Aug. 5, 1924. 1,503,692

W. J. McCARTHY

MAGAZINE SPANNER

Filed Aug. 15, 1923

Fig. 1.

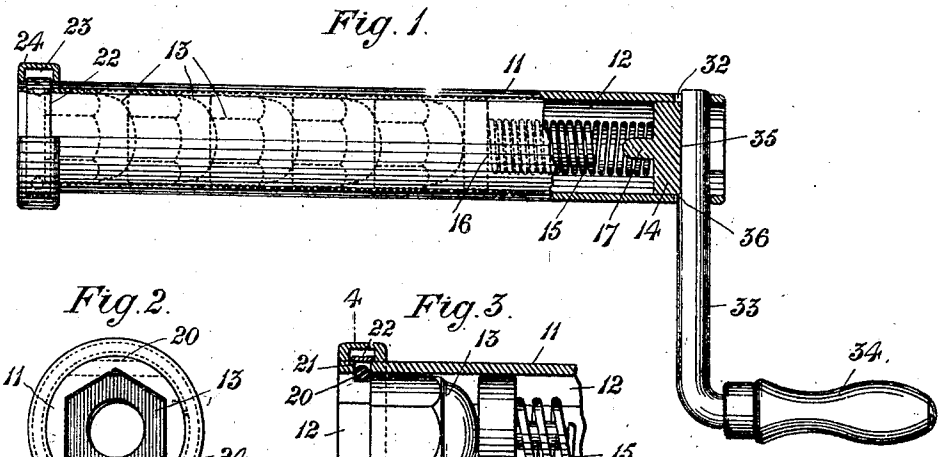


Fig. 2.

Fig. 3.

Fig. 4.

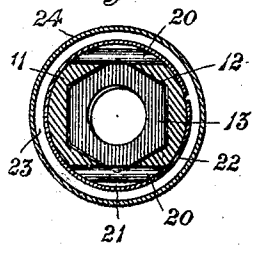


Fig. 5.

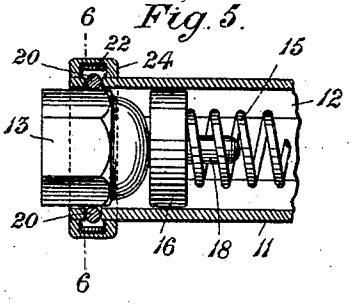
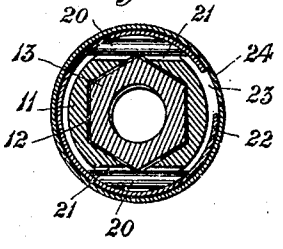


Fig. 6.



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UNITED STATES PATENT OFFICE.

WILFRID JUSTIN McCARTHY, OF KENILWORTH, ENGLAND.

MAGAZINE SPANNER.

Application filed August 15, 1923. Serial No. 657,548.

To all whom it may concern:

Be it known that WILFRID JUSTIN McCARTHY, a subject of the King of Great Britain, residing at Park Hill, Kenilworth, Warwickshire, England, has invented a new and useful Improvement in or Connected with Magazine Spanners; and he does hereby declare the following to be a full, clear, and exact description of the same.

This invention has reference to improvements in or connected with magazine spanners more particularly of the kind wherein the unscrewed nuts are stored within the bore of a tube which forms the body of the spanner, said nuts being maintained within the bore of the tube after unscrewing by means of spring controlled members which only permit the subsequent expression of the nuts one at a time under say the influence of a spring control system located within the bore. The present invention has for its objects the provision of an improved nut retention means and improvements in the details of construction of magazine spanners of this type.

The invention consists of an improved magazine spanner of the kind herein referred to characterized by the provision of a plurality of nut retention members adapted to normally project within the bore of the spanner under the influence of an annular spring surrounding and pressing on the outer extremities of the said members. The invention further residing in certain features of construction hereinafter more fully described.

The invention will now be described with particular reference to the accompanying sheet of drawing wherein—

Figure 1 is a part sectional elevation of a magazine spanner constructed in accordance with the invention.

Figure 2 is a front view of the open or acting end of the spanner showing a nut retained within the magazine.

Figure 3 is a part sectional elevation of the open or acting end of the spanner with a nut retained within the magazine.

Figure 4 is an end sectional elevation of the spanner the section being taken on the line 4—4 Figure 3.

Figure 5 is a similar view to Figure 3 but showing a nut partially expressed from the magazine and gripped by the nut retention member.

Figure 6 is an end sectional elevation taken on the lines 6—6 Figure 5.

The form of magazine spanner shown in the drawings and with which the invention is preferably embodied comprises a cylindrical tube 11 having an hexagonal bore 12 of such dimensions as conform to the size of the nuts 13 with which the spanner is to be employed. The tube 11 forms a magazine for storing the nuts 13 after unscrewing, the said nuts being retained within the tube by means of nut retention members hereinafter more fully described and which form the essential features of the present invention. The said nut retention members are located near the open or acting end of the tube 11 the other end of the said tube being closed by a plug 14. A coil spring 15 and piston 16 are disposed within the bore 12 of the tube and serve to eject the nuts 13 one at a time as permitted by the nut retention members the coil spring being positioned within the tube by means of projections 17 and 18 on said plug 14 and piston 16 respectively. Means such as a tommy bar passing through diametrical holes in the tube 11, or a brace, are provided for rotating the tube, the construction shown in Figure 1 of the drawing being a subsidiary feature of the invention and will be hereinafter more fully described.

