Jan. 22, 1952 W. C. JENSON 2,583,266

GEAR OPERATED CRANKCASE DRAIN PLUG WRENCH

Filed July 11, 1950

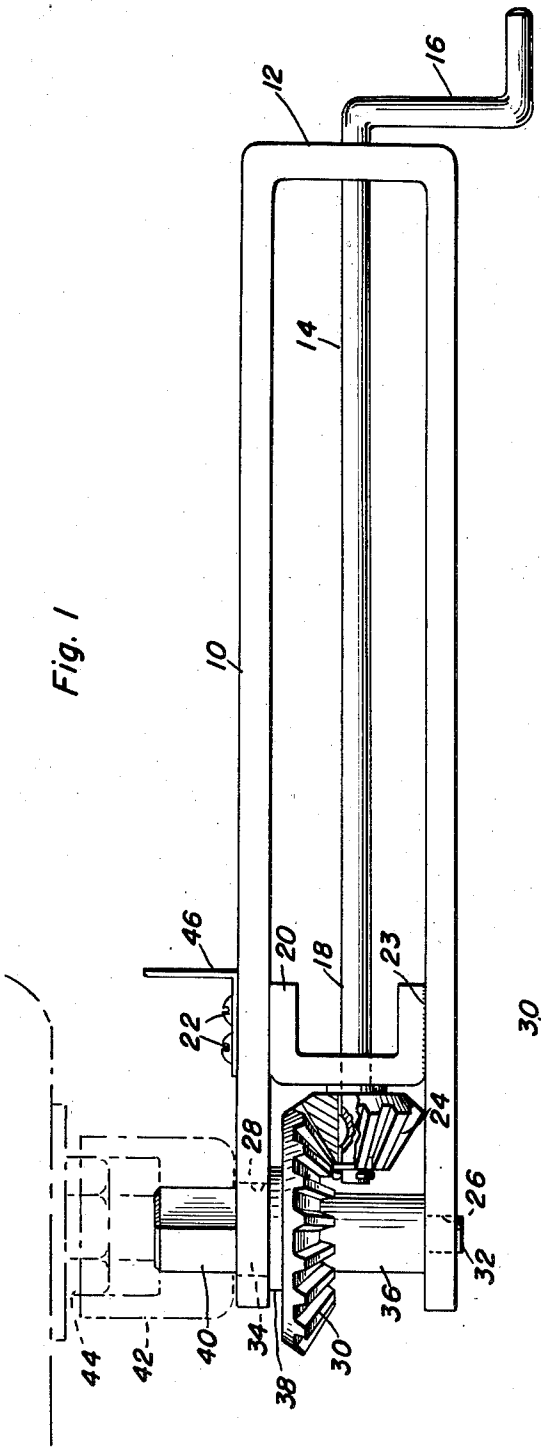


Fig. 1

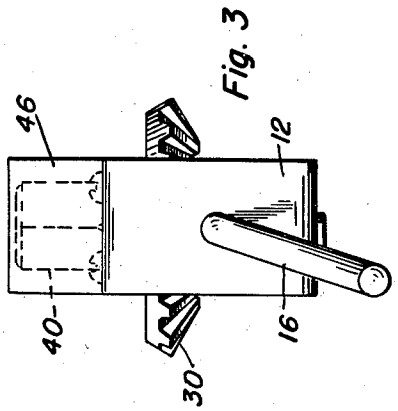


Fig. 3

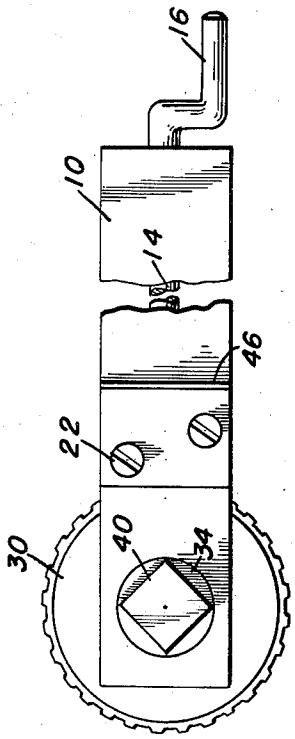


Fig. 2

Wilbur C. Jenson
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Patented Jan. 22, 1952

2,583,266

UNITED STATES PATENT OFFICE

2,583,266

GEAR-OPERATED CRANKCASE DRAIN PLUG WRENCH

Wilbur C. Jenson, Grand Forks, N. Dak.

Application July 11, 1950, Serial No. 173,135

2 Claims. (Cl. 81—57)

1

This invention relates generally to hand tools and more particularly to a gear operated wrench designed specifically for removing the drain plug from a crank case in an internal combustion engine, and for other similar purposes.

A primary object of this invention is to provide means for coveniently removing the drain plug from the bottom of a crank case of an internal combustion engine, or the like, especially when the engine and the oil contained in the crank case are dangerously hot. It will be understood that hot oil constitutes a hazard to the operator's hands and that the wrench is designed particularly to overcome this hazard. Ordinarily, the plug will be loosened with a conventional wrench before the wrench, which is the subject matter of this application, is brought into use.

Another object of this invention is to provide a wrench which will allow a nut or plug to be operated upon by an operator working at some considerable distance from the plug or nut.

Yet another object of this invention, of a specific nature, is to provide a wrench of the general character herein mentioned with a guard plate which comprises a deflector shield to prevent hot oil from reaching the operator's hands.

A last object to be mentioned specifically is to provide a wrench of the character mentioned above which is relatively inexpensive and practicable to manufacture, which is simple, safe and convenient to operate, and which will give generally efficient and durable service.

