May 12, 1925. 1,537,929

H. J. LEE

BOX SPANNER

Filed Feb. 27, 1923

Fig. 1.

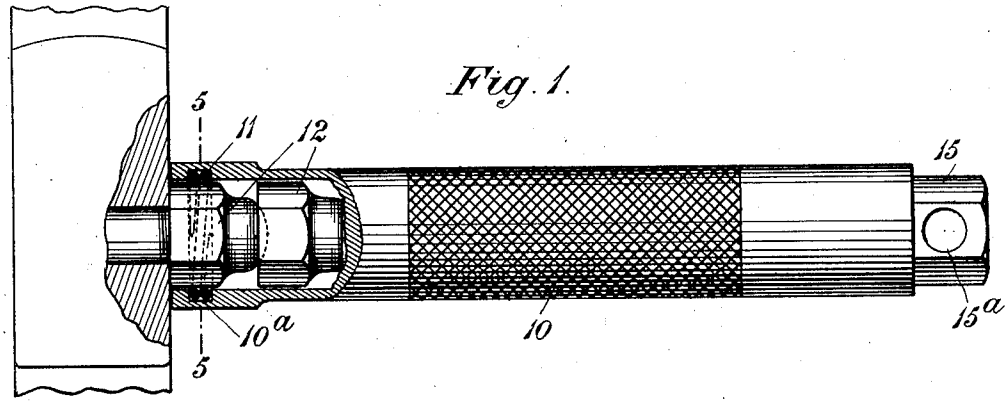


Fig. 3.

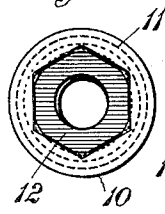


Fig. 2.

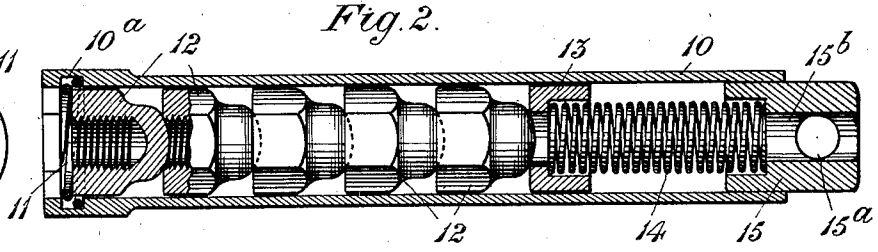


Fig. 4.

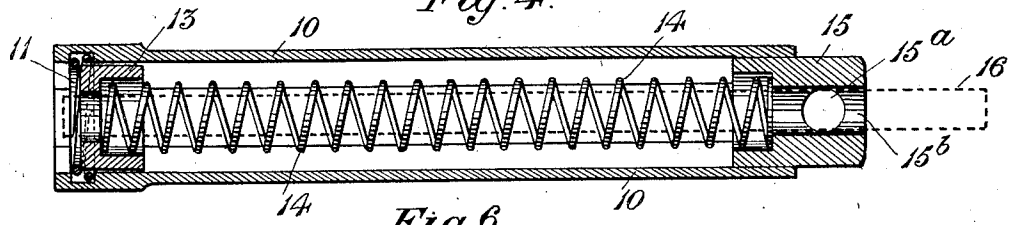


Fig. 5.

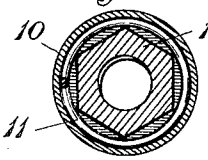


Fig. 6.

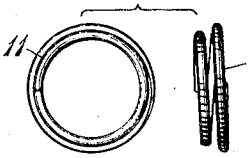


Fig. 7.

Fig. 8.

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UNITED STATES PATENT OFFICE.

HENRY JAMES LEE, OF COVENTRY, ENGLAND, ASSIGNOR TO LEON BRITTON, OF LONDON COUNTY, ENGLAND.

BOX SPANNER.

Application filed February 27, 1923. Serial No. 621,665.

To all whom it may concern:

Be it known that I, HENRY JAMES LEE, a subject of the King of Great Britain, residing at 23 Hertford Street, Coventry, England, engineer, have invented a new and useful Improvement in and Connected with Box Spanners, and do hereby declare the following to be a full, clear, and exact description of the same.

This invention has reference to improvements in and connected with box spanners, and has for its primary object to construct a box spanner which is especially applicable for securing and removing the nuts of a spare wheel of an automobile, and in addition may be employed to store the nuts within the magazine of the spanner. Alternatively the spanner can be formed without any magazine and employed only for screwing or unscrewing the nuts on or from the bolts or studs.

The improved spanner may be constructed as a separate implement, or it may be constructed to form part of, or addition to a brace, the complete spanner being compact and occupying but a small amount of room in the tool kit, and in certain constructions constituting the magazine for holding say the six nuts of a spare wheel during the time that one wheel is being removed and another replaced.

The invention consists of a magazine or box spanner which is characterized by a coil spring gripping device for the nut or nuts located within the bore of the spanner, said coil spring being located within a recess formed in the inner periphery of the spanner and being capable of expansion and construction but restrained from longitudinal motion by the said recess part of the said spring normally projecting beyond the said recess into the bore of the spanner.

The present invention will now be described with particular reference to the accompanying sheet of drawings wherein like reference numerals indicate like parts in the different views.

In the drawings:—

Fig. 1 is a part sectional side elevation of a magazine spanner having the feature constituting this invention embodied therein, the spanner being shown in the position it would occupy when removing or replacing the nut on the end of a bolt or stud.

