April 26, 1955 M. GRAZIOSI 2,706,818

CONTROL DEVICE FOR FLUSH TANKS

Filed Jan. 5, 1952

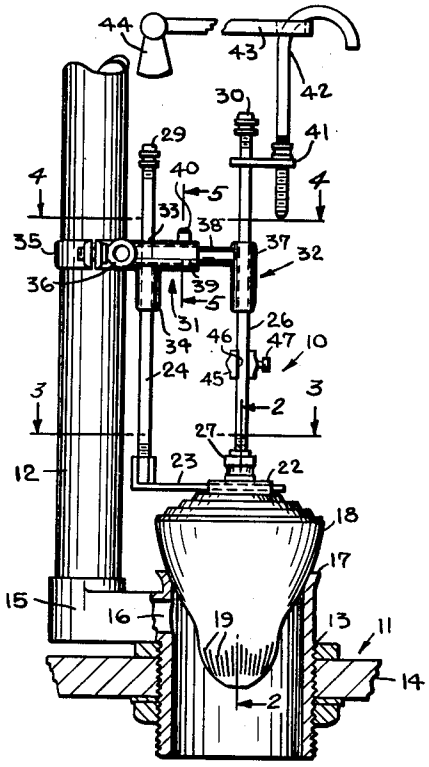


Fig 1

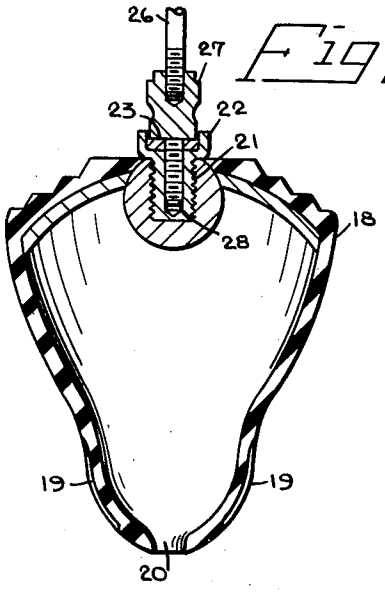


Fig 2

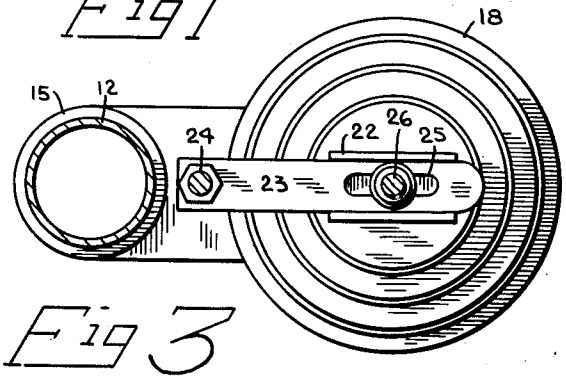


Fig 3

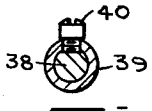


Fig 5

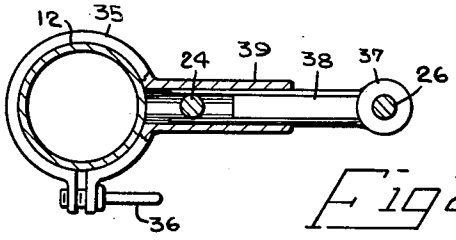


Fig 4

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United States Patent Office 2,706,818
Patented Apr. 26, 1955

2,706,818

CONTROL DEVICE FOR FLUSH TANKS

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Application January 5, 1952, Serial No. 265,062

7 Claims. (Cl. 4—57)

This invention relates to a control device for flush tanks, and more particularly to a universal type of tank ball and adjustable guide for flushing tanks.

An object of my invention is to provide an adjustable water control device for flush tanks of any type where the water automatically enters the tank once it is flushed.

Another object of my invention is to provide a universal type of flush tank device in which the tank ball seal and guide are used to seal or stop the water at the tank ball seat after flushing for the purpose of saving water.

Another object of my invention is to provide an improved guide and tank ball seal, once the flush handle is pushed to flush the water in the tank, that will not permit the improved type of tank ball seal to be deflected on its downward travel with the falling water upon its seat, thereby establishing a foolproof seating which will function properly under all general conditions.

Still another and more specific object of my invention is to provide an adjustable, universal type, twin guide device and a tank ball for seating on any type of outlet pipe in water flush tanks.

Still another and further but specific object of my invention is to provide a device having adjustable twin guide means and a tank ball for flush tanks to effect a foolproof seal in the tank after flushing, said device further providing clamping collar means setting on the water overflow pipe, laterally extending means on the collar for the adjustable, spaced twin guide means on said extending means, and a tank ball sealing member.

Other objects and features of my invention will become apparent from the following detailed description, taken in conjunction with the accompanying drawings, in which:

Fig. 1 is a fragmental view of a portion of a flush tank containing a preferred embodiment of my invention;

Fig. 2 is an enlarged sectional view taken on line 2—2 of Fig. 1;

Fig. 3 is a plan view taken on line 3—3 of Fig. 1;

Fig. 4 is a plan view taken on line 4—4 of Fig. 1; and,

Fig. 5 is a detail view taken on line 5—5 of Fig. 1.

