Jan. 27, 1942. R. CLADE 2,271,475

VALVE LOCK AND WRENCH

Filed June 26, 1940

Fig. 1.

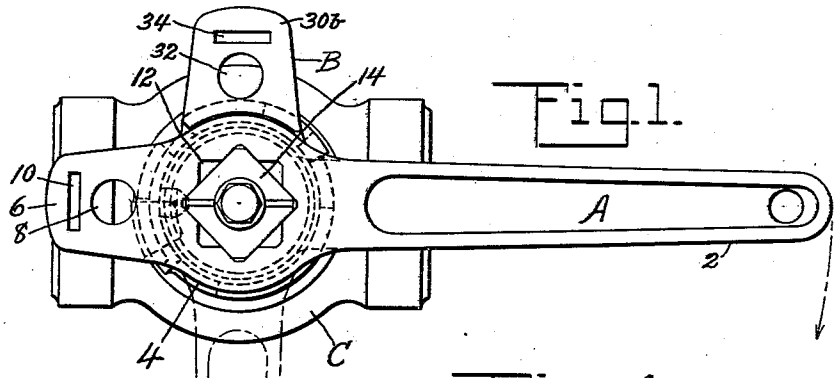


Fig. 4.

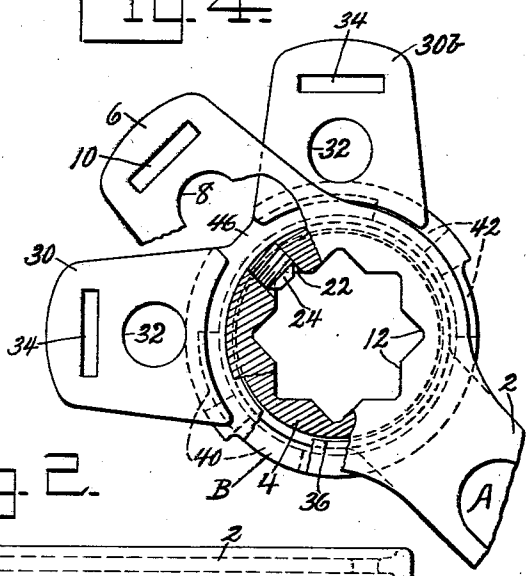


Fig. 5.

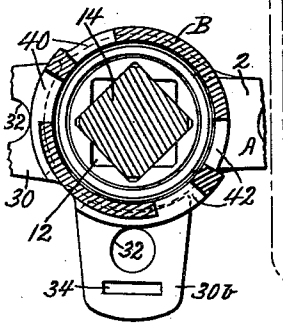


Fig. 2.

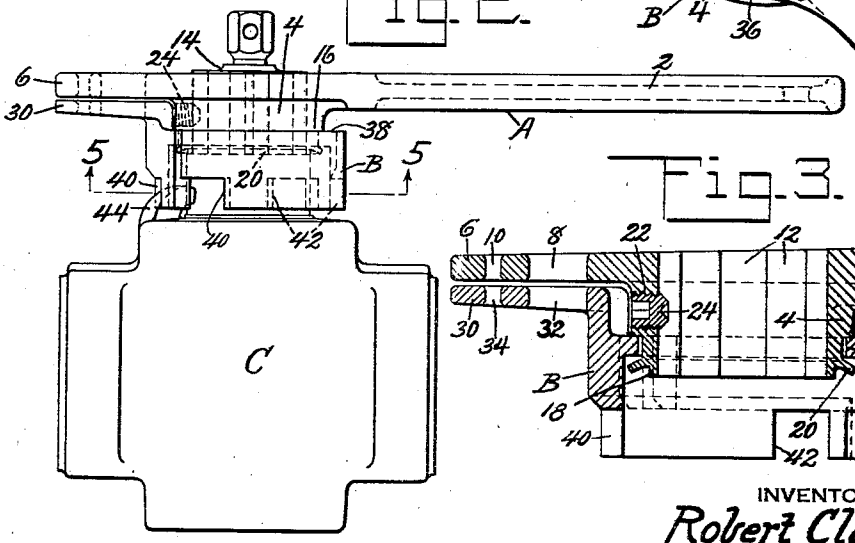


Fig. 3.

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VALVE LOCK AND WRENCH

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Application June 26, 1940, Serial No. 342,575

7 Claims. (Cl. 70—180)

This invention relates to improved means for preventing unauthorized operation of valves while at the same time providing improved means for operation of the valves by authorized persons.

