

Feb. 28, 1939.

P. L. BERTRAND

2,148,896

TOILET BOWL VENTILATING DEVICE

Filed Sept. 7, 1938

3 Sheets-Sheet 1

FIG. 1

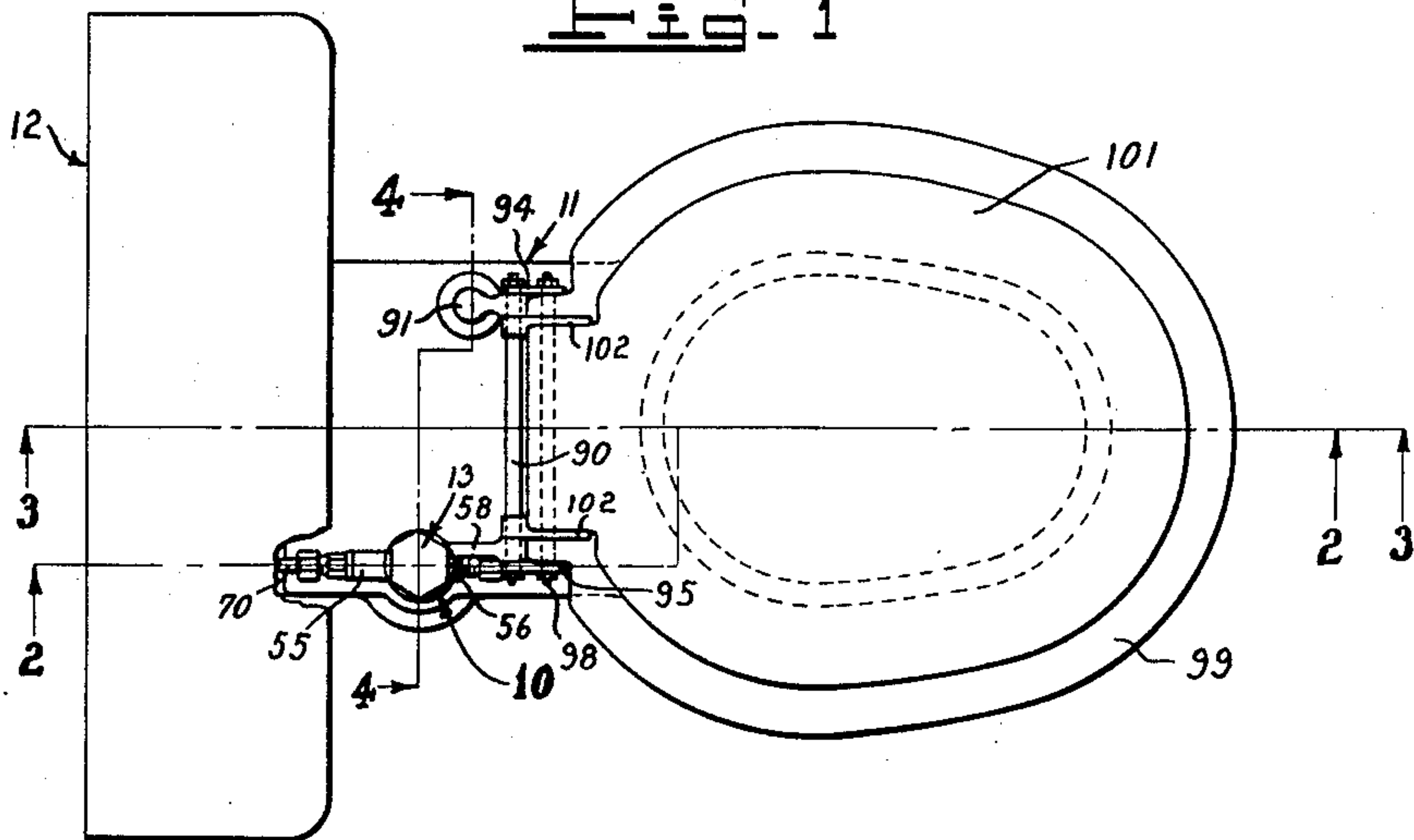
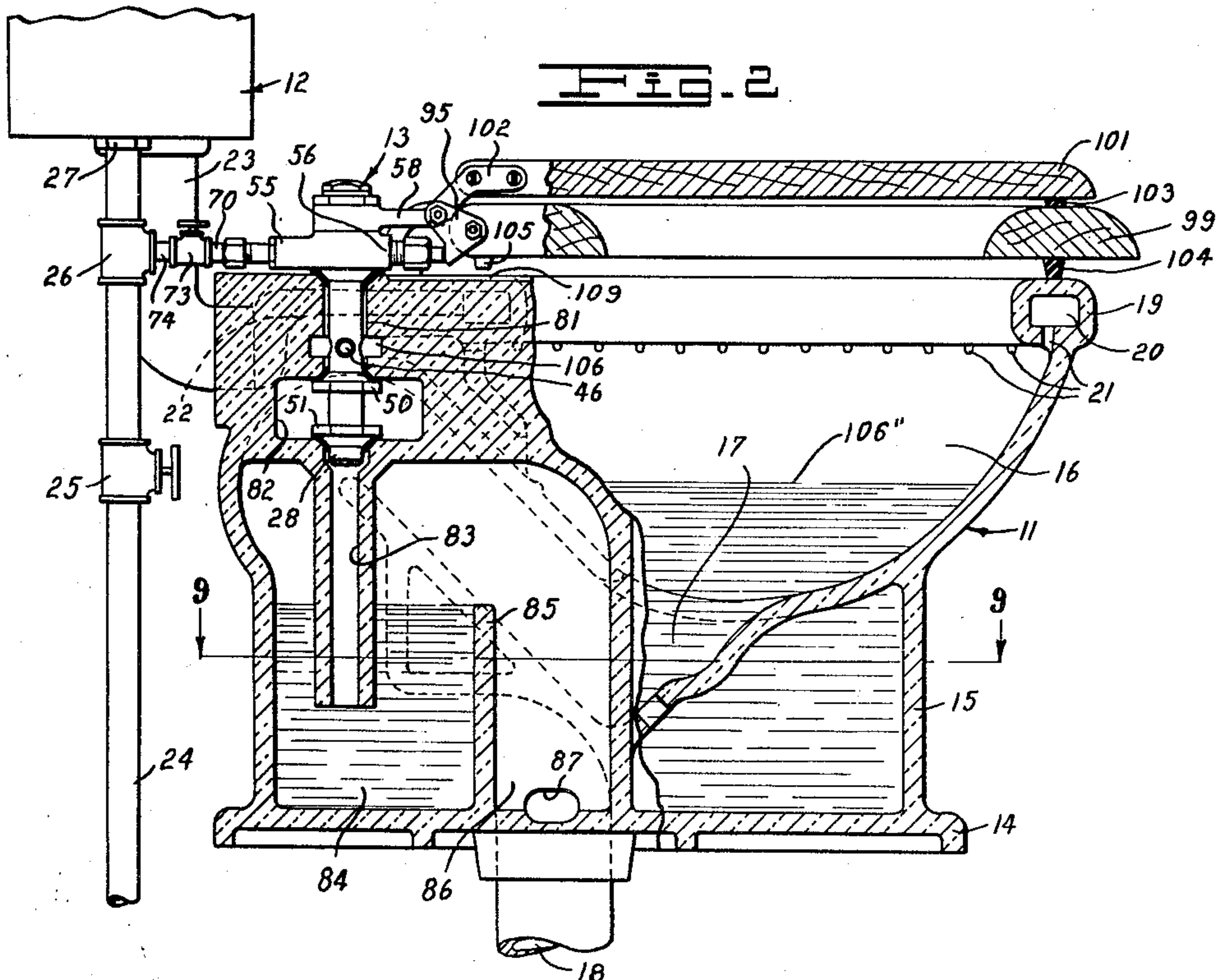


