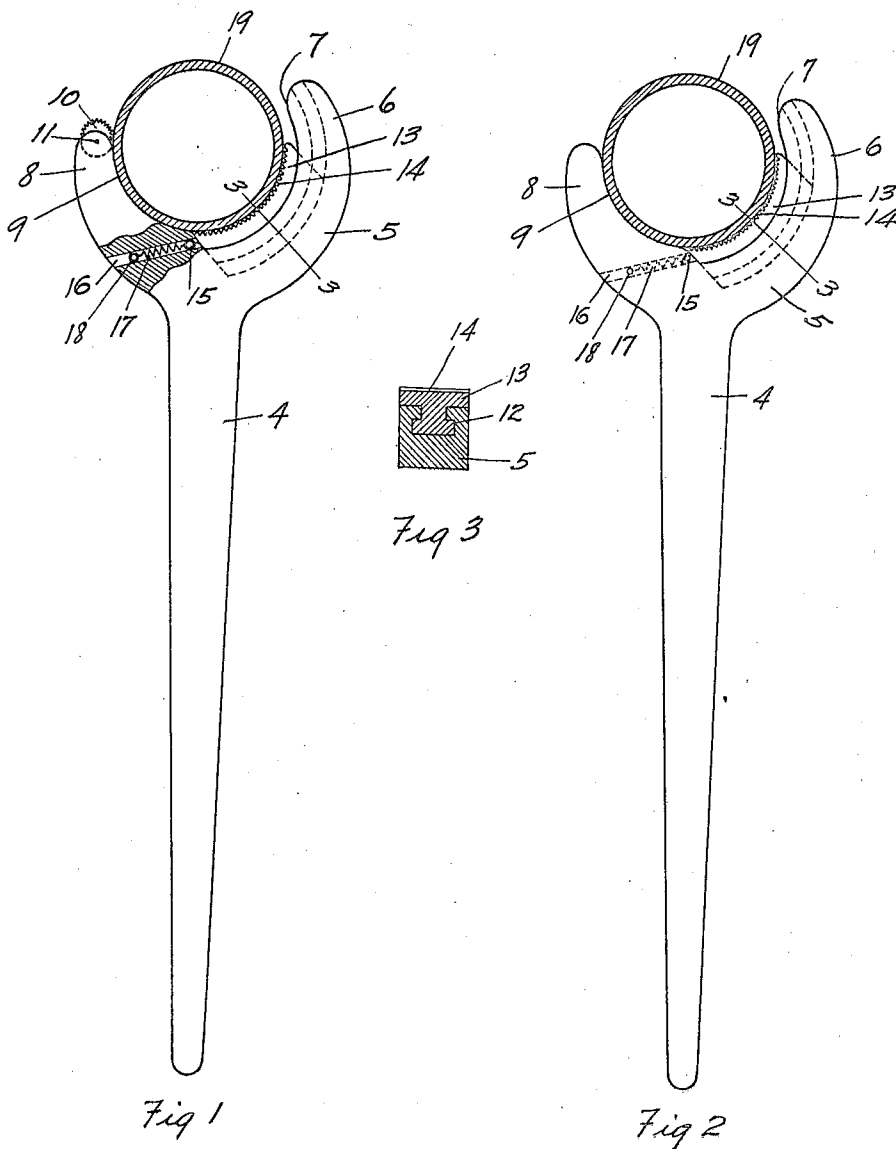


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S. SORENSEN.
PIPE WRENCH.
FILED MAR. 9, 1922.

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Sam Sorensen, Inventor

Jesse R. Stone

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UNITED STATES PATENT OFFICE.

SAM SORENSEN, OF HOUSTON, TEXAS.

PIPE WRENCH.

Application filed March 9, 1922. Serial No. 542,366.

To all whom it may concern:

Be it known that I, SAM SORENSEN, a citizen of the United States, residing at Houston, Harris County, Texas, have invented a certain new and useful Improvement in Pipe Wrenches, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in pipe wrenches and is especially adapted to engage the larger sizes of pipe to be used in oil field work.

An object of my invention is to provide a pipe wrench which may be applied to and detached from the pipe, with a minimum amount of manipulation.

Another object is to provide a pipe wrench which may be operated with the minimum amount of labor, and which is adapted to operate in trenches and other similar places wherein it is desirable to have a wrench which will not need to be manually locked to the pipe.

Another object is to provide a wrench which may be used in either right or left hand position, by simply reversing the wrench upon the pipe.

Other objects and advantages of my improved type of wrench will more clearly appear from the more detailed description which follows:

Referring to the drawing herewith, Fig. 1 is a top plan or elevation of my wrench, having certain parts broken away for greater clearness, and showing the pipe in transverse section. Fig. 2 is a similar view of a different embodiment of my invention, the wrench being entirely in elevation, and Fig. 3 is a transverse section on the line 3—3 of either of Figs. 1 or 2. Like numerals of reference are applied to like parts in the different views as far as is possible.

