

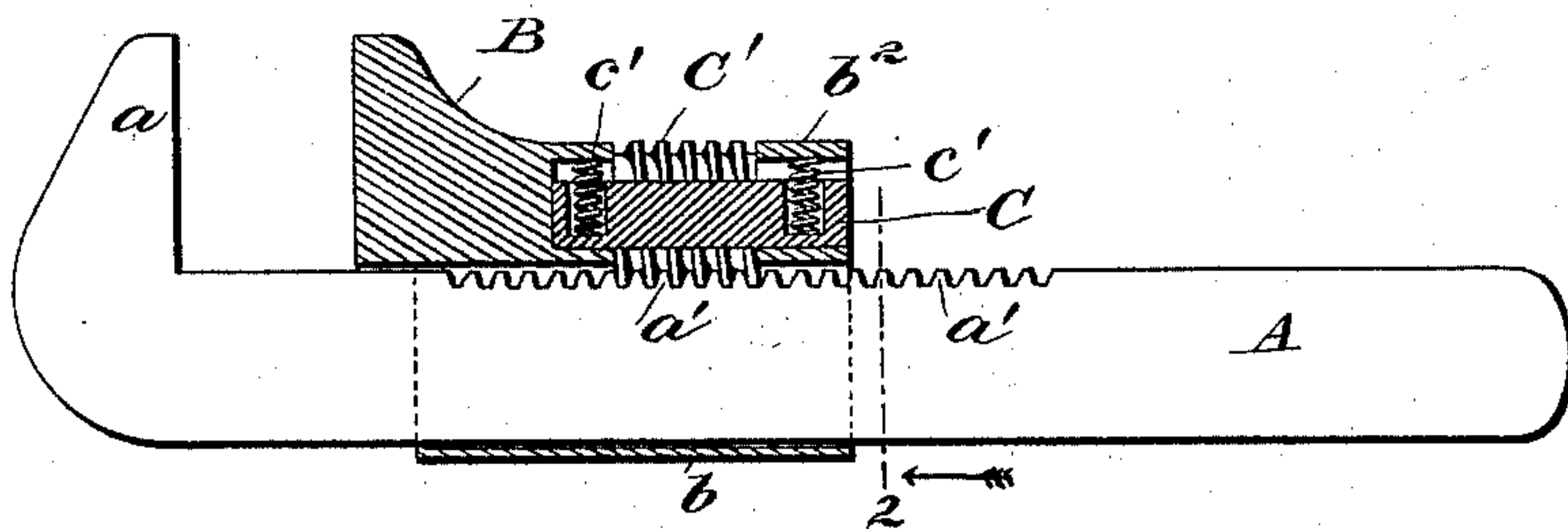
(No Model.)

