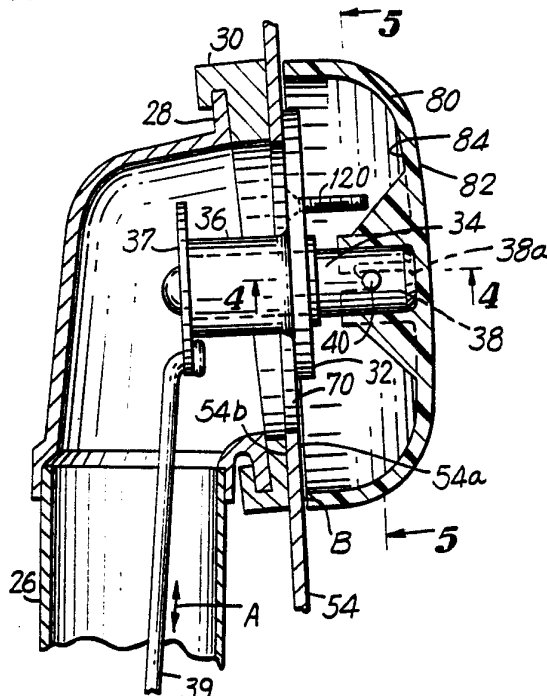




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁵ : E03C 1/232	A1	(11) International Publication Number: WO 92/13146 (43) International Publication Date: 6 August 1992 (06.08.92)
(21) International Application Number: PCT/US91/04650 (22) International Filing Date: 28 June 1991 (28.06.91) (30) Priority data: 642,621 17 January 1991 (17.01.91) US (71) Applicant: AMERICAN STANDARD INC. [US/US]; 1114 Avenue of the Americas, 18th Floor, New York, NY 10036 (US). (72) Inventors: HART, Thomas, G. ; 428 Northam Drive, North Brunswick, NJ 08902 (US). HLADIK, Peter ; 8 Thornton Lane, Piscataway, NJ 08854 (US). (74) Agents: LIPSITZ, Randy et al.; Blum Kaplan, 1120 Ave- nue of the Americas, New York, NY 10036 (US).		(81) Designated States: AT (European patent), AU, BB, BE (European patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH (European patent), CI (OAPI patent), CM (OAPI patent), CS, DE (European patent), DK (European pa- tent), ES (European patent), FI, FR (European patent), GA (OAPI patent), GB (European patent), GN (OAPI patent), GR (European patent), HU, IT (European pa- tent), JP, KP, KR, LK, LU (European patent), MC, MG, ML (OAPI patent), MN, MR (OAPI patent), MW, NL (European patent), NO, PL, RO, SD, SE (European pa- tent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent). Published <i>With international search report.</i>

(54) Title: BATHTUB OVERFLOW CONTROL DEVICE**(57) Abstract**

A control mechanism for use with a bathtub having a drain opening (52a) and an overflow opening (70), with the drain opening (52a) having a stopper (60) moveable between open and closed positions. The control mechanism includes a pipe (12) for coupling the bathtub drain opening (52a) to the overflow opening (70) and a T-shaped bracket (34) rotatably supported in the overflow opening (70) having a projection (38) extending outwardly from the opening and having first and second opposing legs (40a, 40b) extending radially therefrom. A handle (80) is releaseably supported on the T-shaped bracket (34) for rotating the bracket (34). The handle (80) includes a front decorative (82) and an opposing rear surface (84) which includes rearwardly extending tongues (90, 92) having flanges for releaseably capturing the first and second opposing legs (40a, 40b). A linkage mechanism (39) couples the T-shaped bracket (34) to the stopper (60) to control movement of the stopper (60).

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BATHTUB OVERFLOW CONTROL DEVICE

BACKGROUND OF THE INVENTION

The present invention is directed to a bathtub overflow control device and, in particular, to a combined decorative handle and operative overflow control mechanism for use in tubs such as bathtubs, whirlpool tubs, sauna tubs and the like.

