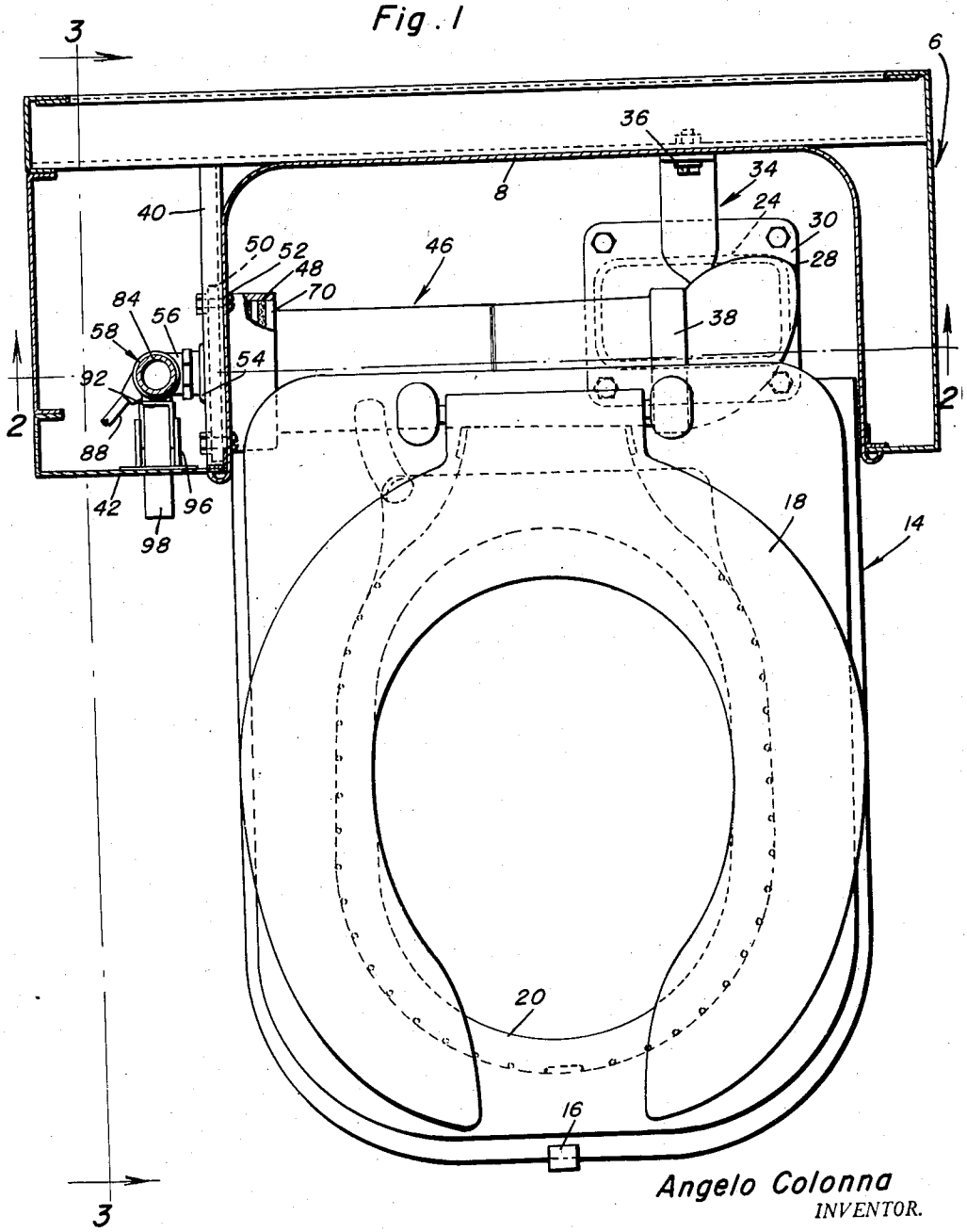
March 18, 1958 A. COLONNA 2,826,762

FOLD-AWAY TOILET WITH IMPROVED BOWL HINGING MEANS

Filed July 26, 1956 3 Sheets-Sheet 1

Fig. 1



