March 6, 1934. F. GUIDETTI ET AL 1,949,415

FLUSHING ARM ATTACHMENT FOR WATER CLOSETS

Filed April 9, 1932 3 Sheets-Sheet 1

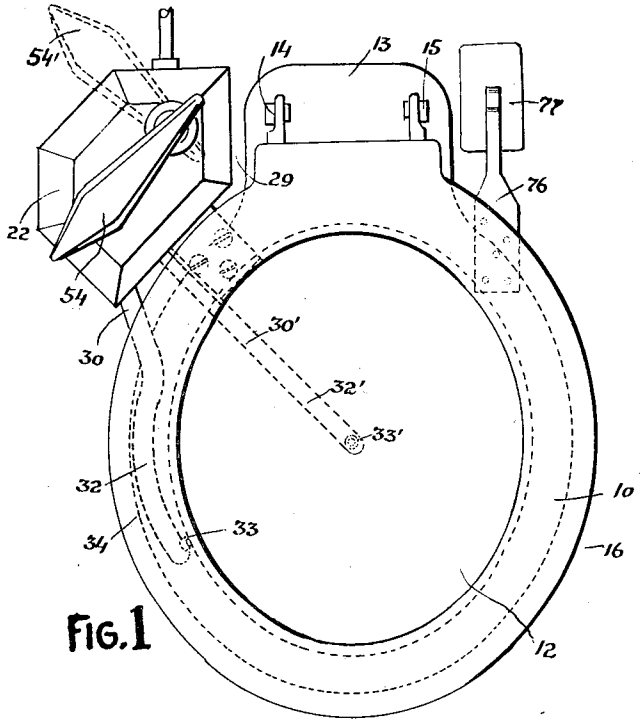


FIG. 1

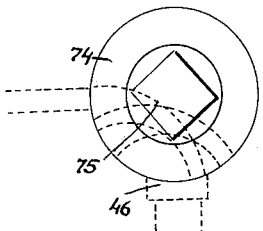


FIG. 12

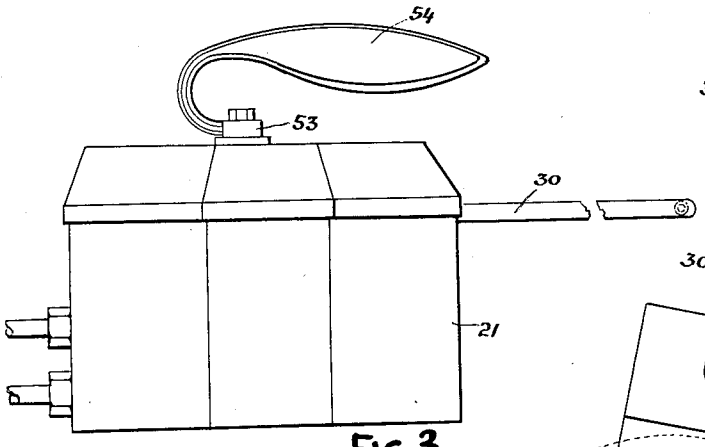


FIG. 3

FIG. 2

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Filed April 9, 1932 3 Sheets-Sheet 2

