(No Model.)

D. R. PORTER.

WRENCH.

No. 426,956. Patented Apr. 29, 1890.

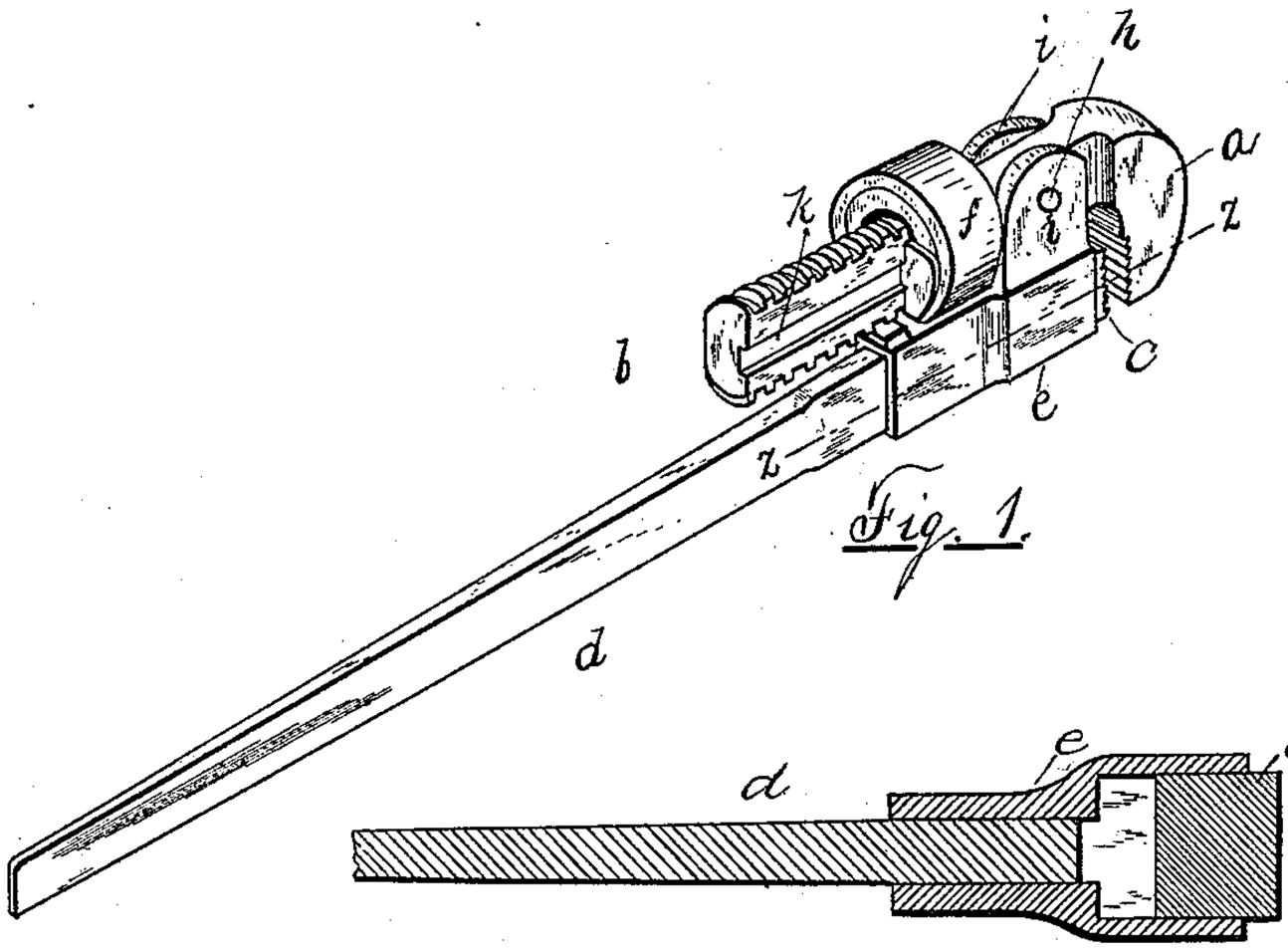

Fig. 1.

Fig. 4.

