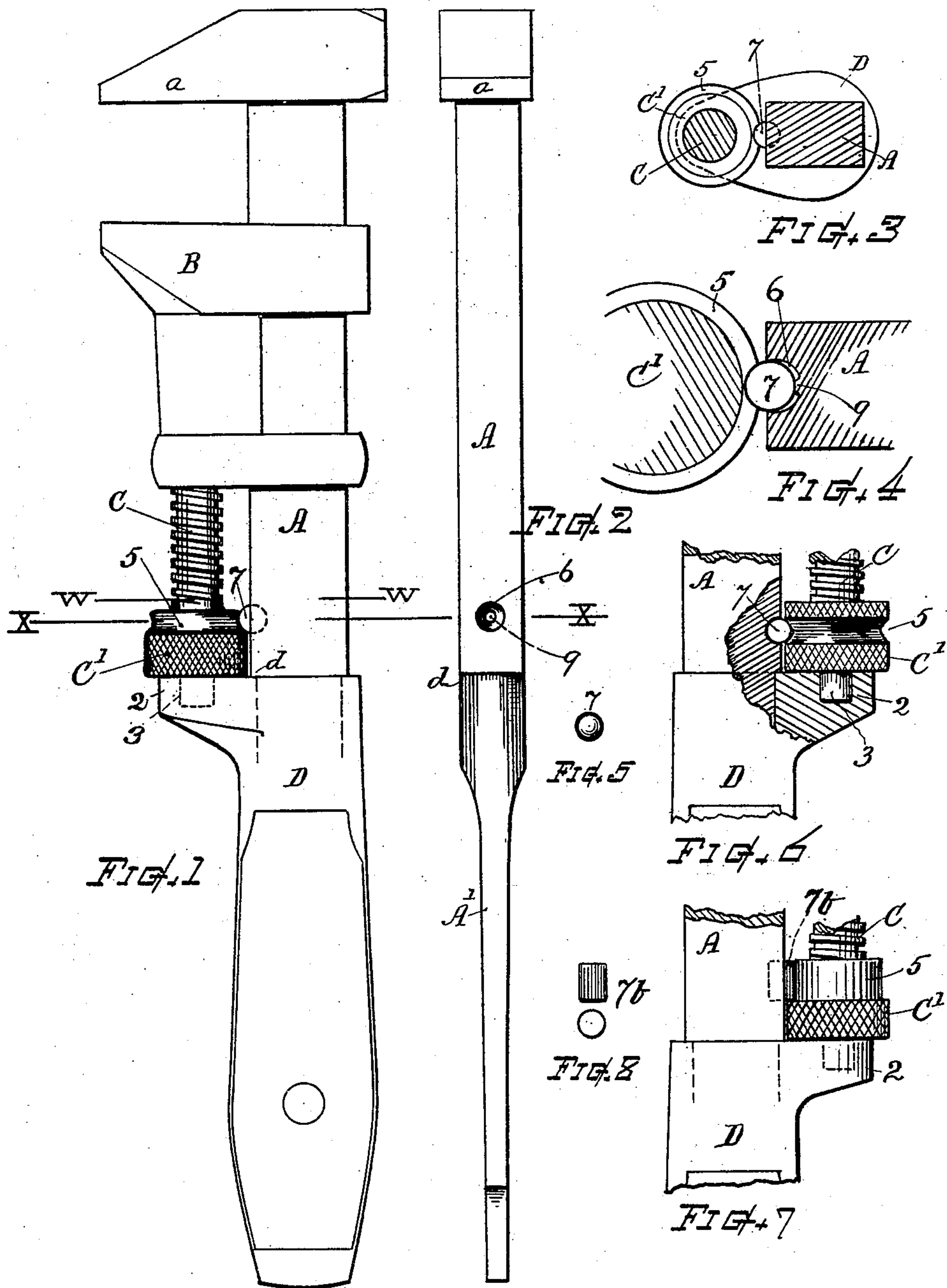


No. 705,874.

Patented July 29, 1902.

H. SEARLE.  
CONSTRUCTION OF WRENCHES.  
(Application filed Apr. 18, 1902.)

(No Model)



Witnesses.

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# UNITED STATES PATENT OFFICE.

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## CONSTRUCTION OF WRENCHES.

SPECIFICATION forming part of Letters Patent No. 705,874, dated July 29, 1902.

Application filed April 18, 1902. Serial No. 103,556. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY SEARLE, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in the Construction of Wrenches, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

This invention relates to novel means for confining the jaw-adjusting screw against endwise displacement or withdrawal of its journal from the bearing-step while permitting the free rotation of the screw, the objects being to afford a simple, easily-constructed, and efficient antifrictional retaining member or ball-bearing device in combination with the wrench-bar and the jaw-adjusting screw, as more fully hereinafter explained. I attain these objects by the mechanism illustrated in the accompanying drawings, wherein—

Figure 1 represents a side view of a wrench embodying my invention. Fig. 2 is a front view of a wrench-bar, showing the bearing-seat for the retaining member. Fig. 3 is a transverse section at line W W. Fig. 4 is a transverse sectional diagram at the position of line X X on Fig. 1, but drawn to a somewhat-larger scale, showing the relation of the bar, screw-rosette, and retaining member. Fig. 5 shows the ball or retaining member. Figs. 6 and 7 illustrate modifications in the structure, and Fig. 8 shows a roller-retaining member.