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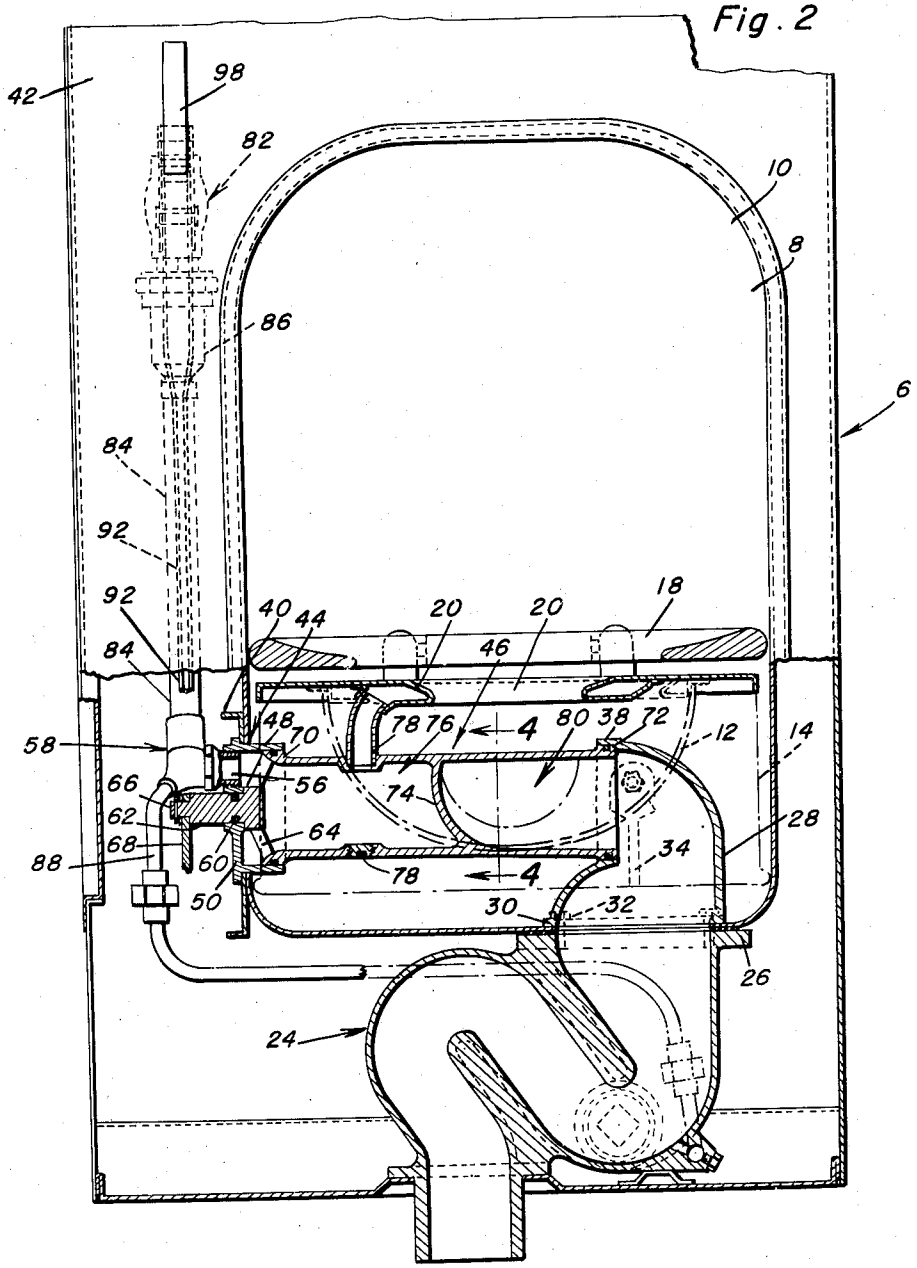
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FOLD-AWAY TOILET WITH IMPROVED BOWL HINGING MEANS

