

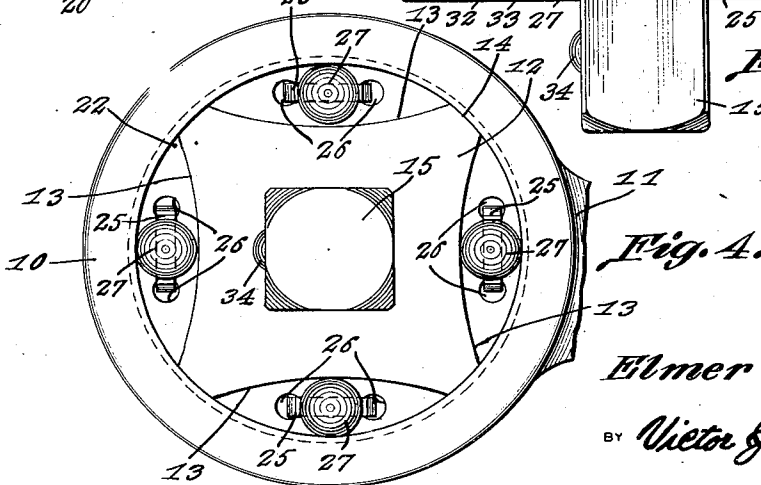
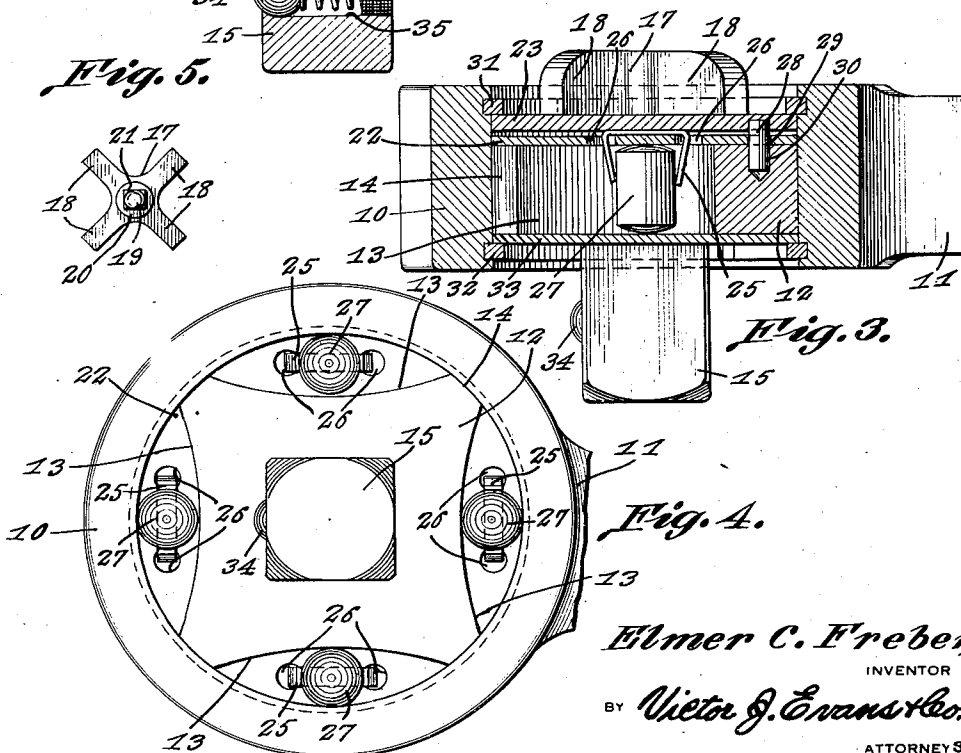
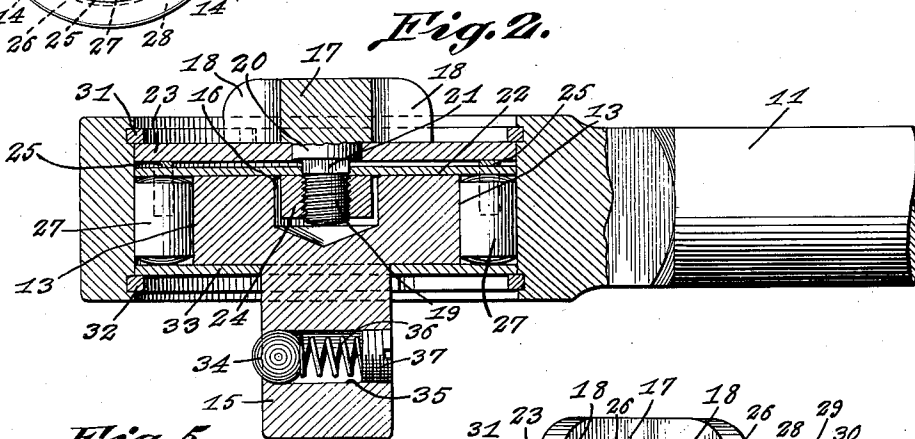
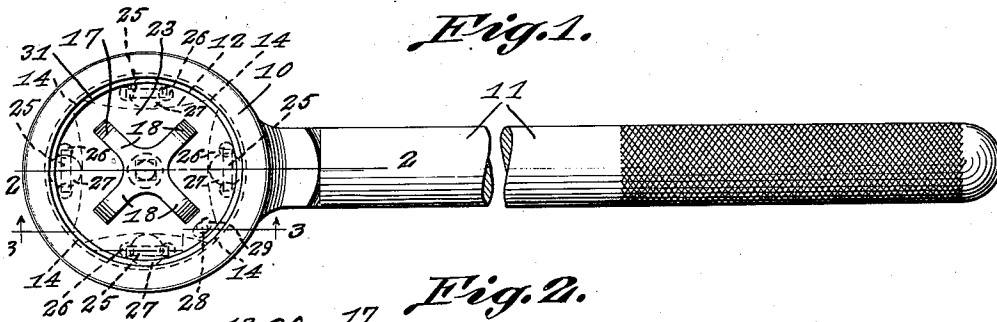
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ROLLER GRIP WRENCH

