No. 744,183. PATENTED NOV. 17, 1903.

A. H. FOX.

MANUFACTURE OF BOLTS OR RIVETS

APPLICATION FILED DEC. 24, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

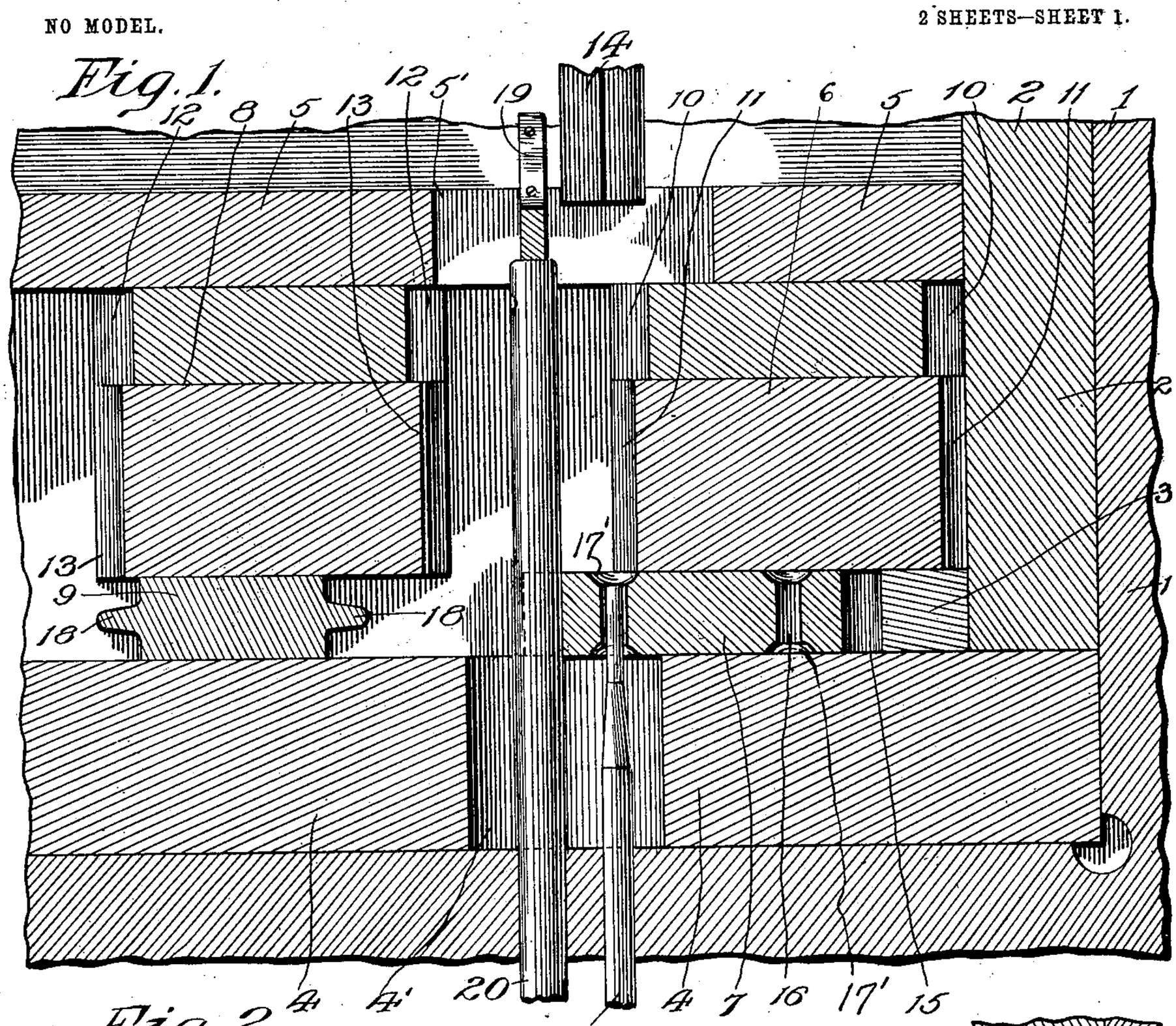
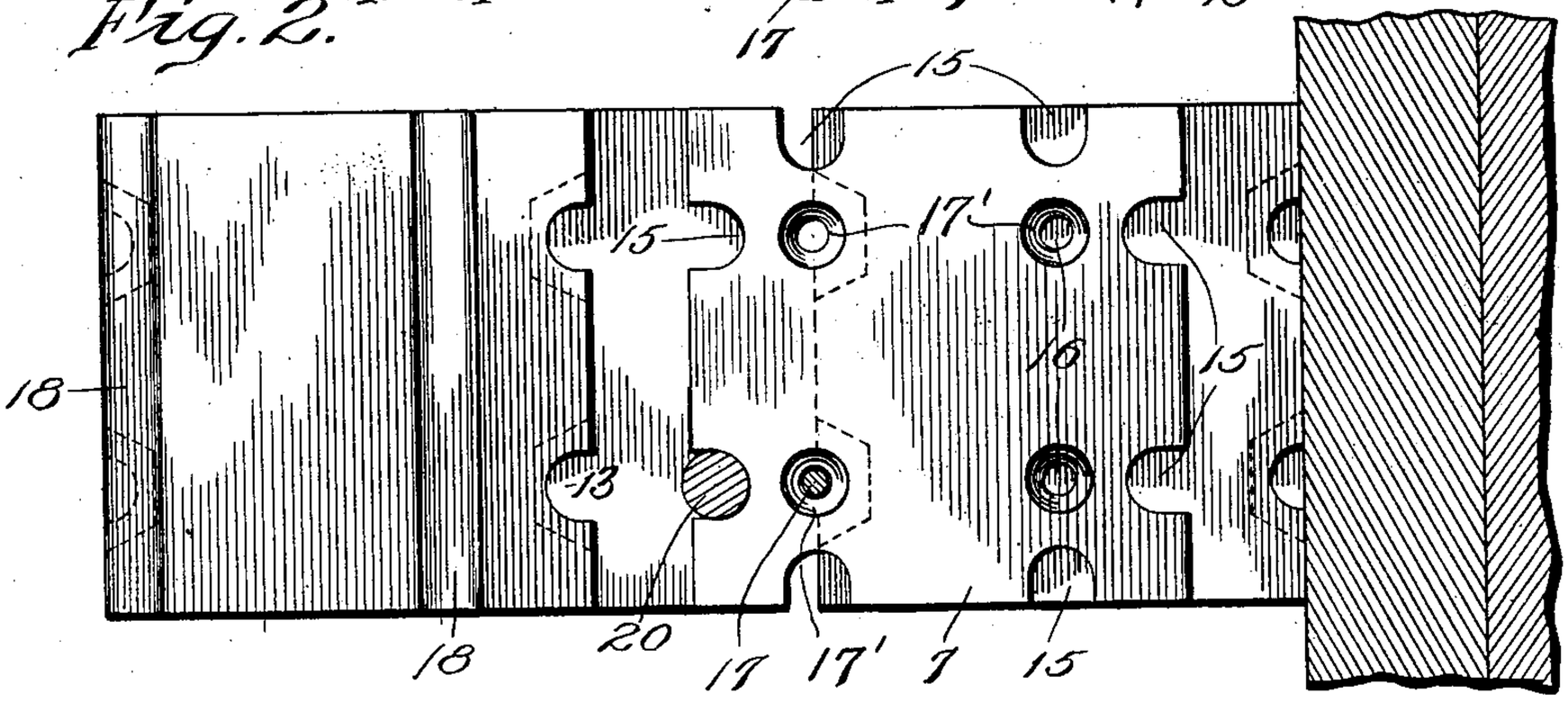


