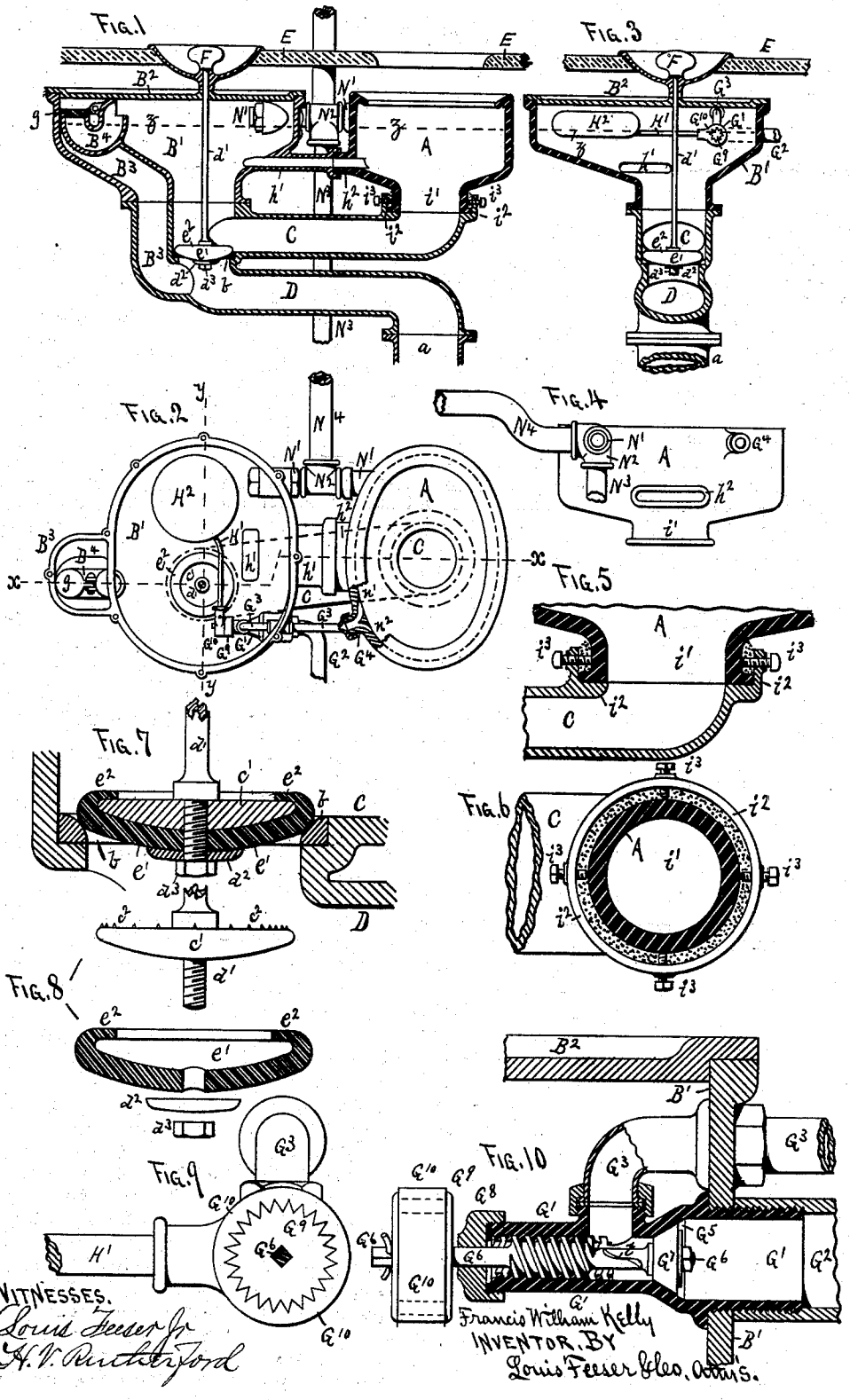
(No Model.)

F. W. KELLY.

WATER CLOSET.

No. 268,025. Patented Nov. 28, 1882.



N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

FRANCIS W. KELLY, OF MINNEAPOLIS, MINNESOTA.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 268,025, dated November 28, 1882.

Application filed July 20, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS WILLIAM KELLY, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have made certain new and useful Improvements in Water-Closets, of which the following is a specification.

This invention relates to water-closets; and it consists in the construction and arrangement of parts, as hereinafter shown and as specifically claimed.

In the drawings, Figure 1 is a transverse section through the bowl and tank on the line *x x* of Fig. 2. Fig. 2 is a plan view of the bowl and tank with the cover of the tank removed. Fig. 3 is a section of the tank on the line *y y* of the tank in Fig. 1. Fig. 4 is a side view of the bowl detached. Fig. 5 is a cross-sectional view; and Fig. 6 is a plan view, enlarged, of the joint connecting the bowl and its discharge-tube, illustrating the manner of constructing it. Fig. 7 is an enlarged sectional view of the flushing-valve, and Fig. 8 is the same with the parts disconnected. Fig. 9 is a front view; and Fig. 10 is a sectional view, enlarged, of the combined washing and bowl supply valve.

