B. L. WALKER.

PIPE AND NUT WRENCHES WITH CUTTERS.

No. 194,488. Patented Aug. 21, 1877.

Fig. 1.

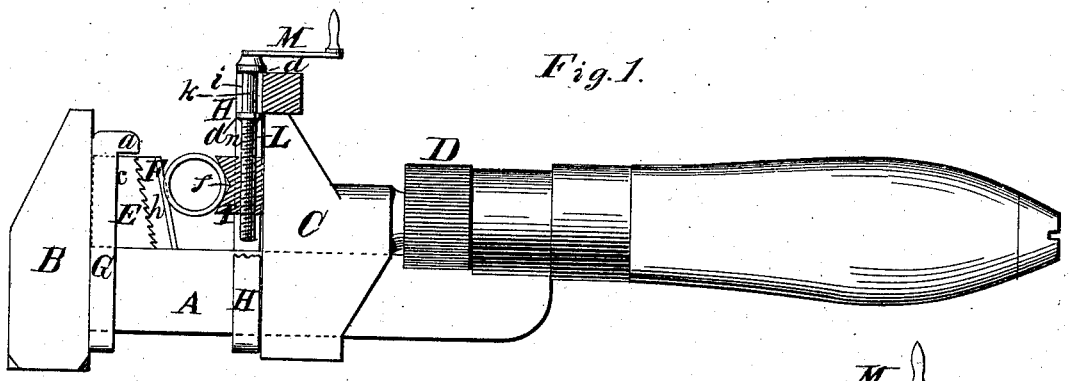


Fig. 3.

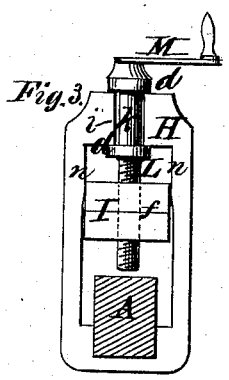


Fig. 2.

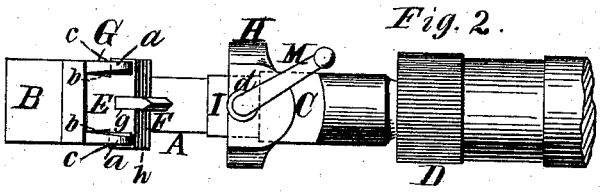


Fig. 4.

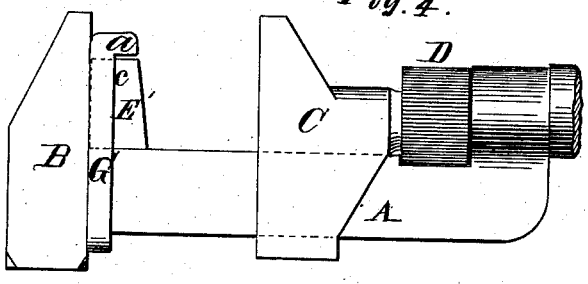
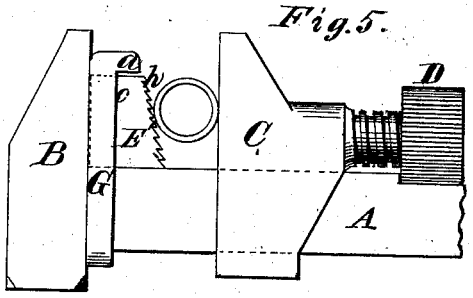


Fig. 5.



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IMPROVEMENT IN PIPE AND NUT WRENCHES WITH CUTTERS.

Specification forming part of Letters Patent No. **194,488**, dated August 21, 1877; application filed February 14, 1877.

