June 5, 1934. F. GUIDETTI 1,962,014

WATER CLOSET APPLIANCE

Filed July 30, 1932 4 Sheets-Sheet 1

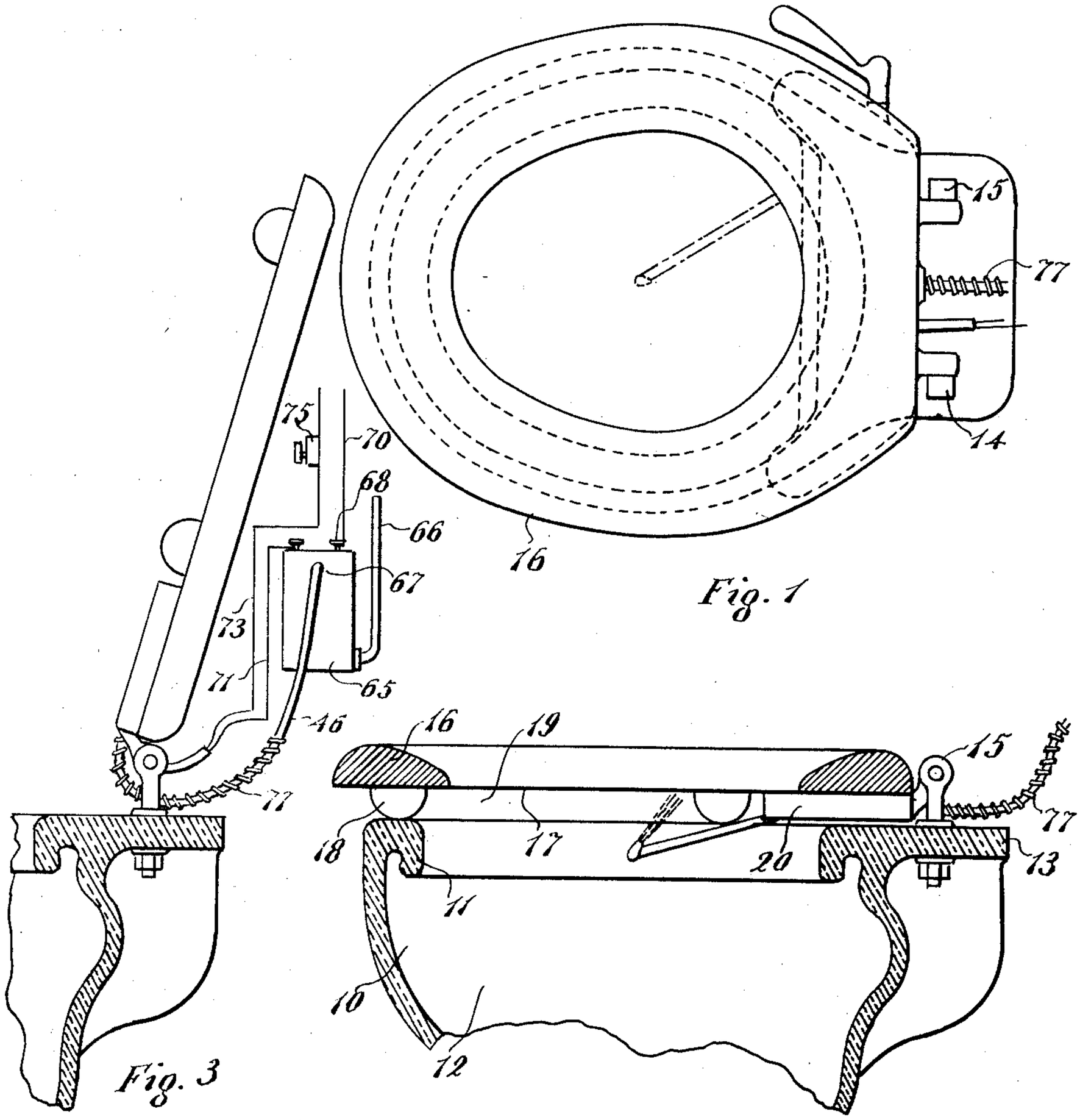

Fig. 1

Fig. 3

Fig. 2

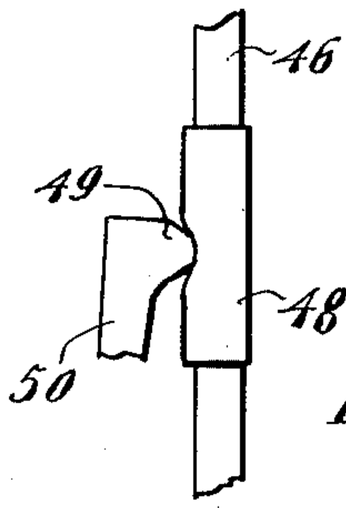

Fig. 10

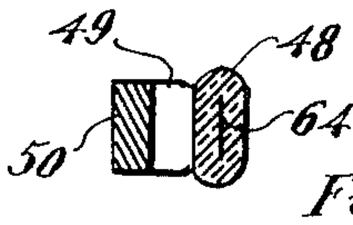

Fig. 11

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WATER CLOSET APPLIANCE

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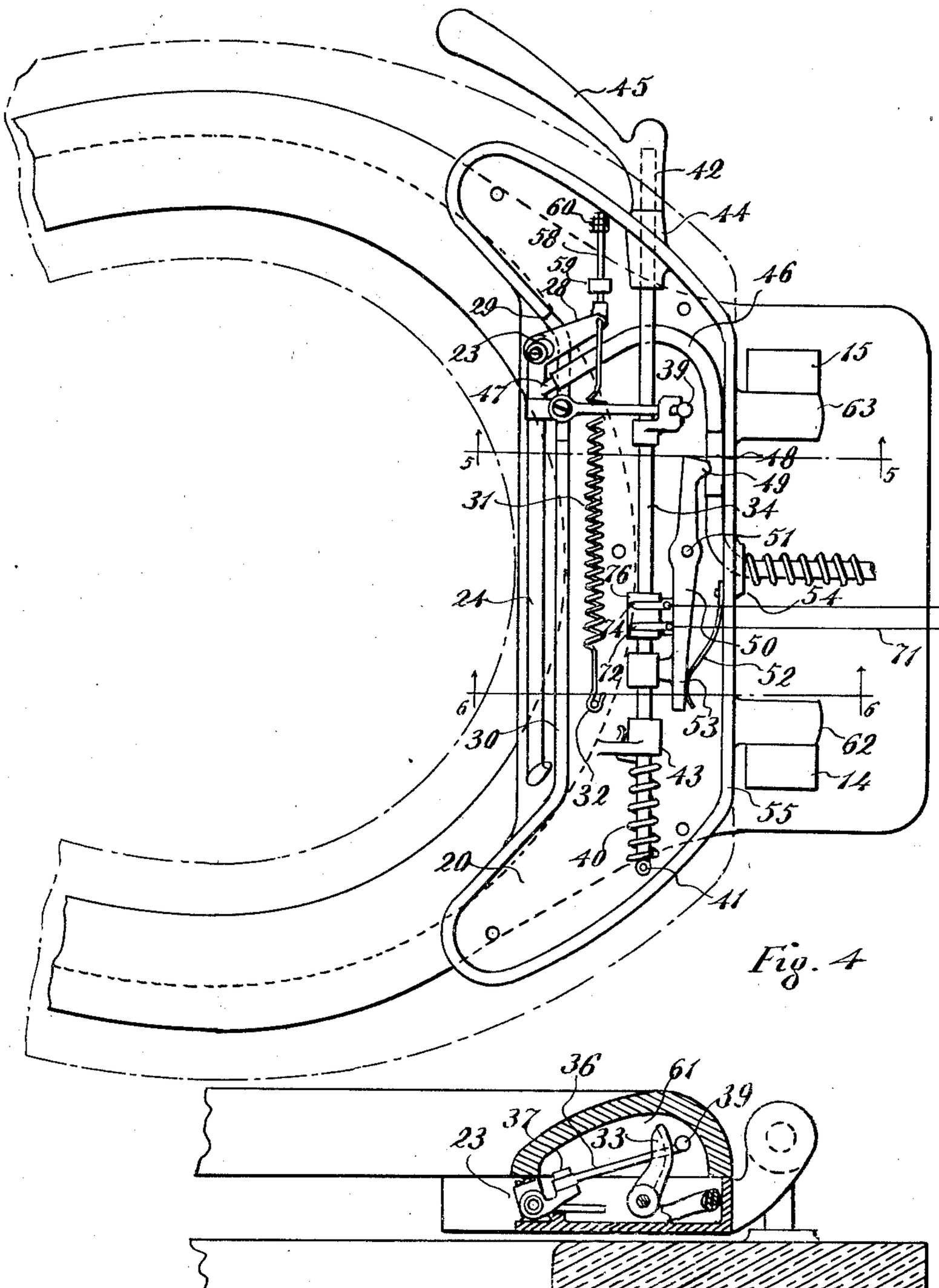

