(No Model.)

W. E. KING & W. R. WALPOLE.

COMBINATION TOOL FOR BICYCLISTS.

No. 475,780. Patented May 31, 1892.

Fig. 1

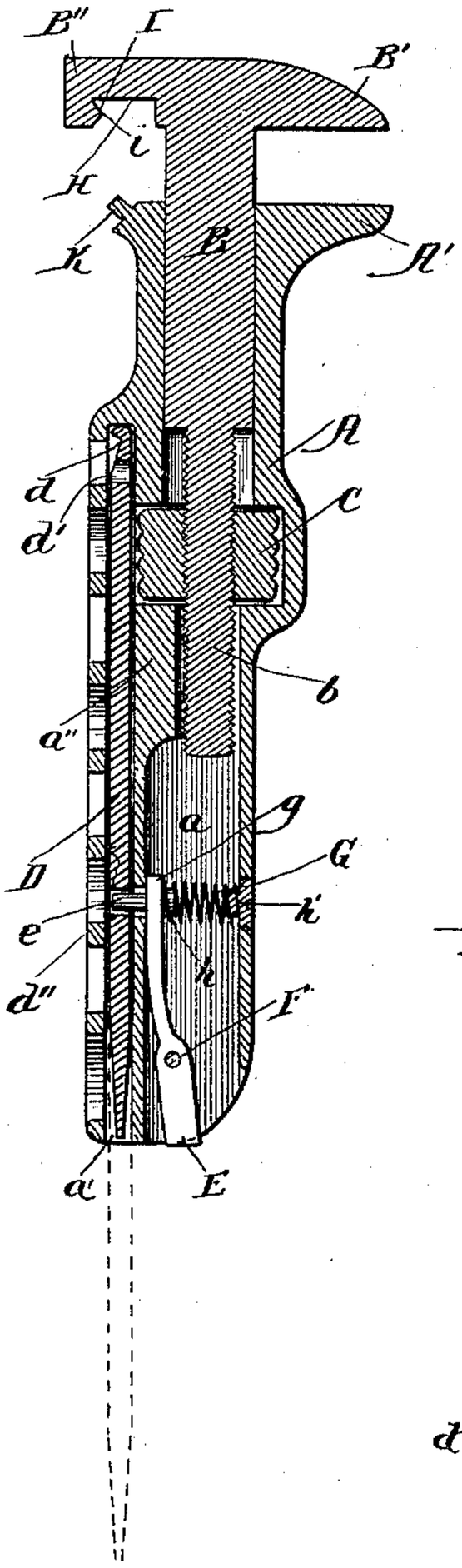


Fig. 2

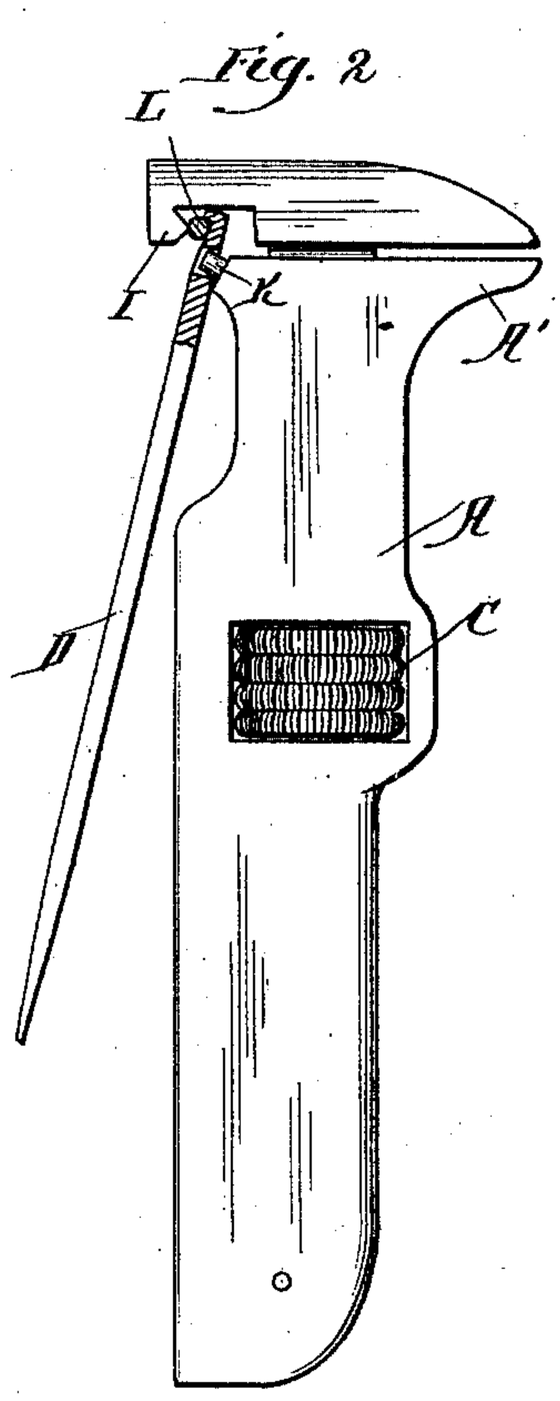
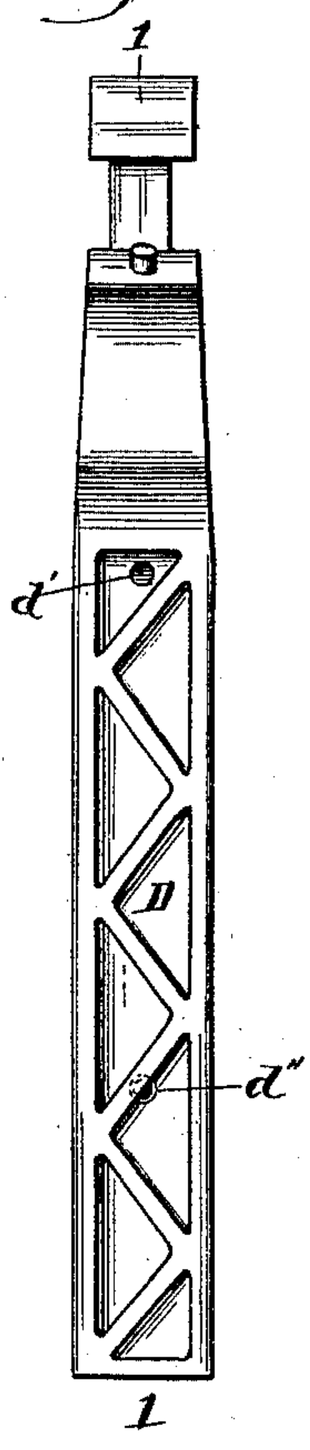


