Sept. 30, 1930. J. F. HEER 1,777,084

PIPE TIGHTENING TOOL

Filed Aug. 15, 1925

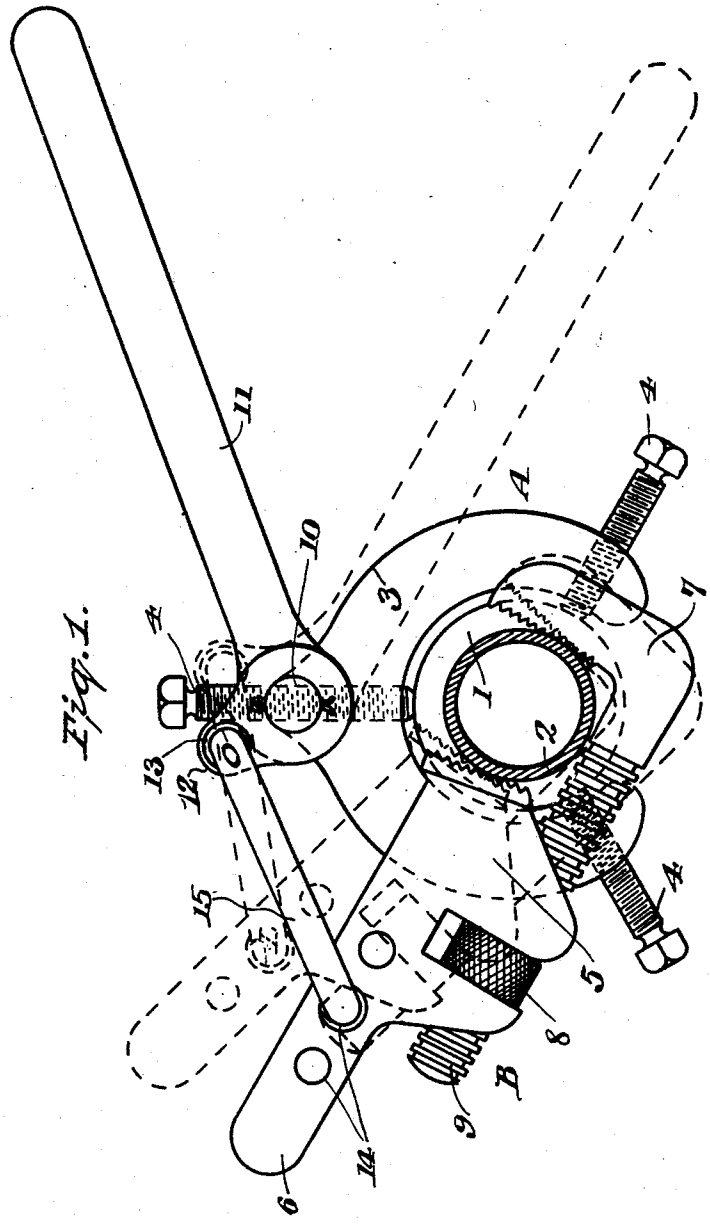


Fig. 1.

WITNESSES:

Joel C. Decker.

Earl B. Amos.

INVENTOR

Joseph F. Heer,

BY Mark M. Secker

ATTORNEY.

Patented Sept. 30, 1930 1,777,084

UNITED STATES PATENT OFFICE

JOSEPH F. HEER, OF WASHINGTON, PENNSYLVANIA, ASSIGNOR TO THE RIDGE TOOL COMPANY, OF NORTH RIDGEVILLE, OHIO, A CORPORATION OF OHIO

PIPE-TIGHTENING TOOL

Application filed August 15, 1925. Serial No. 50,344.

My invention relates to pipe tightening tools, particularly for the use of plumbers, steam, gas and pipe fitters.

An object of the invention is to provide apparatus by which pipes, fittings, and the like, of large sizes, may be readily tightened.

Another object is to provide apparatus for tightening pipe in which the force applied will be multiplied so that even large joints may be effected with little expenditure of energy.

Other objects will hereinafter appear.

The invention will be better understood from the description of one practical embodiment thereof illustrated in the accompanying drawings; in which

Figure 1 is a side elevation of one embodiment of the invention, as used to tighten part of a coupling upon a pipe.