F. S. SMITH.  
WRENCH.

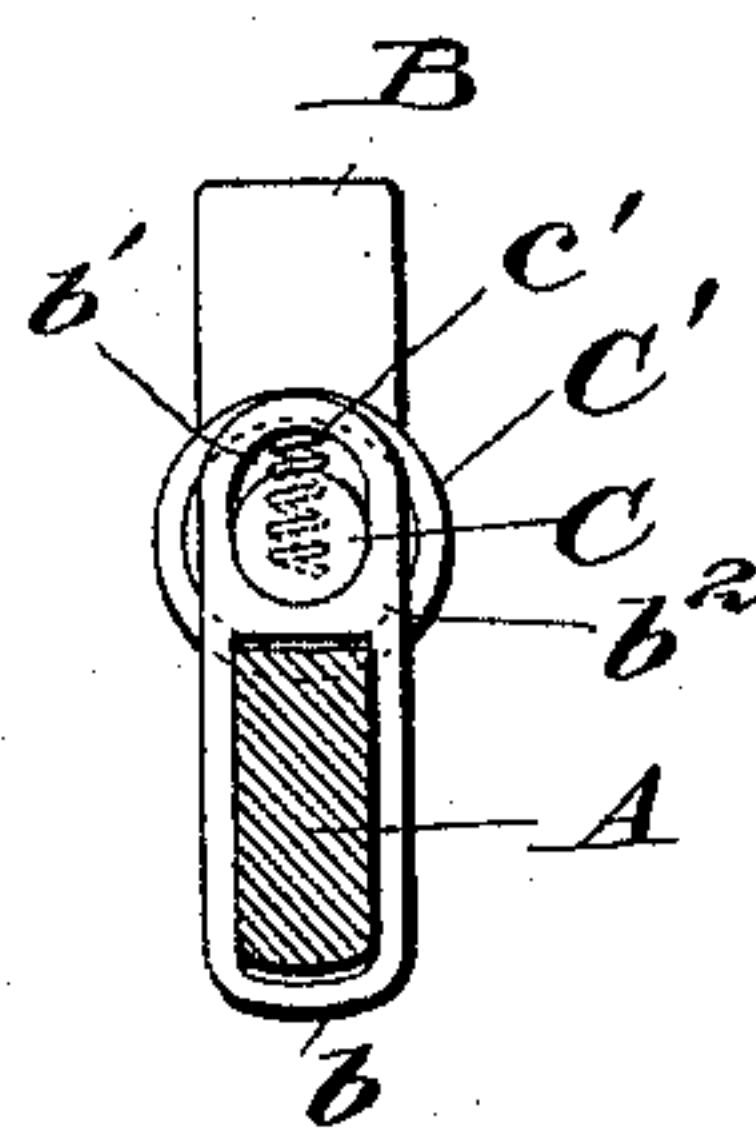
No. 591,061.

Patented Oct. 5, 1897.