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ROLLER GRIP WRENCH

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2 Claims. (Cl. 192-44)

This invention relates to roller grip wrenches and has for an object to provide a reversible ratchet wrench in which the clutch engages at the exact point where the handle is set thereby eliminating lost motion.

A further object is to provide a wrench of this type which may be reversed instantly by moving the shifter and thus eliminating the necessity of reinforcing the wrench from the socket.

A further object is to provide a wrench of this type which will be formed of a few strong simple and durable parts, which may be easily assembled and disassembled, which will be inexpensive to manufacture, and which will not easily get out of order.

With the above and other objects in view the invention consists of certain novel details of construction and combinations of parts herein-after fully described and claimed, it being understood that various modifications may be resorted to within the scope of the appended claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawing forming part of this specification,

Figure 1 is a plan view of a roller grip wrench constructed in accordance with the invention.

Figure 2 is a longitudinal sectional view of the wrench taken on the line 2-2 of Figure 1.

Figure 3 is a longitudinal sectional view of the wrench taken on the line 3-3 of Figure 1 and showing the reversing pin and one of the clutch rollers.

Figure 4 is an enlarged bottom plan view of the wrench head with the bottom snap ring and the annular bottom retaining plate removed to expose the clutch rollers and cam.

Figure 5 is a bottom plan view of the shifter.

Referring now to the drawing in which like characters of reference designate similar parts in the various views, 10 designates an annular wrench head having a socket wrench handle 11 attached thereto.

A substantially square cam 12, having concave faces 13 is concentrically mounted within the annular wrench head and is provided at the corners with rounded bearing faces 14 which slidably engage the inner periphery of the wrench head. The cam is provided with an integral stud 15 adapted to fit in a conventional socket wrench and on the opposite face from the stud is provided with a centrally located recess 16 of substantially square contour.

