

R. A. BROOKS.

TOILET CLOSET.

APPLICATION FILED APR. 19, 1906.

936,516.

Patented Oct. 12, 1909.

4 SHEETS—SHEET 1.

Fig. 1.

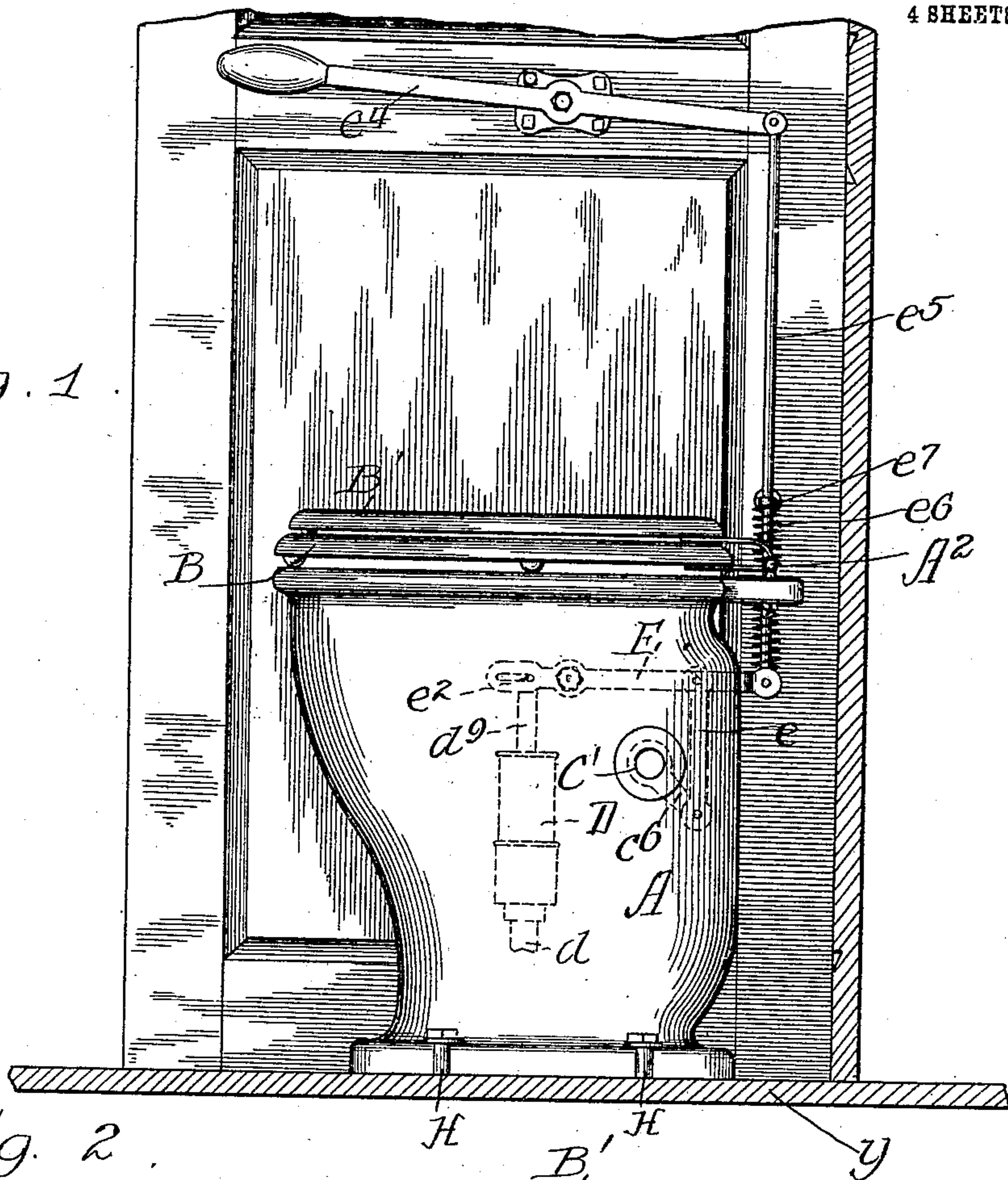
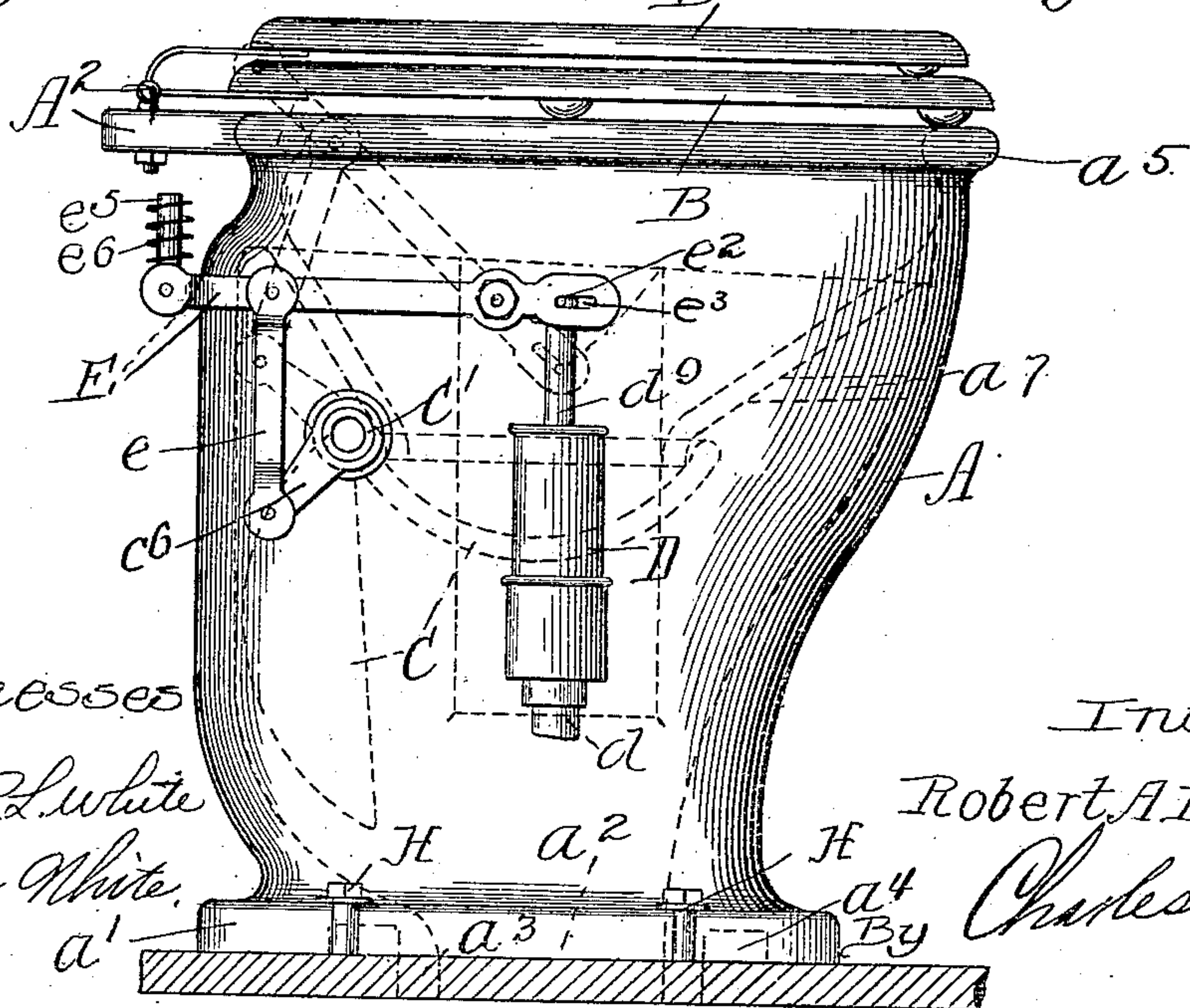


