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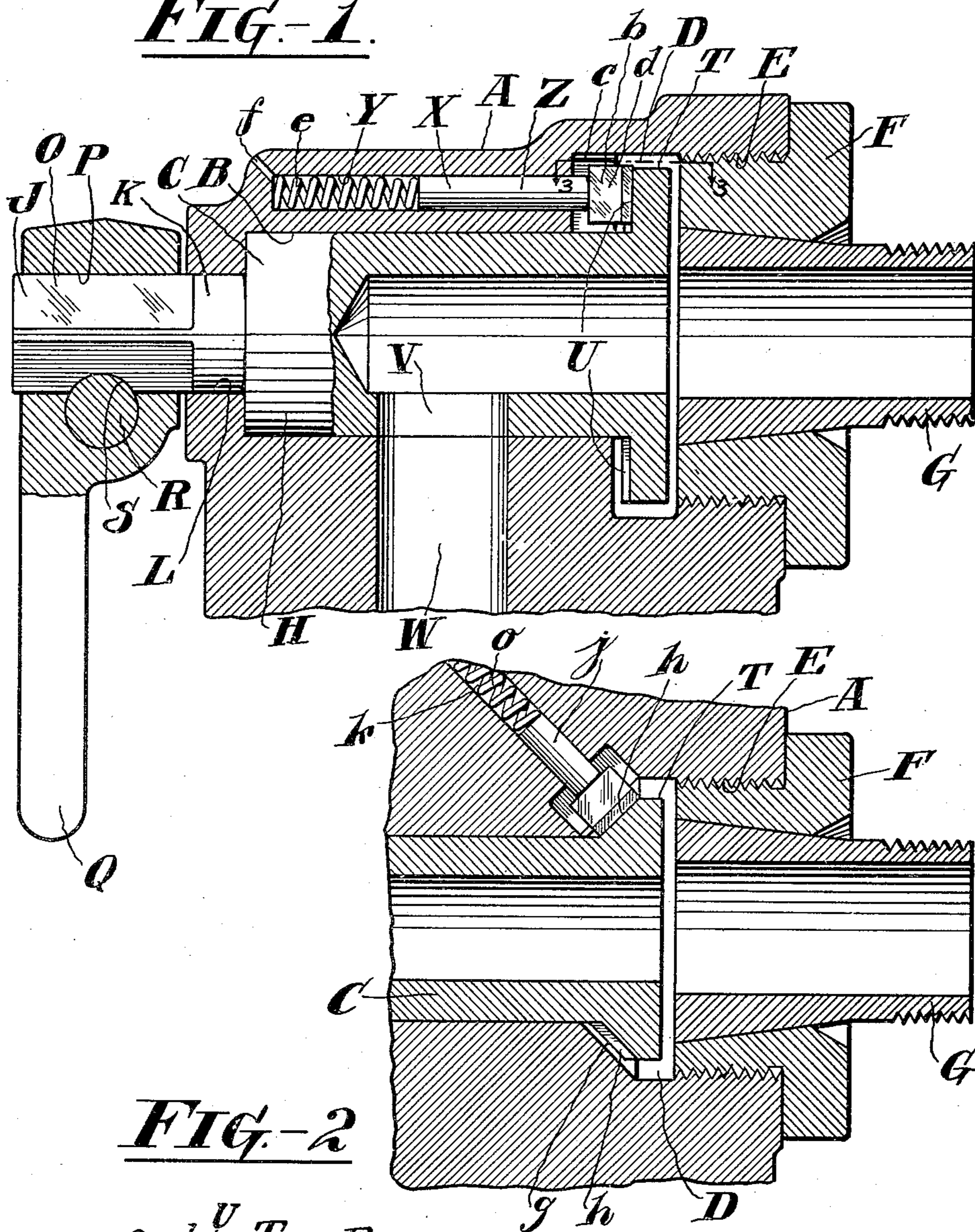
