No. 895,712. PATENTED AUG. 11, 1908.

C. M. ANDERSEN.

WRENCH.

APPLICATION FILED MAR. 23, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

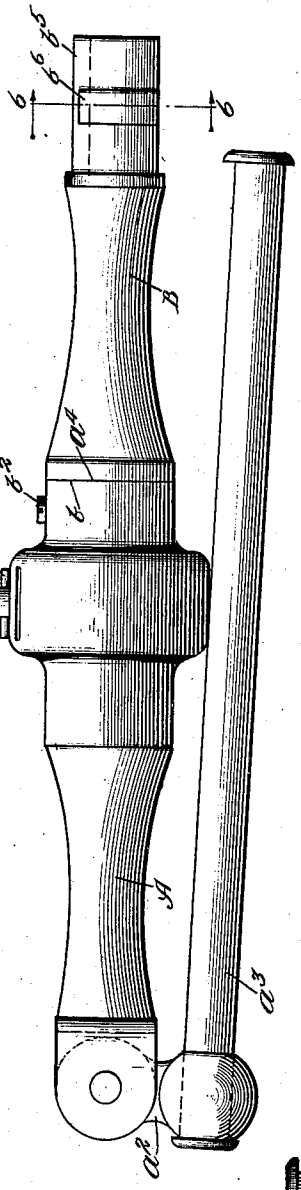
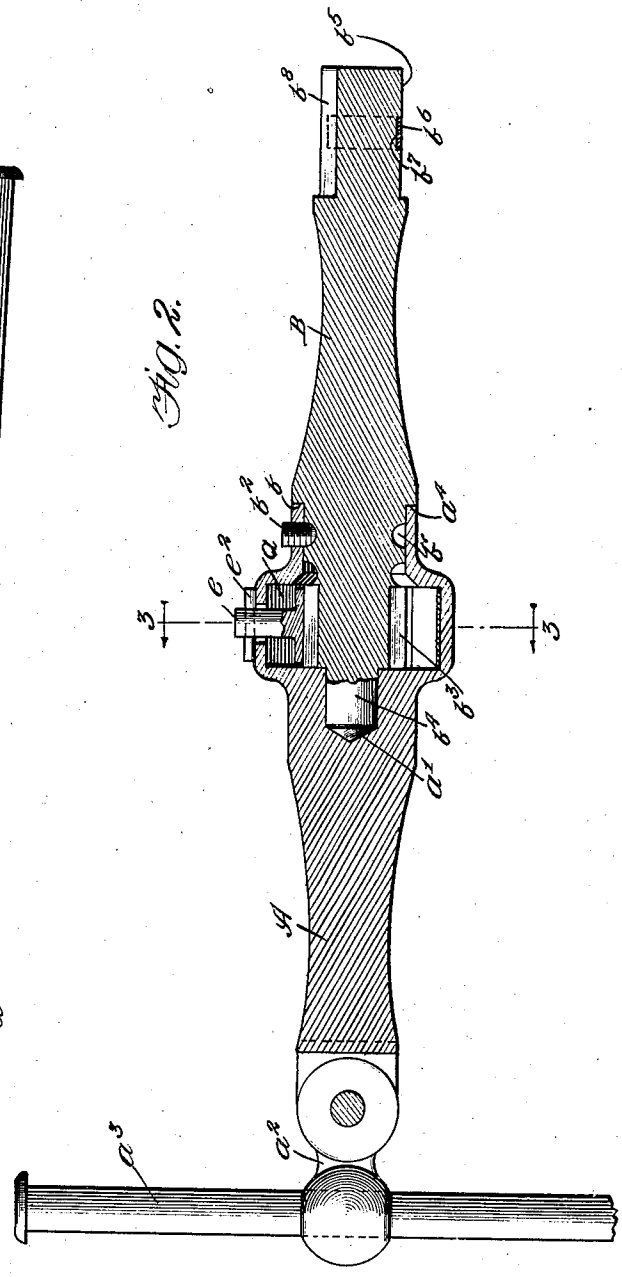


Fig. 2.



Witnesses:

Ba. B. Perry

Albert J. Sauser.

Inventor:

Charles M. Andersen

By Bulkley Grand & Denny

Attorneys

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2 SHEETS—SHEET 2.

Fig. 4.

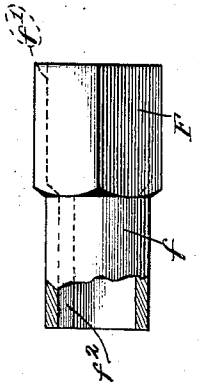


Fig. 5.

