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INLET MEANS FOR TOILET FLUSH TANKS

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Fig. 1

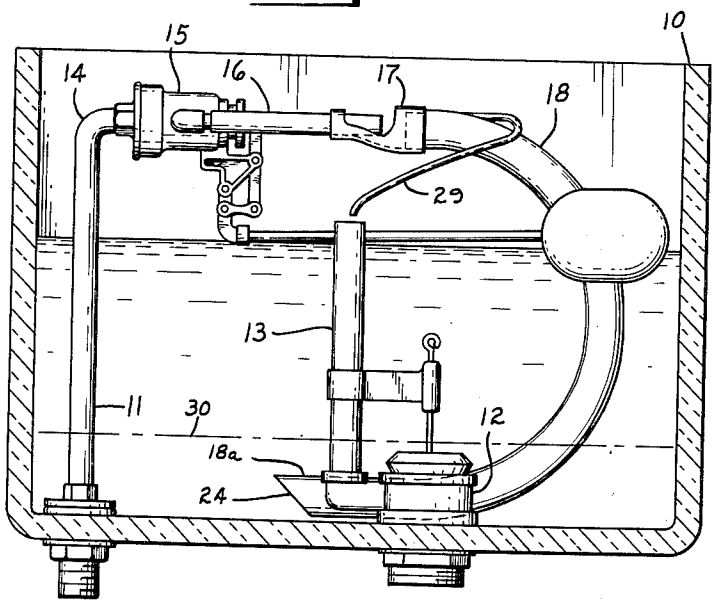


Fig. 4

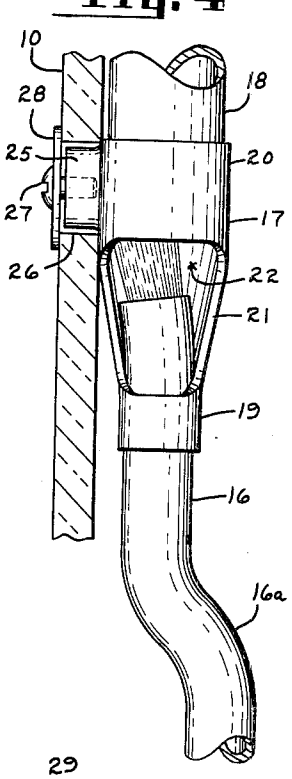


Fig. 3

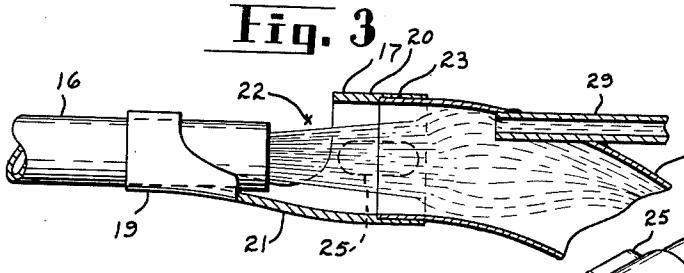
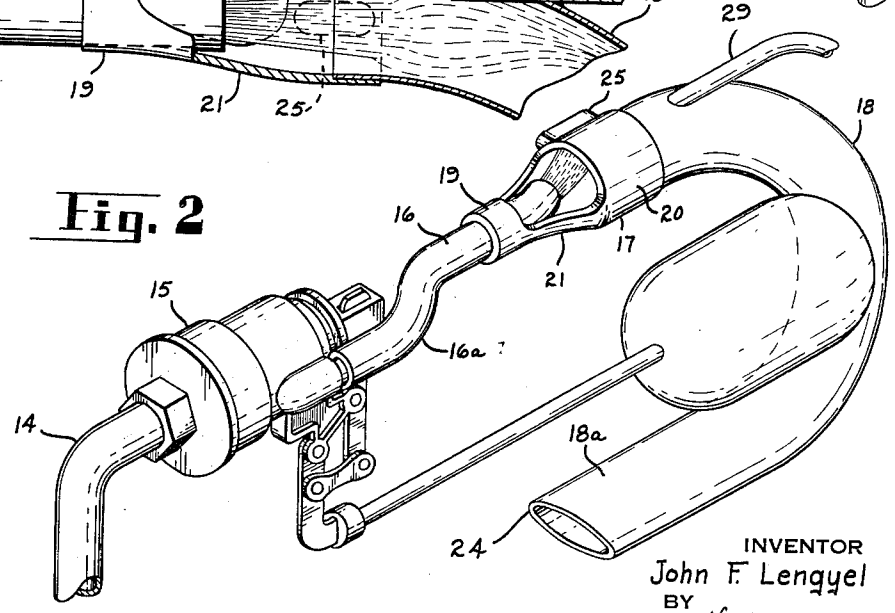


