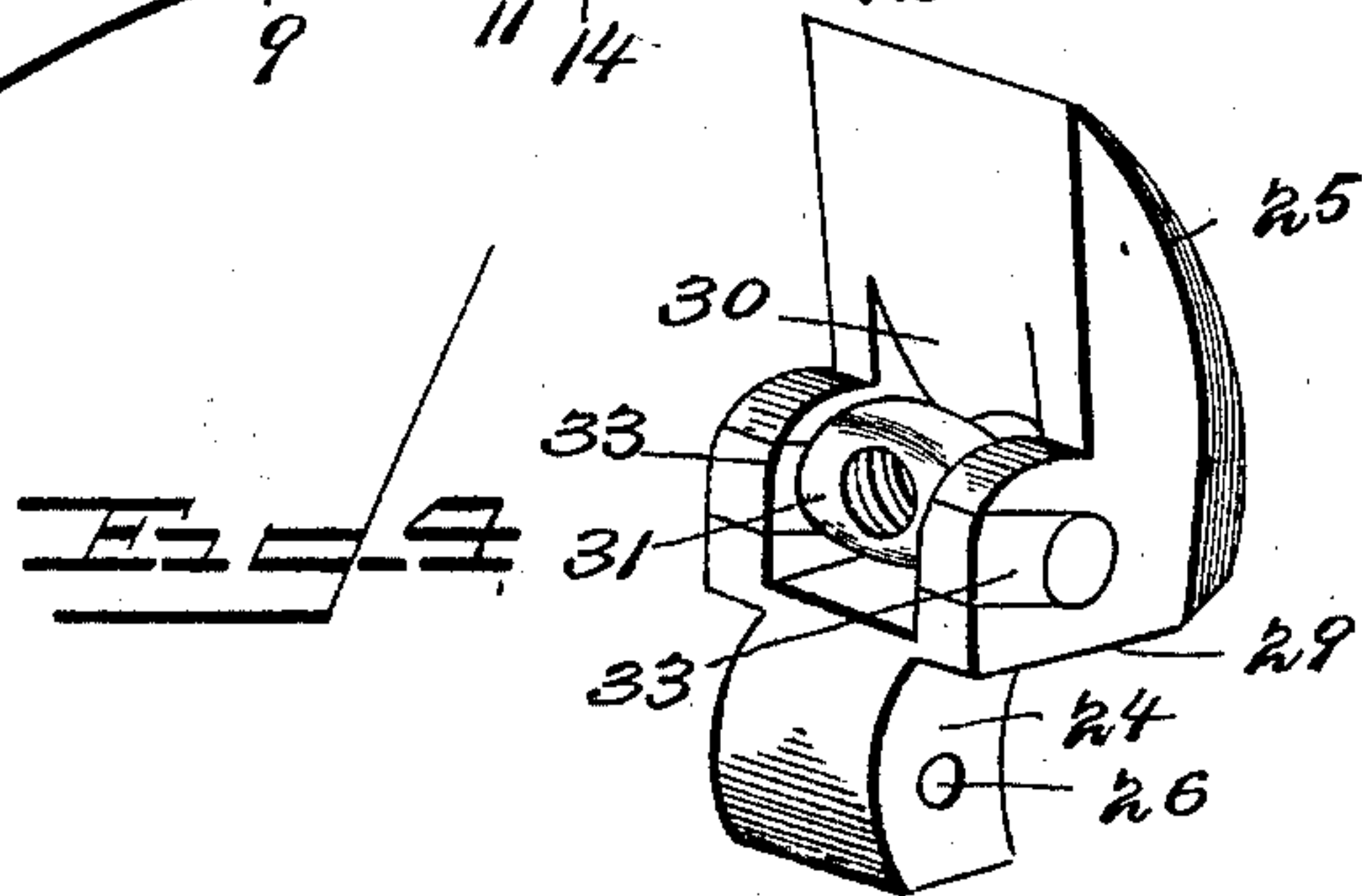
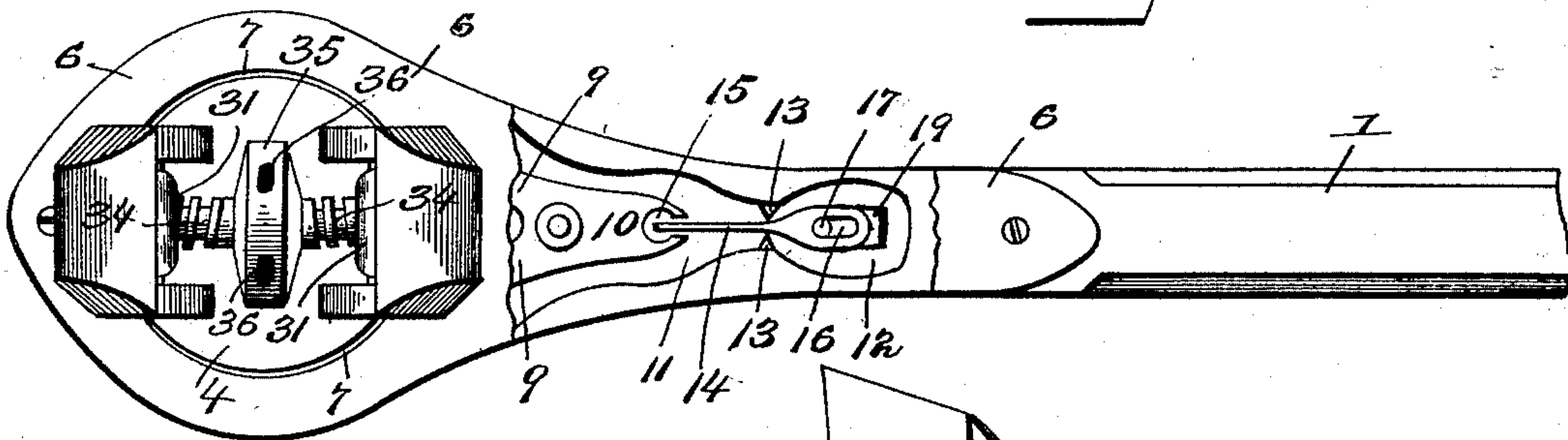
