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PATENTED OCT. 15, 1907.

J. E. RICHARDS & C. W. WALKER.  
PIPE WRENCH.

APPLICATION FILED OCT. 5, 1906.

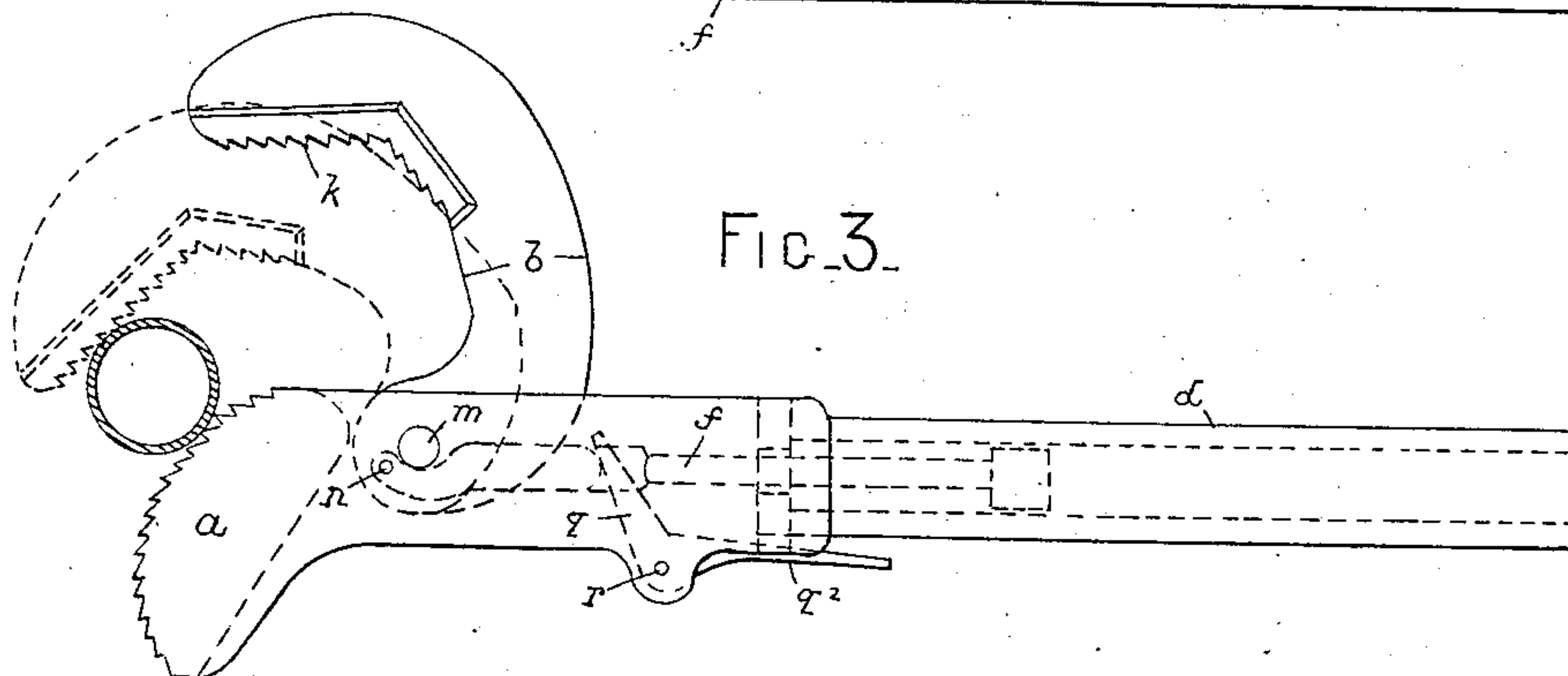