Fig. 2



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INLET MEANS FOR TOILET FLUSH TANKS

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This invention relates to improvements in toilet flush tanks and more particularly to the water inlet means for such tanks.

The primary object of the invention is to provide a simple, easily installed water inlet means for conducting water from the inlet valve in the most quiet possible manner incorporating therewith a reliable anti-suction device or vacuum breaker.

A further object is to provide a water inlet means of the above character which will be quiet both when water is being delivered rapidly under relatively high pressure and when being delivered very slowly, even at a dripping rate.

A preferred embodiment of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a cross-sectional view of a conventional flush tank with the usual ball cock valve and drain means shown in full, and a tank filler member embodying my invention incorporated therein;

FIG. 2 is a perspective view of a ball cock valve and the tank filler member;

FIG. 3 is a partial elevational and a partial sectional view of the connector with portions of the water feed tube and tank filler tube connected thereto; and,

FIG. 4 is a top plan view of FIG. 3.

Referring now to the drawing, the numeral **10** refers to a flush tank of conventional design having the usual vertical inlet supply pipe **11** and an outlet drain valve **12** assembled therein. The drain valve **12** is furnished with the usual overflow pipe **13** projecting upwardly therefrom. The upper end of the supply pipe **11** is formed with a right angle bend or elbow **14** to which may be attached a ball cock valve **15** which may be of any conventional construction, such as shown in the Clemmons Patent 2,595,766.

My improved inlet means consists of an outlet fitting, herein taking the form of the conductor tube **16**, a connector member **17** and a discharge tube **18**. The conductor tube **16** has its entrance end suitably connected to the ball cock valve **15**.

The connector member **17** consists of a small cylindrical neck **19** and a large cylindrical neck **20** spaced from each other and connected by a flaring wall **21** having substantially its upper half cut out to provide an intake opening **22**. The flaring wall section serves as a trough to assure that fluid will always drain from the small neck into the large neck **20** for reasons as will appear later.

The large neck **20** of the connector member **17** is adapted to be fitted over the entrance end of the discharge tube **18** and preferably is formed with a counterbored recess **23** to receive said tube so that the inner walls of said large neck and said tube will be in flush alignment for the purpose of eliminating any shoulders against which the fluid might strike.

The discharge tube **18** has a much larger inside diameter than said conductor tube **16** and is preferably formed in a large arc throughout substantially its entire length with its lower terminal or discharging end **18***a* disposed in relatively close proximity to the bottom of the flush tank **10** as shown in FIG. 1. Thus, the discharge end of the tube **18***a* is always confined under water, the lower level of which after flushing is indicated by dot and dash line **30**, therefore, the water flowing through

said tube for refilling the tank will be thoroughly muffled and silenced. The terminal end of the tube **18***a* is preferably cut on a bias facing the tank bottom as indicated at **24**. This serves to direct the discharging water along the base of the tank rather than having it surge upwardly to the surface of the water remaining in the tank.

The small neck **19** of the connector member **17** is adapted to be slipped over one end of the conductor tube **16** to a point where the discharge end of said tube is positioned a considerable distance within the flared wall section **21** of said connector member, such as best shown in FIG. 4.

It is also to be noted that the discharge end of the conductor tube **16** is slightly bent to one side so that the flow of water therefrom will preferably be directed against the inner wall of the arcuate discharge tube **18** adjacent its entrance end. This arrangement will cause the water discharging from the conductor tube **16** and directed into the discharge tube **18** to more or less flatten out against the inside wall of said discharge tube and flow along the outer curved portion thereof without any agitation and therefore, conducive to produce a very quiet flow of water into the tank.

