United States Patent

[11] 3,614,059

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[21] Appl. No. 879,852
[22] Filed Nov. 25, 1969
[45] Patented Oct. 19, 1971
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[32] Priority Dec. 2, 1968
[33] Australia
[31] 47134/68

[54] **TAPS**

5 Claims, 5 Drawing Figs.

[52] U.S. Cl. 251/267, 251/367, 251/368
[51] Int. Cl. F16k 31/50
[50] Field of Search 251/264, 265, 266, 267, 268, 269, 291; 137/366, 367, 368, 360

[56] References Cited

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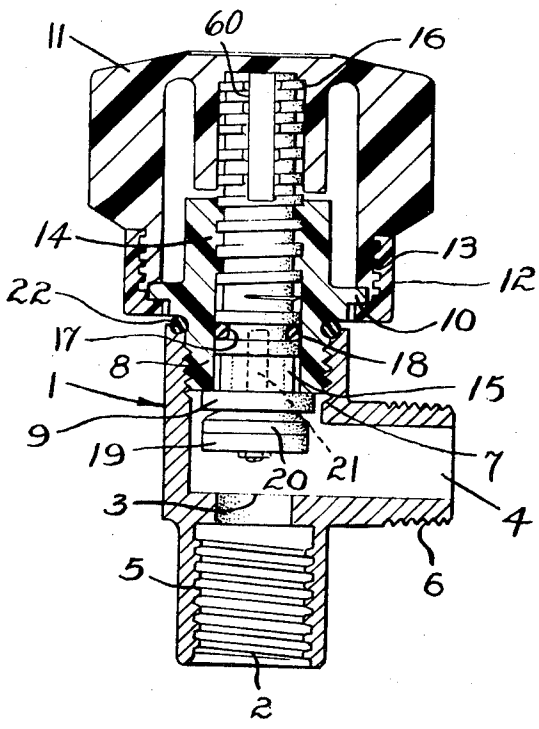
ABSTRACT: In a tap of the type comprising a hollow body with an inlet thereto and an outlet therefrom and a seat on the inlet and in which a sealing member can be moved down onto or retracted from the seat the improved construction comprising a knob rotationally supported from the body preferably through a detachable member but confined axially in relation to the body so that rotation of the knob does not change its axial position, the knob nonrotationally engaging a control member which actuates the sealing member, the control member being in screw threaded engagement with a part of the body preferably the detachable member so that rotation of the knob moves the control member toward or away from the seat.



