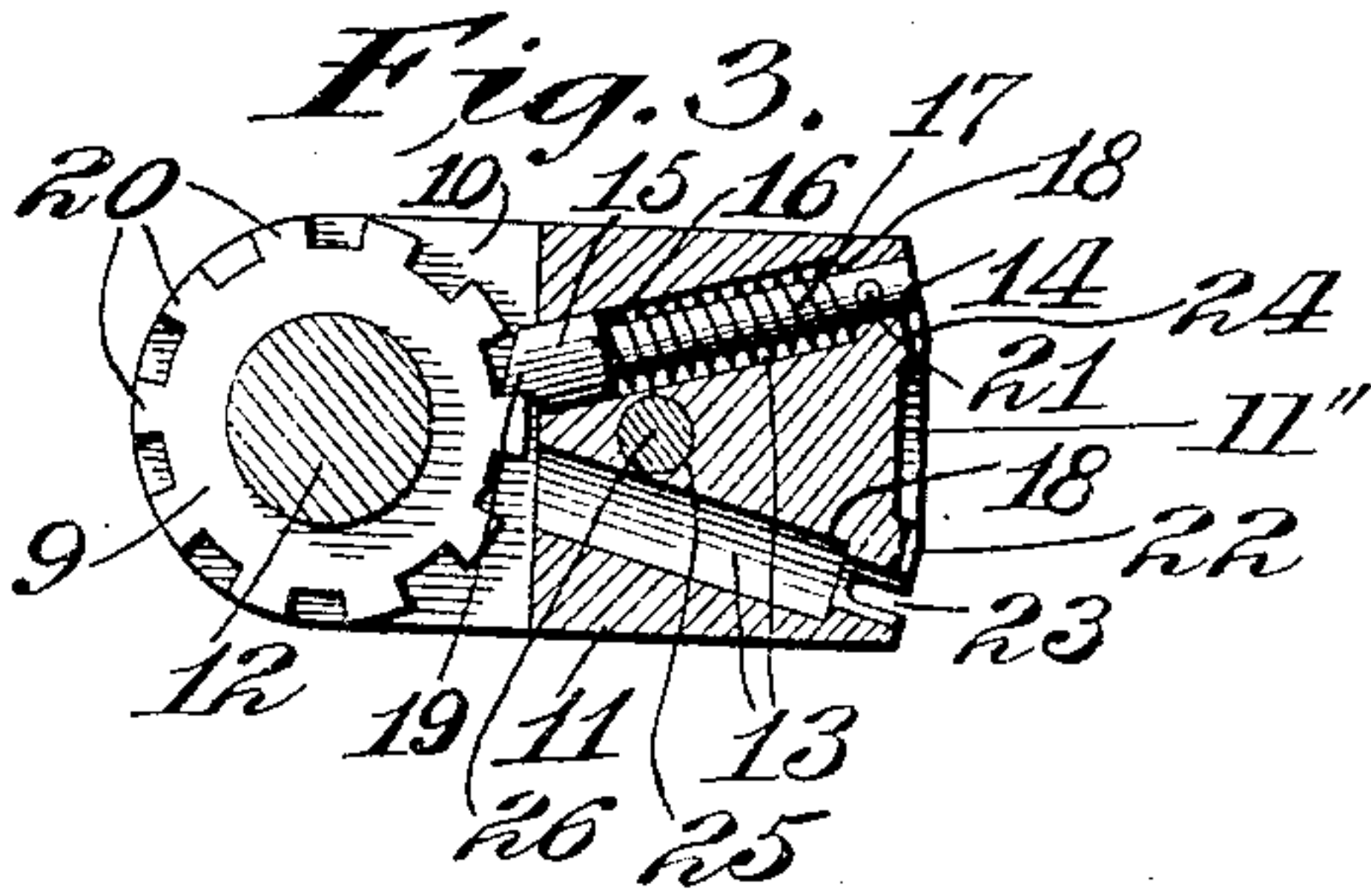
