

April 22, 1952

R. G. AREY
HANDLE-CONTAINER FOR DIFFERENT
SIZE HEXAGONAL WRENCHES
Filed Feb. 10, 1950

2,593,828

Fig. 1

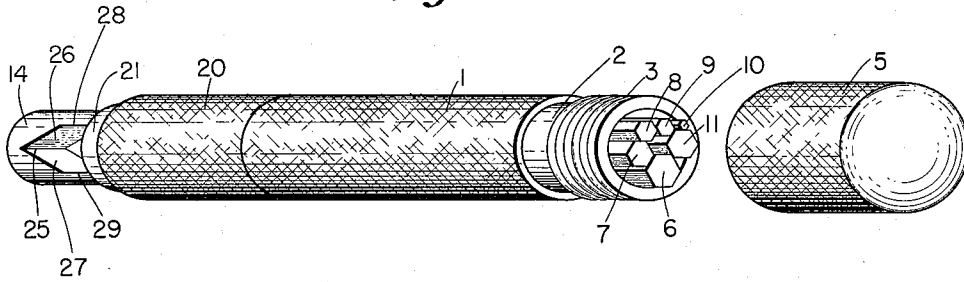


Fig. 2

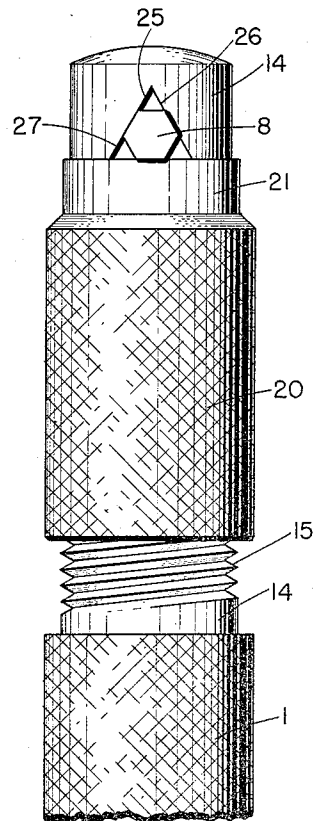
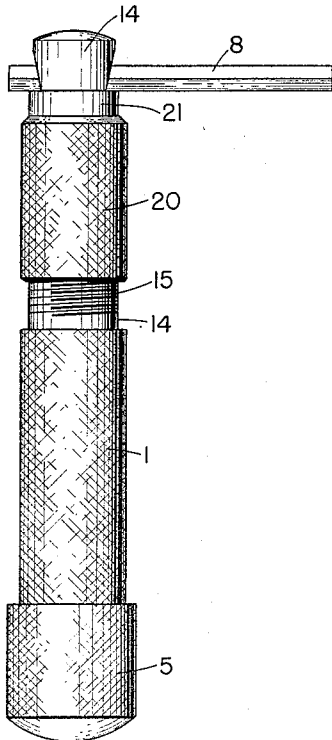


Fig. 3

Ralph G. Arey
Inventor
by James R. Hodder
Attorney

UNITED STATES PATENT OFFICE

2,593,828

HANDLE-CONTAINER FOR DIFFERENT SIZE
HEXAGONAL WRENCHESRalph G. Arey, Brockton, Mass., assignor to Ward
Machine Company, Inc., Brockton, Mass., a cor-
poration of Massachusetts

Application February 10, 1950, Serial No. 143,430

1 Claim. (Cl. 81-177)

1

My present invention is a novel and improved hex wrench with capacity for holding a multiplicity of sizes of hexagonal wrench elements in a quickly adjustable locking chuck, together with means to contain a series or set of varying sizes of such wrench elements.

It is customary at present to employ various bolts, screws, set screws, plugs, and the like devices formed with hexagonal sockets, and heretofore it has been usual to provide socket wrenches in the form of a right-angled handle and depending hexagonal portion to fit into the socket to rotate same for fastening or unfastening.

As these ordinary socket wrenches were capable only of registering or fitting with a corresponding size in the article to be turned, it has been necessary to keep on hand an entire set of such socket wrenches of varying sizes so that the operator could select an appropriate socket wrench to fit the article to be tightened or loosened.

My present invention provides a single handle member with means adjacent one end to receive, fit, hold, and lock a large variety of different sized hexagonal wrench elements; and thus I eliminate the prior necessity of having available an entire set of socket wrenches, usually ten or twelve in number, and ranging from the smallest to the largest wrench generally available for an operator's use.

While my invention is primarily directed to the hex wrench and socket construction, it is equally applicable for use with triangular, five-sided, seven-sided, or other angular socket constructions.

In carrying out my invention, I provide a conveniently sized handle member having a hollow barrel of sufficient length to receive a considerable quantity of different sized socket elements, which are inserted in and removed from one end, which end is covered by a threaded cap.

On the other end of the barrel, I provide a chuck with a threaded clamping portion to engage, hold, and lock any selective one of the wrench elements desired to be used.

I have discovered that by making a triangular recess in the chuck-holding end of the handle with the faces of each side of the recess adjoining the adjacent face at a sixty-degree angle, I am enabled to firmly hold and clamp any sized hexagonal socket element by means of a tubular member threaded on the handle adjacent the chuck end with a ring-like portion constituting the lower side of the sixty-degree triangle.