Fig. 2.



WITNESSES:

F. J. Hartman.

Utley E. Crane Jr.

INVENTOR.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

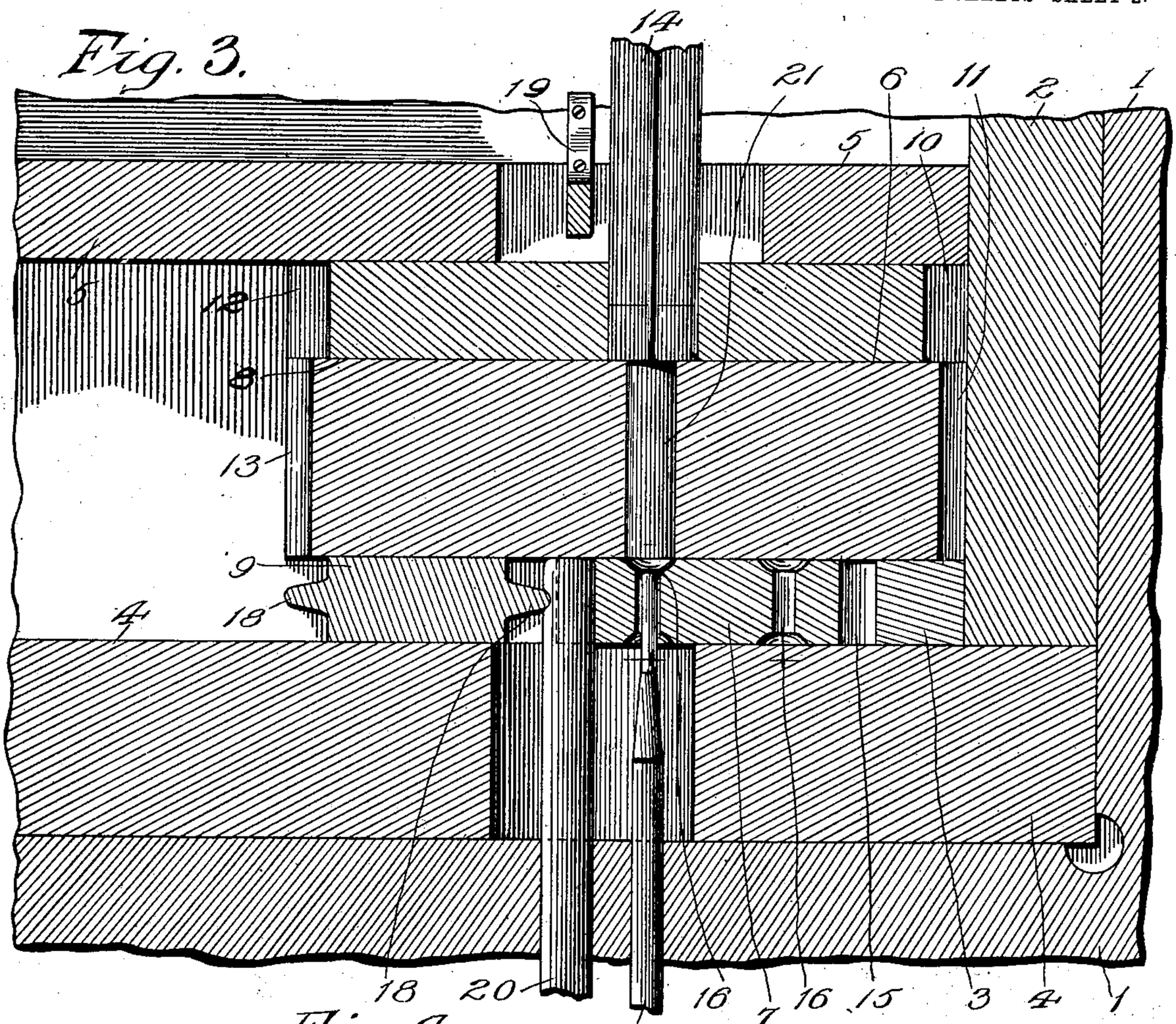
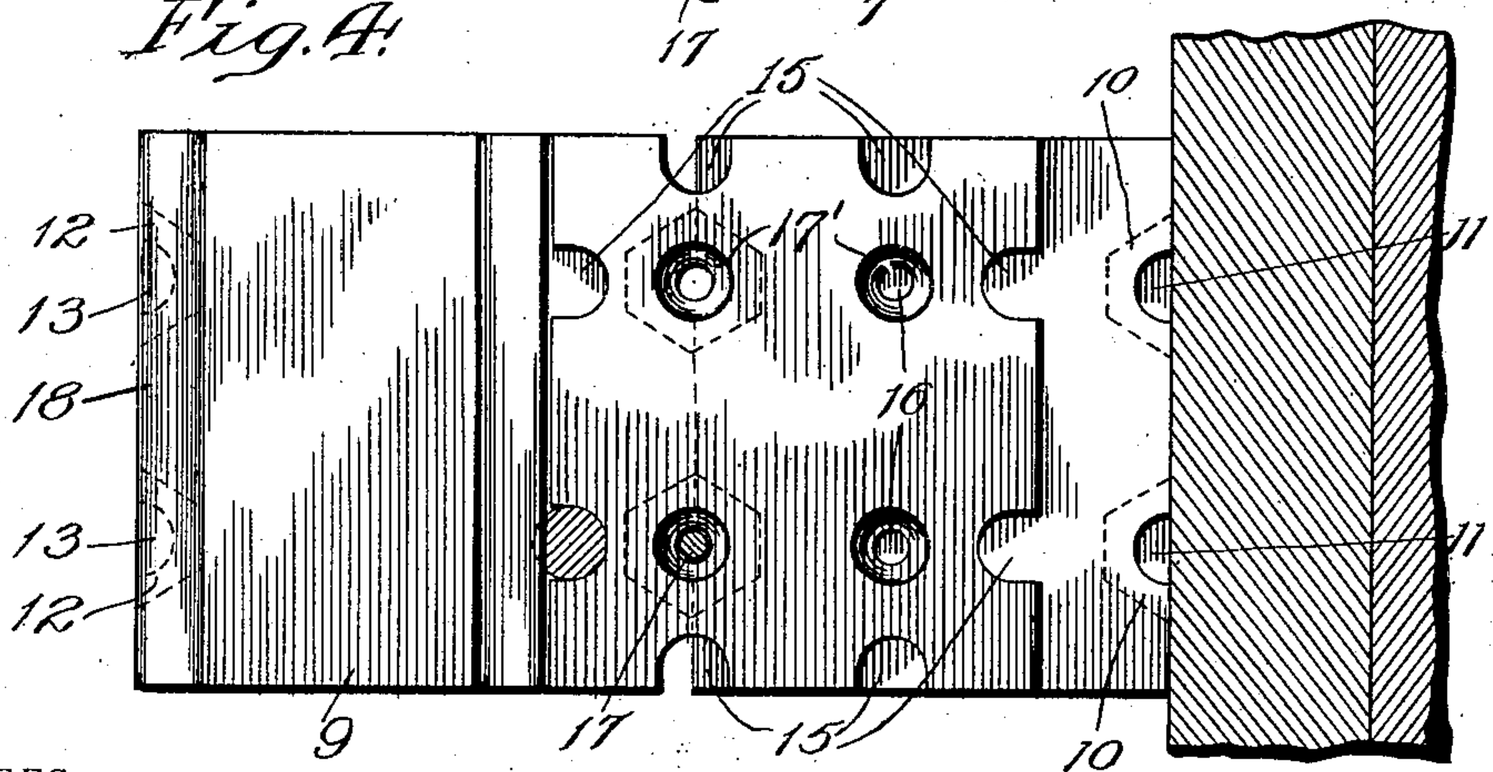


