

(No Model.)

2 Sheets—Sheet 1.

A. H. ROLLIN.
RATCHET WRENCH.

No. 324,169.

Patented Aug. 11, 1885.

Fig. 1.

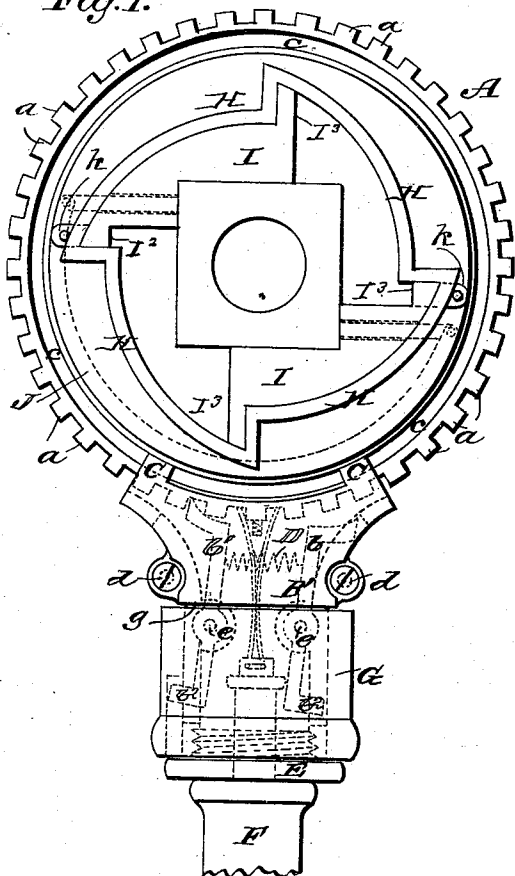


Fig. 2.

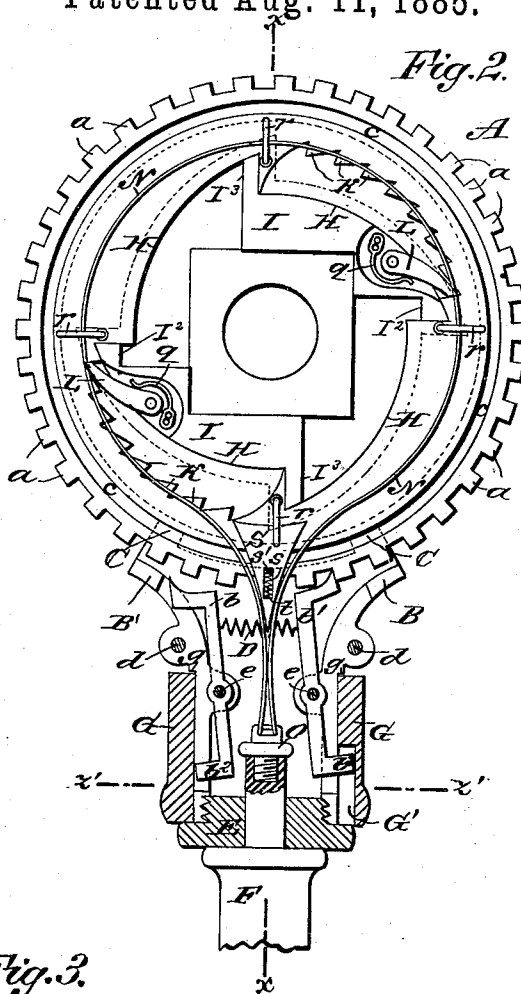
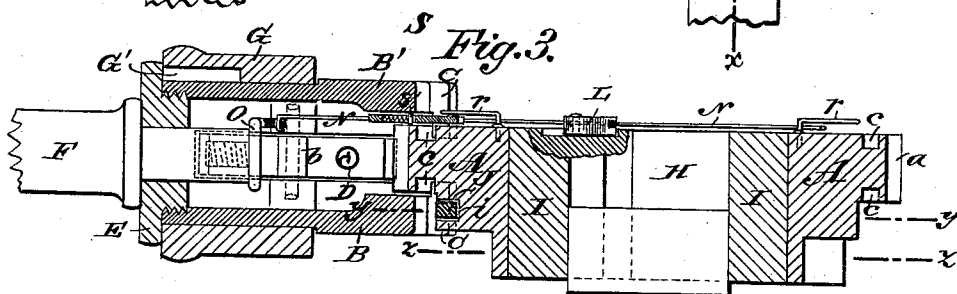
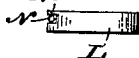


Fig. 4.



