No. 840,496. PATENTED JAN. 8, 1907.

J. M. JUSTEN.

WRENCH.

APPLICATION FILED OCT. 20, 1906.

Fig. 1.

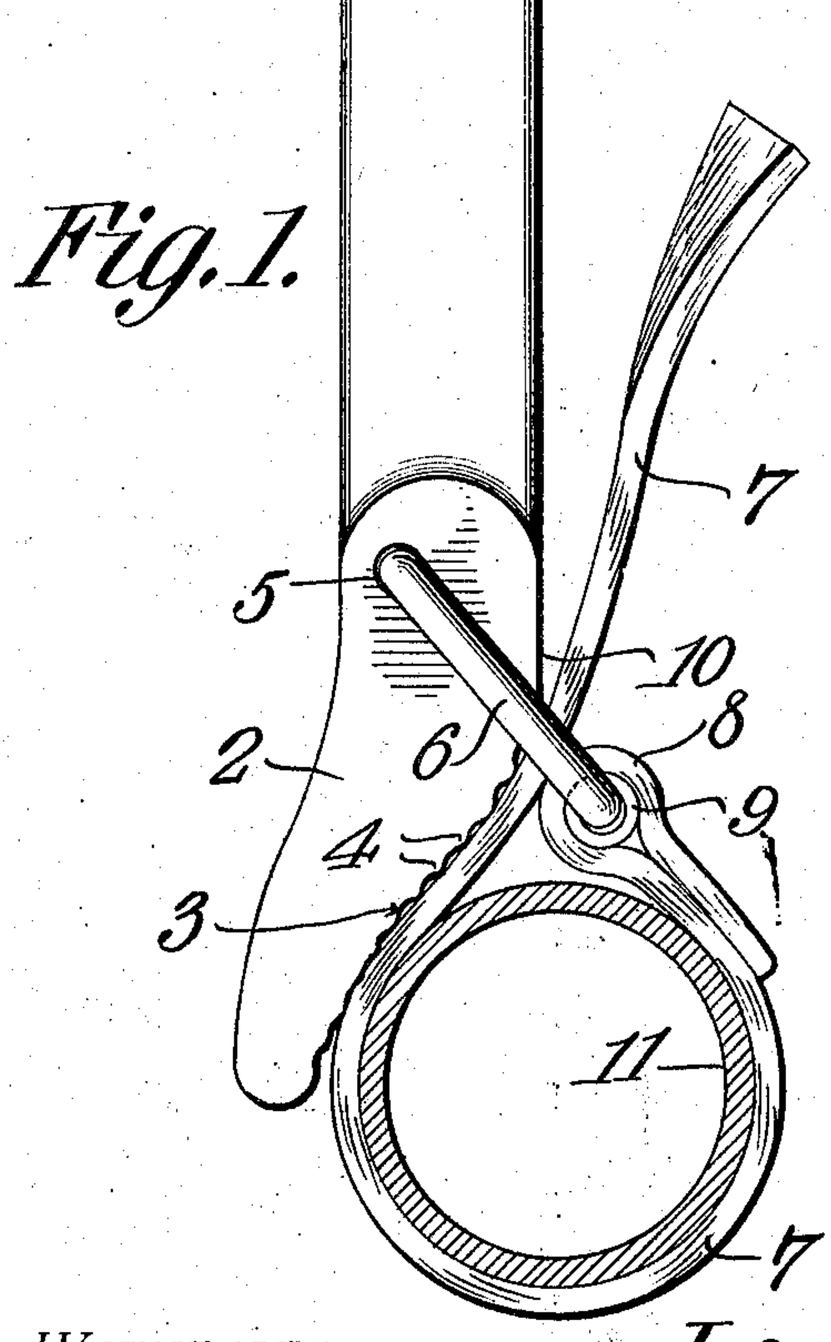


Fig. 3.

