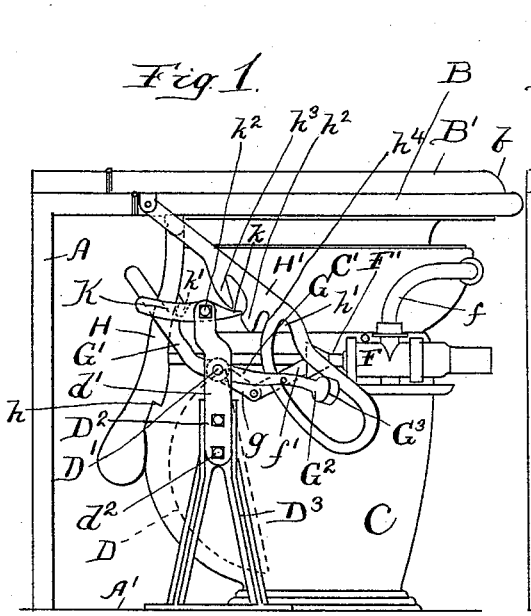
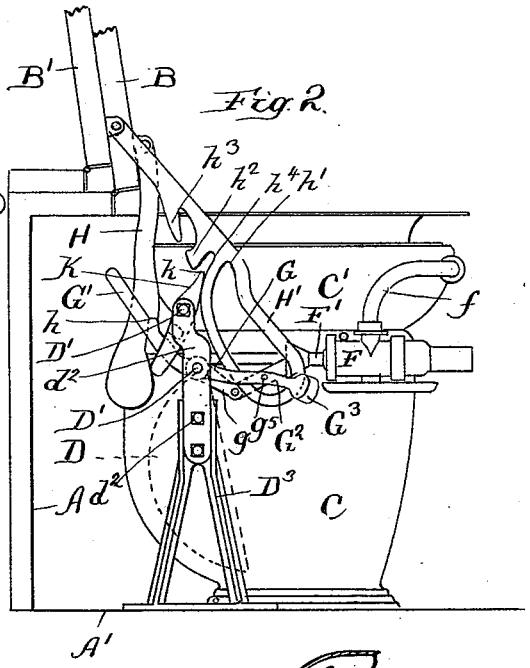
(No Model.)

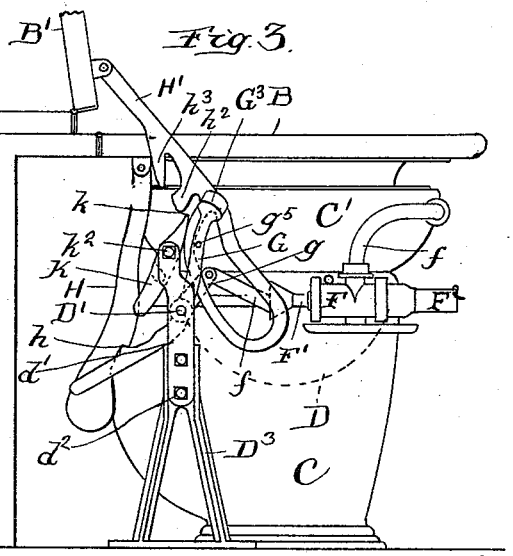
J. F. WOLFF.

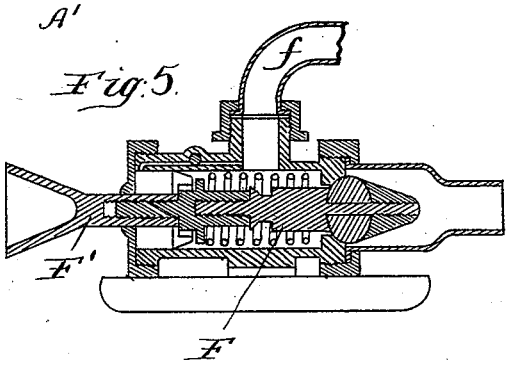
WATER CLOSET.