WITNESSES:

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INVENTOR:

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BY *Munn & Co.*

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 5.

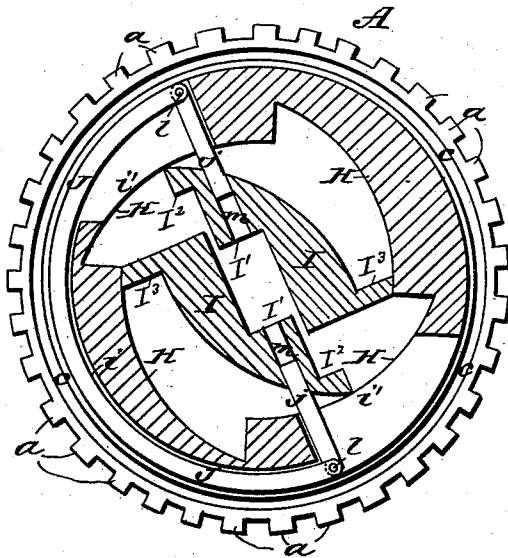


Fig. 6.

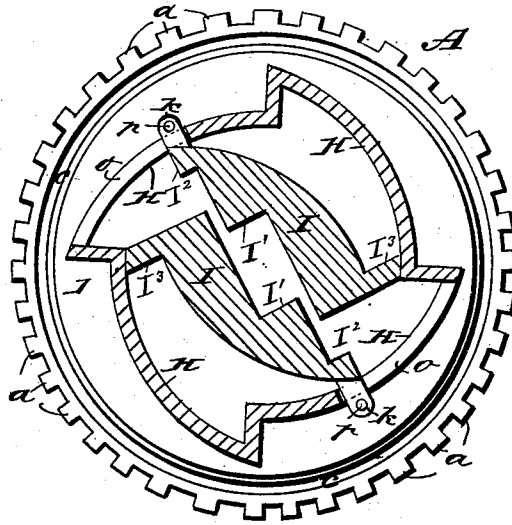


Fig. 7.

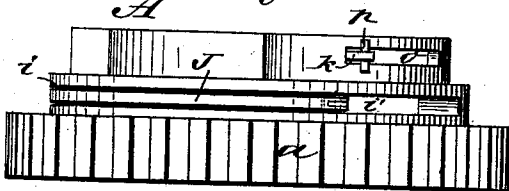
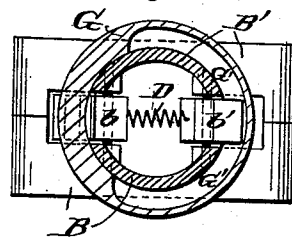


Fig. 8.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ALBERT HARRISON ROLLIN, OF COLDWATER, MICHIGAN.

RATCHET-WRENCH.

EXPLANATION forming part of Letters Patent No. 324,169, dated August 11, 1885.

Application filed March 30, 1885. (No model.)

To all whom it may concern:

Be it known that I, ALBERT HARRISON ROLLIN, of Coldwater, in the county of Branch and State of Michigan, have invented a new and useful Improvement in Ratchet-Wrenches, of which the following is a full, clear, and exact description.

The object of my invention is to provide a ratchet-wrench which can be quickly adjusted and will securely hold different sizes of nuts, bolts, &c., and which can be readily released after the nut or bolt has been driven home.

My invention consists of a ratchet-head having a series of cams which coincide with and work movable jaws, peculiarly constructed pawls which engage with teeth on the cam-head, a spring for releasing these pawls, an oscillating handle provided with operating-pawls, and a collar adapted to throw out of engagement either or both of the operating-pawls.

