

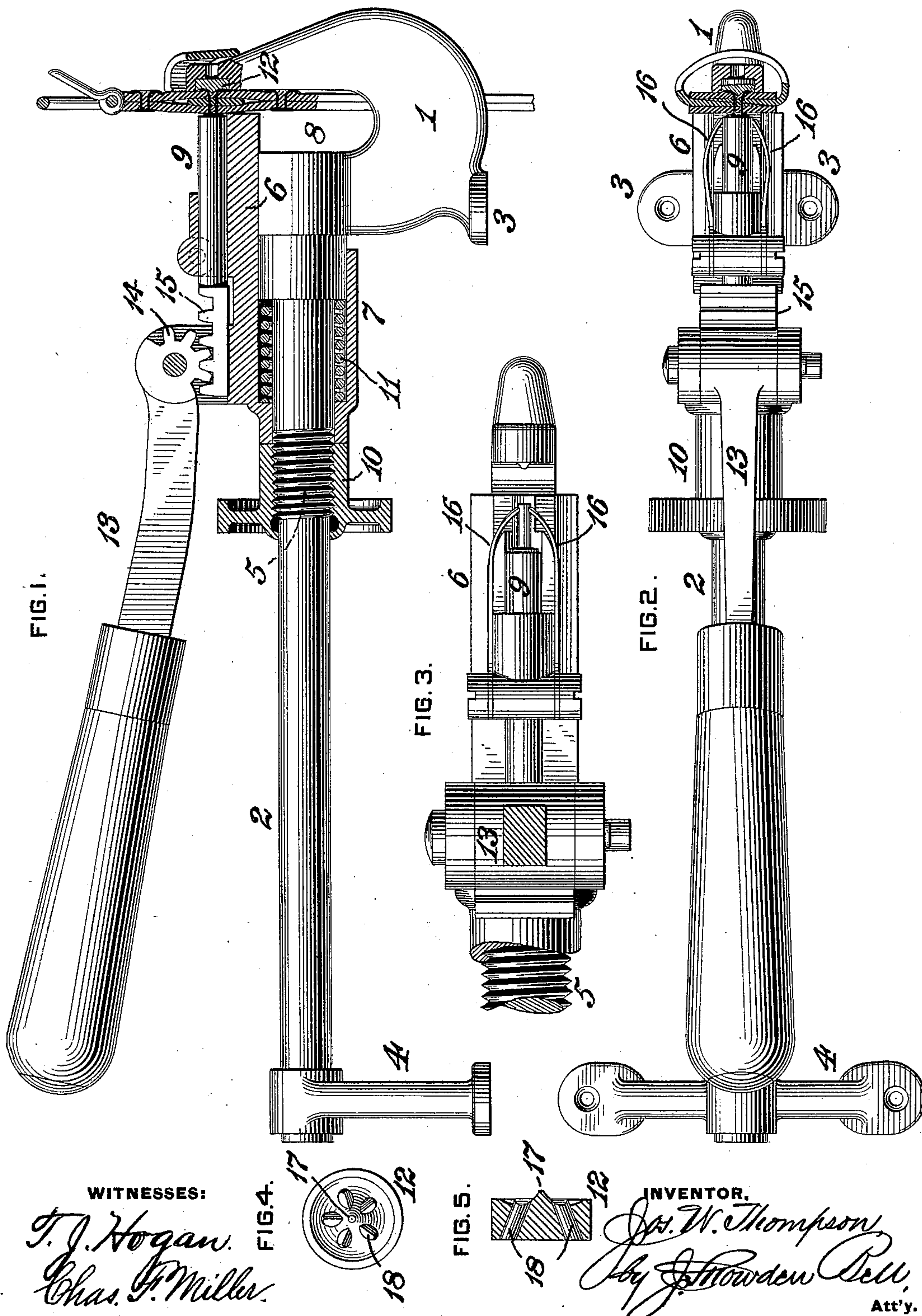
No. 637,489.

Patented Nov. 21, 1899.

J. W. THOMPSON.
RIVET SETTING TOOL.

(Application filed July 6, 1897.)

(No Model.)