Fig. 2.



Witnesses

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a^1

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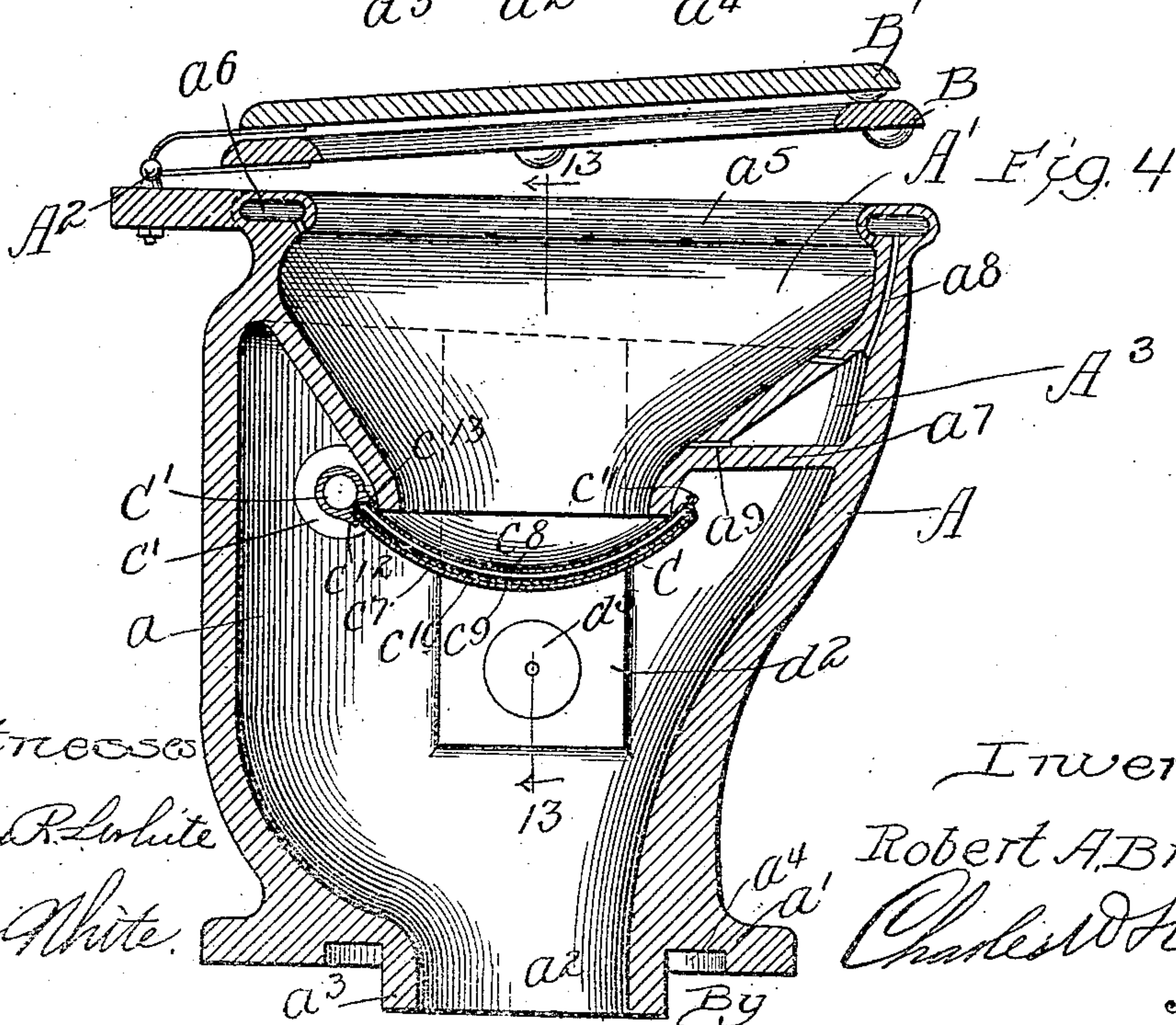
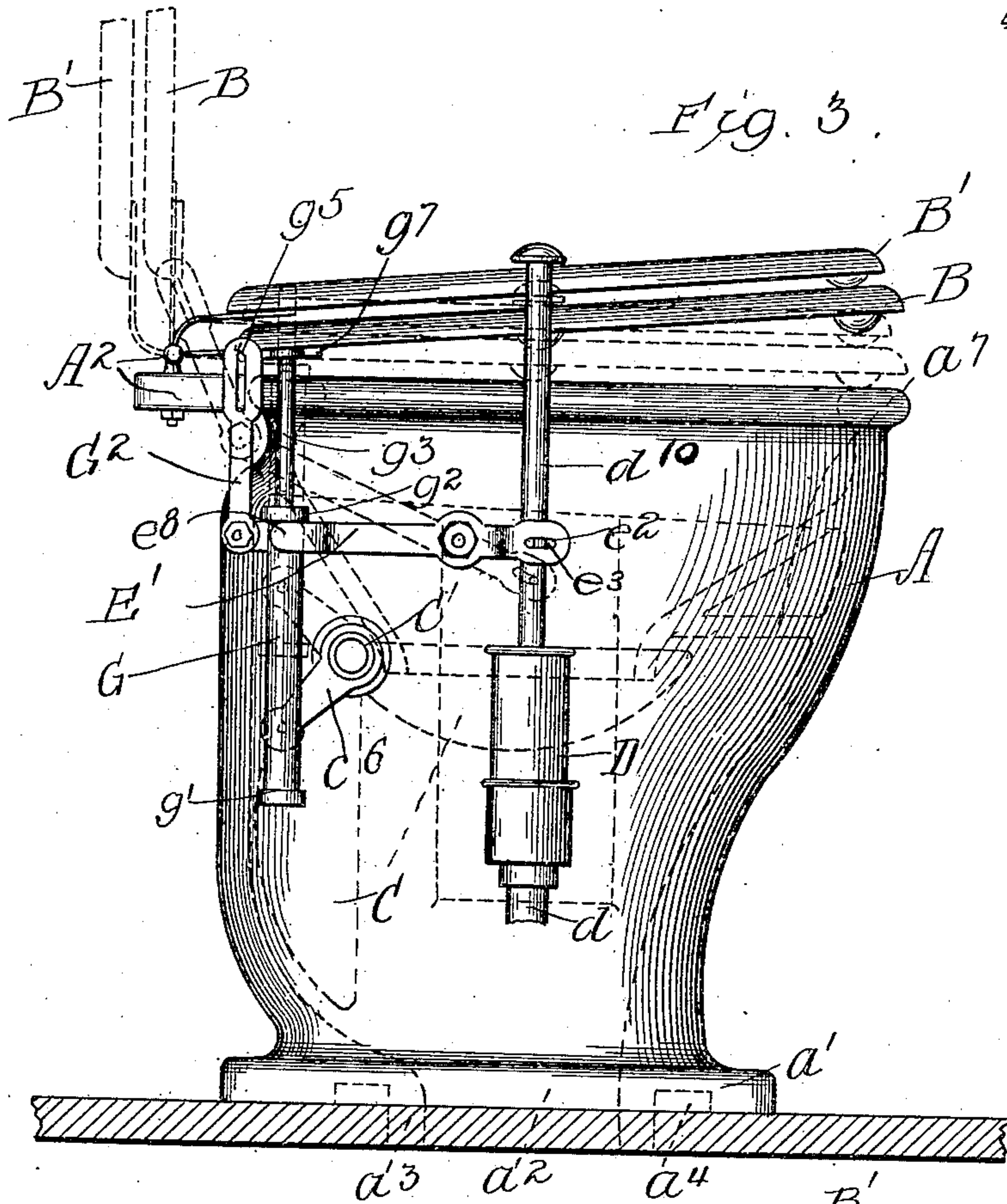
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4 SHEETS—SHEET 2.