FIG. 2



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3 Sheets-Sheet 2

FIG. 3

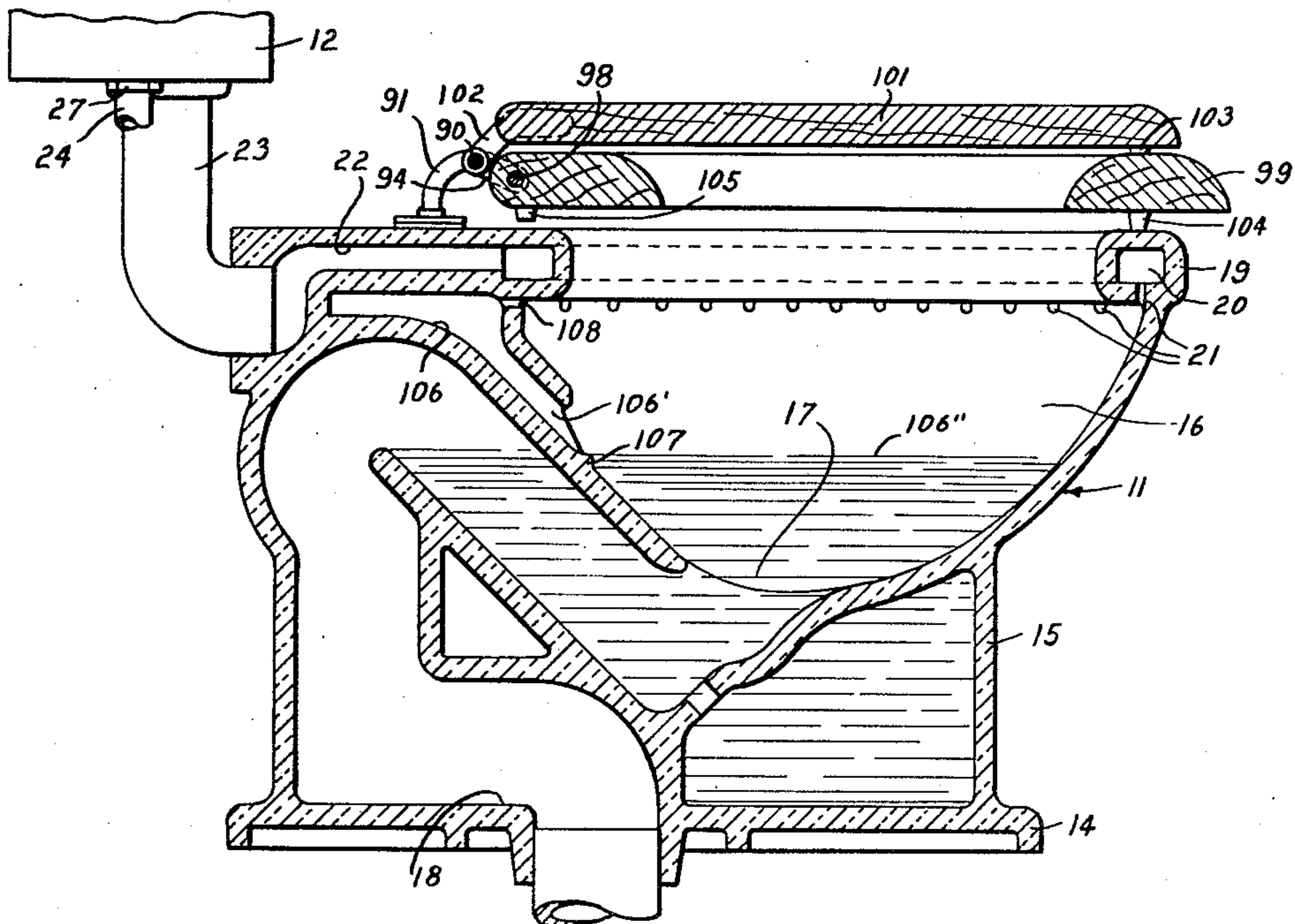