WITNESSES:

T. J. Hogan.
Chas. P. Miller.

FIG. 4.

FIG. 5.

INVENTOR.

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UNITED STATES PATENT OFFICE.

JOSEPH W. THOMPSON, OF SALEM, OHIO.

RIVET-SETTING TOOL.

SPECIFICATION forming part of Letters Patent No. 637,489, dated November 21, 1899.

Application filed July 6, 1897. Serial No. 643,641. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. THOMPSON, of Salem, in the county of Columbiana and State of Ohio, have invented a certain new and useful Improvement in Tools for Setting Tubular Rivets, of which improvement the following is a specification.

My invention relates to rivet-setting tools of the class in which hollow rivets are forced through material to be riveted, which is usually leather or other flexible material, and the hollow end of the rivet split into several branches, which are turned over upon and pressed firmly against the adjacent side of the material to be riveted.

The object of my invention is to provide a rivet-setting tool which shall be simple, durable, and comparatively inexpensive in construction, and which shall possess the operative advantages of, first, adaptability to use in any desired position independently of the action of gravity upon the rivet; second, the capability of firmly gripping and holding the material to be riveted during the setting of the rivet, so as to be capable of use in mending harness while the same is upon a horse and other analogous work; third, capability of riveting the loops or keepers of buckles in place, and, fourth, capability of regularly and symmetrically splitting the open end of the rivet into any desired number of equal branches.

The improvement claimed is hereinafter fully set forth.

In the accompanying drawings, Figure 1 is a side view, partly in elevation and partly in section, of a rivet-setting tool, illustrating an application of my invention, the parts being shown in the positions occupied when the operation of riveting a buckle-keeper is nearly completed; Fig. 2, a plan or top view of the same, showing the rivet-gripping springs as having been opened by the movement of the parts after the rivet has entered the material; Fig. 3, a similar view, on an enlarged scale, of a portion of the same, showing a rivet as gripped in position to be operated on; Fig. 4, a face view, on an enlarged scale, of the splitting-die; and Fig. 5, a transverse section, on a similar scale, through the same.

In the practice of my invention I provide

a tool-body composed of a recessed or U-shaped head 1 and a shank or stock 2, which may be either integral with the head or secured to one side thereof. In order to support the tool upon a bench or table when desired, lugs 3 may be formed upon the sides of the head and a rest 4 be connected to the shank at or near its outer end. In such case the rest should be so connected to the shank as to be readily removable when desired to facilitate the use of the tool in positions other than a horizontal one. The shank may, if preferred, be curved downwardly to the plane of the face of the lugs 3, so as to itself act as an end rest. A screw-thread 5 is cut upon the shank a short distance from the head, for a purpose presently to be described. A block or carrier 6, having a lower cylindrical sleeve 7, which fits freely on the shank 2 adjacent to the head, is fitted to slide longitudinally thereon and on the shank toward and from the jaw or portion of the head which is on the outer side of a recess or opening 8, formed therein for the reception of the material to be riveted, and a punch or plunger 9 is mounted in a guide or socket on the carrier, with the capacity of independent movement thereon toward and from the jaw of the head. The desired movement in either direction and adjustment in desired position of the carrier and the parts supported thereon are effected by means of a nut 10, engaging the screw-thread 5 of the shank and bearing against the adjacent end of the sleeve 7 of the carrier, and a helical spring 11, which encircles the shank within said sleeve and bears at its opposite ends against shoulders on the shank and sleeve, respectively. By turning the nut in one direction the carrier is moved toward the jaw against the resistance of the spring into position to clamp and hold material to be riveted between its face and the jaw, and by a reverse motion of the nut its bearing on the carrier is released and the carrier is moved back by the spring to such distance from the jaw as may be permitted by the adjustment of the nut. It will be seen that the prime function of the carrier is to act as a clamping device for holding the material to be riveted and that while for convenience and simplification of construction it also

serves as the support of the punch the latter might, if preferred, be mounted in a support fixed to the body of the tool.