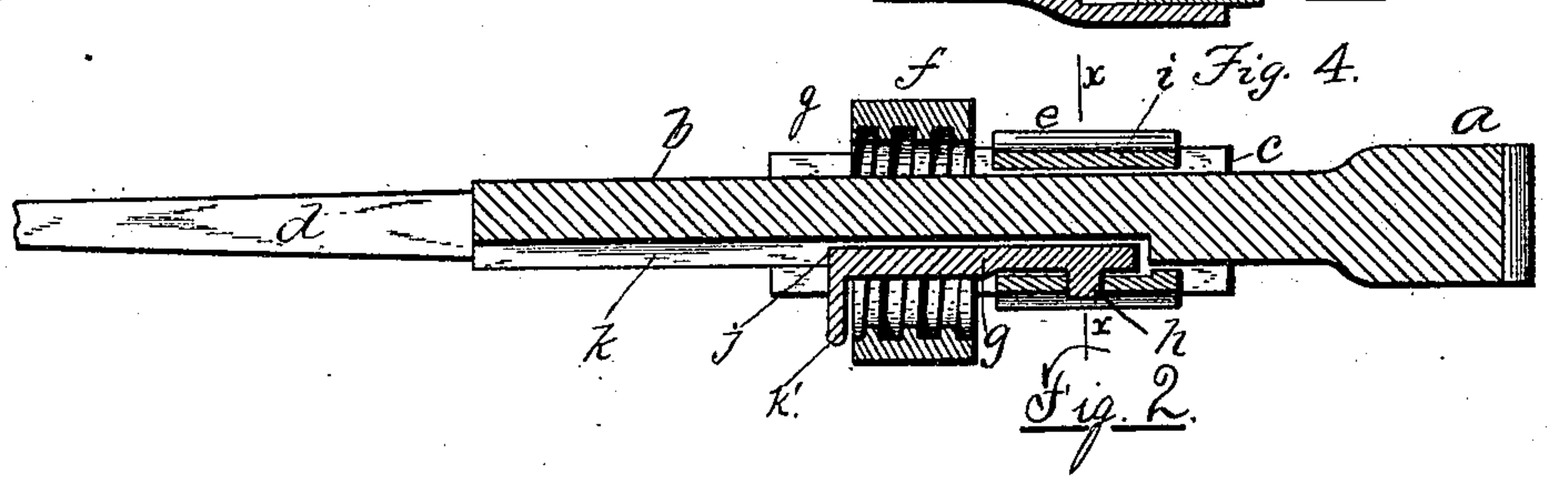

Fig. 2.

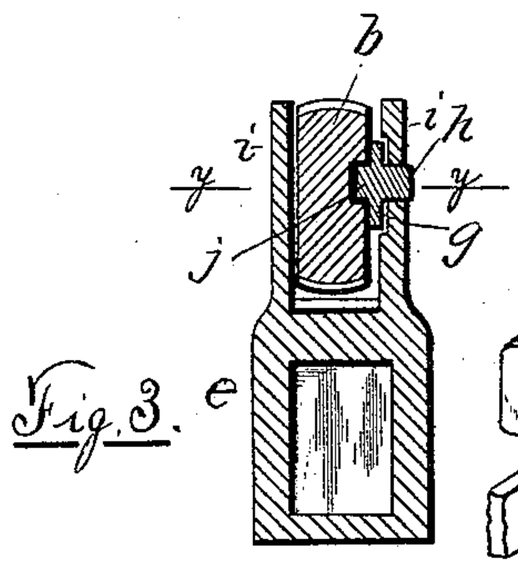

Fig. 3.

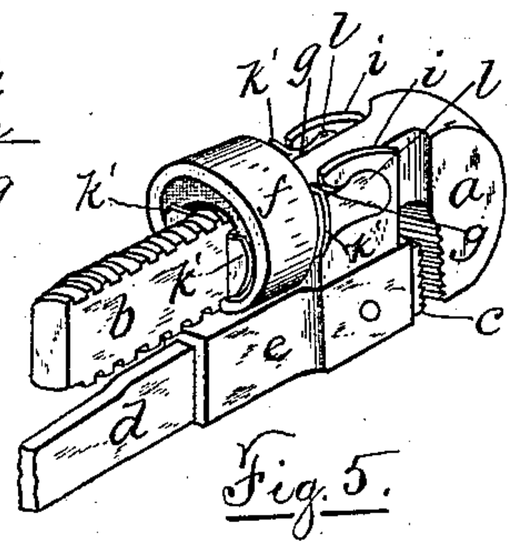

Fig. 5.

Witnesses
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UNITED STATES PATENT OFFICE.

DANIEL R. PORTER, OF CHELSEA, MASSACHUSETTS, ASSIGNOR TO WILLIAM F. GOLDTHWAITE, OF SAME PLACE, AND CHARLES F. BROWN AND ARTHUR W. CROSSLEY, BOTH OF BOSTON, MASSACHUSETTS.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 426,956, dated April 29, 1890.

Application filed December 21, 1889. Serial No. 334,492. (No model.)

