No. 687,946. Patented Dec. 3, 1901.

T. A. WESTON.

WRENCH.

(Application filed Apr. 21, 1898. Renewed May 6, 1901.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

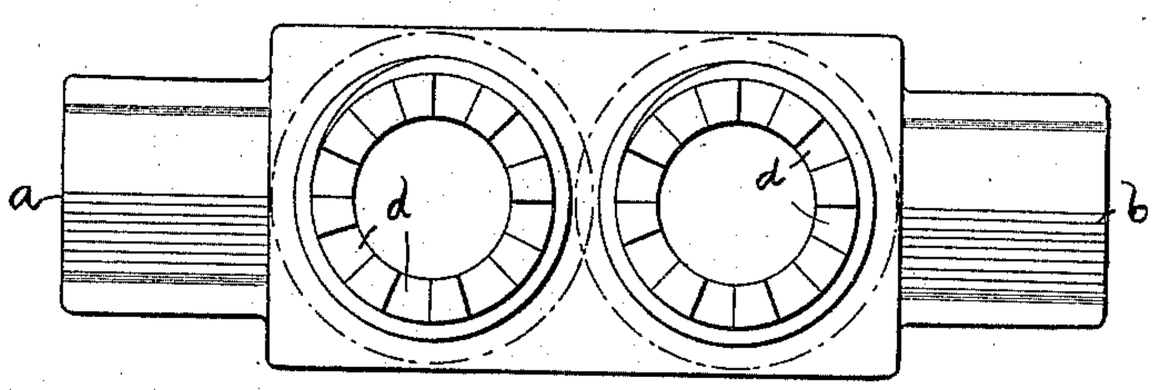


FIG. 2.

