


D. L. WEATHERHEAD.

## Making Rivets.

No. 9,735.

Patented May 17, 1853.





# UNITED STATES PATENT OFFICE.

DAVIS L. WEATHERHEAD, OF PHILADELPHIA, PENNSYLVANIA.

## CLEANSING AND COOLING BLOCK-DIES IN RIVET-MACHINES.

Specification of Letters Patent No. 9,735, dated May 17, 1853.

*To all whom it may concern:*

Be it known that I, DAVIS L. WEATHERHEAD, of the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Rivets, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, which form part of this specification, and in which—

Figure 1, represents a top view of a rivet machine having my improvements applied thereto, Fig. 2, a longitudinal section at the line  $x x$  of Fig. 1; Fig. 3, a transverse section at the line  $x x$  of Fig. 1, showing the heated rod gripped by the cutting and carrying dies preparatory to cutting off the blank; Fig. 4, a similar view showing the blank cut off the rod and carried laterally opposite the heading die; and Fig. 5, a similar view showing the blank headed and the cutting and carrying dies withdrawn and open to receive the heated rod.

My invention and improvement relates to the cooling of the closed or block dies in which rivets, are headed and shaped, and consists in expelling therefrom the particles of oxid, cinders, &c., that fall from the article being formed, by means of a current of water, steam, air, or other fluid.

The accompanying drawings represent my improvements as applied to a machine for making rivets. This machine consists of a strong frame (A) which supports in bearings attached to its under side a cam-shaft (B) which carries four cams (C, D, E, and F) that impart to the moving parts of the machine the proper motion at the proper time, and determine its duration. This shaft also carries a belt pulley (G) by which it is turned, the pulley deriving its motion from a steam engine, or other prime mover, through a belt suitably arranged for the purpose. The cam C, communicates an oscillating movement to a lever (H) which causes a corresponding movement of one of the dies (I) that cuts a piece from the rod of suitable length for a blank and transfers it to the heading die. The cam D imparts an oscillating motion to a lever (H') which gives a corresponding motion to the other die (I'). These cutting and transferring dies (I, I') have separate cams to actuate them, because their movements are sometimes in opposite and sometimes in the same direction—sometimes simultaneous and

sometimes at different times. The cam E is placed in the middle of the space between the sides of the frame and beneath the joint of the toggle levers (J J) to extend the latter and permit them to be flexed, alternately, to impart a reciprocating movement to the heading punch (K) whose stock (L) slides in ways in the top of the frame, that direct the punch properly against the end of the blank.

The cam F imparts a longitudinal sliding movement to a rod (M) which imparts to a lever (N) pivoted to a bracket at the end of the frame (A) an oscillating movement suitable for ejecting a headed blank from the die by forcing into the same, a plug ( $a$ ) and then permitting the plug to retreat again when pressed back by the entrance of another blank, to the proper point to gage the relative length of the shank of the rivet and that portion of the blank left protruding from the die to be upset to form a head.

Between the cutting and transferring dies (I) the feeding and heading die block (O) is placed upon a suitable support (P) and this, as well as the other dies are all held firmly in place by means of a cap plate (Q) and set screws passing through the same.

The feeding and heading dies are formed in a solid block (O) by perforating the same with two horizontal cylindrical holes, one ( $b$ ) slightly larger in diameter than the rod of which the rivets are to be made, so that the rod can easily be fed through it, to have blanks cut off its end; the other hole ( $c$ ) is of the same diameter as the rod and receives and holds the shank of the blank, during the formation of the head. The plug ( $a$ ) extends into the die to the proper position to gage the length of the shank of the rivet, and just at the end of the plug, a vertical aperture leads from the bottom of the die block, into the heading die  $c$ , this aperture forms a conduit or channel for water to enter the die to cool it and expel the cinders, scales, &c. The fluid is supplied to the aperture ( $e$ ) from a channel ( $m$ ) in the support beneath, which channel is in turn supplied by a tube ( $n$ ) which derives its supply from any source capable of sending a current forcibly through it. By thus passing a current of water through the die it will be kept cool and the moisture will cause the oxid to scale off the hot rod which when it enters the die is plunged into water so that the finished rivet will have a smooth surface



and a much better finish than it otherwise could. And whenever a heated rivet is ejected all the residuum left by it in the die will be washed out before the entrance of the  
5 next blank so that the die is kept constantly clear as well as cool. Streams of water may be directed upon the outside of the die in the usual manner, as my improvement is not designed to supersede the ordinary methods  
10 of cooling, but to act, in most cases, in conjunction with them.

The operation of the machine is as follows: One end of the rod properly heated, is inserted into the feeding hole (*b*) of the die  
15 (*O*) and pushed through until its end strikes a gage arranged in the usual manner to determine the length of the blank, the dies (*I I'*) now close upon the rod, grip it firmly, and then by a lateral movement cut off its  
20 protruding end to form a blank and carry it opposite the heading aperture or die (*c*) into which it is forced against the issuing stream of water by the advance of the heading punch (*K*) when the dies (*I I'*) separate  
25 to allow the end of the blank to be upset to form the head; the die (*I*) moving over into the proper position to allow the rod to be pushed through the feeding die to have another blank cut off it, and the die  
30 (*I'*) remaining over at the opposite side of the machine until the heading punch is withdrawn and the headed blank ejected from the die, by the advance of the plug (*a*) as before specified, when it moves over to-

ward the die (*I*) by a spring and grasps the  
35 heated rod which has in the mean time been fed into the proper position to have another blank cut off it and transferred to the heading die, by a repetition of the operation just described. While these operations are going  
40 on water is passing into the die and running out at the mouth of the same during the interval between the discharge of one blank and the admission of another. If  
45 the water is passed through or by the side of the plug (*a*) the supply pipe must connect properly with the plug or the back extremity of the heading die as the case may be.

What I claim as my invention and desire  
50 to secure by Letters Patent is—

Clearing cinders, scales, and other obstructions from a socket die made in a solid block for the purpose of heading rivets, by forcing in at the closed end of the die a  
55 stream of water that washes out the cinders, &c., every time a rivet is discharged; the inner end of the socket of the die being closed, so that the pressure of the head of water is rendered available for forcing obstructions  
60 out of the die, as herein set forth.

In testimony whereof I have hereunto subscribed my name.

DAVIS L. WEATHERHEAD.

Witnesses:

ALEX. C. DURBIN,  
LEWIS BOWMAN.