C. A. GEIST.

RATCHET WRENCH.

APPLICATION FILED APR. 13, 1912.

1,041,064. Patented Oct. 15, 1912.

Fig. 1.

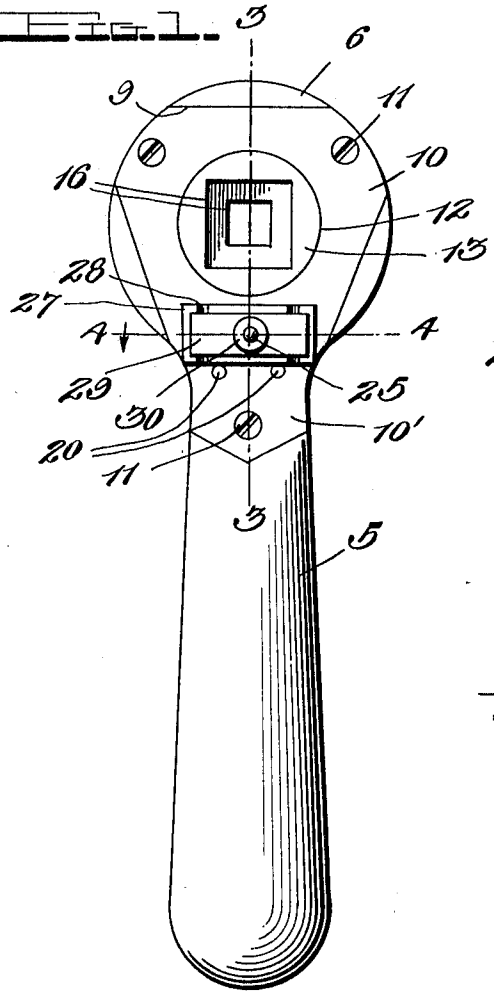


Fig. 2.

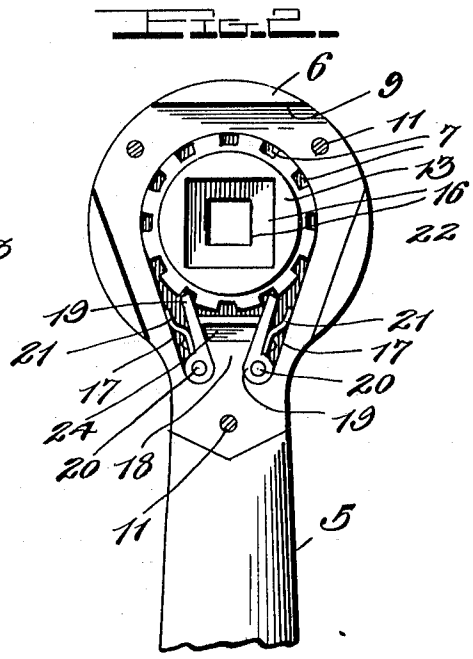


Fig. 3.

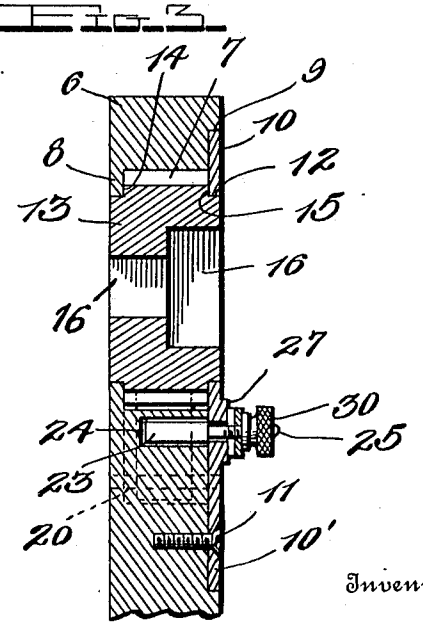
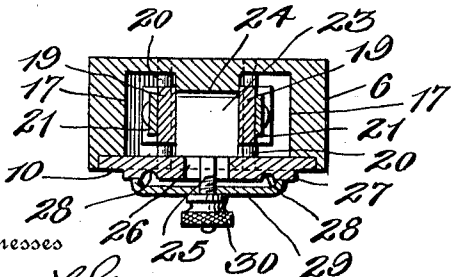


Fig. 4.