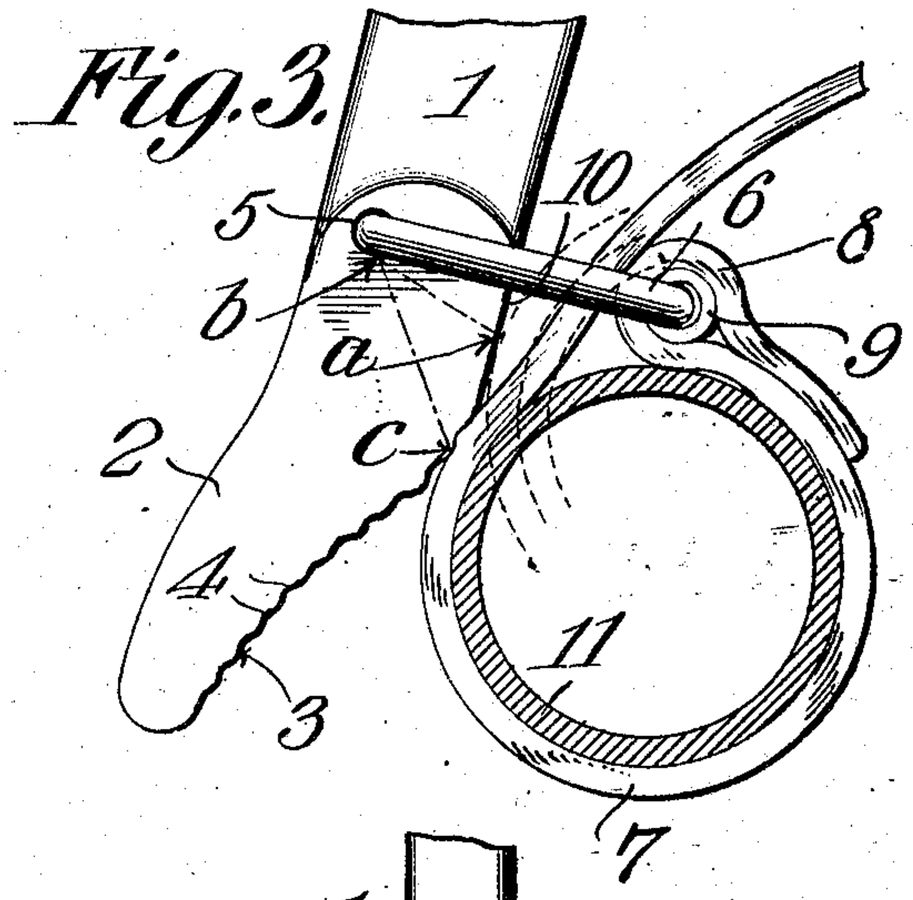
