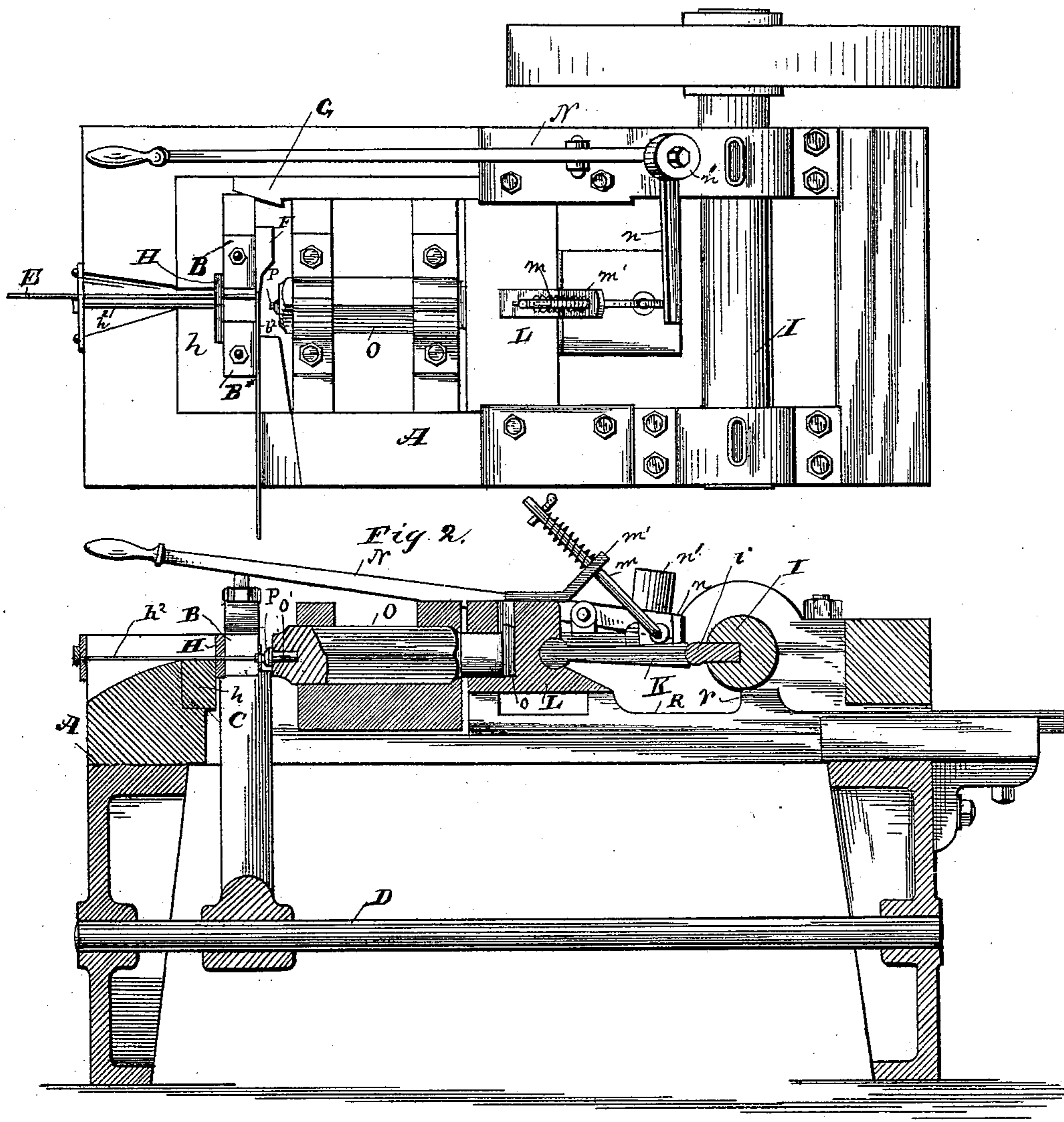


2 Sheets—Sheet 1.

PROCESS OF HEADING BLANKS FOR BOLTS OR RIVETS.

Patented Nov. 12, 1889.

Fig. 1.



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(No Model.)

