No. 609,870. Patented Aug. 30, 1898.

L. M. BIGGS.

TOILET APPLIANCE.

(Application filed Oct. 2, 1897.

(No Model.) 3 Sheets—Sheet 1.

Fig. 1.

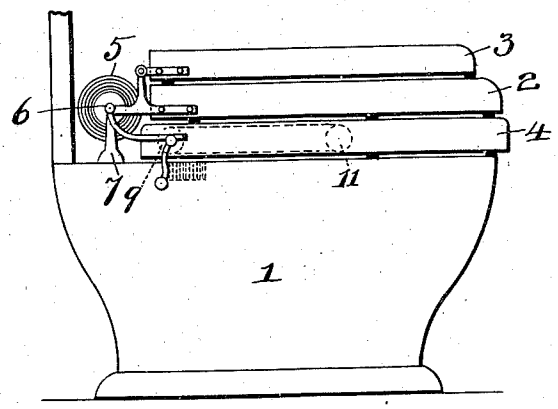


Fig. 4.

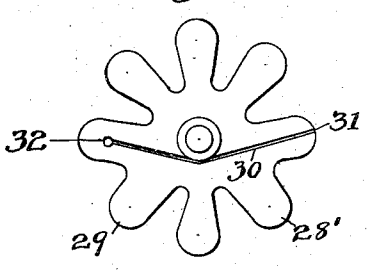


Fig. 5.

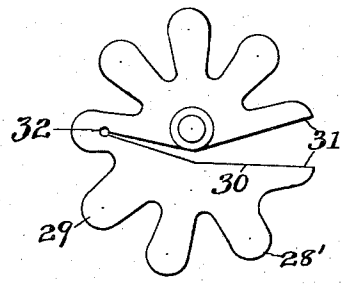


Fig. 6.

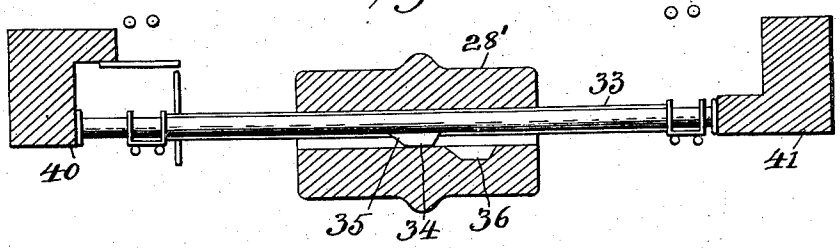
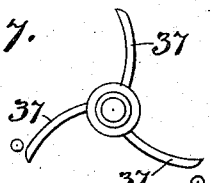


Fig. 7.



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Fig. 2.