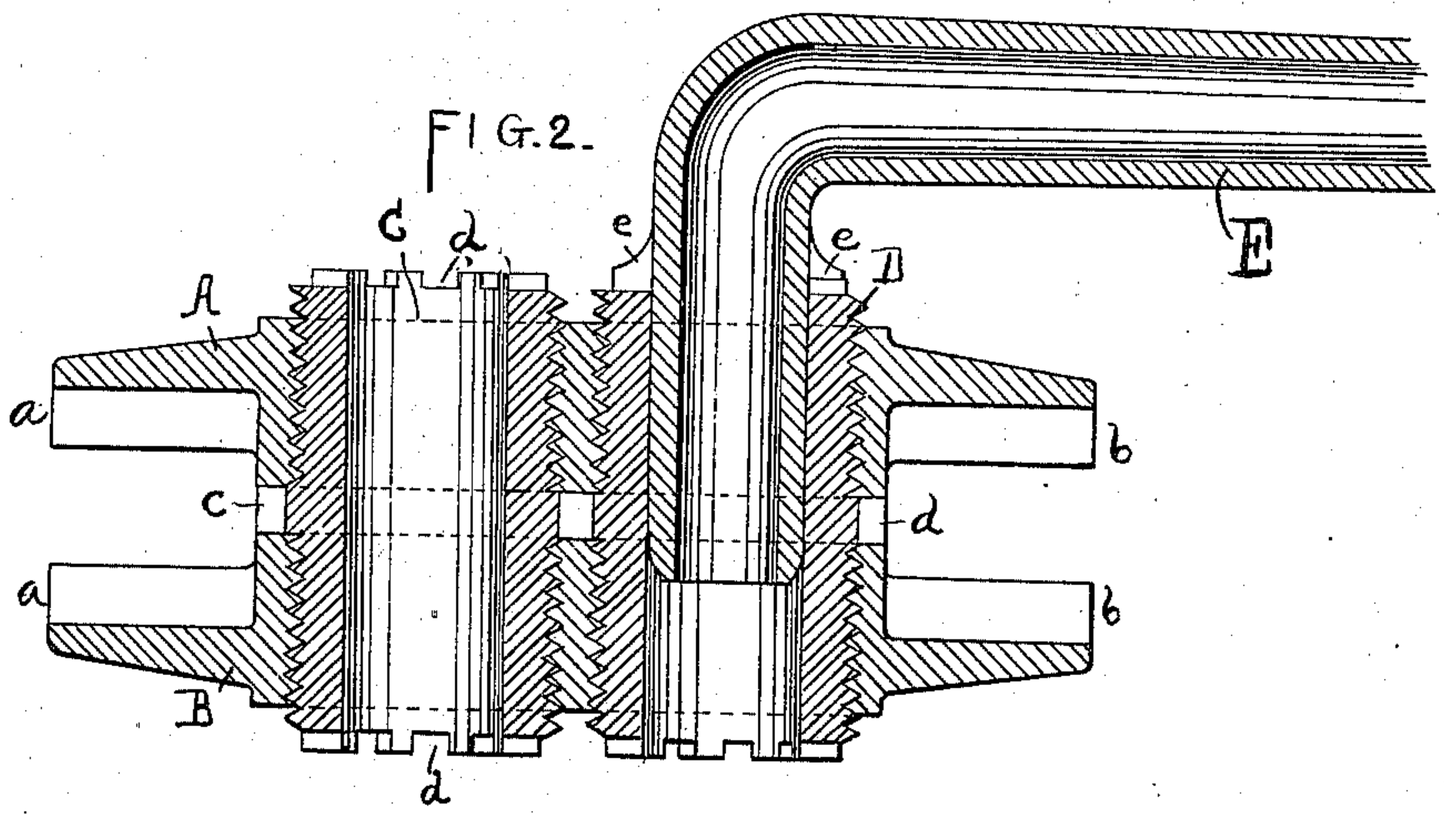


FIG. 4.

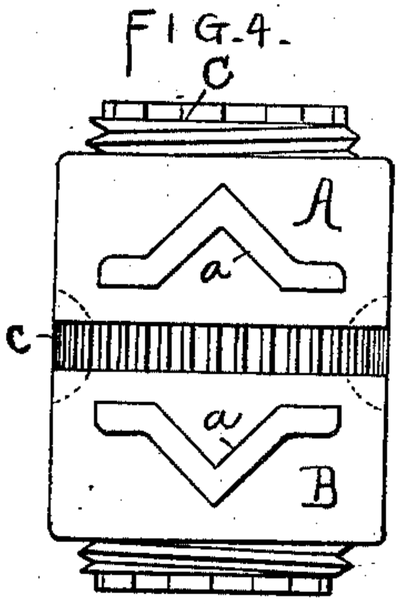


FIG. 3.