In conventional tubs, the drain opening is situated in the floor of the tub and usually includes a pop-up drain stopper to open and close the drain opening. The pop-up drain stopper is generally actuated by a pivotable handle situated on the wall of the tub at an overflow opening and coupled through an appropriate linkage mechanism to the pop-up stopper. The linkage mechanism is generally confined in a tube or pipe which couples the overflow opening in the sidewall of the tub to the drain opening in the tub and ultimately to the main drain. Hence, the overflow opening acts both to receive water above a certain height in the tub to prevent overflow thereof and as a means for anchoring the pivotable lever which controls action of the pop-up stopper in the drain. One form of such a conventional tub drain and overflow control mechanism is described in U.S. Patent No. 4,796,310.

During installation of conventional tubs and their associated drain pipes and hardware, it has been found that the drain actuation mechanism, both internal and external, is sometimes damaged during installation. In addition, in this time of heightened design consciousness, it is desirable to provide a more ornamental handle in which shape and color can be readily selected to compliment the tub appearance and to permit ready replacement when necessary or appropriate.

U.S. Patent No. 4,744,108 discloses a rotatable cover plate for the overflow opening which is held to the drain control linkage mechanism by a set screw which is different to access.

Accordingly, it is desired to provide an improved bathtub overflow control device in which both mechanical and design features are considered.

SUMMARY OF THE INVENTION

Generally speaking, in accordance with the present invention, a control mechanism for use with a tub having a drain opening and an overflow opening, is provided. The drain opening includes a stopper moveable between an open position and a closed position. The control mechanism includes a pipe for coupling the bathtub drain opening to the overflow opening and a T-shaped bracket rotatably supported in the overflow opening having a projection extending outwardly from the opening and having first and second opposing legs extending radially therefrom. A handle is releasably supported on the T-shaped bracket for rotating the bracket. The handle includes a front decorative surface and an opposing rear surface. The rear surface includes a recess therein adapted to receive a portion of the projection and rearwardly extending first and second tongues respectively in alignment with the first and second opposing legs. Each tongue includes a flange or undercut for releasably capturing the respective first and second opposing legs. The control mechanism further includes a linkage system for linking the T-shaped bracket to the moveable stopper.

In a preferred embodiment, the handle is molded from a plastic material and can be provided in various shapes, sizes and colors to coordinate with various tubs on which it will be used. The coupling device permits removal of a selected handle after

insertion on the bracket to permit repair or replacement of the handle and mechanism. Since the handle is inserted after tub installation, damage to the handle is prevented during tub installation.

Accordingly, it is an object of the present invention to provide an improved bathtub overflow device.

Another object of the present invention is to provide a handle for a bathtub overflow device which is decorative in appearance and readily coupleable to an overflow control bracket.

A further object of the present invention is to provide an improved control mechanism for a bathtub overflow device utilizing a T-shaped rotatable bracket and a plastic decorative handle releasably supportable thereon.

A still further object of the present invention is to provide a bathtub overflow control system utilizing a decorative handle which is design coordinated with the bathtub on which it will be used and which is low in cost and easy to manufacture.

Still other objects and advantages of the invention will in part be obvious and will in part be apparent from the specification.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the invention will be indicated in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention, reference is had to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of a bathtub overflow and drain control system constructed in accordance with the present invention shown in place on a portion of a tub;

FIG. 2 is an exploded perspective view of a handle and overflow bracket as depicted in FIG. 1 constructed in accordance with the present invention;

FIG. 3 is an enlarged sectional view taken along line 3-3 of FIG. 1;

FIG. 4 is an enlarged sectional view taken along line 4-4 of FIG. 3;

FIG. 5 is an enlarged partial sectional view taken along line 5-5 of FIG. 4;

FIG. 6 is a sectional view taken along line 6-6 of FIG. 5; and,

FIG. 7 is a sectional view taken along line 7-7 of FIG. 5.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Reference is made to FIGS. 1 through 7 of the drawings which depict a bathtub overflow control device, generally indicated at 10, constructed in accordance with the present invention. Control device 10 includes a T-shaped pipe 12 having an upwardly extending arm 14, a downwardly extending arm 16 coupleable to a drain pipe and an outwardly extending arm 18 coupleable to a pop-up drain assembly 20.