The nut retention means comprises two lengths of wire 20 of cylindrical cross section disposed within slots 21 cut in the walls of the tube near the acting end thereof said slots being cut across the face of the tube and of such a depth that the central portions of the lengths of wire 20 normally project within the bore 12 of the tube 11 under the influence of an annular spring 22 which abuts against the convex shaped ends of the said wire lengths 20. The annular spring 22 as shown in the drawing is composed of a flat spring ring which is disposed within a recess 23 formed in an end collar 24 which fits on the end of the tube 11 and correctly positions the spring 22 relative to the ends of the wire lengths 20, the recess 23 permitting of the necessary extension and contraction of the spring.

The closed or non-acting end of the tube 11 has therein diametrically opposed holes 32 to receive the end of a cranked rod 33 which is provided with a handle 34 to facilitate its rotation for operating the span-

ner. The rod 33 is as shown in Figure 1 formed with a flat face 35 which is adapted to abut against the outwardly presented flat end of the plug 14 and serves to prevent the rotation of the rod within the holes 32, the shoulder 36 forming a limiting stop against the plug 14 for determining the fully inserted position of the cranked rod 33. Alternatively the spanner may be rotated by the hand without the employment of a cranked handle or by a tommy bar, or equivalent means.

The operation of the spanner is as follows:—

The mouth of the tube 11 is forced over the nut it is required to unscrew thereby forcing the central portions of the wire lengths 20 out of the bore of the tube 11 and expanding the annular spring 22, the tendency of the said spring to retain its normal position resulting in the central portions of the wire lengths being firmly pressed against the nut to grip the same during the unscrewing operation. The nut is gripped until it is completely unscrewed, when the end of the bolt or stud from which it has been unscrewed serves to force the nut within the magazine of the spanner beyond the central portions of the wire lengths when the central portions of the wire lengths are again pressed into the bore of the spanner and serve to retain the nut or nuts within the spanner and are in position ready to engage the next nut to be removed.

As each nut is received within the bore of the spanner the piston 16 is pressed inwardly against the resistance of the coil spring 15 and this spring and piston serve as the ejecting means for the contained nuts when it is desired to screw them on to their bolt or stud. A reverse operation of the spanner when positioned relative to a bolt or stud effects the transfer of the nut from the spanner to the bolt or stud.

Spanners of this character are particularly useful for removing the nuts from the wheel of a motor car and retaining them during the replacement while a repair or replacement is being effected.

Claims:—

1. A magazine spanner comprising in combination a tube having one end thereof formed as the acting end of a spanner, lengths of wire disposed within the walls of the tube and having their central portions projecting within the bore of said tube, an annular spring surrounding said wire lengths and abutting their outer extremities and means for positioning said spring relative to said wire lengths.

2. A magazine spanner comprising in combination a cylindrical tube having a bore of a size and shape adapted to engage the nuts with which the spanner is to be employed, one end of said tube being formed as the acting end of the spanner, slots formed in said tube across and near the acting end thereof, lengths of wire disposed within said slots having their central portions projecting within the bore of the tube, a split annular spring adapted to abut the extremities of said lengths and normally maintain the central portions within the bore of said tube, a recessed collar mounted on said tube and adapted to correctly position said spring relative to the wire lengths and means for effecting the rotation of the spanner.

3. A magazine spanner comprising in combination a cylindrical tube having a bore of a size and shape adapted to engage the tube with which the spanner is to be employed, one end of said tube being formed as the acting end of the spanner, slots formed in the said tube across and near the acting end thereof, lengths of wire disposed within said slots having their central portions projecting within the bore of the tube, a split annular spring adapted to abut the extremities of said lengths and normally maintain the central portions within the bore of said tube, a recessed collar mounted on said tube and adapted to correctly position said spring relative to the wire lengths, means for expressing the nuts from the tube as permitted by said wire lengths, diametrically opposed holes formed in the other end of said tube, an end plug disposed within said tube adjacent said holes, a cranked rod, a shoulder flat on said arm of one rod, adapted to abut the face of said end plug and a handle loosely mounted on said rod to permit of the rotation of the same and thereby effect a rotation of the spanner.

4. A magazine spanner comprising in combination a cylindrical tube having a bore of a shape and size adapted to engage the nuts with which the spanner is to be employed one end of said tube being formed as the acting end of the spanner, slots formed in said tube across and near the acting end thereof, lengths of wire disposed within said slots having their central portions projecting within the bore of the tube, a split annular spring adapted to abut the extremities of said lengths and normally maintain the central portions thereof within the bore of said tube, a recessed collar mounted on said tube and adapted to correctly position said spring relative to the lengths, a piston disposed within said tube, an end plug disposed within said tube and closing one end thereof a coiled spring disposed within said tube between the piston and the end plug and means for effecting the rotation of the spanner.

In testimony whereof, I have signed my name to this specification.

WILFRID JUSTIN McCARTHY.