

UNITED STATES PATENT OFFICE

2,660,080

INTERNAL WRENCH WITH FASTENER
RETENTION MEANS

William G. De Kam, Detroit, Mich., assignor to
Kent-Moore Organization, Inc., Detroit, Mich.,
a corporation of Michigan

Application June 28, 1950, Serial No. 170,782

2 Claims. (Cl. 81-71)

1

This invention relates to improvements in internal wrench with fastener retention means.

An object is to provide an improved wrench of the Allen-type. In the Allen-type of wrench there is provided a projecting extension or plug of a hexagonal or other non-circular shape adapted to be received within a similarly shaped socket formed in a nut to rotate the nut. These wrenches are provided in varying size and shape to fit a wide variety of plug sockets.

In automobile service station use it frequently becomes necessary to employ a wrench of the Allen-type to remove a plug where it is desirable that the plug remain attached to the wrench so that it may be withdrawn through an aperture or from within an interior of a casing. For example, in connection with the removal of plugs from mechanism located within the interior of the housing and wherein entrance to the plugs is obtained through apertures in the housing, it is desirable that when the plug is unscrewed that it remain with the wrench so that it may be withdrawn through an aperture in the housing otherwise the plug may fall within the housing requiring disassembly thereof to remove it.

This invention relates to the provision of a wrench of the Allen-type wherein there is mounted upon the shank of the wrench adjacent to the end of the plug but spaced therefrom a magnetic head having the two poles of the magnet disposed on opposite sides of the plug to be engaged by and to retain a nut within the socket over which the wrench plug extension is received.

More specifically, the magnetic head consists of a fork-shape with its two bifurcations disposed in diametrically opposite sides of the plug spaced radially therefrom. These bifurcations represent the opposite poles of the magnet. The outer ends of these poles are spaced rearwardly from the outer end of the plug. When the wrench plug is entered within a socket, the magnet poles of the head engage the end of the nut provided with the socket.

Other objects and meritorious features of this improved wrench will more particularly appear from the following specification, claims, and accompanying drawing, wherein:

Fig. 1 is an elevation of my improved wrench showing the same in use;

Fig. 2 is a transverse sectional view taken on the line 2-2 of Fig. 1; and

Fig. 3 is a cross-sectional view taken on the line 3-3 of Fig. 2.

The wrench is illustrated in the drawings as

2

comprising a shank portion 10. A handle 12 is secured to one end of the shank. The shank terminates at the opposite end in an extension or plug part 14. This plug part is here shown as of a hexagonal shape to be received within a hexagonal socket. Obviously, it might be of any size or shape to be received within the corresponding socket of a screw-threaded plug or nut such as is indicated in Fig. 1 as 16.

Mounted upon the shank at the end adjacent to the extension 14 is a magnetic head indicated as 18. This head is fork-shaped and the two bifurcations 20 are disposed on diametrically opposite sides of the plug extension 14 spaced radially therefrom as shown in the drawing. The magnetic head shown may be of the Alnico-type of magnet which is a magnet of very substantial force and very hard material that is commercially available.

The head itself is shown as secured to the shank upon a mounting of relatively non-magnetic material such as brass indicated herein as 22. This mounting is shown as having a sleeve portion 24 received through the plug and directly engaging the shank and the plug as illustrated in Fig. 3. The mounting has a hub portion disposed above the plug. This mounting may be brazed or otherwise secured to the shank as at 26.

In the operation of the wrench, it is shown as being employed to withdraw a threaded plug or nut 16 illustrated as threaded into a part such as 28 in Fig. 1. This plug is engageable only through an aperture 30 formed in a housing 32. The magnetic head illustrated has a diameter substantially oversize the plug 16. When the plug 16 is unscrewed it may be lifted through the aperture 30 by its magnetic adjustment to the head. The oversize character of the head with respect to the plug limits the chance of the plug 16 striking against the aperture 30 as it is withdrawn therethrough.

What I claim is:

1. In a wrench of the Allen type having a shank provided with a handle at one end and a magnetic head adjacent the opposite end, a non-magnetic sleeve fixedly mounted on the shank spaced from said opposite end and defining a radial shoulder spaced from the end of the sleeve, said magnetic head having a body portion provided with an axial opening therethrough and mounted upon the sleeve in abutment with the shoulder thereof, said head provided with a pair of diametrically opposed magnetic bifurcations depending from the body portion of the head

3

beyond the end of the sleeve and spaced radially from the sides of the shank and spaced from said opposite end of the shank, and said opposite end of the shank defining a polygonal extension the facets of which are of equal width and adapted to fit within a complementary shaped socket in a plug.

2. In a wrench of the Allen type having a shank provided with a handle at one end and a magnetic head adjacent the opposite end, a non-magnetic sleeve fixedly mounted upon the shank and shaped to define an intumed shoulder portion terminating in an integral reduced diameter portion spaced from said opposite end of the shank, said magnetic head shaped to define a cylindrical body portion provided with an axial annular opening therethrough to permit mounting of said body upon the reduced diameter portion of the sleeve, the edge of said sleeve surrounding the annular opening through

4

the reduced portion thereof being flared outwardly to grip the head between the shoulder of the sleeve and the flared edge, said head provided with a pair of depending diametrically opposed magnetic bifurcations spaced radially from said annular opening and straddling said shank spaced from the sides and from said opposite end thereof, and said opposite end of the shank defining a polygonal extension the facets of which are of equal width and adapted to fit within a complementary shaped socket in a plug.

WILLIAM G. DE KAM.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,389,997	Sedgwick	Sept. 6, 1921
1,587,647	Hood et al.	June 8, 1926
2,260,055	Reardon	Oct. 21, 1941
2,300,308	Ojalvo	Oct. 27, 1942