

No. 610,450.

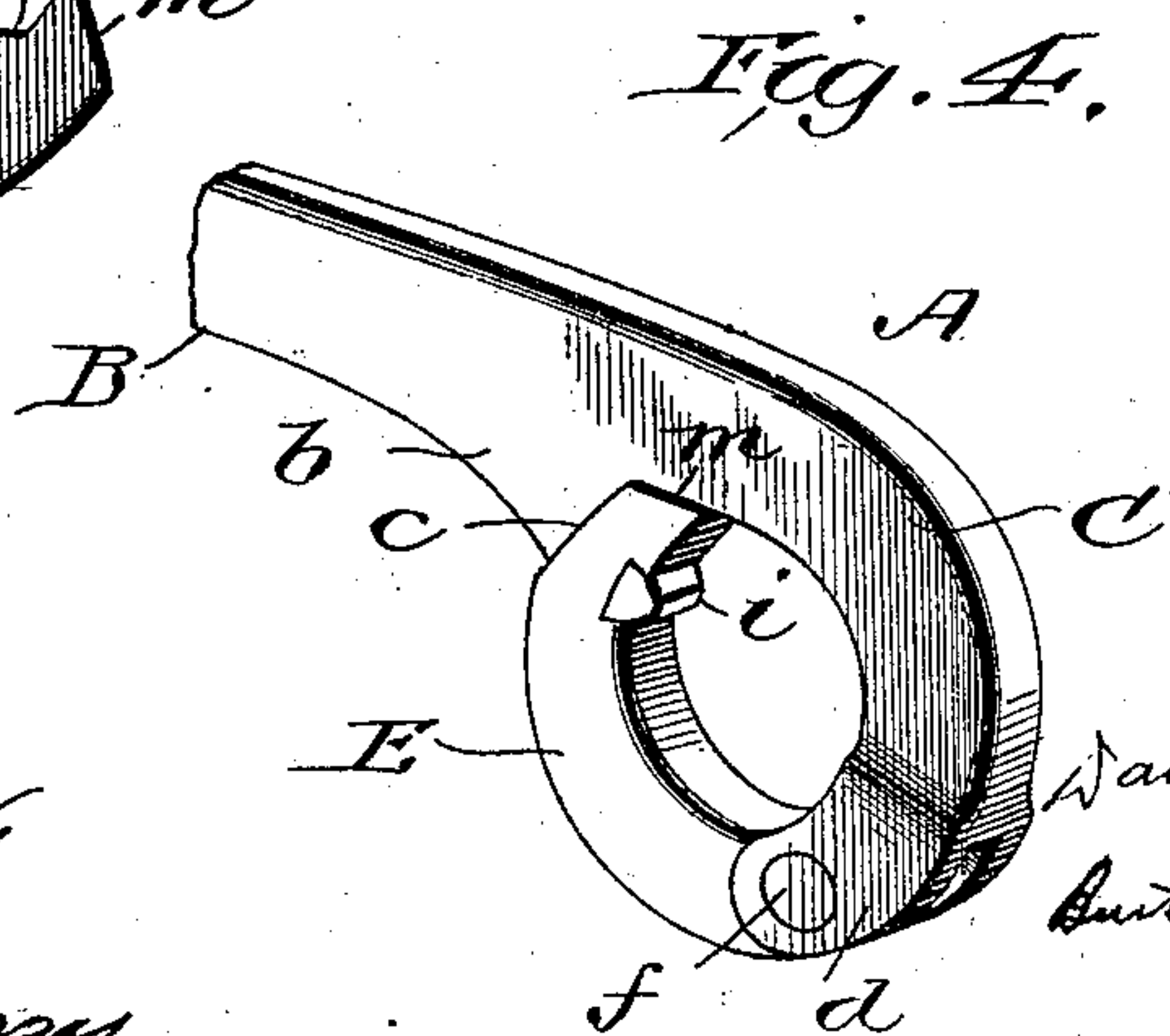
