J. W. BARTON.

BENCH TIRE TOOL.

APPLICATION FILED MAR. 8, 1920.

1,415,916.

Patented May 16, 1922.

3 SHEETS—SHEET 1.

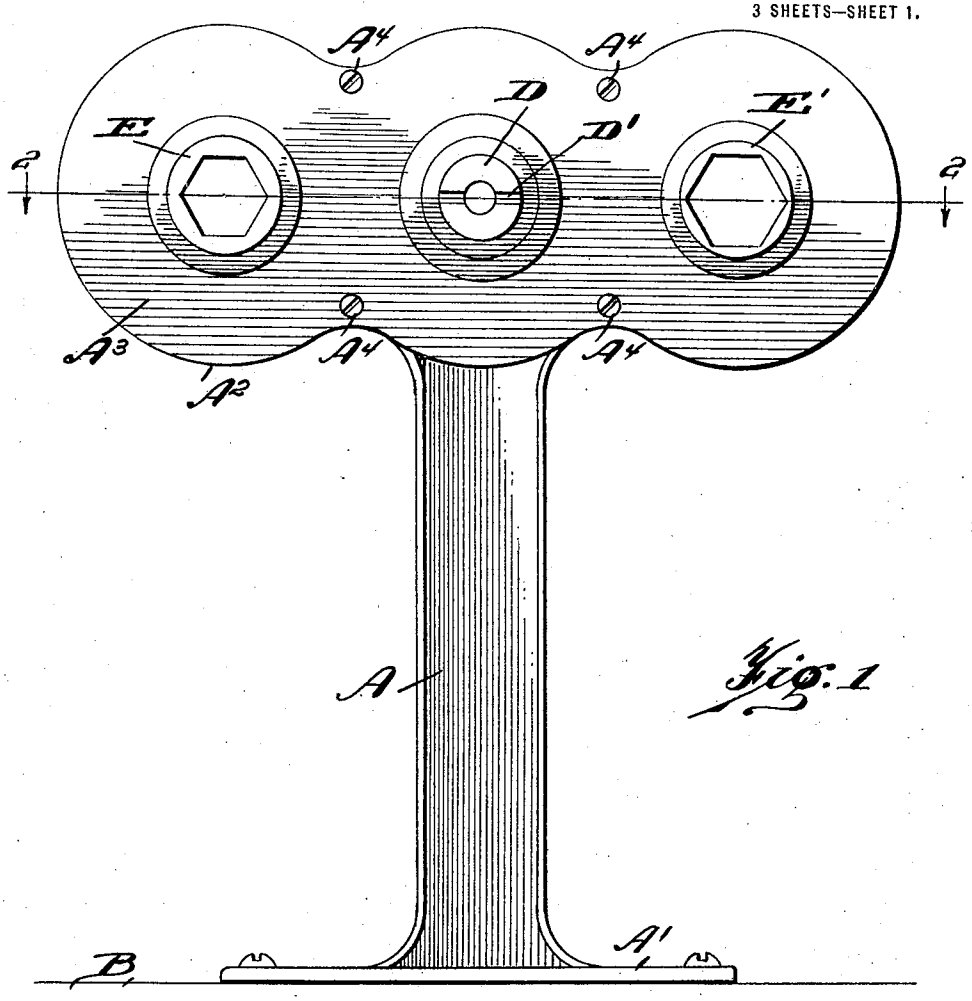


Fig. 1

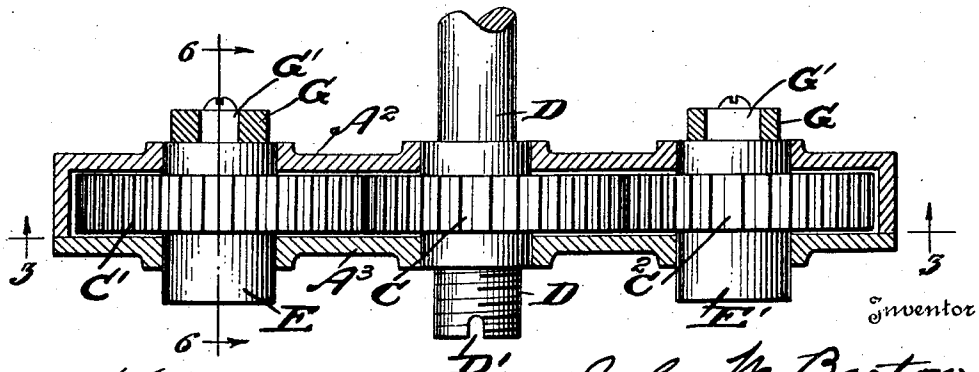


Fig. 2

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3 SHEETS—SHEET 2.

