

E. H. BEACH.
WRENCH.

No. 177,676.

Patented May 23, 1876.

Fig. 2.

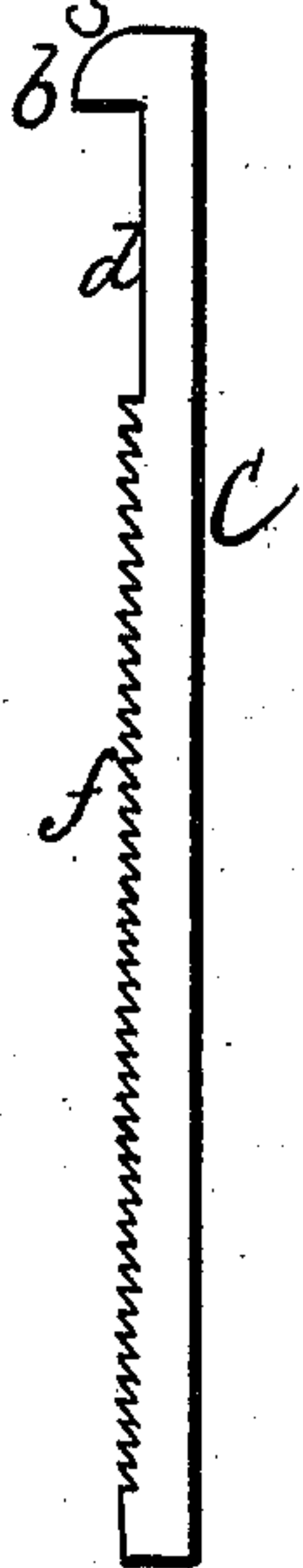


Fig. 1.

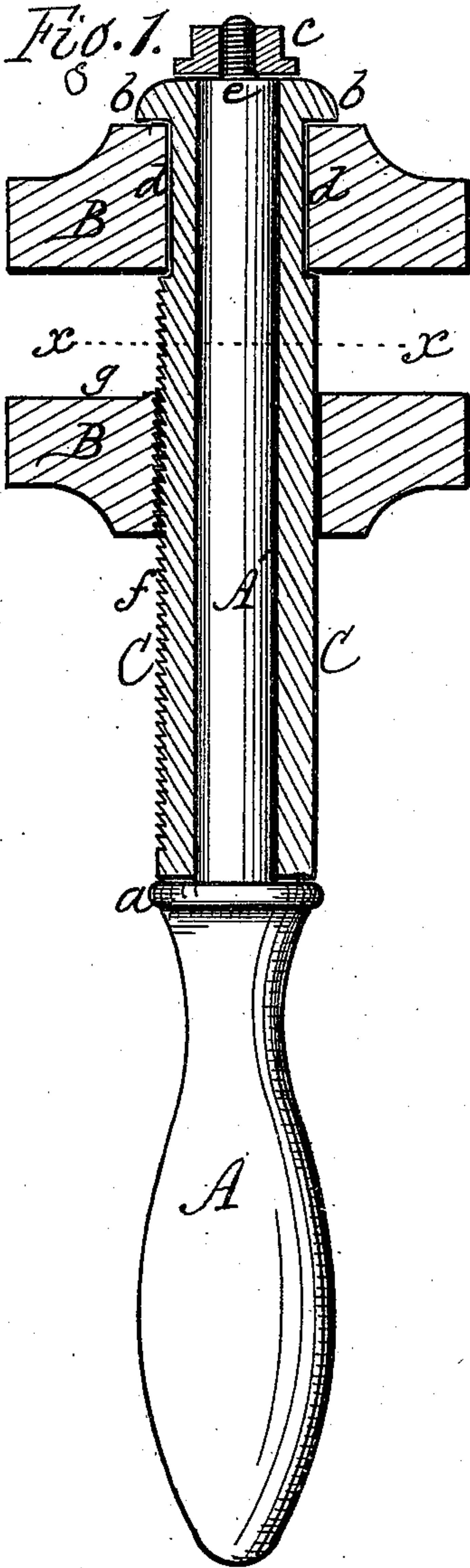


Fig. 3.