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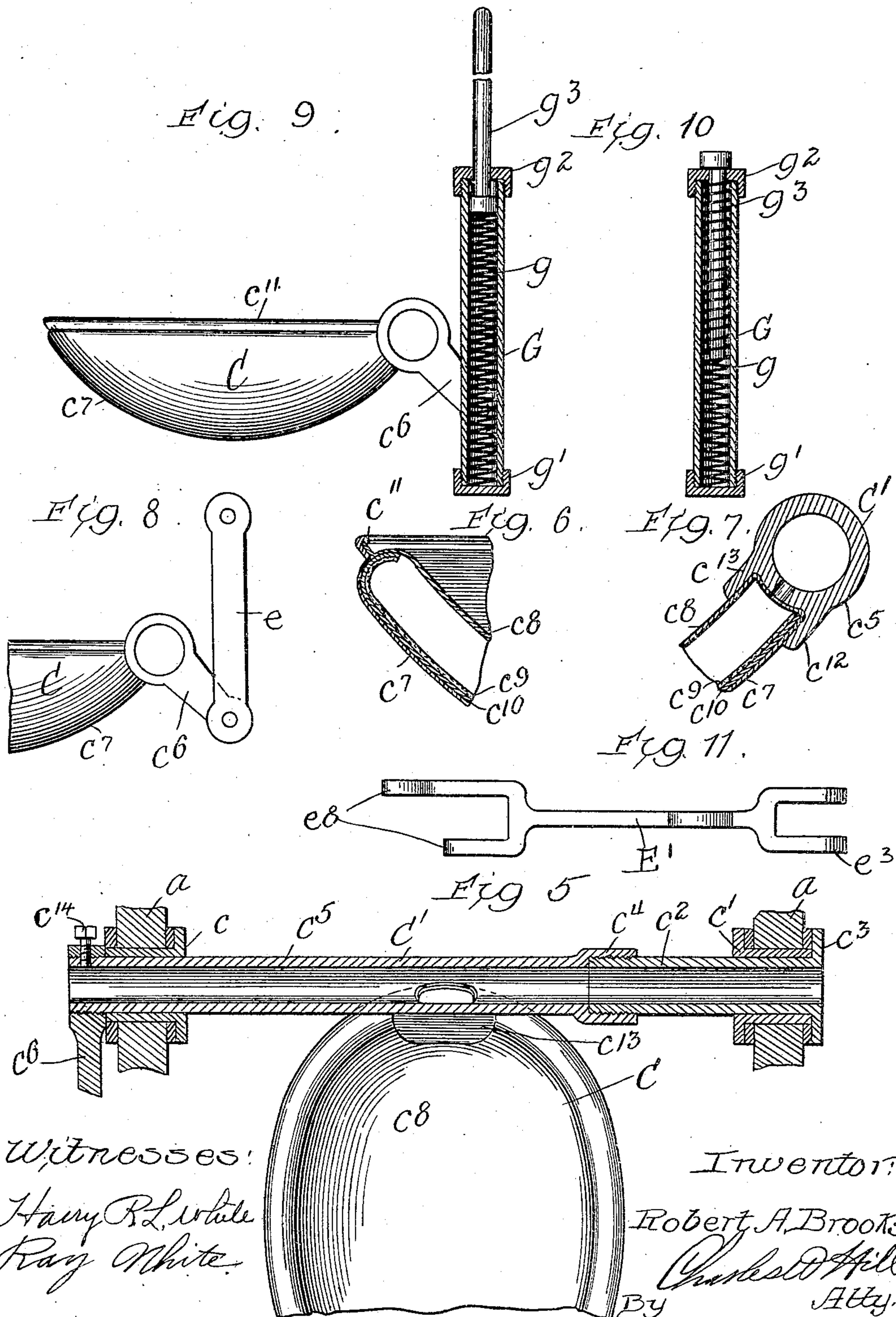
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4 SHEETS—SHEET 3.