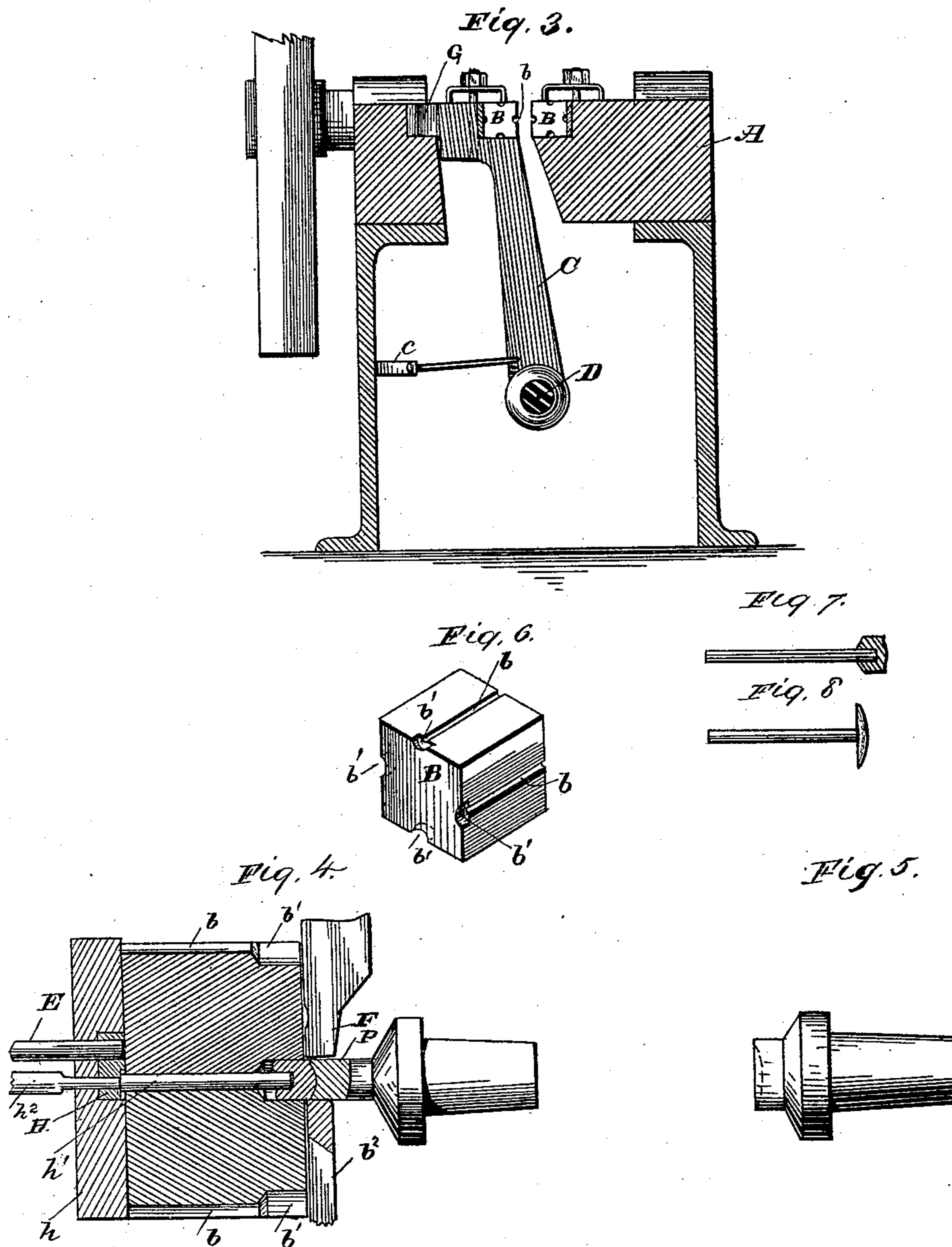
2 Sheets—Sheet 2.

A. M. McGEE.

PROCESS OF HEADING BLANKS FOR BOLTS OR RIVETS.

No. 414,949.

Patented Nov. 12, 1889.



Witnesses.

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UNITED STATES PATENT OFFICE.

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PROCESS OF HEADING BLANKS FOR BOLTS OR RIVETS.

SPECIFICATION forming part of Letters Patent No. 414,949, dated November 12, 1889.

Application filed August 29, 1887. Serial No. 248,148. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS M. MCGEE, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in the Process of and Machine for Heading Blanks for Bolts or Rivets; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to a process of heading blanks for bolts and rivets; and the invention consists in the process as hereinafter described, and particularly pointed out in the claim.

In the accompanying drawings, Figure 1 is a plan view of the machine. Fig. 2 is a longitudinal section thereof. Fig. 3 is a transverse section on line X X, Fig. 1. Fig. 4 is a central horizontal section through the dies and punch, showing these parts in the position when a bolt or rivet stem is nearly headed. Fig. 5 is a view of a finishing-punch. Fig. 6 is a view of one of the dies. Figs. 7 and 8 show headed blanks in different stages of completion.

