No. 649,259. Patented May 8, 1900.

F. POWELL & S. J. GALLAGHER.

PIPE WRENCH.

(Application filed Feb. 24, 1900.)

(No Model.)

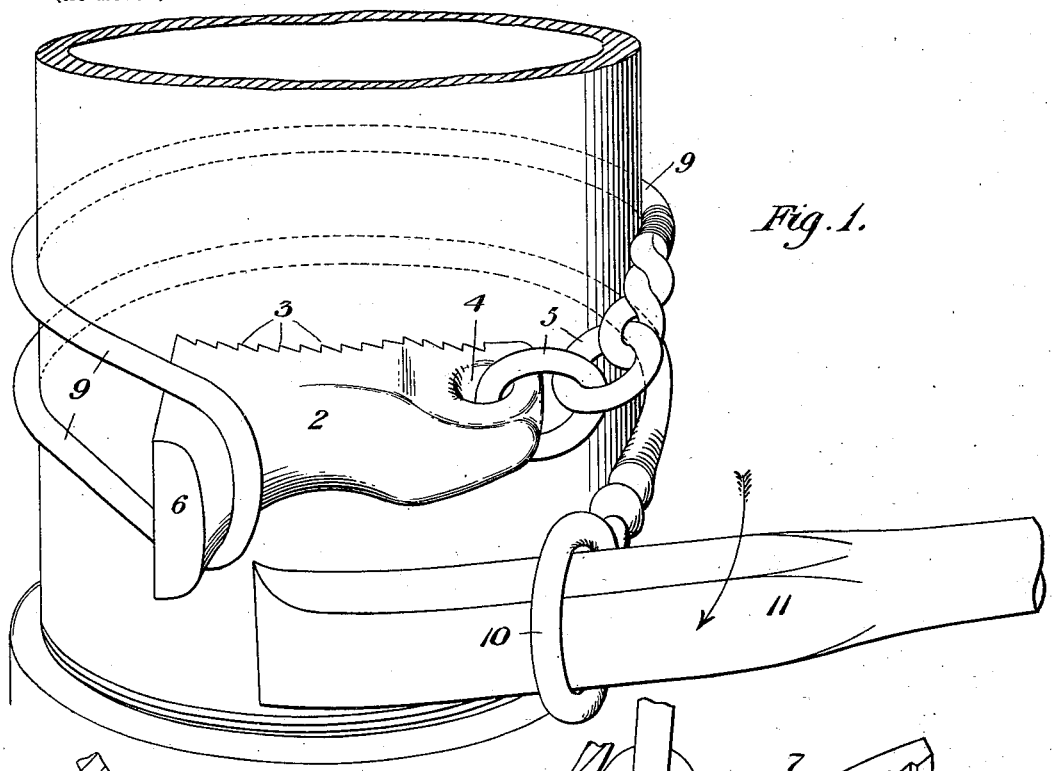


Fig. 1.

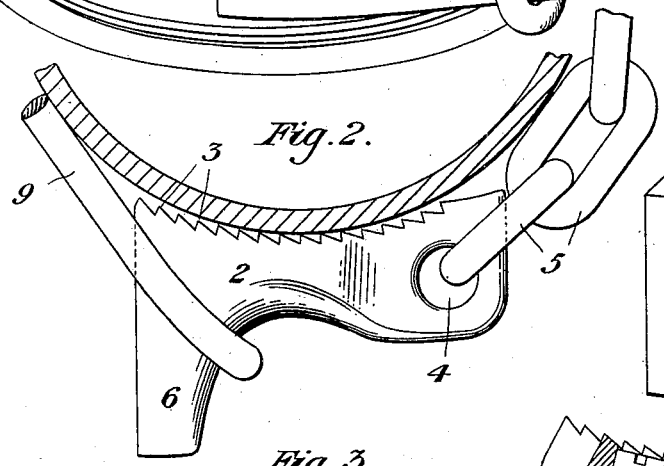


Fig. 2.

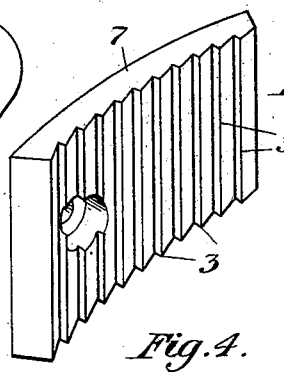
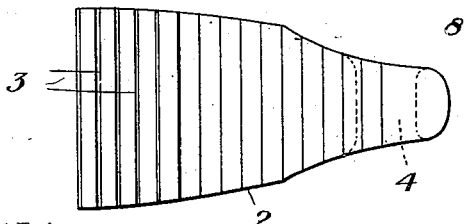
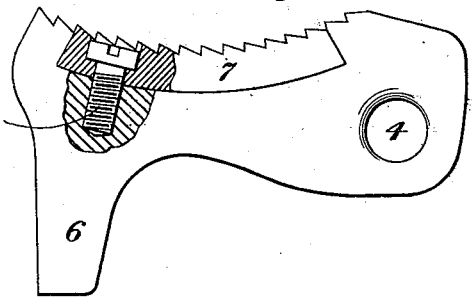


Fig. 5.

Fig. 4.

Fig. 3.





Witnesses:

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UNITED STATES PATENT OFFICE.

FRANCIS POWELL AND SAMUEL J. GALLAGHER, OF RURAL VALLEY, PENNSYLVANIA, ASSIGNORS OF ONE-THIRD TO JAMES EARHART, OF SAME PLACE.

