

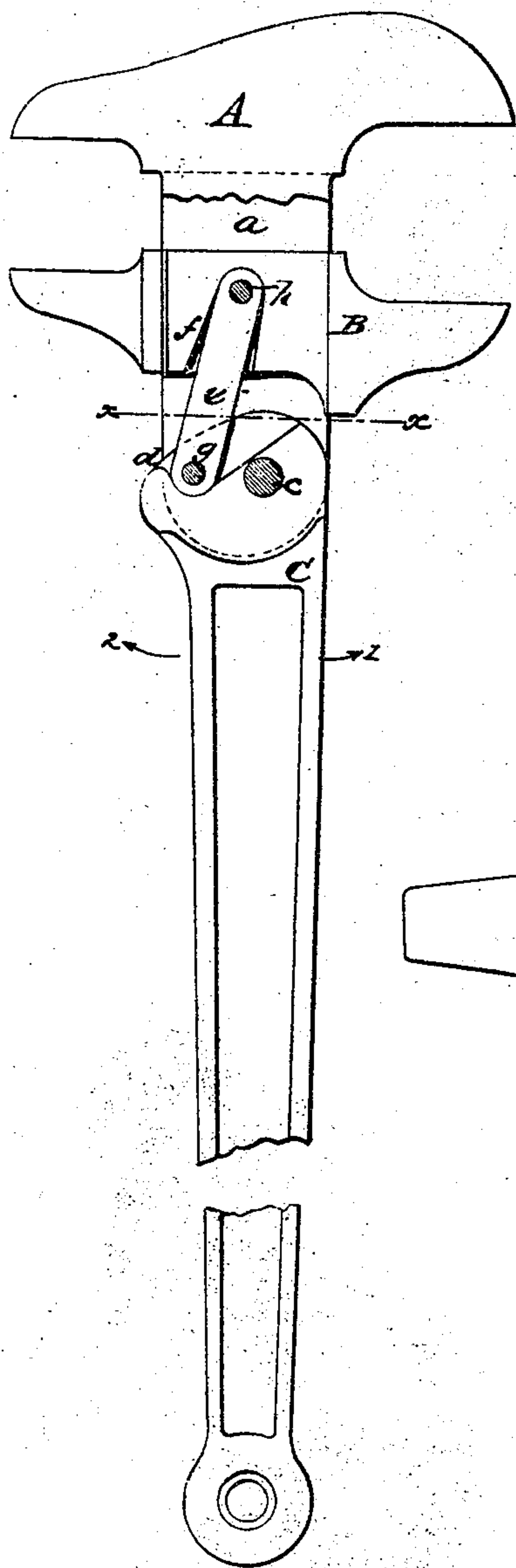
*Schwartzkoff & Kiselowsky,*

*Wrench.*

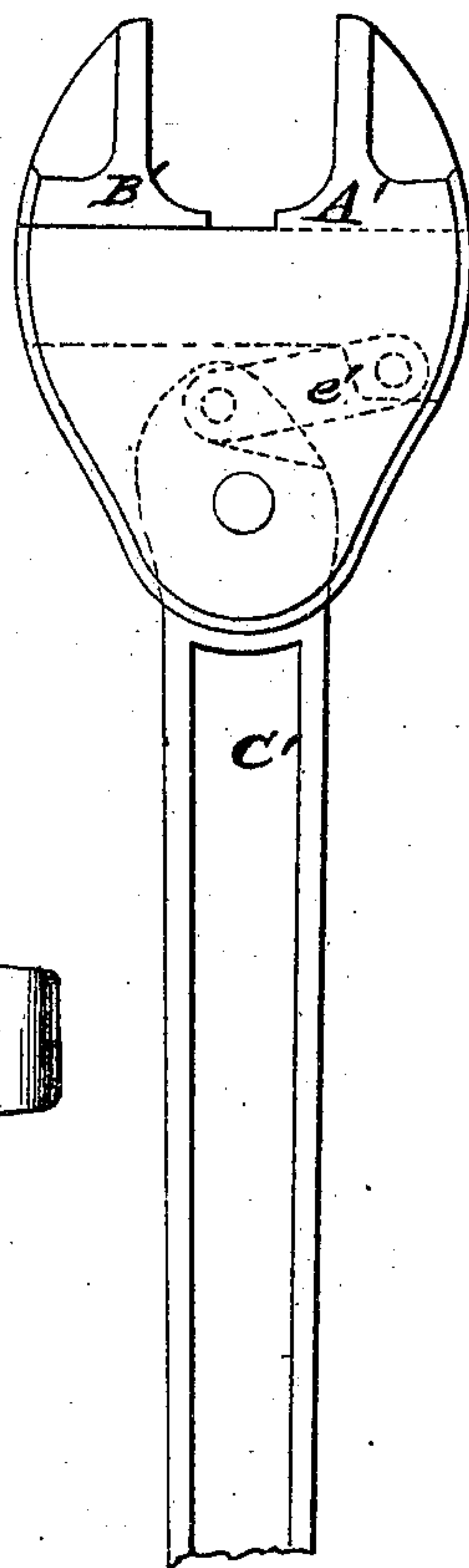
*No 42,903.*

*Patented May 24, 1864.*

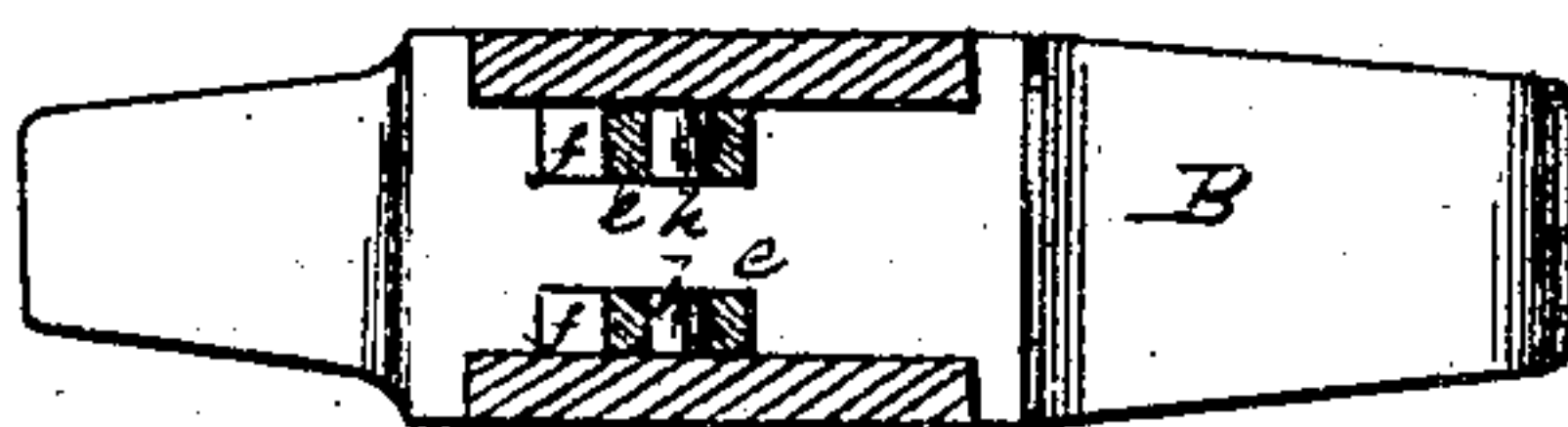
*Fig. 1.*



*Fig. 3.*



*Fig. 2.*



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# UNITED STATES PATENT OFFICE.

L. SCHWARTZKOPFF AND E. KASELOWSKY, OF BERLIN, PRUSSIA.

## IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. 42,903, dated May 24, 1864.

*To all whom it may concern:*

Be it known that we, L. SCHWARTZKOPFF, of Berlin, and E. KASELOWSKY, of Berlin, in the Kingdom of Prussia, have invented a new and useful Improvement in Screw and Pipe Wrenches; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a side elevation of our invention, partly in section, to expose the working parts. Fig. 2 is a horizontal section of the same, taken in the plane indicated by the line *x x*, Fig. 1. Fig. 3 shows the application of our invention to a different class of wrenches than that represented in the previous figures.

Similar letters of reference in the various figures indicate corresponding parts.

This invention consists in the arrangement of an eccentric recess at the head of the hinged handle of a wrench, in combination with toggle-arms interposed between or connecting the head of the handle and the movable jaw of the wrench in such a manner that by throwing the handle in one direction the wrench is opened, and by throwing the handle in the opposite direction the wrench closes and grips a nut or other article placed between the two jaws, the more firmly the harder the pressure upon the handle and the smaller the nut or other article to be turned by the action of the wrench.

To enable those skilled in the art to make and use our invention, we will proceed to describe it.

A represents the stationary jaw of a screw or pipe wrench, made of iron, steel, or any other suitable material. The shank *a* of this jaw is slotted or forked to receive the movable jaw B, which is or may be provided with suitable recesses, to correspond to the forked shank *a*, in such a manner that the jaw B moves in the forked shank toward and from the stationary jaw.

C is the handle, which connects by a pivot, *e*, with the forked end of the shank *a*. The head *c* of said handle is provided with an eccentric recess, *d*, one on each side, to receive the end of one of the toggle-arms *e* and the opposite ends of toggle-arms into the recesses *d* in the movable jaw, as clearly shown in Fig. 1 of the drawing. The toggle-arms are connected to the head of the handle and to the movable jaw by pivots *g h*, which, however,