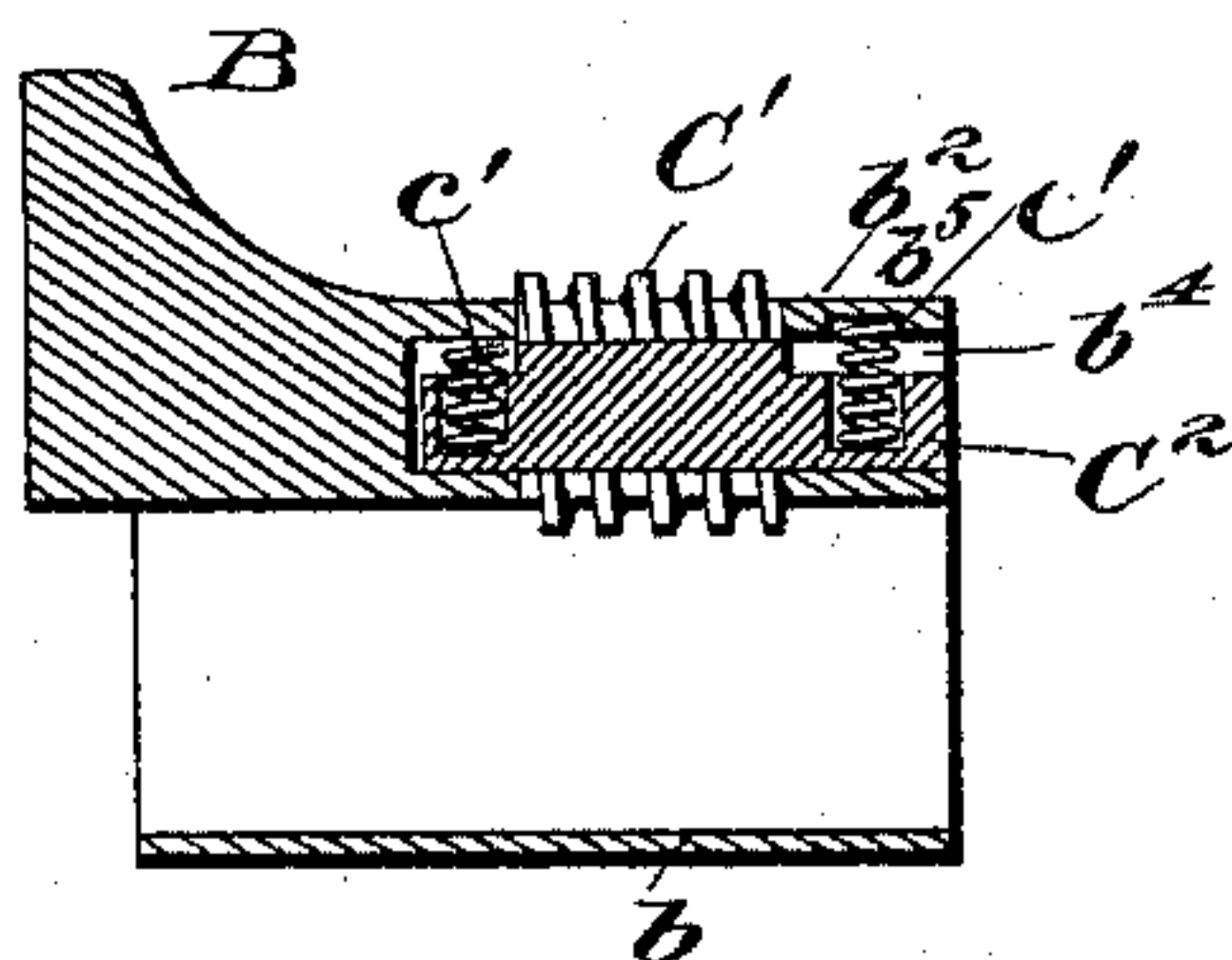
*Fig. 1*



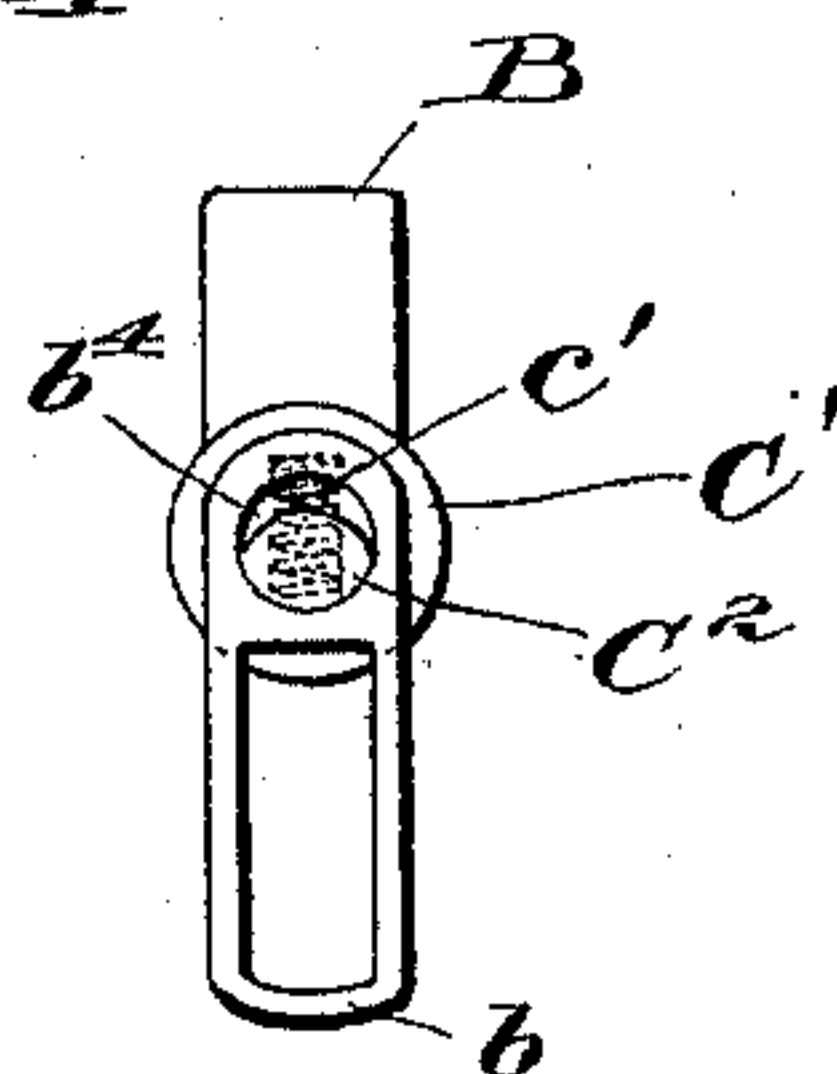
*Fig. 2*



*Fig. 3*



*Fig. 4*



Witnesses.