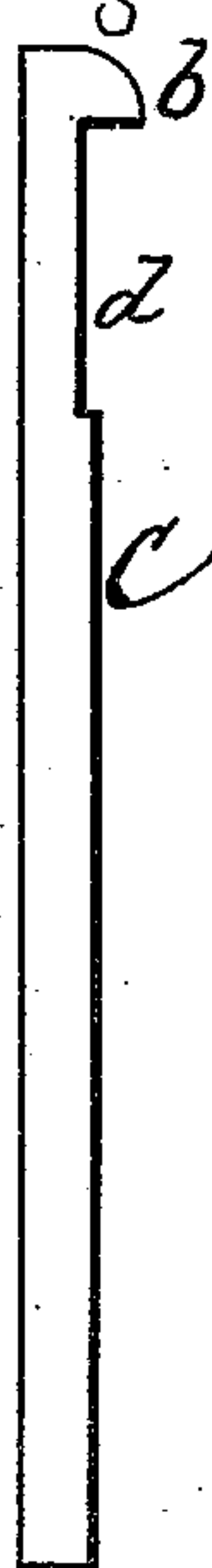
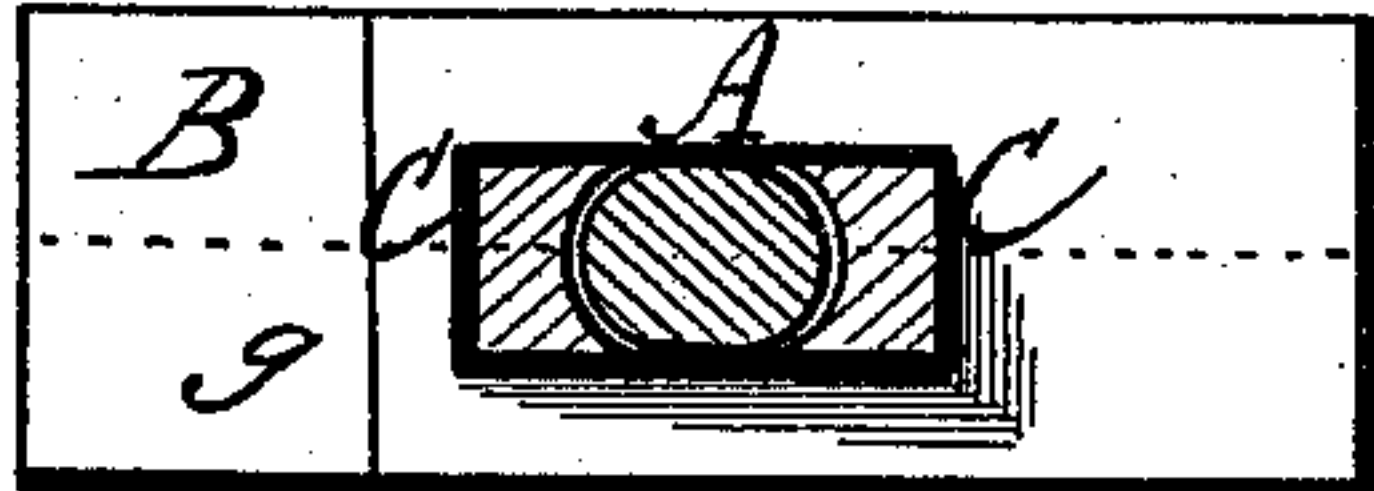


Fig. 4.



Witnesses.

E. B. Scott.

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Elias H. Beach.

Jr R. F. Osgood,
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UNITED STATES PATENT OFFICE.

ELIAS H. BEACH, OF GENEVA, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO ANDREW MORRELL, OF SAME PLACE.

IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. 177,676, dated May 23, 1876; application filed March 31, 1876.

To all whom it may concern:

Be it known that I, ELIAS H. BEACH, of Geneva, in the county of Ontario and State of New York, have invented a certain new and useful Improvement in Wrenches; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section. Figs. 2 and 3 are detached views of the key-bars. Fig. 4 is a section in line *x x* of Fig. 1.