PIPE-WRENCH.

SPECIFICATION forming part of Letters Patent No. 649,259, dated May 8, 1900.

Application filed February 24, 1900. Serial No. 6,399. (No model.)

To all whom it may concern:

Be it known that we, FRANCIS POWELL and SAMUEL J. GALLAGHER, citizens of the United States, residing at Rural Valley, in the county of Armstrong and State of Pennsylvania, have invented certain new and useful Improvements in Devices for Gripping Cylindrical Surfaces, of which the following is a specification, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a perspective view illustrating the application of our invention to the operation of screwing a pipe into a coupling. Fig. 2 is a partial plan view of Fig. 1, the pipe being shown in sections. Fig. 3 is an inner face view of the gripping device. Fig. 4 is a plan view of the device, illustrating a construction wherein a removable toothed segment is employed. Fig. 5 is a perspective detail of the toothed segment.

Our invention relates to means for gripping cylindrical surfaces in the manner of pipe-tongs for imparting rotatory movement; and it consists in a toothed shoe adapted to fit against and engage the curved surface of the pipe and provided with means for attaching it to and exerting operative pressure upon the pipe, as shall hereinafter be described.

In the operation of coupling or uncoupling oil-well or other casing a common expedient consists in the use of hemp rope wound several times around the casing to give sufficient friction and looped around a bar which, used as a lever, will exert sufficient frictional force through the rope to turn the casing. The rope frequently slips, however, resulting in accident, loss of time, &c., and is generally unsatisfactory. Our invention is designed to be used in much the same manner, but is adapted to positively engage the metal of the casing, so as to insure positive action and entirely prevent slipping. Also in the use of the ordinary pipe-tongs commonly employed the pressure on the pipe or casing at the point of engagement is so great as to cut into and mutilate or bend the metal, and our device by distributing the pressure over a larger area effectively prevents such action.

Referring now to the drawings, 2 represents a shoe of metal, preferably chilled or tool steel, the inner face of which is longitudinally curved to approximately the same degree as that of the pipe or casing to which it is to be applied, although in practice we prefer to make the radius of the curvature slightly longer than that of the largest casing to which it is to be applied. The inner face of the shoe is provided with a series of transverse teeth 3, extending laterally across from side to side and so directed that they will "bite" into the face of the casing, although it will be understood that any other suitable equivalent of these teeth may be employed, so as to provide an efficient frictional contact—as, for instance, by gouged-up projections in the manner of a bastard file or otherwise. At the rear end the shoe is reinforced and narrowed and provided with an eye 4, which may be left open for the purpose of tying a rope, cable, or wire, or one or more links 5 may be permanently coupled with it for the same purpose. At the forward end the shoe projects outwardly in the form of a horn 6, the back of which, and likewise the outer body of the shoe, is rounded and hollowed out to provide a good holding-surface for the strain rope or cable. In the form illustrated in Fig. 4 the toothed segment 7 is inserted in the face of the shoe by a dovetail or other suitable joint, held in position by a screw or pin 8, thus permitting of resharpening of the teeth or of insertion of a new segment in case of wear, while retaining the original body portion of the shoe.

In operation the shoe is attached to a flexible connection, as a rope or cable 9, either by the links or through the eye 4, the rope being sufficiently long to pass well around the casing and provided at the other end with an open loop 10. The shoe is placed against the face of the casing, the rope is passed around the casing, hooked over the horn, and brought back, and a bar 11 is passed through the loop 10, bearing against the casing and drawing the rope tight. Upon sufficient pressure being brought to bear on the outer end of the bar by one or more men the casing will be turned down tight by reason of the holding action of the teeth of the shoe. When it is desired to unscrew the casing, the

device is applied in the same manner in a reverse direction, when it will operate equally well.

The advantage of our invention will be appreciated by those accustomed to the manipulation of casing, pipes, tubing, &c., in the field or elsewhere, especially of large diameter, where it is inconvenient to apply tongs or they are unavailable, and, in fact, the results in actual practice have demonstrated its advantage and superiority to other usual devices for the same purpose. It is very simple and easy to operate, cheap to make, and not liable to get out of order, while being extremely light and portable and immediately available for use.

What we claim, and desire to secure by Letters Patent, is—

1. A wrenching device for casing consisting of a shoe having a toothed inner face, an outwardly-projecting horn at one end, and a flexible cable or the like attached to the other end of the shoe and provided with a loop at its extremity.

2. A wrenching device for casing consisting of a shoe having a removable toothed segment on its inner face, an outwardly-projecting horn at one end and a flexible cable or the like attached to the other end of the shoe and provided with a connecting device at its extremity, substantially as set forth.

3. The combination in a device for gripping cylindrical surfaces, of a shoe having a toothed inner face, an outwardly-projecting horn at one end, a flexible cable or the like attached to the other end and provided with a connecting device at its extremity and a lever-bar adapted to engage with the connecting device, substantially as set forth.

4. The combination, with a casing, of a shoe provided with a concave toothed inner face, a projecting horn at one end, a flexible connection attached to the other end, passed around the casing, over the horn, reversed, and provided with a loop at its extremity in engagement with a lever-bar.

In testimony whereof we affix our signatures in presence of two witnesses.

FRANCIS POWELL.
SAMUEL J. GALLAGHER.

Witnesses:
J. C. STEWART,
HENRY TROLLINGER.