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Fig. 2



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FOLD-AWAY TOILET WITH IMPROVED BOWL HINGING MEANS

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Fig. 3

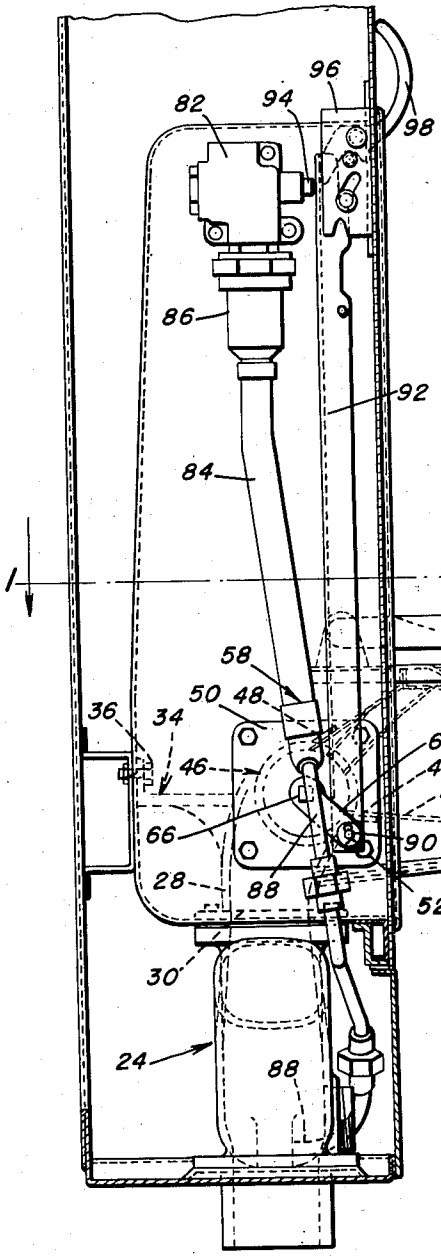
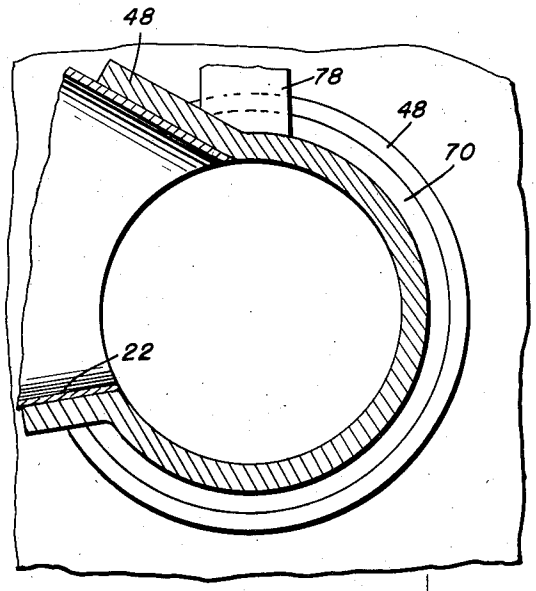


Fig. 4



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United States Patent Office 2,826,762 Patented Mar. 18, 1958

2,826,762

FOLD-AWAY TOILET WITH IMPROVED BOWL HINGING MEANS

Angelo Colonna, Philadelphia, Pa.

Application July 26, 1956, Serial No. 600,349

3 Claims. (Cl. 4—10)

The present invention relates to fold-away or folding flush-type toilets which are primarily designed and therefore suitably adapted for practical use in washrooms and toilets of limited areal size. As will, no doubt, occur to the reader quite promptly, folding toilets, with or without wash basins, are usually associated with small quarters such as are available therefor on railway cars, airplanes, boats, submarines and analogous conveyances. However, and of late, there has been a demand for compact fold-away toilets on and in connection with so-called land structures, for example, homes, apartments, hospitals and the like.

Speaking somewhat generally, hingedly mounted toilet bowls which are expressly constructed to swing upwardly and normally into an out-of-the-way position in a compartment in a wall cabinet are not such in construction that they can be unqualifiedly endorsed for installation in restricted areas in homes and the like. That is to say, a study of the overall problem has shown that installations on land structures must be such that they serve not only the manufacturing requirements and economies of of manufacturers, distribution and sale requirements of plumbing and supply houses and users in general, but the needs of plumbers and especially the provision of requisite adaptations which comply with sanitation code requirements. It follows therefore that the object of the instant invention is to structurally, functionally and otherwise improve upon similarly constructed and performing prior art fold-away toilets and to solve the over-all problem taking into account the prerequisites above touched upon in an ever so general way.