Fig. 4.



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UNITED STATES PATENT OFFICE.

ADAM H. FOX, OF WISSAHICKON, PENNSYLVANIA.

MANUFACTURE OF BOLTS OR RIVETS.

SPECIFICATION forming part of Letters Patent No. 744,183, dated November 17, 1903.

Application filed December 24, 1902. Serial No. 136,438. (No model.)

To all whom it may concern:

Be it known that I, ADAM H. FOX, residing at Wissahickon, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in the Manufacture of Bolts or Rivets, of which the following is a specification.

This invention relates to the operations of shearing, heading, and pointing sections of metal rods in making bolts, rivets, or the like, and embodies an improvement upon the subject-matter of the Letters Patent of the United States heretofore granted to me and numbered 666,092. By my present invention the mechanism is simplified and its function extended to pointing the end of the bolt or rivet, the cost of construction and maintenance are reduced, and the capacity and regularity of operation are improved.

The nature and characteristic features of the improvements will more fully appear by reference to the following description and the accompanying drawings, of which—

Figure 1 represents a sectional view of mechanism embodying the invention, the parts being shown in open relation. Fig. 2 represents a plan of the improved cutter and gag in their relation to the dies, the parts being shown in open relation. Fig. 3 represents a sectional view similar to that shown in Fig. 1 with the parts in closed relation, and Fig. 4 represents a sectional view similar to that shown in Fig. 2 with the parts in closed relation.