Fig. 4

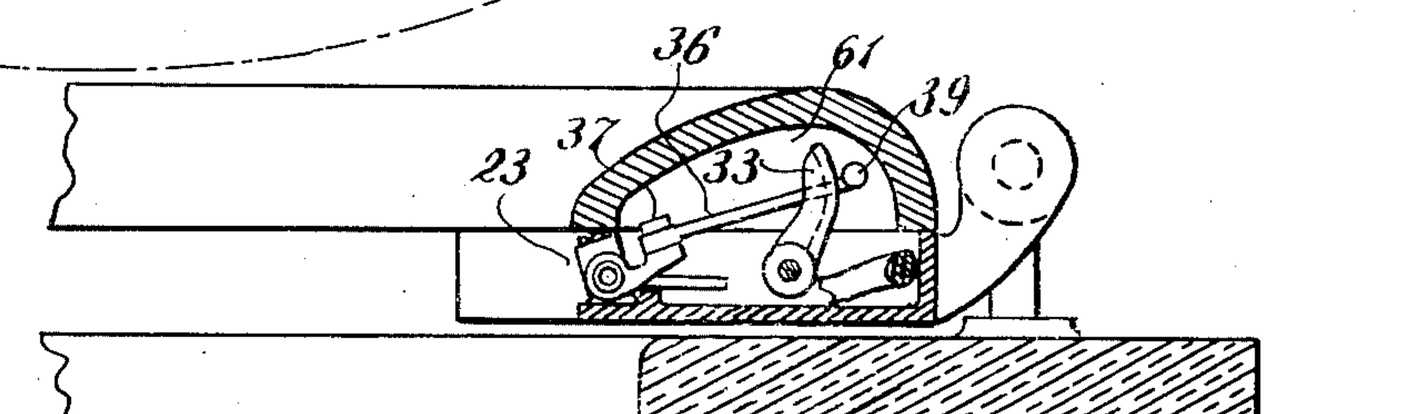

Fig. 5

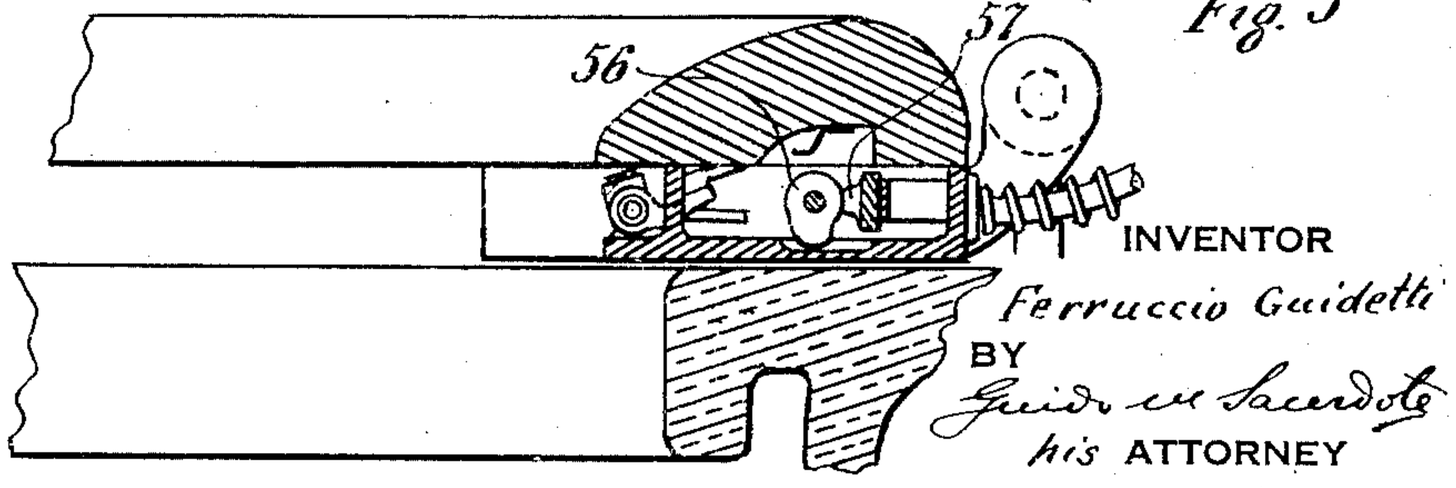

Fig. 6

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WATER CLOSET APPLIANCE

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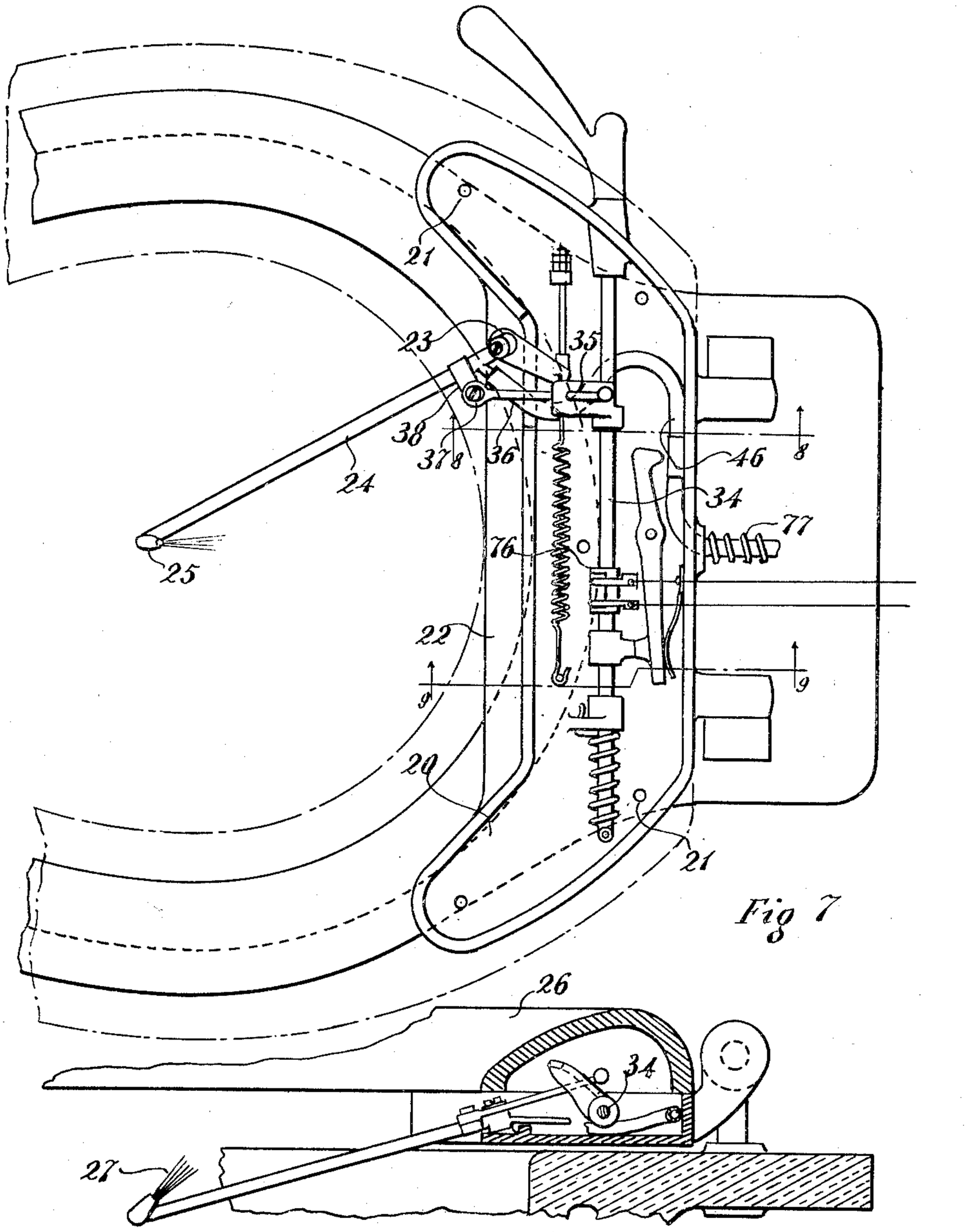