J. S. Coleman  
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# UNITED STATES PATENT OFFICE.

FRANK STEWART SMITH, OF CHICAGO, ILLINOIS.

## WRENCH.

SPECIFICATION forming part of Letters Patent No. 591,061, dated October 5, 1897.

Application filed November 16, 1896. Serial No. 612,282. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK STEWART SMITH, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

The object of my invention is to provide a simple, economical, and efficient screw-wrench adapted to have an easy and rapid adjustment which is intended to be an improvement upon the wrench described and claimed in United States Letters Patent No. 562,477, granted to me June 23, 1896; and the invention consists in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of my improvement, shown partly in section; Fig. 2, a transverse section taken on line 2 of Fig. 1, looking in the direction of the arrow; Fig. 3, a longitudinal sectional elevation of the sliding jaw, showing a modified construction; and Fig. 4, an end view of Fig. 3.

In constructing a wrench in accordance with my improvements I make a body portion A and provide it at one end with a fixed or immovable jaw  $a$ . I then make a movable jaw B and slidingly mount it on the body portion, providing it with an encompassing sleeve  $b$ , that spans and incloses the body portion of the wrench in such manner that the jaw is prevented from lateral movement, but is permitted to have an easy longitudinal movement.

To provide means by which the movable jaw may be operated, I provide a shaft C, which is mounted in suitable openings  $b'$  in the sliding jaw. In my preferred construction these openings are elongated, so that the shaft may have a limited lateral movement for the purposes hereinafter described. The shaft is provided with a rotatable worm  $C'$ , which is held between the main portion of the jaw and the lug  $b^2$ , so that it can have a free rotary motion, but no longitudinal movement.

In order to hold the shaft with its worm in operative engagement and permit such worm to be drawn from its operative engagement, I provide the shaft at each end with diamet-

rical openings or recesses and insert therein helical coiled springs  $c'$ , that have one end resting against the interior surface of the openings in the jaw and the other against the bottom of the diametrical openings of the shaft in such manner that when the shaft is free to operate it forces the teeth of the worm into engagement with the teeth  $a'$  of the wrench-body and permits the revolution or rotation of the worm and adjustment of the jaw.

Inspecting Figs. 1 and 2 of the drawings, it will be seen that the helical coiled spring, to the left of Fig. 1, not only acts to assist in keeping the worm in operative engagement, but also assists in preventing the unlocking of the parts—that is, the shaft cannot be disengaged from the worm until this helical coiled spring is forced down below its surface.

In Figs. 3 and 4 all of the parts are constructed the same as described in connection with Figs. 1 and 2, with the exception that the shaft  $C^2$  is made oval or elliptical shaped at its bearing portions and the perforations or openings  $b^4$  are made perfectly round. This accomplishes the same result as shown in Fig. 1—that is, it permits the necessary lateral movement of the shaft and consequent rapid adjustment of the jaw. In order to lock the parts in place, however, the lug  $b^2$  of the jaw is recessed at  $b^5$  to allow the helical coiled spring to enter the same.

The advantages of my improvement are that the parts may be manufactured very economically and that a less number of parts are required than in my former improvement. Further, the parts are more readily assembled and easily taken apart for the purposes of repair or renewal.

I claim—

1. In a screw-wrench, the combination of a body portion provided with teeth and a jaw portion, a jaw slidingly mounted thereon, a worm-shaft laterally movably mounted in the sliding jaw and provided with diametrical openings—one at each end thereof, and helical coiled springs at each of such openings in the worm-shaft for holding the parts in operative engagement and locking them together, substantially as described.

2. In a screw-wrench, the combination of a



body portion provided with teeth and a rigid  
jaw, a second jaw slidingly mounted thereon  
and provided with elongated openings, a  
worm-shaft laterally movably mounted in the  
5 sliding jaw and provided with diametrical  
openings, one at each end thereof, and a helical  
coiled spring in each of such openings for

holding the parts in operative engagement  
and locking the same together, substantially  
as described.

FRANK STEWART SMITH.

Witnesses:

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