FIG. 4

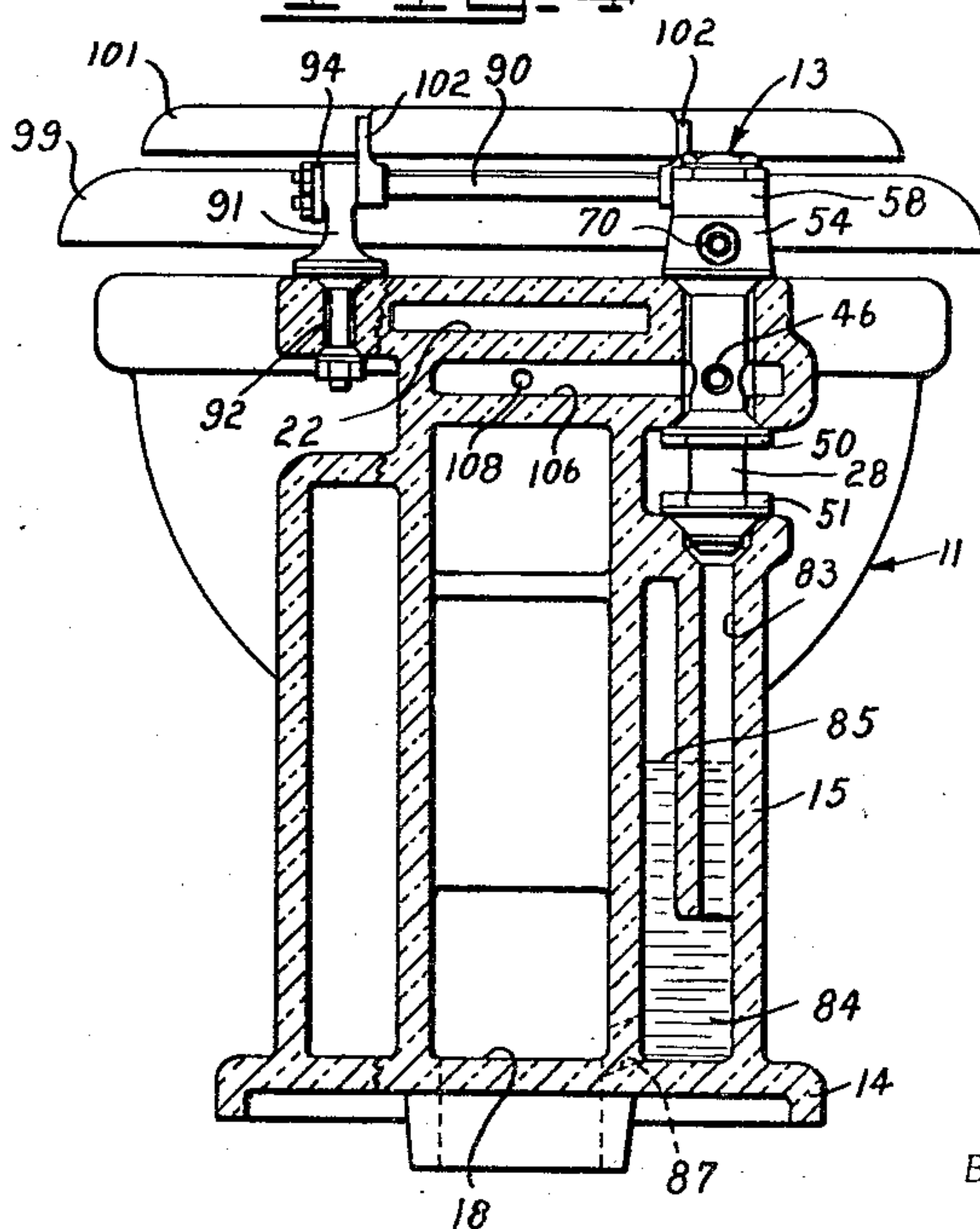
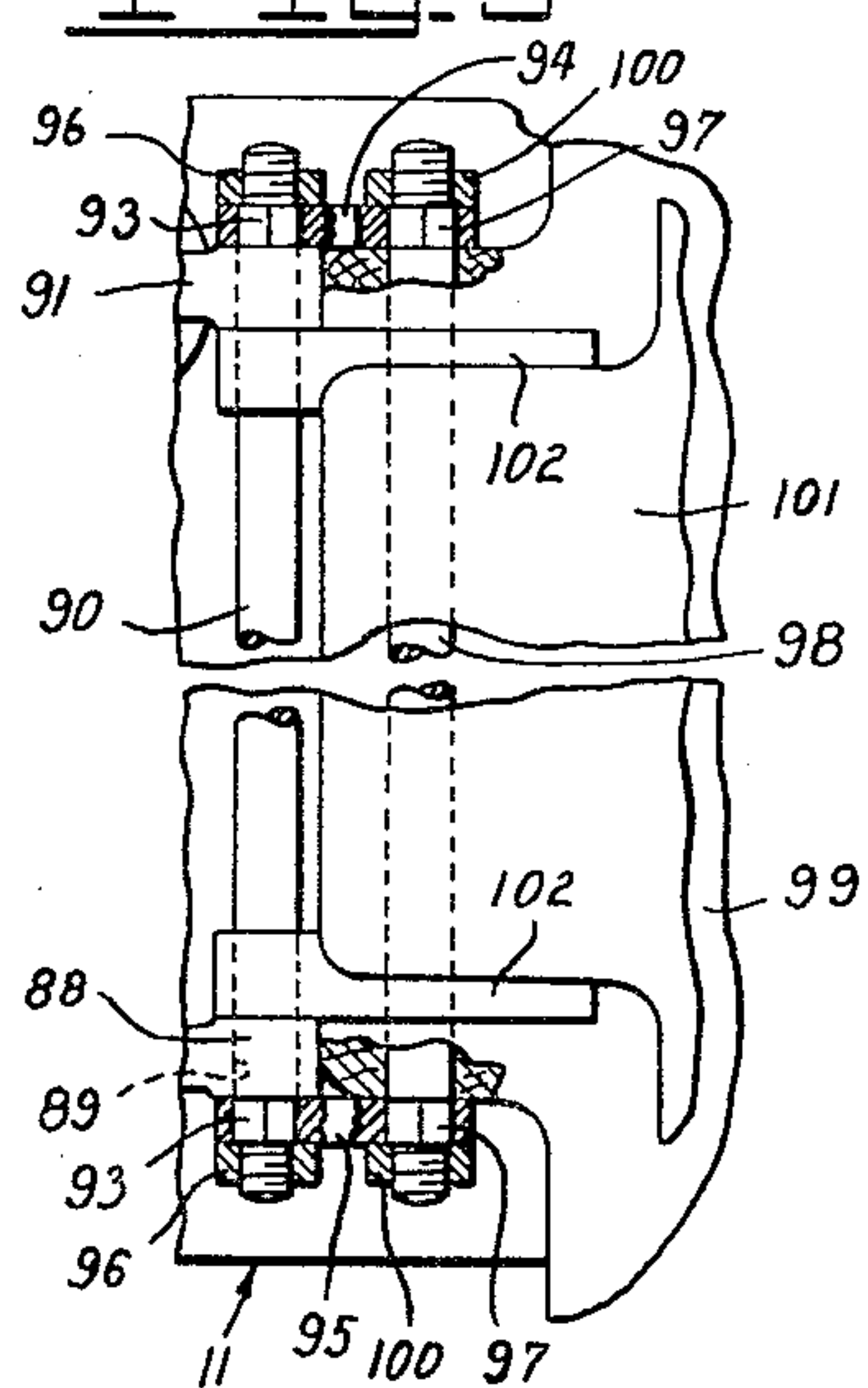


