April 26, 1932. E. OTTON 1,855,414

COCK OR THE LIKE

Filed March 8, 1929

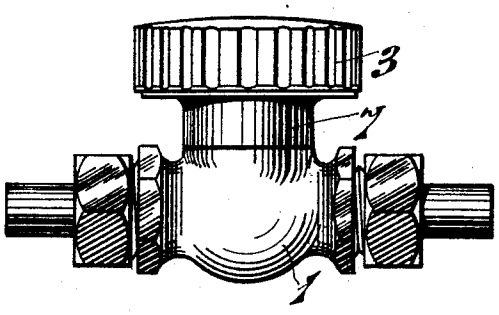


Fig. 1.

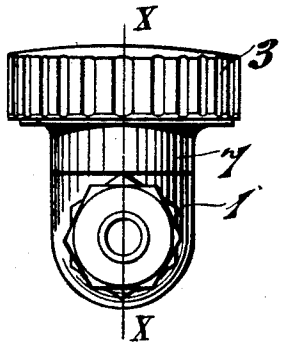


Fig. 2.

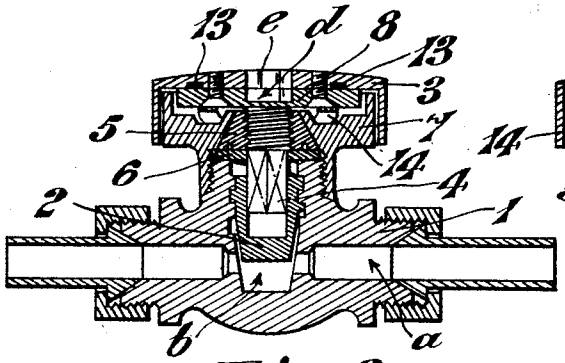


Fig. 3.

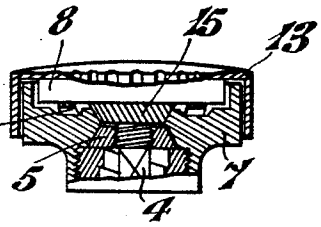


Fig. 6.

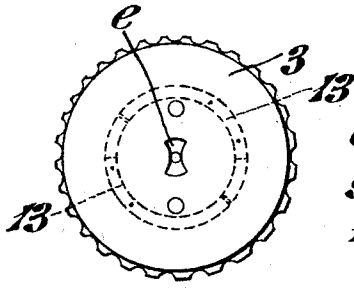


Fig. 4.

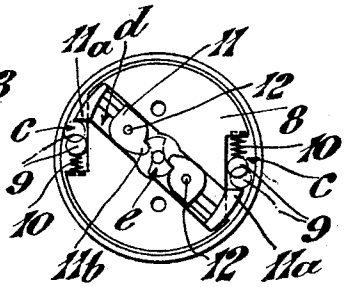


Fig. 5.

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1,855,414

UNITED STATES PATENT OFFICE

EDWARD OTTON, OF LONDON, ENGLAND

COCK OR THE LIKE

Application filed March 8, 1929, Serial No. 345,392, and in Great Britain October 30, 1928.

This invention relates to controlling devices and has for its primary object the provision of improved means in connection with a controlling device whereby unauthorized persons may be prevented from using or exercising whatever is controlled.

The invention consists broadly of a controlling device rotatable to and from two positions of control comprising a one way clutch which permits said device to be rotated to one of said positions and normally prevents it from being rotated to the other, said clutch being adapted to be actuated by means of a key to a release state at which it permits said device to be rotated to said other position.

In order that the invention may be the more clearly understood a petrol cock in accordance therewith will now be described reference being made to the accompanying drawings, wherein:—

Figure 1 is a side elevation of said cock,

Figure 2 is an end elevation of the same,

Figure 3 is a section on line X—X of Figure 2,

Figure 4 is a plan of the same,

Figure 5 is a plan with the hand adjusting knob removed, and

Figure 6 is a section of a slightly modified part.

Referring to the drawings, the cock comprises a body 1 in which the passage of flow *a* is formed in the usual way. Said passage *a* passes through a conical valve chamber *b* and is open or closed according as whether the conical valve 2 is forced down into said valve chamber or is lifted clear of the same in the position shown in Figure 3. Said valve 2 is in screw threaded relation in the body 1 as shown the pitch of the thread being steep so that about a single turn is sufficient to move said valve to and from its open and closed positions. The rotation of said valve 2 is effected by means of an actuating knob 3, said actuating knob being rigidly secured to a square section shaft 4 which mates with a bore of similar section in said valve 2. Thus said valve is constrained to rotate with the knob 3 but is free to move longitudinally as determined by its screw threaded engagement with the body 1.

The rotatable mounting of said shaft 4 in the body 1 is effected by means of a cone 5 and disc 6 secured to said shaft and a conically recessed part 7 secured to said body. Said cone 5 is screwed as shown on to a screwed portion of said shaft 4 above the square section portion and said disc 6 has a square hole therethrough and is threaded on said square section portion. Said cone and disc are locked against relative rotation by means of interengaging pins and pin holes and thus it will be seen that so long as said cone and disc are prevented from falling apart they are rigidly secured to said shaft 4 both as regards rotation and longitudinal movement. The part 7 is screwed into engagement with the body 1, with its conical recess mating with said cone 5 and pressing the disc 6 onto a plane surface of said body 1 and it will be seen that a bearing for said shaft 4 is thus constituted which will effectively seal the valve chamber *b*.