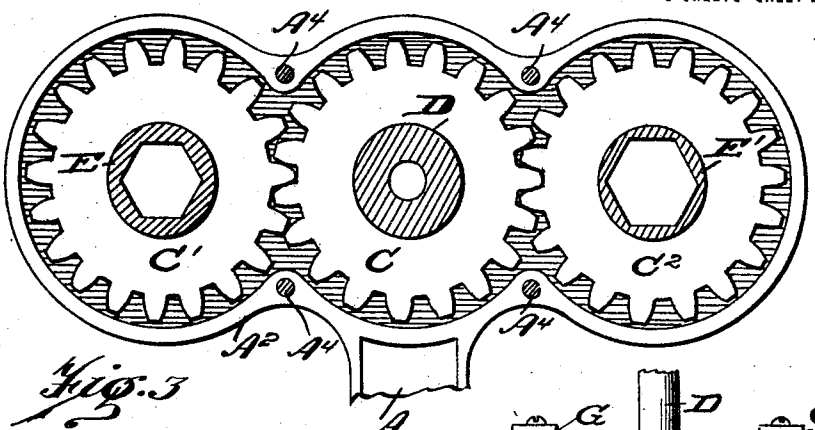
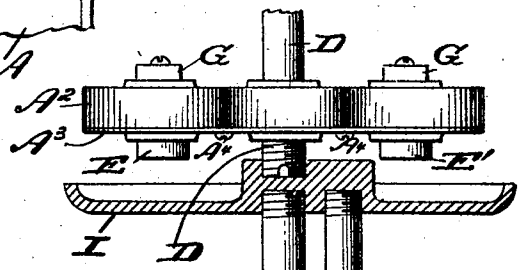


Fig. 3



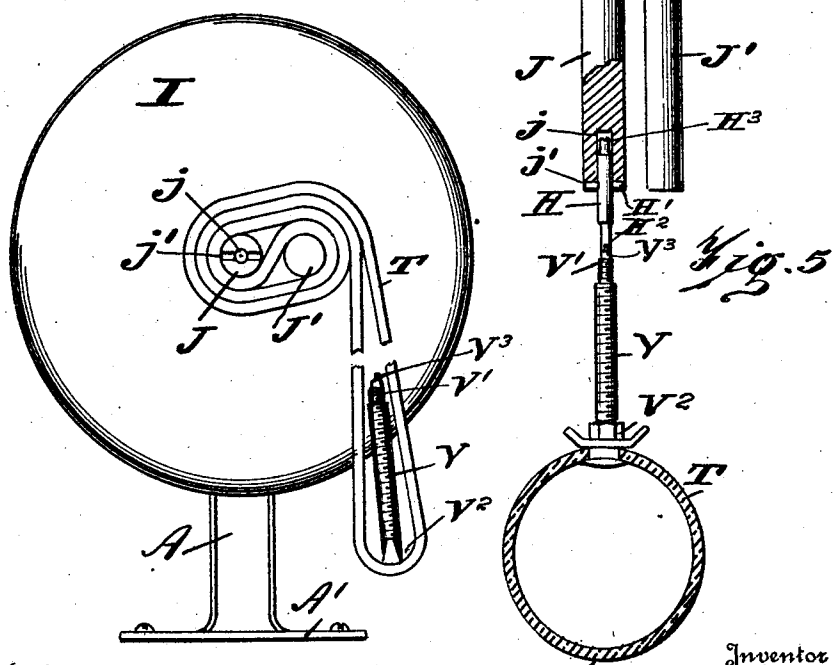


Fig. 5

Fig. 4

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3 SHEETS—SHEET 3.