My invention further consists in the details of construction and combinations of parts, as will be hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of my improved wrench. Fig. 2 is a back elevation of the same. Fig. 3 is a longitudinal section on the line *x x*, Fig. 2. Fig. 4 is a detail view of one of the pawls for operating the movable jaws. Fig. 5 is a sectional view on the line *y y* of Fig. 3. Fig. 6 is a sectional view on the line *z z* of Fig. 3. Fig. 7 is a side view of the ratchet-head. Fig. 8 is a sectional view on the line *z' z'* of Fig. 2.

In the drawings, A represents the ratchet-head, having teeth *a* on its periphery, into which the pawls *b* and *b'* engage.

B B' are semicircular plates connecting the handle with the ratchet-head from the offset *g*. These plates are flattened to form a recess to receive the ratchet-head A. On the inner sides of said flattened portions are formed lugs C, which project in a plane at right angles to the said plates. These lugs C are adapted to work in circular grooves *c* in the head A. Screws *d* secure the plates B B' together after the lugs C have been inserted into the grooves *c*. By this arrangement the head A is securely con-

nected with the handle, and at the same time allows the handle to freely move to the right or left around the head. The pawls *b* and *b'* which engage the teeth *a* work in openings in the plates B and B' and are pivoted at *e*.

D is a contractile spring for holding the pawls *b* and *b'* in contact with the teeth *a*. The plates B and B' are screw-threaded internally at their outer ends to receive an externally-threaded nut, E, through which the shank of the handle F passes. Before screwing the nut E on a loose collar, G, is passed on the semicircular plates B and B', which collar works between offsets *g* on the plates B and B' and the nut E.

On the internal surface of the collar G, and at the outer part thereof, it has a recessed or reduced portion, G', which extends about three-quarters around. This recess G' is for the reception of the lower angular projections, *b''*, of the pawls *b* and *b'*, when they are in engagement with the teeth *a* on the head A. When it is desired to throw one of the pawls out of engagement with the teeth *a*, the collar G is given a slight turn either to the right or left, which forces one of the projections, *b''*, out of the recess G' onto the unbroken surface of the collar G, which will throw the corresponding pawl out of engagement. By turning the collar G so as to allow both pawls to fall into the recess G', the operation of what is termed "coaxing a nut" can be performed—that is, to work it back and forth for a portion of a turn before going ahead.

On the head A, and facing inwardly, a series of cams, H, are formed, upon which the movable jaws I work. Each jaw I is provided on its inner face with the shoulder I' and the lugs I'', and on its outer surface at its opposite end with the lug I''.

In a groove, *i*, which extends half-way around the head, as shown in Figs. 5 and 7, a semicircular holder, J, is adapted to move, and pivoted to this holder at *l* are two radial bars, *j*, which extend through slots *i'* in the head A, and into slots *m* in the movable jaws I. By these means the jaws I are held in their proper relative positions opposite each other. The movable jaws I are also held in place by means of short projecting lugs *k* on their ends, Fig. 6, which have eyes for the reception of retaining-pins *p*. The lugs *k* are passed through

slots *o* in the walls of the cams *H*, and the pins *p* inserted into the eyes, thereby holding the jaws in place and at the same time allowing them play to the full extent of the slots *o*.

5 On the inner face of the head *A*, and just above the slots *o*, teeth *K* are formed, Fig. 2, with which engage the pawls *L*, attached to and through the medium of which the movable jaws are tightened on the nut, bolt, &c.
10 Springs *q* are secured in depressions in the face of the jaws *I* and bear against the pawls *L* to prevent their dropping out of contact with the teeth *K*. The pawls *L* have shallow slots *M* on their engaging-points, through which
15 the spring *N* passes, as shown by Fig. 4. The spring *N*, which may be made of any suitable spring-metal wire, passes around the face of the head *A*, and is held in proper working position to the pawls *L* by means of hooks *r*,
20 which are secured in the head *A*, and under which the spring *N* passes. The ends of the said spring are carried from the head down through the semicircular plates *B* and *B'* to a small opening in the head of a screw-plug, *O*,
25 and there secured. This plug *O* screws into the shank of the handle *F*.

In operating the wrench the jaws *I* are placed over a nut. Either of the pawls *b* and *b'* are brought by means of the collar *G* into engagement with teeth *a*. The handle is moved
30 from right to left, or vice versa. This movement brings the pawls *L* into play, which causes the jaws *I* to grip the nut tightly by the action of the cams *H*, and then the head
35 *A* revolves and the nut is driven home.