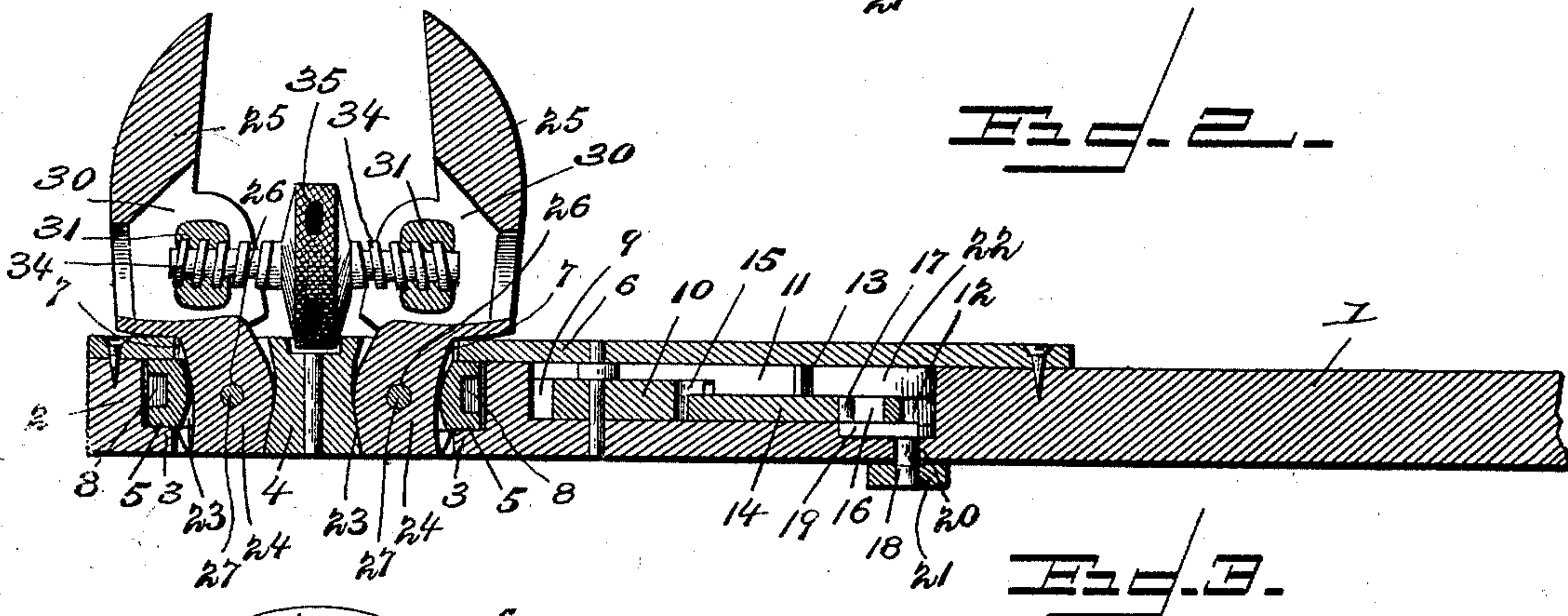
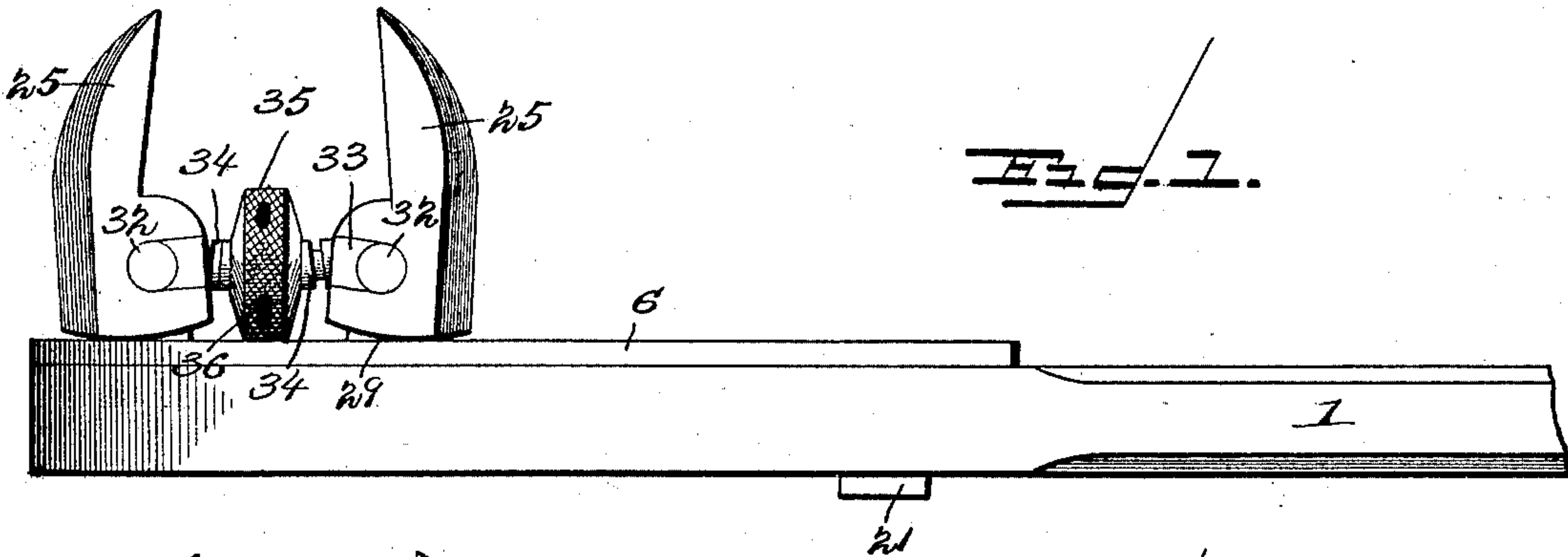


