

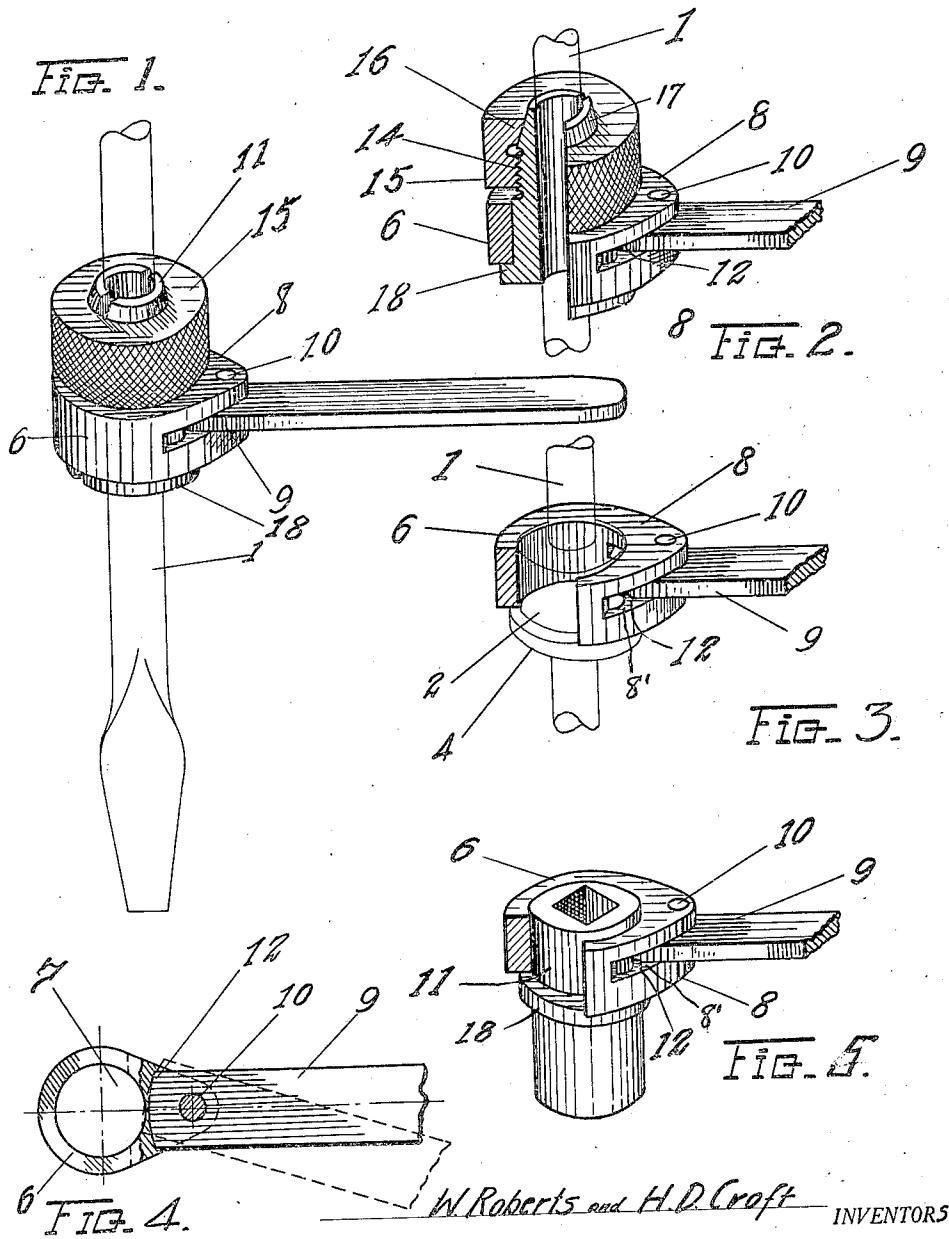
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RATCHET.

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RATCHET.

Application filed May 2, 1921. Serial No. 463,279.

To all whom it may concern:

Be it known that we, HIRAM D. CROFT and WILLIAM ROBERTS, citizens of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented certain new and useful Improvements in Ratchets, of which the following is a specification, reference being had to the accompanying drawing.

This invention refers to tools and other devices usually employing ratchets or their equivalent, in their operation or their construction and use.

This invention has among its objects to provide a separable or universal part, to be applied or made a part of tools or other devices; that will be free from springs or mechanisms apt to complicate its action or increase its cost; that will have the features of an adjustment to any position on said devices, on which it is used or becomes a part of; that will act positively under large or small ranges or loads; that will be provided with means for being adapted to various devices; that will have a relatively simple construction as well as other features enabling it to attain many other objects that will become apparent as the invention is more fully set forth.