Fig 7

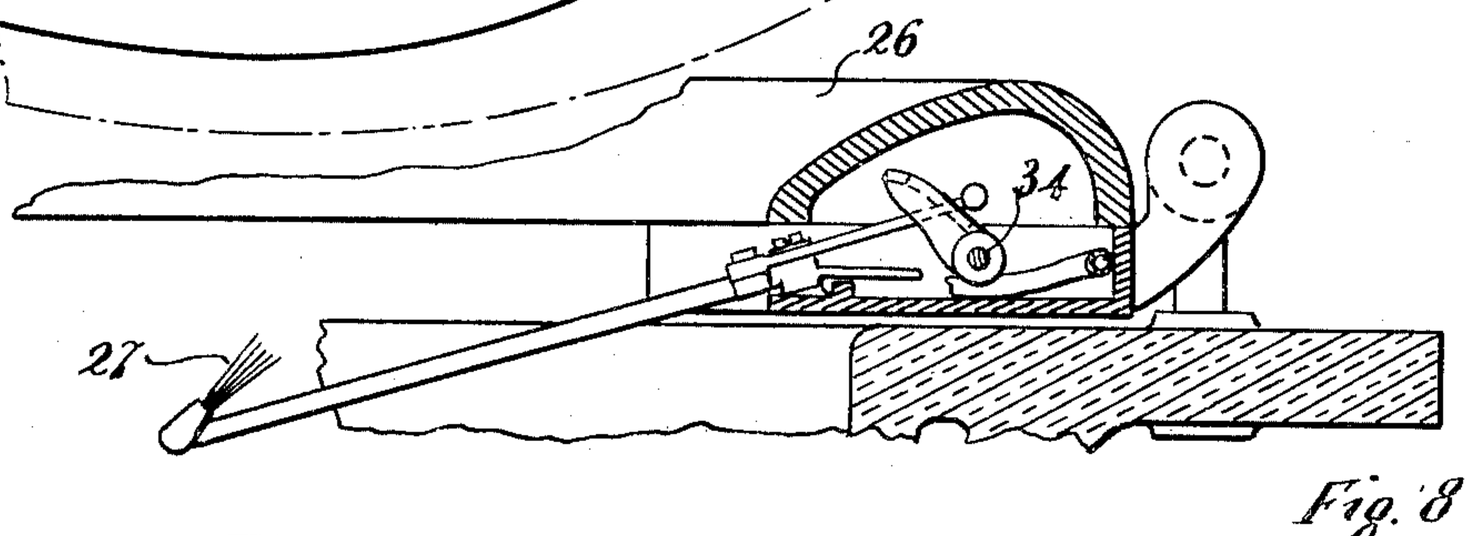

Fig. 8

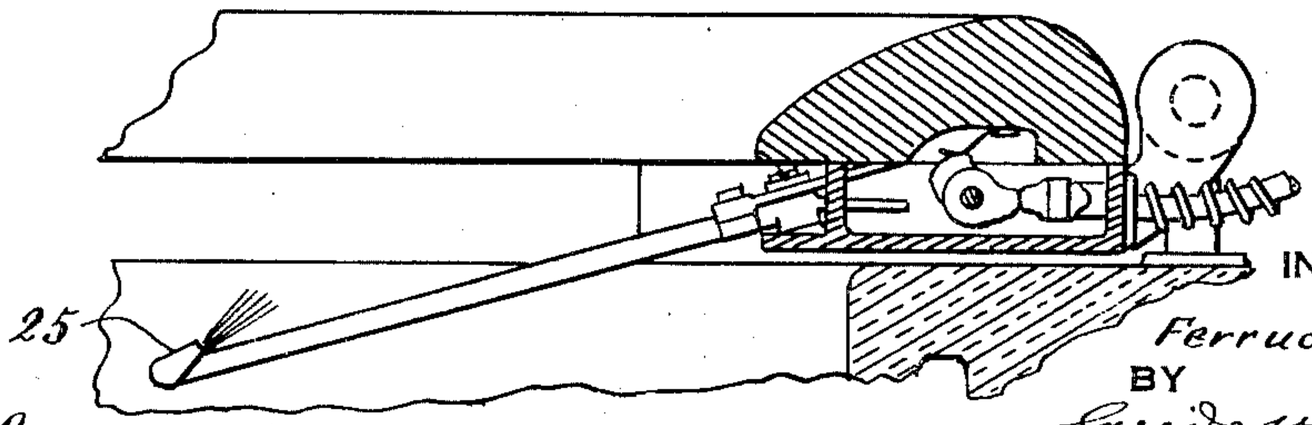

Fig. 9

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WATER CLOSET APPLIANCE

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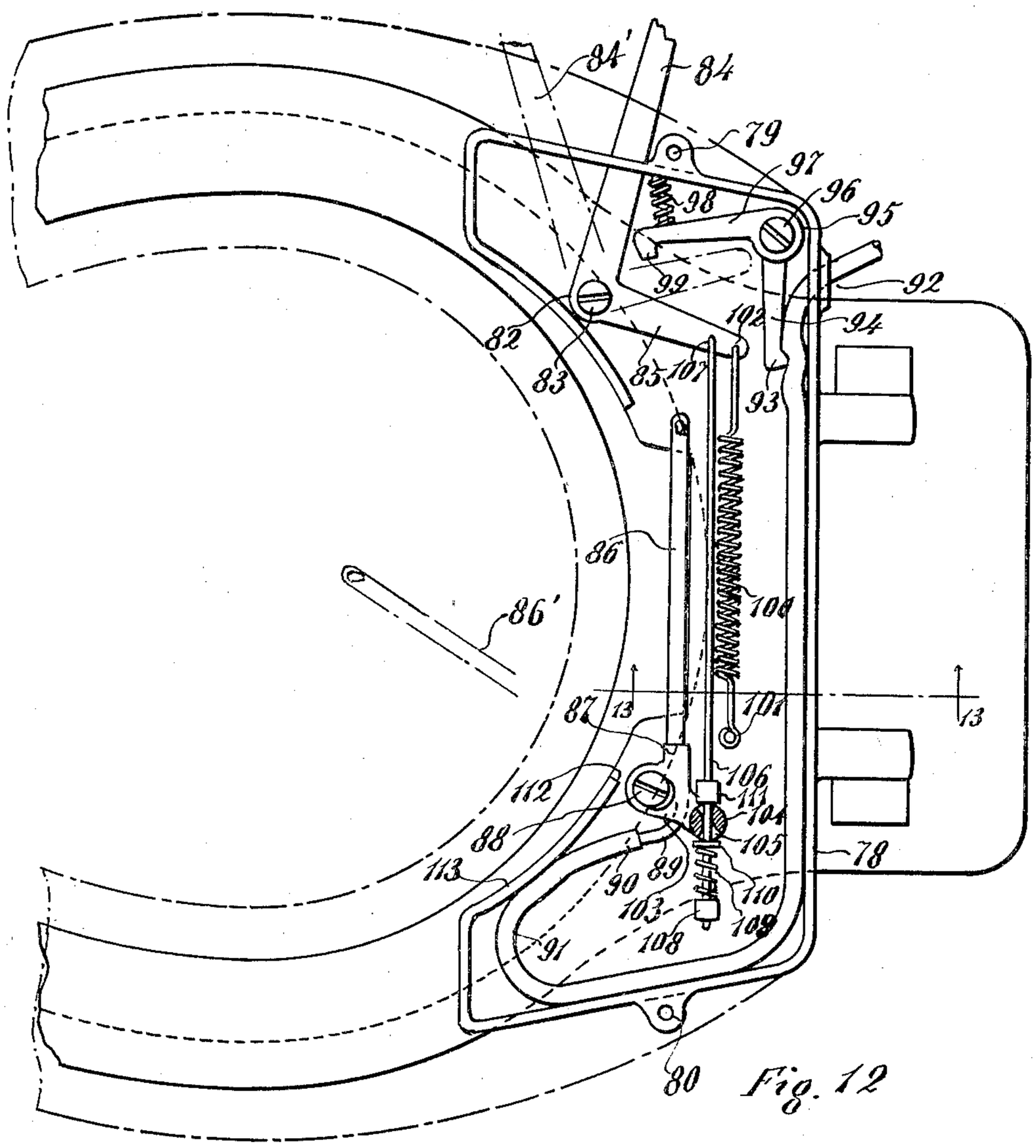