Control device 10 is adapted to be fitted to a tub enclosure 50 having a bottom wall 52 and a sidewall 54. Drain assembly 20 is coupled in a well known manner to an opening 52a in bottom wall 52 of tub 50. Drain assembly 20 includes a stopper 60 selectively displaceable between an upper open position where water in the tub can flow through a drain plug 62 into pipe 18 and down through pipe 16 into the main drain, and a lower position where water is prevented from flowing out of drain assembly 20.

Upwardly extending pipe arm 14 is coupled through an appropriate slip joint nut 24 to an overflow pipe 26 which terminates at its upper end in an enlarged head 28 over which an overflow gasket 30 is fitted as best depicted in FIG. 3.

Sidewall 54 of tub 50 includes an appropriately sized overflow opening 70. An overflow mounting plate 32 on front surface 54a of tub sidewall 54 secures enlarged head 28 through gasket 30 against rear surface 54b of sidewall 54. Appropriate screws may be used to secure the assembly.

Mounting plate 32 includes an enlarged lug 34 which is rotatably supported in mounting plate 32, and includes a rearwardly extending projection 36 and a forwardly extending projection 38. Rearwardly extending projection 36 terminates in an enlarged ring 37 which rotates therewith. A linkage rod 39 is coupled off center of disk 37 to provide a camming action so that it can be moved in the reciprocal directions indicated by arrow A as lug 34 is rotated. Linkage rod 39 is coupled in a well known manner, such as in the manner disclosed in U.S. Patent Nos. 4,796,310 and 4,744,108, the disclosures of which are incorporated by reference herein as though fully set forth, to actuate stopper 60 and cause stopper 60 to move intermediate its open and closed positions.

Hence, rotation of lug 34 causes corresponding up and down movement of stopper 60.

Projection 38 of lug 34 is T-shaped and includes a pin 40 extending therethrough in a position set back from the front end 38a of projection 38. Pin 40 includes a first arm 40a and a second arm 40b.

A handle 80, preferably molded from a plastic material, includes a front decorative surface 82 and a rear surface 84. Rear surface 84 includes a molded recessed portion 86 defined by a circular wall 88 and first and second tongues 90 and 92 proximate circular wall 88. Circular wall 88 includes opposing cutout regions 94 and 96 adapted to receive arms 40a and 40b.

With this construction, handle 80 can be removably secured to mounting plate 32 by inserting projection 38 into recess 86 defined by wall 88, and pressing. Tongues 90 and 92 include respective flanges or undercuts 100 and 102 which capture respective legs 40b and 40a of pin 40 therein to releaseably hold handle 80 on rotatable lug 34. It is noted that rear surface 84 of handle 80 may include additional recessed portions 110 and 112 on the outer periphery thereof to further capture the respective ends of pin 40 and to further stabilize the attachment of handle 80 on mounting plate 32.

In view of the afordescribed coupling, the rotation of handle 80 causes like rotation of lug 34 and movement of linkage rod 39. Stopper 60, coupled to rod 39, can thus be controlled by the rotation of handle 80. It is noted that a set screw or projection 120 may be provided on mounting plate 32 to limit the amount of rotation of handle 80 thereby preventing possible damage to linkage rod 39 and its associated linkage components. Set screw 120

selectively contacts walls 111 and 113 formed on rear surface 84 of handle 80 as handle 80 is rotated.

Mounting plate 32 also includes a cutback region 33, as best depicted in FIG. 2, which exposes a portion of opening 70 to the interior of tub 50. As depicted in FIG. 3, when handle 80 is secured to lug 34, it is spaced somewhat from front surface 54a of tub wall 54 by a gap B thereby permitting water at the appropriate height in the tub to flow behind handle 80 through opening 70 and hence through pipe 26 into the main drain. Thus, the present construction provides both an overflow drain assembly and a control mechanism for the main drain stopper.

The present invention provides a bathtub overflow control device wherein the handle can be molded from a plastic material, have a desired ornamental appearance and be readily insertable on and removable from the control mechanism. Thus, the handle itself may be installed after complete tub and associated plumbing installation, insuring that the handle will not be damaged by installers during installation of the tub and plumbing components. The handle readily snaps onto the control mechanism and can be readily removed to change covers, when necessary or desirable.