It will aid the reader in familiarizing himself with the nature of the subject matter herein under advisement by knowing that much of the structure herein revealed is already covered in one way or another in prior patents. For example, Patent No. 2,725,575 on a folding water closet granted to me on December 6, 1955 should, it is believed, be referred to. Secondly, reference should be made to Patent 2,750,599 and other material which may be touched upon in the instant presentation as will be hereinafter evident.

Briefly, the prior art teaches that it is now old to provide a stationary cabinet or an equivalent structure having a bowl receiving compartment into which the hingedly mounted liftable and lowerable flush type bowl is swung and confined in its up out-of-the-way position. A fixed soil pipe is provided and the intake end of this is provided in one manner or another with an elbow, a cradle or a similar adaptation. The associated bowl is provided with a flush water receiving, circulating and distributing rim around its top portion and has a restricted fluid and fecal matter funneling neck at its emptying or discharge end. A cylindrical head is integrated with and communicatively connected to the discharge neck and the end portions of the neck are mounted for angular rotation in relatively fixed bearing means. Flush water from a remote control valve is passed under pressure through an end portion of the hinging head and then through an appropriate duct connection to an aperture distributing or flush ring or rim on the fold-away bowl.

As already touched upon and whereas the structural arrangements covered in the previous patents are entirely acceptable for use on and in connection with mobile conveyances such as railway cars and so on, the facilities which have been heretofore appropriated to deliver the flush water from the source of supply, the flush valve, to the bowl by way of the hinging head have not measured up to the requirements of the sanitation and plumbing code prerequisites. To the end that this situation may be effectually remedied the improvements herein revealed and required have been evolved and produced. More explicitly, the invention has to do with a novel and practical open ended hinging head which takes the form of a cylinder and which is partitioned between its ends to provide individual chambers or compartments, one for reception and passage of the flush water, and the other for reception of the fecal matter and waste liquids and wherein the desired results are obtained by joining said head with the fecal matter discharge neck of the bowl.

In carrying out a preferred construction and arrangement spaced apart relatively fixed bearings are provided, one being embodied in an elbow-like fitting which is communicatively arranged atop the usual S-trap leading to the disposal pipe.

Novelty in addition is predicated on a special end construction at the intake end of the stated hinging head wherein a fixed adapter is provided and is in turn provided with a bearing and which provides means whereby a coupling may be communicatively connected thereto and also connected to the lower end of a rigid conduit or pipe, the latter at its upper end being, in turn, connected with the required flush valve whereby an arrangement is had which meets, it is believed, the sanitation and plumbing requirements in most areas.

Stated somewhat more generally, an overall objective is to improve upon and reduce the number of parts entering into the combination, thereby not only increasing the efficiency of the structure as a whole but rendering the same less costly to manufacture and to otherwise simplify the factors of assembling, repairing, sale and mode of operation.

In the drawings:

Fig. 1 is a view in section and elevation which may be treated as a plan view of the toilet bowl in its open position, or alternatively, a section taken approximately on the plane of line 1—1 of Fig. 3;

Fig. 2 is a view with parts in section and elevation based on Fig. 1 and taken approximately on the line 2—2 of Fig. 1, looking in the direction of the arrows;

Fig. 3 is a section on the line 3—3 of Fig. 1; and

Fig. 4 is an exaggerated section on the line 4—4 of Fig. 2.

It will be evident to the reader by familiarizing himself with Patents 2,725,575 and 2,750,599 that many of the details herein disclosed are also disclosed in those patents. It is not intended, therefore, to duplicate any of the claimed subject matter in those patents here or to delve into great detail into information given in those patents which is shown, but not claimed, here. In passing therefore, the aforementioned cabinet is denoted by the numeral 6 and may vary in construction so that it will include a compartment or space 8 into which the toilet bowl structure folds to an out-of-the-way position when not in use. The opening in the front is denoted in Fig. 2 by the numeral 10 and a sheet material toilet bowl is denoted at 12 and this is suitably encased

