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F. R. COSTER

2,184,516

UNDERGROUND VALVE

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Fig. 1.

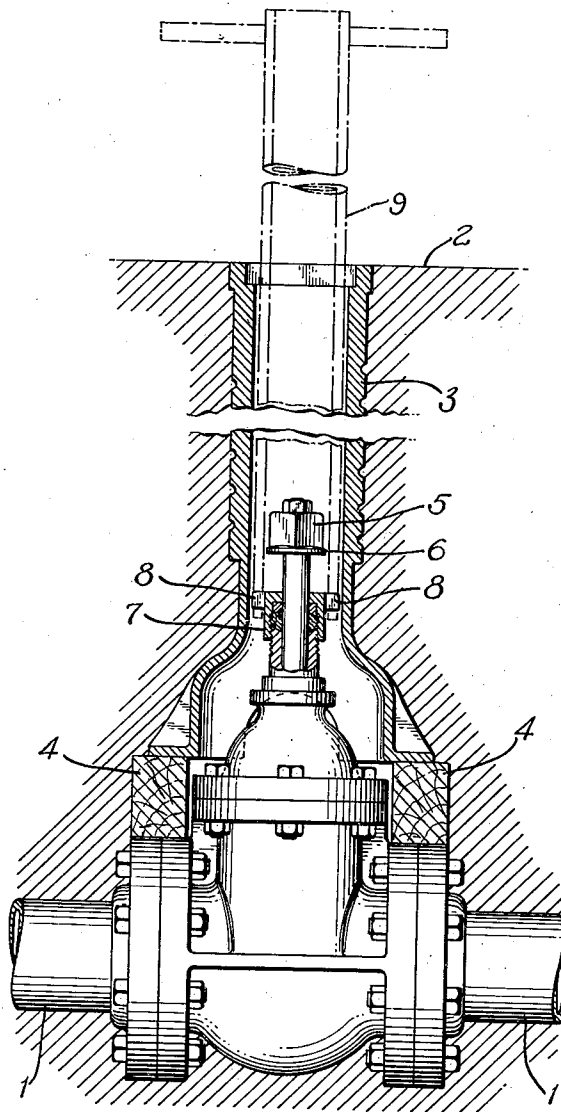


Fig. 2.

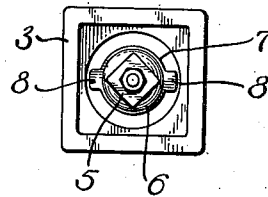
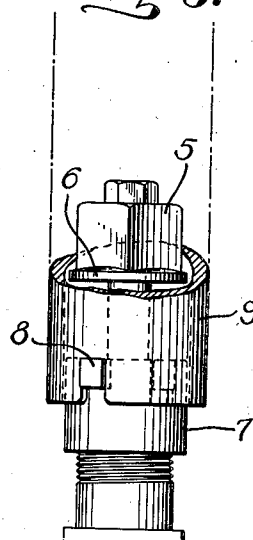


Fig. 3.



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UNDERGROUND VALVE

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Application December 9, 1933, Serial No. 701,589

1 Claim. (Cl. 137—13)

This invention relates to buried pipe-line valves and provides a means of avoiding the necessity of so frequently digging them up in order to stop leakages. Such valves are ordinarily made accessible from the ground surface, for turning them on and off, through a ground box or tubular access casing which encloses the valve at its lower end and terminates flush with the ground or pavement at its upper end, where it is provided with a cover. A long-shanked key or wrench is engaged to the valve, through the casing, and used for turning it on and off. If the valve leaks, repair ordinarily requires its excavation and replacement because the access casing is not wide enough to permit working on the valve from the surface. I have observed that the most common repair consists in merely increasing the pressure on the packing around the valve spindle and this invention consists in an arrangement whereby this operation can also be done from the ground surface in the same manner as the ordinary operation of the valve. The adjustable member of the valve gland is therefore so organized on the valve that a proper tool inserted down the access tube, and more or less guided by it, can be brought into the necessary engagement with it for tightening the packing. In this way a material saving of time and labor is accomplished without any appreciable effect on the cost of manufacture of either valve or road box.

The preferred form of the invention is taken for illustration in the drawing wherein:

Fig. 1 is a vertical section of a conventional type of buried installation sufficiently to scale to illustrate the principle involved,

Fig. 2 is a plan and

Fig. 3 is a larger scale detail of the gland and the tool used for tightening it.

The valve shown will be understood to be of any usual type connected in a buried pipe-line 1. Access is provided to it from the ground surface, indicated at 2, through a tubular casing 3 which is flush with the ground at its upper end and also squared and recessed to receive a square flush cover, not shown. The lower end of the casing is belled to enclose and protect the upper part at least of the valve, so as to keep the surrounding earth away from it. This casing may be of standard design and size, and in more than one piece if desired, and need be no larger than customarily used to permit the application of the usual valve key through it for turning the valve on and off. The blocks, shown at 4, represent the support for the box or casing while it is being installed and as will be understood.

In this preferred form of the invention, the spindle head 5 of the valve is made as usual with a squared or angular cross section to fit the valve key; also it may have the usual bottom flange 6, if that is desired, to limit the extent to which the valve key will telescope over it, but such flange is not necessary in the present case and is only shown because it represents usual construction.

The gland or stuffing box for the valve spindle is also shown as of conventional design and its adjustment means is preferably concentrically related to the spindle, being shown as a cap 7 screw-threaded to the body of the gland. This cap or gland-tightening nut is wider than the spindle head, or if not wider, is formed with radial lugs such as marked 8 which extend beyond the limits of the head but yet lie wholly within the projected cross area of the narrowest diameter of the access tube so that a tubular spanner 9 which is of an internal diameter exceeding that of the head can be let down the casing around the head and engaged to the cap below it. This gland tool can thus be used to tighten the gland in substantially the same way the ordinary valve key is used to turn the valve spindle, neither interfering with the other.

The adjuster cap 7 can have any suitable shape to interlock with the gland tool and the spindle head can, and in the form shown does, assist in guiding the gland tool into interlocking contact with the cap; the lug slots in the gland tool may also be long and tapered or flared for the same purpose. It will be apparent that inasmuch as this gland tool, as shown, is tubular and may therefore be adequately strong with but a relatively thin wall section, it is accordingly adapted to make a proper engagement with the cap notwithstanding a considerable disalignment of the valve axis and the access tube, such as may have occurred from settling of the earth, thereby insuring the success of the tightening operation in practically any case where the valve spindle can also be reached for operating the valve.

The principle of the invention, as has been already indicated, can be carried out by other forms of valve and gland arrangement and it will be understood that there is no limitation to the particular design shown, except as required in the following claim.

I claim:

In underground pipe and valve equipment of the kind comprising a buried valve and narrow access tube, the latter having a cover at the

ground surface and leading therefrom to said valve and being wholly independent of and un-
attached to said valve and of such dimensions
as to preclude personal entry, the spindle of said
5 valve having a head of angular cross section,
disposed at the lower end of said access tube in
a position to receive a valve key guided thereto
by said tube, the combination of a gland-tighten-
ing nut for said spindle concentrically mounted
10 on the valve and wholly disposed within and at
the lower end of said access tube, one or more
radial lugs on the nut extending horizontally
outward therefrom beyond the limit of the spin-
dle head and within the projected cross-area of
the narrowest part of said tube and in line with
the annular space between said tube and spindle
head, so that a gland-tightening tool inserted
through said space, will be guided by the tube
and the spindle head into engagement therewith.
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