No. 755,650. PATENTED MAR. 29, 1904.

A. GRANGER & W. HILZINGER.

WRENCH.

APPLICATION FILED OCT. 8, 1903.

NO MODEL.

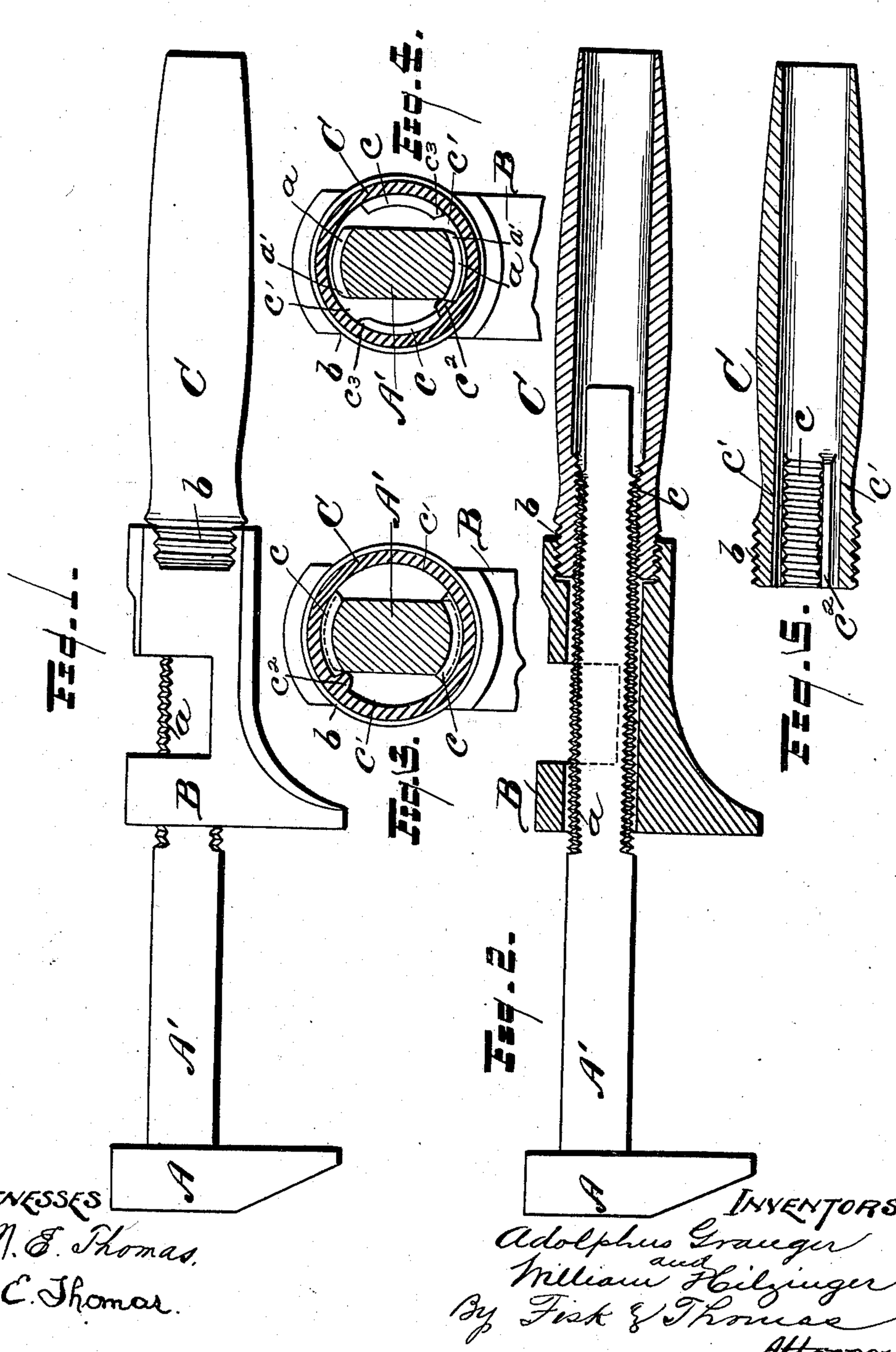

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

WITNESSES
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No. 755,650. Patented March 29, 1904.