(No Model.)

E. B. HYRE.
RATCHET WRENCH.

No. 509,810.

Patented Nov. 28, 1893.



Inventor

Edward B. Hyre,

Witnesses

E. H. Stewart.

[Signature]

By *his* Attorneys.

Cashow & Co.

UNITED STATES PATENT OFFICE.

EDWARD B. HYRE, OF ELK FORK, WEST VIRGINIA.

RATCHET-WRENCH.

SPECIFICATION forming part of Letters Patent No. 509,810, dated November 28, 1893.

Application filed July 7, 1893. Serial No. 479,842. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. HYRE, a citizen of the United States, residing at Elk Fork, in the county of Jackson and State of West Virginia, have invented a new and useful Reversible Ratchet-Wrench, of which the following is a specification.

My invention relates to a reversible ratchet wrench, the objects in view being to provide simple and direct means for reversing the ratchet; and furthermore, to provide improved means for connecting and mounting the jaws of the wrench.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings: Figure 1 is a side view of a wrench embodying my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a plan view with the cap-plate partly broken away. Fig. 4 is a detail view in perspective of one of the jaws detached.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates the handle, provided at one end with an annular bearing or seat 2, rabbeted to form a flange 3, and 4 represents a head, which is rotatably mounted in said bearing or seat and is shouldered, as shown at 5, upon its lower side, to receive the flange 3. The upper side of the bearing or seat is covered by means of a cap-plate 6, secured in place by means of screws or similar devices, and provided with an opening 7 to receive the upper reduced side of the rotary head. Said head is provided with peripheral ratchet-teeth 8, which are engaged by either of the tongues 9, of the pawl 10, the latter being mounted in a cavity or recess 11, which is formed in the handle adjacent to the annular bearing or seat and communicating therewith. The cavity 11 is provided with a communicating chamber 12, and between said compartments of the cavity the side walls approach each other to form wedge-shaped oppositely-disposed bearing points 13, the interval between which is just sufficient to receive the shank of the actuating spring 14. Said

spring is fitted at its free end in a perforation 15, in the rear end of the pawl 10, and is provided at the opposite or rear end with a slot 16, in which fits a stud or pin 17, of the reversing spindle 18. Such reversing spindle is provided with an offset or crank 19, which, at its free end, bears the pin 17, the reversing spindle being mounted in a suitable bearing 20, in the handle and being provided upon the outer surface of the latter with a thumbhold 21.