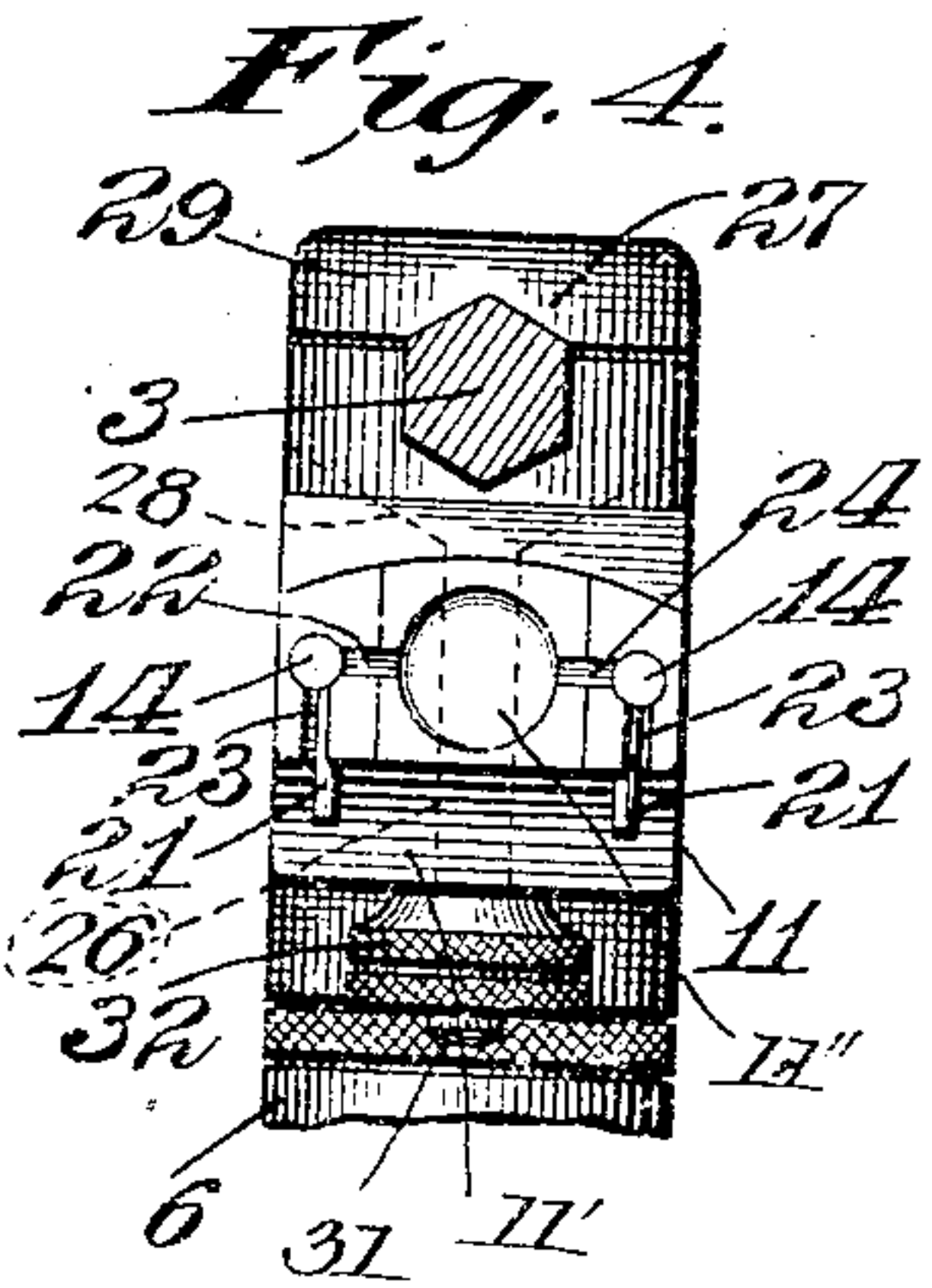
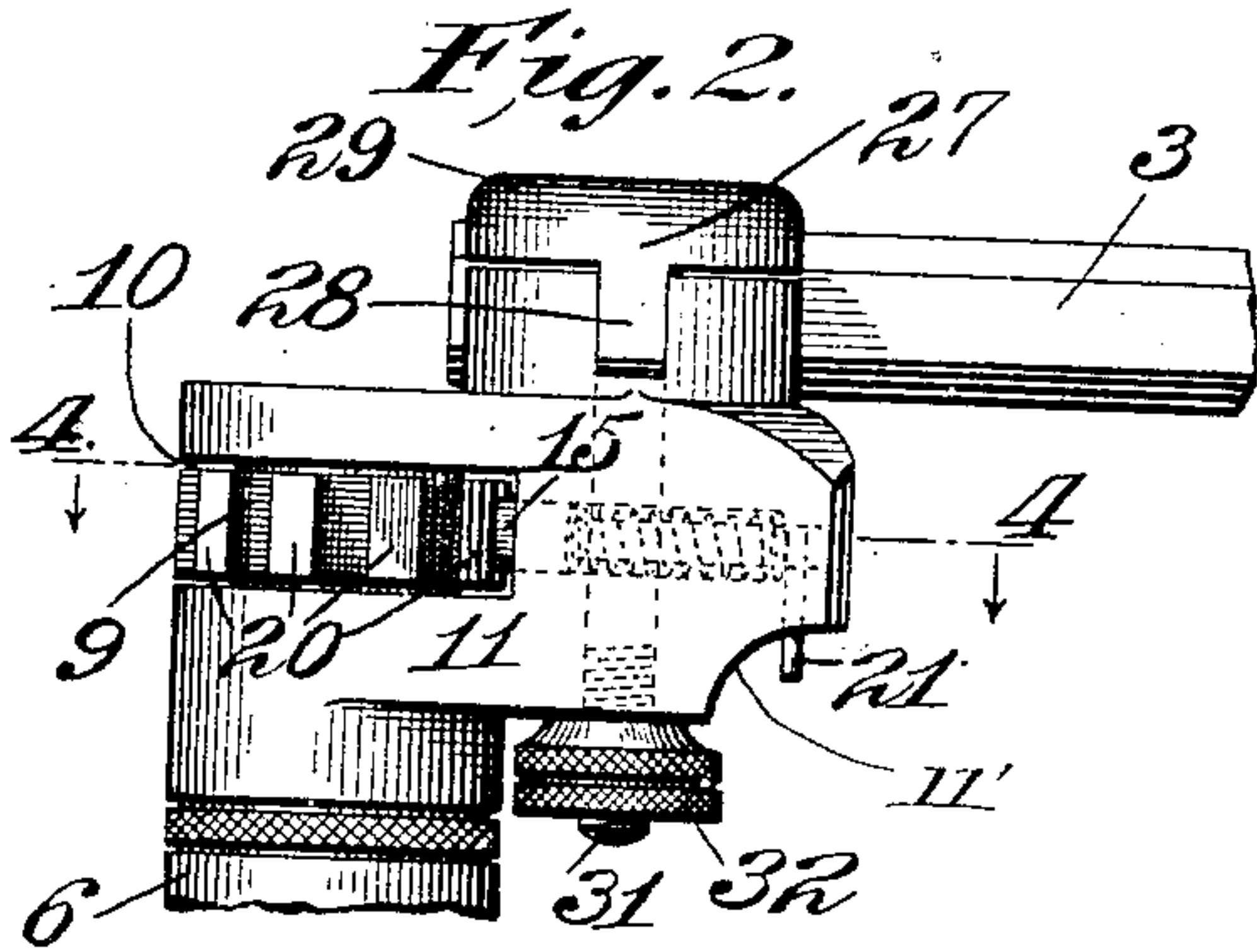
