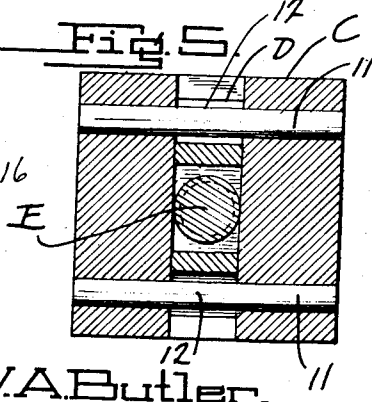
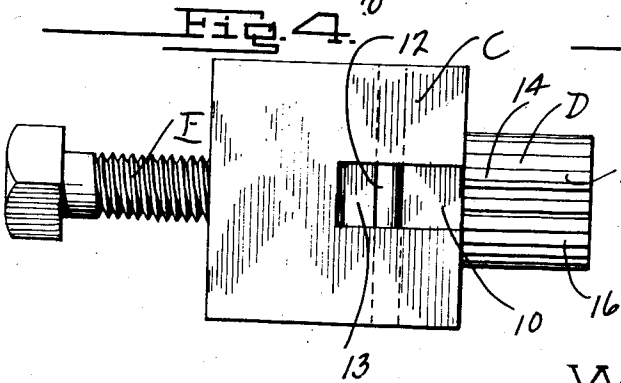
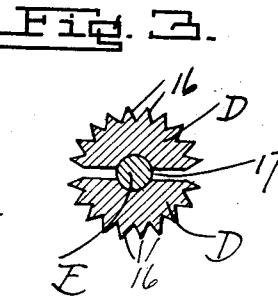
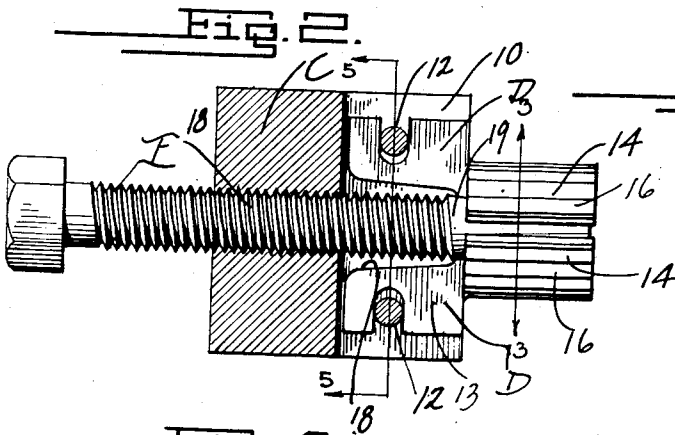
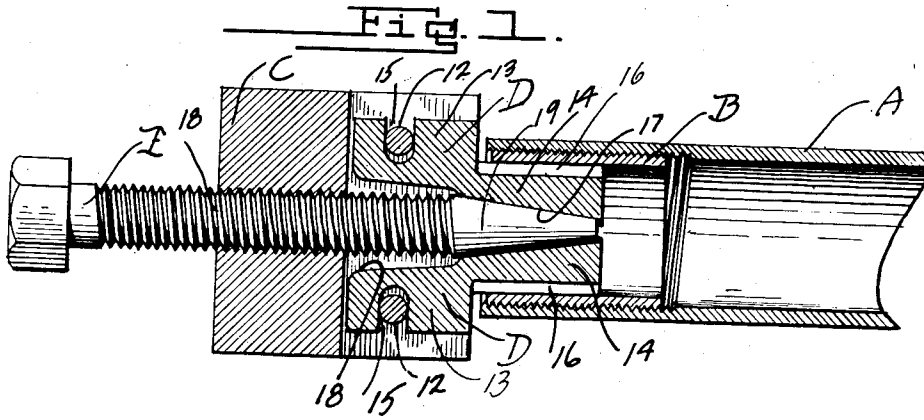


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INSIDE PIPE WRENCH.
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1,405,896.

Patented Feb. 7, 1922.



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INSIDE PIPE WRENCH.

1,405,896.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM A. BUTLER, a citizen of the United States, residing at Portsmouth, in the county of Norfolk and State of Virginia, have invented certain new and useful Improvements in Inside Pipe Wrenches, of which the following is a specification.

This invention relates to improvements in pipe wrenches. An important object of the invention is the provision of a pipe wrench which is capable of gripping a nut or section of a pipe screw threaded within a larger section of material, which is not capable of removal by an ordinary wrench.

A further object of the invention is the provision of a wrench of the above character, which can successfully perform the above operation without liability of damage to the parts being worked upon, such as destruction of screw threads and the like.

A further object of the invention is the provision of an inside pipe wrench simple in construction, efficient in use, and which can be adapted to effect the above outlined operation upon various sizes of pipes.

