United States Patent [19]

Thomasian

[11] **3,732,756**

[45] **May 15, 1973**

[54] RATCHET WRENCH

[75] Inventor: **Harvey A. Thomasian,** Northboro, Mass.

[73] Assignee: **Lowell Corporation,** Worcester, Mass.

[22] Filed: **Aug. 13, 1971**

[21] Appl. No.: **171,649**

[52] **U.S. Cl.** **81/62**

[51] **Int. Cl.** **B25b 13/46**

[58] **Field of Search** ..... 81/61, 177 G, 62, 81/63.1, 119

[56] **References Cited**

UNITED STATES PATENTS

349,007	9/1886	Sinclair	81/62
429,034	5/1890	Justice	81/62

FOREIGN PATENTS OR APPLICATIONS

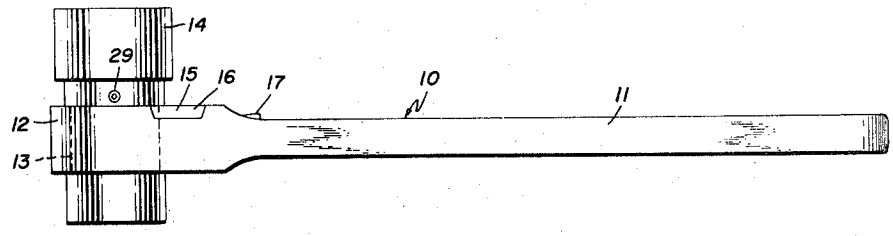
923,146	2/1947	France	81/177 G

Primary Examiner—Othell M. Simpson
Assistant Examiner—James G. Smith
Attorney—Norman S. Blodgett

[57] **ABSTRACT**

A ratchet wrench having a ratchet element with a socket facing each side.