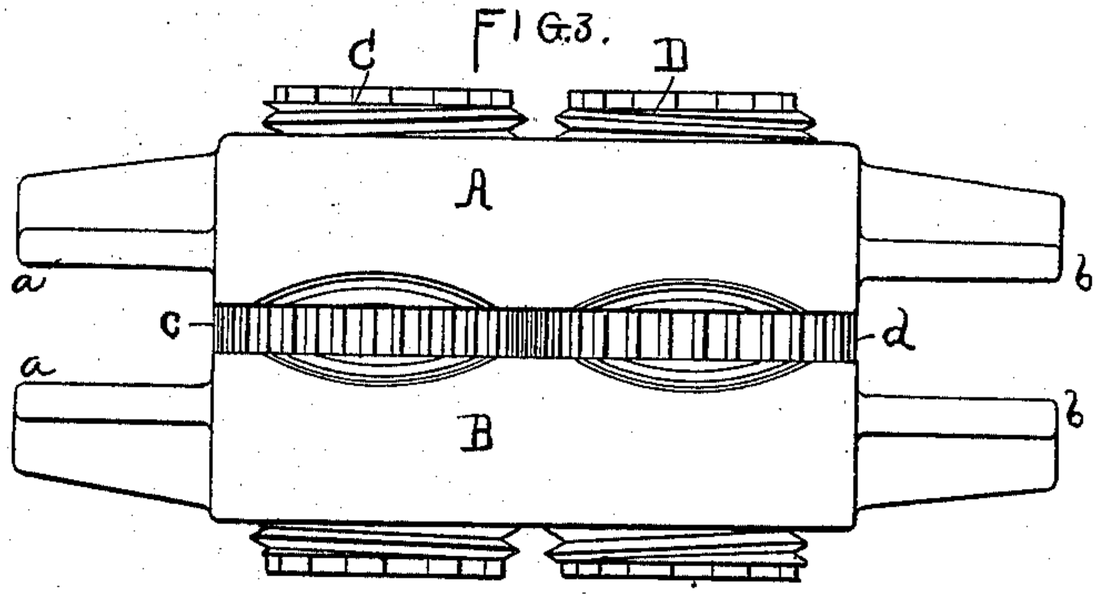
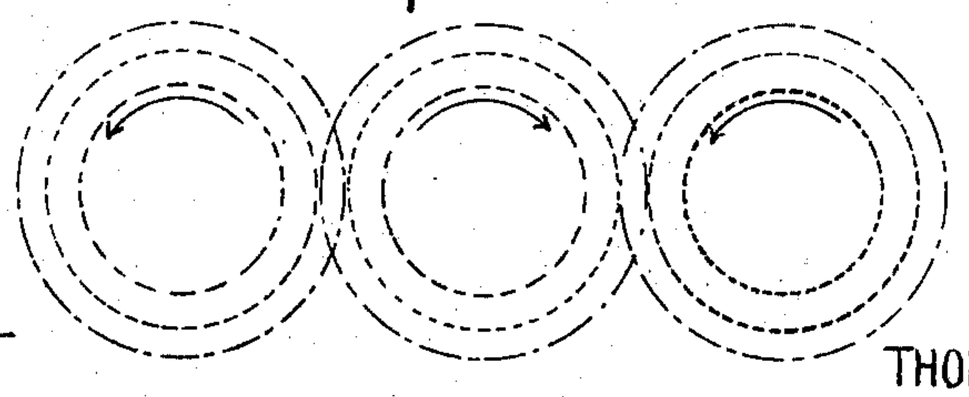


FIG. 7.



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(No Model.) 2 Sheets—Sheet 2.

FIG. 5.

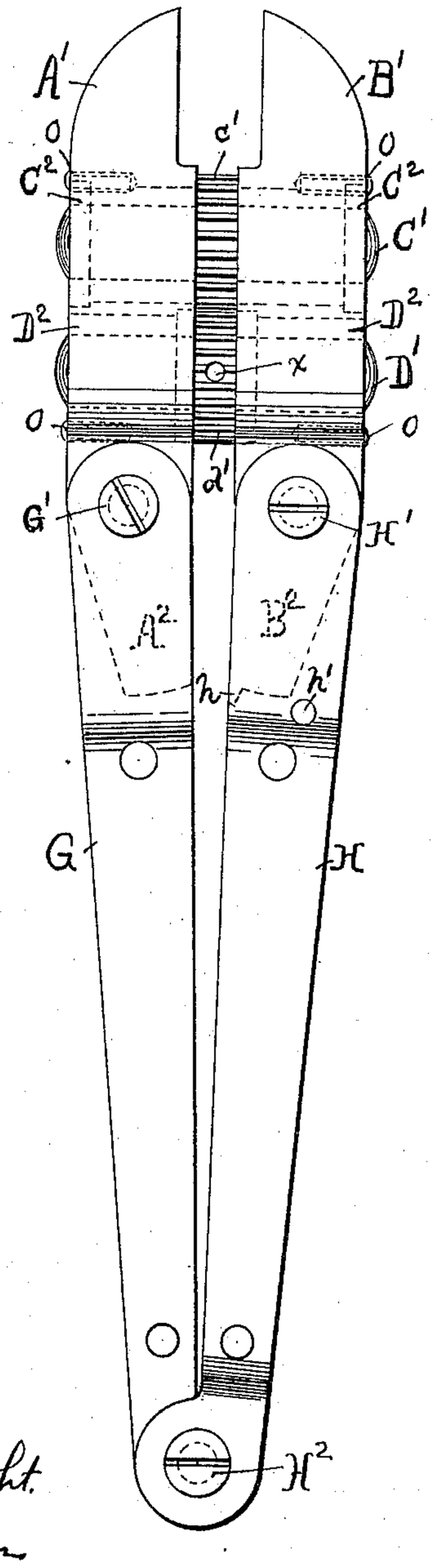
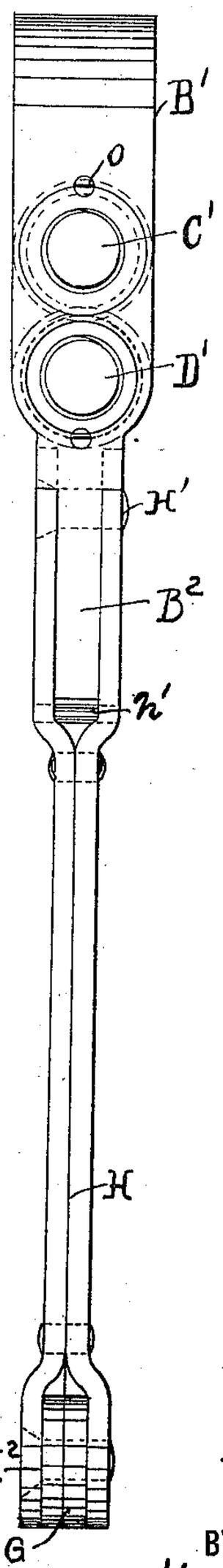