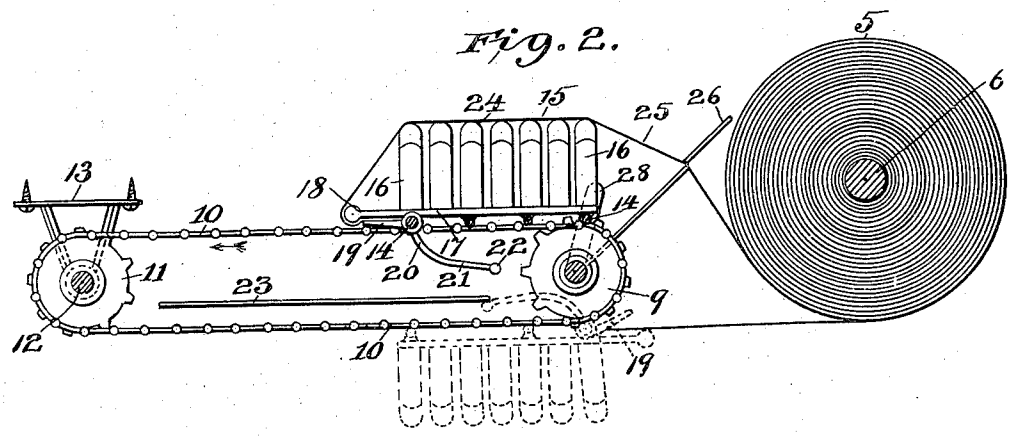
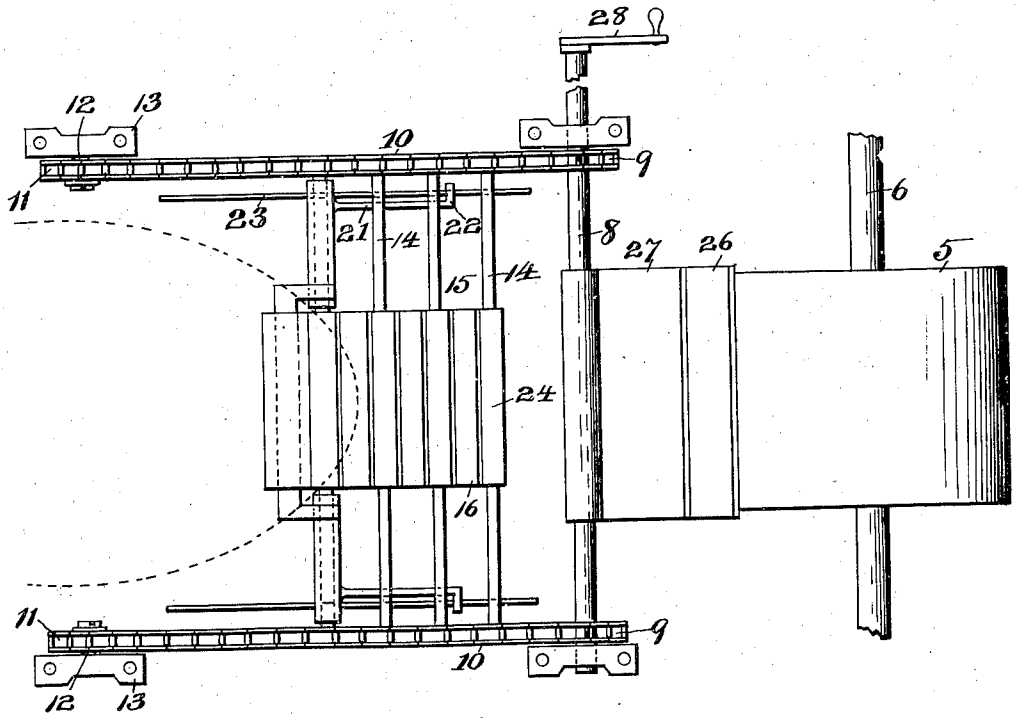


Fig. 3.



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TOILET APPLIANCE.

(Application filed Oct. 2, 1897.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 8.