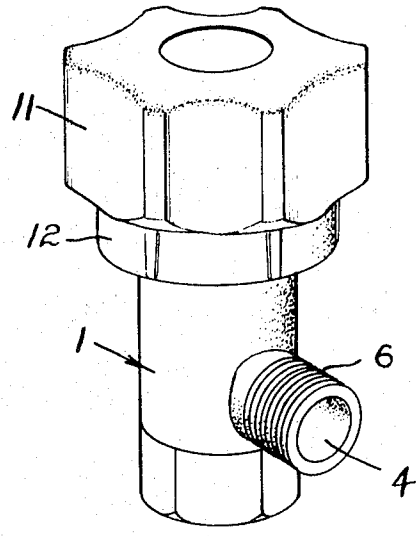


FIG 1

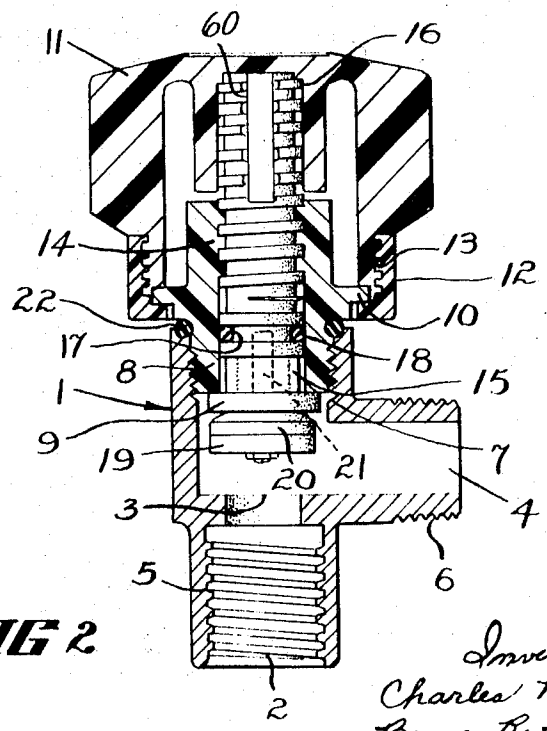


FIG 2

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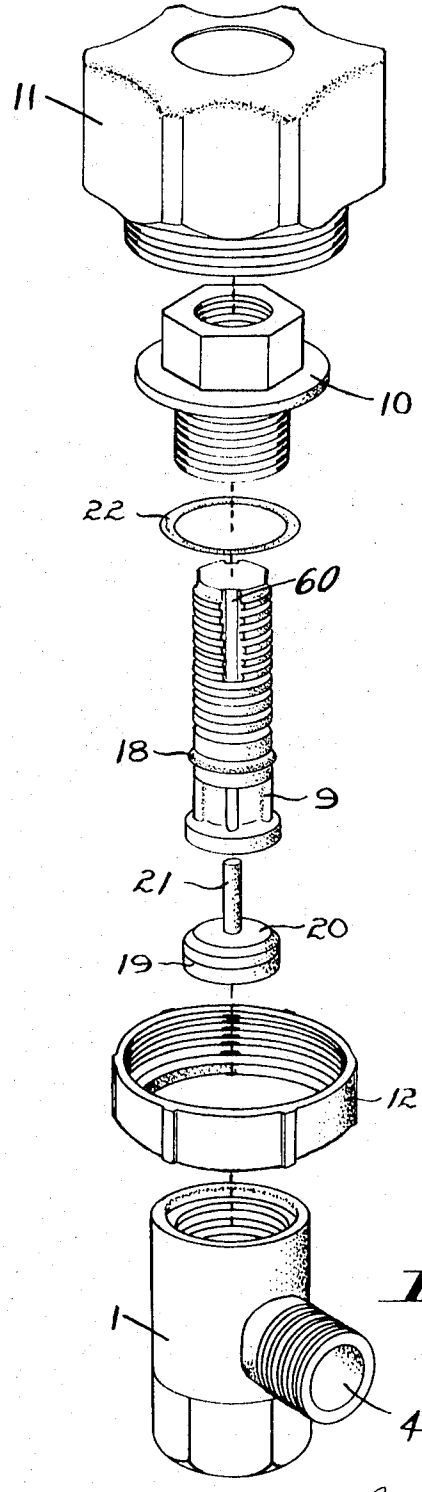

FIG 3

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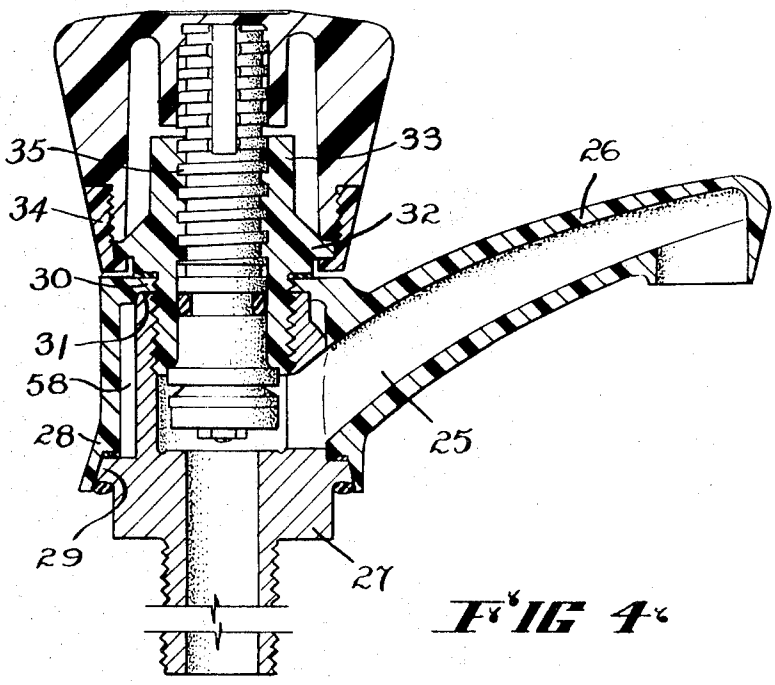