With these objects definitely in view, this invention resides in certain novel features of construction, combination and arrangemet of elements and portions as will be hereinafter described in detail in the specification, particularly pointed out in the appended claims, and illustrated in the accompanying drawings which form a material part of this application, and in which:

Figure 1 is an elevational view of the wrench, a socket to be used therewith and the plug of a crank case being indicated in phantom lines;

Figure 2 is a top plan view of structure illustrated in Figure 1, the figure being broken and shortened to conserve space; and,

Figure 3 is an end elevational view, taken from the right hand end of Figure 1.

Similar characters of reference designate similar or identical elements and portions throughout the specification and throughout the different views of the drawings.

Referring now to the drawings in detail, this invention comprises an elongated U-shaped

2

frame having parallel reach arms 10 and a bight portion 12. A crank having a shank portion 14 and a crank handle portion 16 is rotatably mounted in the bight portion 12 and the shank portion 14 extends centrally in spaced parallelism between the reach arms 10 to a point adjacent the free ends of the arms. A C-shaped bracket 20 is rigidly secured to and between the arms 10, inwardly of said free ends, by means of screws 22 and by welding as indicated at 23. The end portion 18 of the shank 14 is rotatably mounted in the central body portion of said bracket 20 which is provided with a simple bearing aperture for this purpose. A bevel pinion 24 is rigidly secured to the extreme end of the portion 18 of the shank, that is, upon that portion of the shank extending beyond the bracket 20.

The free end portions of the arms 10, extending beyond the level pinion 24, are provided with simple bearing bores 26 and 28, respectively, and the hub of a unified bevel gear 30 is provided with journals 32 and 34 which fit operatively into the bores 26 and 28, respectively. The journal 32 is preferably a reduced shouldered portion of the hub portion 36 on one side of the gear 30, while the hub of the gear has a relatively large shoulder 38 which bears against the inside of the arm receiving the journal 34. The journal 34 is continued outwardly beyond the corresponding arm 10 and squared as indicated at 40 to receive a conventional wrench socket 42 which in turn will engage the screw plug 44 of a crank case.

By way of explanation and in reference to the claims which follow it is to be explained that the bight portion 12 of the U-frame may be conveniently referred to as the proximal end of the frame in that it is closest to the user and is the end adjacent to which the crank 16 is located. The free ends of the limbs which are farther from the point of operation may be conveniently identified, it is believed, as the distal ends of the limbs or the over-all tool as the case may be.

An L-shaped anti-splash plate 46 is secured to the arm 10 between the squared terminal 40 and the crank handle 16 and this plate 46 extends parallel to the terminal 40 and serves as a deflector shield to prevent hot oil from splashing and reaching the operator's hands.

Reverting to the bracket 20, it will be observed that the lower end portion is permanently welded, as at 23, while the upper end is held by said screws 22 and the purpose of this choice and selection of elements is highly important. By this, it is meant that the upper arm 10 has to be

sprung away from the lower arm, this in order to allow the gear unit **30** to be inserted and assembled. Now, the upper arm is sprung back and fastened to the upper end of said bracket **20** by said screws. Also, these same screws serve to anchor the anti-splash shield **46** in place. These are significant manufacturing features and advantages, obviously.

The operation of this invention will be clearly understood from a consideration of the foregoing description of the mechanical details, taken with the drawings and the above recited objects. Further description would appear unnecessary.

Having described the invention, what is claimed as new is:

1. A gear operated crank case drain plug removing wrench of the class described comprising an elongated U-shaped frame having relatively long duplicate reach arms disposed in spaced apart parallelism and joined together at their proximal ends by an apertured bight portion, a rigid substantially C-shaped spacing and bracing bracket embodying lateral ends and a connecting portion for said ends, one of said lateral ends being permanently secured to the inward surface of one of said reach arms at a point spaced inwardly from the distal ends of said reach arms, the remaining reach arm having separable contact with the other lateral end of said bracket, the intermediate portion of said bracket being provided with an aperture lined up with the aperture in the bight portion and said apertures providing aligned bearings, assembling and fastening screws carried by said remaining reach arm and separably joined to said last named lateral end, a crank disposed adjacent to said proximal end having an elongated shank rotably mounted in said bearings and situated in spaced parallelism between the respective reach arms,

a pinion carried by the distal end of said shank and situated between the bracket and distal ends of said reach arms, and an insertable and removable gear unit embodying a hub and a gear carried by said hub, one end of the hub being reduced and providing a journal and the adjacent reach arm having a bearing for said journal, the opposite end of said hub having a non-circular extension and a coacting journal, said extension projecting beyond the remaining reach arm and said journal being rotatable in a bearing provided therefor in said last named reach arm, said pinion being in mesh with said gear.

2. The structure as specified in claim 1 and an L-shaped plate, said plate constituting an anti-splash shield and having one portion disposed on an exterior surface of said remaining reach arm and secured thereto by the stated fastening screws, the remaining portion of the plate being disposed in parallelism as well as close spaced proximity with said non-circular extension and constituting an anti-splash shield.

WILBUR C. JENSON.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
137,910	Gibbs	Apr. 15, 1873
1,199,823	Sadtler	Oct. 3, 1916
1,420,635	Klopper	June 27, 1922
1,494,200	Waters	May 13, 1924
2,284,871	Huss	June 2, 1942
2,429,569	Stewart	Oct. 21, 1947

FOREIGN PATENTS

Number	Country	Date
26,369	Sweden	Feb. 6, 1909