Fig. 12

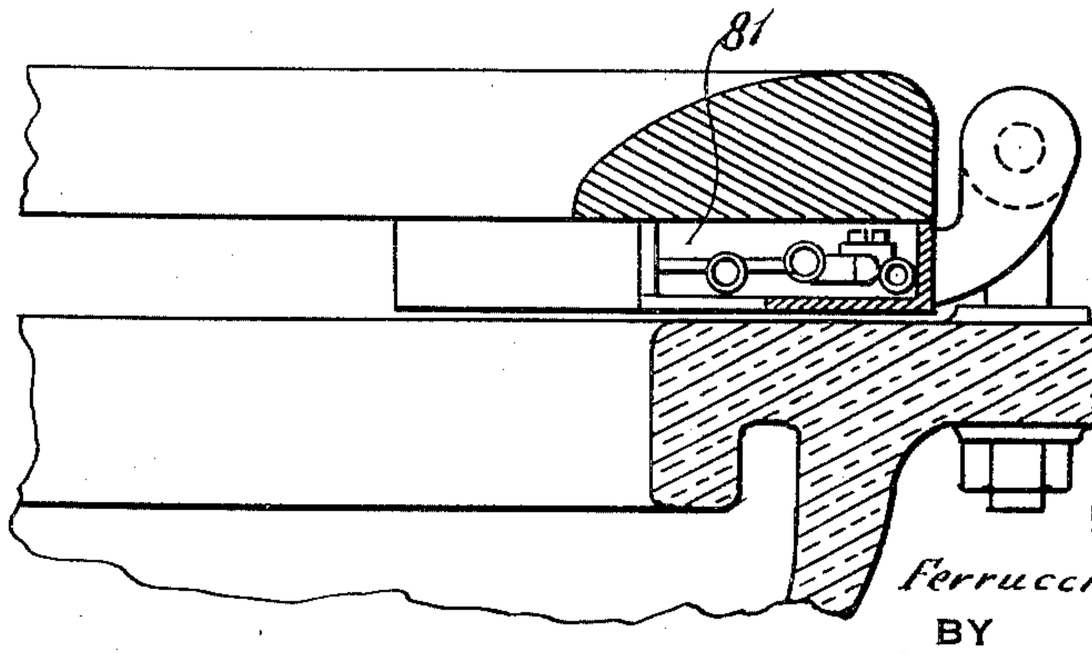

Fig. 13

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UNITED STATES PATENT OFFICE

1,962,014

WATER CLOSET APPLIANCE

Ferruccio Guidetti, Elmhurst, N. Y.