It will then be seen that the objects set forth above among those made apparent from the preceding description, are efficiently attained and, since certain changes may be made in the above construction without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features the

invention herein described and all statements of the scope of the invention which, as a matter of language, might be said fall therebetween.

CLAIMS

WHAT IS CLAIMED IS:

1. A control mechanism for use with a tub having a drain opening and an overflow opening, said drain opening having a stopper moveable therein between an open position and a closed position, comprising pipe means for coupling said bathtub drain opening to said overflow opening, a T-shaped bracket rotatably supported in said overflow opening and having a projection extending outwardly from said opening and having first and second opposing legs extending radially therefrom, a handle releasably supported on said T-shaped bracket for rotating said bracket, said handle having a front decorative surface and an opposing rear surface, said rear surface including a recess therein adapted to receive a portion of said projection and rearwardly extending first and second tongues respectively in alignment with said first and second opposing legs, each said tongue having a flange for releasably capturing said respective first and second opposing legs, and linkage means for linking said T-shaped bracket to said stopper.
2. The control mechanism as claimed in claim 1, further comprising a mounting plate supported on said tub at said overflow opening, said T-shaped bracket being rotatably supported by said mounting plate.
3. The control mechanism as claimed in claim 1, wherein said handle is molded from a plastic material.
4. The control mechanism as claimed in claim 2, wherein said mounting plate includes stopping means for limiting the amount of rotation of said handle.

5. The control mechanism as claimed in claim 1, wherein said first and second tongues each include an undercut at said flange for releasably holding said handle on said T-shaped bracket.

6. The control mechanism as claimed in claim 1, wherein said handle includes first and second slots on the rear surface thereof for capturing the ends of said first and second opposing legs.

7. A handle assembly for use in an overflow opening in a tub having a drain opening and stopper means for selectively opening and closing said drain opening, comprising a T-shaped bracket rotatably supported by said overflow opening having a projection extending outwardly from said opening and having first and second legs extending radially therefrom, a handle releasably supported on said T-shaped bracket, said handle having a front decorative surface and an opposing rear surface, said rear surface including rearwardly extending first and second tongues respectively in alignment with said first and second opposing legs, each said tongue having an undercut for releasably capturing said respective first and second opposing legs to hold said handle on said bracket.

8. The handle assembly as claimed in claim 7, wherein said handle is molded from a plastic material.

9. The handle assembly as claimed in claim 7, wherein said first and second tongues each include a flange at said undercuts for releasably holding said handle on said T-shaped bracket.

10. The assembly as claimed in claim 7, wherein said handle includes first and second slots on the rear surface thereof for capturing the ends of said first and second opposing legs.

