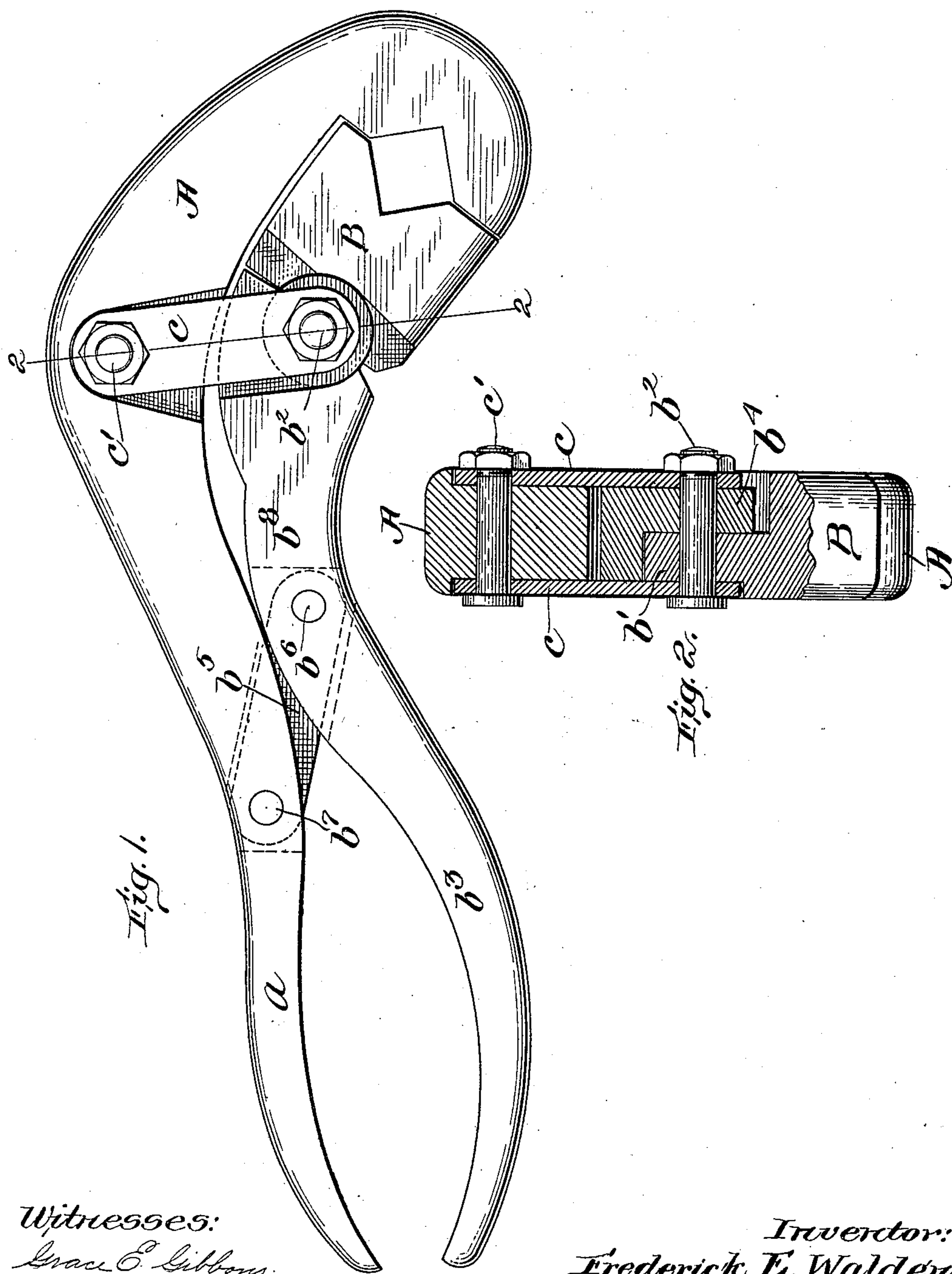


No. 763,227.

PATENTED JUNE 21, 1904.

F. E. WALDEN.
WRENCH OR THE LIKE.
APPLICATION FILED OCT. 15, 1903.

NO MODEL.



Witnesses:

Grace C. Gibbons

Arthur J. Randall

Inventor:

Frederick E. Walden,

by Roberts & Mitchell

Attorneys.

UNITED STATES PATENT OFFICE.

FREDERICK E. WALDEN, OF WORCESTER, MASSACHUSETTS, ASSIGNOR OF
ONE-HALF TO FREDERIC TUDOR, OF BOSTON, MASSACHUSETTS.