Application July 30, 1932, Serial No. 626,688

13 Claims. (Cl. 4—7)

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

In another application for patent entitled, Attachment for water closets, Serial No. 603,696, co-pending herewith, I have described and claimed a water closet attachment of the character to which this invention refers, said attachment comprising an operating mechanism and means for fastening it onto the bowl of the water closet or bidet.

The operating mechanism comprises a water delivery arm which is rotatable about its own axis with respect to a support therefor, which is, in its turn, rotatable about a substantially vertical axis. Said mechanism also comprises a system of valves controlling the supply of cleansing fluid to said arm support and delivery arm and a single member for actuating both said arm support and said valves, the arrangement being such that a continuous movement of said actuating member in one direction from its normally inoperative to its operative position, will first bring the delivery arm to position and then will operate the valve or valves to cause cleansing fluid to flow to and through said arm.

An arrangement of the type indicated, entailing as it does the use of several parts moving in the presence of water under pressure, requires considerable care in its manufacture and also requires frequent inspections and adjustments, in order to prevent leakages which are bound to develop after a certain period of use. I have found in practice that the difficulty of making and maintaining all joints water-tight constitutes a serious drawback to the adoption for general use of a sanitary device of the character to which this invention refers. The water supplied by the average city system is generally under a considerable pressure, and even small leakages are, therefore, likely to become seriously objectionable. I have also found that due to the great variety of closet bowls in use it is difficult to produce an attachment which will be usable in all cases, or at least, it is difficult to produce an attachment which can be readily installed without the expenditure of considerable time and labor, in order to insure the proper position of the fluid delivery arm with respect to the center of the bowl.

The primary object of this invention is to provide a sanitary attachment of the character specified, in which no valves or rotatable parts are employed in the path of the cleansing fluid between its source of supply and the point of delivery.

Another object of the invention is to provide, in a sanitary attachment of the character specified, comprising a fluid delivery arm movable from a normally inoperative to an operative position, a tubular connection directly connecting the fluid delivery arm to the source of supply, said connection being of such a nature as to permit at any time a free movement of said arm from one of its extreme positions to the other.

A further object of the invention is to provide, in a device of the character specified, comprising a fluid delivery arm movable between two positions, a flexible compressible tubular connection between said arm and a source of fluid supply, and simple means for controlling the flow of fluid through said connection.

A still further object is to provide a sanitary water closet attachment of a novel and improved type, said attachment comprising a minimum number of parts enclosed in a relatively shallow casing or frame, adapted to be mounted directly under the water closet seat.

An additional object is to provide an arrangement of extreme simplicity in which the fluid delivery arm is directly connected to the source of fluid supply without the interposition of valves or other moving parts and in which a single angular movement of said arm about its pivotal support is sufficient to bring the arm from its normally inoperative to its operative position.

Other 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.

My 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 my invention;

Fig. 2 is a fragmentary vertical longitudinal section of said closet;

Fig. 3 is another fragmentary vertical longitudinal section of said closet, showing the seat in its raised position;

Fig. 4 is a fragmentary plan view of the same closet in an enlarged scale, with the seat partly broken away to show the operating mechanism;

Fig. 5 is a fragmentary vertical section of said closet through line 5—5 of Fig. 4;

Fig. 6 is another fragmentary vertical section through line 6—6 of Fig. 4;

Fig. 7 is a fragmentary plan view of the same closet, with the seat partly broken away, showing the position of the various parts when the fluid delivery arm has been brought to its operative position;

Fig. 8 is a fragmentary vertical section through line 8—8 of Fig. 7;

Fig. 9 is a fragmentary vertical section through line 9—9 of Fig. 7;

Fig. 10 is a detail plan view of the preferred construction of the section of flexible tubular connection where the fluid flow control is effected;

Fig. 11 is a cross sectional view thereof;

Fig. 12 is a plan view of another mechanism embodying my invention in a somewhat different and preferred form; and

Fig. 13 is a vertical section of the same through line 13—13 of Fig. 12.

As stated in the premises, the novel features of my invention include improvements in the operating mechanism proper, as well as improvements in the manner of mounting the device in position. The improvements in the operating mechanism are directed mainly towards the production of an extremely simple and absolutely reliable device where a continuous and direct passage is provided between the source of fluid supply and the point of delivery, so as to avoid the possibility of leaks developing at intermediate points.

The improvements in the manner of mounting the device in position are intended mainly to obviate the difficulties now encountered in applying sanitary devices to water closets of different designs, and to provide a novel type of enclosure and support for the operating mechanism adapted to be attached directly under the water closet seat.

The basic principle of operation employed in the device forming the subject of my co-pending application above referred to; namely, an operating cycle whereby the fluid delivery arm is brought to position before the fluid delivery is started, has also been employed in the present case, because such an operating cycle constitutes an essential condition for the proper functioning of this class of sanitary devices. In fact, where the movement of the fluid delivery arm from its inoperative to its operative position is effected simultaneously with the movement of the valve controlling the fluid flow to a position of delivery from a position of non-delivery, the valve generally begins to be partly open while the arm is still moving towards its operative position, so that the cleansing fluid is likely to issue from the delivery arm before its proper position has been reached.

However, while, in a broad sense, the principle of operation has been retained, the mechanism itself has been simplified to the point where a minimum number of parts is employed. This reacts to the advantage of both the operation of the device and its cost of production, as will be clearly explained in the description which follows.

In order to avoid the difficulties engendered by the necessity of meeting conditions arising from the use of water closets of various sizes and designs, I have conceived the idea of attaching my device directly to the under side of the closet seat. Such a manner of mounting the device greatly simplifies the problem of applying it in the proper position, because the only precaution that has to be used is to make sure that the nozzle at the end of the delivery arm will remain centrally located with respect to the bowl. Such an arrangement also makes it possible to adopt a standard type of seat already equipped with the sanitary device attached thereto in its proper position and to simply substitute the unitary structure thus obtained for the ordinary seat when the device is to be applied onto a water closet.

Referring to the 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 16 is provided with rubber spacing feet 18, resting upon the edge of the rim 11, causing a clearance 19 to remain between the top of the bowl and the underside of the seat.

The casing or frame carrying the fluid delivery arm and operating parts of the mechanism, shown at 20, consists of a relatively shallow, open-top structure, extending under and across the rear portion of the seat within clearance space 19, said structure being attached to the seat in any suitable manner, for instance, by means of screws inserted through openings 21.

The front part of the casing or frame is preferably formed with a lip 22, at one end of which is pivotally mounted at 23 the fluid delivery arm 24. When the fluid delivery arm is in its inoperative position, shown in Fig. 4, it extends transversely of the seat within the space intervening between lip 22 and the underside 17 of the seat. The pivotal support 23 of said arm is slightly inclined forward, as shown in Figs. 5, 6, 8, 9, so that when the fluid delivery arm is angularly displaced about said pivotal support to its operative position, shown in Figs. 7, 8, 9, it will be slightly inclined downwardly so as to cause its nozzle 25 to remain vertically spaced a suitable distance from the top 26 of the seat.

