

(No Model.)

2 Sheets—Sheet 1.

A. B. SMITH.
ADJUSTABLE WRENCH.

No. 293,984.

Patented Feb. 19, 1884.

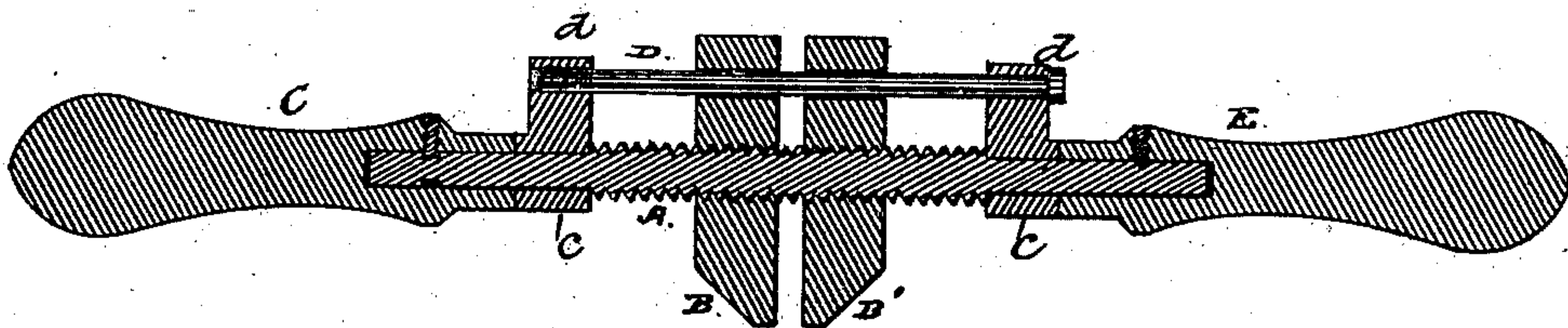


Fig. 1.

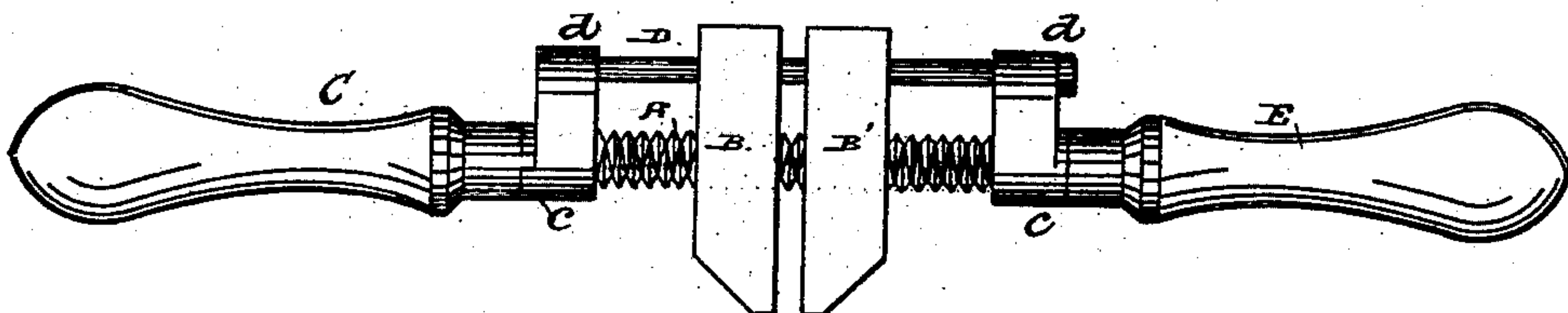


Fig. 2.