Witnesses

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RATCHET-WRENCH.

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To all whom it may concern:

Be it known that I, CHARLES ANTHONY GEIST, a citizen of the United States, residing at Oklahoma city, in the county of Oklahoma and State of Oklahoma, have invented certain new and useful Improvements in Ratchet-Wrenches, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to an improved construction of ratchet wrench whereby nuts may be easily and quickly removed from bolts, or the device employed for the hand operation of a drill bit.

The primary object of the present invention is to provide a reversible ratchet wrench of the above type which is simple, efficient and durable in construction, and may be easily and quickly manipulated.

A further object of the invention is to provide a wrench shank having a head on one end to receive an operating member provided with ratchet teeth, pawls mounted in the head yieldingly held in engagement with the teeth of the ratchet, and novel means mounted upon the operating head to engage and hold either of the pawls out of engagement with the ratchet teeth, the other pawl locking the operating member in the head for movement therewith when the handle is turned.

With the above and other objects in view, the invention consists of the novel features of construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a wrench embodying the present invention; Fig. 2 is a similar view, the face plate being removed; Fig. 3 is a section taken on the line 3—3 of Fig. 1; and Fig. 4 is a section taken on the line 4—4 of Fig. 1.

Referring in detail to the drawing 5 designates the handle of my improved wrench which is provided upon one end with an enlarged circular head 6. This head is formed with an opening 7 and an inwardly projecting annular flange 8 is formed on the wrench head at one end of said opening. The face of the head surrounding said opening at its other end is recessed as at 9 to receive the face plate 10, said plate being provided with an extension 10′ projecting upon the operating handle 5. Suitable fastening screws 11 serve to rigidly retain said face plate in position upon the head. This face plate is provided with a central opening 12 which is of substantially the same diameter as the opposite restricted end of the opening 7 in the head 6 which is formed by the provision of the annular flange 8. The operating member 13 is mounted in the opening 7 and is provided at opposite ends with reduced portions forming shoulders 14 and 15 which engage with the flange 8 and the face plate 10 respectively, thereby retaining said operating member in position and preventing its longitudinal movement. This operating member is provided with the rectangular sockets 16 of different sizes which open upon opposite faces of said member.

The head 6 is further provided with the recesses 17 which are separated by a wedge-shaped lug 18. These outwardly diverging recesses communicate at their outer ends with the opening 7 in the head 6 wherein the operating member 13 is arranged. In the inner ends of these recesses 17 the pawls 19 are pivotally mounted upon the pins 20. These pawls carry the leaf springs 21 which engage at their free ends with the side walls of the respective recesses and normally act to hold the outer free ends of the pawls in engagement with the ratchet teeth 22 formed upon the periphery of the operating member 13.

In order to permit of the movement of the handle 5 of the wrench with relation to the operating member in one direction, I provide the shiftable key 23 which is mounted for sliding movement in a groove or channel 24 provided in the surface of the wedge-shaped lug or projection 18. A reduced cylindrical shank 25 is formed upon the key 23 and is movable in a transverse slot 26 which is formed in the enlarged or thickened portion 27 of the face plate 10. The surface of this enlarged portion of the plate is provided upon opposite sides of the slot 26 with shallow grooves 28 which are adapted to receive the ends of a spring plate 29 rigidly fixed upon the end of the stem 25 and integrally formed with the finger-piece 30.

In Fig. 4 I have shown the plate 29 in an

intermediate position between the grooves 28 and in spaced relation to the face of the enlargement 27 on the plate 10. The plate 29 is of sufficient length to enable it to engage at one end over the end edge of the enlargement 27 when the other end of the plate 29 is seated in one of the grooves 28, said plate 29 moving into close frictional engagement upon the face of the enlargement 27 and acting to more effectually prevent inadvertent sliding movement of the latch plate.