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4 SHEETS—SHEET 4.

Fig. 12.

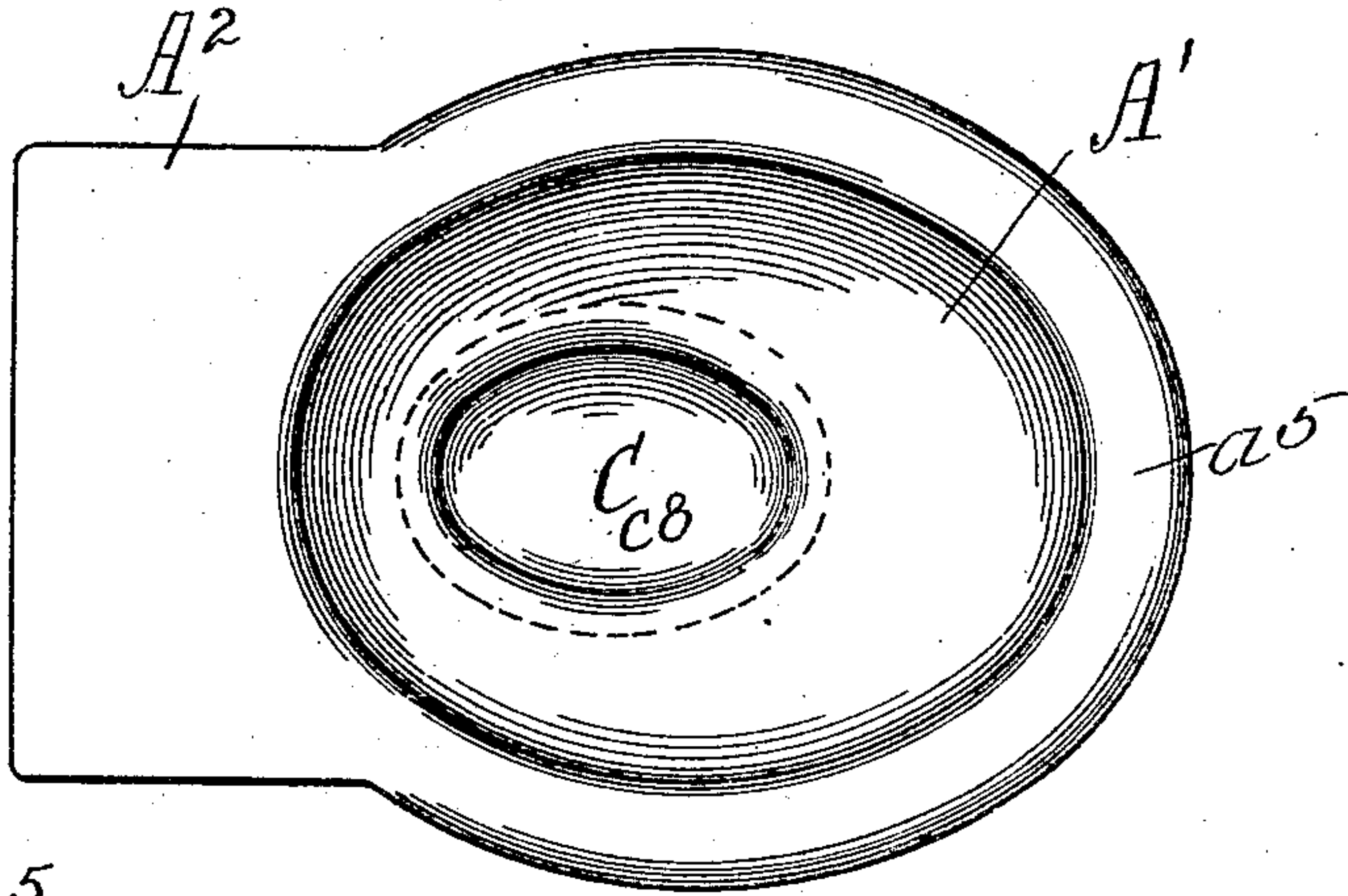


Fig. 13.