2 Claims, 10 Drawing Figures



PATENTED MAY 1 5 1973

3,732,756

SHEET 1 OF 2

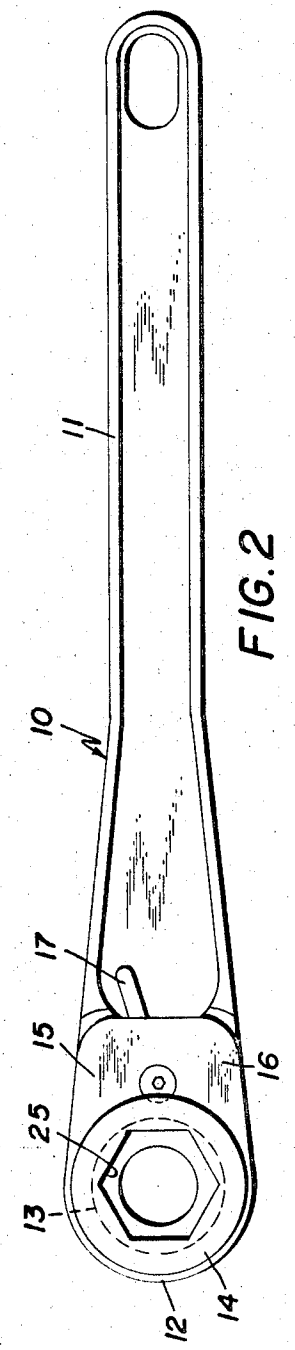


FIG. 2

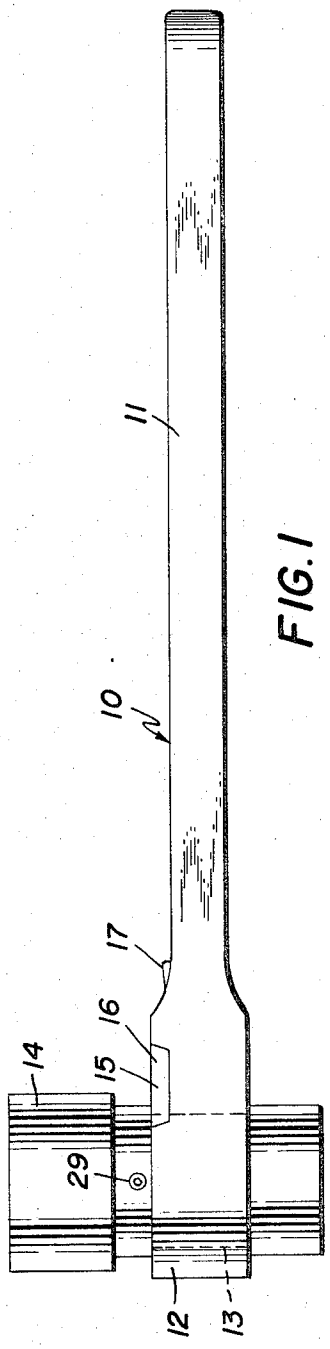


FIG. 1

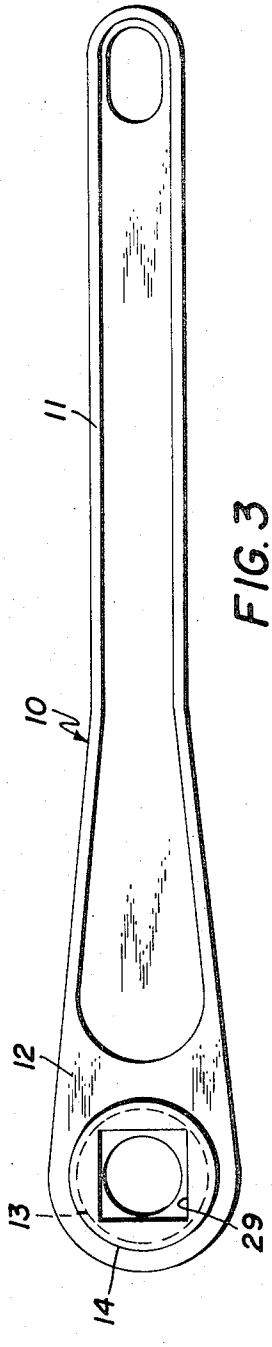


FIG. 3

INVENTOR.
HARVEY A. THOMASIAN
BY
Howard L. Blodgett
ATTORNEY

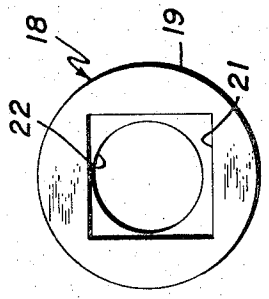


FIG. 5

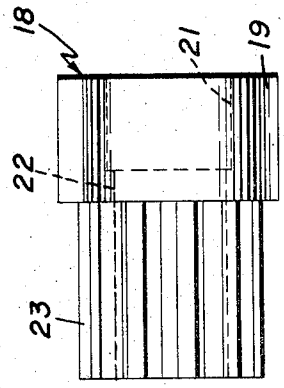


FIG. 4

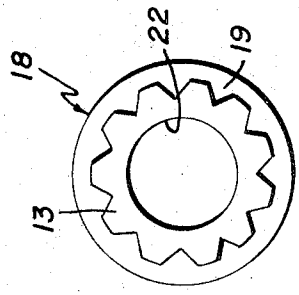


FIG. 6

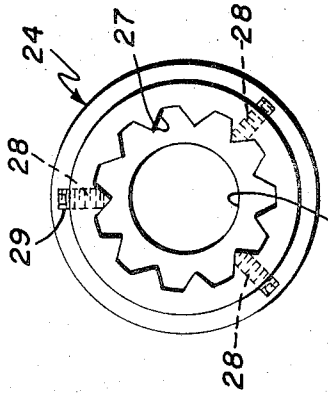


FIG. 8

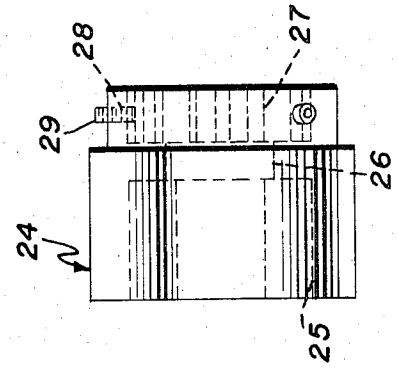


FIG. 7

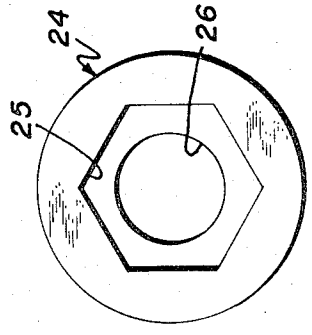


FIG. 9

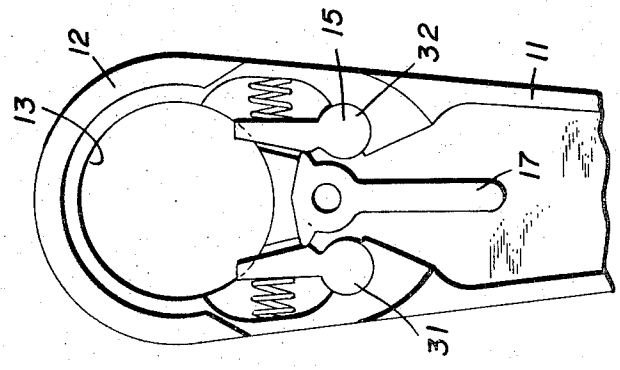


FIG. 10

RATCHET WRENCH

BACKGROUND OF THE INVENTION

In the use of ratchet wrenches, there are many situations where it is desirable to have a single wrench with two different sockets available at the same time. Also, it is desirable to be able to change those sockets easily when desired. In he past, wrenches that offered these capabilities were very complicated and expensive and, furthermore, have not operated effectively. These and other difficulties experienced with the prior art devices have been obviated in a novel manner by the present invention.

It is, therefore, an outstanding object of the invention to provide a ratchet wrench having two sockets at any given time, but with the capability of easily changing the sockets.

Another object of this invention is the provision of a ratchet wrench having oppositely directed sockets, which wrench is inexpensive to manufacture and which is capable of a long life of useful service with a minimum of maintenance.

