

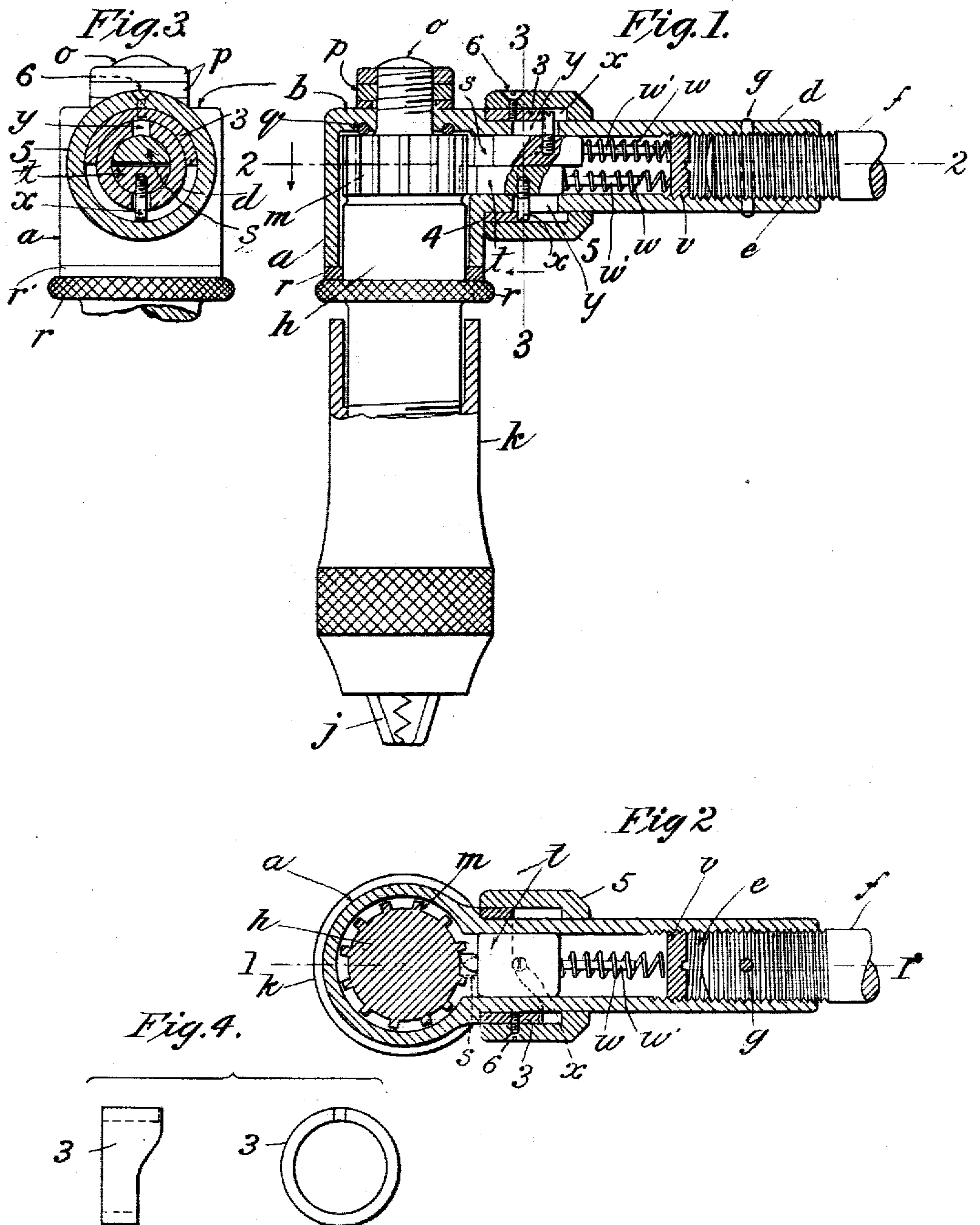
No. 814,319.

PATENTED MAR. 6, 1906.

W. A. PECK.

RATCHET MOVEMENT.

APPLICATION FILED FEB. 25, 1905.



Witnesses:
H. L. Sprague
E. L. Smith.

Inventor.
William A. Peck
by *Chapman & Co.*
Attorneys.