It will be observed from Fig. 7 that when the fluid delivery arm occupies its operative position, said arm is at an angle to the central longitudinal line of the closet bowl, but the nozzle 25, carried by the outer end thereof, remains set in said central longitudinal plane. Furthermore, by looking at Figs. 8 and 9, it will be observed that the nozzle is directed upwardly and is preferably inclined towards the rear, so as to produce a fluid jet 27, which will strike the body of the occupant of the seat tangentially or at a slight angle to the surface thereof. A fluid jet thus directed will clean the surface efficiently and without splashing and due to its velocity will also carry away particles of foreign matter adhering to said surface.

An arm 28 extends inwardly from the pivot end 23 of delivery arm 24 through a passage 29 provided in the front wall 30 of frame 20. To the end of said arm 28 is attached a spring 31, which is attached at the other end to a fixed point 32, and which tends at all times to move the delivery arm from its inoperative position, shown in Fig. 4, to its operative position shown in Fig. 7.

However, said delivery arm is normally retained in its inoperative position against the action of spring 31 by a lever 33, carried by the operating shaft 34, said lever 33 having a slot 35 (see Fig. 7) through which passes a link 36, pivotally connected at 37 to a lug 38, laterally

extending from delivery arm 24. The outer end of link 36 is provided with a rounded or spherical head 39, which abuts against the outer surface of lever 33, and which forms therewith a sort of universal joint, permitting slight angular displacements of said link 36 with respect to said lever 33.

The retaining action of lever 33 upon head 39 of link 36 is exerted by virtue of the action of a spring 40, urging shaft 34 in a clockwise direction with respect to Figs. 5, 6, 8, 9, to its normal position shown in Figs. 4, 5, 6. Said spring 40 is connected to the inner end 41 of shaft 34, while the outer end 42 of said shaft projects through and extends from casing or frame 20, said shaft 34 being supported by bearings 43, 44, integral with said frame.

At the outer end 42, said shaft carries a forwardly extending operating lever 45 which, when depressed, will cause shaft 34 to rotate in a counterclockwise direction with respect to Figs. 5, 6, 8, 9, against the action of spring 40.

When such a movement of shaft 34 takes place, lever 33 moving forward, makes it possible for link 36 to move towards the inside of the bowl, and, therefore, makes it possible for spring 31 to cause the angular movement of fluid delivery arm 24 from its inoperative to its operative position. It will, of course, be understood that spring 40 is strong enough to overcome the action of spring 31 when lever 45 is released, so that when this is done, shaft 34 will return to its normal position and lever 33 will pull back the fluid delivery arm by bearing against head 39 of link 36.

The cleansing fluid, which is usually water coming from the water supply system, is supplied to the fluid delivery arm by a flexible tubular connection 46, attached to a lug 47 laterally projecting from said arm at a point in proximity to its pivotal support 23. Said flexible tubular connection preferably consists of a compressible rubber tube, or at least includes a compressible section 48, which is normally flattened or pinched by the end 49 of a lever 50, said lever being pivotally mounted at 51, and being urged to compress the tubular connection by the action of a spring 52 bearing against its arm 53. Said tubular connection enters the casing 20 through an opening provided at 54, through the rear wall 55 of said casing and is attached to the fluid source of supply in any suitable manner.

Due to the clamping or pinching action of part 49 of lever 50, section 48 of flexible connection 46 is normally flattened so as to positively obstruct the passage of the fluid beyond the point against which end 49 bears.

Operating shaft 34 carries a cam 56, against which bears a lug 57 projecting from arm 53 of lever 50, the action of said cam being to tilt said lever 50, so as to cause its end 49 to release the pressure exerted against tubular connection 46, when after a certain amount of rotation of said shaft 34, the fluid delivery arm has reached its operative position. It will be understood that cam 56 will only start to cause the releasing action of lever 50 after the fluid delivery arm has reached its operative position, in order to insure a condition whereby the cleansing jet issuing from nozzle 25 will be directed to the proper spot.

In order to define the point at which the fluid delivery arm will stop, an adjusting rod 58, passing through a bearing 59 and provided with adjusting nuts 60, is preferably attached to the outer end of arm 28. Nuts 60 are, of course, adjustable along rod 58, so as to determine the extent of the angular movement of the fluid delivery arm, which will stop when nuts 60 come to rest against bearing 59.

Slot 35 in lever 33 extends sufficiently to permit the movement of rotation of operating shaft 34 to continue for a while after the fluid delivery arm has come to a stop and during said period of additional rotation of said shaft 34, the action of cam 56 against lever 50 will take place.

By virtue of this arrangement, after the fluid delivery arm has been brought to position the pressure exerted against the tubular connection 46 is released and the cleansing fluid will issue in the form of a jet 27 from nozzle 25. As soon as lever 45 is released by the occupant of the seat, spring 40 will automatically cause all the parts to return to their normal position, shown in Fig. 4, overcoming the action of both spring 31 and spring 52, the various movements taking place in the reverse order, that is, the supply of cleansing fluid to the nozzle being cut off before the fluid delivery arm begins to return to its normally inoperative position.

In the construction shown, where lever 33 and link 36 are caused to project above the level of the under surface of the seat, the seat will have to be provided with a suitable cavity or cavities, such as 61, supplying the clearance space necessary for the operation of these moving parts.

In this case it is desirable, in practice, to supply both the sanitary attachment and the seat as a single unit and, therefore, the casing 20 is shown formed integral with hinge members 62, 63, adapted for attachment to hinge bolts 14, 15, in the usual manner. This, however, does not exclude the possibility of so modifying the construction of the device that it may not be necessary to provide any cavities in the under side of the seat, so as to make it possible to attach the device to any existing seat. In such a case, it will also be unnecessary to provide the device with hinge members, since it will be possible to utilize the hinge members already attached to the seat.

It is obvious that if desired, cam 56 can be so shaped that the pinching action exerted by end 49 of lever 50 against the tubular connection 46 will be released gradually so as to regulate the amount of cleansing fluid which will be allowed to reach the fluid delivery arm. This is especially important when nozzle 25 is made suitable for the attachment of a rubber hose carrying at its other end a nozzle suitable for internal treatment by douches or enemas.

While flexible connection 46 may consist throughout of a length of rubber tubing having a round section, I prefer to make its section 48, subject to compression of end 49 of lever 50, with a normally oval or flat section, as shown in Fig. 11, its passage 64 being in the form of a narrow slit which, of itself, tends to obstruct or impede the passage of the cleansing fluid therethrough. Such an arrangement makes it easier for lever 50 to totally prevent the flow of liquid through said passage and also prevents the tendency of the rubber to crack, which develops when a round rubber tube is frequently flattened by the action of a pinching or clamping member.

The water pressure in an ordinary water supply system is usually fairly high, so that when the pressure exerted by end 49 against section 48 is released, the water will automatically cause said section to expand, permitting its flow therethrough. It is, of course, quite possible to make the tubular connection proper of round rubber

tubing and to provide the same at the proper point with oval or flat section 48, also made of rubber.

In apparatus of the character to which this invention refers it is frequently desirable to provide means for heating the water delivered at the nozzle. This is especially desirable when no source of warm or hot water supply is available and when the device is also made usable for internal treatment.