Fig. 2 is a longitudinal sectional elevation of the spanner seen in Fig. 1 removed from the bolt or stud and retaining five nuts therein.

Fig. 3 is an end elevation of Fig. 2.

Fig. 4 is a longitudinal sectional elevation of the magazine spanner in its empty position, the dotted lines in this figure indicating the position which would be occupied by a tommy-bar within the spanner when not in use.

Fig. 5 is an end sectional elevation on line 5—5 of Fig. 1.

Fig. 6 are two views of the coil spring which forms an essential part of the present invention removed from the spanner.

Fig. 7 is a part sectional elevation illustrating the combination of a brace handle with the spanner as a convenient means of rotating same, and

Fig. 8 is an end sectional elevation on line 8—8 of Fig. 7.

The spanner is formed from a tubular section of metal 10 the inner periphery of which is hexagonal and conforms as to size and shape with the size of the nut in connection with which it is to be used. Formed near the mouth of this tube is an annular recess 10^a in the inner periphery within which recess is contained a coil or spiral spring 11 having at least two turns, one turn of the said spring being slightly smaller in diameter than the adjacent turn (see particularly Fig. 6) so that the smaller turn projects slightly into the hexagonal bore of the tube forming the magazine of the spanner. (See particularly Figs. 2 and 4). This projecting coil of the spring is forced back into the annular recess 10^a by the corners of the nut 12 when it is engaged thereby (see particularly Fig. 1), the circular section of the wire forming the coil spring forming a lead for the nut in either direction. Disposed within the said hexagonal bore of the tube is a slidable block 13 which is bored and recessed to receive the outer end of a coil spring 14, the other end of the spring being disposed within a recess formed in the closure nut 15 of the tube 10. This spring serves to exert sufficient pressure to maintain the outer of the nuts 12 contained within the magazine near the mouth thereof (as seen in Fig. 2) in readiness for engagement with the thread of the bolt or stud on to which it is to be screwed. The nut 15 forming the closure of the one end of the

magazine is preferably of hexagonal formation so that it may be engaged by a box spanner for the purpose of rotating the magazine, and preferably the nut is drilled to form a circular aperture 15[a] therethrough which may form a means of attachment for a tommy-bar 16, or the cranked arm 17 of a brace handle. Any of the aforesaid means form a ready attachment to the magazine spanner for the purpose of rotating same. When no additional means are employed for rotating the spanner the milled part of the periphery of the tube 10 is useful as a hand grip.

Referring particularly to Fig. 4 it will be seen that the tommy-bar 16 can be disposed within the bore of the magazine when out of use the closure nut 15 being formed with a longitudinal cylindrical aperture 15[b] therethrough to admit of the passage of the tommy-bar into the bore of the spanner.

When it is desired to form the spanner double ended to take two sizes of nuts, the coil spring nut retaining device 11 and recess 10[a] are duplicated at the opposite end of the spanner, and a duplicate slidable member 13 is employed in place of the closure nut 15, and the coil spring 14 would occupy a mid-position within the magazine between the two slidable members 13 as will be readily understood.

The inner periphery of the gripping coil spring 11 maintains its contact across the corners of the nut with which it is in engagement and the spring is formed sufficiently strong to hold the nut at the required position within the magazine of the spanner, the coil spring 14 is designed so that it will not exert a sufficient force to overcome the lateral compressive force of the coil spring 11 on the corners of the nut.

When employed as a magazine spanner as shown in the drawings each nut is automatically positioned by the succeeding nut and the spring controlled block 13 within the hexagonal bore of the tube 10, the spring 14 receiving an increasing compression for each additional nut contained within the magazine.

When it is desired to replace the nuts the last nut retained in the spanner is engaged with the requisite stud or bolt the engagement of the threads of the nut and the stud or bolt upon rotation of the spanner result in a sufficient grip being obtained between the engaging threads so that the corners of the nut bear upon the inner periphery of the coil spring and expand the spring to admit of the withdrawal of the nut from the spanner. The circular section of the spring constitutes a lead for the edge of the nut to admit of its passage through the spring.

Claims:—

1. A magazine spanner for operating on nuts comprising in combination a tube, a coil spring for gripping and retaining the nut or nuts said spring being located in an annular recess formed in the inner periphery and near the mouth of the said tube and normally projecting thereinto, a slidable member within said tube, a closure member for the one end of the tube, and a coil spring located between the slidable and the closure member.

2. A magazine spanner comprising in combination a tube adapted to receive a plurality of nuts, a coil spring gripping and retaining device for the nut or nuts said spring being located in an annular recess formed in the inner periphery and near the mouth of the said tube and normally projecting thereinto, a closure member for the opposite end of the said tube, a slidable member within the tube, and a coil spring disposed between the said members, and means for rotating the spanner.

3. A magazine spanner comprising in combination a tube adapted to receive a plurality of nuts, a coil spring gripping and retaining device for the nut or nuts said spring being located in an annular recess formed in the inner periphery and near the mouth of the said tube and normally projecting thereinto, a closure member for the opposite end of the said tube, a slidable member within the tube, and a coil spring disposed between the said members, and a tommy-bar combined with the said spanner and adapted to rotate same.

4. A magazine spanner comprising in combination a tube adapted to receive a plurality of nuts, a coil spring gripping and retaining device for the nut or nuts said spring being located in an annular recess formed in the inner periphery and near the mouth of the said tube and normally projecting thereinto, a closure member for the opposite end of the said tube, a slidable member within the tube, and a coil spring disposed between the said members, and a brace handle combined with the said spanner and adapted to rotate same.

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

HENRY JAMES LEE.