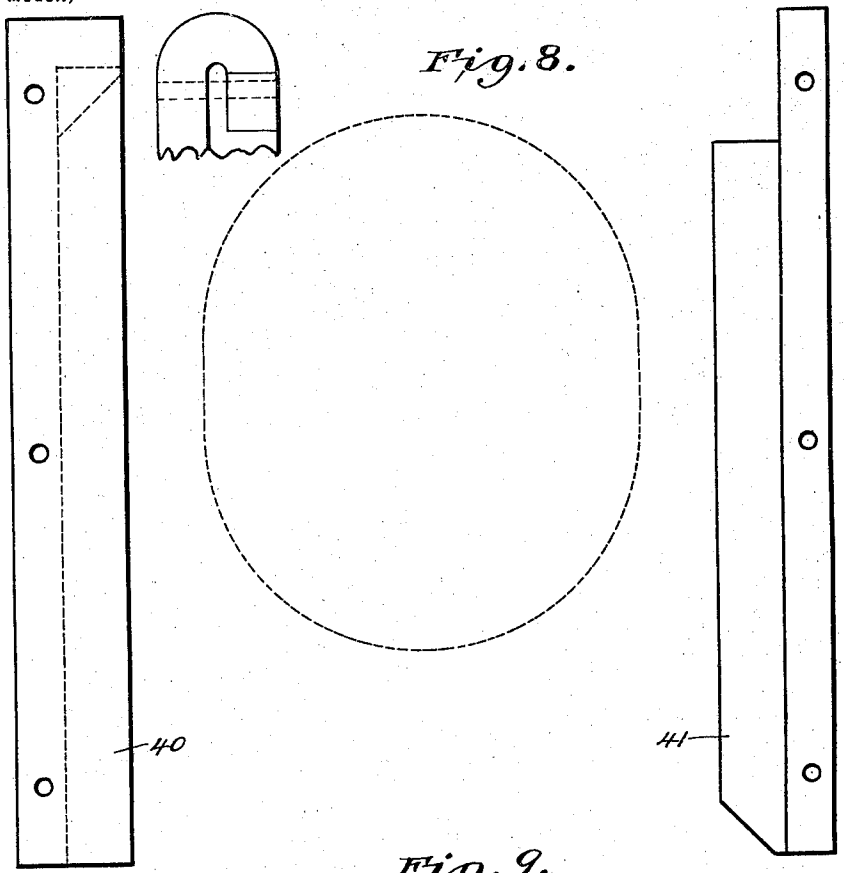


Fig. 9.

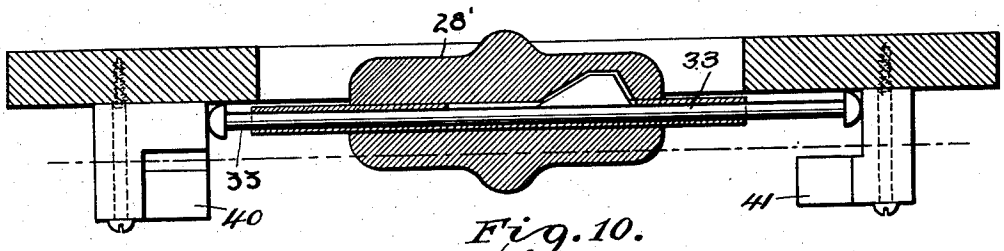
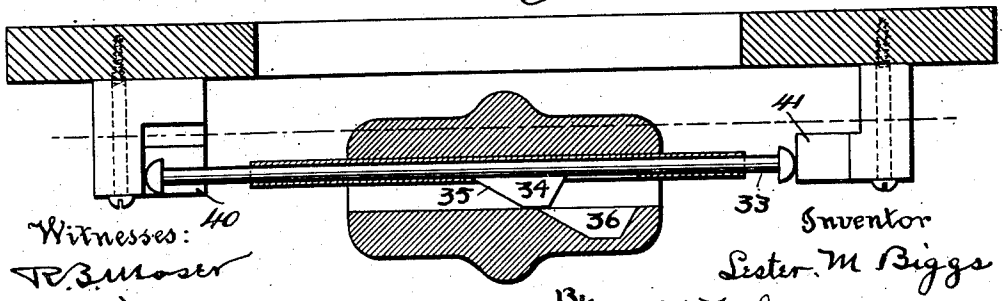


Fig. 10.



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UNITED STATES PATENT OFFICE.

LESTER M. BIGGS, OF AKRON, OHIO, ASSIGNOR TO LESTER E. BIGGS, OF SAME PLACE.

TOILET APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 609,870, dated August 30, 1898.

Application filed October 2, 1897. Serial No. 653,877. (No model.)

To all whom it may concern:

Be it known that I, LESTER M. BIGGS, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Toilet Appliances; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to toilet appliances; and the object in view is to provide, in connection with a water-closet, mechanical means for operating and using the toilet-paper, the same being designed to perform the operation heretofore done by hand.

The detailed objects and advantages of the invention will be pointed out in the course of the subjoined description.