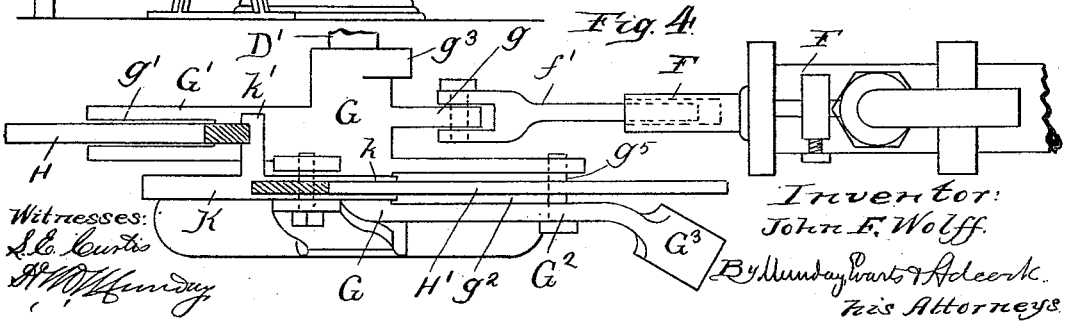
No. 526,065. Patented Sept. 18, 1894.











UNITED STATES PATENT OFFICE.

JOHN F. WOLFF, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE L. WOLFF MANUFACTURING COMPANY, OF SAME PLACE.

WATER-CLOSET.

SPECIFICATION forming part of Letters Patent No. 526,065, dated September 18, 1894.

Application filed March 6, 1893. Renewed August 2, 1894. Serial No. 519,297. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. WOLFF, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Water-Closets, of which the following is a specification.

My invention relates to improvements in water closets, and more particularly to improvements in that class of water closets commonly known as pan closets.

The object of my invention is to provide a closet of a simple, efficient and durable construction, specially adapted for use upon railway cars, and serves both as a urinal and closet, in order that the space that would be occupied by a separate urinal may be saved; and wherein or by the operation of which the supply of water may be greatly economized without interfering with the cleanliness and proper operation of the closet. In railway water supply closets where the supply of water carried is necessarily limited, it is a matter of great importance that the principle and mode of operation of the closet should be such that a minimum quantity of water, consistent with keeping the closet clean and in proper condition, should be used, because otherwise the water supply is likely to be exhausted during a considerable portion of the time; and in such case the closet is likely to become very foul owing to the failure of the water supply necessary for its proper operation. In railway closets also the available room or space is necessarily very limited or contracted, and for this reason it is important that the closet should be so constructed as to be available for use as a urinal, in order that the space that would be occupied by a separate urinal may be saved; and as the use of the closet as a urinal would necessarily result in unnecessary use or waste of the water supply, one of the principal objects of my invention has been to so construct the closet that it may be used as a urinal without requiring the use or waste of water; and, to further economize the quantity of water required, a further object has been to so construct the closet that when it is to be used as a closet a limited supply of water will be first delivered into the pan so as to partially fill, flush or moisten it and thus prevent fecal matter from adhering to the pan, and then a further supply or water delivered into the pan as it is being emptied, tilted or discharged, so as to insure a proper and free discharge of the contents of the pan. At each use of the closet therefore there are two limited supplies of water delivered to the pan; and by thus dividing the water supply into two parts I am enabled to keep the closet in a clean and proper condition by a much less quanity of water than would otherwise be necessary.

My invention consists in the means I employ to accomplish these new results or objects. That is to say it consists first in a closet having a pan, seat and cover and a valve for admitting a supply of water combined with mechanism connecting the seat and cover with the pan whereby the pan is caused to remain in its normally open position when both seat and cover are raised, as well as when both seat and cover are down, to the end that when both seat and cover are raised the pan may be in its normally open position to adapt the closet for use as a urinal.

It further consists in a closet having a swinging pan, a hinged seat, hinged cover, and a valve for admitting a supply of water, combined with mechanism connecting the seat and cover with the valve, whereby both seat and cover may be raised to adjust the closet for use as a urinal, and both seat and cover lowered or let down without operating the valve either by raising or by lowering the seat and cover, thus enabling the closet to be used as a urinal without use or waste of the water supply.