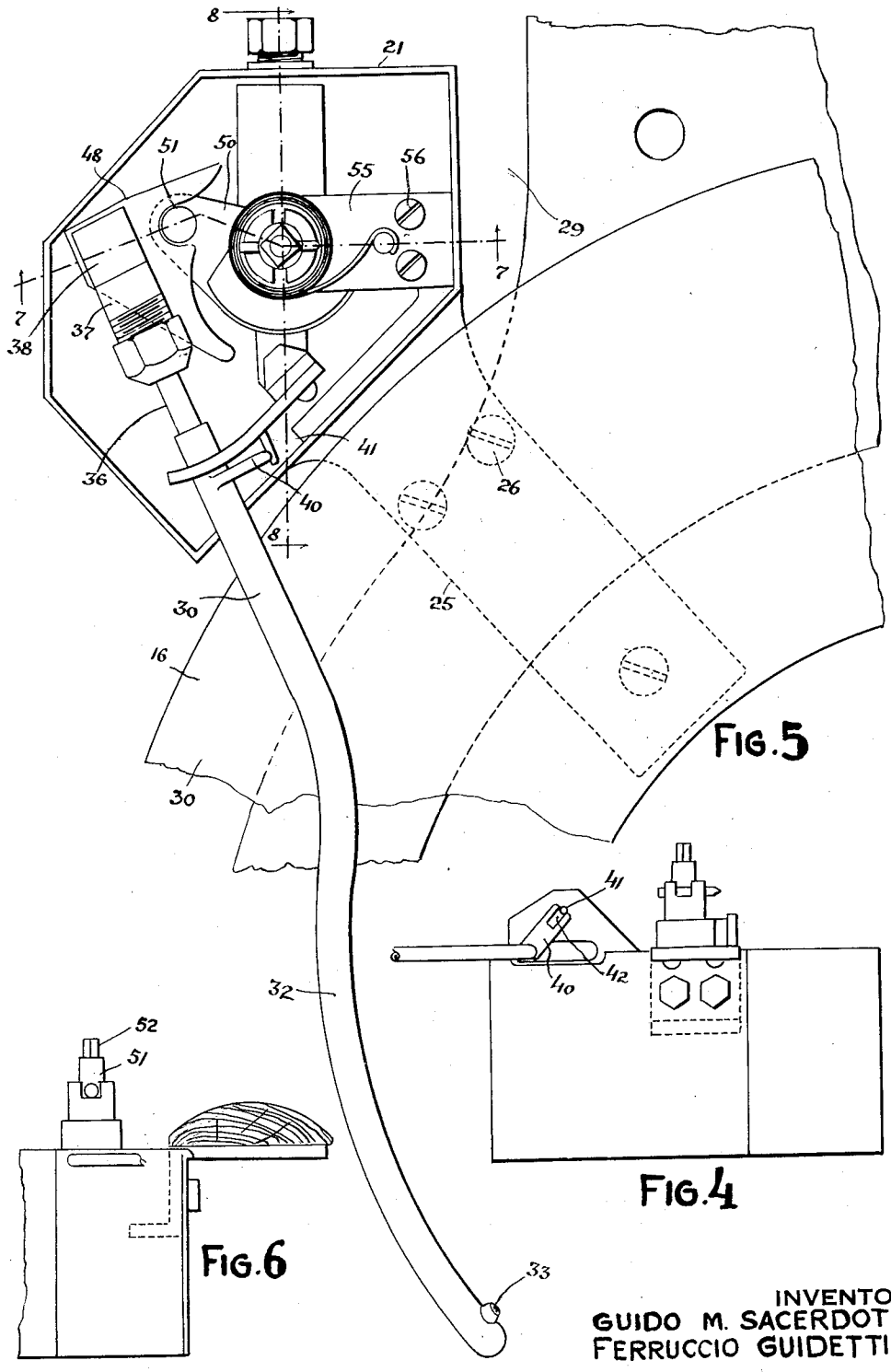


FIG. 5

FIG. 4

FIG. 6

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FLUSHING ARM ATTACHMENT FOR WATER CLOSETS

Filed April 9, 1932 3 Sheets-Sheet 3

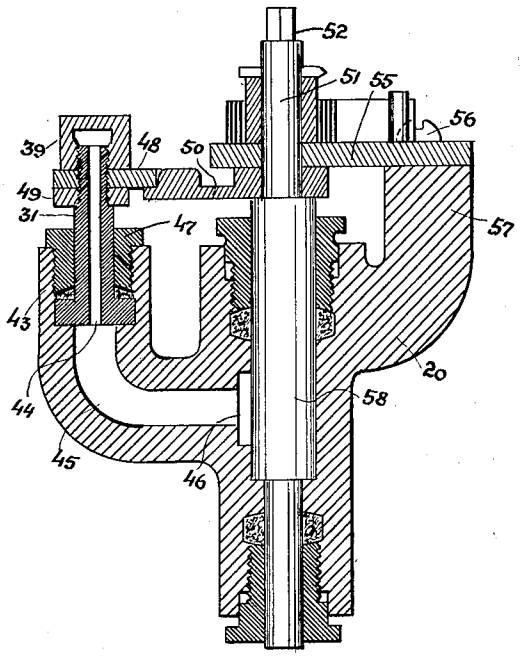


FIG. 7

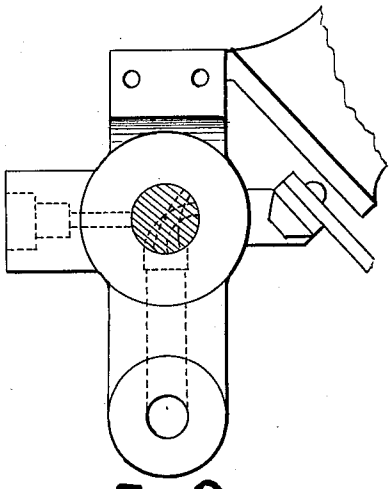


FIG. 9

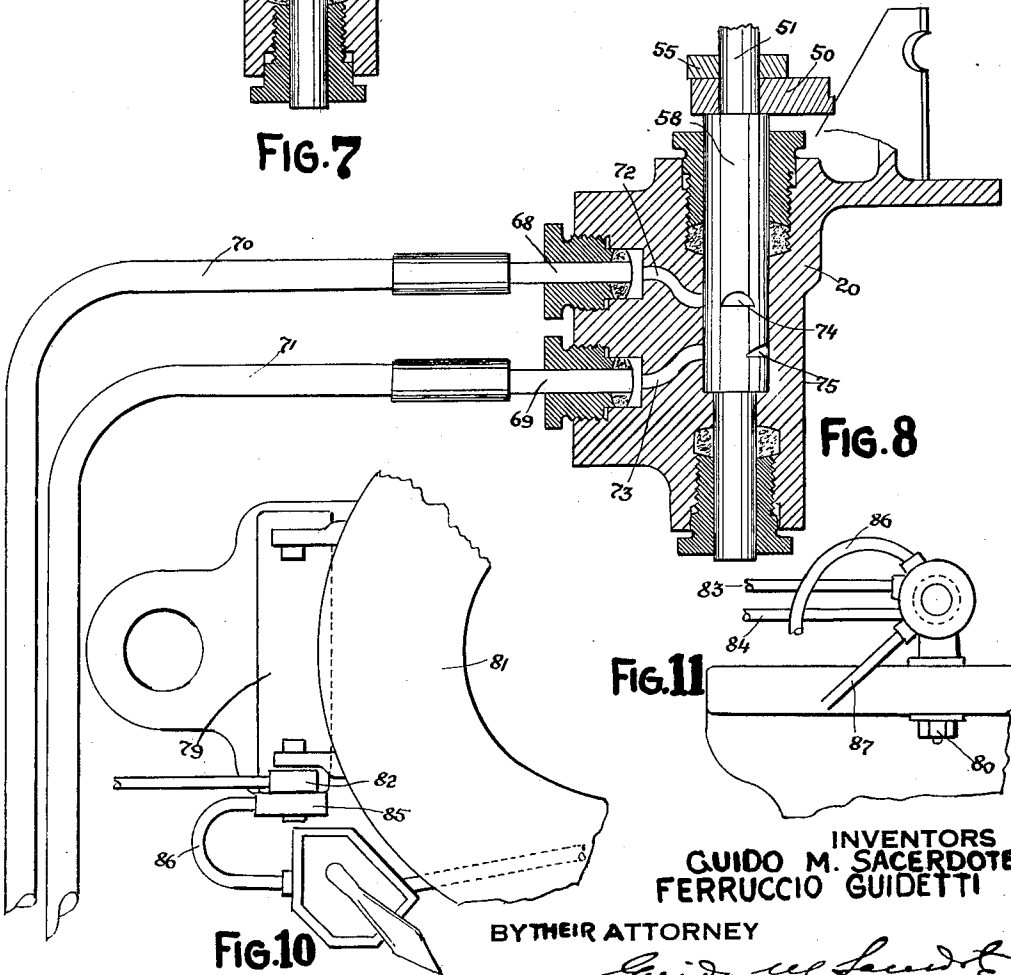


FIG. 8

FIG. 10

FIG. 11

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UNITED STATES PATENT OFFICE

1,949,415

FLUSHING ARM ATTACHMENT FOR WATER CLOSETS

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Application April 9, 1932, Serial No. 604,272

2 Claims. (Cl. 4—7)

This invention relates to plumbing appliances and more particularly refers to improvements in sanitary attachments for water closets and bidets of the type where a nozzle bearing arm is brought from an inoperative to an operative position for directing a jet of fluid against the body of the occupant of the seat for cleansing purposes.

A sanitary water closet attachment of the type to which this invention refers has been described and claimed in a co-pending application entitled Flushing arm for sanitary water closet attachments, Serial No. 516,858, filed by Ferruccio Guidetti as coinventor with Giuseppe Bontempi.

The arrangement described in said application comprises a supporting frame attached onto the rim of the bowl of the water closet or bidet by means of a clamping hook, a flushing or water delivery arm movable from an inoperative position directly above the rim of the bowl to an operative position within the bowl, means for displacing said arm between its two extreme positions and for causing rotation of same about its axis while it is so moved, and valve means for admitting cleansing fluid to said arm after it has reached its operative position.