Said shaft 4 is integral with a plate 8 through which said shaft is secured to the knob 3 as shown and said part 7 is formed with a recess in which said plate 8 is located. Said recess is disc shape and said plate 8 is generally in the form of a disc which fits exactly in said recess as shown in Figure 5. As shown in said figure however said plate 8 has two diametrically opposite "bites" *c* cut out of its circumferential periphery such that wedge shape clearances are constituted between said plate 8 and said part 7. In these wedge shape clearances between the two elements 8 and 7 rollers 9 are located and springs 10 are provided for urging said rollers towards the narrow end of the clearances. When it is attempted to rotates said disc in a counter-clockwise direction (according to Figure 5) said springs 10 and the friction between said rollers and the surrounding wall of the part 7 unite to cause said rollers to jam between said parts and such rotation is prevented. When however a rotary effort is applied in the opposite direction the friction opposes said springs to release such "jams" and rotation is freely effected.

In the cock being described the arrangement is such that the valve may be freely closed but cannot be normally opened. To enable said valve to be opened by an authorised person releasing levers 11 are mounted as shown in a diametrical recess *d*, said levers being pivoted about pins 12 and having heads 11*a* which, when said levers are rocked in a counterclockwise direction move the rollers 9 to a release position at the thick end of the wedge shape clearances. Said levers are adapted to be so rocked by means of a key adapted to be inserted through a slot *e* in the adjusting knob 3 into position between said levers 11 and to engage, upon rotation, with lugs 11*b*.

Thus, with the levers 11 in the non-release state as shown in Fig. 5 the key after insertion through the slot *e* is rotated in a clockwise direction and after making nearly a complete revolution engages the lugs 11*b* and rocks the levers in a counter-clockwise direction as aforestated for moving the rollers 9 to the release position. The key is now at a position in which it does not register with the slot *e* and therefore it cannot be withdrawn. Before it can be again brought into registration with said slot *e* it must be returned in a counter-clockwise direction to its original position and in being so returned it will engage the lugs 11*b* on the other side and positively return the levers 11 to the non-release position of Fig. 5, whereupon the key may be withdrawn. When said levers are moved to the release position they are yieldably retained there by means of the downwardly turned ends (not shown) of arcuate strips 13 located in an annular recess in the underside of the knob 3. This is in order that the key, having once released the clutch, need not be actuated continuously whilst the cock is being opened.

The numeral 14 designates a spring washer adapted to impose a friction drag on the rotation of the knob.

Referring now to Figure 6 this illustrates a modified form of sealing bearing for the shaft 4. In this construction a downwardly pointing cone 15 is formed integrally between said shaft 4 and the plate 8 which cone bears in a conical recess in the part 7 and it will be seen that by screwing up the cone 5 the two cones 5 and 15 are forced tightly into engagement with their respective recesses.

It will be clear that the invention may be applied to many controlling devices other than cocks. For example the invention could obviously be applied to handles for doors, safes, suit cases or the like, and any other article which it is necessary or desirable to lock to prevent unauthorized access, the arrangement being such that the clutch normally locks said handle at the position for securing the door or other article.

What I claim and desire to secure by Letters Patent is:—

1. A controlling device rotatable to and from two positions of control, comprising a one way clutch the two elements of which have a wedge shaped clearance between them and a jamming element located in said clearance which jams in the small end of the clearance when torque is applied for rotating said device to one of said positions of control but not when torque is applied for rotating said device to the other position, and means whereby upon operation of a key said jamming element may be held away from said small end of the clearance so that said device may be rotated in either direction.

2. A controlling device operable in opposite directions, comprising a clutch which normally acts as a one way clutch enabling said device to be operated in one direction only but is capable of being released for permitting said device to be operated in either direction, the clutch elements having a wedge shape clearance between them and said clutch comprising a freely floating jamming element located in said clearance and spring biased towards the small end thereof to cause the clutch to act as a one way clutch and a release device for positively holding said jamming element away from said small end in opposition to said spring bias for the purpose of releasing said clutch.

3. A controlling device according to claim 2, and comprising means for yieldably retaining said release device at the release position.

4. A controlling device operable in opposite directions, comprising a clutch which normally acts as a one way clutch enabling said device to be operated in one direction only but is capable of being released for permitting said device to be operated in either direction, the clutch elements having a wedge shape clearance between them and said clutch comprising a freely floating jamming element located in said clearance and spring biased towards the small end thereof to cause the clutch to act as a one way clutch and a lever carried by the movable element of the clutch and adapted to be actuated by means of a key for positively holding said jamming element away from said small end in opposition to said spring bias for the purpose of releasing said clutch, said key being adapted to be inserted through a slot in the movable part of the device which slot is so located that said key cannot be withdrawn until it has been turned to the position for actuating the clutch to the non release state.

5. A cock for controlling the flow of fluids, comprising a one way clutch which permits said cock to be rotated towards the off position and normally prevents it being rotated towards the on position, said clutch being adapted to be actuated by means of a key to

a release state at which it permits said device to be rotated to said on position.

6. A cock according to claim 5, wherein the rotatable part of the cock rotates in a conical fluid tight bearing.

In witness whereof I affix my signature.

EDWARD OTTON.