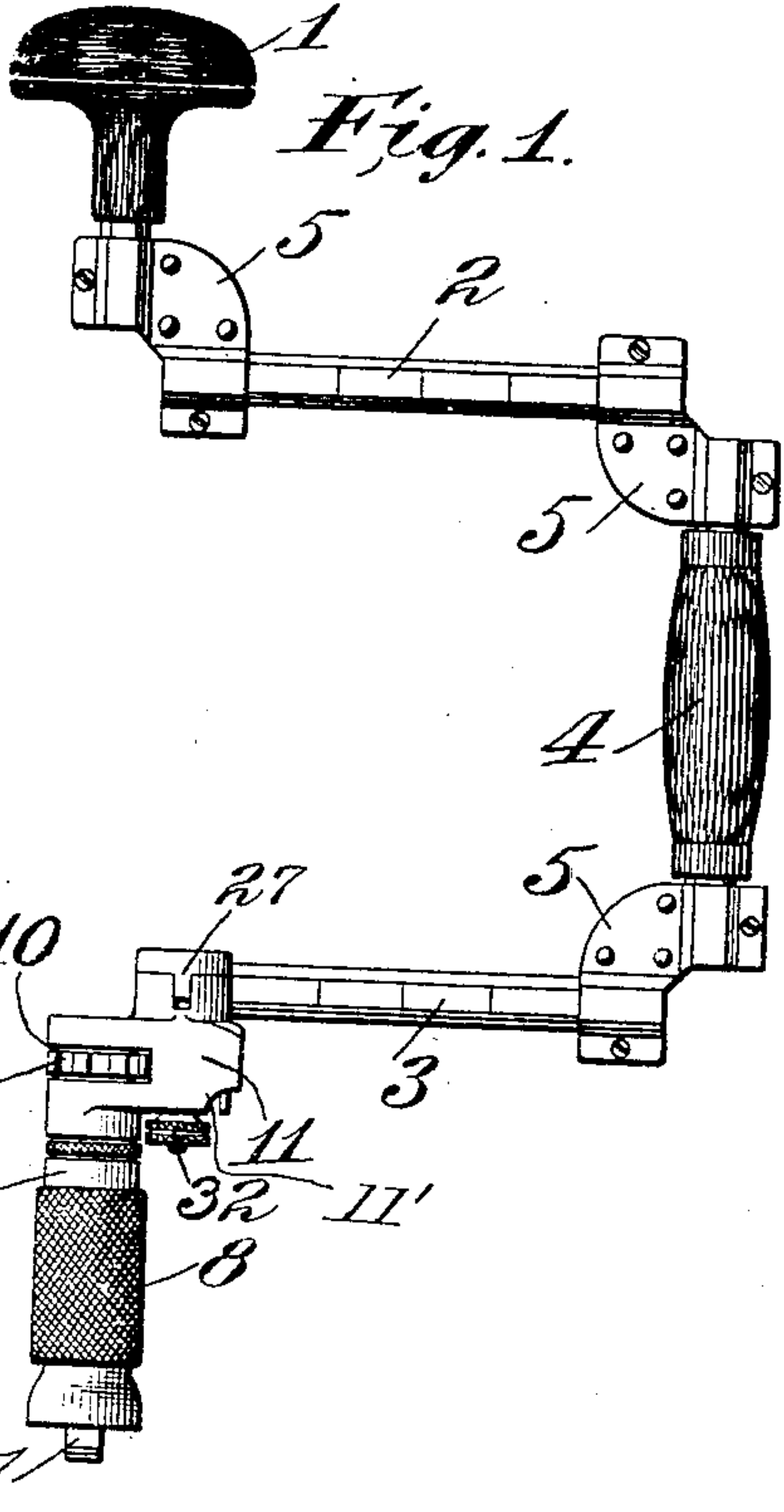