FIG 4

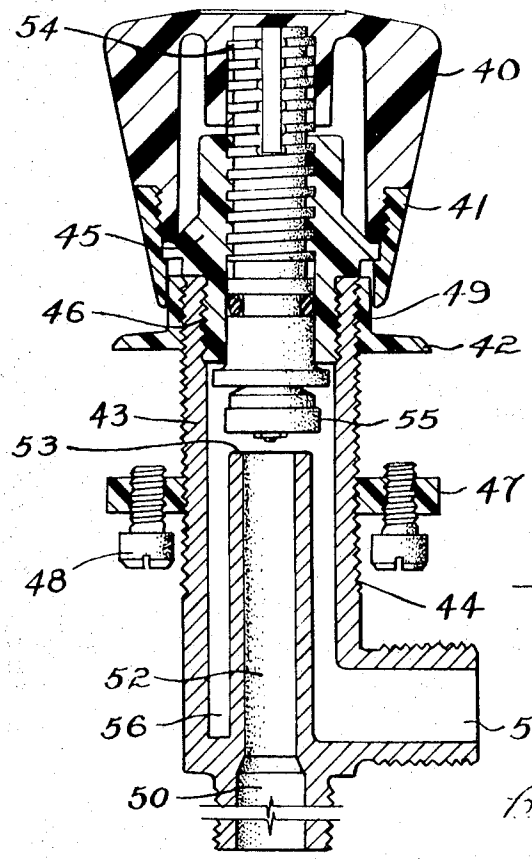

FIG 5

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TAPS

This invention relates to improvements in and to taps and in particular it relates to taps in which the major parts are made solely or mainly of plastic mouldings.

One of the objects of the invention is to provide an improved construction of taps in which an effective operating action will result and in which the actual washer by means of which the seal is made can be readily replaced.

A further object of the invention is to provide a tap of good appearance and one which can be readily fixed in position.

A still further object is to so construct such a tap that the outer surface is of a nature such that the tap can be readily cleaned in that intricacy of the outer shape is avoided.

The objects are achieved according to this invention by so constructing a tap that a body rotationally supports a knob which is axially confined on the body, and in which rotation of the knob axially moves a control member to regulate flow through a seat in the body.

A convenient method of forming such a tap, which can of course be considerably varied, is to form the tap to comprise a body having within it a seating disposed between an inlet and an outlet whereby fluid flow can be regulated by a control member engageable on the seat, the invention being characterized in that the control member is guided in a member detachable from the body and is slidable toward or away from the seat, the detachable member having an operating knob axially confined thereon but rotatable and removable therefrom, the control member and the detachable member having interengaging threads whereby rotation of the control member moves the control member axially, the control member being slidable in the knob but nonrotationally engaged therein, whereby rotation of the knob moves the control member axially to regulate the flow, sealing means being applied between the control member and the detachable member to prevent an outflow of liquid past the control member.

To enable the actual invention to be fully appreciated embodiments of same will now be described with reference to the accompanying drawings in which:

FIG. 1 is an elevation of one form of the invention,

FIG. 2 is a central section of same,

FIG. 3 is an exploded view, and

FIGS. 4 and 5 are further embodiments.

According to the first of these embodiments as illustrated in FIGS. 1, 2 and 3, the body 1 comprises a hollow member having an inlet 2 leading to a seat 3 and an outlet 4, communicating with the other side of said seat 3, the inlet 2 and the outlet 4 being screw-threaded at 5 and 6 to allow connections to be made thereto for the flow of liquid.

Connected to the body 1 by a screw thread 7 is a detachable member 8 which has a hollow bore adapted to axially guide the control member 9, the bore being coaxial with the seat 3 so that movement of the control member 9 in the detachable member 8 causes the control member 9 to move toward or away from the seat 3 as required.

The detachable member 8 has on it an outwardly projecting flange 10 which is engaged on one side by a knob 11 which fits over the upper part of the detachable member 8 and on the other side by a keeper 12 which is connected to the knob 11 by a screw thread 13, so that this flange 10 on the detachable member 8 serves to axially confine the knob but permits the knob to be turned in relation to the detachable member 8.

The outer part of the bore of the detachable member has a screw thread 14 but the inner part 15, which is the part nearest the seat, is plain.