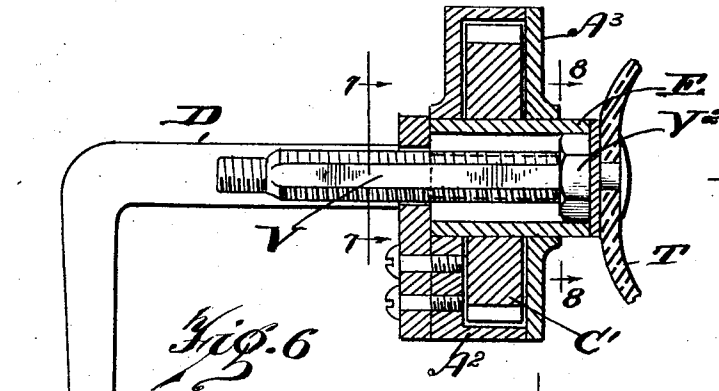


Fig. 6

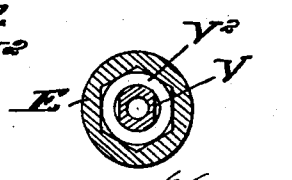


Fig. 8

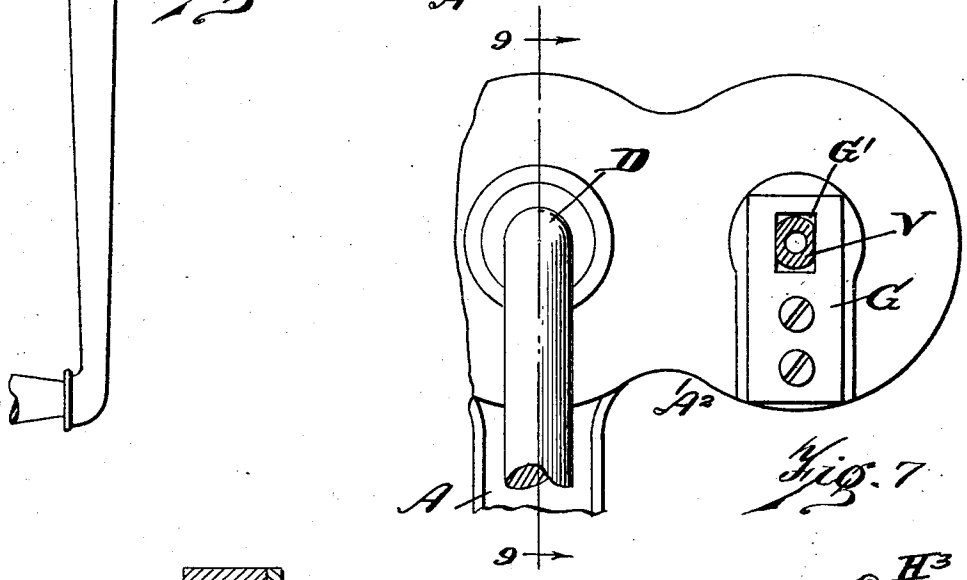


Fig. 7

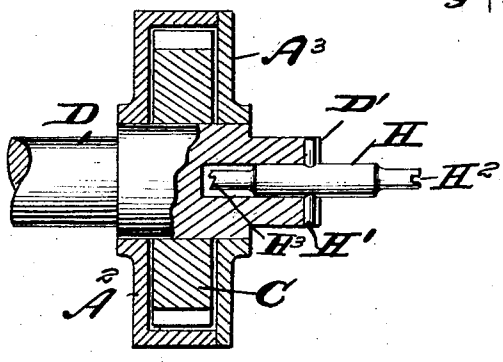


Fig. 9

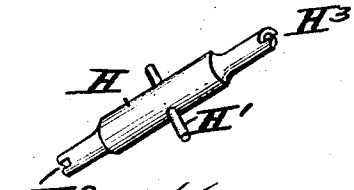


Fig. 10

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UNITED STATES PATENT OFFICE.