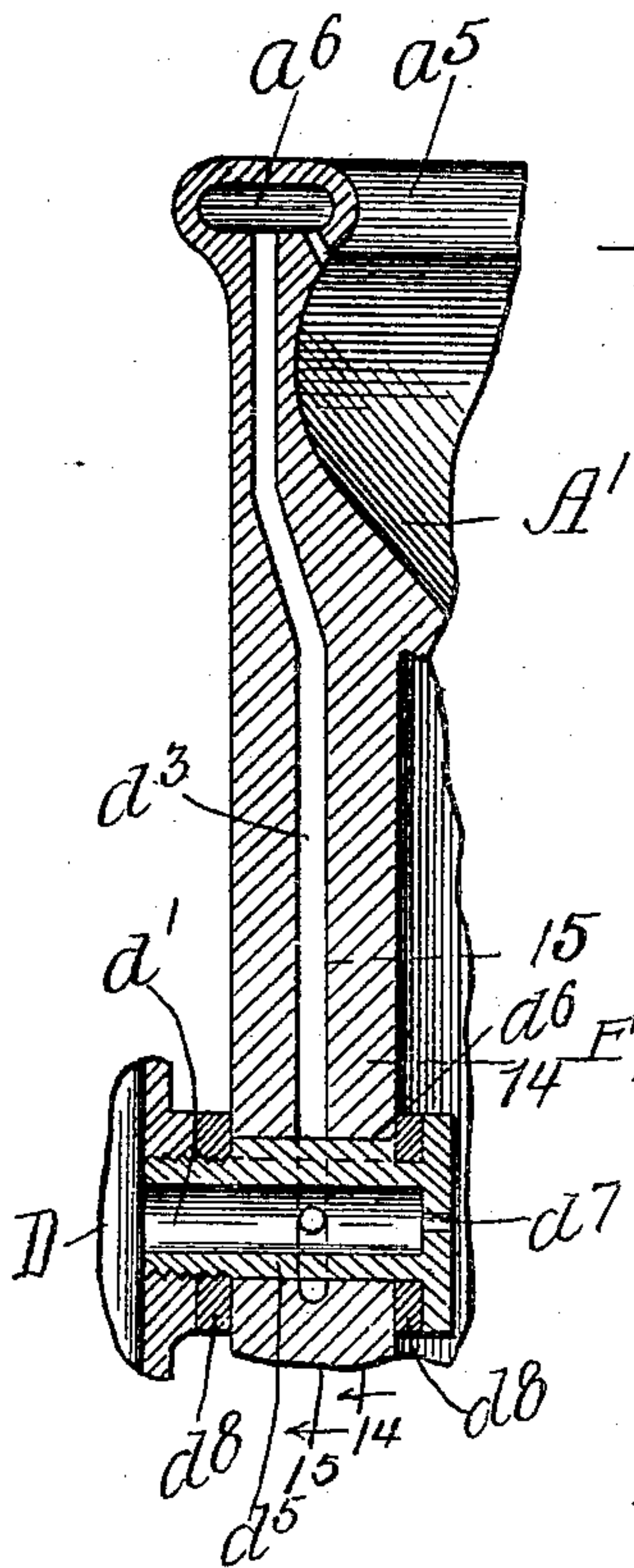


Fig. 14.

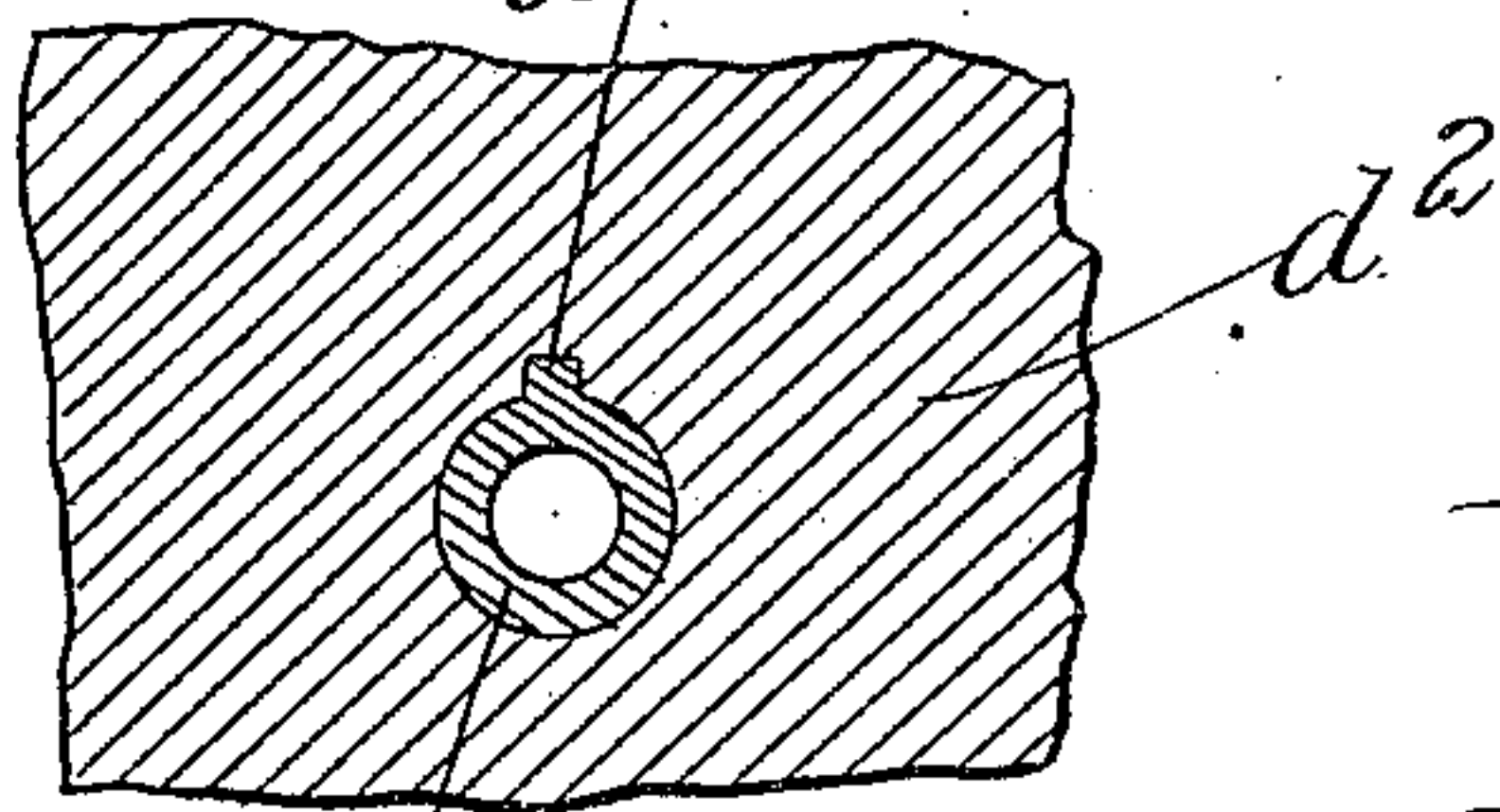


Fig. 17.

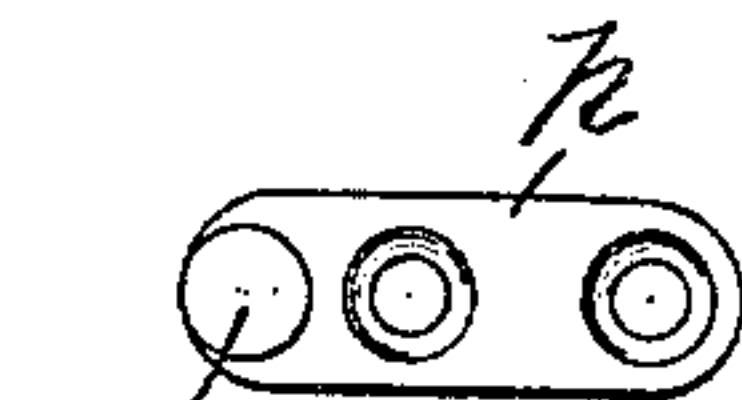


Fig. 15.