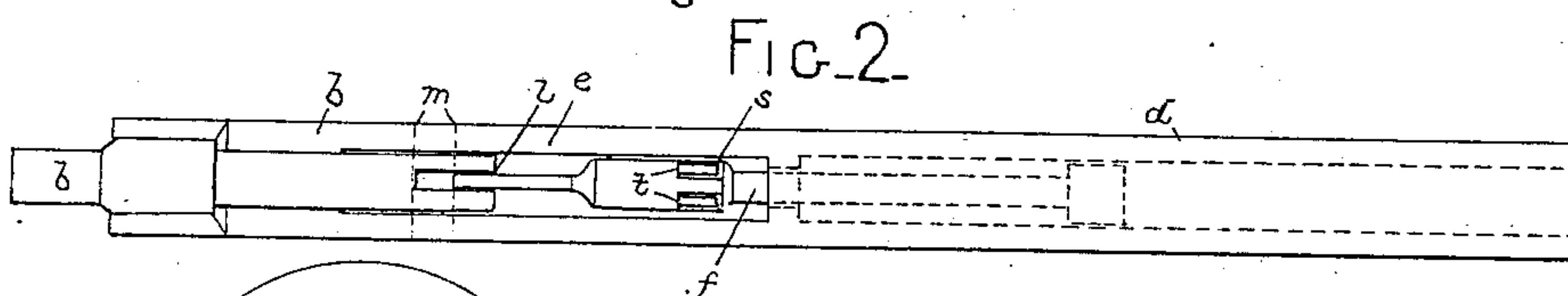
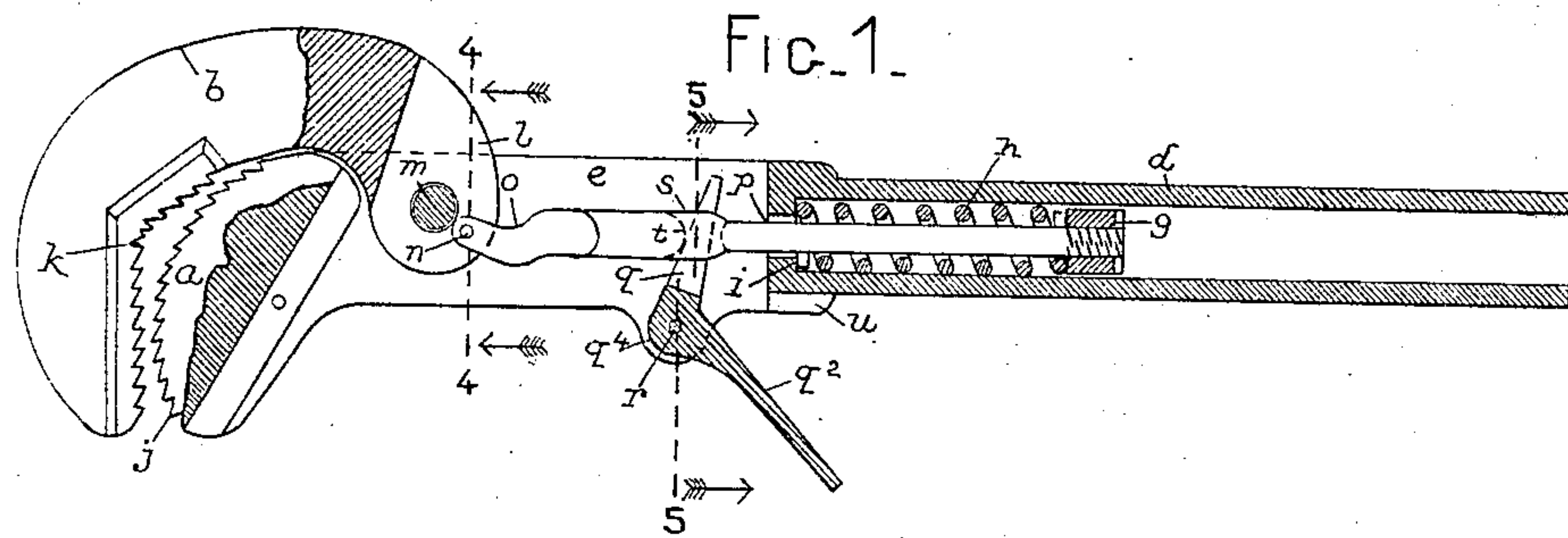
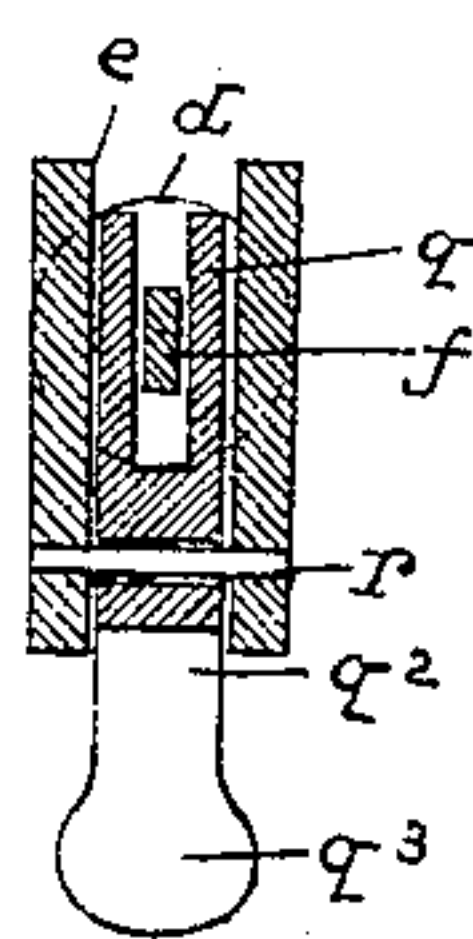
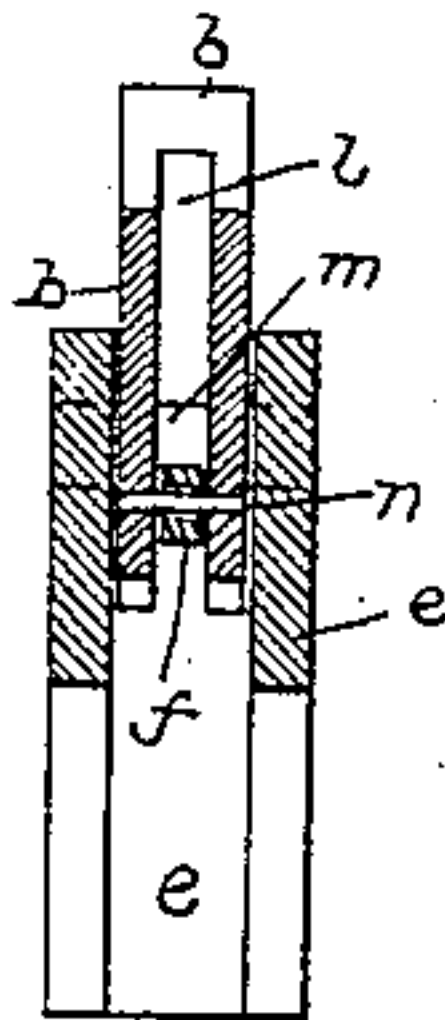