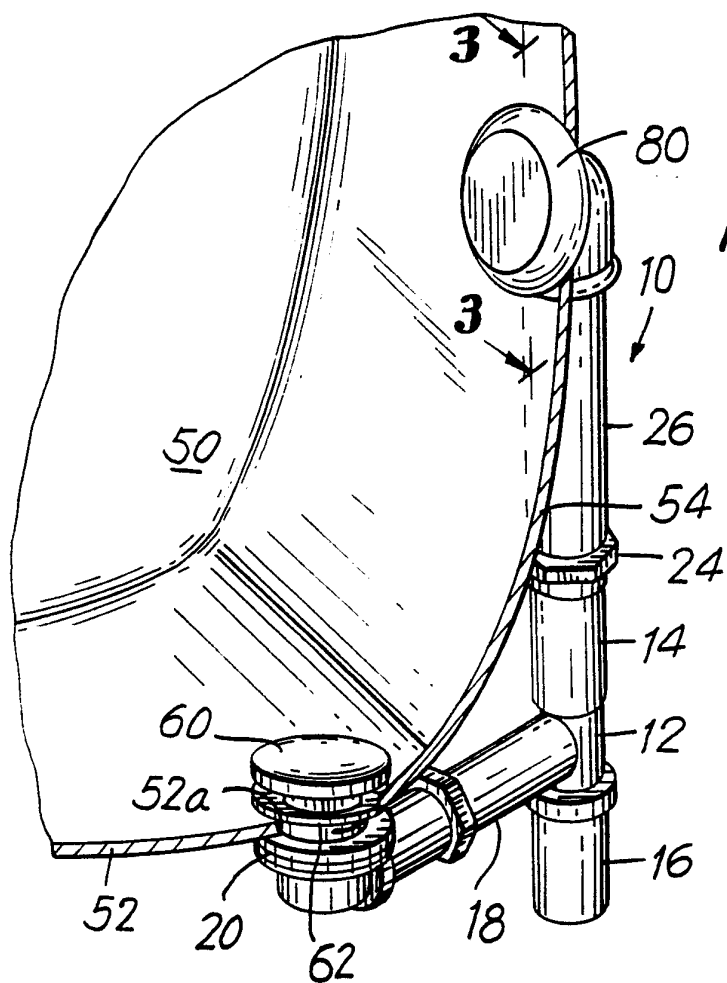
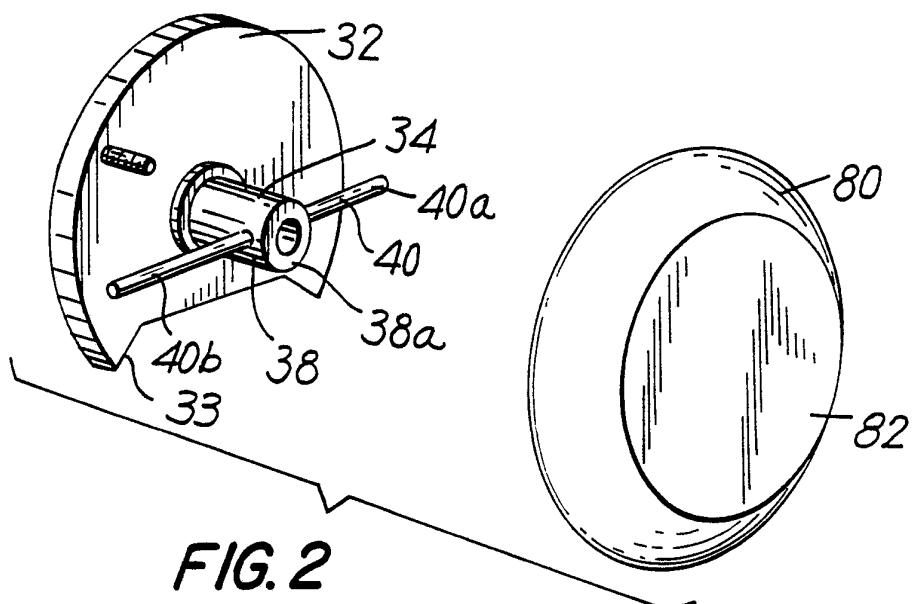
11. A control knob for use on a T-shaped bracket supported on the sidewall of a tub at the overflow opening thereof, comprising a handle molded from a plastic material having a front decorative

surface and a rear surface, said rear surface including at least one tongue for releasably holding said handle on said T-shaped bracket.

12. The control knob as claimed in claim 11, further comprising a second tongue for releasably holding said handle on said T-shaped bracket.

13. The control knob as claimed in claim 12, further comprising a recess formed on said rear surface of said handle for receiving a portion of said T-shaped bracket.

14. The control knob as claimed in claim 14, wherein said handle includes first and second slots on the rear surface thereof for capturing the ends of said first and second opposing legs.