It will be readily seen from the above description that when the key 23 is forced in either direction one of the pawls 19 will be moved against the tension of the spring 21 out of engagement with the ratchet teeth 22 of the member 13. Thus in the movement of the handle 5 in one direction, the same will be locked upon the operating member while said handle is free to be moved in the opposite direction independently of said member, the engaged pawl moving idly over the ratchet teeth 22.

In the use of the device, the nut to be removed is engaged in the socket in either face of the member 13, and the handle 5 moved back and forth or oscillated to continuously rotate the operating member in one direction. The device may also be conveniently used as part of a hand drill by simply engaging one end of the drill bit in one of the sockets 16 of the operating member while a conical bearing member may be fitted into the other of said sockets and engaged with a seat provided in a stationary supporting arm. The mounting and adjusting of the support for the ratchet may be accomplished in many different ways and constitutes no part of the present invention.

My improved wrench is comparatively simple in construction, of great convenience in actual use and owing to the few elements employed, it will be obvious that the wrench is extremely durable.

While I have shown and described the preferred form and arrangement of the various elements, it will be understood that the invention is susceptible of considerable modification without departing from the essential feature or sacrificing any of the advantages of the invention.

Having thus described the invention what is claimed is:—

1. The combination with a handle having a head formed on one end provided with an opening, of an operating member arranged in said opening, a face plate secured upon said head to retain the operating member therein, said member being provided with ratchet teeth upon its periphery, spaced pawls pivotally mounted in the head to engage said ratchet teeth, springs normally acting to hold the pawls in engagement with the teeth, a shiftable element mounted in the face plate disposed between said pawls to hold one of the pawls out of engagement with the ratchet teeth, a resilient plate carried by said shiftable element and movable upon the face plate, and means for adjusting the tension of said resilient plate to retain said element in the position to which it has been shifted.

2. The combination with a handle having a head formed on one end provided with an opening, an operating member loosely arranged in said opening, a face plate secured to the head to retain the operating member therein, spring pressed pawls pivotally mounted in the head, said head being provided with ratchet teeth upon its periphery for engagement by said pawls, a transversely shiftable key disposed between the pawls to move either of said pawls out of engagement with the ratchet teeth, said face plate being provided with an enlargement upon its outer surface, a resilient plate carried by said key and bearing at its ends upon the enlargement of the face plate, and means for adjusting the tension of said resilient plate, one end of said resilient plate being adapted for engagement over the edge of said enlargement to retain the key in the position to which it has been shifted.

3. The combination with a handle having a head formed on one end provided with an opening, of an operating member loosely mounted in said opening, a face plate secured upon said head provided with a transverse slot, a pair of spring controlled pawls mounted in the head to engage at their free ends with the ratchet teeth formed upon the periphery of the operating member, a shiftable key disposed between said pawls and having a reduced portion projecting through the slot of said plate, said plate having grooves in its outer face adjacent the opposite ends of said slot, and means rigid upon the extension of the key to engage in said grooves whereby either of the pawls is held in an inoperative position out of engagement with the ratchet teeth.

4. The combination with a handle having a head formed on one end provided with an opening, of an operating member loosely mounted in said opening and provided upon its periphery with ratchet teeth, a face plate secured upon said head having a projection on its outer face extending transversely of the plate, said plate and projecting portion being provided with a slot, the face of the projection having grooves therein disposed adjacent to the opposite ends of said slot, a pair of pawls pivotally mounted in said head, springs normally holding the free ends of the pawls in engagement with the teeth on the operating member, a shiftable key slidably mounted in the head between said pawls and having a reduced extension projecting through the slot of the

face plate, a plate fixed upon said extension to engage at its ends in the grooves of said face plate, the movement of said key in either direction causing one end of the plate to engage in one of the grooves and the other end of said plate engaging over the edge of said enlarged portion of the face plate.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

CHARLES ANTHONY GEIST.

Witnesses:
FRANK BOND,
FRED MESCH, Jr.