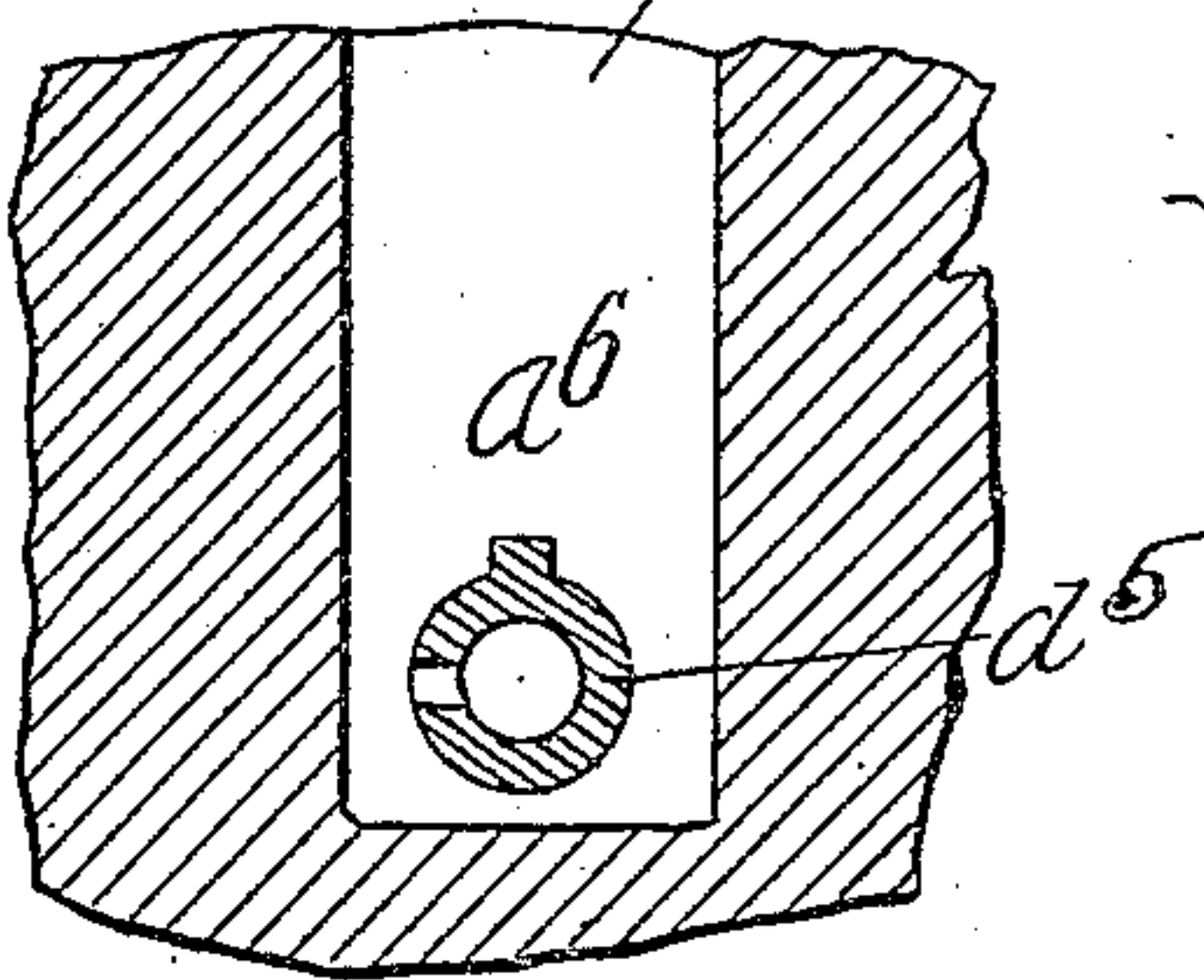
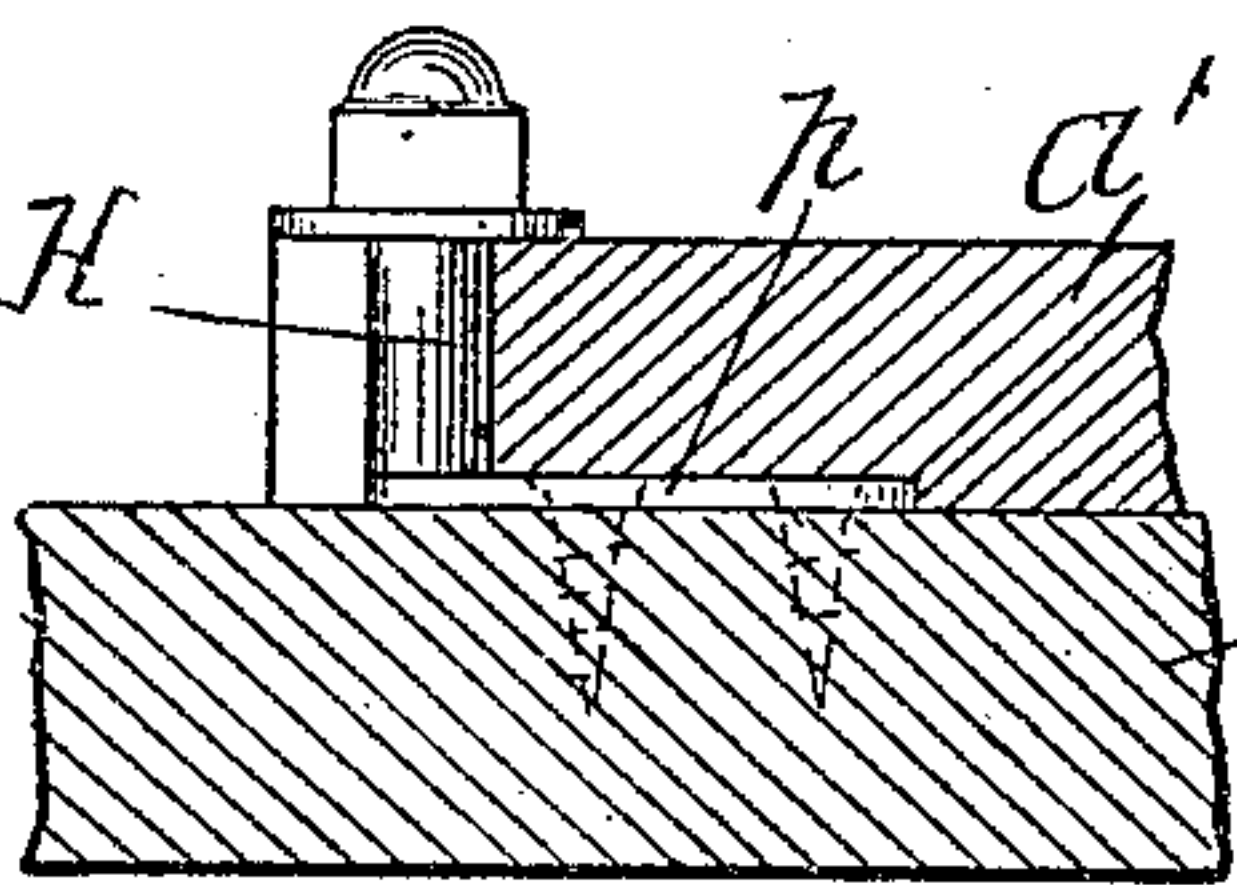


Fig. 16.