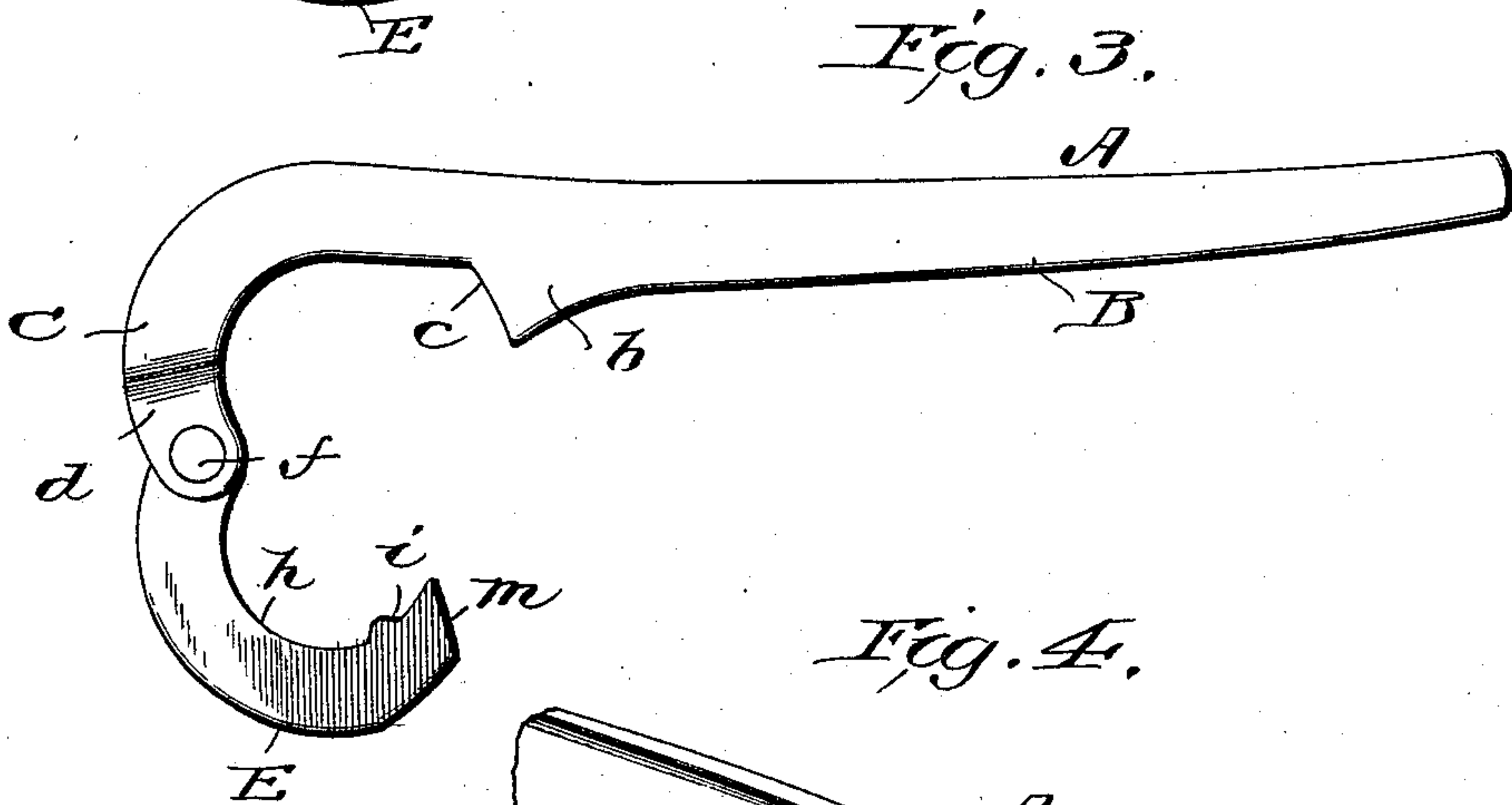