Referring to the drawings, the frame 1 supports the bearings 2 and 3 and the wearing-plates 4 and 5, which hold the stationary die-block 6, having the cutter-plate 7 thereon, and guide the movable die-block 8, having the gag-plate 9 thereon.

The die-block 6 has the head-forms 10 and the shank-forms 11 therein, and the die-block 8 has the head-forms 12 and the shank-forms 13 therein, these parts being reversible and respectively coacting with a header 14 in shaping a blank into a bolt or rivet.

The rectangular cutter or shearing-plate 7, which projects beyond the die-block 6 and coacts with the die-block 8 to shear the blanks, has in the respective edges thereof the jaws 15, which are adapted for engaging the rods from which the blanks are shorn, the plate being turned or reversed to bring other jaws into action when those coacting with the shearing-die become dull. The cutter is also provided with the apertures 16 and the concavities 17′, each symmetrically arranged with reference to the two adjacent jaws and adapted to permit the passage therethrough of a kicker 17, which discharges the article that has been formed.

The gag-plate 9 has thereon the gags 18, each extending the width of the plate and adapted to coact with the adjacent edge of the cutter, the gag-plate being reversible to bring into action either of its gags.

The rod 20 is thrust into the machine through the aperture 4′ in the wearing-plate 4 and between the open dies until its end strikes the stop 19, which limits the length to be shorn. The die-block 8 and the gag-plate 9 are then closed upon the rod upon which the edge of the block 8 coacts with the cutter 7, having the rod engaged in a jaw thereof, to shear off the upper section of the rod. The shorn section is now engaged by the closed forms 11 and 13, while the lower end lies above the concave form 17′, when the header 14 descends to upset the upper end and shape the head in the closed forms 10 and 12 and simultaneously to force the lower end into the form 17′, thus heading and pointing the article. The head and point being formed, the header rises, and thereon the kicker 17 discharges the bolt or rivet 21 through the aperture 5′ in the plate 5. As the die and cutter perform the act of shearing the rod the adjacent gag 18 presses the same against the edge of the cutter, acting to prevent and correct the distortion which is otherwise produced by this shearing operation and results in a defective head. By thus providing means for pointing the bolt or rivet simultaneously with the operation of heading the same the subsequent pointing operations heretofore employed are saved.

It will be understood that by making the cutter-plate square and forming two jaws in each side sixteen cutting edges are provided, and as the jaws are symmetrically arranged with reference to the pointing-forms and kicker-openings the plate can be turned and

reversed until all the cutting edges are worn down before removal for sharpening is required. Sharpening is readily effected by merely grinding or reducing the face of the plate, avoiding the former inconvenience of separating the cutting-knife from the holder therefor and again securing it at considerable inconvenience.

These improvements are adapted for use with automatic feeding mechanism by which a plurality of rods can be operated upon and a plurality of bolts or rivets formed simultaneously.

Having described my invention, I claim—

1. In the manufacture of bolts, rivets and the like, in combination, a stationary die, a shearing-plate having a plurality of cutting-jaws in an edge thereof, a movable die, and a gag-plate having a projecting gag which encompasses a plurality of jaws of said edge, substantially as specified.

2. In the manufacture of bolts, rivets and the like, in combination, a die, a reversible shearing-plate connected therewith and having a plurality of jaws in each of opposite edges thereof, kicker-holes in said plate corresponding to the respective jaws thereof, a second die, and a reversible gag-plate thereon having a plurality of gags each adapted to encompass a plurality of jaws of each of said edges, substantially as specified.

3. In the manufacture of bolts, rivets and the like, a forming-die, a shearing device and a pointing-form connected therewith, a second die adapted to act in shearing relation with said shearing device and in forming relation with said first die, and mechanism for forcing the end of a blank held by said dies into said pointing-form, substantially as specified.

4. In the manufacture of bolts, rivets and the like, in combination, a forming-die, a shearing-plate connected therewith having a kicker-hole and a pointing-form therein, a second die adapted to act in shearing relation with said shearing-plate and in forming relation with said first die, a device for forcing a blank into conformation with the resulting form, and a kicker for discharging the article formed, substantially as specified.

In testimony whereof I have hereunto set my hand, this 23d day of December, 1902, in the presence of the subscribing witnesses.

ADAM H. FOX.

Witnesses:
FRANCIS S. GINTHER,
UTLEY E. CRANE, Jr.