UNITED STATES PATENT OFFICE.

WILLIAM ALLEN PECK, OF JERSEY CITY, NEW JERSEY.

RATCHET-MOVEMENT.

No. 814,319.

Specification of Letters Patent.

Patented March 6, 1906.

Application filed February 25, 1905. Serial No. 247,378.

To all whom it may concern:

Be it known that I, WILLIAM ALLEN PECK, a citizen of the United States of America, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Ratchet-Movements, of which the following is a specification.

This invention relates to bit-braces and like rotatable tools, the object thereof being to provide a ratchet mechanism for tools of this class whereby the tool-chuck associated therewith may be rotated to the right or left.

The invention resides, essentially, in the peculiar construction of the ratchet device and its adaptation to the tool and in the construction of the casing, which receives the operative parts of the ratchet device, whereby all dirt and metal chips may be excluded from these parts and the cost of production reduced.

In the drawings, Figure 1 is a sectional elevation of that part of a bit-brace in which the invention has been embodied in its preferred form. Fig. 2 is a sectional view in a plane at right angles to that of Fig. 1 and indicated by the line 2 2 on that figure, one pawl-tooth being in dotted lines. Fig. 3 is another sectional view, the plane of which is on line 3 3 of Fig. 1. Fig. 4 is a side elevation and end view of a cam-ring to actuate the pawls of the ratchets.

Referring to the drawings, *a* indicates a hollow cylindrical casing having one closed end *b* and a rectangularly-disposed tubular extension *d*, the periphery of which is substantially in the plane of said closed end of the casing. The outer end of the tubular extension, which is round in cross-section, is screw-threaded internally, as at *e*, and the lower end of the crank-arm *f* of the brace is screwed therein, a portion only of this arm being shown in the drawings. Preferably this arm is pinned in place, as by the pin *g*, or otherwise non-rotatably fixed in place. Located in the casing *a* is the cylindrical head *h*, chambered out to receive the chuck-jaws *j*, a sleeve *k* being screwed on the lower end of the head to close the jaws on the shank of a tool in the usual manner, this particular chuck construction forming no part of the invention.

The upper end of the head *h* has fitted thereon non-rotatably or formed integral therewith the ratchet *m*, the teeth of which run parallel with the axis of the head, and extending axially of the head and preferably

forming a part thereof is the cylindrical stem *o*, which extends beyond the top of the ratchet through the closed end *b* of the casing, the end of the stem being provided with a nut *p* and a check-nut for the latter, whereby the head may be rotatably suspended from the upper end of said casing. In the drawings the ratchet has been shown as integral with the head. If desired, an annular groove may be turned in the top of the ratchet or the under side of the closed end of the casing and balls *q* located in said groove to take the thrust of the head when the tool is in use.

Preferably an annular flange *r* is formed on the head *h* and a suitable washer or bearing-ring *r'* interposed between it and the lower end of the casing *a* to close the latter against the entrance of chips or anything which would cause the head to bind and also to constitute a bearing for the head and take the side strain off the stem *o*.

The pawls *s* and *t* are, as shown in Fig. 3, made of half-round metal pieces, which when put together face to face will make a substantially round bar longitudinally divided, each half of which will be slidable on the other in the tubular extension *d*, in which the pawls will when so assembled have an easy fit. Each pawl has a pawl-tooth *s* formed on the ends thereof in reversed positions, with one flat side and one beveled side, as shown in Fig. 2, these teeth engaging the contiguous sides of the two ratchet-teeth disposed each side of the axis of the tubular extension *d*, in which the pawls are located.

A plug *v* is screwed into the threaded outer end of the tubular extension *d* before the end of the arm *f* is secured therein and serves as an abutment for two springs *w*, located between the outer end of each pawl and said plug. This latter element provides means to adjust the tension of the pawl-springs referred to. Pins *w'* in the ends of the pawls to support the springs may be used, if desired.

In each pawl steady-pins *x* are secured, which extend in opposite directions through slots *y* in the extension *d*, their ends extending far enough beyond the surface of said extension to be engaged by the cam-shaped edge of the ring 3, (shown in Fig. 4,) which is rotatably located on the extension *d*, its square end abutting against the shoulder 4. A second sleeve 5 incloses this cam-sleeve and is secured thereto by a screw 6, the outer end thereof fitting closely the extension *d*.