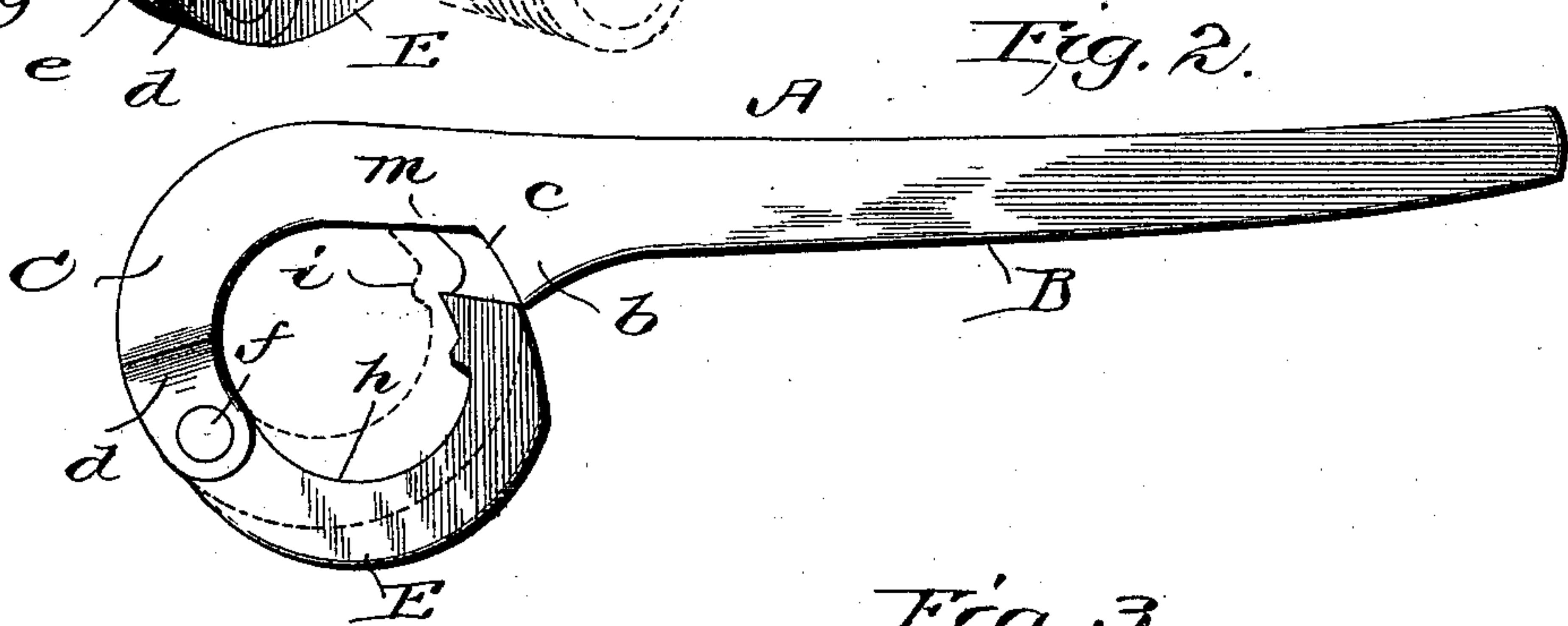