JOHN W. BARTON, OF FLINT, MICHIGAN.

BENCH TIRE TOOL.

1,415,916. Specification of Letters Patent. **Patented May 16, 1922.**

Application filed March 8, 1920. Serial No. 364,142.

To all whom it may concern:

Be it known that I, JOHN W. BARTON, a citizen of the United States, residing at Flint, county of Genesee, State of Michigan, have invented a certain new and useful Improvement in Bench Tire Tools, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to a bench tool for removing the valve and deflating pneumatic tubes, as shown in the accompanying drawings and more particularly described in the following specification and claims.

The purpose of this invention is to provide a simple and convenient bench tool for garage use which is adapted for the removal and replacement of the valve, the valve body, and also to deflate the inner tube that it may be rolled for storage purposes.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangements of parts and in the details of construction hereinafter described and claimed, it being understood that changes may be made in the precise embodiment of the invention herein disclosed without departing from the spirit of the same.

In the accompanying drawings forming part of this specification:—

Figure 1 is a front elevation of the device.

Fig. 2 is a horizontal cross-sectional view on line 2—2 of Fig. 1.

Fig. 3 is a fragmentary elevation with the cover of the gear case removed, taken on line 3—3 of Fig. 2.

Fig. 4 is an elevation of the device as it would appear when deflating an inner tube.

Fig. 5 is a fragmentary plan and horizontal sectional view showing the valve-remover supported in the end of one of the deflating pins, as it would appear when removing or replacing the air valve of the inner tube.

Fig. 6 is a detail sectional view taken on or about line 6—6 of Fig. 2.

Fig. 7 is a fragmentary rear elevation and sectional view taken on or about line 7—7 of Fig. 6, showing the squared socket plate for gripping the valve body while removing the nut screwed thereon.

Fig. 8 is a cross-sectional detail view on line 8—8 of Fig. 6, showing the socket wrench gripping the valve nut.

Fig. 9 is a detail sectional view on line 9—9 of Fig. 7, showing the valve removing tool as when supported in the end of the crank shaft.

Fig. 10 is a perspective view of the valve removing tool.

Referring now to the letters of reference placed upon the drawings:—

A denotes a standard rising from a base plate A′, adapted to be secured to a bench B or other suitable support. A^2 is a gear case, preferably integral with the standard A, in which are housed the intermeshing gears C, C′, and C^2. A^3 is a cover for the gear case secured to the walls of the latter by screws A^4.

D denotes a manually operated crank shaft, journaled in the wall of the gear case and its cover plate, to which shaft the gear C is keyed. The gears C′ and C^2 are keyed or otherwise secured upon rotatable socket wrenches E and E′, journaled in the walls of the gear case and its cover plate. The socket wrenches E and E′ are of relatively different openings so that they may engage nuts of varying size.

G—G are plates bolted to the wall of the case each having a slot G′, respectively different in width, to receive the flatted valve body V, housing the usual air valve V′ of the inner tube. The slotted plates G, G grip the valve body while the socket wrenches E and E′ engage the nut V^2 screwed thereon to secure the body to the tube T; and upon rotating the crank shaft D the nut V^2 may be quickly removed from the valve so that the latter may be disconnected from the tube, or replaced as may be required.

H indicates a valve removing tool provided with a transverse pin H′ adapted to enter the slit D′ in the end of the crank shaft D. The tool H is provided at one end with a slot H^2 to receive the usual ears V^3 of the valve. Should the ears V^3 of the valve be broken off, as frequently occurs, the valve may be removed upon reversing the valve removing tool in its supporting holder; the tool being provided with a hardened saw-tooth cutter H^3 at its opposite end which is adapted to cut into the end of the valve stem and thus serve to remove the latter from the body of the valve.