The apparatus illustrated comprises two gripping devices, A and B adapted to respectively grip two parts which it is desired to rotate relative to each other as for instance a union or other fitting 1 and a pipe 2, there being force-increasing means interposed between the gripping devices for relatively rotating them.

The gripping device A which is shown as engaging the fitting, is illustrated as a type of vise or chuck, in this case consisting of a crescent or U-shaped frame 3 which is positioned about the pipe and secured thereto by set screws 4, and remains in this position until the rotating operation is completed and it is desired to remove the apparatus.

The other gripping device B is illustrated as being substantially a conventional pipe wrench consisting of a stationary jaw 5 having a shank 6 and an adjustable jaw 7 which is moved toward or away from the stationary jaw by a nut 8 threaded on a threaded shank 9 of the movable jaw, the jaws being adapted for a limited angular movement to cause them to grip or release the pipe, this action being similar to that of pipe wrenches now in use and well understood in the art. The wrench-like gripping device B is adapted to engage the second part which it is desired to rotate and to grip the same when being rotated in the desired direction but to be released therefrom when it is being rotated in the opposite direction, so that by being oscillated relative the first mentioned gripping device the two elements will intermittently be relatively rotated and their connection thus tightened or loosened. Fixed to the frame 3 of the first gripping device is a pivot 10, extending in a direction generally parallel to the axis of the objects to be gripped, and mounted on this pivot is an actuating handle or lever 11 illustrated as being a lever of the bell crank type and having a short arm 12 provided with an aperture 13 parallel to the pivot. The shank of the stationary jaw of the wrench-like gripping element is provided with a series of holes 14 and a U-shaped link 15 is adapted to have its ends inserted in the opening 13 and any one of the holes 14. The force supplied to the handle 11 is multiplied through the short arm, link, and the leverage of the shank of the wrench, the amount of multiplication of the force being varied by the hole in the wrench shank in which the link is inserted.

The operation of the device is as follows:

First, the vise-like engaging device A is placed about a pipe or fitting with which it is desired that another shall be connected or disconnected, preferably to a part that it is desired shall remain stationary. The set screws 4 are tightened to firmly lock the device in place, and the wrench B is adjusted to engage the other element which it is desired to rotate relative that held by the vise, and held with its jaws embracing the same. The lever is next oscillated back and forth, causing the wrench to alternately engage and turn the pipe and to release and move back about the same, it being obvious that the link is inserted in the holes 14 which gives the leverage desired.

When the pipe and its fitting are properly tightened or loosened, the set screws are loosened and the apparatus removed.

While I have described the illustrated embodiment of my invention in some particularity, obviously many other embodiments will readily occur to those skilled in the art to which it appertains, and I do not, there-

fore, desire to be limited to the precise details shown and described but claim as my invention all embodiments thereof coming within the scope of the appended claims.

What I claim is:

1. A pipe tightening tool comprising a self-supporting clamp and a wrench each adapted to engage pipe sections in parallel planes, a lever pivoted on said clamp about a pivot parallel to the axis of the pipe, and means connecting said lever to said wrench.

2. A pipe tightening tool comprising a self-supporting clamp and a wrench, said members being adapted to engage pipe sections closely adjacent each other, a lever pivoted to one of said members to rotate in a plane substantially normal to the axis of a pipe, and means connecting said lever to the other member.

3. A pipe tightening tool comprising a self-supporting clamp and a wrench each adapted to engage pipe sections closely adjacent each other, a lever pivoted to one of said members and movable in a plane substantially normal to the axis of a pipe, said lever having a long arm constituting an operating handle and a short arm connected by pivoted linkage to the other of said members.

4. A pipe turning tool comprising a yoke adapted to embrace a pipe in a plane normal to the axis thereof, opposed pipe-engaging means carried by said yoke, a pipe wrench engageable with said pipe adjacent said clamp and movable in a plane parallel thereto, mutually inclined toothed jaws on said wrench, a lever movable in the plane of said wrench, a fulcrum for said lever in the plane of said wrench and supported by said yoke, and a link positively connecting said lever and said wrench for either pulling or pushing impulses.

In testimony that I claim the foregoing as my own invention, I have hereunto set my hand.

JOSEPH F. HEER.