Thus, when the smallest socket element de-

2

sired to be used is fitted in a triangular recess, the locking member is rotated until the bearing ring contacts one side of the hexagonal socket-engaging element, clamping the same firmly against the opposite sides of the triangle and, thus, giving a rigid bearing on three sides of the hexagonal contour of the socket element fitted therein and simultaneously locking the same in firm, rigid position.

Further features, advantages, and novel combinations will be hereinafter more fully pointed out and claimed, wherein I have shown for illustrative purposes the invention as applied to hexagonal socket and wrench constructions.

Referring to the drawings illustrating a preferred embodiment of my present invention:

Fig. 1 is a perspective view of my adjustable socket wrench handle with the cap removed from the open end and showing a plurality of hexagonal socket wrench elements contained therein;

Fig. 2 is a side view showing the wrench and a small socket-engaging element locked in position; and

Fig. 3 is a fragmentary view on a larger scale showing a hexagonal socket-engaging element locked in position, being a view at right angles to that of Fig. 2.

Referring to the drawings, a hollow handle member is indicated at 1 and is, preferably, provided with a knurled surface as a finish and gripping means, which barrel at the open end has a reduced portion, as indicated at 2, formed with threads 3 thereon to receive the internally threaded part of a cap 5 adapted to close the open end of a barrel 1 and to enclose therein a plurality of hex socket elements as indicated at 6, 7, 8, 9, 10, and 11 of varying sizes. At the opposite ends of the handle or barrel 1, I also reduce the outer diameter, as indicated at 14, and form threads 15 thereon to fit the interior threads of a tubular locking member 20.

The threads 15 extend only a short distance along the reduced part 14 to permit a lengthwise adjustment of the locking member 20 to permit the range desired for engaging and locking the socket-engaging elements of different sizes in the triangular recess near the opposite end of the reduced portion 14. The locking member 20 is provided with a ring-like portion 21 at its outer end, which is to provide a bearing contact against the surface of the wrench-engaging element to be fitted in the recess near the outer end of the reduced barrel portion 14.

This recess is formed with a triangular open-

3

ing having a sixty-degree apex, as indicated at 25, and with the walls 26 and 27 of the recess extending from said apex downwardly a substantial distance and merging into longitudinal walls 28 and 29, thus providing an enlarged opening sufficient to receive the largest hexagonal socket-engaging element to be used with the wrench when the locking element 20 is threaded downwardly to the limit of its movement in contact with the handle portion 1.

Upon selecting a desired hex element from those contained within the handle, the operator fits the same in the triangular opening and rotates the locking member 20 until the wrench 21 engages the lowermost face of the socket-engaging element; whereupon said element is locked firmly between the walls 26 and 27 and the contacting face of the ring portion 21 of the locking element.

As shown in Figs. 2 and 3, I have illustrated the wrench with an element 8 locked in position, the ring and the sixty-degree angular walls 26 and 27 constituting a chuck to hold the same firmly in position, with a fairly broad leverage exerted by the diametrically opposite walls of the ring 21 and the cooperating faces 26 and 27 of the triangular part of the opening.

As thus positioned, the wrench is readily manipulated and rotated in either direction to tighten or loosen a bolt, set screw, or the like having a corresponding socket in the head, as will be readily understood.

It will thus be seen that I have devised a novel, efficient, and compact hex wrench device which contains the set of socket-engaging elements ready for selective use and not in danger of being lost or mislaid, together with a quickly adjustable chuck element at the opposite end, adapted to hold all the various sizes of the hexagonal element contained within the handle portion, and each element adapted to be clamped firmly in position with a simultaneous holding action of the threaded locking member.

In adapting and utilizing the chuck for three-, five-, or other sided wrench and socket use, I

4

may, of course, vary the angle of the walls of the chuck relatively with each other to more closely fit the particular angular wrench element desired to be used therein, although the 60° angle formation is capable of use with considerable range of variations, such other angular formations being substantially equivalent to the hexagonal form as herein described and claimed.

I claim:

10 As a new article of manufacture, and adjustable hex wrench of the kind described, comprising a handle with a hollow portion opening at one end, a cap closing said end, the opposite end being provided with a wrench-receiving aperture
15 extending transversely therethrough, said wrench-receiving aperture being formed by two planar sidewalls meeting at a sixty-degree angle and forming an apex directed toward said opposite end, an intermediate portion of said handle adjacent said aperture being provided with screw threads, a sleeve nut operable on said threaded portion and having one end overlapping said opening so as to provide a transverse wall adjustable with respect to said apex, said two planar side-
20 walls and said transverse wall forming a triangular shaped opening in which any one of different size hexagonal wrenches can be clamped, upon rotation of said sleeve nut in a direction to reduce the size of said triangular opening.

RALPH G. AREY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
451,293	Naylor	Apr. 28, 1891
592,199	Fletcher	Oct. 19, 1897
797,804	Gibson	Aug. 22, 1905
1,293,073	Fowler	Feb. 4, 1919
2,404,613	Brooks	Oct. 22, 1946
2,448,168	Banister	Aug. 31, 1948