In order to take care of these requirements I have, therefore, shown an arrangement which can be adopted in connection with my device, said arrangement being illustrated in semi-diagrammatic form in Figs. 1, 3, 4, 6, 7, 9. In the same it will be seen that water from the supply system reaches a receptacle 65 through pipe 66 and then reaches tubular connection 46, which is attached to the outlet of said receptacle at 67. Receptacle 65 is provided with suitable means for heating the water passing therethrough, for instance, electric heating means (not shown), the terminals of which 68, 69, are inserted through the circuit of wire 70 of an electric supply system. Said wire 70 is attached to terminal 68, while the branch wire 71, originating at terminal 69, is attached to a contact member 72 and the other line wire 73 is attached to a contact member 74, said contact members 72, 74, being placed directly above operating shaft 34. A hand-operable switch 75 is inserted in one of the line wires 73, providing means whereby the occupant of the seat may cause the water issuing from the nozzle to be cold or warm, as he may wish.

The electric circuit is normally interrupted at 72—74, but connection between said two contact members is established by a contact drum 76, mounted on shaft 34, as soon as said shaft starts to rotate when pressure is exerted against lever 45.

In other words, the electric circuit of the heating means is normally interrupted at two points; namely, switch 75 and contact members 72—74. Said circuit is closed at 72—74 every time shaft 34 is operated, but the heating means will not be energized unless switch 75 has previously been set in its circuit closing position.

It will be understood that the heating arrangement within the receptacle 65 may be of any suitable type; for instance, the water may be caused to pass through coils interposed between pipe 66 and outlet 67, said coils being exposed to the action of electric heating elements energized by the current passing through the circuit. Another suitable arrangement would be to have the water issue through pipe 66 within receptacle 65 and to equip this receptacle with electric heaters of the immersion type.

The rubber tubing is preferably provided with reinforcing spiral wire shields at the points of bending, as indicated, for instance, in the drawings at 77.

It will be observed that no valves or other moving parts are interposed in the path of the cleansing fluid from its source of supply to the fluid delivery arm, so that no leakages are likely to take place.

It will also be observed that if any water should manage to leak through section 48, when compressed, the leakage would drip through nozzle 25 and would be discharged directly into the closet bowl without splashing on or causing any damage to the floor or any other part of the bathroom. The avoidance of all valves and other parts movable under the necessity of maintaining water-tight connections also results in an extreme simplification of the mechanism as a whole, so that its cost of production is accordingly very much reduced.

Several parts of the mechanism so far described are movable in a vertical plane and, therefore, make it necessary to provide cavities in the underside of the seat, as explained. In the majority of cases it is desirable to apply the apparatus directly onto the underside of an existing seat, and this should be done with an expenditure of a minimum quantity of labor.

I have, therefore, devised another type of mechanism also embodying my invention where all the parts are movable in a horizontal plane so that the shallow chamber formed by the casing is sufficient of itself to house the same at all times.

Such an improved type of mechanism is illustrated in Figs. 12, 13 of the drawings. In the same 78 designates a relatively shallow casing, which can be secured onto the underside of the seat by means of screws at 79, 80, forming therewith a shallow chamber 81. The operating member is a crank lever 82, mounted on a vertical pivot 83, said lever having an operating arm 84 projecting sidewise of the seat to which the device is attached and another arm actuating the fluid delivery arm and the lever controlling the flow of fluid through the rubber tube leading to the fluid delivery arm.

The fluid delivery arm 86 is carried by a bracket 87, mounted on an inclined pivot 88, and is made to communicate with an inlet tube 89, to which is connected the delivery end 90 of a rubber tube 91, attached at the other end to a source of fluid supply such as, for instance, the water supply system. Said rubber tube enters the shallow casing at the rear at 92 and is directly exposed to the pinching action of the end 93 of arm 94, forming part of a crank lever 95, mounted on a vertical pivot 96. Said crank lever has another arm 97, which is normally forced inwardly by a spring 98, causing end 93 of arm 94 to press against the rubber tube, preventing the flow of water or fluid therethrough in a manner previously described.

Arm 97 is formed at its outer end with an inwardly extending lug 99, which projects directly in the path of arm 85 of crank lever 82. Crank lever 82 is normally held in the position shown in full lines in Fig. 12 by a spring 100, attached at one end to a fixed point 101 and at the other end to arm 85 at 102. Bracket 87 is formed with a radial extension 103, the outer end of which is formed with a cylindrical lug 104, having a slot 105 through which passes a rod 106. Said rod is attached at 107 to arm 85 and has at its other end a head 108, causing a spring 109 to exert pressure against a washer 110, bearing against the surface of cylindrical lug 104. Said rod 106 also carries a collar 111, bearing against the opposite side of lug 104.

When arm 84 of the operating lever is moved in a counterclockwise direction from the position shown in full lines in Fig. 12 to the position shown in dotted lines at 84', the fluid delivery arm is caused by rod 106 to move to its operative position, shown in dotted lines at 86', its movement being effected by virtue of the pressure exerted by washer 110 against cylindrical lug 104.

When the fluid delivery arm reaches its operative position it is restrained from going any

farther because bracket 87 strikes edge 112 of rib portion 113 of casing 78. At this point arm 85 of operating lever 82 is about to strike against lug 99 of arm 97, and upon continued movement of arm 84 in the same direction, arm 85 will actually bear against lug 99 and cause a certain angular displacement of crank lever 95 in a clockwise direction, thereby relieving the pressure exerted by end 93 of arm 94 against the rubber tube. This free movement of the operating lever is made possible by the yielding connection provided by spring 109 between rod 106 and arm 103 of bracket 87, as will be understood.

The mechanism operates, therefore, in a manner analogous to that previously described, the fluid delivery arm being first brought to position and cleansing fluid being then permitted to flow through the rubber tube leading to the fluid delivery arm. As soon as pressure against arm 84 is relieved, spring 100 will automatically return the operating lever to its normal position, collar 111 bearing against cylindrical lug 104 and in its turn causing the fluid delivery arm to resume its normal position shown. At the same time spring 98 will also automatically return lever 95 to its normal position, where end 93 of arm 94 checks the flow of fluid through tube 91.

It is obvious that casing 78 may be made with or without a hinge attachment for the seat, being without said hinge attachment when it is designed for use in connection with a seat already mounted in position on its own hinges.

From the foregoing it will be seen that I provide an entirely new type of sanitary attachment for closets and bidets, which is free from the many objectionable features characterizing other kindred devices heretofore in use.

It is obvious that the various constructional details of my device may vary from those shown without departure from the inventive idea; the drawings, therefore, should be understood as being intended for illustrative purposes only and not in a limiting sense.

I, accordingly, reserve the right to carry my invention into practice in all those ways and manners which may enter, fairly, into the scope of the appended claims.

I claim:

1. In apparatus of the class described, adapted for use in connection with a closet bowl, the combination, with a support, of a fluid delivery arm mounted on said support so as to be movable from an inoperative position adjacent the side of the bowl to an operative position where the outer end of said arm is spaced from the side of said bowl, and a flexible tube attached to said arm for establishing a direct connection between said arm and a source of fluid supply.