The control member 9 engages in the bore of the detachable member and is screw-threaded at 16 for part of its length but has a plain portion with a groove 17 and which has an O-ring 18 in it near the seat end so that this O-ring in association with the plain inner part 15 of the bore of the detachable member forms a seal to prevent water flowing past the control member 8.

The control member is fitted with a resilient sealing member 19 which engages the seat 3, which in the form shown comprises a washer attached to a member 20 having an upwardly projecting stem 21 engaged in an internal bore in the control member 9.

While the upper part of the control member is threaded, it is also provided with flutes or splines 60 splines engage complementary splines or flutes within the knob 11, so that when the knob is rotated, the drive from the knob 11 will be applied to the control member 9, but the control member, as it has a thread 16 which engages the thread in the detachable member 8, moves up and down in relation to the knob 11 so that while the knob itself is fixed in its axial relationship to the body to of the tap, the control member 9 moves up and down to bring the resilient sealing member 19 on to the seat 3 or to raise it from the seat to control the flow of the fluid from the inlet 2 to the outlet 4.

In this way an extremely neat tap is provided in which only the body 1 with its inlet and outlet means and the knob 11 is visible, the keeper 12 being so formed that it forms a part of the knob when screwed on to the knob, the actual control members being thus hidden within the knob and body but nevertheless being readily uncoverable for servicing by simply removing the keeper 12 from the knob 11, which allows the knob 11 to be drawn upwardly and away from the body 1, and this then exposes the upper part of the control member 9 which can then simply be screwed out of the detachable member if desired for replacement of the resilient sealing member 19 or if the resilient sealing member 19 resilient its carrying member 20 is of a greater diameter than the control member 9, it is released by simply unscrewing the detachable member 8 from the body, carrying with it the control member 9 and then exposing the sealing member assembly 19–20 for replacement or attention. A seal 22 is provided.

In the case of where a bathroom type of tap, such as shown in FIG. 4, is required in which the outlet 25 has a spout 26 extending from one side of the body 27 a much improved construction is achieved by forming the spout 26 as a separate unit which has a hollow inner section 28 of cylindrical form which can fit over the body 27 and which is confined on the body by a flange 29 at the lower end of the body 27 and by an inwardly extending flange 30 at the upper part of the spout 26 which is firmly held between the top 31 of the body and a step 32 on the detachable member 38 so that while the body 27 can be formed as a relatively simple member, the spout 26 and hollow section 28 thereof can be separately formed to surround the body 27 but with the bore of the spout in communication with the hollow of the body so that when this assembly has been put together the only visible part of such a tap when it is secured in position is the spout 26 and its hollow section and the knob 33 and keeper 34, thus again having a very simple and effective construction with a clean outside appearance and one in which intricate internal passageways can be achieved because of the two-part construction of the body and spout. The control member is designated 35 and operates in a manner similar to that described in the first embodiment.

According to yet another modification, see FIG. 5, where the device is to be used in such a manner that only the knob 40 and its keeper 41 and an attachment flange 42 adjacent the keeper shows, such as when fitting the tap to a basin or the like and remotely coupling the unit to an outlet, perhaps in common with other taps such as for hot and cold water supply, the body 43 of the tap is elongated and provided with an external thread 44 and engages the detachable member 45 at its upper end through a screw thread 46 but is in turn engaged by the rotatable screw ring 47 fitted with setscrews 48 which are so arranged that to compensate for thickness and inequality in the molding of a porcelain basin or the like, the screw ring 47 can be adjusted for thickness selection and the flange 42 which engages the upper surface of the basin or the like can then be fitted to the body 43 by the screw thread 49 and the assembly locked in position by first adjusting the screw ring 47 to bring the ends of the setscrews 48 into correct position in relation to the underside of the basin or the like and these setscrews can be independently adjusted to give a good fixing of

the tap irrespective of inequalities in the thickness of the basin wall.

In this case the body **43** projects sufficiently below the basin wall to allow the inlet and outlet members **50** and **51** to be clear of the basin so that the pipe connections can be made, and the body has an upwardly projecting central tubular extension **52** which has the seat **53** formed at its upper end, so that the seat is raised in relation to the inlet **50** and outlet **51** to bring the seat adjacent to the control member **54**, thus allowing ready access for replacement of the sealing member **55** and permitting the same general assembly of knob **40**, keeper **41** and control member **54** to be used, the fluid flowing from the seat down an annular space **56** between the outside of this extension **52** and the inside of the body **43**. The operation is again the same as in the previously described embodiments. A key **58** prevents rotation of the spout **26**.

