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PATENTED NOV. 6, 1906.

C. B. LOWRY & R. BERNHARD.

WRENCH.

APPLICATION FILED APR. 27, 1906.

2 SHEETS—SHEET 1.

Fig. 3.

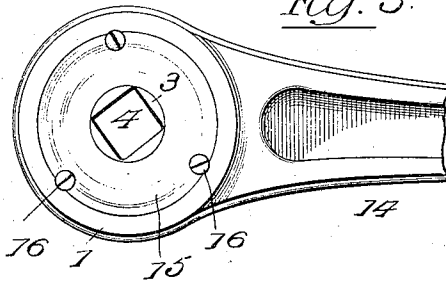


Fig. 4.

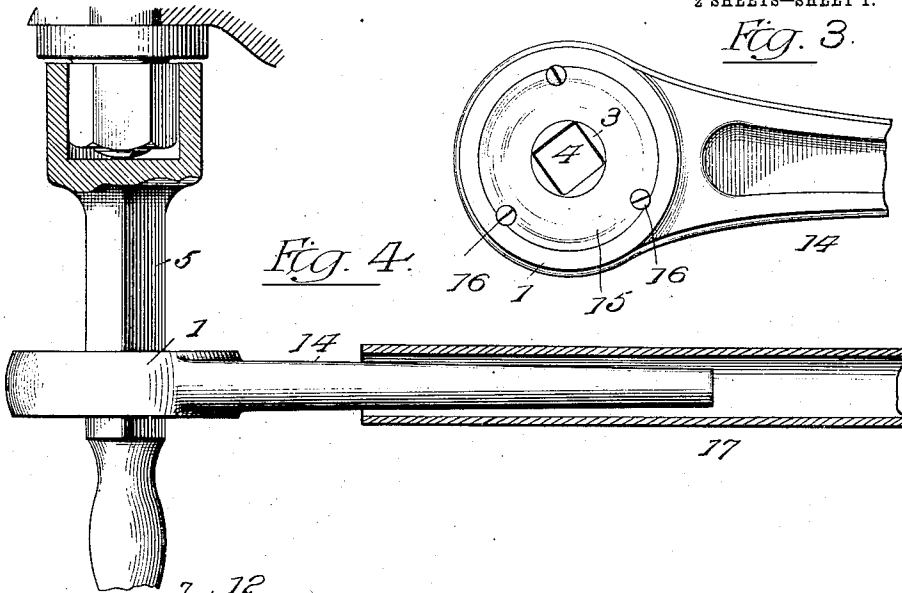


Fig. 1.

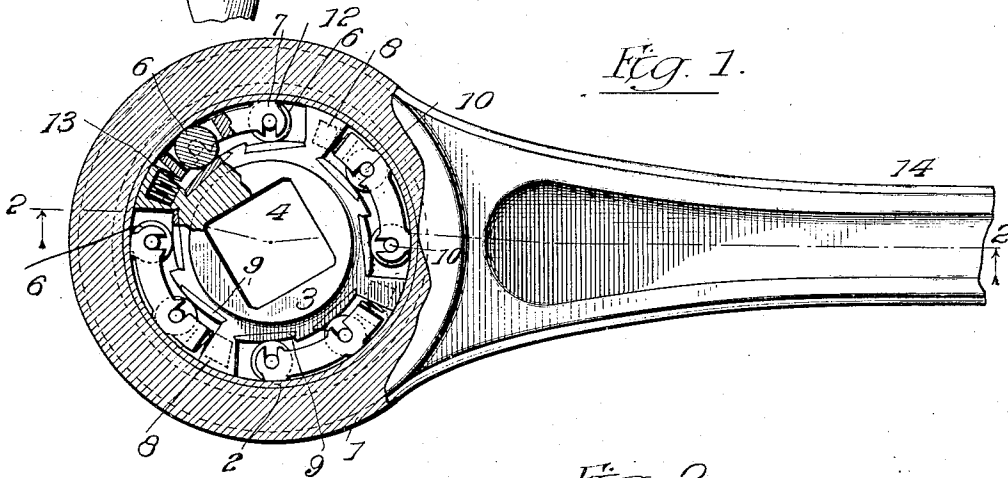
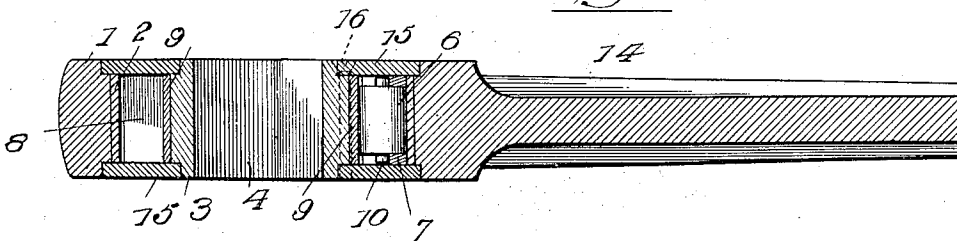