UNITED STATES PATENT OFFICE.

ADOLPHUS GRANGER AND WILLIAM HILZINGER, OF ROYALOAK, MICHIGAN.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 755,650, dated March 29, 1904.

Application filed October 8, 1903. Serial No. 176,282. (No model.)

To all whom it may concern:

Be it known that we, ADOLPHUS GRANGER and WILLIAM HILZINGER, citizens of the United States, residing at Royaloak, county of Oakland, State of Michigan, have invented a certain new and useful Improvement in Wrenches; and we declare the following to be a full, clear, and exact description of the invention, 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.

Our invention relates to an improvement in wrenches shown in the accompanying drawings, and more particularly set forth in the following specification and claims.

In the drawings, Figure 1 is a side elevation of the wrench. Fig. 2 is a similar view with parts in section. Fig. 3 is a cross-sectional view showing the movable jaw locked with the shank of the fixed jaw. Fig. 4 is a similar cross-sectional view showing the movable jaw disengaged from the shank of the fixed jaw. Fig. 5 is a longitudinal sectional view of the handle controlling the engagement of the movable jaw with the fixed jaw.

The object of this invention is to provide means whereby the jaws may be quickly adjusted to accommodate themselves to varying requirements and by which they may be quickly locked when so adjusted and as quickly disengaged when it is desired to remove the wrench from the work.

Another object is to provide a wrench in which the leverage increases with the separation of the jaws, thereby adapting the wrench for a greater variety of work than is possible in the forms in common use. Other features of the invention will hereinafter appear.

Referring to the letters of reference shown in the drawings, A is the fixed jaw, and A′ its shank.

B is a movable jaw having a screw-threaded engagement with the handle C, as shown at *b*. On the inside of the tubular handle C is provided a threaded portion *c*, engaging the threaded portion *a* of the shank A′, and a plain portion *c*′ corresponding with that of the shank A′.

c^2 is a stop-lug formed on the inside of the handle designed to limit the rotation of the handle in either direction when brought in contact with the shank A′. We prefer that this stop should be V-shaped in form, as it will permit of more movement and a more complete locking of the threads when the handle is engaged with the shank. In order that the threads may interlock more readily when the handle is rotated, we prefer that the threads be rounded at the points indicated by the index-letters *a*′ and c^3, for by so doing the thread is more "open," and consequently engages more easily.

The operation of the wrench will be readily understood. When it is desired to change the relation of the jaws to each other, the handle C is turned to the position shown in Fig. 4, the stop c^2 coming in contact with the shank, limiting its further rotation in that direction, as will be readily understood. When in this position, the handle and movable jaws are free to slide along the shank until the jaws are adjusted to the requirement of the article it is desired to engage. The handle C is then turned to the position shown in Fig. 3, the movement in this direction being again controlled by the stop c^2 coming in contact with the shank. When in this position, the threaded portion *c* on the inside of the handle engages the threaded portion of the shank A′, and thereby locks the movable jaw and the handle C with the shank of the fixed jaw. We prefer that the threaded portion *b*, which engages the movable jaw with the handle C, should be a left-hand thread, as it will be found more convenient for general use.

We claim—

1. In a wrench, a fixed jaw provided with a shank plain on its sides and threaded on its edge, a tubular handle having a screw-threaded engagement with the sliding jaw and provided on its inside with a threaded portion and a plain portion corresponding with that of the shank, and a stop on the inside of the

handle to limit its rotation in either direction, by coming in contact with the shank, substantially as described.

2. In a wrench, a fixed jaw provided with a shank plain on its sides and threaded on its edge, a tubular handle having a screw-threaded engagement with the sliding jaw and provided on its inside with a threaded portion and a plain portion corresponding with that of the shank, and a V-shaped stop-lug on the inside of the handle to limit its rotation in either direction, by coming in contact with the shank, substantially as described.

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

ADOLPHUS GRANGER.
WILLIAM HILZINGER.

Witnesses:
S. E. THOMAS,
CHAS. TIMM.