It further consists in a closet having a seat, cover, pan and valve and mechanism connecting the seat and cover with the valve and pan, whereby both seat and cover may be raised or lowered together without operating either the pan or valve, the seat and cover being so arranged in respect to each other that the front edge of the seat projects beyond the front edge of the cover, the front edge of the cover being beveled off so that the cover cannot be conveniently lifted except by taking hold of the seat and lifting it also.

It further consists in a closet, hinged seat,

cover, pan and valve, and mechanism connecting the seat and cover with the pan and valve, whereby both seat and cover may be raised or lowered simultaneously without operating the pan or valve, and whereby the pan and valve are operated to swing or turn the pan into position for use and admit a limited supply of water thereto upon lowering the seat to deliver a preliminary flush or supply of water to the pan, before the closet is used; and whereby also the pan and valve are again operated by the lowering of the cover to tilt or discharge the pan and deliver an afterwash or supply of water to the pan to insure the proper discharge of its contents and the keeping of the same in a clean condition.

It further consists in a closet having a hinged seat and cover and a water supply valve, and mechanism connecting the seat and cover with said valve, said mechanism comprising a vibrating toggle link or equivalent device arranged and adapted to pass a center and thus operate the valve as said link or device vibrates or moves in both directions past said center. By this means I am enabled by a simple mechanism to deliver the water to the pan each time the closet is used in two distinct supplies, one before and one after—that is to say when the pan is turned into position for use, and the other when the pan is being turned into its normal or open position to discharge its contents.

My invention further consists in a closet having a time or compression cup valve for delivering a supply of water thereto, of an operating lever and toggle link connection for actuating said valve both upon the up stroke and the down stroke of the lever.

It further consists in the novel construction of parts or devices and in the novel combinations of parts or devices herein shown and described, as will be more particularly pointed out in the claims.

In the accompanying drawings forming a part of this specification, I have shown a railway car water closet embodying my invention, and exhibiting one good form or construction of mechanism for practicing it, and that which I believe to be the best form now known to me.

In said drawings Figure 1 is a side elevation of a closet showing the parts in their normal position. Fig 2 is a like view showing the closet with its parts in position for use as a urinal. Fig. 3 is a like view showing the closet in position for use as a closet. Fig. 4 is an enlarged detail plan view of certain parts to be hereinafter described; and Fig. 5 is a detail sectional view of the time or compression-cup valve.

In said drawings similar letters of reference indicate like parts throughout all the figures.

In the drawings A represents the casing or frame; A′, the floor or support upon which the closet rests; B, the hinged seat; B′ the hinged cover; C, the discharge chamber; C′, the bowl; D, the movable swinging or hinged pan; D′, its shaft or pivot; F, the valve; F′, its piston, cock, or movable part; F^2, the water supply pipe, and f the connecting pipe leading from the valve to the bowl. All these parts are or may be of any well known or suitable construction. The front edge b of the cover B′, however, is preferably beveled off, substantially as shown in Fig. 1, and does not project over the front edge of the seat; so that the cover cannot be conveniently lifted except by taking hold of the seat and raising it also; and the valve F is, preferably, of the well known time or compression-cup type, so that a limited supply of water may be delivered each time the valve is opened without employing overhead or elevated water supply tanks. The pan shaft or pivot D′ is journaled on the cast metal chamber C at its inner end or portion; but at its outer end a supporting bracket D^2 is employed to give additional support to the outer projecting end of the shaft D′. This bracket D^2 has a base D^3 adapted to be secured by screws to the floor, and it is preferably made in two parts or sections, the upper part or section d' being preferably of brass, and secured to the lower or main part D^2 by bolts d^2.

Secured rigidly to the pan shaft D′ is a vibrating lever G for operating the pan and the valve; as a single lever or operating device is preferably employed for actuating both the pan and the valve. This vibrating lever G has an arm g connected by a toggle pivoted link f' with the piston or movable part F′ of the valve F.