FIG. 5



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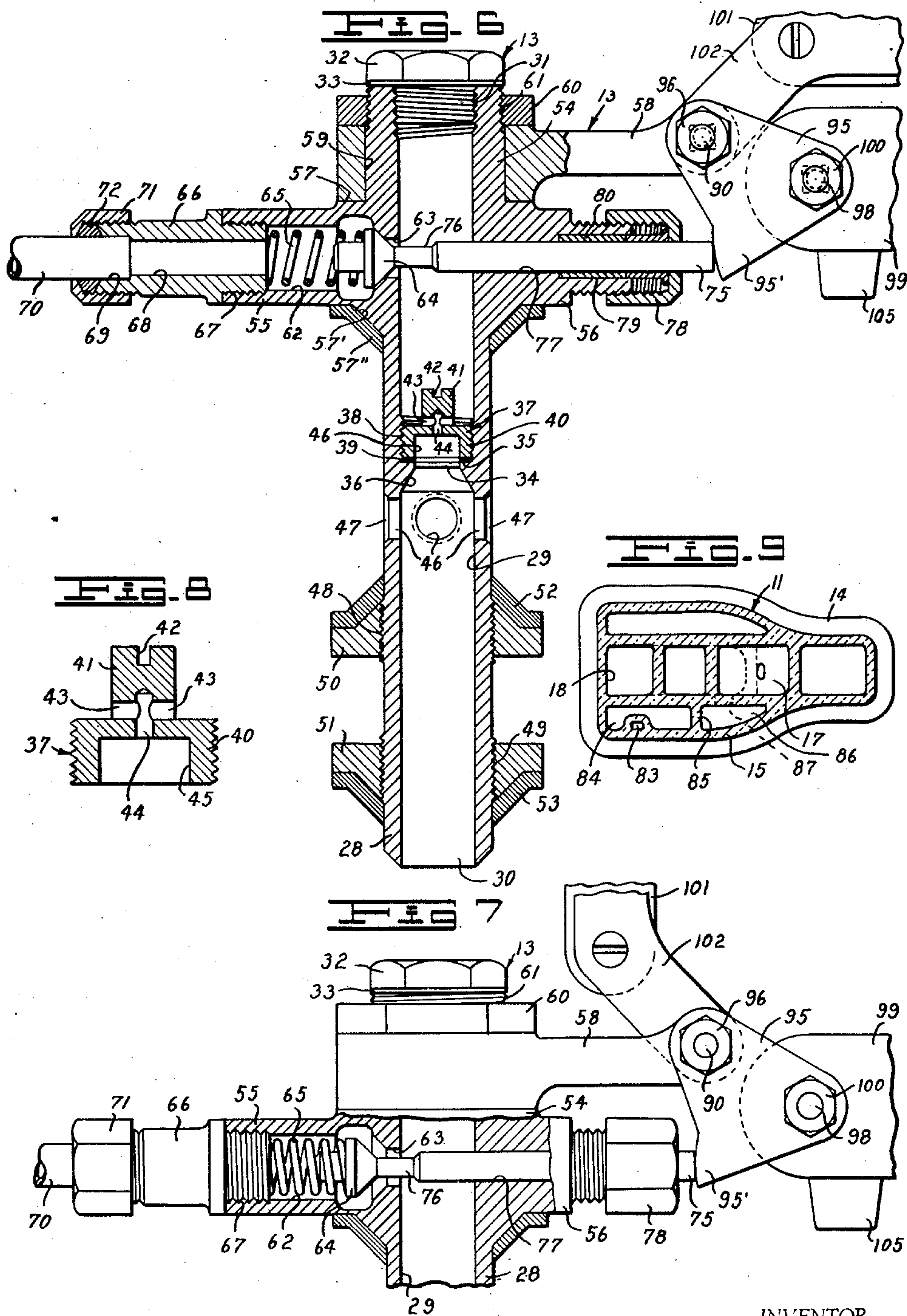
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,148,896

TOILET BOWL VENTILATING DEVICE

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Application September 7, 1938, Serial No. 228,722

13 Claims. (Cl. 4—215)

This invention relates to improvements in ventilating toilets.

The general object of this invention is to provide a novel toilet embodying novel forced draft means for conveying obnoxious odors therefrom.

Another object of my invention is to provide a novel forced draft ventilating system for toilets.

Another object is to provide a novel toilet ventilating means which is entirely automatic in operation.

A further object is to provide a novel toilet ventilating valve mechanism operated by applying weight to the seat.

Another object of the invention is to provide a novel toilet ventilating apparatus wherein the parts are all mounted within the toilet bowl and wherein the parts can be economically made and installed.

An additional object of my invention is to provide novel forced draft ventilating means for a toilet bowl which is free from clogging and other troubles and which will operate satisfactorily, without need for servicing or attention, over long periods of time.

