March 29, 1960 A. MINELLA 2,930,049

TOILET TANK, BOWL, AND ADAPTER CONNECTION

Filed Oct. 1, 1956

Fig. 1

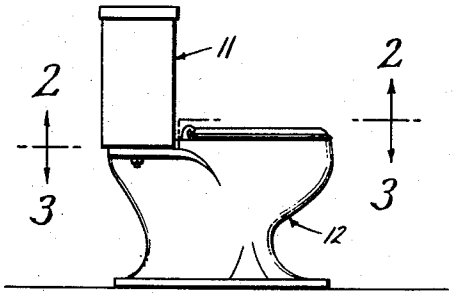


Fig. 2

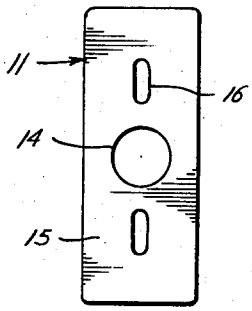


Fig. 3

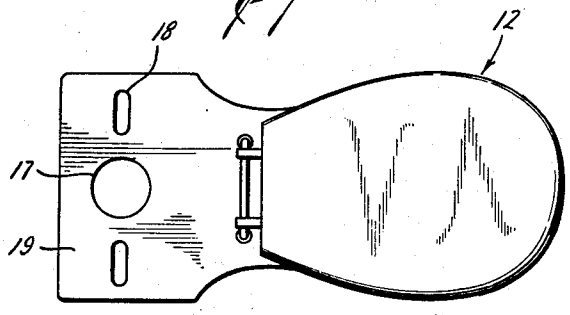


Fig. 6

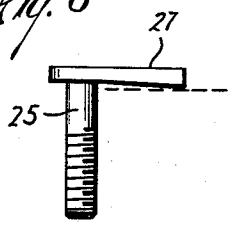
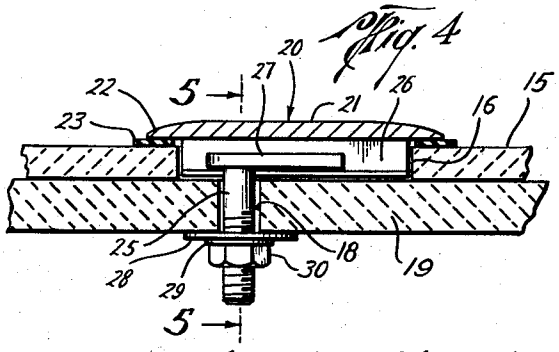


Fig. 4



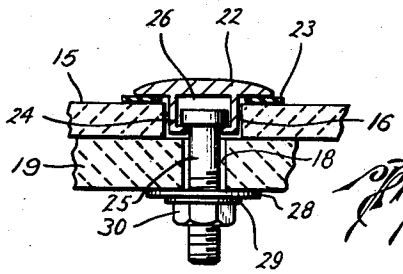


Fig. 5

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TOILET TANK, BOWL, AND ADAPTER CONNECTION

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Application October 1, 1956, Serial No. 613,085

6 Claims. (Cl. 4—68)

This invention relates to a toilet tank and bowl, and to an adapter connection therefor, and to a method of connection whereby tanks of various makes having connection openings in the bottom thereof variously spaced from the discharge opening centrally therein, may be assembled with toilet bowls of various makes having connection openings in the top thereof variously spaced from the inlet opening therein.

It is therefore a primary object of this invention to provide toilet tanks, toilet bowls, and adapter connections therefor, and a method of connection whereby toilet tanks of various makes may be assembled with toilet bowls of various makes by virtue of tank and/or bowl construction and adapter connections therefor.

It is another object of this invention to provide such a construction and method, whereby adapter connections may be made between tanks and bowls of various makes with a minimum effort, and a minimum of special equipment.

Other and further objects will be apparent when the specification herein is considered in connection with the drawings in which:

Fig. 1 is an elevation of an assembled toilet tank and bowl modified in accordance with this invention;

Fig. 2 is a bottom view of a tank modified in accordance with this invention;

Fig. 3 is a plan view of a bowl modified in accordance with this invention;

Fig. 4 is a longitudinal sectional elevation of an adapter connection for adapting the toilet tank of Fig. 2 to a conventional toilet bowl;

Fig. 5 is a transverse sectional elevation taken along section 5—5 of Fig. 4; and

Fig. 6 is an elevation of the special bolt included in the adapter.

Referring in detail to the drawings, a tank **11** is shown in Fig. 1 installed upon a bowl **12**, both tank and bowl being of conventional toilet size and construction except as hereinbelow described as to novelty. In the bottom view of the tank shown in Fig. 2 a central discharge passage or outlet or opening **14** is shown centrally of the bottom or base closure **15** of the tank, and equally longitudinally spaced on either side thereof slots **16** are provided in the base or tank bottom. Also the bowl **12** shown in Fig. 3 has a central passage or inlet **17** therein in the top **19** thereof and equally longitudinally spaced on either side thereof slots **18** are provided.