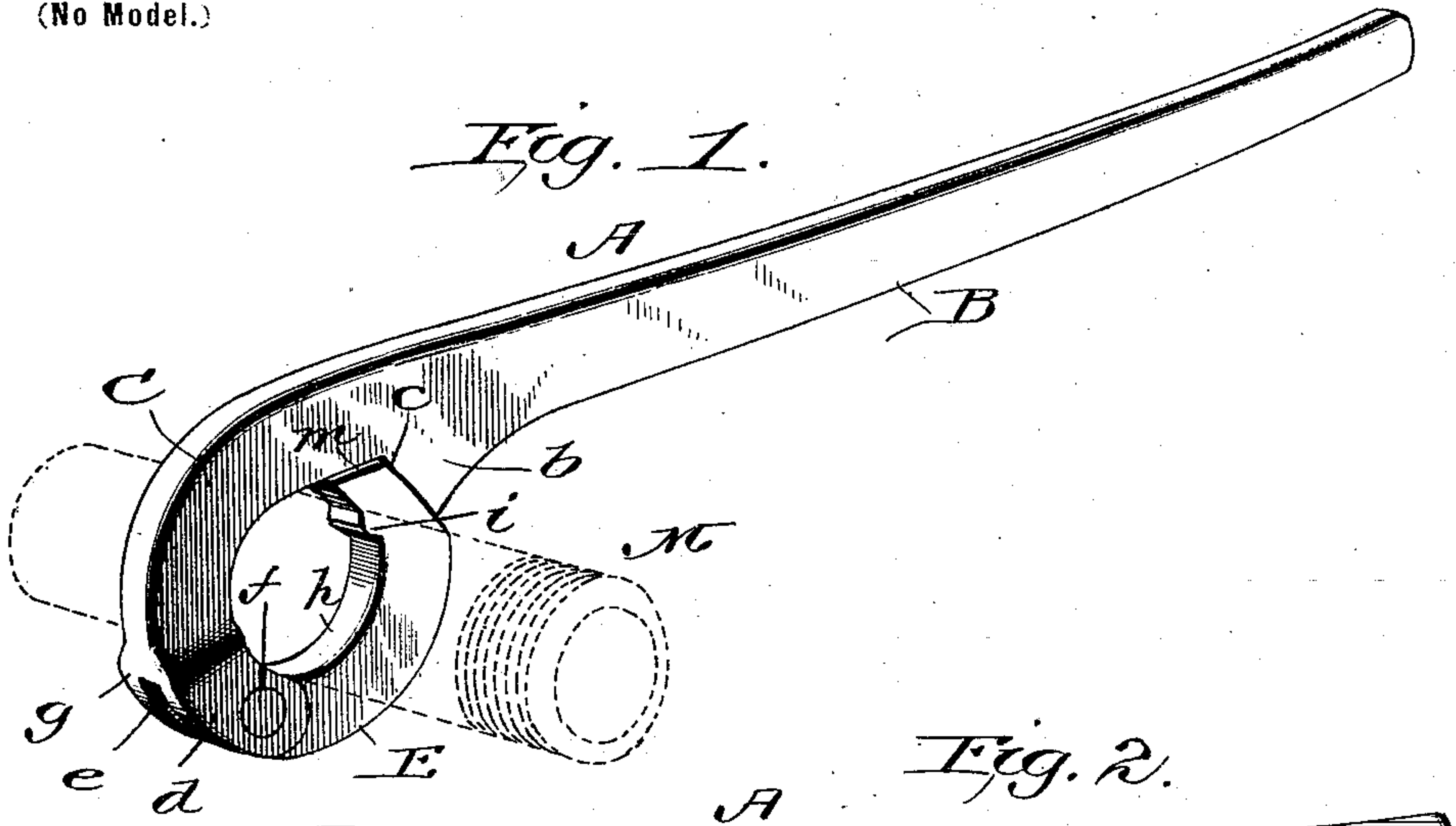
Patented Sept. 6, 1898.

