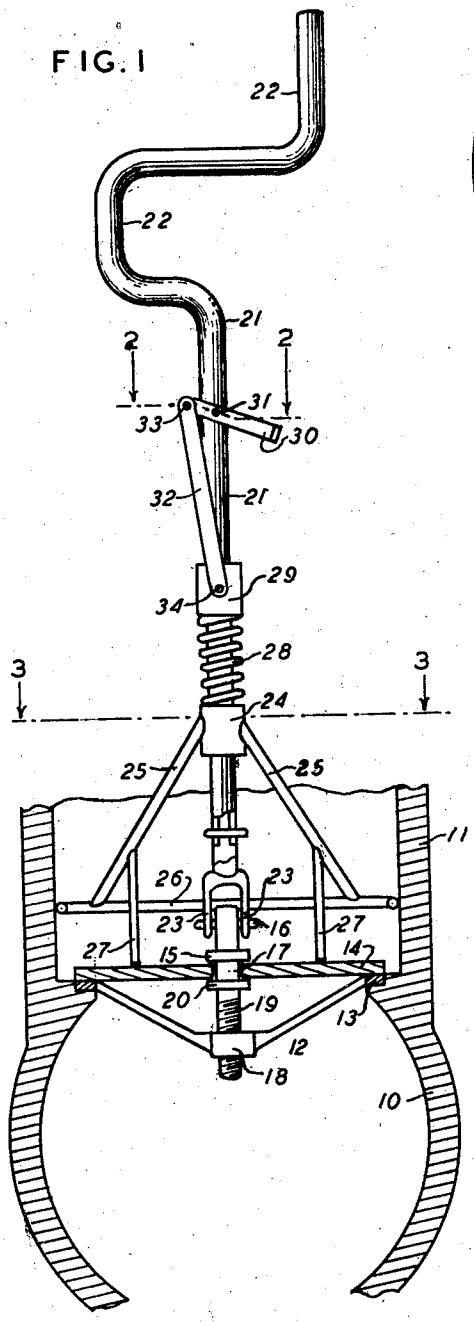
May 14, 1946. E. T. FILLINGER 2,400,083

IRRIGATING VALVE WRENCH

Filed June 30, 1945

FIG. 1



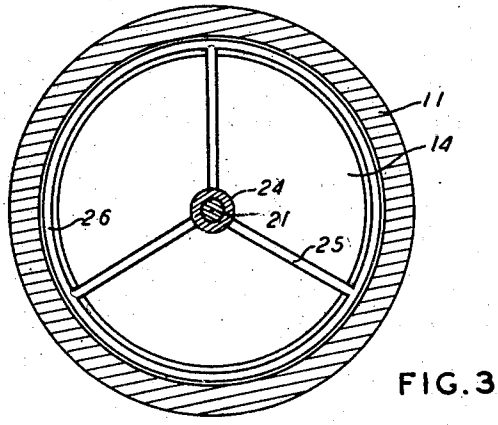


FIG. 3

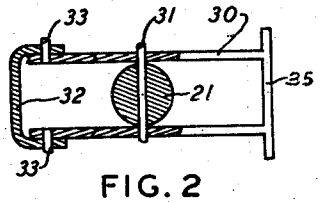


FIG. 2

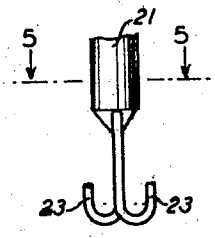


FIG. 4

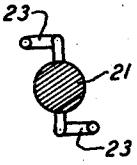


FIG. 5

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IRRIGATING VALVE WRENCH

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Application June 30, 1945, Serial No. 602,506

3 Claims. (Cl. 29—213)

This invention pertains to a wrench or key for adjusting, removing and replacing the disc of a valve of the type used in irrigation.

The purpose of the invention is to provide a wrench by which the disc may be loosened, positioned, removed and replaced with the maximum of speed and with the least possible exertion on the part of the operator.

The invention is described with reference to the attached drawing, in which:

Fig. 1 illustrates the wrench in elevation and in operating position on an irrigating valve, the valve and pipe being shown in cross section;

Fig. 2 is a cross section through the stem of the wrench as on the line 2—2 of Fig. 1;

Fig. 3 is a plan view of the lower end of the wrench, as on the line 3—3 of Fig. 1;

Fig. 4 shows the hooks 23 of Fig. 1 in side elevation, and

Fig. 5 is a plan view of the same as on the line 5—5 of Fig. 4.

Referring first to Fig. 1, 10 is a section of a concrete pipeline through which irrigation water is conveyed under a relatively low pressure; 11 is a fragment of the stub, a T-branch integral with the pipeline; 12 is a spider fixed in a circular opening in the pipe by means of a metallic ring 13 which forms a valve seat; 14 is a valve disc mating the valve seat; 19 is a coarsely threaded screw having laterally projecting pins, as at 16, this screw revolving freely in the disc, as at 17, and being threaded in the spider, as at 18. The screw is provided with collars 15 and 20 by which the disc is lifted or pressed down on rotation of the screw. It will be understood that the above is no part of the invention and is shown merely to illustrate the manner in which the wrench of the invention is used.