One object of the invention is the provision of a combination valve lock and valve wrench which may be handled as a unit and applied to existing valve structures.

A further object of the invention is the provision of a combined valve lock and wrench which may be handled as a unit and applied to existing valve structures in a plurality of positions, thereby permitting placement of the handle so as to permit its sweep without interfering with existing clearances.

A still further object of the invention is the provision of a combined valve wrench and valve lock which may be handled as a unit and can only be removed from the valve when in an unlocked and intermediate position of the valve plug.

These and other objects of the invention will be apparent to persons skilled in the art from a study of the following description and accompanying drawing, in which:

Figure 1 is a plan view of a valve with the combined wrench and lock applied thereto;

Fig. 2 is an elevational view of the valve and operating locking means shown in Figure 1;

Fig. 3 is a sectional view taken substantially through the longitudinal center of the combined lock and wrench means;

Fig. 4 is a plan view of a portion of the lock and wrench means with parts broken away to show the position of the parts necessary for attachment or removal from the valve stem, and

Fig. 5 is a sectional view taken substantially on line 5—5 of Fig. 2 to better show the arrangement of the adjusting notches.

Referring now to the drawing in detail, it will be seen that the combined valve lock and wrench means consists of two major parts, namely, a wrench A and a lock plate B which are shown as assembled on a valve C of the general type shown in my Patent 2,038,888. The wrench portion of the combined means is formed as a forging, casting or pressing having operating handle 2 merging into a hub portion 4 and extending therebeyond to provide a projection 6. This projection is provided with an opening 8 adapted to receive a padlock or other means and with a slot 10 adapted to receive a sealing means. The hub portion is provided with a polygonal opening 12 having 16 sides formed in effect by superimposing two squares with one rotated 45 degrees relative to the other. In this manner the wrench may be engaged over the square stem 14 of the valve in a plurality of positions displaced 45 degrees relative to each other. The hub portion, as clearly shown in Figs. 2 and 3, extends downwardly from the plane of the handle and is formed with a shoulder 16 and a notched lower edge 18, which edge may have one part, such as 20, rolled outwardly to secure the wrench upon the lock plate later to be described. The hub portion is drilled and tapped substantially in the plane of the center line of the handle as at 22 in order to receive a set screw 24 adapted to engage either a corner of the valve stem or a flat portion thereof. It is, of course, obvious that the valve stem will preferably be drilled slightly in order to receive the end of the set screw, thereby preventing any possible removal of the wrench and lock plate from the valve stem by unauthorized persons.

The lock plate B is preferable formed as a casting, forging or pressing with two lugs 30 and 30*b* extending outwardly from the central hub portion. Each of the lugs is provided with a hole 32 adapted to receive a padlock or other lock means and with a slot 34 adapted to receive a seal. The openings and slots in the lugs are so formed as to be in alignment with the hole and slot in the wrench portion when the valve is in open or closed position and the padlock or other means and seal will extend completely through the wrench and through one or the other of the lugs. The hub portion of the lock plate is formed with a central, circular opening 36 formed at its upper edge with a shoulder 38 adapted to engage the shoulder 16 and rolled portion 20 of the wrench, all as clearly shown in Fig. 3. The lower portion of the lock plate hub is notched with pairs of diametrically opposite slots 40 and 42 adapted to engage with a stop 44 formed on the body of the valve. It will be seen that by engaging the slots 40 or 42 with the stop 44 the position of the lock plate relative to the valve may be varied by approximately 45 degrees such being the angular relation between the center lines of the slots. The hub wall of the lock plate intermediate lugs 30 and 30*b* is notched as at 46 in order to permit entrance of a socket type wrench for tightening or loosening the set screw carried in the wrench hub, all as clearly shown in Fig. 4. It will be seen that the only time the set screw can be moved is when the wrench is in an intermediate position with the axis of the set screw in alignment with the center of the slot 46; in other words, only in the position as shown in Fig. 4. At all other times the set screw is inaccessible and the combined wrench and lock could not be removed from the valve.

Due to the provision of the plurality of slots in the hub portion of the lock plate and to the 16 sided opening in the wrench, it is possible for the set screw to grip either a corner of the valve stem or a flat portion thereof whichever is most desirable. Furthermore, by providing a plurality of notches in the lock plate, the position

of this lock plate relative to the valve may be varied, thereby permitting variance of the sweep of the wrench handle in order to place the handle in the best or most convenient operating position. The lock plate has been shown as provided with only two lugs positioned 90 degrees apart as would be necessary for a two-way valve of 90 degrees turn with one of the lugs adaptable to lock the valve in open position and the other adaptable to lock the valve in closed position. It will, of course, be obvious that if a valve body of more than two ways is used, then the number of lugs formed on the lock plate will correspond to the number of positions in which it is desired to lock the valve.