A further object of the present invention is the provision of a ratchet wrench having interchangeable dual sockets where the mechanism allowing this function is simple and rugged.

With these and other objects in view, as will be apparent to those skilled in the art, the invention resides in the combination of parts set forth in the specification and covered by the claims appended hereto.

SUMMARY OF THE INVENTION

In general, the invention consists of a ratchet wrench having an elongated handle with a head at one end having a non-circular aperture and containing a ratchet mechanism. It is also provided with a socket element having two portions, each portion having a polygonal recess. The two portions are telescopically coupled by non-circular male and female elements with a portion of the socket element fitting snugly in the said aperture of the head.

BRIEF DESCRIPTION OF THE DRAWINGS

The character of the invention, however, may be best understood by reference to one of its structural forms, as illustrated by the accompanying drawings, in which:

FIG. 1 is a front elevational view of a socket wrench embodying the principles of the present invention,

FIG. 2 is a top plan view the wrench,

FIG. 3 is a bottom plan view of the wrench,

FIG. 4 is a side elevational view of one part of the wrench,

FIG. 5 is an end elevational view of the part of the wrench shown in FIG. 4,

FIG. 6 is an opposite end view of the part of the wrench shown in FIG. 4,

FIG. 7 is a side elevational view of another part of the wrench,

FIG. 8 is an end view of the part of the wrench shown in FIG. 7,

FIG. 9 is an opposite end view of the part of the wrench shown in FIG. 7, and

FIG. 10 is a view of the wrench with the sockets and cover removed.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring first to FIGS. 1, 2, and 3, which best show the general features of the invention, the ratchet wrench, indicated generally by the reference numeral 10, is shown as having an elongated handle 11 having a head 12 at one end. The head has a circular aperture 13 in which is fitted a socket element 14. A ratchet mechanism 15 is also carried in the head, the ratchet mechanism being held in place by a cover 16 and operating selectively by the setting of a finger 17.

In FIGS. 4, 5, and 6, it can be seen that a portion 18 of the socket element 14 has an enlargement 19 formed with a square socket 21; extending through the socket element is a bore 22. Extending away from the enlargement 19 is a stem 23 which is splined.

In FIGS. 7, 8, and 9, it can be seen that the other portion 24 is generally cylindrical and is formed with a hexagonal socket 25 extending into one end and with a bore 26 extending entirely through it. At the other end, it is provided with a socket 27 which is splined to cooperate in a sliding manner with the stem 23 on the portion 18. Three threaded bores 28 extend radially into the socket 27 to receive set screws 29 (see FIG. 1).

The details of construction of the ratchet mechanism 15 are shown in FIG. 10. The finger 17 is operative on pawls 31 and 32 which are spring-loaded toward the bore 13. The finger 17 acts to introduce either the pawl 31, the pawl 32, or both the pawls 31 and 32 into the area subtended by the bore 13, so that they either make engagement with or are restrained from engagement with the teeth on the splined stem 23 of the portion 18 of the socket element.

The operation of the invention will now be readily understood in view of the above description. The portions 18 and 24 are assembled by passing the stem 23 through the bore 13 in the head 12; the portion 24 is then telescopically received on it with the stem 23 fitting exactly into the socket 27. The set screws 29 are tightened and the wrench is then operative. The cover 16 is, of course, in place (which it is not in the showing of FIG. 10).

The wrench is useful in many situations where two sockets are to be used at the same time. In the preferred embodiment, for instance, the square socket 21 and the hexagonal socket 25 are used alternately on different parts of a special machine. Many similar applications are present in, for instance, water distribution installations. In any case, it is a very simple matter to replace one or both of the portions 18 and 24 of the socket element 14 to set the wrench up for a particular application. The pawls 31 and 32 operate directly on the socket element without an intervening rotatable ring as is commonly the case in socket wrenches. It simplifies the construction and provides for ready replacement of the ratchet portion of the ratchet mechanism 15 in case of wear. Because of the minimum number of moving parts, the wrench is capable of a long life of useful service under conditions when dirt and other foreign matter are likely to make the life of a ratchet wrench a short one.

It is obvious that minor changes may be made in the form and construction of the invention without departing from the material spirit thereof. It is not, however, desired to confine the invention to the exact form

herein shown and described, but it is desired to include all such as properly come within the scope claimed.

The invention having been thus described, what is claimed as new and desired to secure by Letters Patent is:

1. A ratchet wrench, comprising

a. an elongated handle having a head at one end having a circular aperture and containing a ratchet mechanism, and

b. a socket element having two portions, each portion having a polygonal recess, the two portions being telescopically coupled by non-circular male and female elements, the non-circular male and female elements having the cross-section of a ratchet, a portion of the socket element fitting snugly in the said aperture of the ring element, a portion of the male element being acted upon by pawls located in the head.

2. A ratchet wrench as recited in claim 1, wherein the ratchet mechanism includes two spring-loaded pawls which may selectively extend into the circular aperture for operation on the socket element.

* * * * *