I is a disk, tapped to receive the end of the manually rotated crank shaft D, from which projects a pair of spaced pins J and J′ designed to receive a pneumatic tube T, in order that the latter may be deflated for storage purposes, as shown in Fig. 4.

The pin J is screwed into the disk in axial alinement with the crank-shaft, and its outer end is bored as indicated at *j* and provided with a slot *j′* to receive and engage the valve removing tool H, as shown in Fig. 5, it being sometimes more convenient to support the valve removing tool in the pin J than in the end of the crank shaft D, as shown in Fig. 9.

Having thus described my invention, what I claim is:—

1. In a device of the character described, a supporting frame, a crank shaft journaled in the supporting frame and having the end opposite the handle projecting beyond the side of the frame, a gear keyed to the crank shaft and located entirely within the frame, a rotatable socket wrench journaled in the supporting frame, a gear keyed to the socket wrench and located entirely within the frame and meshing with the aforesaid gear, and means comprising a plate having a squared opening therein to engage and hold a valve body against rotation while a nut screwed upon said valve body is being removed or replaced under the influence of rotation of the socket wrench.

2. In a device of the character described, a supporting frame having a hollow casing at its top provided with apertures, a crank shaft journaled in the casing and extending through one of said apertures, a gear keyed to the crank shaft and located entirely within the casing, a rotatable socket wrench in the casing forming a hub journaled in other of said apertures, a gear keyed to the socket wrench and located within the casing and meshing with the said gear keyed to the crank shaft, and means located on the casing to engage and hold a valve body against rotation while a nut screwed upon said valve body is being removed or replaced with relation to the valve body, under the influence of rotation of the socket wrench.

3. In a device of the character described, a supporting frame including a casing at its upper end, a crank shaft journaled in the casing, a gear keyed to the crank shaft and located within the casing, a plurality of socket wrenches journaled in the casing, the aforesaid gear being located between the socket wrenches, a gear keyed to each socket wrench and located within the casing and meshing with the gear of the crank shaft, and means on the casing adjacent each socket wrench to engage and hold a valve body against rotation while a nut screwed on said valve body is being removed or replaced by the rotation of the respective socket wrench.

4. In a device of the character described, a supporting frame, a crank shaft journaled in the supporting frame, a gear keyed to the crank shaft, a rotatable socket wrench journaled in the supporting frame, a gear keyed to the socket wrench and meshing with the gear of the crank shaft, and a plate secured to the supporting frame and provided with a slot adapted to embrace a valve body to hold the latter against rotation while the securing nut screwed upon said valve body is being removed or being replaced by the rotation of the socket wrench.

5. In a device of the character described, a supporting frame including a casing at its upper end, a crank shaft journaled in the casing part of the supporting frame and projecting entirely therethrough, with its inner end exteriorly screw-threaded and hollow at its inner end and at its inner extremity provided with a transverse slot intersecting the hollow inner portion of the crank shaft.

6. In a device of the character described, a supporting frame, a crank shaft journaled in the supporting frame, a gear keyed to the crank shaft, socket wrenches mounted within the frame, gears keyed to the socket wrenches and meshing with the gear on the crank shaft, the said socket wrenches slidably engaging a nut screw-threaded on a valve body, and means for holding the latter against rotation when the securing nut on the valve body is being removed or replaced by the rotation of the wrenches.

7. In a device of the character described, a supporting frame, a crank shaft journaled therein, a gear keyed to the crank shaft within the frame, socket wrenches comprising hollow bodies, journaled in the frame, gears keyed to the socket wrenches meshing with the gear on the crank shaft, the said socket wrenches adapted to slidably engage a nut threaded on a valve body whereby rotation of the wrenches causes the nut to travel therethrough, and means for holding the valve body against rotation when the nut is being removed or replaced.

In testimony whereof, I sign this specification in the presence of two witnesses.

JOHN W. BARTON.

Witnesses:

C. M. VAN BENSCHOTEN,

KATHERINE RUTHERFORD.