This improvement relates to wrenches in which the movable jaw is tightened by turning the handle.

The invention consists of the combination, with the jaws, of ratchet key-bars and an eccentric handle, constructed and arranged to operate as hereinafter more fully described.

A is the base of the handle, which is made of metal, with a wood covering at the bottom. A' is the body of the handle, which is oval or elongated in cross-section, thereby forming a cam or eccentric its whole length. The elongated or oval form is shown in the cross-section, Fig. 4. B B are the jaws. The upper one is stationary, and the lower one movable. These jaws project on both sides, as shown, in order to be used either way. C C are the key-bars, one of which is used on each side of the cam. These bars are simply strips of metal, square in cross-section, but hollowed on the inner faces to fit the cam. They rest at their lower ends upon the collar *a* of the handle, and they have at their upper ends hooks *b b*, which project over and hold the upper jaw in place. They extend the whole length of the cam A', and rest in mortises of the jaws. They are held at the top by a nut, *c*, which screws down upon a shoulder, *e*, of the cam. This allows free expansible action of the key-bars, but retains them in place. The key-bars have notches or sockets *d d* cut in their outer edges, which receive and hold the upper jaw in place, but allow the necessary expansion and contraction of the key-bars. A series of ratchet-teeth, *f*, are formed on the outer edge of one of the key-bars, and the throat or mortise of the lower jaw is provided with a corresponding set of

ratchet-teeth, which engage therewith. The upper clamping-face of the lower jaw, on one side, is provided with a depression, *g*, of a depth just equal to one-half of the distance of the ratchet-teeth apart, by which means a double adjustment of the wrench is obtained in clamping an object, by changing from one side to another. The cam A' has a free turning movement between the blocks C C, being retained in place by the nut *c*. When turned with the major axis in line with the blocks, as shown in Fig. 2, the said blocks will be forced out so as to clamp the jaws B B fast in place, the lower jaw engaging with the ratchet-teeth, and the upper jaw being held by the sockets *d d*. The wrench can then be used in the ordinary manner. When the cam is turned with the minor axis in line with the key-bars, then the latter can contract or move inward, thereby releasing the lower jaw from the ratchet, and allowing the said jaw to be moved up or down to any desired adjustment. During such contraction, the upper jaw still retains its position, by reason of the recessed bearings *d d*, which allow the necessary motion without releasing the jaw. These recessed bearings and the hook-heads *b b* are essential to keep the upper jaw in place. It is essential that the cam A' and the key-blocks C C extend the whole length of the working part of the wrench, in order to produce equal expansion and contraction, and prevent springing of the key-bars away from the jaws at different adjustments.

The construction above described is simple and effective, and the device is cheap. The parts can all be cast, and no holding or fastening attachment of the handle is necessary. It keeps its place under strain by the close fitting of the eccentric to the key-bars, and the firm hold of the hand while the wrench is under strain.

The wrench might be made effective by making the ratchet-bar fast to the upper jaw, and using the eccentric handle alone for tightening the lower jaw, the lower end of the ratchet-bar in that case having a pointed elongation running in a groove in the handle.

What I claim as new is—

1. In a wrench, the combination with the

jaws B B, of the key-bars C C, resting loosely in the mortises of the jaws, and the cam A', resting between the key-bars, the key-bars and cam extending the whole length of the working portion of the wrench, and the cam forming a part of the handle, as shown and described, and for the purpose specified.

2. The combination, with the cam A', of the key-bars C C, constructed with the recesses *d* and hooks *b b* at the top, to receive and hold the stationary jaw, and one of them provided with the ratchet *f*, to engage the movable jaw, as and for the purpose specified.

3. In combination with the cam A' and key-bars C C, the movable jaw B, constructed with the depression *g* on one side of its working-face, of a depth equal to one-half the distance between the ratchet-teeth, as and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

ELIAS H. BEACH.

Witnesses:

D. W. HALLENBECK,
S. N. ANTHONY.