FIG. 6.



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UNITED STATES PATENT OFFICE.

THOMAS A. WESTON, OF ARDEN, NORTH CAROLINA.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 687,946, dated December 3, 1901.

Application filed April 21, 1898. Renewed May 6, 1901. Serial No. 59,019. (No model.)

To all whom it may concern:

Be it known that I, THOMAS ALDRIDGE WESTON, a citizen of the United States of America, and a resident of Arden, Buncombe county, North Carolina, have invented Improvements in Wrenches, of which the following is a specification.

The main object of my invention is to make an effective but inexpensive wrench which shall be capable of exerting a positive vise-like grip upon the nut or other object to be held thereby and among other consequent advantages to avoid that abrasion upon the angles of the nut which always occurs with the loose-fitting jaws of the wrenches in common use.

A further object of my invention is to so construct the tool that it will serve many of the purposes of a vise or clamp.

In the accompanying drawings, Figure 1 is a plan view of one form of my improved wrench. Fig. 2 is a sectional view of the same. Fig. 3 is a side view, and Fig. 4 is an end view. Fig. 5 is a side view of a modification. Fig. 6 is an edge view of the same, and Fig. 7 is a diagram.

In Figs. 1 to 4 I have shown my invention as embodied in a form of wrench more particularly such as adapted for use as a carriage-wrench—that is, for manipulating the nuts of vehicle-axles.

My invention is illustrated in Figs. 5 and 6 as embodied in the form of wrench adapted for use as a monkey-wrench.

I will first describe the form of wrench shown in Figs. 1 to 4, prefacing such description with the remark that one of the important features of construction of my invention whereby the vise-like grip is obtained is the union of the two members carrying the gripping-jaws by two or more parallel adjusting-screws, although certain other features of my invention may be employed in other constructions of wrenches.

Referring to Figs. 1 to 4, the body of the wrench consists of two similar members or halves A and B, united by two or more adjusting-screws. Two such screws C and D are shown in this instance. These screws C and D are shown as tubular, and they are geared or engaged with each other at about mid-length by their respective toothed gears *c d*, so that their rotations will always be simultaneous. On opposite sides of the central gears *c d* the threads of the screws run in opposite directions (one right-handed and the other left-handed) and are adapted to corresponding threads in the two halves or members A B of the wrench, so that on rotating the screws in one direction or the other the two members will be caused to move toward or from each other in parallelism. These members are shown in Figs. 1 to 4 as provided with end gripping-jaws *a a* and *b b*, which may be suitably shaped—as, for instance, one for square nuts and the other for hexagonal nuts.