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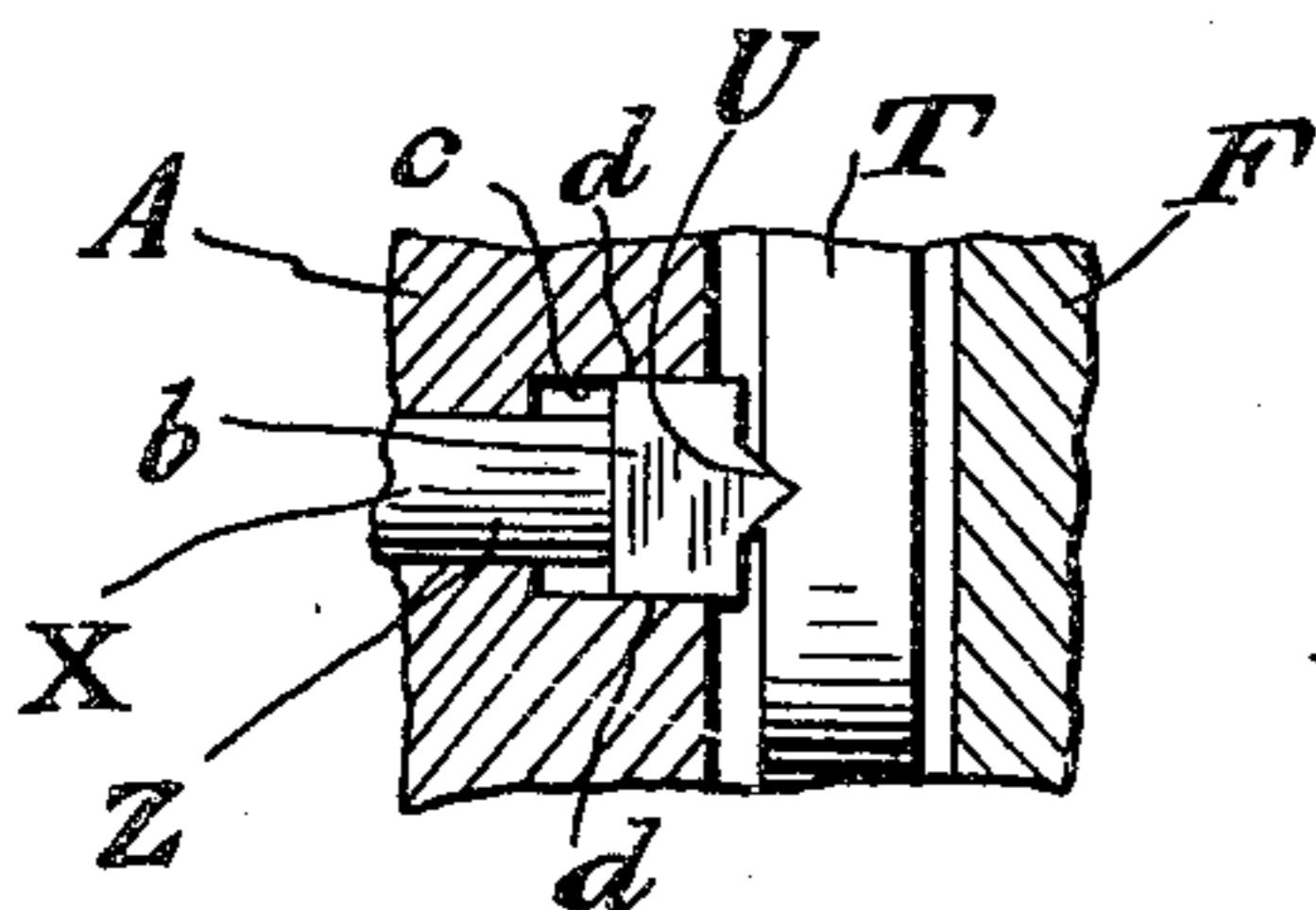
# LOCKING DEVICE FOR THROTTLE VALVES