Other objects and advantages of my invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a top plan view, with parts broken away, showing a ventilated toilet embodying the features of my invention;

Fig. 2 is a section taken approximately on line 2—2 Fig. 1;

Fig. 3 is a section taken on line 3—3 Fig. 1;

Fig. 4 is a section taken on line 4—4 Fig. 1;

Fig. 5 is an enlarged fragmentary top plan view with parts broken away showing the seat mounting;

Fig. 6 is an enlarged vertical section through the valve mechanism with parts broken away;

Fig. 7 is an enlarged fragmentary side elevation of the valve mechanism shown in another position with parts broken away;

Fig. 8 is an enlarged vertical section of the nozzle; and

Fig. 9 is a section taken on line 9—9 Fig. 2 on a reduced scale.

Referring to the drawings by reference characters I have shown my improved ventilating means as embodied in a toilet which is indicated generally at 10. As shown the construction includes a toilet bowl 11 having the usual flush tank 12 and a valve mechanism 13.

The toilet bowl 11 includes a base 14 and walls 15 defining the usual internal chamber 16 hav-

ing a lower water trap 17 which communicates with the usual waste pipe outlet 18.

The upper end of the bowl 11 is provided with the usual rim 19 having an internal annular water chamber 20 from which water is discharged through a plurality of apertures 21. The internal chamber 20 communicates with the flush tank 12 through a conduit 22 and pipe 23.

Water is supplied to the flush tank by means of a conduit 24 which includes a valve 25, a T member 26, and a suitable coupling 27 for securing the conduit to the flush tank 12.

The valve mechanism 13 comprises a cylindrical body portion 28 having a central bore 29 which is open at the lower end as at 30 and internally threaded at the upper end as at 31 to receive a threaded closure member 32 which includes a packing ring 33.

Approximately midway between the upper and lower end of the central bore 29 an annular boss 34 provides a shoulder 35, the lower side of which is bevelled outwardly as at 36. A nozzle 37 threadedly engages the bore 29 as at 38 and secures a packing ring 39 against the shoulder 35. The nozzle 37 (see Fig. 8) includes a body portion 40 having a centrally arranged upright boss 41 in which a slot 42 is provided in which a screw driver may be inserted. The nozzle 37 includes apertures 43 in the lower end of the boss 41 which intersect an axial aperture 44 extending downwardly into a cylindrical chamber 45 in the body portion 40.

Directly below the nozzle 37 and shoulder 35 a plurality of apertures 46 are provided in the body 28. These apertures communicate with the exterior of the valve 13 and the ends are outwardly bevelled as at 47 thus providing a more evenly distributed flow of air.

The lower end of the cylindrical body portion 28 is provided with externally threaded portions 48 and 49 to receive clamping nuts 50 and 51 and gaskets 52 and 53. The upper end of the body portion 28 has an enlarged head portion 54 from which opposed bosses 55 and 56 project. A shoulder 57 is arranged above the bosses 55 and 56. A bevelled portion 57' is disposed below the bosses and is engaged by a gasket 57''.

A bracket 58 having a central bore 59 engages the enlarged head portion 54 and is secured thereon and against the shoulder 57 by a nut 60 which engages threads 61 on the enlarged head portion 54.

The boss 55 includes a central bore 62 having a reduced bore 63 at the inner end which is bevelled to provide a seat against which a

valve 64 is normally held closed by a spring 65. The spring 65 is held compressed by a coupling 66 threadedly secured to the boss 55 as at 67. The coupling 66 includes a central bore 68 having an enlarged outer bore 69 in which a conduit 70 is secured in place by a packing nut 71 and packing 72 and has its outer end connected to a valve 73 which is in turn connected to the T member 26 by a conduit 74 thereby supplying water to the valve 13.

The valve 64 includes a valve rod 75 having a reduced portion 76. The valve rod 75 extends across the bore 29 into a central bore 77 in the opposed boss 56 and out through a packing nut 78 which secures suitable packing 79 in an enlarged bore 80 in the outer end of the bore 77.

The valve 13 is mounted within an aperture 81 in the rear and at one side of the toilet bowl 11 and is secured in position by the nuts 50 and 51 and is maintained against leakage by the gaskets 52, 53 and 57'. A lateral opening 82 is provided whereby the nuts 50 and 51 may be easily reached. The nut 51 secures the lower end of the valve within a conduit 83 which is in alignment with the aperture 81. The conduit 83 extends down within the water held in a trap 84 by a dam 85 integral with the walls 15. The dam provides a channel 86 in front of the dam 85 and an aperture 87 at the lower end connects the channel with the waste pipe outlet 18.

The bracket 58 has an enlarged head 88 with an aperture 89 therein which pivotally supports one end of a shaft 90. The other end of the shaft 90 is supported in an aperture on a bracket 91 secured to the toilet bowl 11 at the rear and at one side as at 92. The outer ends of the shaft are provided with square shanks 93 on which is mounted shackles 94 and 95 secured in place by nuts 96. The opposite end of the shackles 94 and 95 engage square shanks 97 on the end of a second shaft 98 which extend through the rear end of the seat 99 and are secured in place by nuts 100. The square shanks on the ends of the shafts are to eliminate any tendency for the seat to twist when weight is applied. A seat cover 101 is pivotally mounted on the shaft 90 by means of brackets 102. The shackle 95 includes a downwardly projecting cam 95' which is in alignment with the end of the valve rod 75.