Fig. 2.



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2 SHEETS—SHEET 2.

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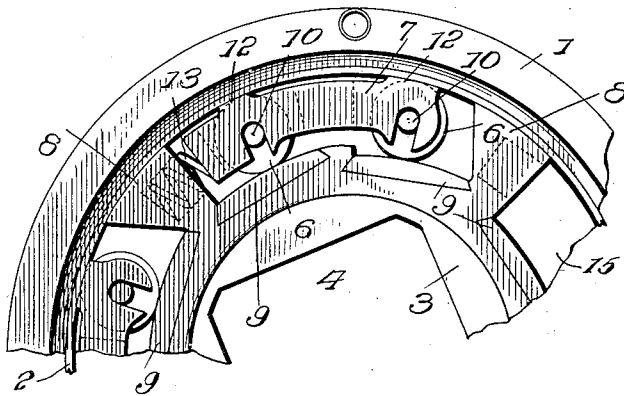
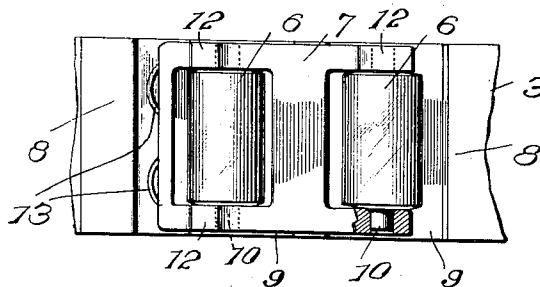


FIG. 6.



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To all whom it may concern:

Be it known that we, CUTHBERT B. LOWRY, of Lexington, in the county of Fayette, State of Kentucky, and RICHARD BERNHARD, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Wrenches; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The primary object of this invention is to provide a clutch-head wrench of maximum strength and power and one wherein all the rollers of a series of gripping-rollers will simultaneously cooperate regardless of the position occupied by the wrench.

The invention will be hereinafter fully set forth, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation, partly in section. Fig. 2 is a longitudinal sectional view on line 2 2, Fig. 1. Fig. 3 is a face view. Fig. 4 shows the application of the wrench to a spindle. Fig. 5 is an enlarged view of a portion of the casing and socket-head. Fig. 6 is a plan view of one pair of rollers and their carrier, portions of the casing and socket-head being broken away.

Referring to the drawings, 1 designates an annular casing of heavy metal having an annular opening, which is preferably faced with a steel ring 2. Within this annular opening is located a socket-head 3, which has a central square opening 4 to accommodate nuts or to engage angular spindles, as 5, which at one end may be formed to engage nuts, as shown in Fig. 4. This socket-head at its periphery has a series of separate chambers, in each of which is located two rollers 6, which are held in constant alinement by a carrier 7, so that both rollers will always be in proper relation to each other and to the peripheral edge of the socket-head. We have shown four chambers and a corresponding number of sets of rollers. The several chambers are separated by peripheral projections 8, curved at their peripheries on a radius to conform to the wall of the casing-opening. The periphery of the socket-head within each chamber