The invention consists in certain novel features and details of construction and arrangement of parts, as hereinafter fully described, illustrated in the drawings, and incorporated in the claims hereto appended.

In the accompanying drawings, Figure 1 is a side elevation of a water-closet, showing the improved appliance mounted thereon. Fig. 2 is an enlarged sectional view of the apparatus, showing two positions of the hand and the actuating and cutting mechanism. Fig. 3 is a plan view of the same. Fig. 4 is an end view of a rotary hand or wiper. Fig. 5 is a similar view showing the hand open to grasp the paper. Fig. 6 is a longitudinal section through the hand, showing the means for opening or spreading the hand to grasp the paper. Fig. 7 is a diagrammatic view showing the means for rotating the hand. Fig. 8 is a plan view of the cam-pieces, showing one end of one of the bars in side elevation and a diagram of the seat-opening in dotted lines. Figs. 9 and 10 show end elevations of the cam-bars and cross-sections of the seat and different positions of the hand and the operating-shaft therefor, as hereinafter described.

Similar numerals of reference designate corresponding parts in all the views.

Referring to the accompanying drawings, 1 designates the bowl of a water-closet, of any ordinary or preferred construction, 2 the seat, and 3 the usual lid.

In carrying out the present invention an auxiliary lid or seat 4 is employed, the same being interposed between the main seat 2 and the top of the bowl 1. This auxiliary seat is apertured to admit of the introduction of the improved mechanism, and said mechanism is preferably attached to the under side of the main seat 2. The improved mechanism embodies, essentially, a roll of paper 5, which is mounted upon a shaft 6 and arranged in rear of the seat, the shaft 6 being preferably mounted in suitable pedestals 7, secured to the bowl or other convenient point.

Journaled in the rear end of the seat-board 4 is a transverse shaft 8, carrying at its opposite ends sprocket-wheels 9, over which run two parallel chains 10, the said chains extending forward and running over other similar sprocket-wheels 11, journaled upon shafts 12, mounted in hangers 13, secured to the under side of the main seat 2. The chains 10 are connected at suitable intervals by means of cross-rods 14, and upon these rods is placed a rubber hand 15. The hand, which is constructed of soft rubber, comprises a series of similar fingers 16, separated slightly from each other, but arranged in parallel order and extending transversely to the line of movement of the hand as a whole, and said fingers are connected at their bases to a common base or sheet 17 of flexible material, preferably rubber, so that said base may yield and conform to the curvature of the chains as the latter pass around their respective sprocket-wheels. The base 17 is extended at one end to form a stationary paper-gripping jaw 18, and arranged opposite and beneath said jaw when in its uppermost position is the movable jaw 19 of an elbow-shaped gripping-lever 20. This lever is journaled upon one of the rods 14 nearest the stationary jaw 18 of the hand and is provided with a handle or lever 21, the end of which (indicated at 22) is bent at substantially a right angle, so as to move into and out of engagement with a track or governor 23, preferably composed of wire and arranged intermediate the upper and lower portions of the chains and also between the two chains. The fingers on their operative surfaces are shaped,

as indicated at 24, to correspond approximately to the contour of the posterior parts, and the paper (indicated at 25) rests upon said fingers in the manner illustrated in Fig. 2 as the hand moves forward in the direction indicated by the arrow in said figure to perform its work.

Intermediate the paper-roll 5 and the shaft 8 is a stationary cutter or ledger-blade 26, arranged above the line of travel of the paper 25. Connected to and carried by the shaft 8 is a revolving cutter 27, the outer operative edge of which is adapted in each revolution of the shaft 8 to strike against the under side of the paper 25 and by forcing said paper against the stationary blade 26 to sever said paper just as the hand 15 moves forward. The shaft 8 is preferably provided at one end with a crank-handle 28, by which motion may be imparted to the apparatus hereinabove described.