When said arm is in its inoperative position it remains flat above the rim of the bowl, and when it is brought to its operative position the nozzle provided at the end of said arm comes to occupy a position within the bowl in which its axis remains on a vertical longitudinal plane passing through the center of the bowl and is upwardly inclined towards the rear of the bowl.

Water under pressure issuing from the nozzle will therefore be projected in an upwardly inclined direction towards the rear of the bowl. More particularly the direction of the fluid jet issuing from the nozzle will be such that the fluid under pressure will strike directly against the body outlet of the occupant of the seat in connection with which the cleansing operation is to be performed.

The flushing arm thus provided, when in its inoperative position, has its free or nozzle end resting above the rim at the rear of the bowl, the outer end of said arm being pivotally mounted upon the supporting frame at a point spaced laterally of the bowl, located on or in close proximity of a transversal axis passing through the center of the bowl.

The translatory or angular movement of the flushing arm in a horizontal plane is effected by means of a cam-acting plunger member, while its rotatory movement about its own axis is effected by a cam-acting dog integral with said arm, striking a stop during the translatory movement of the arm.

It was found in practice that the arrangement forming the subject of said co-pending application is susceptible of improvement in various respects. Although it is preferable for the flushing arm to remain normally in a position where the water used to flush the bowl and residual matters cannot reach or contaminate it, and, therefore, it is desirable that the flushing arm remain entirely above the rim and away from the cavity of the bowl, yet when the arm extends above the rear of the bowl, it is still exposed to contamination through carelessness of the user, and, therefore, further improvement in this direction is in order.

The position of the pivotal support of the flushing arm, pointed out above, is such that the supporting frame extends very materially from the side of the bowl.

In certain instances, this has proved to be a serious obstacle to the adoption of the improvement because of lack of sufficient clearance space between the bowl and the wall.

It was also found that the operation of the flushing arm by means of a plunger member imposes severe stresses upon the various parts of the mechanism and also entails various complecations of design. The clamping hook attachment advocated in said application particularly has been found wanting in the matter of stability and rigidity, because of the stresses imposed upon it by the considerable downwardly directed force applied against the plunger member at a material distance from the point of attachment of the device onto the bowl.

In another application for patent entitled attachment for water closet, Serial Number 603,696 filed April 7, 1932 by Ferruccio Guidetti, co-pending herewith, is accordingly described and claimed a sanitary attachment of the character specified adapted to be secured onto the bowl of a water closet or bidet, in a manner which will cause said attachment to project but little in a lateral direction so as not to create undue difficulties in the matter of space requirements.