In the drawings, A denotes the wrench-bar, provided with the head or fixed jaw *a* and handle-supporting shank A', as usual.

B indicates the movable jaw, that slides on said wrench-bar, C the jaw-adjusting screw, and D the handle frame or collar fitting upon the wrench-bar shank and having a projecting portion or bearing 2 on which the screw-journal 3 is stepped. The wrench-bar is preferably formed with a flat front face 4 from the head to the collar-positioning shoulders *d*, against which the handle abuts.

The adjusting-screw C is disposed in such

relation to the wrench-bar A that its rosette C' is clear of the plane of the front face 4 of said bar and with its journal 3 inserted in the step-bearing 2. The boss or rosette on said screw is, according to my invention, provided with a circumferential cavetto, chamfer, groove, or bearing-way 5, forming a shoulder or offset above or in connection with the knurled surface. In the front face of the wrench-bar, at a position corresponding with that of the groove or offset 5 on the rosette, there is formed a socket, recess, or cavity 6, sunk in the surface of the bar. Combined with said rosette and wrench-bar I provide a protuberant ball or rotatable retaining member 7, supported in the front face of the wrench-bar and projecting over or into the offset, groove, or bearing-way 5 on the rosette C', as illustrated, thereby retaining said rosette adjacent to the collar projection and keeping the screw-journal 3 within its bearing, but at the same time permitting easy and free rotation of the screw by the rolling action of the keeper member within the cavity 6 and against the surface of the groove 5.

The cavity 6 is preferably made of a form that will contain the member or ball 7 with slight play room, and may be provided with a small elevation or seating-point 9 in the bottom of the cavity, as indicated in Fig. 4, so that the ball will bear only on said point and at the edges of the cavity, thus permitting an easy or non-frictional action. The ball or rolling member is confined by the sides of the recess 6 and surface of the groove 5 in a manner that will prevent its escape from said cavity while performing its function as a protuberant keeper for preventing endwise displacement of the jaw-adjusting screw.

The groove or rollway-surface 5 on the rosette is best formed to afford two bearing-points against the ball 7, although such form is not in all cases essential, as a single bearing-point will accomplish the retention of the parts.

When assembling the parts, the sliding jaw is slipped onto the bar and the screw threaded therein. Then the keeper or ball is introduced into its cavity and the rosette adjusted in proper relation thereto before the bar-



shank is inserted in the handle and the journal 3 entered into its bearing. Then after said parts have been assembled and the handle fixed to the bar the rosette-screw and the  
5 retaining member itself are normally maintained in proper operative relation.

In Fig. 6 I have shown a modification wherein the groove 5 is between an upper and lower division of the knurled surface on  
10 the rosette instead of being wholly above the knurled surface, as in Figs. 1 to 4, as hereinbefore explained.

In Figs. 7 and 8 I have illustrated a modification in which the keeper or retaining member is formed as a cylindrical roller instead of  
15 a spherical ball. This latter modification I desire to include as within the scope of my invention, although I prefer the form first above described.

20 I claim as my invention and desire to secure by Letters Patent—

1. In a wrench, in combination with the wrench-bar, and jaw-adjusting screw; a protuberant retaining member or keeper supported within a cavity formed in the front  
25 face of the wrench-bar, and projecting beyond the plane of the wrench-bar face and over a portion or shoulder of the rosette of the jaw-adjusting screw, for the purpose set forth.

30 2. In a wrench of the character described, the combination with the wrench-bar, and the jaw-adjusting screw; of a rotatable retaining member or keeper supported in a recess in the face of the wrench-bar, and engaging with an  
35 offset groove or bearing-surface upon the ro-

sette or boss of the jaw-adjusting screw and coacting therewith to prevent endwise displacement of said screw.

3. In a wrench having a sliding jaw, and a jaw-adjusting screw journaled in the collar  
40 projection, with its rosette clear of the front of the bar, the rosette provided with a circumferential groove, offset or bearing-surface, and a rolling retaining ball or member disposed in a cavity formed in the face of the  
45 wrench-bar and protruding therefrom and acting against said rosette-surface, substantially as set forth.

4. In a wrench, in combination, for the purposes set forth, a wrench-bar having in its  
50 face a socket, recess or cavity with a seating point or elevation on the interior thereof, a rotatable ball loosely supported within said socket by said seating-point and the rim of  
55 the cavity, and protuberant from the face of the wrench-bar, the jaw-adjusting screw journaled in the projecting portion of the handle-frame and provided with a rosette or boss  
60 having a circumferential bearing groove or surface engaging against said ball, and confining it loosely in connection with its cavity, and said screw in turn thereby confined to its journal-bearing.

Witness my hand this 15th day of April, 1902.

HARRY SEARLE.

Witnesses:

FRANK L. COES,

FRANK S. SPOONER.