No. 810,409.

PATENTED JAN. 23, 1906.

G. M. D. HEARD.  
RATCHET BRACE.

APPLICATION FILED JULY 17, 1905.



*Witnesses:*  
M. E. Johnson.  
Gladys Walton.

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George M. D. Heard,  
by Hugh V. Wagner  
His Atty.



# UNITED STATES PATENT OFFICE.

GEORGE M. D. HEARD, OF WORCESTER, MASSACHUSETTS.

## RATCHET-BRACE.

No. 810,409.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed July 17, 1905. Serial No. 269,984.

*To all whom it may concern:*

Be it known that I, GEORGE M. D. HEARD, a citizen of the United States, residing at the city of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Ratchet-Braces, of which the following is a specification.

This invention relates to ratchet-braces, particularly of the kind illustrated in my United States Letters Patent No. 779,079.

The features of invention will be hereinafter described, and particularly pointed out in the claims.

In the drawings accompanying this specification and forming part of same and in which like numbers of reference denote like parts wherever they occur, Figure 1 is a side elevation of a ratchet-brace embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional view on the line 4 4, Fig. 2. Fig. 4 is a rear elevation of the subject-matter of Fig. 2.

The top 1, sweep-arms 2 and 3, handle 4, and means for connecting same together, consisting of the elbows 5, are all constructed and arranged as described in my above-mentioned Letters Patent.

The chuck-holder 6 may be of any ordinary or desired form, but is illustrated in the drawings as having the jaws 7, the revolubly-adjusting drum 8, and ratchet 9 located in the recess 10 in the head 11 of the chuck-holder 6. The ratchet 9 is fixed to the shaft 12 bearing the jaws 7. In the head 11 a pair of bores 13 is arranged on lines approximating the radial lines of the ratchet 9, and in said bores a pair of plungers 14 is located. Each plunger 14 has a head 15, which provides a shoulder 16 or abutment for the helical spring 17, which at its other end abuts against the shoulder 18 at the end of the bore 13 away from the ratchet 9. On the head 15 of the plunger 14 is formed a tooth 19, which engages with one of the teeth 20 of the ratchet 9 when it is desired to engage said ratchet for rotation. It will be obvious that the right-hand plunger 14 is intended for use when the ratchet is to be rotated in one direction and that the left-hand plunger 14 is to be used when the ratchet is rotated in the opposite direction. The arrangement of the bores 13 so that the plungers are disposed toward the ratchet on lines approximating the radial lines thereof is of great advantage, as thereby the best resistance of the plunger to the