in an appropriate housing **14**. The latch which holds the encased bowl in an up out-of-the-way position is denoted at **16**. The hingedly mounted seat is denoted at **18** and is of any appropriate construction and suitably mounted. The perforated ring or rim on the top of the bowl is denoted at **20** as is seen in Fig. 2. The discharge neck, which may be said to be somewhat semi-cylindrical in cross-section, is denoted at **22** and is communicatively joined and integral with the discharge end of the bowl and is shaped as shown in dotted lines in Fig. 3. The extreme discharge end portion thereof is best shown in Fig. 4. Before discussing the details of the bowl and its hinging and mounting means reference is made now to Fig. 2 wherein **24** denotes the aforementioned S-trap which is communicatively joined at its lower end with a soil pipe or the like (not detailed). On the flanged upper end **26** of the trap there is an elbow-like fitting **28** which is one of the improved features here and which is appropriately hollow and which is provided at its bottom with a flange **30** which is bolted in place as at **32**. Incidentally, the numeral **34** designates a bracing bracket which serves to stabilize the fitting and is of any appropriate construction and suitably bolted in place as at **36** in Fig. 3. As seen in Fig. 1 the upper neck portion of the elbow is laterally directed from right to left and is fashioned into an annular bearing **38**.

Looking now to the left in Fig. 2 attention is directed to a horizontal channel-shaped stabilizing member which is denoted generally by the numeral **40**. This is suitably supported in the cabinet and extends from the point seen in Fig. 1 to the front wall **42**. The web portion of this is provided with an aperture which is utilized to accommodate an insertible and removable adapter **44**. This adapter has other functions and one of them is to cap over and close an adjacent end portion of a cylindrical hinging head **46** which is joined to the aforementioned funneling or discharge neck as at **48** in Fig. 4. Referring, however, to the adapter **44** this comprises an annular collar-like portion **48** providing a bearing, and a closing plate **50** bolted in place as at **52**. This plate has an outstanding boss **54** which is provided with a screw threaded hole to accommodate one branch **56** of a rigid coupling **58**. This embossed portion is also provided somewhat centrally with a bearing **60** which serves to accommodate a stub shaft **62** carried by the arms **64** of a spider formed integrally with one open end portion of the aforementioned hinging head **46**. The stub shaft terminates in a reduced extension **66** to which a crank arm **68** is connected. Reverting to the hinging head this is an elongate open ended cylinder and the left hand end is slightly enlarged where the spider is formed to provide an outstanding annulus **70** which is channeled and provided with a packing ring and provides a trunnion or journal which is rotatable in the bearing **48**. There is an equivalent packed journal or trunnion **72** at the right hand end as also seen in Fig. 2 and this is mounted for rotation in the aforementioned bearing **38**. Interiorly the cylinder is divided by an imperforate partition **74** at the left into a water intake space **76** having a clean out plug **78**. The space in the cylinder receives water by way of the spider openings and bearing **48** from the branch **56** of the coupling **58**. The water is transferred from the space **76** into a short rigid tube or pipe **78** which communicates with the rim **20** in the manner shown best in Fig. 2. The right hand space or compartment **80** provides for reception of the fecal matter and waste water from the bowl received by way of the aforementioned discharge neck **22** (Fig. 4).

The flush valve is denoted by the numeral **82** and is of the same construction as shown in my copending application U. S. Serial No. 474,370, filed on December 10, 1954, now Patent No. 2,794,988, issued June 11, 1957. There is a rigid supply pipe **84** which leads from the vacuum breaker **86** of the valve and provides a rigid connection between the valve **82**, coupling **58** and rigidly

mounted adapter **44**. This all rigid construction is in compliance with the sanitation and plumbing code requirements and is also novel. The numeral **88** designates a jet pipe or line from the coupling **58** to the S-trap which is here shown for completeness but is neither featured nor claimed. The aforementioned crank arm **68** is pivotally connected as at **90** (Fig. 3) with the lower end of a channel shaped bar **92** the upper end of which is in cooperating contact with a push button **94** and which is also operatively located between guide flanges **96** mounted on the front wall and providing a support for the hinge controller handle or lever **98**. These parts (**90** and **98**) are special features of a construction which is not to be herein described in detail but which are covered in my copending U. S. application Serial No. 560,198, filed on January 19, 1956, now Patent No. 2,799,864, issued July 23, 1957. In fact, it would only complicate matters here to discuss in detail the valve and controller and locking means. Also, it would be complicating the case to describe that in actual practice mechanical lifting and lowering means (not shown) is provided for the bowl and is covered in copending Serial No. 474,370 (Patent No. 2,794,988). Therefore, attention is to be focused on the construction seen in Fig. 2 which has to do with the bearing equipped elbow **28** communicatively joined with the S-trap **24** and having the bearing **38** to accommodate the trunnion or journal **72** on the cooperating end of the angularly rotatable multipurpose cylinder **46** which serves not only as a hinging head but as a divider and defines the incoming water space **76** at the left and the fecal matter compartment or space **80** at the right of the partition **74**. Novelty is also predicated on the spider and bearing equipped left hand end of the multipurpose hinging head or cylinder **46** and the closing cap **44** with the facilities whereby the desired rigid plumbing requirements including the coupling **58** and remote control flush valve may be satisfactorily appropriated and utilized.