A is the usual earthenware bowl for receiving the deposits, and B′ the metal flushing-tank, placed alongside the bowl, and the two connected at their contracted lower ends with a large tube, C.

Leading from the tank B′, below the tube C, is another tube, D, either turned off to one side and downward at *a*, beneath the center of the bowl A, or in any other direction that the location of the apparatus may require. At the junction of the tubes C and D a valve-seat, *b*, is set, upon which a valve rests, as shown. This valve is constructed of a metal disk, *c′*, having a curved lower side and a flat upper side provided with small spurs c^2 and rounded outer edges, over which disk a rubber cup-shaped packing or cushion, *e′*, is adapted to be drawn. The lower part of this cushion fits the disk *c′*, and is provided with a turned-over rim, e^2, which fits over the rounded edges of the same disk, *c′*, and is held thereon by the spurs c^2 entering the rubber.

d′ is the valve-stem, passing down through the disk *c′* and cushion *e′*, and provided below the cushion with a washer, d^2, and nut d^3, by which the disk *c′* and cushion *e′* are firmly connected to the stem *d′*. The stem runs up through the cover B^2 of the tank B′, and also through the seat E, and is provided with the ordinary knob or "pull," F, whereby the valve may be raised from above in the ordinary manner. By this construction of the valve no part of the rubber cushion is left loose to be bent back and forth by the action of the water, which soon breaks off their edges and causes them to leak. In my arrangement the edge of the valve-cushion is turned over and held down upon the disk *c′* by the spurs c^2, so that the rubber is in the same position whether the valve is opened or closed. The rubber will be molded, as shown in Fig. 8, and stretched over the disk when placed in position, so that no "springy" action will occur to displace it.

Branching from the tank B′ is a small flat tube, *h′*, adapted to be connected to a similar tube, h^2, branching from the bowl A, whereby a passage-way is opened between the tank and bowl.

The lower edge of the tube *i′*, leading from the bowl A, is provided with a small collar or rib on the outside, adapted to fit into a small collar, i^2, on the tube C, and held in place by set-screws i^3, as shown in Figs. 4 and 5, the remainder of the space between the tube *i′* and flange i^2 being filled with cement of any suitable kind to form a gas and water tight joint, the set-screws preventing the strain coming upon the cement.

B^3 is a tube running down the outside of the tank B′ from its top to the bottom, and opening into the tube D below the valve *e′*. The upper part of this tube B^3 is larger than the lower part to provide room for a small "trap," B^4, opening at one end into the tank B′ and at the other end into the tube B^3, thereby forming an overflow for the tank, and by its form serving as a trap to prevent the gas from the tubes passing into the tank, being thus an ordinary water-trap. A small valve, *g*, will be hinged over the inner end of this trap B^4 to be opened only by pressure from within and closed by any back-pressure, to serve as an additional safeguard to prevent the escape of gas from the tubes B^3 or D into the tank in event of the trap failing to operate.

G′ is a valve-casing screwed through the side

of the tank B′ from the inside, and connected on the outside with a tube, G^2, leading to the hydrant or tank for supplying water to the apparatus.

G^3 is another tube, leading from the top of the casing G′ out through the tank B′ and into a small projecting tube, G^4, on the side of the bowl A. Leading from this tube G^4 are two oppositely-branching ports, n' n^2, opening at angles into the bowl, as shown, so that the stream of water from the tubes will be divided and enter the bowl from two directions, as hereinafter shown.

The valve-casing G′ is formed on the inside, near its forward end, with a smooth conical valve-seat, G^5, and back of the opening into the tube G^3 with a double screw-thread adapted to receive a threaded valve-stem, G^6, of a conical valve, G^7, the latter adapted to fit upon the conical seat G^5. By forming the screw-thread in the casing G′ and on the stem G^6 double or with two threads, one inside the other, a small movement of the stem around its center will cause the valve to be opened a longer distance than it would be were only one thread used. The stem G^6 is continued out beyond the casing G′ through a stuffing-box, G^8, and provided on the outside with a serrated-edged hub, G^9, over which a similarly-serrated collar, G^{10}, fits. Into the side of this collar G^{10} is secured a rod, H′, on the opposite end of which a float, H^2, is attached, the float adapted to lie upon the water in the tank. By this arrangement it will be seen that if the float be raised the valve will be closed, and if the float be lowered the valve will be opened, the double screw-thread on its stem insuring its wide opening by a comparatively small downward movement of the float. When the valve is thus opened the water from the hydrant or supply-tank is thus free to flow into the bowl A through the parts n' n^2, and thus wash it out, as hereinafter shown.