2. In apparatus of the class described, adapted for use in connection with a closet bowl, the combination, with a support, of a fluid delivery arm mounted on said support so as to be movable from an inoperative position adjacent the side of the bowl to an operative position where the outer end of said arm is spaced from the side of said bowl, and a flexible tube attached to said arm for establishing a direct connection between said arm and a source of fluid supply, at least part of said tube being made of compressible material.

3. In apparatus of the class described, adapted for use in connection with a closet bowl, the combination, with a support, of a fluid delivery arm mounted on said support so as to be movable from an inoperative position to an operative position where the outer end of said arm remains within said bowl, a flexible tube attached to said arm for establishing a direct connection between said arm and a source of fluid supply, means for controlling the flow of fluid through said tube to said arm, and a single operating member under the control of the occupant of the bowl for first effecting the movement of said arm from its inoperative to its operative position, and for then actuating said controlling means to cause fluid to flow to and from said arm.

4. In apparatus of the class described, adapted for use in connection with a closet bowl, the combination, with a support, of a fluid delivery arm mounted on said support so as to be movable from an inoperative position to an operative position where the outer end of said arm remains within said bowl, a flexible tube attached to said arm for establishing a direct connection between said arm and a source of fluid supply, at least part of said tube being made of compressible material, releasable means for exerting pressure against said compressible part, in order to check the flow of fluid therethrough, and means under the control of the occupant of the bowl, for first effecting the movement of said arm from its inoperative to its operative position, and for then actuating said pressure exerting means to release the pressure thereby exerted against said compressible part, in order to cause fluid to flow to and from said arm.

5. In apparatus of the class described, adapted for use in connection with a closet bowl, the combination, with a support, of a fluid delivery arm mounted on said support so as to be movable from an inoperative position to an operative position where the outer end of said arm remains within said bowl, a flexible tube attached to said arm for establishing a direct connection between said arm and a source of fluid supply, at least part of said tube being made of compressible material, releasable means for exerting pressure against said compressible part, in order to check the flow of fluid therethrough, and a single operating member under the control of the occupant of the bowl, for first effecting the movement of said arm from its inoperative to its operative position, and for then actuating said pressure exerting means to release the pressure thereby exerted against said compressible part, in order to cause fluid to flow to and from said arm.

6. In apparatus of the class described, adapted for use in connection with a closet bowl and a seat therefor, a supporting frame attachable to the underside of said seat, a fluid delivery arm mounted on said frame so as to be movable from an inoperative position to an operative position where the outer end of said arm remains within said bowl, means controlling the supply of fluid to said arm, and means, also carried by said frame, for first moving said arm to its operative position, and thereafter for starting the flow of fluid to and through said arm, said frame and said operating parts all being housed in the clearance space intervening between the top of the bowl and the underside of the seat.

7. In apparatus of the class described, adapted for use in connection with a closet bowl and a seat therefor, a supporting frame attachable to the underside of said seat, a fluid delivery arm mounted on said frame so as to be movable from an inoperative position to an operative position where the outer end of said arm remains within said bowl, a flexible tube for establishing a direct connection between said arm and a source of fluid supply, at least part of said tube being made

of compressible material, releasable means for exerting pressure against said compressible part, in order to check the flow of fluid therethrough, and means under the control of the occupant of the bowl, for first effecting the movement of said arm from its inoperative to its operative position, and for then actuating said pressure exerting means to release the pressure thereby exerted against said compressible part, in order to cause fluid to flow to and from said arm, all said mentioned elements being carried by said frame and being housed therewith in the clearance space intervening between the top of the bowl and the underside of the seat.

8. A water closet appliance of the character specified comprising, in combination, a supporting frame adapted to be attached to the underside of a closet seat and to be entirely housed in the clearance space intervening between said seat and an underlying bowl, a fluid delivery arm mounted in said frame so as to be movable from an inoperative to an operative position, flexible means for directly connecting said arm to a source of fluid supply, and means for controlling the operation of said arm and the flow of fluid therethrough, said frame being provided with hinge members for pivotally attaching the same onto the seat hinge bolts of the toilet bowl.

9. In apparatus of the class described, adapted for use in connection with a closet bowl, the combination, with a support and a fluid delivery arm mounted on said support so as to be movable from an inoperative position to an operative position where the outer end of said arm remains within said bowl, of a flexible tube attached to said arm for establishing a direct connection between said arm and a source of fluid supply, at least part of said tube being made of compressible material, releasable means for exerting pressure against said compressible part, in order to check the flow of fluid therethrough, a single operating member under the control of the occupant of the bowl, for first effecting the movement of said arm from its inoperative to its operative position, and for then actuating said pressure exerting means to release the pressure thereby exerted against said compressible part, in order to cause fluid to flow to and from said arm, and means automatically returning all said elements to and retaining them in their respective normal positions.

10. In apparatus of the class described, adapted for use in connection with a closet bowl provided with a seat, a supporting frame attachable to the underside of said seat, a fluid delivery arm mounted on said support so as to be movable from an inoperative position to an operative position where the outer end of said arm remains within said bowl, a flexible tube attached to said arm establishing a direct connection between said arm and a source of fluid supply, at least part of said tube being made of compressible material, releasable means for exerting pressure against said compressible part, in order to check the flow of fluid therethrough, means under the control of the occupant of the bowl, for first effecting the movement of said arm from its inoperative to its operative position, and for then actuating said pressure exerting means to release the pressure thereby exerted against said compressible part, in order to cause fluid to flow to and from said arm, and means automatically returning all said elements to and retaining them in their respective normal positions, said frame and said operating parts all being housed in the clearance space intervening between the top of the bowl and the underside of the seat.

11. In apparatus of the class described, adapted for use in connection with a closet bowl, the combination, with a support and a fluid delivery arm mounted on said support so as to be movable from an inoperative position to an operative position where the outer end of said arm remains within said bowl, of a flexible tube attached to said arm for establishing a direct connection between said arm and a source of fluid supply, at least part of said tube being made of compressible material, and having a flattened section forming a restricted passage tending to impede the passage of fluid therethrough.

12. In apparatus of the class described, adapted for use in connection with a closet bowl, the combination, with a support and a fluid delivery arm mounted on said support so as to be movable from an inoperative position to an operative position where the outer end of said arm remains within said bowl, of a flexible tube attached to said arm for establishing a direct connection between said arm and a source of fluid supply, at least part of said tube being made of compressible material, and having a flattened section forming a restricted passage tending to impede the passage of fluid therethrough, and releasable means for exerting pressure against said flattened section, in order to check the flow of fluid therethrough.

13. In apparatus of the class described, adapted for use in connection with a closet bowl, the combination, with a support, of a fluid delivery arm mounted on said support so as to be movable from an inoperative position to an operative position where the outer end of said arm remains within said bowl, a flexible tube for establishing a connection between said arm and a source of fluid supply, at least part of said tube being made of compressible material, and releasable means for exerting pressure against said compressible part, in order to check the flow of fluid therethrough.

FERRUCCIO GUIDETTI.