Reference to Fig. 3 of the drawings will show that turning the reversing spindle through a half-revolution will throw the rear end of the actuating spring from one side of its compartment of the cavity 11 to the other, thus reversing the position of the pawl 10 and bringing the opposite arms thereof alternately into engagement with the teeth of the rotary head.

To the under surface of the cap-plate 6 is fixed a block 22, which fits into the compartment 12 of the cavity to fill the space between the plane of the upper surface of the handle and that of the upper side of the actuating spring, to hold the latter and the reversing spindle in their proper relative positions.

The rotary head is provided with opposite contiguous recesses 23, in which are fitted the depending curved shanks 24, of the jaws 25, such shanks being transversely perforated, as shown at 26, to receive the pivot-pins 27, which are arranged in the registering perforations formed in the rotary head parallel and between the planes of the upper and lower sides thereof and intersecting the recesses 23. The jaws are shouldered, as shown at 29, at the upper ends of the shanks 24, to bear upon the upper surface of the rotary head, and contiguous to such shoulders are cut away, as shown at 30, to receive the pivotal or swinging nuts 31. These nuts are provided with lateral trunnions 32, mounted in bearings 33, in opposite sides of the jaws, and the oppositely-threaded adjusting-screw 34 engages such nuts and is provided with a central milled enlargement 35, provided with sockets 36, to receive the end of a lever, pin or nail which may be employed to rotate the same to effect the adjustment of the jaws. The cut-away portions 30 are extended through to the outer sides of the

jaws to form vertically-disposed slots 36, to permit the free vertical movement of the terminals of the adjusting-screw.

From the above description it will be understood that the simultaneously-adjustable jaws are pivotally instead of slidably connected to the rotary head, thus giving a positive connection, and at the same time permitting the removal of either or both of the jaws by the disengagement of one or both of the pivot-pins; and furthermore, the swinging or pivoted nuts which engage the opposite ends of the adjusting-screw enable the jaws to be placed as desired without cramping the screw. Furthermore, the means for reversing the pawl which controls the ratchet head, are inclosed within a suitable cavity, as is the toothed portion of the head, thus preventing the dust and dirt from accumulating thereon and increasing the frictional contact of the parts.

The only portion of the wrench which is exposed is the mechanism for adjusting the separation of the jaws, and as such device is arranged between and within cavities of the jaws, they are protected from a rapid accumulation of dust.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having described the invention, what I claim is—

1. In a wrench, the combination with a rotary ratchet head, and means for operating the same, of jaws pivotally connected to said head, swinging nuts arranged upon and carried by the jaws, and an oppositely-threaded adjusting-screw engaging said nuts, substantially as specified.

2. In a wrench, the combination with a rotary ratchet head, and means for operating the same, of jaws provided with stems fitting in recesses of said head, pivot-pins engaging

registering perforations in the head and shanks, swinging nuts carried by the jaws, and an oppositely-threaded adjusting-screw engaging said nuts, substantially as specified.

3. In a wrench, the combination with a rotary head and means for operating the same, of jaws pivotally connected to said head and a right and left threaded adjusting screw connecting the jaws for simultaneously adjusting the same, substantially as specified.

4. In a wrench, the combination with a handle provided with a terminal bearing or seat, a cavity or recess being formed in said handle adjacent to and communicating with such bearing or seat and having a reduced communicating compartment 12 between which and the main portion of the cavity are arranged the wedge-shaped fulcrum points 13, a rotary shouldered head mounted in said bearing or seat and carrying jaws and means for operating the same, of a removable cap covering said bearing or seat and the communicating cavity, a reversible pawl pivotally mounted in the cavity to engage the ratchet-teeth of the rotary head, an actuating spring arranged at an intermediate point between the fulcrum points 13 and provided with a slotted rear end, a reversing spindle mounted in a suitable bearing in the handle and provided with an offset or crank 19 carrying a stud or pin 17 to engage the slot of the actuating spring, and a block fixed to the under surface of the cap-plate and fitting in the compartment 12 of the cavity to bear upon the upper side of the actuating spring and the extremity of the pin or stud 17 to hold the latter in operative relation, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

EDWARD B. HYRE.

Witnesses:

JAS. M. POLING,
T. E. GRAHAM.