The punch or plunger 9 is fitted to reciprocate on the carrier in line axially with a splitting-die 12, which is fixed on the inner face of the jaw of the head and made either integral therewith or separate therefrom, as preferred, and is moved toward and from said die by a hand-lever 13, pivoted on the carrier and having a segment-gear 14, concentric with its pivot, which engages a rack 15, formed on the upper side of the punch or plunger. By this means the punch may be moved with any required degree of force toward the splitting-die to effect the insertion and turning over of the rivet in and on the material to be riveted by the compressive action of its end face upon the rivet and thereafter retracted to admit of the removal of the riveted material from the tool.

In order that the tool may be capable of operation in any desired position, so as to be independent of the action of gravity upon the rivet, I provide means whereby the rivet is held in contact with the end face or head of the punch during its traverse toward the material to be riveted and prior to its entrance therein. To this end in cases where the rivets used are of iron or steel I provide a magnetized punch and form a carrier (or that portion thereof through which the punch moves) of non-magnetic material, such as bronze, brass, or any metal other than iron or steel. As an equivalent means of holding the rivet to the punch prior to its entrance into the material gripping-springs 16 may be connected to the carrier, said springs being located on opposite sides of the punch and bent inwardly at and adjoining their free ends toward the same, so that they clamp the rivet between them when inserted in the tool and hold it until it has entered the material, as shown in Fig. 3, after which they are spread apart and released from the rivet by the forward movement of the punch, as shown in Fig. 2. The rivet is compressed and headed by and between the end face of the punch 9 and a suitable riveting abutment or bearing on the inner face of the jaw of the head 1, and in order that the hollow end of the rivet may be regularly and symmetrically split into any desired number of equal branches this abutment or bearing is preferably provided by a splitting-die 12, inserted and held in the jaw in line axially with the punch. The splitting-die is provided with the usual central conical point 17, which enters the open end of the rivet, and a substantially radial series of splitting blades or edges 18, by which the body of the rivet is split adjacent to the open end into a desired number of equal parts, thereby forming a regularly and symmetrically divided head.

In the operation of the tool the material to be riveted, which may be in one, two, or more

thicknesses, is inserted in the recess or opening of the head and clamped between the inner face of the jaw and the adjacent end of the carrier by proper adjustment of the nut 10. The rivet is laid on the carrier with its head in contact with the end face of the punch, to which it is held either by magnetic action when the same is magnetized or by the gripping-springs, if the latter expedient be preferred and employed. By movement of the hand-lever to the left with the proper degree of force the rivet is thrust into and through the material and its open split end turned over on the farther side thereof by the splitting-die. The carrier is then retracted by sufficient release of the nut and the riveted material removed. As shown in the drawings, the keeper of a buckle may be riveted or any other operation performed upon harness without removing it from the animal, as the tool can be used in any desired position, and it may be employed with equal facility for working on a bench or table.

The adjustment required for different thicknesses of material to be riveted and the clamping of the same while being riveted are provided for by the movement of the carrier, which feature permits the abutment at the outer end of the jaw of the head to be made sufficiently small to pass into the inside of buckle-loops, as shown in Figs. 1 and 2.

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

1. In a tool for setting tubular rivets, the combination, substantially as set forth, of a body having a recessed head and a threaded shank, a riveting-abutment in the recess of the head, a carrier fitted to traverse on the shank, a nut engaging the thread and adapted to bear on the carrier, a spring bearing on the carrier in opposite direction to the nut, a punch fitted to traverse on the carrier, in line axially with the abutment, and a hand-lever by which movement in either direction may be imparted to the punch.

2. In a tool for setting tubular rivets, the combination, substantially as set forth, of a recessed or U-shaped head, a threaded shank or stock projecting therefrom, a riveting-abutment in the recess of the head, a carrier fitted to traverse on the body and guided on the shank, a nut engaging the thread of the shank and adapted to bear on one end of the carrier, a spring encircling the shank and bearing on a shoulder thereon and on an internal shoulder in the carrier, a punch fitted to slide in a guide on the carrier in line axially with the riveting-abutment, a rack formed on the punch, a hand-lever pivoted to the carrier, and a segment-gear on the hand-lever engaging the rack on the punch.

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Witnesses:

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W. L. MERWIN.