To all whom it may concern:

Be it known that I, DANIEL R. PORTER, of Chelsea, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Wrenches, of which the following is a specification.

My invention has relation to wrenches generally and to pipe-wrenches particularly, it being my object to provide such improvements in the class of tools mentioned as will simplify their construction, lessen the cost of their manufacture, and increase their utility and efficiency.

My invention will first be described in connection with the annexed drawings, forming a part of this specification, and then particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of my improved wrench. Fig. 2 is a longitudinal sectional view taken on the line *y y* of Fig. 3. Fig. 3 is a vertical sectional view taken on the line *x x* of Fig. 2. Fig. 4 is a sectional view taken on the line *z z* of Fig. 1. Fig. 5 is a perspective view of a portion of the improved wrench, showing a modified form thereof.

The same letters of reference designate the same parts or features, as the case may be, wherever they occur.

In the drawings, having reference to Figs. 1 to 4, inclusive, *a* designates the movable jaw; *b*, its screw-threaded shank; *c*, the fixed jaw; *d*, the wrench-handle; *e*, the shoe in which the fixed jaw and handle are secured and which supports the movable jaw and its adjuncts, and *f* the adjusting-nut operating upon the shank of the movable jaw.

g is a fulcrum and retaining bar provided at its forward end with a stud *h*, constructed and arranged to operate in a hole formed in one of the ears *i* of the shoe *e*. The bar *g* is provided on its inner side with a rib *j*, which operates in a groove *k*, formed in the adjacent side of the shank *b* of jaw *a*. On the rear end of the bar *g* there is an abutment or a shoulder *k'*, between which and the ears *i* the adjusting-nut *f* operates, said nut encircling both the shank *b* and the bar *g*. With this simple construction and limited number of parts the movable jaw *a* can be readily adjusted to adapt the wrench to use on pipes of varying size, and the tool may be at the same time made to possess maximum strength.

By allowing slight play between the shoulder or offset *k'* and the ears *i* jaw *a* will be afforded "throw ahead" sufficient to immediately release the grip of the jaws upon the pipe upon letting go the force applied to the handle *d*.

In order to cheapen the cost of construction of the tool, I may make the handle *d* of low-priced metal having the requisite strength and form the jaw *c* of high-grade hardened steel, securing both the handle *d* and jaw *c* in the shoe by frictional means, though it is obvious that the handle and fixed jaw may be made on one piece.

In Fig. 5 I have shown two bars *g*, one on each side of the shank *b*, and each provided at its forward end with a rounded portion *l*, operating in corresponding recesses formed in the ears *i*. The nut *f* in this instance encircles both bars *g* and the shank *b* and operates between and upon shoulders or abutments *k'* on the said bars, both in front and rear of the nut. By this construction the grooving of the shank *b* is avoided, so that the latter part may possess maximum strength. These and other changes may be made in the form and arrangement of parts comprising my improvements without departing from the nature or spirit thereof.

It will be seen that the bar *g* (shown in Figs. 1, 2, and 3) or the two bars *g g*, (shown in Fig. 5,) pivotally connected with the handle *d* at one end and engaged at the opposite end with the adjusting-nut, constitute a swinging connection between the handle and the adjusting-nut, whereby the nut, the shank *b*, and the jaw *a* are adapted to swing independently of the handle *d* and its jaw *c*.

Having now described my invention, I declare that what I claim is—

1. A wrench comprising in its construction a movable jaw and its shank, a fixed jaw and handle, a shoe provided with ears, a fulcrum and retaining bar pivoted to one of said ears and provided with a shoulder or abut-

ment, and an adjusting-nut encircling the shank of the movable jaw and the said bar, as set forth.

2. A wrench comprising in its construction a movable jaw having a screw-threaded shank provided with a groove, a fixed jaw and handle, a shoe provided with ears, a fulcrum and retaining bar pivoted to one of said ears and provided with a rib adapted to operate in the groove of the shank of the movable jaw, said bar being also provided with a shoulder or abutment, and an adjusting-nut encircling the shank of the movable jaw and the said bar, as set forth.

3. A wrench comprising in its construction a handle or lever provided with ears *i*, and having a jaw *c*, a jaw *a* and its screw-threaded shank, and adjusting-nut *f*, engaged with said shank and adapted by its rotation to move the shank endwise and in operating as a wrench to bear on the ears *i*, and a bar or lever pivoted to the said ears and engaged by the said nut, as set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 4th day of December, A. D. 1889.

DANIEL R. PORTER.

Witnesses:
ARTHUR W. CROSSLEY,
A. D. HARRISON.