ratchet is obtained. When the right-hand plunger 14 is in engagement with the ratchet 9, the left-hand plunger 14 is withheld from engagement therewith by the pin 21, fixed at right angles to and upon the plunger 14, said pin 21 resting in the groove 22 on the rear end of the head 11. When the pin 21 is in this position, the left-hand plunger 14 is retracted within the left-hand bore 13 from engagement with the ratchet 9, the spring 17 being compressed. At the same time the similar pin 21 on the right-hand plunger 14 will be resting in the slot 23. When it is intended that the ratchet 9 shall rotate in the opposite direction, the pin 21 on the left-hand plunger 14 is lifted out of groove 22 and turned so as to rest in left-hand slot 23, which allows the spring 17 to force the plunger 14 into engagement with one of the teeth 20 on ratchet 9, and at the same time by pulling upon pin 21 of the right-hand plunger 14 the latter may be withdrawn from engagement with the ratchet and held thus disengaged by turning said pin 21 to rest in the groove 24. Head 11, at its rear end on the bottom thereof, is cut away, as at 11', in the form of an arc, enabling ready access to and manipulation of pins 21, and is further formed with a circular depression 11'', central between slots 23, which serves to enable the operator's fingers to readily grasp whichever of the pins which may occupy grooves 22 or 24, it being thereby apparent that the depression serves in a like capacity for each of the pins 21 in being common to each. A vertical opening through the head 11 allows for the passage of the shank 26 of the clamp 27 for the sweep-arm 3. Through said clamp 27 a polygonal opening is cut for the reception of the sweep-arm 3 and corresponds in angular form thereto, the yoke portion 28, borne by the shank 26, being surmounted by an overlapping head or pair of flanges 29, containing a part of the angular opening for the sweep-arm 3 for the sake of obtaining a better bearing upon said arm 3, and thereby more tightly clamping same against the angular walls of the opening 30 in the head 11. The lower end of the shank 26 is threaded at 31 and a thumb-nut 32 cooperating therewith forms means to draw the clamp 27 and arm 3 into tight contact with the angular walls of the opening 30.

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

1. In combination with the lower sweep-



arm of a ratchet-brace, a head having a recess at its front end secured thereto, a shaft in the head having jaws on its lower end and a ratchet on its upper end extending in said recess, the rear end of said head having a central depression therein with a pair of horizontal grooves leading into said depression and on opposite sides of the latter, said rear end of the head further having vertical slots therein of considerably greater depth than said grooves, and spring-pressed plungers in the head having pins on their outer ends to engage in said slots and grooves.

2. In combination with the sweep-arms, and handle of a ratchet-brace, a head having a ratchet and jaws, a pair of spring-pressed plungers in said head, a pin carried by each plunger on the rear end thereof, said head at its rear being cut away on its under side to enable said pins to project in said cut-away part, said head being formed on its rear end with a central depression and with a pair of horizontal slots extending into said depression and being further formed with a pair of vertical slots of considerably greater depth than said horizontal slots.

3. In combination with the lower sweep-arm of a ratchet-brace, a head secured thereto and carrying a ratchet and jaws, a pair of spring-pressed plungers in said head radially disposed with respect to said ratchet and having a depression formed in the rear end of the head located between the same at their outer ends, said head at its rear end further having two pairs of cut-out portions of unequal depth, each of one pair leading into

said depression, and pins carried by the plungers to engage in said cut-out portions.

4. In combination with the lower sweep-arm of a ratchet-brace, a head secured thereto and carrying a ratchet and jaws, a pair of spring-pressed plungers in the head, said head at its rear end being formed with two horizontal grooves and with a depression into which the inner end of each slot leads, said head also having a pair of vertical slots of greater depth than said horizontal grooves and a cut-out portion on its bottom into which each of said vertical slots leads, said plungers each having an outwardly-extending pin to be received in said slots and grooves, and at their outer ends project in said depression and cut-out portion.

5. In combination with the lower arm of a ratchet-brace, a head secured thereto, a shaft in the head, a ratchet on the shaft, a pair of plungers arranged in said head and disposed toward said ratchet on lines approximating the radial lines thereof, said plungers at their outer ends being spaced apart with a depression formed in the head between said plunger ends, said head further having slots leading from said plungers ends, and pins on the plungers to be received in said slots and to extend in said depression.

In testimony whereof I have affixed my signature in presence of two witnesses.

GEORGE M. D. HEARD.

Witnesses:

JAMES W. BURKE,  
GEORGE E. BELISLE.