Referring now to the drawings, in which like reference numerals refer to like parts throughout, it will be noted that I provide, according to my invention, an adjustable assembly **10**, used, for example, in the conventional type of flush tank **11** part of which is illustrated in Fig. 1 of the drawings, and connected to a water overflow pipe **12** in said tank. Said pipe **12** is connected to a water discharge seat **13** extending through the floor **14** of tank **10**, for the passage of water through an elbow or joint **15** and an opening **16** in seat **13**. Said seat **13** is provided in the midportion in tank **10** with an outwardly flared top **17** for a ball seal **18** of novel design and outline. Said ball seal **18** is of a hollow irregular cone shape having a tapering end with a succession of sharp edged longitudinal furrows **19** to effect streamlike movement of the seal into the seat **13**. Also, the bottom of said ball seal member has an opening **20** therein to minimize buoyancy and to permit better seating of the ball on flared portion **17** of seat **13**.

Said ball seal member **18**, as shown, is somewhat flattened forming a series of concentric steps and is provided at its upper inner portion with a centrally located plug **21** and a horizontal guide member **22** extending

along the top of the member **18**. Said guide is in the shape of a U groove and accommodates side arm **23** of lever **24**. Said side arm **23** has a longitudinal slot **25** for the passage therethrough of the lower part of a vertical rod **26**. Said rod **26** is provided with a connecting knob **27** from which extends a threaded member **28** connected with said plug **21**, as shown in Fig. 2. It will be noted that by adjusting knob **27** with respect to rod **26** and plug **21**, sidearm **23** can be adjusted and moved laterally of the vertical rod **26**. The top of said lever **24** and of said rod **26** is each provided with a removable knob screw **29** and **30**, respectively. Said lever **24** and rod **26**, as noticed, are disposed parallel with each other and are held in such position by means of adjustable, telescopic, guide means **31** and **32**. Said guide means **31** is provided with an opening **33** and a tube extension **34** for accommodating and guiding the vertical movement of lever **24** therein. Furthermore, said guide means **31** is provided with a collar **35** for mounting around overflow pipe **12**. Said collar **35** is relatively adjustable with respect to the pipe **12** by means of an eye screw member **36** so that the guide means **31** is raised or lowered as desired. Said guide means **32**, as shown, has a sleeve **37** for accommodating said vertical member or rod **26**. Extending angularly from said sleeve is an extension arm **38** telescopically adjustable with respect to side arm **39** of guide means **31**. Said side arm **39** is provided with an adjustable knob set screw **40** so as to permit relative fixing or lateral adjustment of the guide means **31** and **32**.

Said vertical rod **26** is provided above sleeve **37** with a loose fitting cross rod **41** onto which is screwed an adjustable hook **42** which in turn is pivotally connected to an arm or lever **43** connected with tank handle **44**.

When handle **44** is turned to operating position, hook **42** is raised which in turn, once the proper adjustment is made, raises rod **41** against knob screw **30** thereby lifting seat ball **18** by means of rod **26**. Simultaneously, lever **24** is raised. By such adjustment and operation of the device herein described and illustrated, the amount of water entering or leaving the flush tank is effectively regulated. Furthermore, by the adjustment of collar **35** on pipe **12** and by the relative adjustment of guide members **31** and **32** and side arm **23** in guide **22**, any desired extension can be obtained so that the invention can be used in any of the conventional types of flush tanks. To control or regulate the amount of water leaving the flush tank **11**, I provide a stop member **45** comprising a sleeve formed and having an axial slot **46** cut lengthwise at its side having a thumb screw **47**. This member **45** is installed by slipping over either lever **24**, or rod **26**, and set at a point about ⅜ to ¾ of an inch from the bottom edge of either guide means **32** or tube extension **34**. After thumb screw **47** has been made tight it is ready for operation. The stop member operates as follows, when handle **44** is turned to operating position, thumb screw slotted sleeve will come to rest at the bottom of either guide means **32** or tube extension **34**. If the sleeve is set about ½ an inch below the bottom of either guide means **32** or tube extension **34** tank ball will be raised only about ½ an inch from its seat. When the proper amount of water has been let out of flush tank to clean the toilet bowl, handle **44** is released and the tank ball will seat itself upon its seat thereby sealing the water in the flush tank. By this method for water control, the operator's hand must be on handle **44** when flushing and as soon as the hand is off handle **44** the tank ball will drop upon its seat thereby sealing the water in the flush tank.

A ⅜ inch elevation of tank ball is sufficient for flushing but if more water is desired it can be elevated up to ¾ inch. Tank ball cannot be elevated more than ¾ inch, since tank ball will then not drop when the operator's hand is taken off handle **44** thereby causing most all of the water in a flush tank to be drained out. By this method of water control for flush tanks, every time handle **44** is turned to operating position, it saves water because instead of the entire tank being drained, the water is regulated and only the necessary controlled amount is let out through pipe **13**.