In the drawings, A represents a rectangular metallic frame, made sufficiently heavy to withstand the operations of the machine. This frame is recessed to receive the dies B B', one of which is fixed to the frame, as seen in Fig. 3, and the other is supported on an arm C, attached to a rock-shaft D, journaled in the supporting-standards of the frame. The arm C also is recessed to receive the die B, and has a retracting-spring c, whereby the arm is normally held in the position seen in Fig. 3. The dies are secured in position by clamping-screws and have semi-cylindrical grooves b, the counterpart of each other, and cavities b', to receive and give shape to the head of the bolt or rivet when severed from the stock-bar by the action of the punch and dies, as shown in nearly-completed form in Fig. 4.

In Figs. 1 and 4 E represents the end of a rod from which the bolt or rivet stems are cut, one such blank being shown in the die, Fig. 4, and the rod E in position to be pushed

forward when the die B is swung back, as in Fig. 3, and the stem that has been headed is permitted to drop to the floor. When the rod E is pressed forward to be headed, its end strikes a stop F, and then as the die B is forced to the right against die B' by the beveled piece G a shearing cut is performed on the rod E between die B and the steel block H, set in cross-bar h, fixed firmly in the main frame. The block H is slightly recessed at h' to receive the end of the bolt-stem, so that said stem may be carried back slightly and prevent the head from being driven entirely through over the end thereof, as might occur if this provision were not made, especially if the punch were given its full thrust. A hand-piece h² is shown for dislodging the bolt-blank from the recess h'.

I represents a shaft driven by a pulley and having a cam i set therein, which engages with a clapper K, socketed in a cross-head L, sliding in guides in the main frame. The clapper K is normally held out of contact with the cam i by a rod and spring m, supported in a bracket m', fixed on the cross-head. The shaft and cam may therefore be in constant movement; but the machine will be at rest unless the clapper is borne down to be struck by the cam. This action is under control of the operator through lever N, pivoted on the main frame and having an arm n, which bears on the clapper. A counter-weight n' on the lever keeps the arm n constantly upon the clapper ready for action. When the pressure thus brought to bear on the clapper is withdrawn, the retracting-rod and spring M instantly raise the clapper out of reach of the cam and the machine stops.

O is a plunger projecting into the cross-head L, as seen in Fig. 2, and slightly adjustable therein to give more or less entrance to its thrusts by means of metal plates o, inserted behind it. In the opposite end of the plunger is a socket o', in which is supported the punch P. (Seen enlarged in Fig. 4.) This punch is formed with a concave end corresponding to the convexity of the head of the bolt, and is in exact alignment with the bolt-stem in the die.

In operation, when the clapper is brought down into engagement with the cam on the

main shaft, the plunger and punch are forcibly driven forward, and the stock-bar b^2 , from which the head of the bolt or rivet is formed, being first suitably heated, is placed in position with its end against the stop F. Then as the punch strikes said bar and bears its end against the dies it instantly severs the said end from the bar, and, driving it into the recess of the die upon and about the end of the unheated bolt or rivet stem, as seen partly completed in Fig. 7 and completed in Fig. 8, the stem is headed and that part of the process is finished. This forms what I term a "bolt or rivet blank." The cross-head is then carried back to its starting-point by the cam i engaging shouldered projection r on the bar R, which is secured to the bottom of the cross-head, thus releasing the headed bolt from the dies and throwing all the parts into position to be refed and to repeat the operation above described. This completes the process and produces the blank shown in Fig. 7. Then if it is desired to finish the blank, it may be done in the usual way by swaging the head thereon either by hand or by machinery. For this purpose the same machine may be used, and in some instances the same dies, except in reverse order. To carry out this step, the bolt or rivet stem is heated to a welding temperature, and, being placed in the die, the head is so thoroughly incorporated and blended with the bolt-stem—usually by a single thrust of the punch—that a cross-section will not reveal the point of

union. The texture and strength of both metals are undisturbed by this method of heading, thus producing a blank in which the head is as firm and perfect as the body itself. In Fig. 5 is shown a punch suitable for this work.

In the foregoing description I have confined myself to the exact devices shown in the drawings. Obviously these might be materially varied and still be within the spirit and scope of my invention.

The process of heading a bolt or rivet stem or like article substantially in the manner herein described is regarded, broadly, as my invention, and the machine hereshown is but one of but possibly several practical ways of carrying the process into effect.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The method of making blank bolts, which consists in cutting the bolt stem or shank from a cold bar into suitable lengths and holding the stem or shank so formed in a die, then heating a bar for forming the heads of the bolts to about a welding temperature, cutting off blank-head after blank-head from said heated bar, and forcing each blank upon a cold stem or shank in one die to the full extent for use, substantially as set forth.

AUGUSTUS M. MCGEE.

Witnesses:

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HENRY E. LOWER.