To all whom it may concern:

Be it known that I, BENJAMIN L. WALKER, of Sing Sing, in the county of Westchester and State of New York, have invented an Improvement in Pipe-Wrench and Cutter Attachments for Screw-Wrenches; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

My invention has for its object the supply of pipe-wrench and pipe-cutter attachments which will operate efficiently when applied to any of the ordinary kinds of screw or monkey wrenches, when the movable jaw of such a wrench is operated only by the thumb-nut and screw, which slides such jaw with little force up toward the work between the jaws of the wrench, thus avoiding the necessity for a separate wrench or lever to work the thumb-nut with sufficient force to hold the work, or to perform the cutting. In accomplishing this object I secure important advantages. In the use of the attachment as a wrench I secure, without the use of a pawl and ratchet, many advantages of a ratchet-wrench; and in the use of the same as a pipe-cutter I avoid imperfections of other pipe-cutters and pipe-cutter attachments for wrenches.

My invention consists of a novel construction and combination of parts for accomplishing the objects hereinbefore mentioned, which construction and combination will be fully described, and a preliminary explanation is therefore deemed unnecessary.

Figure 1 in the accompanying drawings is a side view of a screw-wrench with my invention attached thereto and adjusted to perform the office of a pipe-cutter, a partial section of the attachment being shown. Fig. 2 is a face or front view of the same. Fig. 3 is a detail view of a part of the attachment, and a cross-section through the bar of the wrench. Figs. 4 and 5 are side views of a wrench to which my invention is applied, arranged for use as a nut-wrench in Fig. 4, and as a pipe-wrench in Fig. 5.

A represents the bar of the wrench; B, the fixed jaw; C, the movable jaw; and D, the thumb-nut of the same.

E, Figs. 1 and 2, is a sliding griping-block and cutter-carrier. F, Figs. 1 and 2, is a cutter, fitted into a groove or recess, *g*, Fig. 2, formed in the said cutter-block. G is the spring clamping-strap, which holds the sliding cutter and griping-block E, Figs. 1 and 2, or the sliding griping-blocks E′, Figs. 4 and 5, in proper relation with the bar A and the jaw B.

The said clamping-strap is, preferably, made of steel. It passes around the back of the bar A, is fitted to the back of said bar and two sides thereof, extends in front of said bar out nearly to the front part of the jaw B, and rests firmly upon the inner side of said jaw. Said strap is open at its front part, and its front extremities are provided with angular projections *a*. The inner sides of the strap, near the projections *a*, are beveled under, as shown at *b*, Fig. 2, and that part of the sliding griper-block and cutter-carrier E, Figs. 1 and 2, or griper-block E′, Figs. 4 and 5, which passes between the said inner sides of the said strap, is correspondingly dovetailed or beveled and the said block is so fitted to the said strap behind the projections *a* that when its dovetailed part is placed between the said inner sides of said strap the shoulders *c*, formed on opposite sides of the block, rest upon the said strap behind said projections *a*. The said block is, moreover, made a little shorter than the distance from the bar A to the projections *a*, so that it may in use, as hereinafter described, slide in and upon the said strap G. The strap G is made so that its beveled inner sides, near the projections *a*, spring into the dovetailed parts of the sliding griper-block E, which, with the projections *a*, hold the said block with sufficient firmness to prevent its shaking out when attached to the wrench and in use, but not so tightly as to prevent its being easily sprung by the fingers out from or into engagement with the said strap.

To the back and sides of the bar A is also fitted the rectangular screw-bearing and guide-frame H, for the sliding support or block I, Figs. 1, 2, and 3. Said frame has formed therein a semi-cylindrical groove, *i*, into which is fitted the cylindrical bearing *k* of the male feed-screw L, fitted into a female screw in the sliding support or block I, and having collars

d, which prevent its longitudinal movement. Said screw is provided with a small wrench, M, at its outer extremity. Said sliding support or block I is, moreover, formed with a transverse groove, *f*—preferably an angular groove, as shown in Figs. 1 and 5.

The inner side of the said frame is beveled under at *n*, Figs. 1 and 3, and the supporting-block I is slightly dovetailed, so that when drawn back toward the bearing *k* of the screw L it cannot easily drop out of the said frame.

The griper-block may be formed either with or without serrations *h* on its side opposite the shoulders *c*, and the said side is inclined to the jaw B, making the said griper-block wedge-shaped.