From the foregoing, it will be further noted that there

is eliminated the necessity of obtaining a specific type of seal ball member depending on the type of water discharge seat used in presently known types of flush tanks.

By my invention I eliminate the aggravation of handle jiggling, the necessity of resetting leaking tank ball members and the consequent annoyance and loss of running water.

Further, there is effected by my invention, considerable economy in water and there is also eliminated the wear and tear caused by the defective operation of the tank ball seal which in time causes wear and excessive loss of amounts of water in the seat outlet piping.

While a preferred embodiment of my invention has herein been described and illustrated, it is to be understood that modification as to form, arrangement of parts and use of materials may be made without departing from the spirit and scope of the invention as claimed.

I claim:

1. For a flush tank having an overflow means and water outlet means, a tapering ball seal member for said water outlet means, the top of said ball having a horizontal guide member for permitting relative adjustment of the seal member, and L shaped member having a long arm and a short arm, said short arm being adjustably mounted in the guide member, and extending to one side of and angularly from the top of said ball member and laterally adjustable therewith, means for adjusting the L shaped member relatively of the vertical axis of the ball member, an adjustable vertical rod member extending axially from the ball member disposed parallel with the long arm of the L-shaped member, means on said vertical rod member for adjusting the L shaped member relatively laterally of the ball member, a pair of telescopic adjustable sleeve guide means fixed to the overflow means for said L shaped member and the vertically extending member, said sleeve guide means having parallel sleeve portions each for the vertical member and the long arm of the L member, means for fixing said telescopic adjustable member in said flush tank, and means, in connection with the vertical member for raising the ball member and parallel members in unison, said L shaped member permitting positive sealing of the ball member.

2. In a flush tank having water flow means, water overflow means, a ball seal seat, and water outlet means, the improvement comprising a tapering ball seal member having a tapered end adapted to slide into and seal said water outlet means, a vertically operable L shaped member having a long arm and a short arm extending at right angles therefrom, said short arm being connectible with said ball member and laterally adjustable therewith, guide means on top of said ball member for the short arm of said L shaped member to permit adjustment relatively of the ball member, a vertical shaft extending axially from the ball member and above the guide means, means on said vertical member for adjusting the L shaped member relatively of the ball member and in the guide means, adjustable telescopic sleeve guide means for the long arm of said L shaped member and for the vertically extending member, means for fixing said adjustable telescopic member to the overflow means in said flush tank, means in connection with the water flow means and in connection with the vertical shaft member, and means for raising the last named means whereby the ball member, the vertical and L shaped members are raised in unison.

3. The combination according to claim 2, in which the guide means and the adjustable guide means are provided with locking means to permit relative lateral adjustment of the L shaped member and vertical shaft member, said members being also adjustable laterally of each other through said guide means on the ball member.

4. In a flush tank having water supply means, water overflow pipe means, and a water flush outlet, the improvement for adjusting the supply of water from the tank, comprising collar means for attachment to the water overflow means in said tank, a pair of telescopic sleeve means extending laterally from the overflow pipe means, a movable L shaped member having a long arm and a short arm, the long arm extending through one of the telescopic means, a rod extending axially through said other telescopic means, a ball seal member connected to said rod, horizontal guide means on top of said ball seal member for slidable horizontal adjustment therein of the short arm of said L shaped member to permit lateral adjustment thereof, slidable means on said rod for actuating the same and means in connection with the slidable means for raising the ball and L shaped member in unison.

5. An adjustable control device for flush tanks having water overflow pipe means and a water flush outlet, comprising collar means for adjustable attachment to the water overflow means in said tank, a pair of relatively, laterally adjustable telescopic sleeve guide means extending horizontally from the collar means, each of said sleeve guide means having a sleeve member depending perpendicularly therefrom and spaced parallel relatively of each other, an L shaped member having a long arm and a short arm, its long arm extending vertically through one of the depending sleeves in the telescopic means, a rod extending through said other depending sleeve in the telescopic means, a ball seal member connected to said rod, a guide slot on said ball seal member for accommodating the short arm of said L shaped member, slidable means on said rod and means in connection with the slidable means which when actuated raises the rod, the ball, and the L shaped member in unison.

6. An adjustable water control device for flush tanks, having water supply, outlet and overflow means, comprising collar means for attachment to the overflow means, a pair of laterally, relatively movable telescopic sleeve means extending horizontally from the collar means, each of said telescopic means having a vertical sleeve spaced parallel with each other and having a long arm vertically movable in one vertical sleeve of said telescopic means, a rod vertically movable in the other vertical sleeve of the telescopic means, means on each lateral member for locking one of said telescopic means with the other telescopic means, a ball seal member connected to said vertical rod, a grooved horizontal guide member fixed on top of said ball seal member for the short arm of said L shaped member, said L shaped member being adjustable laterally of the axis of the ball seal, means for fixing said L shaped member with the guide, and slidable means on said rod which upon actuation raises the ball and L shaped member in unison, said vertically movable rod having adjustable stop means for limiting the rise thereof when operating said device.

7. A device according to claim 6, in which the vertically movable member is provided with adjustable stop means comprising a slotted sleeve for the member and regulable means for fastening the sleeve to the movable member.

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