In practice it often happens that because of strikes, priorities and scarcities during emergency periods, or in booming building periods, it is not always possible to obtain the same make of toilet tank and bowl for assembly, with the consequence that a bowl of one manufacturer must be assembled with a tank of another manufacturer. In such cases the conventional round openings conventionally provided in tanks and bowls in place of the slots **16** and **18** hereinabove described may vary in spacing from the central opening **14** or **17**, respectively so that the round openings in tank base and top of bowl

do not coincide. Obviously, as set forth within the scope of the preceding sentence, connection may be made when the tank has slots while the bowl has only round holes or openings, or conversely when the bowl has slots while the tank has only round holes or openings.

In such case the material, usually procelain, of which tank and bowl are constructed does not readily lend itself to permitting extension of such round openings to provide coincidence between such tank and bowl openings, with the consequence that it is often difficult to assemble toilets and bowls when provided by different manufacturers having different spacing practices.

In order to accomplish the adaptation of the tank of Fig. 2 to a bowl, as shown in Fig. 3, or to a conventional bowl, an adapter or adapter connection as shown in Figs. 4–6 is provided. Such an adapter **20** comprises a slot insert **21** having a flange **22** of larger area than the slot **16** to fit therearound on a gasket **23** and a bolt head support **24** comprising two (2) oppositely facing sections of L-shape cross-section depending from the flange **22** and spaced apart slightly more than the diameter of a connection means or bolt **25**, the head of which is insertable in the slot **26** provided between the L's, so that the head **27** of the bolt shoulders on the upper faces of the lower legs of the L's. The head **27** is elongated to extend in one direction substantially beyond the body or shank of the bolt **25** to bear upon the L's.

As is conventional, the end of the shank of the bolt **25** is threaded and receives a large washer **28** thereover of size to bear upon the inner face of the bowl top **19** surrounding the opening **18**. Optionally, another smaller friction washer **29** may be inserted over the end of the bolt **25** to bear against the washer **28**; then when a nut **30** is threaded on the bolt end to bear on the washer **29**, the whole adapter is tightened so that the friction of the flange **22** bears tightly against the top of the gasket **23** to force its lower face tightly against the top surface of the tank bottom **15**.

As best seen in Fig. 6, the elongated bolt head **27** has the lower surface thereof to extend downwardly at an angle to the horizontal so that when the nut **30** is tightened the outer end of the bolt head **27** exerts a downward tension on the upper faces of the lower legs of the support L's **24** to firmly bind the tank bottom and bowl top in firm and sealed abutment.

Variation may be had in construction, for instance, the adapter **20** may be installed in the toilet bowl slots **18** in inverted position from the position shown in Figs. 4 and 5. Obviously in such case the washer **28** will bear against a gasket corresponding in function with the gasket **23** and such gasket in turn will bear against the upper face of the tank bottom **15** on either side of each slot **16**, or surrounding conventional bolt openings in the tank bottom in cases where the slots **16** are not provided therein.

As one modification the bolt support **24** may be a solid construction and drilled and tapped on the face opposite the flange **22** at closely spaced apart intervals along a center line running longitudinally centrally of the adapter connection **20**. In such case an ordinary cap screw may be substituted for the bolt **25** and nut **30** and installed with head to bear against the washer **29** to effect the binding abutment between tank bottom and bowl top as the cap screw is threaded into a selected tapped hole in the support **24**.

Broadly, this invention is not limited to the structural embodiments and method of connection herein disclosed, but other embodiments and modifications are considered as well as such may fall within the broad spirit of the invention and within the broad scope of interpretation claimed and merited for the appended claims.

What is claimed is:

1. As an assembly a toilet tank having a discharge opening centrally spaced in the bottom thereof and equally longitudinally spaced on either side thereof a longitudinally extending slot, a toilet bowl having a central inlet in the top thereof to receive discharge from said discharge opening and equally longitudinally spaced on either side thereof a longitudinally extending slot, and an adapter connection of substantially slot area and depth guidably to fit within each tank slot and to seal against the top side of the tank base and having a longitudinally extending opening therein and a bolt slot slightly greater than bolt diameter therebelow thereby providing shoulders on each side of said bolt slot adapted to support a bolt head therein and said bolt head having a radially outwardly and angularly extending extension thereon to bear against said shoulders at a spaced distance from the axis of said bolt, said bolt extending axially from said head into the bowl slot therebelow and including a washer to bear upon the sides of the bowl slot and a nut threadable on the end of the bolt to bind said washer against said bowl and said head extension against said shoulders whereby tanks and bowls may be tightly adjustably connected in leak-proof assembled relation in cases where the tank and bowl slots may be differently spaced in different makes of tanks and bowls.