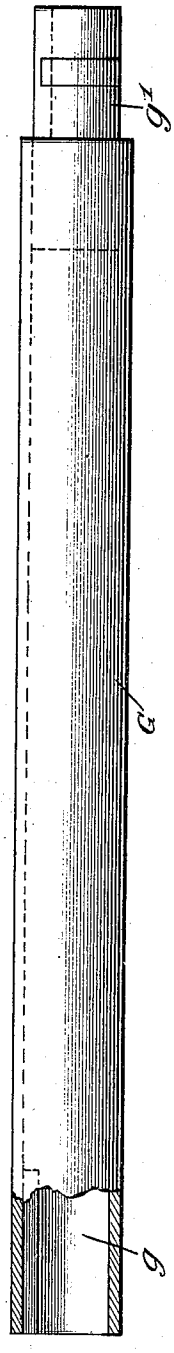


Fig. 7.

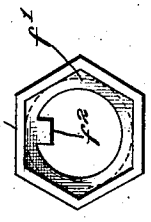


Fig. 3

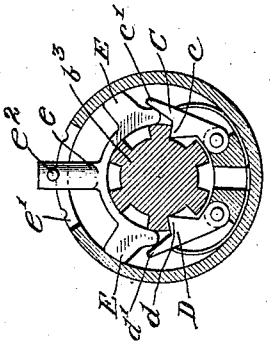
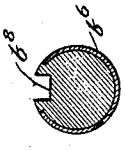


Fig. 6.



Witnesses:

Ira D. Perry

Albert J. Sawyer

Inventor:

Charles M. Andersen

By Buckley Durand & Drury

Attorneys

UNITED STATES PATENT OFFICE.

CHARLES M. ANDERSEN, OF CHICAGO HEIGHTS, ILLINOIS.

WRENCH.

No. 895,712. Specification of Letters Patent. Patented Aug. 11, 1908.

Application filed March 23, 1907. Serial No. 364,136.

To all whom it may concern:

Be it known that I, CHARLES M. ANDERSEN, a citizen of the United States of America, and resident of Chicago Heights, Cook county, Illinois, have invented a certain new and useful Improvement in Wrenches, of which the following is a specification.

My invention contemplates a novel and highly efficient wrench or ratchet key. Devices of this character are useful in connection with automobiles, where nuts of various size are used. Furthermore, in such cases the nuts are accessible in various ways, and a tool is needed which can readily adjust itself to different situations.

I provide a wrench or key which can be used for any size of nut, and which can be worked in either direction, by improved means. Furthermore, my improved wrench is much simpler than heretofore, and can be folded to reduce it to small size.

The nature and advantages of my invention will, however, hereinafter more fully appear.

In the accompanying drawings, Figure 1 is a side elevation of a wrench embodying the principles of my invention, showing the same folded for storing away in a bag or box. Fig. 2 is a longitudinal section of said wrench, showing the same open for use. Fig. 3 is a cross section on line 3—3 in Fig. 2. Fig. 4 shows a socket-piece or bit for said wrench. Fig. 5 shows an exterior for the shank. Fig. 6 is a cross section on line 6—6 in Fig. 1. Fig. 7 is an end view of one of the tools or socket-pieces.

As thus illustrated, my invention comprises a body portion A having a chamber a and a socket a^1, as shown in Fig. 2. The other end of said body is provided with a hinged end portion a^2 in which a rod a^3 is inserted. Said rod can be used for turning the body A, and can be folded in the manner shown in Fig. 1. The shank B has a shoulder b and an annular groove b^1 engaged by a small screw b^2 to rotatably hold the body and shank together. Said shank has an integral ratchet wheel b^3 the teeth of which are square and adapted to work either way. This ratchet wheel has an integral stud or journal b^4 adapted to rotate in the socket a^1. The shoulder b is engaged by the edge a^4 of the body. A pair of oppositely facing dogs C and D are inclosed in the chamber a and pivoted on the metal of the body.

The dog C has an engaging portion c and a tip or end c^1, the former adapted to engage the square teeth of the ratchet wheel, as shown in Fig. 3. The other dog D is similarly formed with a portion d and a tip d^1. Springs hold the dogs on the ratchet wheel. The throw-out E sets in between the ratchet wheel and the inner surface of the body, and is thus movably held in place. A handle e on said throw-out extends through a slot e^1 in the bulging side of the chamber a, and has a click device e^2 for yieldingly holding it in different positions. This click device can consist of an ordinary spring-pressed pin in the handle e adapted to engage notches or sockets in the lower edge of the slot e^1. By shifting the throw-out E in one direction one dog will be thrown out of engagement with the ratchet, and the other dog will work the ratchet wheel and shank B in the desired direction. The action can then be reversed by reversing the position of the throw-out—that is, by shifting the handle e to the other end of the slot e^1. In this way a rotary reciprocal motion of the body A, in either direction, can be converted into an intermittent rotation on the part of the shank B. The shank B has a round stub b^5 provided with a split ring b^6 in an annular groove b^7. Said stub also has a longitudinal groove b^8. The tool or socket-piece F has an end portion f adapted to fit over the stub b^5, and to be held thereon by the friction of the spring b^6. The other end f^1 of said hexagonal member F is adapted to fit over a hexagonal nut or bolt head of a certain size. By providing socket pieces of different sizes, any size of nut or bolt can be turned by the wrench. Said wrench accommodates itself readily to awkward or inconvenient situations where an ordinary wrench could not be used. Furthermore, it will be seen that a single ratchet wheel is sufficient for turning a nut or bolt in either direction. By centering the handle e the ratchet is locked and the body and shank are rigidly connected together. The stub and the shank may be lengthened by the removable extension G, which has a socket g and a stub g^1. In this way the wrench can be lengthened to reach an inconveniently located bolt. The tool or socket-piece F can have a tongue f^2 adapted to engage the groove b^8 in the shank. The tubular extension G can have a similar tongue adapted to engage the said groove on the shank. In this way the said extension and socket-piece are interchangeable, and tools and socket