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# UNITED STATES PATENT OFFICE.

ROBERT A. BROOKS, OF CHICAGO, ILLINOIS.

TOILET-CLOSET.

936,516.

Specification of Letters Patent.

Patented Oct. 12, 1909.

Application filed April 19, 1906. Serial No. 312,631.

*To all whom it may concern:*

Be it known that I, ROBERT A. BROOKS, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Toilet-Closets; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to toilet closets and is shown more particularly as a closet adapted for use for railway cars or steamboats though of course useful elsewhere.

Heretofore closets installed on Pullman cars and the like have in some instances been provided with a concave pan adapted to extend beneath the waste outlet of the bowl, and serving, to retain a small amount of water therein sufficient to afford a water seal and to prevent the inward flow of cold air and dust due to the motion of the train. Such constructions are sometimes inconvenient and objectionable owing to the failure of the supply of water which causes the closets soon to become clogged and filthy because of the pan retaining more or less of the waste. Furthermore such closets have heretofore been so constructed that to insert or remove the pan from the closet it is necessary to release the closet from the floor as also is necessary for adjusting the mechanisms for operating the pan for flushing.

The object of the invention is to provide a strong, cheap, simple and compact closet of the class described provided with a pan hinged beneath and closing the opening or outlet in the bottom of the bowl and the edges of which extend upwardly somewhat above and inclose said outlet from the bowl, effectively sealing the same after flushing. It is also an object of the invention to so construct and insulate said pan as to protect the water therein from freezing and to so construct the closet and pan as to enable the pan to be inserted or removed through the bottom of the bowl from above without releasing the closet from the floor and to provide means for operating said pan to dump the contents and to afford a thorough flush and also an after fill for the closet.

An important object of the invention is

to provide a very strong cheap, simple, durable and compact construction, adapted should the supply of water fail to be quickly adjusted to permit the waste passage to remain permanently open thus insuring a gravity discharge from the closet and avoiding fouling the same.

The invention embraces many other novel features and consists in the matters hereinafter described and more fully pointed out and defined in the appended claims.

In the drawings: Figure 1 is a side elevation of a device embodying my invention showing the same installed as in a Pullman car. Fig. 2 is a similar view of the side opposite that shown in Fig. 1. Fig. 3 is a side elevation similar to that shown in Fig. 2 but showing a slightly different mechanism for operating the pan. Fig. 4 is a central vertical section of a device embodying my invention: Fig. 5 is an enlarged fragmentary section illustrating the support for the pan. Figs. 6 and 7 are fragmentary sections illustrating the construction of the pan. Fig. 8 is a fragmentary side elevation of a part of the pan and the mechanism for operating the same. Fig. 9 is a similar view showing a part of the mechanism for operating the pan as shown in Fig. 3. Fig. 10 is a central vertical section of the spring casing showing the push pin therein inverted. Fig. 11 is an enlarged top plan view of the operating lever for the flushing valve. Fig. 12 is a top plan view of the closet bowl showing the pan in dotted lines. Fig. 13 is a section taken on line 13—13 of Fig. 4. Fig. 14 is a section taken on line 14—14 of Fig. 13. Fig. 15 is a section taken on line 15—15 of Fig. 13. Fig. 16 is an enlarged fragmentary detail section showing one of the attaching studs in elevation. Fig. 17 is a top plan view of one of the attaching studs.

As shown in the drawings: The closet constructed of any suitable material, comprises the bowl A' which is of the gravity discharge type and is provided centrally in its bottom as shown in Fig. 12 with a relatively large elliptical soil opening which has its major axis longitudinally of the bowl, and the integrally connected outer wall or casing of the closet indicated by A. Said outer casing or wall tapers downwardly to the base a', which is flanged for attachment to the floor as is usual and through which and in



vertical alinement with the soil opening in the bottom of the bowl, is the waste or soil outlet  $a^2$ . This is continued downwardly below the base flange  $a'$ , as indicated by  $a^3$ .  
 5 As shown also the usual annular groove  $a^4$ , is adapted to receive a gasket which is provided around the outlet and within the base flange to insure a tight joint. Said closet is extended rearwardly at the top of the bowl,  
 10 as indicated by  $A^2$  to afford means for attaching the seat and cover thereto and as shown is provided with a rounded or in-turned edge  $a^5$  at the top of the bowl within which is provided a water passage  $a^6$ , opening  
 15 into the bowl through closely arranged apertures so that the flushing fluid is directed from the periphery of the bowl toward its central waste outlet from all parts thereof. Within the walls  $A$ , of the closet  
 20 and integrally connected therewith and with the outer side of the bowl  $A'$ , is an integral inwardly directed floor or wall  $a^7$ , which affords a small closed compartment, at the front side of the bowl though obviously it  
 25 may be otherwise situated if preferred. Said compartment is connected with the waterway  $a^6$ , at the top of the bowl and receives a part of each flushing discharge through the passage  $a^8$  opening thereinto  
 30 and which it delivers more slowly through a restricted passage or passages  $a^9$ , into the bowl at the conclusion of the flush.

An aperture is provided through the walls of the closet on opposite sides thereon and a  
 35 little at the rear of and above the orifice of the bowl and extended therethrough is a tubular shaft  $C'$  comprising as shown a relatively short section  $c^2$ , provided on its outer end with a head  $c^3$ , and screw threaded at its  
 40 inner end adapted for engagement thereby with the internally threaded end  $c^4$  of the corresponding but longer tubular shaft section  $c^5$ . This is externally threaded at its outer end and adapted to engage thereon a  
 45 crank arm  $c^6$ , whereby said shaft is partly rotated. As shown the shaft is journaled in suitable bearing sleeves  $c$   $c'$ , secured in the apertures in the sides of the closet.