The front of the seat cover 101 is provided with a rubber bumper 103 directly over a rubber bumper 104 on the seat 99. The bumper 104 engages the top of the toilet bowl 11. A second rubber bumper 105 on the rear of the seat 99 is shorter than the bumper 104 and only contacts the toilet bowl 11 when weight is applied to the seat.

When the valve 13 is securely held in place the apertures 46 in the cylindrical body 28 are in alignment with a chamber 106 which communicates with the chamber 16 by means of a conduit 106' just above the normal water level 106'' of the bowl. A curved boss 107 is provided on the toilet bowl directly in front of the lower end of the conduit 106' to provide a more gradually inclined inlet for the gas to enter the conduit 106'. An air bleed hole 108 is provided below the rim 19 of the toilet bowl 11 to prevent flushing water being drawn into the valve device 13 when the toilet is flushed and the water level 106'' rises and covers the entrance to chamber 106. A groove 109 is provided directly below the boss 56 and its component parts to catch any water that may drip

therefrom by reason of possible seepage by the valve packing 80 and valve stem 75 and to provide a means to divert it into the toilet bowl 11.

In operation the valves 25 and 73 are normally open and the seat cover 101 may be raised in the usual manner and upon applying weight to the seat 99, the cam 95' on the shackle 95 rocks about the shaft 90 and opens the valve 64 allowing water to pass through into the bore 29 thence downwardly to the nozzle 37 and into the apertures 43 wherein the water coming from both sides at high velocity meets in head on collision which causes a maximum of turbulence breaking up the fluid into fine globules. The water emerges from the nozzle in the form of high velocity, uniform spray which is directed longitudinally and centrally through the bore 29. As the water emerges from the aperture 44 and passes the apertures 46 in the body 28 a partial vacuum is produced thereby causing a rush of air through the apertures 46 and causing obnoxious gases to be drawn from within the toilet bowl 11 up through the chamber 106 and into the bore 29, thence down through the conduit 83, whence it bubbles up through the water in the trap 84 and over the dam 85 and through the channel 86 and aperture 87 in the waste outlet pipe 18. Also the spray from the nozzle 37 condenses and supplies the water for the trap 84, the surplus escaping over the dam 85. Upon removal of the weight from the seat the valve automatically closes.

From the foregoing description it is apparent that I have invented a novel ventilator for toilets.

Having thus described my invention I claim:

1. A valve mechanism for toilets, comprising a cylindrical body, valve controlled means to admit fluid to said body, a nozzle member in said body, said nozzle member including a body portion having an aperture leading from one end thereof, said body including a second aperture intersecting said first aperture one of said apertures communicating with one end of the body and the other aperture communicating with the other end of said cylindrical body, said cylindrical body beyond said nozzle having an aperture affording communication between the interior and the exterior thereof.

2. A venting mechanism for toilets comprising a cylindrical body having bosses at one end thereof and having a bevelled portion beneath said bosses, a gasket engaging said bevelled portion, the lower portion of said body having threads thereon, a pair of spaced nuts engaging said threads, each of said nuts including bevelled portions, gaskets engaging said bevelled portions, means to admit fluid to said body, said body having an atomizing nozzle therein, said body having an open end and having apertures through the wall thereof disposed between said open end and said nozzle.

3. A venting mechanism for toilets, comprising a cylindrical body, valve means to admit fluid to said body, a nozzle member in said body, said nozzle member including a body portion having a boss therein, said body having an axial aperture leading from one end, said body including radial apertures intersecting said axial aperture, said cylindrical body being outwardly bevelled beyond said nozzle and having a plurality of apertures affording communication between the interior of said cylindrical body and the exterior thereof, said last mentioned apertures being outwardly bevelled at their outer ends.

4. In a toilet device, a body having walls forming a bowl, seat controlled valve means, means to supply fluid under pressure to said bowl, said body including a drain groove below said valve means, an outlet member leading from said bowl, said body having a trap therein at one side thereof, a dam member defining one wall of said trap, said body having a conduit extending into said trap and having a channel in front of said dam, said body having an aperture affording communication between said channel and said outlet, said body having a lateral opening communicating with said conduit and having an aperture coaxial with said conduit and communicating with said lateral opening, said body having a chamber communicating with said aperture, a conduit extending downwardly from said chamber to said bowl and opening above the normal fluid level in said bowl, said bowl having a curved boss in advance of said opening, said body having a bleed hole leading from said bowl to said last mentioned conduit.

5. A venting mechanism for toilets, comprising a hollow body closed at one end and having a pair of opposed bosses at one end, said body having an aperture including a valve seat therein opening through one of said bosses, a valve engaging said seat, means to urge the valve to its seat, means to supply fluid under pressure to said one boss, said other boss having an aperture therethrough, said valve having a stem extending through said other aperture, means to shift said stem, a nozzle member in said body, said nozzle member including a body portion having a boss thereon, said body having a chamber in the lower end thereof, said body having an axial aperture leading from said chamber, said boss including radial apertures intersecting said axial aperture, said cylindrical body being outwardly bevelled beyond said nozzle and having a plurality of apertures affording communication between the interior of said cylindrical body and the exterior thereof, said last mentioned apertures being outwardly bevelled at their outer ends.