2. As an assembly a toilet tank having a discharge opening centrally spaced in the bottom thereof and equally longitudinally spaced on either side thereof a longitudinally extending slot, a toilet bowl having a central inlet in the top thereof to receive discharge from said discharge opening and substantially equally spaced on either side thereof an opening, and an adapter connection of substantially slot area and depth guidably to fit within each tank slot and to seal against the top side of the tank base and having a longitudinally extending opening therein and a bolt slot slightly greater than bolt diameter therebelow thereby providing shoulders on each side of said bolt slot adapted to support a bolt head therein and said bolt head having a radially outwardly and angularly extending extension thereon to bear against said shoulders at a spaced distance from the axis of said bolt, said bolt extending axially from said head into the bowl opening therebelow and including a washer to bear upon the bowl surrounding the bowl opening and a nut threadable on the end of the bolt to bind said washer against said bowl and said head extension against said shoulders whereby tanks and bowls may be tightly adjustably connected in leak-proof assembled relation in cases where the tank slots and bowl openings may be differently spaced in different makes of tank and bowls.

3. An adapter assembly for connecting a toilet tank to a toilet bowl wherein said tank has a central discharge in the bottom thereof and equally longitudinally spaced on either side thereof a longitudinally extending slot and wherein said bowl has a central inlet in the bottom thereof and on either side thereof an opening, said assembly being spaced and each adapter assembly comprising an adapter connection of substantially slot area and depth guidably to fit within each of said slots and to seal against the top side of the tank base and having a longitudinally extending opening therein and a bolt slot slightly greater than bolt diameter therebelow thereby providing shoulders on each side of said bolt slot adapted to support a bolt head therein and said bolt head having a radially outwardly and angularly extending extension thereon to bear against said shoulders at a spaced distance from the axis of said bolt, said bolt extending axially from said head into the bowl opening therebelow and including a washer to bear upon the bowl surrounding the bowl opening and a nut threadable on the end of the bolt to bind said washer against the bowl and said head extension against said shoulders whereby tanks and bowls may be tightly adjustably connected in leak-proof assembled relation in cases where the tank slots and bowl openings may be differently spaced in different makes of tanks and bowls.

4. As an assembly a toilet tank having a discharge opening centrally spaced in the bottom thereof and equally longitudinally spaced on either side thereof a bolt connection opening, a toilet bowl having a central inlet in the top thereof to receive discharge from said discharge opening and equally longitudinally spaced on either side thereof a longitudinally extending slot, and an adapter connection of substantially slot area and depth guidably to fit into each bowl slot and when connected to seal against the lower side of the bowl top and having a longitudinally extending opening therein and a bolt slot slightly greater than bolt diameter therebelow thereby providing shoulders on each side of said bolt slot adapted to receive a bolt head therein and said bolt head having a radially outwardly and angularly extending extension thereon to bear against said shoulders at a spaced distance from the axis of said bolt, said bolt extending axially from said head through said tank opening thereabove and including washer means to bear upon the upper face of the tank bottom surrounding said tank opening, and a nut threadable on the end of the bolt to bind said washer against the tank bottom and said head extension against said shoulders whereby tanks and bowls may be tightly adjustably connected in leak-proof assembled relation in cases where tank openings may be variously spaced from the tank discharge opening in various makes of tanks.

5. An assembly of toilet tank and bowl as claimed in claim 4 in which the tank bolt connection openings comprise longitudinally extending slots.

6. The assembly of two elements comprising a toilet tank and toilet bowl providing respective central communcating fluid passage means therebetween, slot means provided in and extending through one element and substantially equally spaced on opposite sides of said passage means, said slot means extending longitudinally along the axis through said slot means and said passage means, openings provided in and extending through the other of said elements and disposed along an axis parallel to said slot axis and substantially equally spaced on opposite sides of said passage means, said assembly including adapter means disposed in said slot means and including leak-proofing means to exclude fluid passage through said slot and also including means to support said adapter means by contact with said slot providing element, said assembly also including connection means each having a shank to extend through an opening means and also having a securing means axially positionable upon an end of said shank to be adjustably brought to bear against the side of the opening means providing element opposite the slot means providing element, the other end of each connection means extending from its shank at other than right angles to contact a respective adapter means at a spaced distance from the axis of its shank in manner that adjustment of securing means position upon its shank results in said tank and said bowl being drawn together in more tightly fitting contact with greater assemblying contact thrust being exerted at predetermined spaced distance from said shank axis than at other distances therefrom, connection between tank and bowl thus being made by such contact and over range of variation of openings spacing from said central passage means for various openings spacing as encountered in various makes of openings providing elements.

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