From the foregoing it will be appreciated that a simple and effective form of tap is provided which can be relatively simply constructed and which will have a good appearance and in which servicing can be readily carried out.

While several embodiments of the invention have been disclosed herein, it will be appreciated that modification of these particular embodiments of the invention may be resorted to without departing from the scope of the invention as defined in the appended claims.

What we claim is:

1. A fluid control tap having a hollow body with an inlet thereto and an outlet therefrom, a seat associated with the said inlet, and a movable control member in said body having a sealing member adapted to engage the seat or move away therefrom as the control member is rotated, characterized by a knob rotatably supported from the said body but axially confined in relation thereto, said knob being nonrotationally engaged on the said control member; and

a detachable member engaged on the said hollow body, said detachable member movably supporting the said control member by having interengaging threads on the said detachable member and the said control member, means to axially confine the said knob on the said detachable member, and interengaging means on the said knob and the said control member to permit axial movement of the said control member in relation to the said knob but to cause the control member to rotate with the knob, whereby rotation of the knob axially moves the control member because of the said interengaging threads between the detachable member and the said control member but no axial movement of the knob takes place in relation to the body.

2. A fluid control tap having a hollow body with an inlet thereto and an outlet therefrom, a seat associated with the said inlet, and a movable control member in said body having a sealing member adapted to engage the seat or move away therefrom as the control member is rotated, characterized by a knob rotatably supported from the said body but axially confined in relation thereto, said knob being nonrotationally engaged on the said control member; and

a detachable hollow member screwed on to the said hollow body coaxially with the said seat, said control member being screwed into the hollow of the said detachable member also coaxially with the said seat, means on the said detachable member to rotationally support and axially confine the said knob thereon also coaxially with the said seat, and interengaging means on the said knob and the said control member to transmit rotation of the knob to the control member but to allow axial movement of the control member in relation to the said knob, whereby rotation of the knob moves the sealing member toward or away from the said seat.

3. A fluid control tap according to claim **2** characterized by a peripheral flange on the said detachable member engaged on one side by the said knob and on the other side by a keeper detachably secured to the said knob, whereby the knob is axially confined on the said detachable member.

4. A fluid control tap having a hollow body with an inlet thereto and an outlet therefrom, a seat associated with the said inlet, and a movable control member in said body having a sealing member adapted to engage the seat or move away therefrom as the control member is rotated, characterized by a knob rotatably supported from the said body but axially confined in relation thereto, said knob being nonrotationally engaged on the said control member; and

a detachable hollow member withdrawably secured on the said hollow body coaxially with the said seat, said detachable member forming a support for the said knob and the said control member, said knob being rotational on but axially confined on the same detachable member but withdrawable from the said support member and the said control member; and

the means to axially confine the knob on the attachment member comprises a peripheral flange on the said detachable member engaged on one side by the said knob and on the other side by a keeper screwed on to the said knob whereby unscrewing of the keeper releases the said knob to give access to the said detachable member and control member for removal from the said body.

5. A fluid control tap having a hollow body with an inlet thereto and an outlet therefrom, a seat associated with the said inlet, and a movable control member in said body having a sealing member adapted to engage the seat or move away therefrom as the control member is rotated, characterized by a knob rotatably supported from the said body but axially confined in relation thereto, said knob being nonrotationally engaged on the said control member; and

the tap including an outlet spout confined on the said body between a lower flange on the body and an inwardly extending flange on a hollow inner section of the spout which encircles the body, said latter flange being axially confined on the body by a detachable member screwed to the body and supporting the said knob and the said control member, said spout communicating with the hollow of the body to guide fluid from the said seat to the said spout.

UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,614,059 Dated October 19, 1971

Inventor(s) Charles Rothauser and Bruce R. Thompson

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Col. 2, line 5, after "60", "splines" should be -- which --.

Col. 2, line 11, after "body", "to" should be -- 1 --.

Col. 2, line 28, after "19" (second occurrence) delete "resilient" and insert -- and --.

Signed and sealed this 18th day of April 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

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* U.S. GOVERNMENT PRINTING OFFICE : 1969 O—366-334