For the rapid rotation of the adjusting-screws the gears *c d* may be manipulated by the finger and thumb acting on the projecting peripheries of the gears, while to get a vise-like grip on a nut or to loosen a tight grip a lever, such as E, may be employed. The lever and the nuts should be provided with means for interlocking—for instance, teeth or projections *e* may be provided on the lever E to engage with notches *d'* in the outer faces of the tubular screws. The said lever may also be used to apply powerful axial rotation to the entire wrench, along with its embraced or gripped nut, by inserting either the cranked or straight end of the lever within one of the hollow screws C D. One of the advantages of a separable lever, however, is that when the gripped nut turns freely the lever may be laid aside, and the wrench-body A B as a handle to the attached nut can be rotated much more rapidly by itself than when encumbered by the unbalanced lever.

The parallel vise-like action of the wrench described above enables the nut to be so firmly held in the gripping-jaws as to make it unnecessary for the user to touch the nut with his fingers, the wrench-body being a convenient handle, at the same time avoiding the loss of the nut by its being dropped from the jaws of the wrench, as commonly happens with most forms of wrenches.

When the wrench is out of use, the lever E may be left in the position shown or placed transversely and gripped between the jaws of the wrench or the handle end of the lever can be passed through one of the hollow screws to keep the parts together.

While I have shown two mutually-engaged screws C D in Figs. 1 to 4, it is obvious that any desired number of such geared screws can be organized to act together. For instance, in the diagram Fig. 7 I have indicated three such.

Referring now to the modification illustrated in Figs. 5 and 6, A′ and B′ are the two main members, carrying plain gripping-jaws and united by screws C′ D′, geared together by their respective integral gears c' d'. These screws are shown as solid; but to effect the vise-like grip of the jaws upon the embraced nut one or more holes x may be provided in one or both of the gears for the insertion of a steel pin to turn them. Instead of threading the screws C′ D′ directly into the members A′ and B′, I have shown in this case internally-threaded bushes C^2 C^2 and D^2 D^2, secured in the members A′ and B′ by light retaining pins or screws O. Preferably each of the said bushes is flanged at one end to receive the thrusting or pulling strains and to relieve the retaining-pins O from strain.

The purpose of providing the desired threaded bushes is to facilitate the finishing, hardening, assembling, and renewing of the parts of the tools.

As in the construction described with reference to Figs. 1 to 4, the projecting gear-teeth form corrugated peripheries, whereby the screws may be turned conveniently by the fingers for adjustment.

I have shown handles or levers G H as pivoted at G′ H′ to the members A′ B′ and as pivoted to each other at H^2. The members A′ and B′ are provided with tailpieces A^2 B^2, extending into the bifurcated ends of the levers G H in order to steady and guide the several parts in their movements.

I prefer to provide a stop-pin h', against which a toe h on the tailpiece B^2 may abut to limit the opening of the jaws of the wrench.

I claim as my invention—

1. A wrench having adjustable members combined with parallel adjusting-screws geared together at mid-length and having right and left handed threads on opposite sides of the gears, as and for the purpose set forth.

2. A wrench having a tubular adjusting-screw in combination with a lever and means whereby the lever and screw may be interlocked, as and for the purpose set forth.

3. A wrench having parallel adjustable members and screw-adjusting means, in combination with handles or levers pivoted to the respective members and to each other, substantially as described.

4. A wrench or clamp having adjustable members combined with coacting mutually-geared hollow adjusting-screws.

5. A wrench having parallel adjustable members and parallel adjusting-screws uniting said members and a hand-lever carrying said members and screws, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

THOMAS A. WESTON.

Witnesses:

F. WARREN WRIGHT,

HUBERT HOWSON.