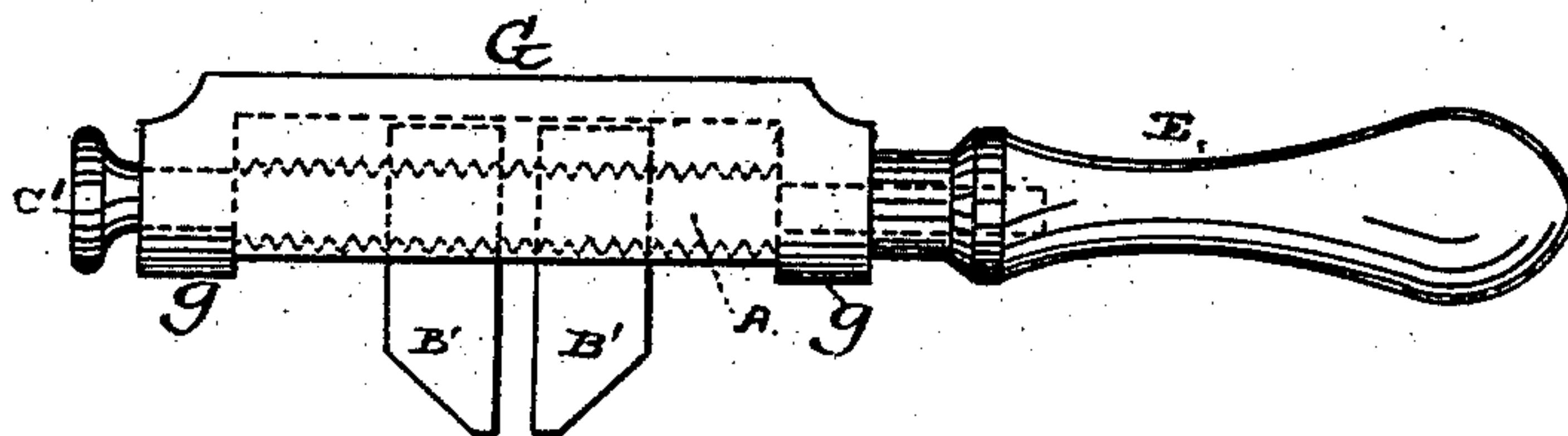


Fig. 3.

Witnesses:

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Inventor:

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By his atty., Edward C. Osborn

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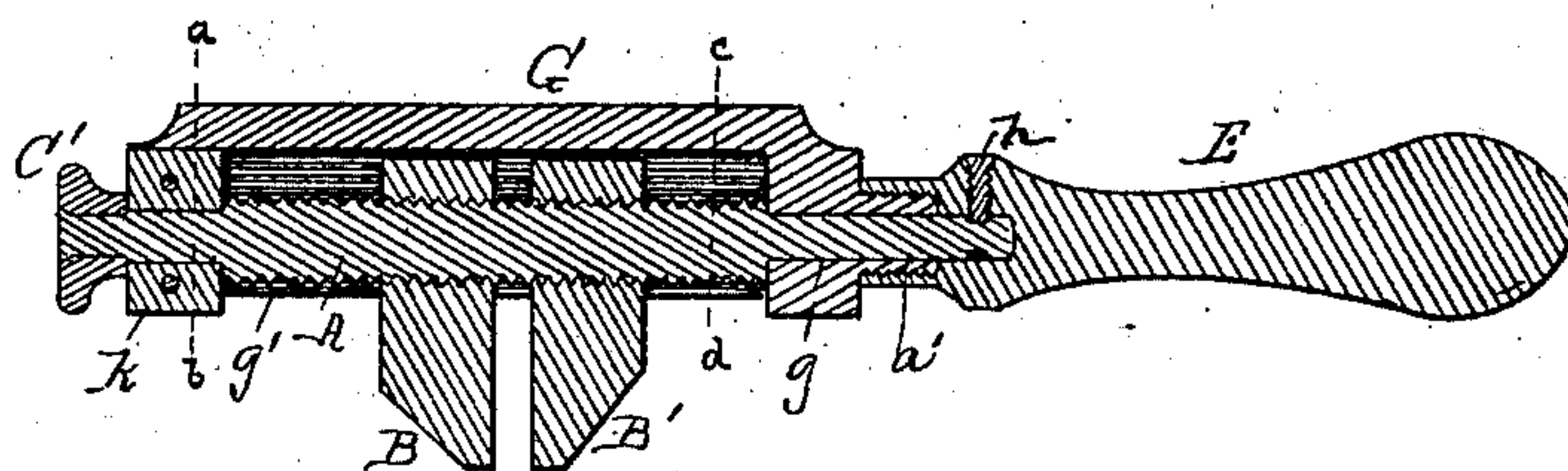


Fig. 4.

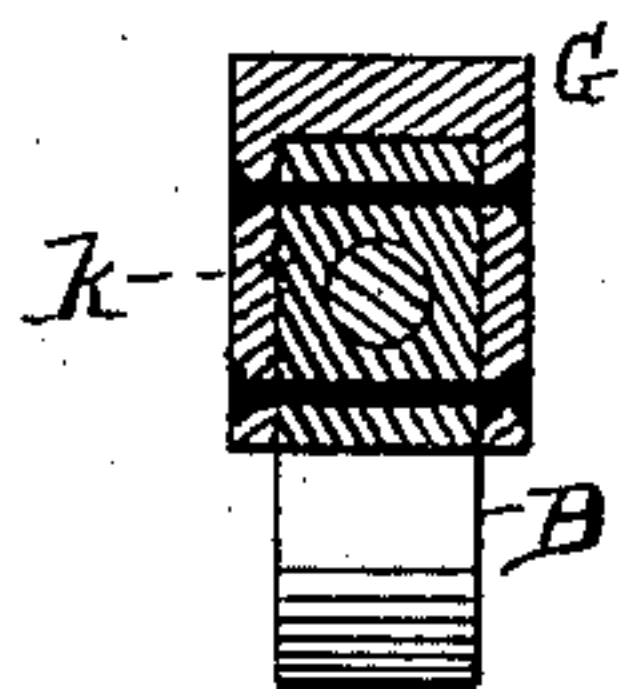


Fig. 5.