In the past, ratchets have been provided with pawls, rack teeth and springs or their equivalent, which work well, but at the same time were susceptible to various possible troubles due to the weakness of the parts and their liability to break down under severe working conditions; their cost of manufacture and the trouble experienced in the replacement of parts. Some devices have been invented that use a cam system for their functioning as a part of a wrench and the like, but in such cases they are a part of the device and can only operate in one way with practical facility. This invention provides the equivalent of a ratchet which may be independent or a part of the tool or device, and is adaptable for use in a more or less universal manner on various kinds and types and sizes of shanks. It will work in either direction without change or adjustment of parts and has an infinite facility of movement instead of the necessary long tooth movement required in other devices used for the same purposes.

In the drawings which illustrate by way of example this invention:—

Figure 1 is a view in perspective of a ratchet embodying this invention.

Figure 2 is a sectional perspective view of the device shown in Figure 1.

Figure 3 is a view in perspective of a modified form of the invention.

Figure 4 is a detail of the modified form indicating the working movement of the handle of the device.

Figure 5 is a modified form adapted for use on shanks of square cross-section.

Similar reference characters refer to similar parts throughout the drawings.

In the construction shown 1 represents a conventional form of shank, having perhaps a handle with the ferrule 2 of the general cylindrical construction shown, and the collar 4 at the bottom to form the rest and stop for the handle. The device proper slips over the shank or as in the case of Figure 3 on the ferrule, the collar 6 of the device having a central hole 7 adapted to permit it. The collar is provided with an outwardly extending projection 8. This projection is slotted as shown at 8' so as to provide a bifurcation in which an arm 9 is pivoted or held in a position at right angles to the shank. The pivot 10 is provided in the projection and is in such a position with respect to the arm and the shank 1 or the false shank 11 in the other form shown in Figure 1, so that a turning movement of the arm 9 will immediately bring its pressure exerting end 12 against the same and bind it securely. This binding action will not only provide a frictional engagement but will also grip the shank and cause it to move with the arm as it is turned around further. The process can be repeated by moving the arm in the opposite direction.

In Figure 1 the collar 6 is arranged so that the pressure exerting end of the arm 9 will project through the same beyond the inside surface of the collar and make contact with the member 11 located therein should the arm 9 be turned slightly in either direction. When straight out it will simply rest against the member 11. The member inside the collar may be the shank directly, or the false sleeve or shank 11 as in Figure 1, or the ferrule as in Figure 3. In Figure 1 the

false shank 11 is of split construction like a split sleeve and having its interior rounded and so arranged that if brought together or closed it will securely grasp a round shank and of different diameters. The false shank is provided with a threaded section 14 on which a nut 15 is placed and which is provided with a part or extension 16 that engages with a cone tightening portion 17 on the sleeve 11. The false shank portion is provided with a portion 18 adapted to retain the collar 6 and hold it in position on the false shank parts and at the same time allow the collar to slide or turn freely thereon except when bound by the movement of the handle in which case the collar frictionally binds on the false shank and make the latter turn with it.

In operation or use, the device is placed on the shank and if the false shank is used, it is tightened up by the nut 15 until it binds the shank tightly and becomes as it were an integral part of the same. The arm 9 is then turned on its gripping pivot and its end portion 12 is brought into pressure engagement with the shank or the false shank, and the latter is turned thereby. To release the shank, the arm is simply reversed and brought back again to a straight-out position. To reverse the movement of the shank the arm is simply turned in the other way. While the arm 9 is kept out straight or its end 12 free from the sleeve, it will not bind on the shank and may be turned back without any binding effect on the shank, and will act as it were without effect on the shank. In action the hand is given a pivoting movement on the pivot following same with a turning action on the arm in the same direction. This will cause the collar and tool to turn.

The ratchet movement simply takes place as the arm 9 is brought straight out and then turned, keeping the arm straight out so that its pressure end 12 will not bind on the shank. In general the frictional action is

one brought about under severe leverage, and is thereby rendered effective.

In the simpler forms of construction shown the device is inserted on the shank and turned on it in the same manner. In the form shown with the square hole, such represents the form that uses a rectangular form of shank for the tool, and the ratchet is simply inserted on the member with the kind of hole desired for the work which may be interchanged to suit. This gives the device a great facility to adapt itself to many uses with which it would be of value.

While several forms of the invention are shown in the drawings, it is not desired to limit this application for patent to this particular form nor in any other way, otherwise than limited by the prior art, as many modifications in the construction of this invention could be made that would use the same principles and come within the scope of the appended claim.

Having thus described the invention, what is claimed is:—

A ratchet device for imparting a step by step rotary movement in either direction to a shaft or the like and comprising a rigid one piece ring member to receive the shaft, the member being slotted from its outer to its inner surface, a lever freely pivoted in the slot and having its inner end merging into the inner surface of the ring when the lever is in its normal or radial position but projecting beyond the inner surface when moved out of its normal position, said lever serving to frictionally grip a shaft in the ring and turn the same when the ring and lever are rotated.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

HIRAM D. CROFT.
WILLIAM ROBERTS.

Witnesses:

A. P. CONNOR,
MARGARET M. MCGLYNN.