The clutch shifter 17 has radially disposed wings 18 to provide finger holds and is provided

with an integral screw threaded stud 19 having a cylindrical portion 20 and having a rectangular portion 21. A spring carrying plate 22 is provided with a rectangular opening to receive the rectangular portion 21 of the shifter so that the plate will move as a unit with the shifter when the shifter is turned axially. A retaining disc 23 is provided with a central circular opening to receive the cylindrical portion 20 of the shifter and is mounted outwardly of the spring carrying plate. A nut 24 is screw threadedly engaged upon the threaded stud 19 and holds the shifter 17, plate 22 and disc 23 in assembled relation.

Springs 25 of U-form and best shown in Figure 3, are carried by the spring carrying plate 22, the side members of the springs passing through openings 26 in the spring carrying plate and embracing rollers 27 associated with the cam 12, as best shown in Figure 4. The cross members of the springs are located between the retaining disc 23 and the disc carrying plate 22, and function to hold the plate normally against movement with relation to the disc.

The spring carrying plate 22 is moved through the medium of the rectangular portion 21 of the shifter engaged in the similar shaped opening in the ring. It is limited in its movement in opposite directions by means of a pin 28 which is tightly fitted into an opening in the disc 23 and which passes through a slot 29 in the spring carrying plate 22 and is rigidly secured in an opening 30 in the cam 14. The pin holds the cam and disc assembled as a unit but permits the spring carrying disc to turn axially to reverse the position of the rollers on the cam faces 13 of the cam 12.

The parts are held assembled by snap rings 31 and 32 fitted in grooves in the inner periphery of the annular wrench head. The snap ring 31 contacts with the retaining disc 23 and the snap ring 32 contacts with a retaining disc 33 located between it and the cam 13.

To yieldably retain a socket wrench on the stud 15 a ball 34 is mounted in a recess 35 formed in the side of the stud and is spring pressed outwardly by a helical spring 36 which is seated in the recess between the ball and a stop plug 37 which is screw threadedly engaged with the wall of the recess.

In operation the nut 24 creates a tension which yieldably holds the spring carrying plate 22 in either shifted position, forward or reverse. When the shifting lever or shifter 17 is shifted until one end of the slot 29 is against the stop pin 28, the springs 25 reverse the position of the

rollers on the cam surfaces, thereby acting as shifters and thereafter become tension springs and exert the right amount of tension on the rollers.

5 From the above description it is thought that the construction and operation of the invention will be fully understood without further explanation.

What is claimed is:

10 1. A ratchet mechanism comprising an annular head, a cam concentrically disposed in the head, wedge rollers between the cam and the inner periphery of the head, a shifter lever having an integral screw threaded stud provided
15 with angular and cylindrical portions, a plate mounted upon the angular portion to turn as a unit with the shifter lever, springs carried by the plate and engaging the rollers longitudinally to tension the rollers and reverse the position of
20 the same, a disc mounted outwardly of the plate upon the cylindrical portion of the stud and carrying a stop pin, there being an arcuate slot in said plate, the ends of which are adapted to engage the stop pin and limit shifting movement of
25 the plate, and a nut mounted upon the stud and holding the lever, the disc and the plate in assembled relation.

2. A ratchet mechanism comprising an annular head, a cam concentrically disposed in the head, wedge rollers between the cam and the inner periphery of the head, a shifter lever having an integral screw threaded stud provided with angular and cylindrical portions, a plate mounted upon the angular portion to turn as a unit with the shifter lever, a disc mounted outwardly of the plate upon the cylindrical portion of the stud and carrying a stop pin, there being an arcuate slot in said plate, the ends of which are adapted to engage the stop pin and limit shifting movement of the plate, springs of U-form carried by the plate, the side members of the springs passing through openings in the plate and embracing the rollers to shift the rollers when the plate is shifted, the cross members of the springs being located between the disc and the rollers, said cross members being adapted to hold the plate normally against movement with relation to the disc, and a nut mounted upon the stud and holding the lever, the disc, and the plate in assembled relation.

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