Referring to the same figure, and describing now the elements which enter into the invention: a rod or tube 21 is bent to form a double hand crank as at 22—22. At its lower end the rod carries a pair of upwardly looking hooks 23—23, facing in opposite directions as shown in side elevation in Fig. 4 and in plan view in Fig. 5. These hooks engage the laterally projecting pins 16 for turning screw 19 and for lifting the valve out of the stub if desired.

The lower portion of the rod is rotatable in a collar 24 carrying three or more legs 25 which are retained against spreading by a ring 26 of rod or pipe. This ring is preferably of such diameter as to fit somewhat closely inside stub 11 and thus to center the hooks and cause them to span the upper end of screw 19. These legs carry downwardly projected studs 27—27 which engage the upper surface of valve disc 14 when the rod and hooks are lifted as will be described.

Above collar 24 is placed an open coil spring 28, the upper end of this spring engaging a collar 29 which is slidable on rod 21. A lever 30 is pivotably pinned on the rod, as at 31, and a pair of links 32 are connected to the end of the lever as at 33 and to the sliding collar as at 34. It is convenient to combine these links in the form of a light channel, as shown at 32 in Fig. 2. It is permissible to bend the lower corners of the channel to partially surround the rod and thus to eliminate collar 29 by allowing the end of the channel to bear directly on the upper end of the spring.

With the lever in the depressed position shown in Fig. 1 the spring is fully expanded and the rod is at its lowermost position as regards the assembly 24—25—26—27, a position which will permit the upper ends of hooks 23 to pass below pins 16 when the rod is rotated in the proper direction (counterclockwise as the hooks are arranged in Fig. 5). On raising lever 30 until crossbar 35 encounters the rod, the rod is lifted, causing the hooks to engage the pins, and the spring is placed in compression. By this movement collar 20 is brought to bear on the lower side of disc 14 and studs 27 are forced into contact with the upper face of the disc. The purpose of the spring is to compensate for differences in length of the upper end of the valve stem, and if the position of pins 16 as regards the upper face of the disc is constant, the spring may be omitted from the assembly by lengthening links 32 and allowing collar 29 to bear directly on collar 24.

With the lever in the raised position the cranks may now be rotated to withdraw screw 19 for a desired distance, allowing water to flow beneath the edge of the disc and overflow the stub in the usual manner. If the maximum flow of water is desired, the screw may be backed out completely and the disc, which is firmly gripped between collar 20 and studs 27, lifted out of the stub together with the wrench. To replace the disc after removal the guide ring 26 is inserted in the stub, the wrench held in an upright position, centering the screw in boss 18, and the cranks rotated right hand to screw the disc into place. When seated, the lever is depressed, the cranks rotated left hand to cause the hooks to clear the pins, and the wrench lifted out of the stub. It will be noted that, for purposes of illustration, the tool

is shown as much shorter than it is actually made.

The merits of this structure lie in the provision for centering the device in the stub, thus permitting the wrench to be placed over the valve stem, or the screw and disc to be replaced after removal, without tedious feeling for the control position, and in firmly gripping the disc to permit it to be withdrawn and replaced with great readiness.

The double crank illustrated is convenient for rapidly rotating the rod but is not essential. If preferred, the upper end of the rod may be provided with a T-handle or a hand-wheel.

I claim as my invention:

1. An irrigating valve wrench, comprising: a guide ring horizontally disposed; a vertically arranged collar; legs rigidly coupling said collar to said ring; a stud projected downwardly from each said leg, said studs terminating in a common horizontal plane; a rod slidable and rotatable in said collar; a double hand crank formed at the upper end of said rod; a pair of oppositely facing and upwardly looking hooks attached to the lower end of said rod; a spring bearing on said rigidly supported collar and a slidable collar bearing on the upper end of said spring; a hand lever pivotally pinned to said rod and links connecting the free end of said lever with said slidable collar.

2. An irrigating valve wrench, comprising: a guide ring horizontally disposed and a vertically arranged collar centrally supported from said ring; a vertically arranged rod slidable and rotatable in said collar and means for manually rotating said rod; a pair of hooks attached to the lower end of said rod and arranged to engage pins projected from the stem of said irrigating valve; means for raising and lowering said rod within said collar; stop means arranged to limit the movement of said collar toward the disc of said irrigating valve, and a resilient, compressible element interposed between said raising and lowering means and said collar.

3. An irrigating valve wrench, comprising: a guide ring horizontally disposed and a vertically arranged collar centrally supported from said ring; a vertically arranged rod slidable and rotatable in said collar and means for manually rotating said rod; a pair of hooks attached to the lower end of said rod and arranged to engage pins projected from the stem of said irrigating valve; means for raising and lowering said rod within said collar to bring said hooks into engagement with said pins, and stop means arranged to engage the upper surface of the disc of said irrigating valve when said rod is lifted to cause said hooks to engage said pins.

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