D. C. JOHNSTON.

PIPE WRENCH.

(Application filed Jan. 26, 1898.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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PIPE-WRENCH.

SPECIFICATION forming part of Letters Patent No. 610,450, dated September 6, 1898.

Application filed January 26, 1898. Serial No. 668,084. (No model.)

To all whom it may concern:

Be it known that I, DAVID C. JOHNSTON, a citizen of the United States, residing at Marietta, in the county of Washington and State of Ohio, have invented certain new and useful Improvements in Pipe-Wrenches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to certain new and useful improvements in pipe-wrenches; and it consists, substantially, in such features of construction, arrangement, and combination of parts as will hereinafter be more particularly described.

The invention has for its object to provide a pipe-wrench comprising comparatively few parts and one also that can be easily and quickly applied and manipulated.

A further object of the invention is to provide a pipe-wrench of exceedingly simple construction and one possessing maximum strength and increased durability.

A still further object is cheapness in cost of manufacture, as well as increased effectiveness, as compared with many pipe-wrenches at present in use.

These objects I attain by the means illustrated in the accompanying drawings, in which—

Figure 1 is a view in perspective of my improved pipe-wrench, the said view indicating the wrench as applied to or fitted upon a short section of pipe. Fig. 2 is a side view of my improved wrench, showing in full lines the pivoted outer jaw as thrown out to maximum effective position and also showing in dotted lines the minimum extent to which the pivoted outer jaw is brought. Fig. 3 is a similar view with the pivoted outer jaw thrown open or outward to be placed around a pipe for the purpose of tightening or loosening the same upon a coupling or other pipe-section. Fig. 4 is a similar view to Fig. 1, minus the pipe-section, and showing the employment of an inserted tooth in the swinging or outer jaw.

My improved pipe-wrench conforms in all essential particulars to that class of wrenches

comprising a swinging or pivoted "outer jaw," and as constructed by me a wrench of given size or dimensions is capable of being operated with equal effect upon pipes of different standard sizes ranging from minimum to maximum in predetermined limits. Also with my improved construction the jaws of the wrench are made to grip the pipe or other object with greater force or strength the harder the wrench is turned, and thus there is no liability to slipping and consequent marring of the surface of the pipe or other object being operated upon.

Many other advantages of my improved wrench could be specifically set forth herein; but it is deemed unnecessary for the purpose of this specification to enumerate them all, and hence I will now proceed with a more detailed description of the construction and arrangement.

In the accompanying drawings, A represents my improved pipe-wrench as a whole, and B the handle portion thereof, which may be either rectangular, oval, or round in cross-section, as preferred. The said wrench is of course constructed of metal having the requisite strength for the purpose or uses to which the same is intended to be put, and formed with the said handle portion B, at the lower end thereof, is a curved jaw C, which for the purposes of the present description I term the "stationary" jaw. This said jaw and the handle portion are integral or in one piece, and the inner side or edge of the jaw is curved inward in conformity with the outer contour of the pipes in connection with which the wrench is used. Of course, if desired, the said curved stationary jaw C could be made separate from the handle and securely fastened thereto in any suitable manner; but for strength and convenience of manufacture I prefer to construct the two parts in one piece.

At about what may properly be called the point of demarcation or intersection of the curved jaw C with the handle B, or, in other words, at a point where the said jaw begins to assume its curved shape, the wrench is formed on its inner side or edge with a lateral projection or shoulder b, the inner surface c of which is beveled outwardly and up-

wardly at a suitable angle, as shown, thus constituting a bearing and engaging surface for said lateral projection or shoulder by which the latter is made to operate effectively in connection with the inner pivoted inner jaw, as will be described. The outer end or extremity of said curved stationary jaw C is increased somewhat in thickness at *d* and is divided or split at *e* to constitute a clip or yoke *g* for the reception of the inner end or extremity of the pivoted outer jaw E, the said outer jaw being held on a pin or pivot *f*, passing through the connecting ends of the two jaws, as shown. The inner side or edge *h* of the said pivoted outer jaw is curved in correspondence with the opposite or adjacent side of the stationary jaw C, and on said inner side of the jaw E, at or near the end or extremity of the jaw, is one or more teeth *i*, designed to take into or grip the pipe M or other object operated upon by the wrench. These teeth are preferably of very hard metal, such as steel, so as not to be easily broken or mashed, and in order that the same may not take into the pipe too deeply I prefer to slightly flatten them at the point or apex of the tooth. In some instances said teeth can be dispensed with and the gripping effect will be derived from friction alone. The outer surface of the pivoted or outer jaw E is preferably also curved or rounded for the sake of symmetry and appearance; but for a suitable distance from the free end of the jaw the said outer surface is formed or constructed with a straight or beveled portion or surface *m*, which is struck on substantially the same angle as the beveled under surface *c* of the projection or shoulder *b*—that is to say, relative to the inner side or edge of the stationary jaw C—when the said swinging or pivoted outer jaw E is closed, as in dotted lines Fig. 2. In this way whenever a pressure is exerted upon the wrench to turn a pipe the shoulder *b* bears with its under side upon the straight or beveled surface *m*, and in consequence thereof the harder the wrench is turned the tighter will be the gripping effect of the jaws upon the pipe.