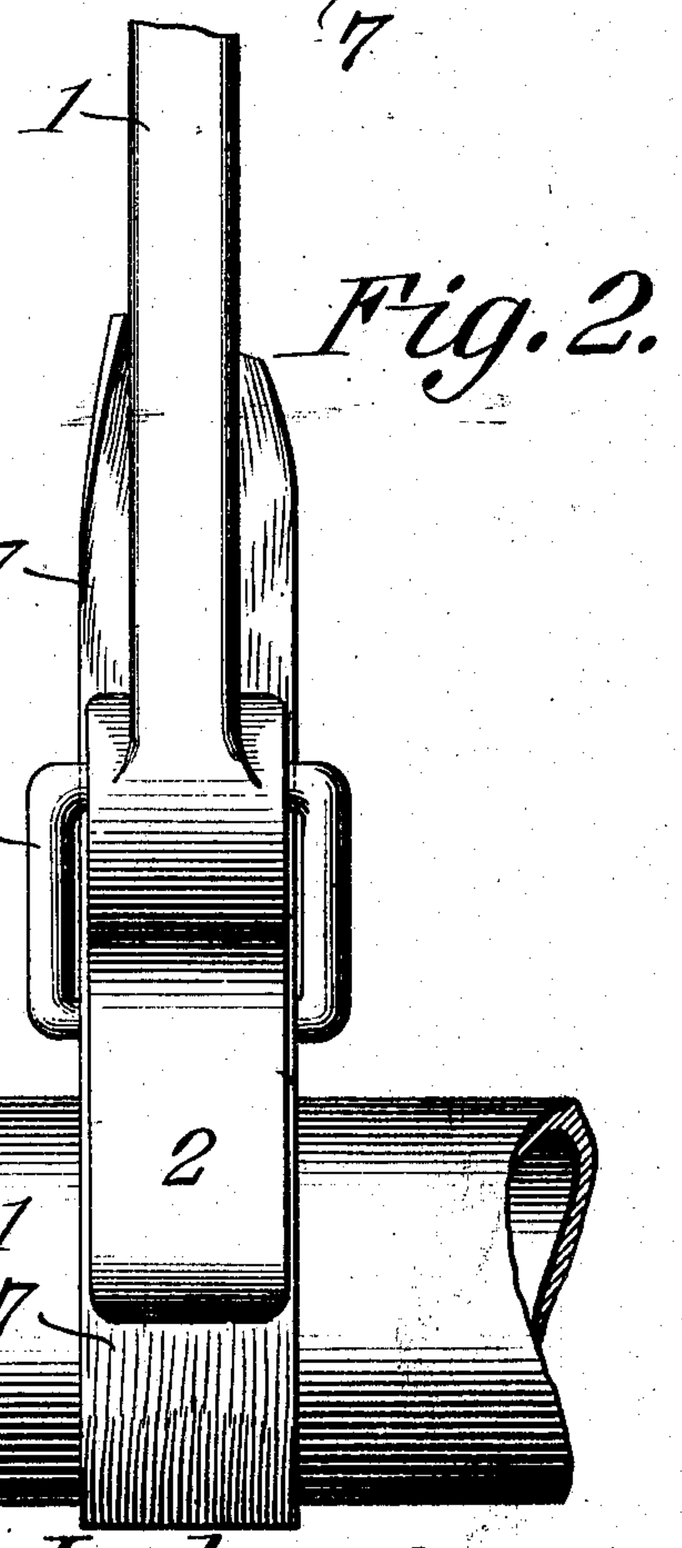