In operation the crank-handle 28 is turned, thus imparting motion to the various parts of the mechanism, and upon the rotation of the shaft 8 the chains carry the hand in the direction indicated by the arrow in Fig. 2. Supposing the hand to be in its lower position, as indicated in dotted lines in Fig. 2, as the hand moves rearward the jaw 19 is rocked away from the jaw 18 and the paper 25 falls between said jaws. Upon the movement of the hand upward in rear of the shaft 8 the jaws close upon each other and grip the edge of the paper 25, thus unreeling the same from the roll 5. Upon reaching its upper position, as shown in full lines in Fig. 2, and starting forward the hand draws the paper 25 taut, and at the same time the knife or cutter 27 operates, in connection with the stationary ledger-blade 26, to sever the paper at the point of meeting of said cutters. Upon further rotation of the shaft 8 the hand 15 is now carried forward until it comes in contact with the person and performs its work in a manner that will be readily understood. The movement of the mechanism is continued until the hand 15 passes downward in front of the shaft 12, whereupon the hand 22 of the lever 21 is engaged by the track 23, thus opening the jaw 19 and releasing the soiled paper, which gravitates into the bowl, the hand 15 again moving rearward to the position first referred to.

In Figs. 4 to 7, inclusive, I have shown a modified construction in which the hand 15 is somewhat cylindrical in form, or shaped after the manner of a gear-pinion with enlarged teeth. The modified hand (indicated at 28′) is seen to comprise a series of radiating fingers 29, and the entire hand is composed of rubber, so as to afford the desired degree of flexibility. The hand is also divided on a substantially diametrical line, as indicated at 30, so as to establish opposing jaws 31 for gripping the paper when the hand is closed. The division 30 extends nearly but not quite through the hand, terminating at the point 32, so as to leave a hinge. Extending through the center of the hand 30 is a shaft 33, provided intermediate its ends with a feather or spline 34, having inclined opposite edges, as shown at 35. The bore of the hand is correspondingly recessed, as indicated at 36, so that when by any suitable means the shaft 33 is reciprocated or shifted longitudinally the feather 34 will ride out of the recess 36 and thereupon effect a spreading of the jaws 31 preparatory to the grasping of the toilet-paper between said jaws. The shaft 33 itself is rotated one or more times by means of a spider or series of arms 37, which are arranged at or near one end of the shaft and which come in contact with a series of stationary pins or projections 38, arranged at regular intervals and connected to the auxiliary seat-board 4. It is of course to be understood that this last-described form of hand may be used as a substitute for that first described and as a substitute in case it may be found more effective or desirable in practice. In the use of the rotatable hand the paper severed from the roll is of course of sufficient length to extend entirely around the hand.

From the foregoing description it will be seen that I have produced a simple and effective device operated mechanically for performing the operation hitherto done by hand. It will of course be understood that the mechanism hereinabove described is susceptible of various changes in the form, proportion, and minor details of construction, which may accordingly be resorted to without departing from the principle or sacrificing any of the advantages of the invention.

It should be understood that the flexible hand shown in Figs. 4, 5, and 6 is designed to be carried by shaft 33 on the flexible chains 10, the same as the hand in Figs. 2 and 3, and is supported on a sleeve which surrounds said shaft and through which the spline 34 projects. The said shaft is caused to move axially in one direction as it makes the turn at the front, when it opens the jaws, as seen in Fig. 6, and axially back again in the opposite direction when it makes the turn at the rear and paper has been engaged between the jaws, and said axial movement is caused by a wedge-shaped or equivalent cam or means, the opening cam being shown as the right in Fig. 6, bearing against the end of the shaft. The cam 40 is the "upper" longitudinal cam, so called, acting on shaft 33 as the chain travels one way, and 41 is the lower cam, acting on the said shaft as the chain travels the other way. These cams cause the shaft 34 to come out of recess 36, as in Figs. 6 and 10, below and open the hand, and the cams change the position of shaft 33 to do this work.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. The combination with a water-closet, of a mechanical device for performing the work

specified, and comprising a flexible traveling hand and a grip to engage paper with the hand, substantially as described.