The conductor tube **16** as shown in FIGS. 2 and 4 is formed with an off-set bend **16***a* at its intermediate section for the purpose of positioning the connector member **17** in close proximity to the rear wall of the flush tank **10**.

In order to attach the connector member **17** to the tank **10** and properly support the tubes **16** and **18** connected thereto, said connector member is formed with a rearwardly extending elongated boss **25** integrally connected to the large neck **19**. The boss **25** is adapted to be inserted through an oblong hole **26** usually provided in the back wall of the tank and held there in place by a screw **27** and a washer **28**.

While the longitudinal axis of the boss in FIG. 3 is shown as parallel to the axis of the conductor member **17**, it is within the purview of this invention to position the boss on a slight incline relative to the conductor member axis so as to further assure that no amount of water will remain in the trough of said member upon completion of the tank refill cycle. Also, when my device is installed into a flush tank, it is desirable to have the height of the valve **15** so positioned relative to the connector member **17** that the conductor tube **16** will be on a slightly downward incline from the horizontal and away from said valve.

In case the plumbing code should require a refill tube, a small tube **29** of the right diameter can be inserted through a suitable opening in the upper arcuate portion of the discharge tube **18** and there soldered in place in such a position that the full diameter or the refill tube will be located within said discharge tube in line with the water discharged from the conductor tube **16**. The refill tube is long enough and may be bent so that its discharge end is directed into the overflow pipe **13** in the usual manner.

During the flushing and refilling operation of the tank, when the valve **15** is first opened, water will be discharged from the end of conductor at relatively high velocity, cross the gap space in the connector member **17** and strike against the sidewall of the discharge tube **18**, and due to the centrifugal force, will more or less hug the inside wall of said tube **18** along its outer larger arc. Due to the large area of the discharge tube **18** as compared to the conductor tube **16**, the velocity of the water will be considerably reduced for effecting a more silent refilling operation.

As the valve is shut off at the end of the refilling operation, the volume and velocity of water will be progressively reduced to zero, and during this slowing up cycle, the water will be caught in the trough part of

the connector member 17 and flow along the innermost small arc portion of the discharge tube 18, even to the last drops flowing from the conductor tube 16.

It will be evident from the above description that I have provided a very simple tank refilling device that can be easily installed in the conventional flush tank so that the tank can be filled with the least water disturbance and thereby effect a very quiet filling of said tank.

Furthermore, by reason of the large opening 22 in the connector member 17, if perchance, a quick suction action of any degree should occur in the supply pipe 11, no water can be drawn back into the supply system from the tank, thus satisfying the requirements of the strictest plumbing codes.

While only one form of the invention is disclosed, it will be apparent that the invention is susceptible to other structural modifications coming within the scope of the appended claims.

What I claim is:

1. An improved water inlet means for a toilet flush tank for conducting water from the inlet valve into the tank, comprising an outlet fitting of uniform diameter leading from the inlet valve in a substantially horizontal direction, a discharge tube of much larger inside diameter than the inside diameter of said outlet fitting, and a connector for the adjacent ends of said fitting and tube serving to support said fitting and tube in spaced and substantially horizontal alignment, said connector having a trough-shaped portion closed at the bottom and having its inner surface in flush alignment with the bottom inner surface of said tube so as to carry slowly flowing water from the fitting to the discharge tube, said tube being open at the top in the region of the space between the fitting and tube to permit air to enter freely into the outlet fitting.

2. An improved water inlet means for a toilet flush tank as defined in claim 1 wherein the discharge tube is formed in a large single curved arc having its terminal discharging end in close proximity and parallel to the bottom of the tank.

3. An improved water inlet means for a toilet flush tank as defined in claim 1 wherein the discharge end of the outlet fitting is slightly angled to direct the water angularly against one side of the discharge tube adjacent its entrance end.

4. An improved water inlet means for a toilet flush tank as defined in claim 1 wherein the refill tube of relatively small diameter is fitted into the upper arcuate portion of the discharge tube and is charged by the water fanned out against the inner wall of said tube.

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