WRENCH OR THE LIKE.

SPECIFICATION forming part of Letters Patent No. 763,227, dated June 21, 1904.

Application filed October 15, 1903. Serial No. 177,159. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK E. WALDEN, a citizen of the United States, and a resident of Worcester, in the county of Worcester and State of Massachusetts, have invented new and useful Improvements in Wrenches or the Like, of which the following is a specification.

My invention relates to wrenches, particularly to pipe-wrenches, and has for its object to provide an improved article of this class which will be simple in construction, powerful, and easily operated.

My improved pipe-wrench comprises a fixed jaw provided with a handle, a movable jaw provided with a handle and constituting one member of a toggle, and a link constituting the other member of that toggle, said link being connected at one end with the fixed jaw and at its other end with the movable jaw. Pressure upon the two handles tends to straighten the toggle and to force the two jaws together onto the work with great force. In the best form of my invention the handle of the movable jaw is pivotally connected to said jaw, and between that pivotal connection and its free end said handle is also pivotally connected to one end of a link, which at its other end is pivotally connected to the handle of the fixed jaw. This second link not only serves to direct the movements of the pivoted handle of the movable jaw, but, together with said handle, constitutes a second toggle by which the first toggle is operated. In this way the multiplying effect of the first toggle, of which the movable jaw constitutes a member, is enhanced by the multiplying effect of the second toggle.

Other features of my invention are hereinafter pointed out.

In the accompanying drawings, Figure 1 is a side view of a pipe-wrench embodying one form of my invention. Fig. 2 is a section on line 2 2 of Fig. 1.

Having reference to the drawings, A represents the fixed jaw of my improved pipe-wrench, said jaw being provided with an integral handle *a*.

B represents the movable jaw of the wrench. The movable jaw B is made with a lug *b'*, pivotally connected by a bolt *b²* with the ends of

a pair of links *c c*. The other ends of the links *c* are pivotally connected with the jaw A by a bolt *c'*. The movable jaw B is provided with a handle *b³*, made with a lug *b⁴*, pivotally mounted on the bolt *b²* alongside the lug *b'* of jaw B. At *b⁶* handle *b³* is pivotally connected to one end of a link *b⁵*, whose other end is pivotally connected to the handle *a* of jaw A. That part of handle *b³* between bolt *b²* and pivot *b⁶* and designated *b⁸* constitutes one member and link *b⁵* the other member of a second toggle. The two jaws and their handles are so arranged relatively that the direction of thrust of the second toggle is substantially perpendicular to the direction of thrust of the first toggle and operates the latter, thus making the wrench in its best form an exceedingly powerful instrument.

When the form of my invention shown in Fig. 1 is used, and the two jaws A and B are brought to bear upon a pipe, pressure upon the two handles *a* and *b³* tends to move the pivot *b⁶* into line with pivots *b²* and *b⁷*, so that handle *b³* is moved endwise toward jaw A. This endwise pressure on handle *b³* tends to thrust the pivot *b²* in between the work and pivot *c'*, with the result that the two jaws A and B are clamped onto the work.

My improved wrench is simple and strong in its construction, and therefore capable of standing considerable hard usage, and, moreover, in its best form the double arrangement of toggle provides an exceedingly efficient pipe-wrench of great power.

What I claim is—

1. A wrench comprising a fixed jaw provided with a handle; a movable jaw constituting one member of a toggle; a handle pivotally connected with the movable jaw, and a link connecting the movable jaw with the fixed jaw and constituting the other member of the toggle.

2. A wrench comprising a fixed jaw provided with a handle; a movable jaw constituting one member of a toggle; a handle pivotally connected with the movable jaw; a link connecting the movable jaw with the fixed jaw and constituting the other member of that toggle, and a second link connecting the han-

dle of the movable jaw with the handle of the fixed jaw so as to provide a second toggle for operating the first-mentioned toggle.

3. A wrench comprising a fixed jaw provided with a handle; a movable jaw constituting one member of a toggle; a handle pivotally connected with the movable jaw; a link connecting the movable jaw with the fixed jaw and constituting the other member of that toggle, and a second link connecting the handle of the movable jaw with the handle of the

fixed jaw so as to provide a second toggle for operating the first-mentioned toggle, the direction of thrust of said second toggle being substantially perpendicular to that of the first toggle.

Signed by me at Boston, Massachusetts, this 15th day of September, 1903.

FREDERICK E. WALDEN.

Witnesses:

ROBERT CUSHMAN,
ARTHUR F. RANDALL.