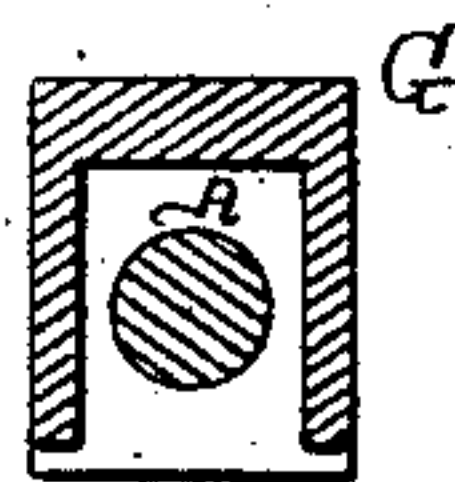


Fig. 6.

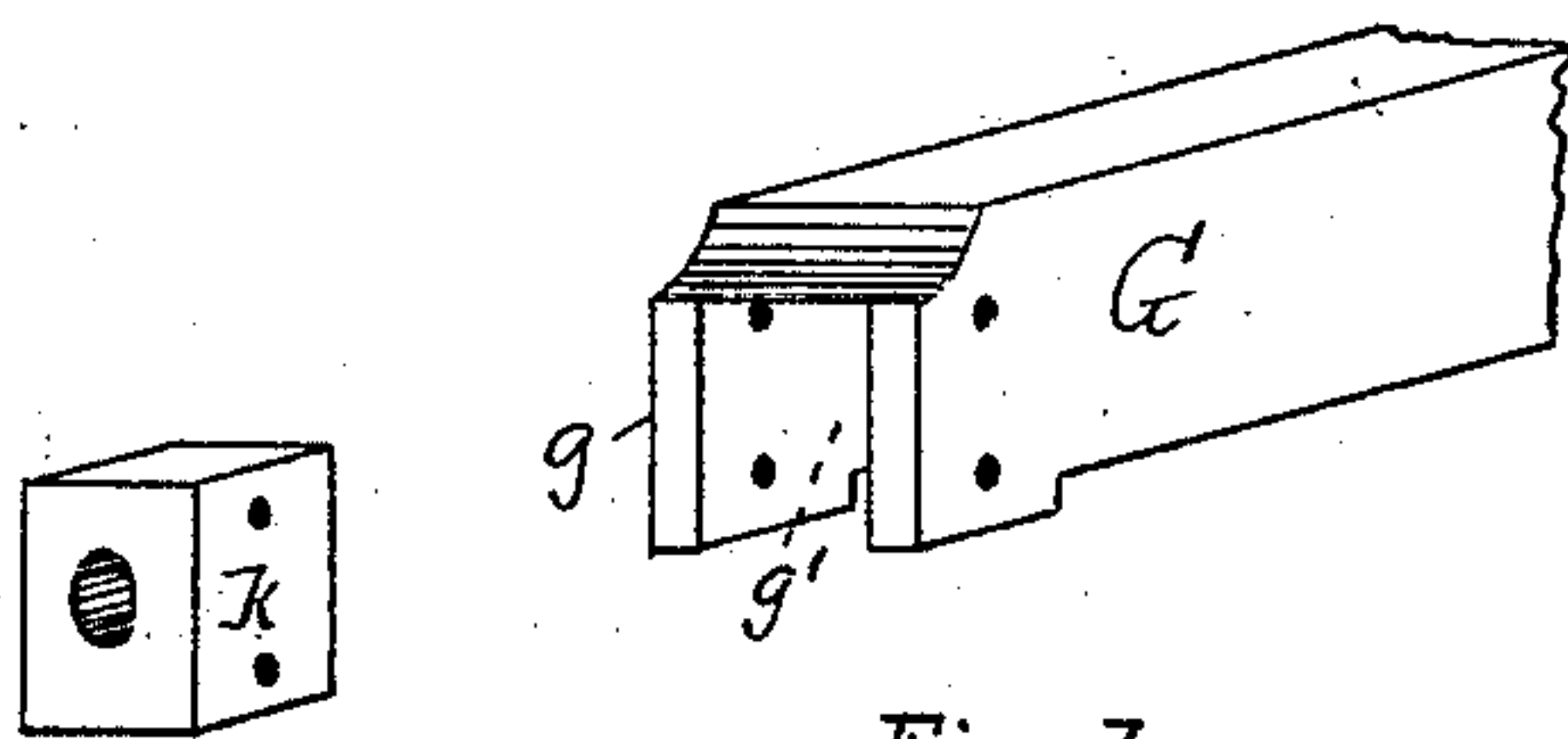


Fig. 7.