Fig. 4. Fig. 5.



WITNESSES.

*George C. Davis*  
*Marion E. Brown*

INVENTORS.

*Joseph E. Richards*  
*and*  
*Charles W. Walker*  
*by*  
*Albert W. Brown*  
*their Attorney.*



# UNITED STATES PATENT OFFICE.

JOSEPH E. RICHARDS, OF MELROSE, AND CHARLES W. WALKER, OF BOSTON, MASSACHUSETTS, ASSIGNORS TO IRLAND PIPE-WRENCH COMPANY, OF PORTLAND, MAINE.

## PIPE-WRENCH.

No. 868,126.

Specification of Letters Patent.

Patented Oct. 15, 1907.

Application filed October 5, 1905. Serial No. 281,370.

To all whom it may concern:

Be it known that we, JOSEPH E. RICHARDS and CHARLES W. WALKER, citizens of the United States, residing, respectively, at the town of Melrose, in the county of Middlesex and State of Massachusetts, and at the city of Boston, in the county of Suffolk and State aforesaid, have jointly invented a new and useful Improvement in Pipe-Wrenches, of which the following is a specification.

This invention relates to that class of pipe-wrenches, having a stationary jaw at one end of a suitable handle or shank; a movable jaw fulcrumed on said handle and arranged to be moved away from and toward said stationary jaw; a slidable rod arranged within a tubular handle and at one end eccentrically hung on the movable-jaw as to its axial line of swing and at the other end, and within the casing, having an enlargement, and a coiled spring about said rod and confined, end to end, between said enlargement and a shoulder of said casing, that is situated at a point between the said enlargement and the movable jaw, and the invention consists in substance of means for operating said slidable rod and their application and location relative to the spring surrounding and to the hanging of said rod on the movable jaw, all substantially as hereinafter described.

In the accompanying plate of drawings, forming a part of this specification, Figure 1 is a central longitudinal section with the movable jaw closed toward the stationary jaw. Fig. 2 is a plan view. Fig. 3 is a side view with the movable jaw fully opened from the stationary jaw, and showing the movable jaw, by dotted lines, and the stationary jaw as gripping a pipe, shown in cross section. Figs. 4 and 5 are transverse vertical sections, lines 4—4 and 5—5, respectively.

In the drawings, *a* is the fixed or stationary jaw; *b* is the movable jaw; *c* is a chambered shank; *d* is a tubular handle; *f* is a slidable rod; *g* is an enlargement at one end of the rod *f*; *h* is a coiled spring surrounding the rod *f* and confined, end to end, between its enlargement *g* and a shoulder *i* of the bore of the tubular handle; *j* is the curving convex toothed or gripping face of the stationary jaw; *k* is the angular running toothed or gripping face of the movable jaw; *l* is a slotted way in and *m* is the fulcrum-pin of the movable jaw; *n* is a pin hanging one end of the rod *f* to the movable jaw and *o* is a recess or depression or notch in the said rod.