6. A venting mechanism for toilets, comprising a cylindrical body having a pair of opposed bosses at one end, said body having an aperture therein opening through one of said bosses, a valve engaging said aperture, means to urge the valve to its seat, means to supply fluid under pressure to said one boss, said valve having a stem, means to shift said stem, a nozzle member in said body, said nozzle member including a body portion having a boss thereon, said body having a chamber in the lower end thereof, said body having an axial aperture leading from said chamber, said boss including radial apertures intersecting said axial aperture, said cylindrical body having a plurality of apertures affording communication between the interior of said cylindrical body and the exterior thereof.

7. In a toilet device, a body having walls forming a bowl, means to supply fluid under pressure to said body, an outlet member leading from said bowl, said body having a trap therein, a dam member defining one wall of said trap, said body having a conduit extending into said trap and having a channel in front of said dam, said body having an aperture affording communication between said channel and said outlet, said body having an aperture coaxial with said conduit, said body having a chamber communicating with said aperture and having a conduit extending downwardly from said chamber to said bowl and opening above the normal fluid level in said bowl.

8. In a toilet device, a body having walls forming a bowl, means to supply fluid under pressure to said body, an outlet member leading from said bowl, said body having a trap therein, a dam member defining one wall of said trap, said body having a conduit extending into said trap and having a channel in front of said dam, said body having an aperture affording communication between said channel and said outlet, said body having an aperture coaxial with said conduit, said body having a chamber communicating with said aperture, a conduit extending downwardly from said chamber to said bowl and opening above the normal fluid level in said bowl, said body having a bleed hole leading from said bowl to said last mentioned conduit.

9. A valve control mechanism for toilets, comprising a hollow body having a shoulder, a bracket having an aperture, said bracket being fitted on said body and engaging said shoulder, a shackle mounted on said bracket, a cover, said cover engaging said bracket above said shackle, a seat, said seat engaging said shackle, means whereby when the seat is shifted the shackle is rocked, a valve associated with said body, said valve having an operating stem, and said shackle having a cam surface thereon disposed in the path of said valve stem.

10. A valve control mechanism for toilets, comprising a cylindrical body having a pair of opposed bosses at one end, a shoulder adjacent said bosses, a bracket having an aperture, said bracket being fitted on said body and engaging said shoulder, a shackle mounted on said bracket, a cover, the portion of said bracket engaging said cover above said shackle, a seat, said shackle engaging one side of said seat, means whereby when the seat is shifted the shackle is rocked, said body having a valve aperture therein opening through one of said bosses, a valve engaging said valve aperture, means to urge the valve to its seat, means to supply fluid under pressure to said one boss, said other boss having an aperture therethrough, said valve having a stem extending through said other boss aperture, said shackle having a cam surface thereon disposed in the path of said valve stem.

11. In a toilet device, a body having walls forming a bowl and having an outlet, said body having a trap therein and including means to afford communication between said trap and said outlet, said body having a conduit extending into said trap and having an aperture leading to said conduit, a tube in said aperture, means to supply fluid to said tube, said tube including an atomizing nozzle disposed intermediate the length thereof, said tube having apertures in the wall thereof affording communication with said aperture, said first mentioned body having a conduit extending downwardly from said aperture to said bowl.

12. In a toilet construction, a body having walls forming a bowl and having an outlet, said body having a trap therein and including means to afford communication between said trap and said outlet, said body having a conduit extending into said trap and having an aperture leading to said conduit, an atomizing device in said aperture, said device including a tube communicating with said conduit, said tube having a valve controlled inlet, means controlling passage through said inlet, said atomizing device including a nozzle member disposed intermediate the length thereof, said tube having apertures in the wall thereof affording communication from said aperture to the in-

terior of said device, said first mentioned body having a conduit extending downwardly from said aperture to said bowl and opening above the normal fluid level in said bowl.

- 5 13. In a toilet construction, a body having walls forming a bowl and having an outlet, said body having a trap therein and including means to afford communication between said trap and said outlet, said body having a conduit extending into
10 said trap and having an aperture leading to said conduit, an atomizing device in said aperture, said device including a tube communicating with said conduit, said tube having a valve controlled inlet, said controlled means controlling passage

through said inlet, said atomizing device including a nozzle member disposed intermediate the length of said tube, said tube having apertures in the wall thereof affording communication with said aperture, said body having a conduit extending downwardly from said aperture to said bowl and opening above the normal fluid level in said bowl, said bowl having a boss adjacent the lower end of said conduit and having a bleed aperture substantially in alignment with the upper end of said aperture and fluid tight clamping means for holding said atomizer device in said body aperture. 5 10

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