It is submitted that the detailed specification taken in conjunction with the copending applications and the aforementioned patents and the accompanying sheets of drawings will enable the reader to obtain a satisfactory understanding of the construction and mode of operation. In the circumstances a more detailed description is believed to be unnecessary.

Changes in shape, size and rearrangement of parts may be resorted to in actual practice without departing from the spirit of the invention or the scope of the subjoined claims.

What is claimed as new is as follows:

1. In a folding toilet construction, a stationary cabinet having a bowl receiving and accommodation compartment, a toilet bowl normally located in a folded out-of-the-way position in said compartment, an S-trap adapted to be communicatively and cooperatively mounted on a stationary soil pipe, a vertical elbow-like fitting having one end communicatively and operatively supported atop and communicatively joined to the intake end of said S-trap and having a laterally directed horizontal intake end fashioned into a bearing, a hollow bowl supporting and hinging cylinder, said cylinder being of uniform cross-sectional diameter and open ended and having open end functioning as a waste matter discharge and communicatively mounted for operation in said bearing, a fixedly supported adapter having a bearing aligned axially with and spaced from said first named bearing, said cylinder bridging the space between said elbow and said adapter and the open end of cylinder adjacent to said adapter serving as a water inlet and being operatively mounted in said second-named bearing, a remote type flush water supply valve, a rigid delivery pipe providing a connection between said valve and adapter and for supplying water into the inlet end of the hinging cylinder by way of said adapter, said hinging cylinder partition internally to define a flush

water space at said inlet end and a fecal matter and waste water discharge space at said discharge end, said adapter comprising a cup-shaped closure which is capped over said inlet end and which has an annular member providing said second named bearing, and a rigid tube lateral to and communicatively joined to said cylinder and adapted to be operatively connected to the flush rim of a toilet bowl.

2. In a fold-away toilet construction, in combination, an S-trap adapted to be communicatively connected to and supported atop a soil pipe, an elbow-like fitting rigidly and communicatively secured atop said S-trap and having a laterally directed end terminating in a first bearing, a cup-shaped adapter embodying a plate having an annular laterally disposed rim member, said annular rim member providing a second bearing, said plate and annular member, conjointly, constituting a cap and being adapted to serve as a closure, said plate having a centrally disposed bearing, a bowl supporting and hinging head comprising a cylinder, said cylinder bridging the space between said bearings, being of uniform cross-sectional diameter from end to end and open at its opposite ends one open end functioning as the waste matter discharge and communicatively mounted for operation in said first bearing, the opposite open end of said cylinder, adjacent to said adapter, serving as a water inlet and being operatively mounted in said second named bearing, said cylinder being provided at its intake end with spider means having an axially disposed outstanding stub shaft journaled for angular rotation in the bearing in said plate, a remote type flush water supply valve, a rigid delivery pipe providing a connection between said valve and having coupling means communicatively coupled to an opening provided therefor in said plate in a manner to deliver the water into the intake end of said cylinder, said cylinder being partitioned internally to provide a flush water space at said inlet end and a fecal matter and waste water discharge space at said discharge end, said toilet bowl having a fecal matter emptying neck communicating operatively with water discharge space in said cylinder, said bowl having a flush rim, and a rigid communicating connection between said rim and cylinder.

3. The structure defined in claim 2 and wherein said stub shaft extends beyond the plate, the extended end thereof being provided with a crank arm and said crank arm being adapted to be operatively connected to safety control means which is utilized for cooperating contact with a push-button with which the aforementioned valve is provided.

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