The stationary jaw *a* is at one end of the chambered shank *c*. The movable jaw *b* is located between the inner parallel side walls of the chambered shank and its fulcrum pin *m* extends across and is fixed in said shank. The gripping face *k* of the movable jaw *b* is opposite to the gripping face *j* of the stationary jaw *a*. The fulcrum-pin *m* of the movable jaw crosses and is partially exposed in the slotted way *l* of the movable jaw. The pivot *n* connecting the rod *f* to the movable

jaw, has its axis transverse to the slotted way *l*, and parallel but eccentric to the axis of the fulcrum-pin *m* of the movable jaw and in a plane coincident with an axial plane of the tubular handle. The slidable-rod *f* which is the operating rod, as will hereinafter appear, for the movable jaw, passes through an enlarged opening *p* of and lies within the tubular handle *d* and the rod-enlargement *g* is at the end of the rod opposite to the end pivoted to the movable jaw, and it loosely fits the bore of the handle so as to be free to slip lengthwise of the bore.

*q, q<sup>2</sup>* is an angular lever for moving the slidable rod *f* against the action of its surrounding spring *h*. One arm *q* of this lever is bifurcated along its length, and its other arm *q<sup>2</sup>* preferably, terminates in a thumb or finger piece *q<sup>3</sup>* for convenience in manipulating it, as will hereafter appear.

*r* is the fulcrum-pin of the lever *q, q<sup>2</sup>*, and this fulcruming of the lever is at its angular portion *q<sup>4</sup>* and is on the shank *c* of the wrench, and so fulcrumed the bifurcated arm *q* of the lever straddles the slidable rod *f* at a point *s* between its hanging *n* on and the end of the spring *h* toward the movable jaw *b* and the other arm *q<sup>2</sup>* of the lever is outside of and projects from the shank *c*, and all normally in the position shown in Fig. 1. The rod *f* at the point *s* where the lever *q, q<sup>2</sup>* straddles it, as has been described, is provided on each side with a shoulder *t* in position for the tines of the bifurcated arm of the lever to bear and press thereagainst when the handle arm of the lever is pressed toward the wrench-handle or shank, and into the position shown in Fig. 3, and the handle or shank is cut away, as at *u*, to permit the lever arm to then come close up to the handle.

By moving the lever, as above described, the movable jaw is swung away from the stationary jaw, or in other words, the jaws of the wrench are opened and this swing of the movable jaw is against the action of the coiled spring *h* which, thereby is compressed from end to end, and so on releasing the pressure on the handle-lever *q, q<sup>2</sup>* by the reaction of the spring, the movable jaw is returned to its normal position, Fig. 1. Under the arrangement and location of the operating lever *q, q<sup>2</sup>* relative to the operating-rod *f*, and its surrounding spring *h*, and the movable jaw *b*, all as has been explained, it is apparent that the lever engages and acts on the operating rod at a point intermediate of its length, and which is between the spring *h* and jaw *b* and that the spring *h* is compressed by a pulling action thereon of the enlargement of the rod toward shoulder *i* of the handle casing.

It will be observed that the arrangement of operating lever *q, q<sup>2</sup>* as to its connection with the operating rod *f*, shown and described, is further advantageous in that the projecting arm *q<sup>2</sup>* of the lever is, as it were, more compactly situated relative to the wrench-handle and

so less liable to be injured or impaired in any way in the handling of the wrench for use.

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

- 5 A pipe-wrench constructed of a tubular-handle; a chambered-shank in continuation of and in one piece with said handle; a pipe gripping-jaw fixed at the outer end of said shank; a pipe-gripping jaw fulcrumed on said shank; a rod at one end-portion pivoted on said fulcrumed-jaw  
10 and at its other end-portion entered into said tubular-handle; a head rigidly fastened to said rod within and loosely fitting the bore of said handle; a coiled-spring con-

finer end to end between said head and a shoulder at one end of the tubular-handle, and a lever fulcrumed on the chambered-shank and at one end-portion straddling the  
15 said rod lying therewithin, and arranged for a bearing at its opposite sides on shoulders of said rod, all as particularly described and for operation as specified.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses. 20

JOSEPH E. RICHARDS.  
CHARLES W. WALKER.

Witnesses:

ALBERT W. BROWN,  
MARION E. BROWN.