In said attachment the flushing arm is so arranged that when inoperative it rests above the rim and away from the cavity of the bowl at the side of the bowl, so as to occupy a position less likely to be exposed to the possible effects of carelessness or inadvertence.

We have now found that in order to insure thoroughly sanitary conditions it is best to remove the flushing arm altogether from any po-

sition where it is likely to be exposed to contamination when the seat of the toilet is raised. When the seat is lowered the flushing arm is protected thereby, as a matter of course, but when the seat is raised the maintenance of sanitary conditions is very problematical as long as the flushing arm is entirely exposed, the danger of contamination being greater of course in public places.

Due to the objectionable possibilities engendered by the construction heretofore advocated, it has not always been feasible or advisable to utilize the advantages of sanitary devices of the character specified in hotels, restaurants, and public comfort stations; in some cases their use even being ruled out by the sanitary regulations of the local authorities.

Accordingly, the primary object of this invention is to provide a sanitary attachment of the character specified, adapted to be secured directly under the seat of the closet or bidet to which the device is applied, so as to be raised to a position where all the parts of the device are positively protected against possible contamination when the seat itself is raised.

Another object is to provide in connection with a sanitary attachment of the character specified, adapted to be fastened directly under the seat of a toilet bowl or bidet, means for connecting the same to a source of water supply, permitting free movement of the seat and the device attached thereto from a lowered to a raised position and vice versa.

Another object is to provide in connection with a sanitary attachment of the type mentioned, movable together with the seat from a lowered to a raised position, and vice versa, flexible tubular connections for supplying water to the device from a source of water supply, said tubular connections making it possible to freely move said device from one position to the other.

A still further object is to provide means for counterbalancing the offsetting of the center of gravity of a toilet seat when a device of the character specified is attached thereto, so as to check any tendency of the seat to fall back to its normal position when raised to its inoperative position away from the bowl.

Further objects and advantages of the present invention will more fully appear as the description proceeds and will be set forth and claimed in the appended claims.

Our invention is illustrated by way of example in the accompanying drawings in which:

Fig. 1 is a plan view of a water closet equipped with a device embodying our invention;

Fig. 2 is a fragmentary side elevation thereof, showing the seat in its raised position;

Fig. 3 is a side view in elevation of said device;

Fig. 4 is a view in elevation of said device from the inner side thereof;

Fig. 5 is a plan view in an enlarged scale of said device with the cover removed;

Fig. 6 is a partial front elevation of said device;

Fig. 7 is a vertical section through line 7—7 of Fig. 5;

Fig. 8 is a vertical section through line 8—8 of Fig. 5;

Fig. 9 is a partial plan view of the device with parts removed;

Fig. 10 is a fragmentary plan view of a water closet equipped with a device embodying our invention, in which the connections between the device and the water supply system are of a rigid articulated type;

Fig. 11 is a fragmentary view in elevation of a swivel head portion of said connections; and

Fig. 12 is a detail plan view in enlarged scale of the cock regulating the water supply.

Referring to said drawings, 10 designates a toilet bowl of usual construction formed with a rim 11, surrounding the bowl cavity 12, and having a rear extension 13 carrying hinge bolts 14, 15, by means of which the seat 16 is attached to the bowl. The lower surface 17 of the seat is usually provided with rubber spacing feet 18 resting upon the edge of the rim 11, causing a clearance 19 to remain between the edge of the bowl and the lower surface of the seat, and having a plate 25 inwardly extending therefrom adjustable by means of screws 26 to the under side of the seat 16.

As Fig. 1 clearly shows, when the device is thus secured in position it occupies the recessed space 29 formed at the rear by extension 13 with the body of the bowl proper so that the body of the device does not project to an excessive extent laterally of a vertical plane tangent to the side of the rim of the bowl.