Filed April 13, 1929

**FIG.-1.**



**FIG.-2**



**FIG.-3.**

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# UNITED STATES PATENT OFFICE

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## LOCKING DEVICE FOR THROTTLE VALVES

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This invention relates to throttle valves, but more particularly to a locking device for throttle valves of the rotary type, such as are commonly used for controlling the admission of pressure fluid into fluid actuated rock drills and similar machines.

The objects of the invention are to assure thorough lubrication of the means whereby the throttle valve is locked in placed position and to protect such locking means against the exposure to dust and other foreign matter resulting from the drilling operation.

Other objects will be in part obvious and in part pointed out hereinafter.

In the drawings illustrating the invention and in which similar reference characters refer to similar parts,

Figure 1 is a longitudinal sectional elevation of a throttle valve and its casing equipped with a locking device constructed in accordance with the practice of the invention,

Figure 2 is a similar view showing a modification of the invention, and

Figure 3 is a view, partly in section taken through Figure 1 on the line 3—3 looking in the direction indicated by the arrows.

Referring more particularly to the drawings, A represents a casing, such as may form an integral part of the rock drill or other machine which in operation is subjected to terrific vibration. The casing A may accordingly comprise a part of the back head of a drill and has a throttle valve chamber B in which is disposed a throttle valve C.

The throttle valve chamber B is provided at one end with an enlarged recess D having internal threads E at its outer end for the reception of a plug F which forms a closure for the recess D and also serves as a receptacle for a connection G such as a part of a hose line whereby the pressure fluid is conveyed from a source of supply (not shown) to the recess D.

The throttle valve C may be of the rotary type. It comprises in this instance a body portion H and a reduced stem J having a cylindrical bearing portion K which extends through an aperture L in the casing A. The stem J may, as is customary, be provided with a polygonal portion O for cooperation with a

corresponding bore P of a lever Q whereby the throttle valve C may be manipulated.

Any suitable means may be provided for locking the lever Q on the stem J. The means illustrated for this purpose consists of a pin R which extends transversely through the lever Q and engages a notch S in the stem J.

In accordance with the present invention the throttle valve C is provided at one end with a flange T which lies within the recess D. In the flange T, and preferably in the side facing the stem J, are formed radial notches U which may be suitably located with respect to the various positions in which the throttle valve C may be placed during operation, as for instance, the open and closed positions. In the drawings the throttle valve is shown in the open position so that a passage V formed therein registers with a passage W in the casing A and leading to the element intended to be supplied with pressure fluid.

Means are provided to engage the notches U for holding the throttle valve C in placed position. To this end a plunger X is disposed slidably in a bore Y in the side of the casing, preferably parallel with the valve chamber B. The plunger X comprises a cylindrical stem Z which is in slidable engagement with the bore Y and has a head b which extends into a slot c opening from the innermost end of the recess D. The head b is preferably provided with flat surfaces d which engage slidably the walls of the slot c to maintain the plunger X in the proper operative position.

In order to constantly urge the plunger X in the direction of the flange T and thus assure its prompt engagement with the notches U and its retention therein a spring e is disposed in the bore Y to act against the stem Z of the plunger. Preferably the bore Y is provided with a small vent f to prevent the accumulation of pressure fluid rearwardly of the plunger.

The modification illustrated in Figure 2 is in many respects similar to that illustrated in Figure 1. It differs therefrom chiefly in that the flange T of the valve C is provided with an inclined surface g in which are

formed notches *h* for cooperation with a plunger *j*. The plunger *j* is disposed slidably in an inclined bore *k* in the casing *A* and is urged in the direction of the notches *h* by a spring *o* disposed in the bore *k* to act against the rearward end of the plunger.

From the foregoing description it will readily be seen that the plunger whereby the throttle valve is held in the placed position is entirely encased by the casing in which it is disposed. Inasmuch that a portion thereof is also exposed to pressure fluid being supplied to the machine a portion of the lubricant conveyed by such pressure fluid will be deposited upon portions of the plunger. Due to the reciprocatory action of the plunger, such lubricant will be conveyed into the bore *Y* and thus assure the thorough lubrication of the plunger. Another advantageous feature of the present invention is that by entirely encasing the plunger within the casing the plunger will at all times be adequately protected against exposure to dust and cuttings, such as is usually present in the vicinity of a drilling operation.

I claim:

In a locking device, the combination of a casing having a valve chamber and a recess at one end of the valve chamber, a throttle valve rotatable in the valve chamber, an inlet port for the valve opening into the recess, a plug forming a closure for the recess, a flange on the throttle valve lying in the recess and provided with a radial notch, a slot in the casing opening from the innermost end of the recess, a bore communicating with the slot and arranged substantially parallel to the valve chamber, a plunger slidable in the bore to engage the notch for locking the throttle valve in placed position, a spring disposed in the bore to press the plunger into the notch, and an angular head on the plunger adapted to engage the walls of the slot to prevent rotation of the plunger in the bore.

In testimony whereof I have signed this specification.

JOHN F. MOCK.

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