N′ is a tube connecting the rear upper parts of the tank and bowl to each other, and provided at the center with a three-way coupling, N^2, from the bottom of which a tube, N^3, branches down to a "safe" upon or beneath the floor upon which the apparatus rests, and from the side of which coupling another tube, N^4, branches and turns upward and outward, and is conveyed to a ventilating chimney or shaft, the upward turn of the tube being to prevent any water from the bowl or tank from flowing into it. By this means an additional overflow is provided for the tank and bowl through the tubes N′ and N^3 in case of the failure of the trap B^4 to operate, while at the same time, by means of the larger tube, N^4, a perfect ventilator is formed, and by turning the tube N^4 upward before it passes to the chimney no water or matter from the bowl or tank can get into it, but will flow off through the tube N^3. When the tank and bowl are empty the float H^2 will fall and open the valve G^7 and allow the water to flow into the bowl through the ports n' n^2 and fill it up, and also the tank B′ as far as the line z, until the water has raised the float high enough to close the valve G^7 again, the valve e' having of course been previously closed.

By adjusting the float H^2 higher or lower with relation to the valve G^7 the water-line z may be raised or lowered at pleasure. This adjustment of the float is made by means of the serrations on the hub G^9 and in the ring G^{10}, as will be readily seen that by removing the ring G^{10} from the hub G^9 and replacing it with another set of the teeth in contact with each other the float may be adjusted to act upon the valve G^7 at a higher or lower point of elevation, and thus raise or lower the water-line z. By making the serrations small the float may be adjusted to a very small degree.

When it is desired to discharge the apparatus the valve e' is raised, when the water is free to flow out of the bowl A through the tubes C and D. The raising of the valve e' shuts off to a very large extent the communication between the tank B′ and tube C, it being raised above the tube C, so that the water from the tank, as soon as the water in the bowl sinks below the line of the water in the tank, will begin to run into the bowl through the tube h' h^2, and the exit from the bowl at i' being much larger than the tube h^2 h', the bowl will soon be emptied and the water from the tank flow in with some force and wash out the bowl thoroughly. At the same time the float will fall with the water in the tank, open the valve G^7, and permit the water to flow through the ports n' n^2. As before stated, these ports, branching in opposite directions, carry the streams of water around the entire inside surface of the upper part of the bowl, and insures its more perfect cleansing. This arrangement is especially beneficial where oval or oblong bowls are used, as one single stream fails to do the work efficiently. The water will continue to flow through the ports n' n^2 until the valve e' is closed and enough water has flowed into the bowl to fill the latter and the tank B′ high enough to raise the float H^2 and close the valve G^7. By this construction a much greater force is given to the water that flows from the tank into the bowl than by any other apparatus with which I am acquainted.

In most water-closets heretofore constructed the water and matter from the bowl passes through the lower part of the tank and comes in contact with the valve, while in this arrangement the water from the tank passes into the bowl after the matter and water have left it, and acts as a "washer" to the bowl in addition to the washing from the ports n' n^2. This utilizing of the large body of water from the tank to wash the bowl, and not merely to flow through the lower end of the bowl, as in other devices, is a very important part of my invention.

Small wings t' may be placed upon the valve G^7 or its stem, upon which the water may act to turn the stem and close the valve should the float become broken or detached.

I do not claim in this application, broadly, the construction of the valve, but reserve the right to make the same the subject of a separate application.

What I claim as new is—

1. In a water-closet, the combination of a deposit-bowl and a water-tank, both adapted to hold water and communicating with each other below the water-line of both, and a valve which, when opened, permits the contents of the bowl to be discharged and water to pass from the tank through the bowl in quantity sufficient to flush the bowl, substantially as and for the purpose set forth.

2. In a water-closet, the combination of a deposit-bowl and water-tank communicating between their upper and lower ends and having a tubular connection at their lower ends, in combination with a valve serving to cut off the tank from the tube communicating with the bowl, and also as a valve for controlling the discharge of the deposits from the bowl and the influx of water from the tank to the bowl, substantially as and for the purpose set forth.

3. The combination of tank B′, provided with an overflow, B^3, and having a contracted neck, bowl A, connecting with the tank by a flushing-tube, h' h^2, tube C, and a valve, e', controlling the opening and closing of tube C, and fitting in the neck of the tank, so as to cut off the tank from tube C and cause the water to flow from the tank into the bowl through the flushing-tube, substantially as and for the purposes set forth.

4. The combination of the bowl A, tank B′, connecting-tube N′ N^3, and ventilating-tube N^4, substantially as set forth.

5. The combination of bowl A, tank B′, tubes G^2 G^3, ports n' n^2, a valve for controlling the flow of water from one of said tubes to the other, and a float connected to and adapted to be moved to open and close said valve, substantially as set forth.

6. The tube D, having the valve-seat b, in combination with the valve consisting of the disk c', rubber cushion e', adapted to fold over the edge of said disk, and stem d', substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FRANCIS WILLIAM KELLY.

Witnesses:

C. N. WOODWARD,

LOUIS FEESER, Sr.