H is a pawl pivoted to the seat B, and adapted to engage one arm G′ of the operating lever G; and H′ is a pawl pivoted to the cover B′ and adapted to engage the opposite end or arm G^2 of the lever G. The arm G′ of the lever G has a slot or fork g' to serve as a guide for the pawl H, and the arm G^2 of the lever G has a slot or fork g^2 to serve as a guide to keep the pawl H′ in position. The pawl H has one notch or tooth h which engages the end or arm G′ of the lever G to operate said lever when the seat B is being lowered and thus swing the pan from its normal or hanging position to its horizontal position for use, as shown in Fig. 3. The pawl H′ has a notch, tooth, shoulder or projection h' for engaging the opposite end or arm G^2 of the lever G and thus operating said lever to swing the pan from its horizontal position down into its normal or hanging position to discharge the contents thereof when the cover B′ is lowered, and the pawl H′ has two other notches, shoulders, teeth or projections h^2 h^3 for engaging the drip device K.

The function of the trip device K is to disengage the pawl H from the operating lever G when both seat and cover are being lowered at once, so that this may be done without operating the pan or valve, and to disengage the pawl H from the lever G, (after the pan and valve have been operated by lowering the seat alone) so that the pan and valve may

be again operated through the pawl H′ by the lowering of the cover B′ alone. A simple and convenient, and the preferable form of construction of the trip K, is to make it in the form of an ordinary lever the same being arranged so that the end k of it is engaged by the pawl H′ or the teeth or projections thereon, while the other end of the trip lever or a projection k' thereon engages the other pawl H. The trip lever K is preferably pivoted by a pin k^2 to the bracket D^2, or the upper section d' thereof. The piston or movable part F′ of the valve is furnished with a socket to receive and support the end of the vibrating toggle link f', so that after the link and arm g of the lever G pass the center the further movement of the toggle link and lever f', g, will not retract or draw back the piston F′ of the valve. The lever G, or its supporting shaft D′ to which it is rigidly secured, is furnished with a stop projection g^3 that engages a corresponding projection on the discharge chamber casting C, for the purpose of limiting the downward or swinging movement of the pan, and thus prevent the pan striking against the back wall of the chamber C and being injured.

The operation is as follows: To use the closet as a urinal the seat B and cover B′ are lifted together, this operation imparting no movement to the operating lever G, and of course none to the pan or valve. In this operation of raising the seat and cover the tooth or projection h^3 on the pawl H′ engages the end k of the trip lever K and vibrates this trip lever into the position indicated in Fig. 2, and then after the closet has been used as a urinal, the pan at this time remaining swung down or in its normal position and out of the way, the seat and cover are simultaneously lowered, this simultaneous lowering of the seat and cover imparting no movement to the operating lever G, and of course none to the pan or to the valve; because the tooth or projection h^3 on the pawl H′ engages the trip lever K and causes the opposite end k' thereof to disengage the notch h of the pawl H from the end G′ of the operating lever G. The closet may thus be used as a urinal without use or waste of water.

To use the closet as a closet, the seat and cover are first both raised, this operation imparting no movement to the operating lever, pan or valve; and then the seat B is lowered into position for use, as indicated in Fig. 3. This operation of lowering the seat B alone causes the pawl H to actuate the operating lever G and turn the pan into the position shown in Fig. 3, and also open the valve as the toggle lever g and link f' pass the center, and thus cause a measured quantity of water to be delivered into the pan to properly moisten or flush the same and thus prevent fecal matter sticking thereto. Then, after the closet has been used, cover B′ is lowered. This operation of lowering the cover causes the pawl H′ to first engage the trip lever K and thus actuate said trip lever to disengage the notch h of the pawl H from the operating lever G; and then the further movement of the pawl H′ causes the same to engage at h' the end G^2 of the operating lever and thus vibrate said lever in the opposite direction and tilt the pan and discharge its contents and return it to its normal or hanging position; while at the same time this up or return stroke of the vibrating lever G causes the toggle lever g and link f' to again pass the center and again open the valve and deliver an afterwash supply of water to the pan while it is in the act of being tilted to discharge its contents, thus insuring its proper discharge and keeping the pan in a cleanly condition.