**FIG. 1****FIG. 2**

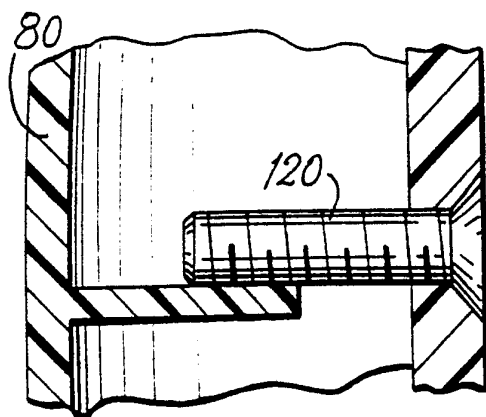
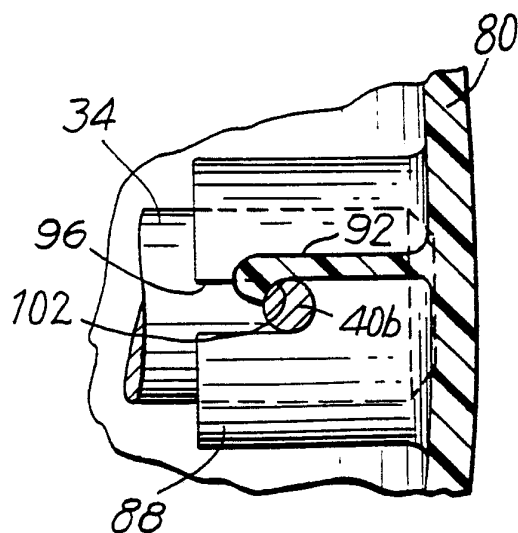