The flushing arm 30 extends inwardly in a direction inclined towards the front of the bowl from a pivotal attachment 31, and terminates with a curved portion 32, provided at the end with a nozzle 33, said curved portion remaining flat directly above the side portion 34 of the rim of the bowl when the flushing arm is in its inoperative position, shown in Figs. 1 and 5.

From said normal or inoperative position, the arm may be angularly displaced in a substantially horizontal plane about pivotal attachment 31 to the operative position shown at 30', 32' in Figs. 1, 2, where its nozzle will occupy the position 33', where it is upwardly and somewhat rearwardly directed along the longitudinal vertical median plane of the bowl at a suitable distance beneath the plane of the seat 16, as shown in Fig. 2.

When the flushing arm is in its operative position and cleansing fluid is supplied thereto, the same will issue through the nozzle in a jet 35, which is upwardly and somewhat rearwardly directed so as to produce an effective cleansing action against the body of the occupant of the seat.

In order to make it possible for flushing arm 30 to rotate about its axis, the same is rotatably mounted upon a stem 36 outwardly projecting from the horizontal leg 37 of an elbow tubular piece 38, the vertical leg of which 39, is screwed onto the upper end of vertical pivotal member 31, as shown in Fig. 7.

When said pivotal member together with elbow member 38 is angularly displaced in a counterclockwise direction with respect to Fig. 5 about the axis of pivotal member 31, a slotted dog 40, integral with arm 30, is caused to engage a stationary pin 41, so that while the arm progresses towards the center of the bowl it is compelled to rotate about its axis in the direction shown by the arrow in Fig. 4. When the flushing arm is angularly displaced in the opposite direction, from its operative to its inoperative position, the opposite side of the slot 42 in slotted dog 40, will bear against pin 41 and will cause the arm to rotate in the opposite direction.

Vertical pivot 31 is rotatably mounted in a lug 43 upwardly projecting from body 20 and is provided with an axial opening 44, establishing

communication between a passage 45 extending from a chamber 46 and elbow member 38. Said pivot 31 is retained in position in any suitable manner, for instance, by means of a nut 47.

Said pivot 31 also carries a plate 48 which is clamped between the bottom of part 39 of elbow member 38 and a nut 49.

Said plate 48 constitutes the driven member of a Geneva type of control for causing the angular movement of pivot member 31 and elbow member 38, the driving member of said control being constituted by an arm 50 mounted upon vertical stem 51 of a cock 58, engageable at its upper end 52 by the hub 53 of an operating handle 54. Said stem is rotatably inserted through a bearing plate 55, which is attached by means of screws 56 onto a lug 57 vertically extending from the body 20.

By virtue of this construction when cock 58 is rotated by means of handle 54, arm 50, inserted over its stem 51, will also rotate. As stated, arm 50 acts as the driving member of a Geneva control and, therefore, is provided with an upwardly projecting pin 63, engaging a slot 64 formed in plate 48, and is furthermore provided with an upwardly projecting segmental member 65 adapted to engage and to register with a circular arc portion 66 of plate 48 and to retain said plate 48 in position after pin 63 has caused a predetermined angular movement of plate 48. Thus it will be seen that if stem 51 together with arm 50 is angularly displaced in a clockwise direction with respect to Fig. 5, plate 48 together with pivot 31 and elbow member 38, will be displaced a certain angle in a counter clockwise direction until segmental member 65 engages circular arc portion 66.

When this position has been reached stem 51 and arm 50 can still continue to rotate in the same direction, but plate 48 will be securely restrained against further angular movement in either direction.

The rotation of stem 51 is effected against the action of a spring 67, which will return all the parts to their normal position shown in Fig. 5, as soon as handle 54 is brought from the position shown in full lines in Fig. 1 to the position shown in dotted lines, shown at 54', and during its movement the flushing arm is first brought from the position shown in full lines to the position shown in dotted lines in the same figure and then upon cock 58 continuing its movement in the same direction, cleansing liquid is admitted to chamber 46 and thence to flushing arm 30.