In the accompanying drawings, forming a part of the specification, and in which like references designate like parts throughout the same:

Figure 1 is a longitudinal cross sectional view of the inside pipe wrench in position to remove a small section of pipe entirely inserted within a larger section.

Figure 2 is a view partly in cross section showing the arrangement of parts within the inside pipe wrench.

Figure 3 is a cross section taken on the line 3—3 of Figure 2.

Figure 4 is a plan view of the inside pipe wrench.

Figure 5 is a cross sectional view taken on the line 5—5 of Figure 2.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the letter A designates a section of pipe having screw threaded therein a smaller section B and which is inaccessible to an ordinary wrench. A wrench casing or head C is provided having jaws D detachably, slidably and pivotally mounted therein, and which are capable of expansion by the bolt E.

The casing or head C is preferably polygonal shaped in cross section and has a longitudinal recess 10 therein upon one of

its surfaces and which extends for substantially one half the depth of the body. Pins 11 are detachably mounted within the casing or head C and so situated therein as to extend laterally through the recess 10 to leave portions 12 thereof exposed within the recess 10.

The jaws D are preferably two in number and each include a shank 13 adapted to fit within the recess 10 of the casing or head C, and a projecting portion 14. The shank 13 is of slightly smaller width than the width of the notch 10 and is provided with a recess 15 adapted to engage the portion 12 of the pin 11 for pivotal and sliding movement thereon. The portion 14 projecting from a face of the casing or head C is preferably integral with the shank 13 and is substantially semi-cylindrical in lateral cross section, and is provided exteriorly and longitudinally with corrugations or teeth 16. The portions 14 are provided with internal smooth tapering faces 17 converging toward the extremity thereof 14, while the shanks 13 are provided with much wider internal faces than portions 14.

The bolt E is preferably mounted in casing or head C as by screw threads 18 and is provided upon its forward end with a tapering portion 19 of the same pitch as the internal faces 17 of portions 14 upon the jaws D.

In operation, the jaws D are inserted into the casing or head C upon pins 11 and the projecting portions 14 thereof are inserted into a section of pipe A in order to abut against the internal face of a section B which it is desired to remove. Upon rotation of the bolt E within casing or head C the tapered portion 19 is moved forward into contact with the faces 17 of the jaws D and since the jaws D are pivotally and slidably mounted upon pins 11, the portions 14 will expand within the pipe B until the teeth 16 thereof bite into the internal face of the pipe B. An ordinary monkey wrench can now be used upon the casing or head C for rotation thereof and the pipe B, since it is securely in the grip of the jaws can easily be removed from within the pipe A. By slidably and pivotally mounting the jaws D on the pins 11, the active faces of the jaws can be held in parallelism during adjustment, thereby insuring full engagement of said active faces with the work. The mounting of the jaws D also permits a much wider

range of adjustment to be had than if the jaws were simply pivotally mounted upon the pins. It is apparent that this method of removing the pipe presents a distinct improvement over the common method now in use, which method is to cut out the section B with a chisel, which not only consumes considerable time, but very often results in battered screw threads upon the section which it might be desired to use again.

The tool can be made in sets covering various sizes, since numerous jaws can accompany one casing adapted to fit various sizes of openings.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same, and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims:

I claim:

1. In a wrench for removing sections of pipes not accessible to an ordinary wrench, the combination with a wrench head, jaws pivotally and slidably mounted within said head, and having portions projecting from said head provided with teeth, and means for rocking and sliding the jaws whereby the teeth upon said jaws will engage the inner surface of the work.

2. In a wrench, the combination of a head, jaws pivotally and slidably mounted within said head and having portions projecting

from said casing provided with teeth, and a screw threaded bolt adapted to slidably engage said pivoted and sliding jaws to expand the projecting portion thereof, whereby the teeth upon said jaws will be forced into engagement with the inner face of the work.

3. In an inside pipe wrench, the combination of a wrench head, jaws pivotally and slidably mounted within said head having projections thereon extending from the casing, said projections provided exteriorly with teeth and interiorly with tapered faces, and a bolt screw threaded within said head having a conical point thereon, said conical point adapted to slidably engage the tapered faces of said jaws to expand them upon rotation of the bolt within the head.

4. In a wrench, the combination of a polygonal head having a recess formed in the inner face thereof, pins mounted within said head extending laterally through said recess, jaws detachably and pivotally mounted upon the portions of said pins within the recess of the head having portions thereof projecting from the inner end of the head, said projecting portions provided externally with teeth and internally with tapered faces, a bolt threaded within said head having a conical point thereon adapted upon rotation to ride upon the tapered faces of the jaws to force the teeth thereof into engagement with the inner face of the work.

WILLIAM A. BUTLER.