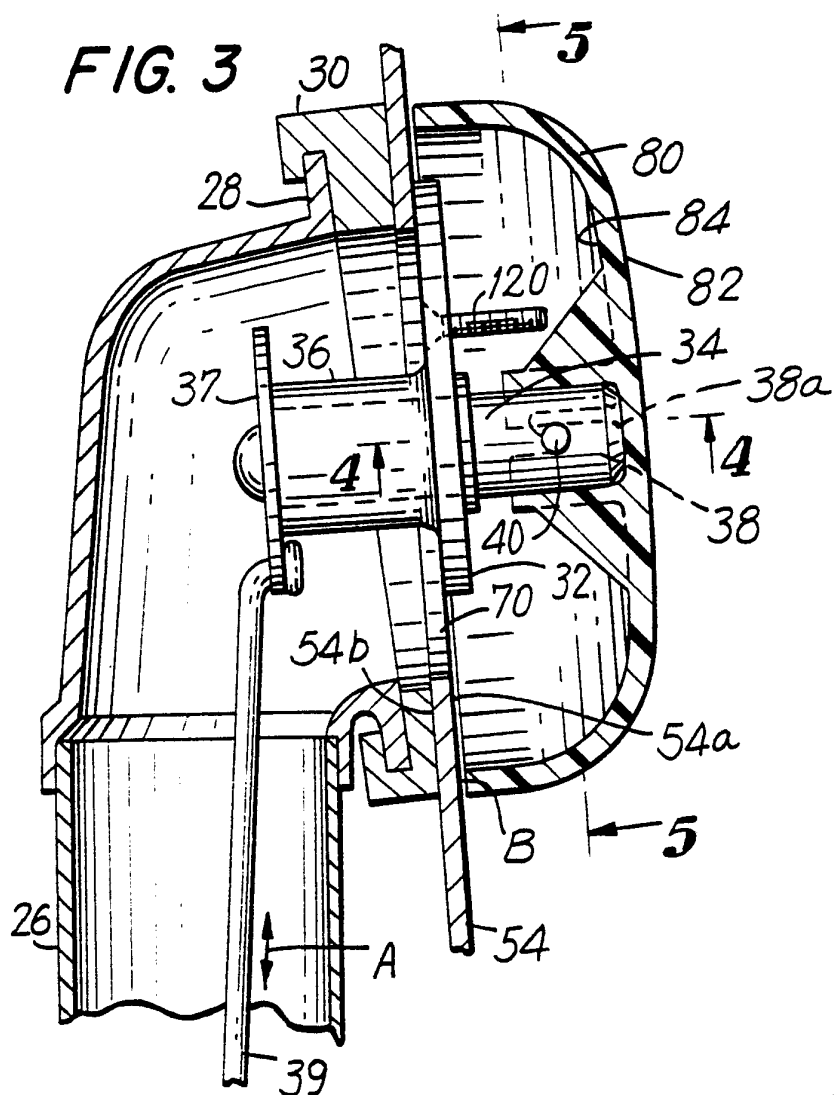
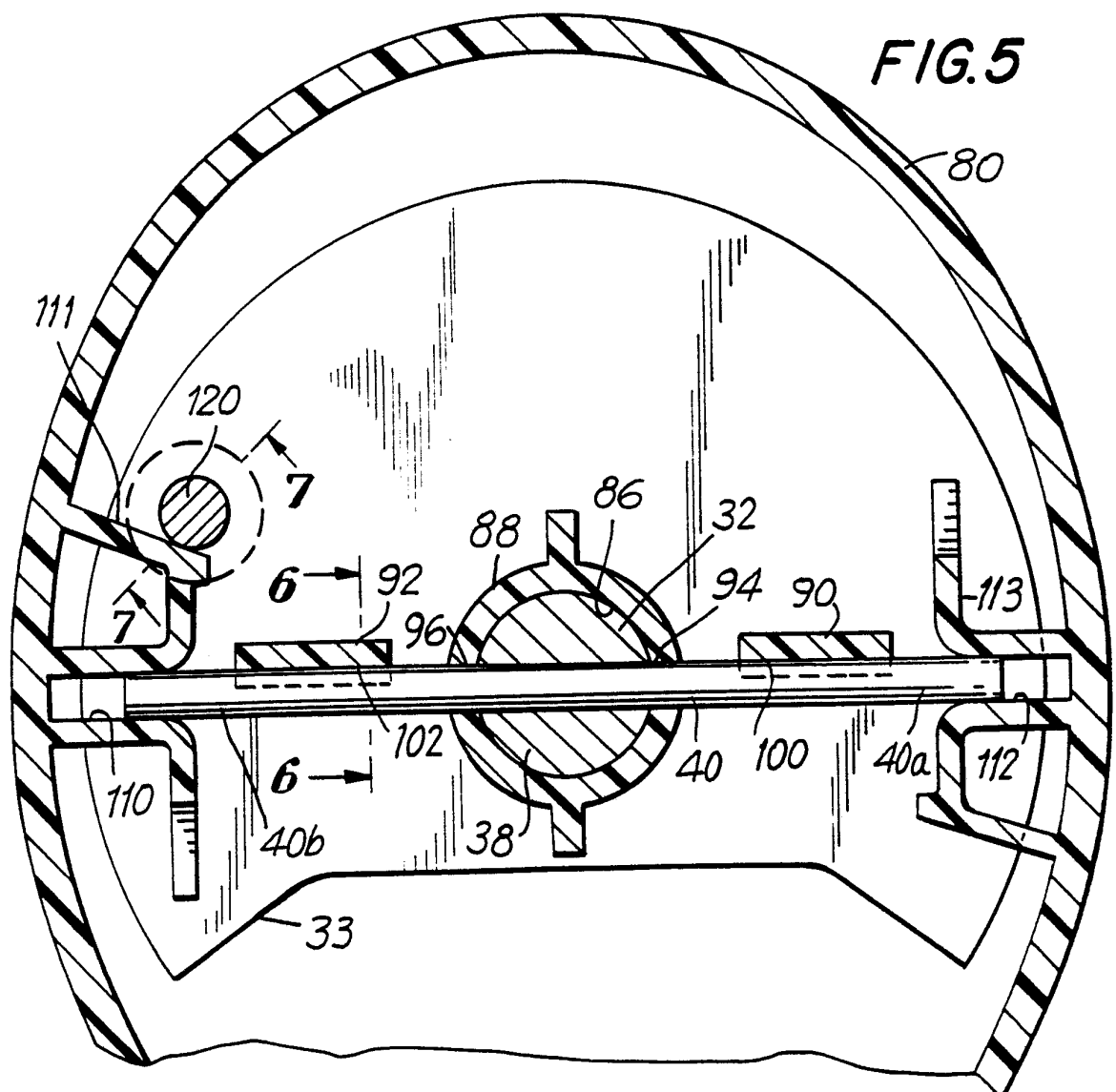
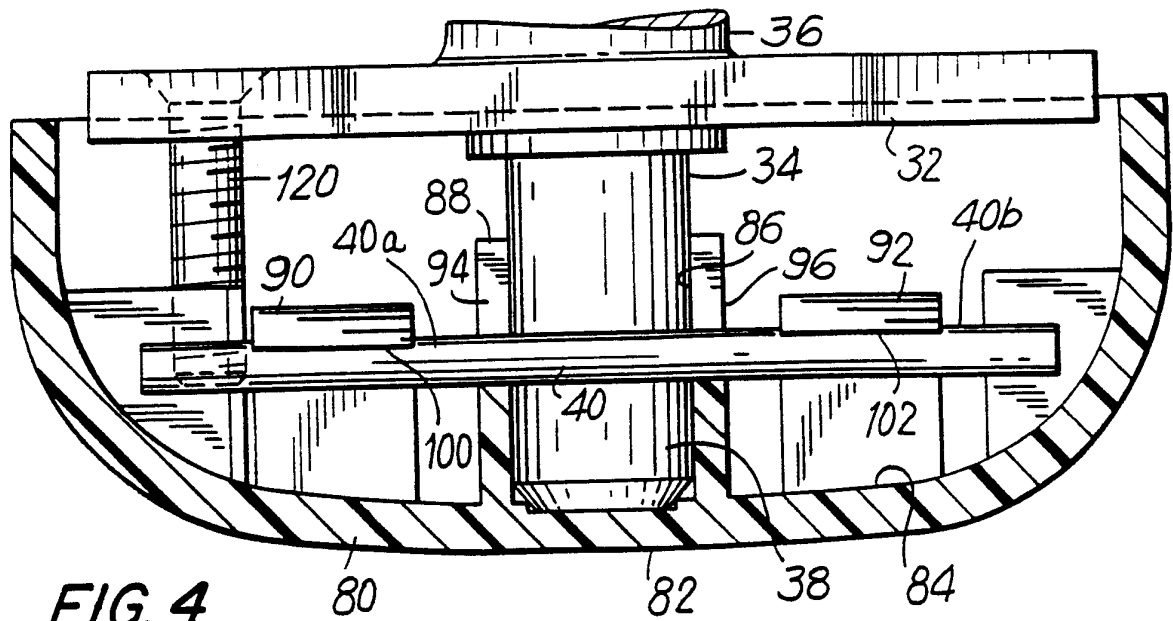