is formed with two separate bearing-surfaces 9, each consisting of a steel plate set into a groove in the edge of the head. These bearing-plates are eccentrically positioned, so that their surfaces and the wall of the annular opening will be approximately convergent. Hence the rollers will be in binding engagement with the head and the casing as they are moved longitudinally with their carriers toward the reduced ends of the chambers and will be released by a slight reverse movement. Each of the carriers consists of two connected side bars formed with open-end slots to accommodate the journals 10 of the rollers, and said side bars are built up at points 12, so as to abut against the wall of the casing-opening. Each of the carriers is constantly under the tension of coiled springs 13, bearing against the end connecting-bar thereof, such springs being located in bores formed in the straight faces of the peripheral projections 8. The tendency of these springs is to constantly hold the rollers toward the reduced ends of the several chambers. Under the slightest axial motion of the annular casing by power applied to the radial handle 14 thereof both of the rollers of each set of rollers will be immediately brought into frictional engagement with the casing and the socket-head. There is not the slightest opportunity of any one roller failing to operate simultaneously with the others, since both rollers of each set are held in perfect alinement with each other, and any reverse motion of the wrench is taken up by the several springs 13, which will return the carriers and rollers to their normal positions when pressure on the handle is released.

The socket-head, the rollers, and their carriers are held in place within the annular housing by cap-rings 15 and screws 16. If additional power is desired, a supplemental handle 17 may be used, as shown in Fig. 4.

From what has been said it will be seen that by using a plurality of hardened rollers arranged in pairs and held in fixed alinement by spring-pressed carriers a quick and effective clutching action between the two movable members is had. The best results are obtained by arranging the rollers in pairs and having them movable in unison. Only the slightest axial movement of the annular cas-

ing is required to clutch or unclutch the two parts, the rollers revolving on their own axes in binding and releasing such parts.

The features of this invention may be employed in friction-clutches generally.

We claim as our invention—

1. The combination with two parts or members, each movable relatively to the other, and having an intervening space, the opposite walls whereof are approximately convergent at a plurality of points, rollers located in independently-movable pairs within such space at such points, means for holding the rollers of each pair in constant relation to each other, and means tending to normally hold the rollers in engagement with the opposite walls at said points of convergence.

2. The combination with two parts or members, each movable relatively to the other, with a series of separate chambers between the two members, the walls of each chamber being approximately convergent at a plurality of points, a plurality of rollers located within each chamber and designed to engage the opposite walls thereof, means for holding the rollers in each chamber in fixed alinement with each other, and means tending to normally hold the rollers toward the reduced portions of each chamber.

3. A wrench comprising a casing having an annular opening, a socket-head within said opening, a series of separate chambers being formed between the socket-head and the wall of said opening, each chamber having eccentrically-arranged walls, rollers located within said chambers, and carriers for holding the rollers of each chamber in fixed relation to each other.

4. A wrench comprising a casing having an annular opening, a socket-head fitted within said opening, a series of separate chambers being formed between the socket-head and the wall of said opening, each chamber having eccentrically-arranged walls, a plurality of rollers located within said

chambers, carriers for holding the rollers of each chamber in fixed relation to each other, and springs acting on said carriers.

5. The combination with the casing having an annular opening, of the socket-head fitted in said opening and having at its periphery a series of spaced-apart chambers, the periphery of said head within each chamber being eccentric, at two different points, to the axis of the wrench, a roller for cooperating with each eccentric portion of each chamber, a carrier for holding the rollers of each chamber in fixed relation to each other, and means acting on said carrier for holding the rollers toward one end of each chamber.

6. The combination with the casing having an annular opening, of the socket-head fitted in said opening having a series of peripheral projections and intermediate chambers, each chamber having separate bearing-surfaces eccentric to the axis of the wrench, rollers within said chambers, carriers for said rollers, and springs mounted in said peripheral projections and acting on said carriers.

7. The combination with the casing having an annular opening, of the socket-head having a series of peripheral projections forming separate chambers having bearing-surfaces eccentric to the axis of the wrench, rollers located in said chambers, carriers for holding each pair of rollers in fixed relation to each other, said carriers comprising connected side bars having open-ended slots to accommodate the journals of said rollers, and springs mounted in said projections and acting on said carriers.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

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