Fig. 2.



WITNESSES:

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JOSEPH M. JUSTEN, OF TOLEDO, OHIO, ASSIGNOR OF TWO-FIFTHS TO OTTO AUGSBACH, OF TOLEDO, OHIO.

WRENCH.

No. 840,496. Specification of Letters Patent. Patented Jan. 8, 1907.

Application filed October 20, 1906. Serial No. 339,868.

To all whom it may concern:

Be it known that I, JOSEPH M. JUSTEN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented a new and useful Wrench, of which the following is a specification.

This invention relates to a wrench of that type in which the gripping element is of a pliable nature—such, for instance, as a strap—so that nickel-plated, brass, or other highly-polished pipes can be gripped without danger of being marred by the wrench.

The invention has for one of its objects to provide a wrench of simple and substantial construction, composed of few parts, and inexpensive to manufacture.

A further object of the invention is to so arrange the parts of the wrench that a very powerful draft can be produced on the gripping-strap, whereby a pipe can be firmly gripped without danger of slipping.

With these objects in view and others, as will appear as the nature of the invention is better understood, the invention comprises the various novel features of construction and arrangement of parts, which will be more fully described hereinafter, and set forth with particularity in the appended claims.

In the accompanying drawings, which illustrate one of the embodiments of the invention, Figure 1 is a side elevation of the wrench shown in the act of gripping a pipe. Fig. 2 is a front view of the same. Fig. 3 is a fragmentary side elevation of the wrench illustrating the operation thereof to produce draft on the gripping-strap.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

Referring to the drawings, 1 designates the handle or lever of the wrench, which is in the nature of a straight bar having one end formed into the jaw 2. The lever and jaw may be cast or forged in one piece or made separately, as desired, and the jaw 2 extends laterally at a slight angle to the length of the handle. The gripping-face 3 of the jaw is slightly concaved and is provided with transversely-extending corrugations or serrations 4. Adjacent the inner end of the jaw 2 the same is provided with a transversely-extending opening 5, in which the rectangular link or shackle 6 is pivoted. The length of the link is considerably less than that of the jaw, so that the link will be maintained on one side of the latter and be prevented from swinging from one side to the other over the free end of the jaw. Attached to the outer end of the link is the flexible gripping member or strap 7, which may be of any suitable material—such, for instance, as a stout tape of woven fabric. The strap is attached to the link by passing one end through the opening of the latter and then stitching or riveting the end of the strap to the body of the same, thus forming an eye 8. To prevent wear of the strap at the eye, the latter is provided with a sleeve 9, loosely mounted on the link 6. The strap and jaw are of approximately the same width, and the opening of the link 6 is wide enough to permit the strap to be passed freely through the same. The arrangement of the jaw and link is such that the link is disposed at an angle to a line passing longitudinally through the handle 1, and the said angle is opposite to the angle formed between the gripping-face 3 of the jaw and the longitudinal center line of the handle. In gripping a pipe, therefore, the link 6 and face 3 of the jaw are disposed in tangential relation to the pipe at two different points. For this reason the pull on the link 6 will be directly in line with the length thereof and the strap will engage almost completely around the pipe, as will be understood from Fig. 1 of the drawings. The side of the jaw 2 contiguous with the inner end of the corrugated face 3 is flat, as at 10, and extends flush with one side of the handle 1.

In operation, the handle 1 is held by the operator in one hand in proper relation to a pipe to be gripped, and then the strap 7 is lapped around the pipe and the end of the strap passed between the jaw 2 and pipe 11 and then through the link 6. The wrench is held so that when the free end of the strap is pulled tight, so as to initially adjust the strap to the pipe, the pipe will be in the relative dotted-line position, as indicated in Fig. 3. The pipe and strap will be disposed against the flat surface 10 of the point *a*. The handle 1 is then manipulated so that the point of contact between the strap and jaw will gradually move along the flat wall 10 to the corrugated face 3. While the point of

contact is thus changing, a considerable draft is produced on the strap by reason of the change of leverage. This change in the leverage will be apparent by the comparison of the broken lines *a b* and *c d*, Fig. 3. By further manipulating the lever the strap is drawn tighter and tighter. By reason of the concavity of the corrugated face 3 of the jaw 2 a relatively large area of contact is provided between the jaw and strap, so that slipping is effectively prevented.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation, it is believed, will be readily understood by those skilled in the art to which the invention appertains, so that further description is deemed unnecessary.

What is claimed is—

1. A pipe-wrench comprising a handle, a jaw connected therewith having a corrugated gripping-face which is concaved in its longitudinal dimension and disposed with its length at an angle to the handle, a link pivoted on the handle, and a strap attached to the link and adapted to be gripped around the pipe by the said gripping-face.

2. A pipe-wrench comprising a handle, a jaw connected therewith having an inclined and concaved gripping-face disposed at an angle to the length of the handle, a link pivoted on the jaw and arranged to extend at an angle to the length of the handle and in the direction opposite to the said face when gripping a pipe, and a strap connected with the link and arranged to extend around a pipe and along the said gripping-face from the outer to the inner end thereof and thence through the link.

3. A pipe-wrench comprising a handle, a jaw connected therewith having a flat face at one end and a contiguous concaved face provided with corrugations, a link pivoted to the jaw at one side of the flat portion of the latter and disposed with its free end on the side of the jaw having the gripping-face, a strap connected to the free end of the link and arranged to be gripped by the flat and concaved faces of the jaw, and a sleeve on the link around which the strap extends.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

JOSEPH M. JUSTEN.

Witnesses:
M. C. FOGARTY,
JOHN C. VELKER