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UNITED STATES PATENT OFFICE.

ALPHONSO B. SMITH, OF SAN FRANCISCO, CALIFORNIA.

ADJUSTABLE WRENCH.

SPECIFICATION forming part of Letters Patent No. 293,984, dated February 19, 1884.

Application filed April 18, 1883. (No model.)

To all whom it may concern:

Be it known that I, ALPHONSO B. SMITH, a citizen of the United States, residing in the city and county of San Francisco, State of California, have made and invented certain new and useful Improvements in Adjustable Wrenches; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the accompanying drawings.

My invention relates to a novel construction of mechanism for operating the jaws of adjustable wrenches. It is applicable to all varieties of this class of mechanical tool and such similar tools—as tap-wrenches—wherein there are jaws or parts to be moved and set toward and from each other.

The object of my improvement is to enlarge the capacity of the tool without increasing its bulk or size.

The following description fully explains the nature of my said improvement and the manner in which I proceed to construct, apply, and use the same, the accompanying drawings being referred to by figures and letters.

In the said drawings, Figure 1 is a longitudinal section through the parts of a wrench constructed in accordance with my invention. Fig. 2 is a view of the same wrench. Fig. 3 is a modification of construction, adapted for light work. Fig. 4 is a longitudinal sectional view of the form shown in Fig. 3; and Fig. 5 is a transverse section of the same on line *a b*, Fig. 4. Fig. 6 is a transverse section on line *c d*, Fig. 4; and Fig. 7 is a perspective showing the open end of the slotted block and the head to be inserted therein.

My improvement consists, essentially, in making both jaws or gripping parts of the wrench movable, so that they both have a movement simultaneously toward or away from each other, according to the adjustment. To effect this movement and action of the jaws, I employ a screw-threaded shaft, A, upon which is cut a double thread, composed of a right and a left hand thread, intersecting and crossing each other. Each jaw is then provided with a single-threaded hole to fit the shaft, of which one, B, is cut right-handed, or to engage the right-hand thread of the screw-

shaft, while the other one, B', is formed with reversed thread, to take into and work upon the left-hand thread of the shaft. The ends of this shaft are fitted in a socket-handle, C, so that while being securely fixed therein the shaft is free to be rotated, and the other end of the shaft is then provided with a handle, E, by which to readily grasp and give it rotation. The backs of the jaws B B' are confined and guided so that the rotation of the screw-shaft is converted into parallel sliding movement of the jaws.

In the accompanying drawings I have given two constructions of this part—one adapted to a double-handle wrench, the other a lighter form for small wrenches. In the one construction given in Figs. 1 and 2, the backs of the jaws B B' are arranged to slide on a guide bar or rod, D, either round or square in cross-section, and the ends of this bar are fixed in lateral extensions *d d* of the sockets *c c*. The handle E is fitted upon the end of the screw-threaded shaft A, and securely fixed to it, so that rotation of the shaft is effected by turning the handle E with one hand, while the other handle, C, is held in the grasp of the other hand. The screw-shaft then acts upon the jaws to move them regularly along upon the guide-rod either toward or away from each other. In the construction given in Fig. 3 of the drawings this bar D and the sockets *c c* are replaced by a slotted block, G, in which the screw-shaft is provided with bearings in the solid ends *g g*, while the space or longitudinal slot *g'* is made of suitable width to receive and afford guiding-surfaces for the back parts of the jaws B B'. This block is closed at the back, and is fixed to the handle E, into which is also fixed the end of the screw-shaft, so that it will turn freely in the socket *g*. The opposite end of the screw-shaft is carried out through the head of the block G, and is fitted with a milled-head thumb-nut, C'.

In putting the wrench together, the shaft A, with the jaws on it, is set in the block G, the head *h* of which is removed. The shank *a'* of the shaft A extends through the end of the block G into the handle, where it is provided with an annular groove, in which works the holding-screw *h*, to hold the handle on. The

nut C' being removed, the head *k* is put over the end of the shaft and secured in place in the block, when the nut C' is again screwed on, and the device is ready for use. In this I obtain a large throw and wide movement of the jaws, as well as a more rapid adjustment of the jaws to any given work.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an adjustable wrench, the combination of the handle and double-screw-threaded shaft set in line with the handle, with the two jaws having oppositely-threaded apertures, and a

means or device separate from the handle, by which the jaws are held in line as they are moved, as set forth.

2. In an adjustable wrench, the combination of the double-screw-threaded shaft, jaws moving thereon, and means for operating said shaft, with the supports *d*, in which the screw-shaft is mounted, and the rod D, upon which the jaws ride, and by which they are held in place, as set forth.

ALPHONSO B. SMITH. [L. S.]

Witnesses:

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