2. In an appliance for the purpose specified, the combination with a flexible hand having a series of fingers, and operating means therefor constructed to carry the hand in a circuit and means for gripping the paper with the hand, substantially as described.

3. In an appliance for the purpose described, the combination with a flexible hand, of operating means therefor, a roll of paper, means for connecting the paper with the hand, and means for severing and delivering said paper, substantially as described.

4. In an appliance of the character specified, the combination with a flexible hand, of actuating means therefor, a paper-gripper carried by the hand, a roll of paper, and a cutter for severing the paper, substantially as described.

5. In an appliance of the character specified, a movable and flexible hand, actuating means therefor, and a paper-gripper carried by the hand, in combination with a roll of paper, and a cutter for severing the paper, substantially as described.

6. In an appliance of the character specified, the combination of a flexible hand, of operating means therefor, a pivoted paper-gripping device carried by said hand, and means for opening and closing said gripping device at the proper points, substantially, as described.

7. In an appliance of the character specified, the combination with suitable chains and sprocket-wheels, and operating means therefor, of a flexible hand carried by said chains, a paper-gripping device carried by said hand, means for opening and closing said gripping device, a roll of paper, and a cutter arranged contiguous to said roll, substantially as described.

8. In an appliance of the character specified, the combination with a flexible hand and means for imparting motion thereto, of a roll of paper, and a rotary cutter operating at intervals upon said paper, substantially as described.

9. In an appliance of the character specified, the combination with a set of continuous chains and operating means therefor, of a flexible hand connected with and actuated by said chains, and a paper-gripping device carried by said hand, substantially as described.

10. In an appliance of the character described, a flexible hand, composed of a series of fingers united to a common flexible base, and a paper-gripping device connected with said hand, substantially as described.

11. In an appliance of the character specified, a flexible hand having a series of flexible fingers and a common flexible base to which said fingers are severally and collectively attached, in combination with an endless carrier for said hand, substantially as described.

12. In an appliance of the character described, a flexible hand, composed of a flexible base or sheet, and a series of flexible fingers connected to said base and spaced apart and having their outer active surfaces shaped to conform to the curvature of the surface to which they are to be applied, in combination with an endless carrier for said hand and means to grip a sheet of paper to said hand, substantially as described.

13. In an appliance of the character described, the combination with suitable actuating mechanism, of a flexible hand, consisting of a number of fingers collectively attached to a common base projected at one end beyond the fingers to form a paper-gripping jaw, and a pivoted gripping device comprising a movable jaw carried by said hand and operating in connection therewith to grip the paper, substantially as and for the purposes described.

14. The combination with a water-closet, and the seat thereof, of an auxiliary seat interposed between the bowl and main seat, and paper-carrying mechanism arranged within said auxiliary seat, said mechanism comprising a flexible hand and an endless carrier for the hand, substantially as described.

15. In an appliance substantially as described, the combination of the water-closet and the auxiliary lid thereon next to the water-closet bowl, an endless carrier supported on said lid having a series of cross-pieces and a series of flexible fingers supported on said cross-pieces, substantially as described.

16. The water-closet bowl and the auxiliary lid thereon, in combination with an endless carrier on said lid having chains at the sides of the lid, a hand having a series of flexible fingers secured midway between the sides of said carrier, means to operate the carrier and means to engage a slip of paper with said hand, substantially as described.

17. The endless carrier having transverse pieces and a hand with flexible fingers supported midway on said pieces and gripping mechanism to engage a sheet of paper with said hand, in combination with means to operate said carrier, a paper-roll support and means to sever the paper, substantially as described.

18. The combination of the water-closet bowl, the auxiliary lid thereon, an endless carrier on the rear portion of said lid and a flexible hand on said carrier, a paper-roll supported on the rear of the closet, means to draw the paper over said hand and grip the paper, and cutters to sever the paper between the roll and the hand, substantially as described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

LESTER M. BIGGS.

Witnesses:
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HARRY JOHNSON.