serve only to hold said arms in their places and to draw the movable jaw back. In moving the movable jaw up toward the stationary jaw the ends of the toggle-arms bear against recesses *d f*, and the pivots *g h* are relieved from all pressure to which said movable jaw may be exposed. For very light work the recesses *d f* might be left off, and the toggle-arms connected simply by pivots.

By referring to Fig. 1 of the drawings it will be seen that when the handle is moved in the direction of arrow 1 the jaw B moves off from the jaw A, and when the handle is moved in the direction of arrow 2 the jaw B moves toward the jaw A. Consequently, by throwing the handle in the direction of arrow 1 the wrench opens, so that it can be applied to a nut or other article, and by throwing or forcing the handle in the opposite direction the wrench closes and grips the nut or other article between the jaws the more firmly the greater the pressure to which the handle is exposed and the smaller the nut or other article between the jaws. With small nuts the pivots *g h* of the toggle-arms will come nearly in the line with the pivot *e* of the handle, and the movable jaw will be pressed up against the nut with an immense power.

The jaws A B may be made double, as shown in Fig. 1; or they may be brought in said relation to each other, as shown in Fig. 3, where the shank of the movable jaw B slides in a recess or slot in the body or head of the wrench toward and from the stationary jaw A by the action of the handle C' on the toggle-arms *e'*. The principle in this case is precisely the same as in the wrench previously described, the sole difference being that the position of the different parts in relation to each other has been slightly changed.

It is obvious that this construction is applicable with equal advantage to screw-wrenches and to pipe-wrenches, and one and the same wrench can be used for several sizes.

What we claim as new, and desire to secure by Letters Patent, is—

The eccentric recess *d*, or its equivalent, at the head of the handle C of a wrench, in combination with the toggle-arms *e* and movable jaw B, constructed and operating in the manner and for the purpose substantially as shown and described.

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