As the front edge of the seat B projects beyond the cover B′, and as the front edge of the cover B′ is beveled off, the cover B′ cannot be practically or readily raised without first lifting the seat B. However if the cover B′ is separately raised, this act will not actuate the operating lever and of course not turn the pan into position or actuate the valve, and if the seat B should be then separately raised, this act will likewise have no effect on the operating lever G, pan or valve. So, too, after seat and cover have both been raised and the seat separately lowered into position for use the pan cannot be tilted or discharged or the valve operated by again raising and lowering the seat separately, as the pawl H connected with the seat can have no further operation on the operating lever G until after said lever G has been actuated by the pawl H′ connected with the cover B′. This will be readily understood from Fig. 3 of the drawings.

The tooth or projection h^3 on the pawl H′ is for the purpose of safety to prevent the trip lever K being moved out of its proper relation to the other parts by a partial raising and then lowering of the cover.

The operating lever G is furnished with a weight G^3 for the purpose of carrying the operating lever down to its normal position after it has been partially pushed down by the shoulder h' engaging the end G^2 of the operating lever. For convenience the operating lever is furnished with a pin g^5 at its end G^2 to engage the shoulder h'. The tooth projection or cam surface h^4 on the pawl H′ engaging the trip lever K serves to hold said trip lever in position to be engaged by the tooth h^3, as will be clearly apparent from Figs. 2 and 3.

In my new combination of the valve and pan, with the seat and cover, neither valve or pan is operated by the upward movement of the seat and cover whether the seat and cover be raised separately or together; and neither valve or pan is operated by the downward movement of the seat and cover together. The valve and pan are only operated by the downward movement of the seat and by the downward movement of the cover, each separately and in their proper order. That is to say after the seat and cover are

both raised the separate downward movement of the seat will operate the valve and pan and then the separate downward movement of the cover will again operate the valve and pan, the former operation bringing the pan into position for use and the latter emptying the pan and returning it to its normal or hanging position; and after being thus operated both seat and cover must be raised before the valve can be again operated by either. By simply raising and lowering the cover alone no movement is communicated to the operating lever or to the valve or pan; and likewise, too, after the seat has been lowered separately and the valve and pan thus once operated, the further lowering and raising of the seat alone communicates no movement whatever to the operating lever, valve or pan.

I claim—

1. In a water closet, the combination of a hinged seat and cover with a swinging pan, a water supply valve and mechanism connecting the seat and cover with the pan and valve for operating the same, and said mechanism having a trip device whereby the seat and cover may be raised and the seat and cover also lowered simultaneously without operating either the pan or valve, substantially as specified.

2. In a water closet, the combination with a hinged seat and cover of a swinging pan and mechanism connecting the seat and cover with the pan for operating the same and said mechanism having a trip device whereby the seat and cover may be raised or lowered simultaneously without operating the pan, substantially as specified.

3. In a water closet, the combination with a hinged seat and cover of a water supply valve and mechanism connecting the seat and cover with the valve for operating the same and said mechanism having a trip device whereby the seat and cover may be raised or lowered simultaneously without operating the valve, substantially as specified.

4. In a water closet, the combination with a hinged seat and cover of a swinging pan, mechanism connected to the seat for raising the pan into its horizontal position by the lowering movement of the seat, and mechanism connected to the cover for returning the pan to its hanging or normal position by the lowering movement of the cover, substantially as specified.

5. In a water closet, the combination with a hinged seat and cover of a swinging pan, mechanism connected to the seat for raising the pan into its normal position by the lowering movement of the seat, mechanism connected to the cover for returning the pan to its hanging or normal position by the lowering movement of the cover, and a trip device to prevent either of said mechanisms from operating the pan when the seat and cover are lowered together or simultaneously, substantially as specified.