Fig. 3



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UNITED STATES PATENT OFFICE.

WILLIAM E. KING AND WILLIAM R. WALPOLE, OF CHICAGO, ILLINOIS.

COMBINATION-TOOL FOR BICYCLISTS.

SPECIFICATION forming part of Letters Patent No. 475,780, dated May 31, 1892.

Application filed February 23, 1892. Serial No. 422,408. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM E. KING and WILLIAM R. WALPOLE, citizens of the United States, both residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Combination-Tool for Bicyclists, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical section upon line 1 1 of Fig. 3. Fig. 2 is a side elevation with the spoke-wrench in position gripping a spoke of the wheel, and Fig. 3 is a rear elevation showing the open-work upon the back of the handle.

Our invention relates to improvements in a combination-tool for bicyclists; and its object is to provide a tool which can be used as a monkey-wrench, spoke-wrench for tightening or loosening the spokes, and a screw-driver, and which is light and compact in form and can easily be carried in the pocket of the rider. We accomplish these ends by means of the devices shown in the accompanying drawings and hereinafter described.

That which we regard as new will be pointed out in the claims.

In the drawings, A represents the handle of the monkey-wrench, carrying the lower jaw A′ of the wrench. The handle A, which is of about the size and shape shown, is formed with two compartments *a* and *a′*, separated by the partition *a″*.

B indicates a shank carried in the compartment *a* and bearing at its upper end the jaws B′ and B″. The shank B is provided at its lower end with a screw-thread *b*.

C indicates a milled nut carried in a suitable opening of the handle A and working upon the screw-thread of the shank B for the purpose of adjusting the upper jaw B′ of the monkey-wrench.

D indicates a flat bar of steel or other suitable metal shaped at one end into the form of a screw-driver. The other end is provided with a groove or notch *d*, which extends transversely across the bar D, giving it a hook-like shape at the end. The bar D is provided with two holes *d′* and *d″*.

E indicates a lever placed within the compartment *a* and carried upon a suitable pivot F. The lever E carries upon its upper and inner arm a pin *e*, adapted to pass through a suitable hole *g* in the partition *a″* and to engage with the holes *d′* and *d″* in the bar D.

G indicates a spring placed between the upper end of the lever E and the opposite inner wall of the compartment *a* and held in place by pins *h h′* or other suitable means. The spring G operates to hold the upper arm of the lever against the partition *a″* and to keep the pin *e* in position in the compartment *a′*.

The end B″ of the upper jaw of the monkey-wrench is provided with an angular groove or recess H upon its under side, of about the size and shape shown and extending transversely across the under surface of the jaw, thereby forming a shoulder I. The outer edge of the shoulder I is beveled off to form an edge *i*, extending across from side to side.

K indicates a rigid pin projecting upward and outward from the top of the handle A upon the side that comes under the recess H. The pin K is of such size as to engage with the hole *d′* in the bar D.