FIG. 6

FIG. 7



INTERNATIONAL SEARCH REPORT

PCT/US 91/04650

International Application No

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)⁶

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 E03C1/232

II. FIELDS SEARCHED

Minimum Documentation Searched⁷

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Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched⁸III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹

Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	DE,A,3 603 877 (GEBERIT) September 11, 1986 see page 5, paragraph 8 - page 7; figure 1 ---	1,3,7,8, 11
A	DE,U,8 602 370 (F. VIEGENER) March 6, 1986 see page 3, line 23 - line 30 see page 5, line 9 - line 23; figures 1-5 ---	1,7
A	US,A,4 744 108 (E. SCHMIDT) May 17, 1988 cited in the application see column 5, line 37 - column 6, line 51; figure 1 ---	1,7,11
A	FR,A,2 302 392 (A. KNAPP) September 24, 1976 see page 4, line 20 - page 5, line 14; figure 2 ---	1,7
A	US,A,1 901 118 (E. POPE) March 14, 1933 ---	-

¹⁰ Special categories of cited documents:^{"A"} document defining the general state of the art which is not considered to be of particular relevance^{"E"} earlier document but published on or after the international filing date^{"L"} document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)^{"O"} document referring to an oral disclosure, use, exhibition or other means^{"P"} document published prior to the international filing date but later than the priority date claimed^{"I"} later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention^{"X"} document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step^{"Y"} document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.^{"&"} document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search

04 OCTOBER 1991

Date of Mailing of this International Search Report

16 OCT 1991

International Searching Authority

EUROPEAN PATENT OFFICE

Signature of Authorized Officer

KRIEKOUKIS S.



ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.

US 9104650
SA 49420

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report.
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04/10/91

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