6. In a water closet, the combination with a hinged seat and cover of a swinging pan, mechanism connected to the seat for raising the pan into its horizontal position by the lowering movement of the seat, mechanism connected to the cover for returning the pan to its hanging or normal position by the lowering movement of the cover, a water supply valve and mechanism connected to the cover and connected to the seat for operating said valve by the lowering movement of the seat and again by the lowering movement of the cover, substantially as specified.

7. In a water closet, the combination with a hinged seat and cover of a swinging pan, mechanism connected to the seat for raising the pan into its horizontal position by the lowering movement of the seat, mechanism connected to the cover for returning the pan to its hanging or normal position by the lowering movement of the cover, a water supply valve and mechanism connected to the cover and connected to the seat for operating said valve by the lowering movement of the seat and again by the lowering movement of the cover, and a trip device to prevent said mechanism from operating either the pan or the valve when the cover and seat are lowered together or simultaneously, substantially as specified.

8. In a water closet, the combination of a hinged seat and cover with a swinging pan, an operating lever for said pan, and two pawls for actuating said lever, one connected to the seat and one to the cover, substantially as specified.

9. In a water closet, the combination of a hinged seat and cover with a swinging pan, an operating lever for said pan, and two pawls for actuating said lever, one connected to the seat and one to the cover, and a trip lever or device for disengaging said pawls, substantially as specified.

10. In a water closet, the combination of a hinged seat and cover with a water supply valve, an operating lever G, and two pawls H and H′ for actuating said lever, one of said pawls being connected to the seat and the other to the cover, substantially as specified.

11. In a water closet, the combination of a hinged seat and cover with a water supply valve, an operating lever G, and two pawls H and H′ for actuating said lever, one of said pawls being connected to the seat and the other to the cover, and a trip lever or device K, for disengaging said pawls substantially as specified.

12. In a water closet, the combination of a hinged seat and cover with a swinging pan and a water supply valve, a lever G for operating said pan and valve and two pawls H and H′ for actuating said lever, one connected to the seat and one to the cover, substantially as specified.

13. In a water closet, the combination of a hinged seat and cover with a swinging pan and a water supply valve, a lever G for op-

erating said pan and valve and two pawls H and H′ for actuating said lever, one connected to the seat and one to the cover, and a trip lever or device K for disengaging said pawls, substantially as specified.

14. In a water closet, the combination of a hinged seat and cover with a swinging pan and water supply valve, a lever G for operating said pan and valve and two pawls H and H′ for actuating said lever, one connected to the seat and one to the cover, and a toggle link f' connecting said lever G and valve, and arranged to operate said valve both on the up stroke and down stroke of said lever G, substantially as specified.

15. In a water closet, the combination with a hinged seat and cover of a swinging pan and water supply valve, operating lever G, pawl H furnished with notch or projection h and pivotally connected to the seat, pawl H′ pivotally connected to the cover and provided with notches or projections h' and h^2, and a trip lever K, located between said pawls for disengaging the same from the operating lever substantially as specified.

16. In a water closet, the combination with a hinged seat and cover of a swinging pan and water supply valve, operating lever G, pawl H furnished with notch or projection h and pivotally connected to the seat, pawl H′ pivotally connected to the cover and provided with notches or projections h', h^2, and h^3, substantially as specified.

17. In a water closet, the combination of a hinged seat and cover with a swinging pan, a water supply valve and mechanism connecting the seat and cover with the pan and valve for operating the same, and said connecting mechanism including a trip device whereby the seat and cover may be raised and the seat and cover also lowered simultaneously without opening either the pan or valve, the front edge of said seat projecting beyond the front edge of the cover and the front edge of the cover being beveled off to prevent the cover being separately raised, substantially as specified.

18. In a water closet the combination of a swinging pan and water supply valve, with a hinged seat and cover and connecting mechanism for operating the valve and pan by the separate downward movement of the seat, and again by the separate downward movement of the cover, said connecting mechanism being furnished with a trip device and the valve or pan not being operated by the upward movement of seat or cover, or by the simultaneous downward movement of seat and cover, substantially as specified.

JOHN F. WOLFF.

Witnesses:
H. M. MUNDAY,
EDMUND ADCOCK.