When not in use, the jaws of the monkey-wrench are screwed together. The lower end of the lever E is pressed toward the partition *a″*, thereby withdrawing the pin *e* from the compartment *a′*. The bar D is then pushed, notched end first, into the compartment *a′* until it is entirely within the same, at which position the hole *d″* will come opposite the hole *g*. The lower end of the lever is then released and the pin *e* engages with the hole *d″*, holding the bar D in position. When it is desired to use the screw-driver, the lever E is pressed, so as to disengage the pin *e*, and the flat bar D is allowed to drop down until the hole *d′* is opposite the hole *g*, as indicated by dotted lines in Fig. 1. The lever E is then released, and the pin *e*, engaging with the hole *d′*, holds the bar D in place, so that it can be used as a screw-driver.

When it is desired to use the tool as a spoke-wrench the bar D is entirely removed from the handle and hung by means of the hole *d′* upon the pin K, the notch *d* being outward and facing the shoulder I, the upper jaw B′ of the monkey-wrench being raised to a suitable position. The spoke L of the wheel is grasped between the notch *d* and the edge *i* of the shoulder I and held firmly by grasp-

ing the bar D and the handle A in the hand together. The spoke is then twisted in the desired direction by turning the tool. When the twist is made as far as the tool will turn, the grasp upon the bar D is relaxed, freeing the spoke from the grip. The tool is then turned back in an opposite direction, the spoke again gripped and twisted as before, the operation being repeated as often as may be necessary to sufficiently tighten or loosen the spoke. We prefer to make the back of the handle A open, as shown in Fig. 3, as thereby the tool is made lighter and the bar D is accessible in case it sticks in the compartment.

We have described our device as being particularly adapted for use by riders of bicycles; but it is obvious that by enlarging the tool it may be used as a spoke-wrench for larger spokes, as a pipe-wrench, or for other similar uses.

That which we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, with a longitudinally-movable jaw, said jaw being provided upon the under surface with an angular recess forming a shoulder, a handle carrying said longitudinally-movable jaw, and devices for moving said jaw longitudinally, of a bar adapted to be removably pivoted upon said handle and with said shoulder to form a wrench, substantially as described.

2. The combination, with a longitudinally-movable jaw, said jaw being provided upon its under surface with an angular recess forming a transversely-edged shoulder, a handle carrying said jaw, and devices for moving said jaw longitudinally, said handle being provided with a rigid pin opposite said angular recess, of a bar adapted to be removably hung upon said pin and provided with a transverse notch at its upper end, adapted with said shoulder to form a wrench, substantially as described.

3. The combination, with a longitudinally-movable shank B, carrying at its outer end a jaw B′ and jaw B″ and provided upon its lower end with a screw-thread *b*, said jaw B″ being provided upon its under side with an angular recess H, forming a transversely-edged shoulder I, a handle A, carrying said shank B and provided with a jaw A′ opposite said jaw B′, said handle being provided with a rigid pin K, extending upward and outward under said recess H, and a milled nut C, carried by said handle A and adapted to engage with said screw-threaded end *b*, of a bar D, adapted to be removably hung upon said pin K, said bar being provided with a transverse notch *d*, adapted with said shoulder I to form a wrench, substantially as described.

4. The combination, with a longitudinally-movable shank B, carrying at its outer end a jaw B′ and jaw B″ and provided upon its lower end with a screw-thread *b*, said jaw B″ being provided upon its under side with an angular recess H, forming a transversely-edged shoulder I, a handle A, carrying said shank B and provided with a jaw A′ opposite said jaw B′, said handle being provided with a rigid pin K, extending upward and outward under said recess H, and a milled nut C, carried by said handle A and adapted to engage with said screw-threaded end *b*, of a bar D, provided with a transverse notch *d* at one end and with a hole *d′* near said notched end, said hole *d′* being adapted to fit over said pin K, said bar D being adapted with said shoulder I to form a wrench.

5. The combination, with a handle A, divided by a partition *a″* into two longitudinal compartments *a a′*, a longitudinally-movable shank B, carrying at its outer end a jaw B′ and adapted to be carried in said compartment *a*, and devices for moving said jaw longitudinally, of a flat bar D, shaped at one end to form a screw-driver and adapted to loosely fit into said compartment *a′*, said bar being provided with two holes *d′ d″*, a lever E, pivoted within the lower portion of said compartment *a* and bearing at its inner end a pin *e*, adapted to pass through a suitable opening in said partition *a″* and engage with said holes *d′ d″* in said bar D, and a spring G, adapted to hold the inner end of said lever against said partition, whereby said bar D may be removably secured wholly within said compartment *a′* or held with its screw-driver end extending outside of said compartment to form a screw-driver, substantially as described.

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