In order to release the wrench from the nut, the handle is drawn outward in the nut *E*. This causes the spring *N* to contract laterally, and as the pawls *L* straddle the spring it is
40 evident that the pawls *L* will be thrown out of engagement with the teeth *K*, and the jaws *I* will then become loose and can be released from the nut, &c.

S represents a wedge-shaped releaser, which
45 is held in position by means of a pivot, *s'*, projecting from the plate *B'*, and which works between said plate and the head *A*. The pivot *s'* projects through a slot, *s*, in the releaser *S*, and in this slot under the pivot *s'* a
50 spiral spring, *t*, is seated.

When the spring *N* is contracted, as above described, it will force the releaser *S* out toward the head *A*, and when the pressure of the spring *N* is removed the spiral spring *t*
55 will return the releaser *S* to its first position. The object of this is as follows: If after screwing up a nut it is found that either of the pawls *L* come to a rest just above the releaser *S*, where the spring *N* cannot act against it,
60 the releaser *S*, moving up, will accomplish the object of throwing the pawl out of engagement.

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

65 1. In a wrench, the combination, with the head *A*, having grooves *c*, of the plates *B* and *B'*, carrying handle *F*, and having lugs *C*,

which work in the grooves *c*, the said plates *B* and *B'* being secured together by screws *d*, substantially as and for the purpose specified. 70

2. In a wrench, the combination, with the head *A*, having teeth *a*, of the pawls *b* and *b'*, having angular projections *b²*, and working through slots in the semicircular plates *B* and *B'*, and pivoted at *e*, said pawls being thrown
75 into and out of engagement by means of a spring, *D*, and collar *G*, having reduced portion *G'*, substantially as and for the purpose specified.

3. In a wrench, the head *A*, having teeth *a*,
80 in combination with the pawls *b* and *b'* and the collar *G*, having recessed portion *G'* to receive the angular projections *b²* on the pawls *b* and *b'*, substantially as and for the purpose specified. 85

4. In a wrench, the combination, with the head *A*, having a series of cams, *H*, of the jaws *I*, each provided with a shoulder, *I'*, and lugs *I²* *I³*, substantially as herein shown and described. 90

5. In a wrench, the combination, with the head *A*, cams *H*, and jaws *I*, of the semicircular holder *J* sliding in the groove *i*, and having short bars *j*, passing through slots *i'* and into slots *m* in the jaws *I*, substantially
95 as and for the purpose specified.

6. In a wrench, the combination, with the head *A*, cams *H*, and jaws *I*, of the lugs *k* projecting through slots *o*, and having eyes to receive pins *p*, substantially as and for the
100 purpose specified.

7. In a wrench, the head *A*, having a groove, *i*, and slots *i'* to receive the semicircular holder *J* and radial bars *j*, in combination with the jaws *I*, having lugs *k*, projecting
105 through slots *o*, and pins *p*, inserted into eyes in the lugs *k*, substantially as and for the purpose specified.

8. In a wrench, the combination, with the jaws *I*, resting against cams *H*, and adapted
110 to be held in position by means of semicircular holder *J*, having radial bars *j*, and held to the cams *H* by lugs *k* and pins *p*, of the pawls *L*, having contact-springs *q*, said pawls engaging the teeth *K* in the head *A*, substantially
115 as and for the purpose specified.

9. In a wrench, the combination, with the pawls *L*, of the spring *N*, held to head *A* by hooks *r*, and passing through open slots *M* in the pawls *L*, the said spring being fastened
120 to handle *F* by means of screw-plug *O*, substantially as and for the purpose specified.

10. In a wrench, the combination, with the pawls *L*, spring *N*, and movable handle *F*, of the wedge-shaped releaser *S* between plate *B'*
125 and head *A*, and having slot *s* to receive a pivot projection, *s'*, and a spring, *t*, the releaser *S* being operated by means of spring *N*, substantially as and for the purpose specified.

ALBERT HARRISON ROLLIN.

Witnesses:

ISAAC M. SELOVER,
RAWSON HARMON.