The device is shown equipped with two water connections 68, 69, to which are attached flexible tubular members 70, 71, connecting the same to a source of cold and a source of hot water supply, respectively. In correspondence of said water connections body 20 is provided with two passages 72, 73, leading the water to points on the same plane with ports 74, 75, with which the cock is provided.

Said ports are angularly spaced with respect to each other, and lead the water running therethrough to chamber 46, as Figs. 9, 12, clearly show. In Fig. 9 passages 72, 73 are shown entirely closed by the body of the cock. In Fig. 12 the cock having been rotated a certain angle in a clockwise direction, port 74 has reached a point directly opposite passage 72, so that cold water flows through said port to said chamber 46. As the angular movement of the cock progresses in the same direction, port 75 will come to register with passage 73, while port 74 still registers with passage 72, so that a supply of both cold and hot water is admitted to chamber 46. The supply of hot water gradually increases and the supply of cold water gradually decreases as the movement of the cock continues, until finally port 74 has passed entirely beyond passage 72 and port 75 is still opposite passage 73, so that only hot water will then be admitted to chamber 46.

It is thus possible for the user to exactly regulate the temperature of the water to suit, merely by varying the position of cock 58.

The flexible tubular connections 70, 71, make it possible for the seat to be raised or lowered, together with the device attached thereto, without disturbing the continuity of the water connections.

It will be observed that when the seat is in the raised position, as shown in Fig. 2, all the parts of the device have been moved away from the bowl to a position practically out of reach of a careless user, thus insuring sanitary conditions throughout.

The seat is usually raised to a somewhat rearwardly inclined position, which of itself, is sufficient to maintain the seat in such position, even though the device attached thereto may somewhat advance its center of gravity. If, due to the weight of the device, any tendency should develop in the seat to fall back to its lowered position, said seat may be equipped with a rearwardly extending bracket, such as shown at 76, and a counterweight 77 may be suspended from the end of said bracket by means of a wire 78. Said counterweight will, therefore, serve to counterbalance the weight of the device and to hold the seat in its raised position.

If desired, the device may also be connected to the source or sources of water supply by means of articulated connections formed by rigid members, said connections permitting the raising and lowering movements of the seat. For instance, a rotatable connection may be provided of the type shown in Figs. 10, 11, where 79 designates a plate held in position by the hinge bolts 80, used as pivotal supports for the rear end of the seat 81, said head being provided with a stationary hollow block 82 coaxial with said pivotal supports and permanently connected to a source of cold and hot water supply by pipes 83, 84. On said hollow block is rotatably mounted a swivel head 85, also coaxial with the hinged parts, said swivel head being connected by tubular connections 86, 87 to the body of the device and therewith forming a passage for the water from block 82 to said body.

Due to the fact that the swivel head is rotatable about the same axis as the seat itself, the seat can be freely moved up or down without disturbing the water connections thus obtained.

It will be observed that our invention permits of fastening the device of the character specified onto the underside of the seat without interfering with any one of the existing parts of the closet structure. Our invention, therefore, permits of more or less standardizing the construction of a flushing device so that the same may be easily attached to water closets of practically any size, design, or make, without requiring any special change in the water closet itself.

The constructional details of our invention may vary from those shown without departing from the inventive idea. We accordingly reserve the right to carry our invention into practice in all those ways and manners which may

enter, fairly, into the scope of the appended claims.

We claim:

1. In apparatus of the class described, adapted for use in connection with a closet bowl provided with a hinged seat, a support, a fluid delivery arm mounted on said support, movable from an inoperative position under said seat, to an operative position where the outer end of said arm remains within said bowl, means for fastening said support onto the underside of said seat, and flexible tubular means for connecting said support to a source of water supply.

2. In apparatus of the class described, adapted for use in connection with a closet bowl provided with a hinged seat, a support, a fluid delivery arm mounted on said support, movable from an inoperative position under said seat, to an operative position where the outer end of said arm remains within said bowl, means for fastening said support onto the underside of said seat, flexible tubular means for connecting said support to a source of water supply, means for regulating the delivery of water to said arm, and a member for actuating said arm and said regulating means.

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