My wrench is an exceedingly simple tool and comprises a handle 4, formed integrally with a forked head, 5. This head is approximately crescent shaped, having a prong, 6, provided with an arcuate inner face 7 to receive the pipe. The other prong 8 of the wrench head is similar in shape to the prong 6 and has an arcuate inner face 9 for contact with the pipe. At the forward end of the prong 8 of the wrench head I recess or slot the said prong to provide a mounting for a cam-shaped wheel or jaw

10, this jaw being rotatable upon a pin 11, extending through the slot and the cam. This cam is provided with serrated teeth around the outer periphery thereof.

The inner face of the jaw 6 is provided with a dovetailed slot 12 therein as shown particularly in Fig. 3. This slot provides a track in which a pipe-engaging slip 13 is adapted to fit. The slot 12 is deeper toward the inner end than at the outer end, and the jaw 13 is slidable in the slot so that as it moves outwardly therein it will be advanced forwardly from the face 7 of the jaw 6 in an obvious manner. The slip 13 is toothed on its forward face at 14 and has on its inner end an eyelet 15 secured thereto. This eyelet is adapted to project into a tubular opening 16 in the head of the wrench as is particularly shown in Fig. 1. To this eyelet I contemplate attaching a spiral spring 17, the opposite end of which is secured at 18 to the wrench head. This spring is under tension and serves to hold the slip 13 resiliently in position against the lower shoulder of the slot.

In the operation of this form of wrench the cam-shaped jaw 10 will be thrown manually outwardly away from the pipe-receiving recess and the spring will tend to hold the slip 13 in its innermost position. In this arrangement, the wrench will be thrust forwardly against a pipe such as is shown at 19. By then throwing the handle of the wrench toward the left, in a clockwise movement thereof, the slip 13 will be moved outwardly toward the end of the jaw, and in this movement it will be forced inwardly against the pipe. The cam-shaped jaw 10 will also contact with the pipe and as the wrench head is rotated, the cam will be drawn inwardly toward the pipe, and will also serve to seize the pipe from that side. It will be noted that the two jaws or forks of the head 6 and 8 extend somewhat over half way around the pipe so that when the slip is advanced into gripping position, the action of the slip and the cam-shaped jaw will be to securely grip the pipe and prevent its removal from the wrench, and as the wrench is rotated, will tighten securely on the pipe and serve to rotate the pipe.

In the modification shown in Fig. 2 the head 5 of the wrench is similar in construction to that shown in Fig. 1 with the exception of the fact that the cam-shaped jaw 10 is omitted. It has been found that when the

head of the wrench has been made in such manner as to extend past the center of the pipe on each side and the slip 13 is advanced into gripping position by the rotation of the wrench, the pipe will be firmly seized and rotated without the necessity of the assistance of the cam-shaped jaw. The jaw is therefore used only as a precautionary provision to assist the slip in holding the pipe firmly under difficult circumstances. I do not wish it understood therefore that this wrench can not be used without the cam-shaped jaw. It is of value however in the use of the wrench under certain conditions, and constitutes a useful part of my invention.

The advantages of this type of wrench will be obvious to one skilled in the art. No manipulation of this wrench is necessary. The wrench may be thrust forwardly against the pipe and when held with slight pressure in that position it may be rotated so as to cause the slip 13 and the jaw 10 to firmly grip the pipe; after which the said pipe may be rotated. If it is necessary to rotate the pipe in the opposite direction the position of the wrench may be reversed and in that position the rotation of the wrench in the opposite direction will seize the pipe and cause it to be rotated with the wrench. This type of tool will be especially advantageous in screwing up pipe in trenches, as is sometimes necessary in laying pipe line. The wrench may be extended downwardly into the trench against the pipe, and without further manipulation will rotate the pipe as desired.

Having thus described my invention, what I claim is new and desire to protect by Letters Patent is:

1. In a pipe wrench, a handle, an integral forked head thereon having an arcuate pipe-

receiving recess therein, said recess enclosing an arc greater than 180 degrees of a circle, a slip slidable in a slot in the inner face of one fork of said head, said slot extending to the forward end of the jaw and being of shallowest depth at said forward end, and means to retain said slip resiliently in its rearward position.

2. In a pipe wrench, a forked head having an inner pipe receiving recess therein, one of the forks of said head having on its inner face a dovetailed slot extending from an intermediate point to the forward end of said jaw and being of shallowest depth toward the said forward end, and a toothed pipe engaging slip slidable in said slot.

3. In a pipe wrench, a forked head thereon having an inner pipe engaging recess extending more than half around the circumference of the pipe to be gripped, a toothed jaw slidable in a slot in one of the forks of said head, said slot being eccentric to said recess whereby the sliding of said jaw therein will cause it to be forced toward the pipe.

4. In a pipe wrench, a handle, a forked head thereon having a pipe engaging recess therein, a pipe-engaging slip slidable in one of the forks of said head, and a cam-shaped jaw on the forward end of the other fork thereof in the manner described.

5. In a pipe wrench, a handle, an arcuate head integral therewith, a toothed pipe engaging slip slidable in a slot decreasing in depth forwardly in one fork of said head, a spring to hold said slip resiliently to the rear of said slot and additional means on the other fork of said head to assist in gripping the pipe.

In testimony whereof, I hereunto affix my signature this the 4th day of March, A. D. 1922.

SAM SORENSEN.