pieces of different sizes can be used and substituted one for the other.

It will be understood, of course, that the tongue and groove connection between the portions b^5 and f can be changed or modified if desired by placing the tongue on one portion and the groove on the other, according to requirements. For this reason it is not essential that the tongue be located on the part f, nor is it essential that the groove be located on the part b^5, as either arrangement will serve the purpose. Furthermore, it will be understood that an ordinary handle can be inserted in the portion g, and that tools other than the wrench tools F can be employed in connection with my invention, so that the same can be used for performing various operations.

What I claim as my invention is:

1. A wrench or turning device comprising a body and a shank, and means including a single ratchet wheel rigid with the shank for operatively connecting the body with the shank, and a plurality of oppositely acting dogs for said wheel said body being separable endwise from the ratchet end of said shank.

2. A wrench or turning device comprising a body and shank, each extending in a straight line in continuation of the other, and each held against endwise displacement relatively to the other, but adapted for relative rotation, a single ratchet wheel on the shank, two dogs on the body engaging said ratchet wheel, and means for throwing either dog out of engagement, said body being separable endwise from the ratchet end of said shank.

3. A wrench or turning device comprising a body and a shank, each extending in a straight line in continuation of the other, and each held against endwise displacement relatively to the other, but adapted for relative rotation, a square toothed ratchet wheel on said shank, two dogs on the body engaging said wheel, and a throw-out provided with means for engaging the tips or ends of said dogs, whereby either dog can be disengaged, said body being separable endwise from the ratchet end of said shank.

4. A wrench or turning device comprising a ratchet connected body and shank, a hinged end for said body, and a rod slidably inserted through said hinged end, said rod provided at its ends with means for limiting its endwise movement, said body interposed between the shank and hinged end, and said hinged end being of a length to permit said rod to fold flat against the side of the body and shank.

5. A wrench or turning device comprising a ratchet connected body and shank, said shank provided with a spring ring, and a removable socket-piece adapted to fit on the shank and be held in place by the periphery of said spring ring.

6. A wrench or turning device comprising a body and a shank, ratchet means between the shank and body, said shank having an annular groove, a spring member in said groove, and a removable socket-piece adapted to fit on the shank and be frictionally held thereon by said spring member.

7. A wrench or turning device comprising a body and shank, one telescoping over a portion of the length of the other, ratchet mechanism in the telescoping portion of the body, means for lengthening the shank, and means for attachment to the extension or to the shank direct, as set forth.

8. A wrench or turning device comprising a ratchet-connected body and shank, one telescoping over the other to inclose the ratchet mechanism, means for extending the shank, and a holding end for the shank as set forth.

9. A wrench or turning device comprising a longitudinally grooved shank, a member formed with longitudinal internal means for engaging said groove, and a spring for frictionally holding the member on the shank, as set forth.

10. A turning device of the class described and shown, comprising a body and shank, each extending in continuation of the other, and each held against endwise displacement relatively to the other, but adapted for relative rotation, a ratchet wheel fixed on one of said elements, a pair of dogs on the other element, a handle for the body, and engaging means on the end of said shank, the ratchet mechanism being inclosed by the body.

11. In a device of the class specified, a shank and a body held end to end and partially telescoped one within the other, means for holding the said shank and body against relative endwise movement, but permitting relative rotation between the same, a single ratchet wheel on the shank and inclosed by a portion of the body, a pair of dogs for engaging said ratchet wheel, means for throwing either dog out of engagement with the ratchet wheel, a folding handle for the body, and means on the end of the shank for engaging either a tool or an extension member, substantially as set forth.

12. In a device of the class specified, the combination of a shank, a ratchet mechanism for rotating the same in either direction, a body telescoped over the ratchet, a tubular extension removably fitted upon one end of said shank, and a tool removably fitted upon the end of said tubular extension, the body and shank and extension all held in alinement and against relative endwise displacement, substantially as set forth.

Signed by me at Chicago, Cook county, Illinois, this 20th day of March, 1907.

CHARLES M. ANDERSEN.

Witnesses:

F. H. DRURY,

ALBERT JOHN SAUSER.