If desired, the teeth *i* may be formed separately from the jaw E and inserted and secured in a recess *n* therefor formed in said jaw, and in this way when said teeth become worn or broken the same can be readily removed and replaced by others. (See Fig. 4.)

In wrenches of given sizes the straight or beveled portion *m* of the outer surface of the swinging or pivoted outer jaw may be said to be such as to render the wrench capable of effective use in connection with pipes of different standard sizes varying from minimum to maximum in predetermined limits. Thus as shown in dotted lines, Fig. 2, the swinging jaw E is in a position to grasp and effectively operate upon a pipe, say, of standard size minimum, while as shown in full lines, same figure, the said jaw E is thrown or carried

back to its farthest limit and in position to grasp and effectively operate upon a pipe of maximum size. These explanations, while not necessary to be followed in detail, will still be found to be useful in the manufacture of different sizes of wrenches.

From the construction and operation explained it will be understood that the resistances as well as the effective pressures or bearings between the parts of the wrench are received in direct lines and also that all strain is distributed throughout equally. In virtue of the form of connection between the stationary and pivoted jaws the latter is prevented from wobbling, and therefore the same can only work or swing in a plane coincident with the plane of the opposite side of the stationary jaw and handle portion of the wrench.

It will be understood that my invention is capable of a great many embodiments as to form and construction and also that in some instances it could be employed as a nut-wrench or as tongs for lifting pipes and the like. Therefore, without limiting myself to the precise details herein shown and described,

I claim—

1. A pipe-wrench comprising a handle portion terminating at its lower end in a stationary jaw adapted to partially embrace an object, an outer jaw pivoted to said stationary jaw at its outer end, and a shoulder on the stationary portion of the wrench adapted when the wrench is turned to engage said outer jaw and form a bearing therefor, substantially as described.

2. A pipe-wrench comprising a handle portion terminating at its lower end in a curved stationary jaw adapted to partially embrace an object, and having a lateral projection or shoulder the under side of which constitutes an engaging and bearing surface for the pivoted jaw, and a curved jaw pivoted to said stationary jaw at its outer end, and having on its outer edge a bearing-surface adapted to engage the said projection or shoulder when the wrench is turned, substantially as described.

3. A pipe-wrench comprising a handle portion terminating at its lower part in a curved stationary jaw adapted to partially embrace an object and having a projection or shoulder beveled outwardly and upwardly on its under side to constitute a bearing and engaging surface for the pivoted jaw, and a curved outer jaw pivoted to said stationary jaw at its outer end and also beveled on its outer edge or side and adapted to be engaged by the beveled surface of said shoulder, substantially as shown and in the manner described.

4. A pipe-wrench comprising a handle portion terminating at its lower part in a curved stationary jaw adapted to partially embrace an object and having at its outer end a clip or yoke, a lateral projection or shoulder beveled outwardly and upwardly at a suitable

angle to constitute a bearing and engaging
surface for the pivoted jaw, and a curved
outer jaw pivoted to said yoke in a plane co-
incident with the plane of the stationary jaw,
5 and also beveled on its outer side to be en-
gaged by the correspondingly-beveled surface
of said shoulder, substantially as described.

In testimony whereof I affix my signature
in presence of two witnesses.

DAVID C. JOHNSTON.

Witnesses:

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CHAS. H. NIXON.