Although the invention has been described more or less in detail with specific reference to the drawing, it will be understood that various modifications and rearrangements of parts will suggest themselves to persons skilled in the art and all such modifications and rearrangements of parts are contemplated as will fall within the scope of the appended claims defining my invention.

What is claimed is:

1. A combined valve lock and wrench device for use on valves having a casing with an exterior stop formed thereon and a rotatable valve stem, said device comprising a valve operating member, means to secure said member to said valve stem, and a lock plate pivotally carried by said valve operating member and located between said member and valve casing, said lock plate being formed with a plurality of slots each adapted to be selectively engaged with said stop to retain said plate in predetermined position relative to the valve casing, said member and lock plate being formed with openings adapted to register when the valve stem is in a predetermined position to receive locking means preventing unauthorized movement of said member.

2. A combined valve lock and wrench device for use on valves having a casing with an exterior stop formed thereon and a rotatable valve stem, said device comprising a valve operating member, means to secure said member to said valve stem, and a lock plate pivotally carried by said valve operating member and located between said member and valve casing, said lock plate being formed with a plurality of slots each adapted to be selectively engaged with said stop to retain said plate in predetermined position relative to the valve casing, said means being completely covered by said lock plate and inaccessible except in one position of said member relative to the lock plate.

3. A combined valve lock and wrench device for use on valves having a casing with an exterior stop formed thereon and a rotatable valve stem, said device comprising a valve operating member having a handle, a hub and a projecting locking lug, securing means extending through said hub and into engagement with said valve stem to secure said operating member to said valve stem, and a lock plate surrounding said hub and rotatably secured thereto and covering said securing means, said lock plate being formed with slots engageable with said exterior stop to prevent rotation of the plate and with angularly disposed locking lugs cooperable with said first named locking lug when the valve stem is placed in predetermined positions to receive locking means preventing unauthorized movement of said operating member and valve stem.

4. A combined valve lock and wrench device for use on valves having a casing with an exterior stop formed thereon and a rotatable valve stem, said device comprising a valve operating member having a handle, a hub and a projecting locking lug, securing means extending through said hub and into engagement with said valve stem to secure said operating member to said valve stem, and a lock plate comprising a hub portion surrounding the hub of said operating member and rotatably secured thereto and covering said securing means, slots formed in the lower edge of said locking plate hub and engageable with said exterior stop to prevent rotation of the lock plate, a slot formed in the upper portion of said locking plate hub permitting access to be had to said securing means only when said operating member is in a predetermined position, and locking lugs extending radially from said locking plate hub and cooperable with said first named locking lug when the valve stem is placed in predetermined positions to receive locking means preventing unauthorized movement of said operating member and valve stem.

5. As an article of manufacture, a combined valve operating wrench and valve lock consisting of an operating member formed with a handle and a projecting locking lug joined by a hub portion having a valve stem receiving opening, securing means extending through said hub for engagement with a valve stem, and a locking plate comprising a hub portion surrounding said operating member hub and rotatably secured thereto and covering said securing means to render the same inaccessible except in one predetermined position of said operating member.

6. As an article of manufacture, a combined valve operating wrench and valve lock consisting of an operating member formed with a handle and a projecting locking lug joined by a hub portion having a valve stem receiving opening, securing means extending through said hub for engagement with a valve stem, and a locking plate comprising a hub portion surrounding said operating member hub and rotatably secured thereto and covering said securing means to render the same inaccessible except in one predetermined position of said operating member, slots cut in said locking plate hub for engagement with an immovable part of a valve casing, and angularly disposed locking lugs extending radially from the locking plate hub and cooperable with the operating member locking lug to receive locking means preventing relative rotation of said operating member and locking plate when said operating member is in predetermined positions.

7. A combined valve lock and wrench device for use on valves having a casing with an exterior stop thereon and a valve stem, said lock comprising a handle portion having a hub adapted to engage the valve stem, and a lock plate carried by the hub in such a manner as to permit relative rotation between said hub and lock plate, the latter having a plurality of slots formed therein each adapted to be selectively engaged with said stop whereby said lock plate is restrained against rotation relative to the valve casing, said lock plate and handle portion being provided with openings adapted to register when the valve stem is in predetermined position to receive locking means to prevent unauthorized movement of said handle portion.

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