This inclosing sleeve serves to cover the open slots y , and thus prevent the entrance of chips therethrough into the extension d . The cam-ring 3 is made, as usual in constructions of this character, with a cam edge so disposed that when the ring is rotated to withdraw one pawl, as in Fig. 1, from engagement with the ratchet the low part of the cam edge will permit the other pawl to be advanced by its spring into engagement with the ratchet, this cam edge of the ring being so disposed that when the latter is rotated to another position both pawls will be in the position shown in Fig. 2.

If desired, a washer or bearing-ring may be interposed between the nut p and the closed end of the casing.

From the foregoing description it is seen that all of the operative parts of the ratchet mechanism are inclosed in a dust-proof casing and that the latter requires but little machining to finish it for the reception of its contained parts, that the half-round ratchets are capable of being fitted in the tubular extension at a very slight expense and are so mounted therein as to insure their operation with the smallest liability of binding, and that the pawl-springs may be adjusted as described. In this connection it should be further explained that one of the practical advantages of the present invention arises from the fact that the tubular extension d is a true cylinder, the same having a true cylindrical bore and a cylindrical outer surface. This is of considerable importance in the manufacture of the brace, for the reason that it is simply necessary to lightly dress up the bore of the tubular extension to provide a perfect bearing for the two pawls s and t , which are made of half-round or semicylindrical pieces whose flat sides or faces abut and slide one upon the other, while the rounded surfaces of the pawls slidably register with the correspondingly-shaped bore of the tubular extension. Also it will be observed that the slots y , for the steady-pins x of the pawls are located in diametrically opposite sides of the tubular extension, so that in one operation of the tool both of the said slots may be formed. Furthermore, in the operation of the parts it will be observed that this construction provides means wherein each pawl is steadied, guided, and supported not only by its own steady-pin, but also by the other pawl and the steady-pin of the latter. Hence all of the several structural features involved in the mounting of the pawls provides for maintaining the same perfectly centered and properly guided.

The construction described and the parts emphasized possess marked advantages over constructions wherein separate chambers and guiding means are provided for the individual pawls. Furthermore, it will be ob-

served that by reason of the half-round form of the pawls the teeth thereof are of a combined width exactly equaling the width of ratchet-face of the ratchet member.

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

1. In a ratchet device, a hollow casing having a tubular extension, semicylindrical pawls arranged in matching relation within said extension and slidable one upon the other, pressure-springs for said pawls, an adjusting device for the springs carried by said extension, a camming device for moving the pawls in opposite directions, and a ratchet rotatably supported in the casing.

2. In a ratchet device a hollow casing having one closed end and a tubular extension, the latter and said casing being internally cylindrical with rectangularly-disposed axes, the outer end of said extension being screw-threaded; pawls located in said extension, slidable one relative to the other; an adjustable member in said extension and a spring for the pawls between the latter and said member, means to move the pawls in opposite directions, and a ratchet rotatably supported in the hollow casing with which said pawls engage; means to close the open end of the casing and the open end of the tubular extension.

3. In a ratchet device, a hollow casing having a tubular extension provided with a cylindrical bore, and oppositely-disposed guiding-slots, spring-pressed semicylindrical pawls arranged in matching relation within said cylindrical bore with their flat faces abutting and slidable one upon the other, said pawls having their rounded surfaces abutting and sliding on the cylindrical wall of the bore, and provided with steady-pins working in said slots, an adjusting device for moving the pawls in opposite directions, and a ratchet detachably supported in the casing and engaged by the teeth of the said pawls.

4. In a ratchet device, a casing having a tubular extension provided with a cylindrical bore, semicylindrical pawls arranged in matching relation within the bore and having their flat faces abutting and sliding one upon the other, the round surface of the pawls abutting and sliding on the cylindrical wall of the bore, pressure-spring arranged to move the pawls in one direction, a camming-sleeve fitting on the exterior of the tubular extension and operatively connected with both pawls, and a cover-sleeve fitting to said camming-sleeve and covering the connections between the same and the pawls.

WILLIAM ALLEN PECK.

Witnesses:

A. K. McDONALD,
H. W. BRIGHAM.