The parts are all easily removable from, and attachable to, the wrench, their adjustment and use being as follows:

For a nut-wrench the sliding block E′, without serrations, as shown in Fig. 4, is used, the wedge-like form of said block being exaggerated in the drawing. The spring clamping-strap G is first slipped over the back of the bar A, between the jaws of the wrench, and the dovetailed part of the griper-block E′ is slipped between the beveled inner sides *b* of said strap, behind the projections *a* on said strap, the spring-arms of said strap clasping and firmly holding the griper-block, but not so firmly as to prevent the latter being sprung out or into engagement with the spring-arms of the clamping-strap. When this is done the block E is held by the strap G, and the said block and strap mutually attach each other to the wrench. The wrench may now be applied to a nut, the nut entering between the jaw C and the block E′. The said jaw is then screwed up as tightly as possible against the nut to be turned by the thumb-nut D. Suppose the wrench applied to the nut in the position shown in Figs, 1, 4, and 5, and turned in the direction opposite to that of the movement of the hands of a watch. At first the griper-block will slide forward toward the projection *a* on the strap G, and by its wedge-like action will engage the nut with great firmness, taking up all the looseness of parts usual in screw-wrenches after they are a little worn, and enabling the wrench to turn off from their screws even old brass nuts, the corners of which are worn off, and which, in marine engines and other situations, are very difficult to remove with the ordinary screw-wrench unprovided with my tachment.

For a pipe-wrench the sliding block E, having the wedge-like form described, but serrated at *h*, as shown in Fig. 5, is employed, and adjusted on the wrench, as described. Its griping action is the same as that described for the unserrated block, and causes the serrations to engage the pipe-bolt or rod with a force more than commensurate with the strength of the wrench, so that the wrench will break before it will slip on the work. By working the handle of the wrench backward and forward, keeping the serrated block pressed against the pipe or rod to be turned, the sliding of the said block alternately causes the serrations *h* to engage and disengage the pipe or rod without the use of the thumb-nut D, and the wrench then becomes a substitute for a ratchet-wrench.

By forming the groove *g*, Fig. 2, in the griping-block and placing therein the cutter F, or by placing the cutter in a special sliding cutter-block between the beveled inner sides of the strap G, and placing on the bar A the frame H, with the sliding support I and screw L arranged in relation to the movable jaw C, as hereinbefore described, the attachment is adapted for a pipe-cutter. The pipe to be cut is placed in the groove *f* of the sliding support I. The thumb-nut is turned to bring the pipe lightly against the cutter F. The sliding action of the block E, when the wrench is turned, causes the cutter to engage the pipe, while the sliding support I prevents the pipe from entering between the jaws so far as to make the engagement of pipe too severe on the cutter. The wrench is then turned once around the pipe. The wrench is then turned slightly in the opposite direction, to allow the block E to slide toward the bar A, which relieves the pressure of the cutter F upon the pipe. The screw L is then turned a little to force the sliding support I a little farther toward the bar A, to enable the cutter F to penetrate a little deeper into the pipe, and so on till the pipe is cut off, the said screw thus performing the function of a feed-screw.

So effective is this arrangement that in a wrench capable of receiving between its jaws a nut three and three-eighths inches square, I am able to cut off a No. 9 wire and pipes ranging from this size up to two and three-fourths inches in diameter, and do the work rapidly, and without reduction of the bore of the pipe at the part where cut.

What I claim is—

1. In a wrench constructed with a fixed jaw, B, and a movable jaw, C, the combination, with the fixed jaw, of the wedge-shaped griper-block and the spring-strap G, having the turned-down ends *a*, and embracing the said block and the bar A, and holding the griper-block in the relation to the bar and fixed jaw, the said griper-block constructed to have a longitudinally-sliding movement on the strap G, as and for the purpose described.

2. The combination of the sliding and griping-cutter carrier E, carrying the cutter F, strap G, frame H, carrying the grooved sliding support I, feed-screw L, having bearing K, and winch M, all constructed and combined for operation substantially as described.

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