Rigidly secured to the shaft  $C'$  at its center is the concave pan  $C$  comprising as  
 50 shown a concave bottom wall  $c^7$  which is seamed to or otherwise united with the inner concave bottom  $c^8$  affording a relatively large air space therebetween, and an inner  
 55 wall or layer  $c^9$ , of copper or other suitable metal is provided between the same and between which and the outer wall  $c^7$ , is provided a layer of asbestos or other non-conducting material indicated by  $c^{10}$ . Said pan  
 60 is provided at its periphery with an upwardly directed lip  $c^{11}$ , which acts to extend the same considerably above the orifice of the bowl when in place. The pan is rigidly secured at its rear edge to the tubular  
 65 shaft indicated as a whole by  $C'$ , by any

suitable connection. As shown said tubular shaft is provided with lips  $c^{12}$  and  $c^{13}$  one above the other and which are parallel with each other, and which afford sufficient space  
 70 between the same to engage therebetween the rear edge of the pan. A relatively large aperture is provided through the side of said tubular shaft  $C'$  and opens into the air space in the bottom of the pan thus providing means for the circulation of warm air  
 75 from the car or room thereinto and preventing freezing. Said pan as shown in Fig. 12 is oval in shape and is of less width than the length of the opening through the bottom of the bowl and as shown is hinged in such po-  
 80 sition that when swung upwardly it receives the lower downwardly extending edges of the bowl surrounding the opening and extends somewhat above the same so that when filled with water it forms a water seal for  
 85 the bowl.

As shown the water or flushing fluid is delivered to the closet through a flushometer of flushing valve  $D$  of any suitable construction such for instance as that set forth in  
 90 my prior application for flushometer filed December 4, 1903, Serial No. 183,790 and which as shown is connected at its lower end  $d$ , with a suitable source of supply and is connected in one side through a suitable  
 95 pipe  $d'$  with the inlet passage of the closet.

As shown one of the side walls of the closet indicated by  $d^2$ , is made considerably thicker than the other walls and is cored to provide an upwardly opening relatively  
 100 broad passage  $d^3$  which communicates at its top with the water passage  $a^6$  extending around the rim of the bowl. An aperture is provided through said side wall and extending therethrough is the inlet pipe  $d'$  from  
 105 the flushing valve and indicated by  $d^5$ . Said inlet pipe is provided on one side with a longitudinal rib or key  $d^6$  which engages in a suitable recess, key way or seat in the closet wall and serves to rigidly hold the  
 110 same from turning.

The inlet pipe is provided with one or more ports opening therethrough into the water passage  $d^3$  and is closed at its outer end except for a very small waste aperture  
 115 or passage  $d^7$  opening through the end thereof into the closet. The extremity of said inlet pipe protrudes beyond the end of the wall of the closet and is screw threaded for engagement in the side of the flushometer  
 120 and as shown suitable gaskets  $d^8$ , are secured between the inner end of the pipe and the wall of the closet and the outer wall thereof and the flushometer to afford a tight joint.

Means are provided for operating the flushometer at the same time or at approximately  
 125 the same time that the pan is dumped. For this purpose as shown a lever  $E$  is pivoted on the side of the closet and is pivotally connected at its rear or longer end with a  
 130



link  $e$ , which extends downwardly and pivotally engages the arm or crank  $c^6$  whereby the pan is actuated. The front or shorter end  $e^3$  of said lever is slotted longitudinally and engages a pin  $e^2$  secured in the stem  $d^9$  of the flushing valve, so that as the rear end of said lever is elevated as shown in dotted lines in Fig. 2 the actuating stem  $d^9$  of the flushometer is forced down to start the flush and the pan is swung downwardly to dump its contents. Means are provided for actuating said lever  $E$  embracing a lever  $e^4$ , fulcrumed on the wall or other convenient support adjacent the closet and adapted for manual engagement and connected at its rear end by means of a rod  $e^5$  with the rear end of said lever  $E$ . Said connecting rod  $e^5$  is provided on its lower end with a spring  $e^6$ , which as shown bears against a stationary stop  $e^7$ , through which said connecting rod passes and its lower end bears on the rear end of the lever  $E$  and acts to hold said lever at all times in a horizontal position and the pan elevated.

If preferred the closet may be emptied and flushed by operating the seat. For this purpose a lever  $E'$  is pivoted on the side of the closet as before described with reference to the lever  $E$  and at its short forwardly directed end  $e^3$  is likewise slotted longitudinally and engages the pin  $e^2$ . As shown said stem  $d^{10}$  is lengthened and extends upwardly beside the seat in position to be manually actuated if desired. At the rear end of said lever  $E'$  as shown is provided a yoke  $e^8$ , in which is engaged a tubular casing  $G$  within which is a spiral spring  $g$ . Said casing as shown is closed at the bottom, and at the top by screw caps  $g^1$  and  $g^2$  and through the upper cap is provided a central aperture adapted to receive a push pin  $g^3$ , which at its inner end within the casing is provided with an enlarged head which bears upon said spring and at its upper end as shown in Fig. 3 bears against a suitable striking plate  $g^4$ , on the under side of the seat near the hinge. The lever  $e^6$ , for actuating the pan is provided at its lower end with a laterally directed pin which engages in a suitable aperture in said casing. Pivotaly connected with the lever  $E'$  at its rear end is a link  $G^2$ , which is longitudinally slotted at its upper end and a pin  $g^5$  carried on the seat projects laterally into said slot.

The operation is as follows: The closet is secured in position upon the floor in any suitable manner and as shown the flushometer is secured in place by inserting the inlet pipe  $d^5$ , from the inner side of the closet outwardly and screwing the flushometer and suitable packing onto the protruding threaded end. The pan is secured in place either before or after the closet is set. To secure the same in place after set-

ting, the closet pan is passed downwardly through the aperture in the bottom of the bowl and the end of the pipe section  $c^2$  is projected inwardly and threaded into the enlarged head  $c^4$  of said pipe section  $c^5$ . The crank is next threaded onto the outer end of said section  $c^5$  and adjusted and rigidly secured in place by a set screw  $c^{14}$  to give the desired position of the pan when supported to close the bowl. The link  $e$  is next connected with the lever  $E$ , the forward end of which pivotally engages the actuating stem for the flushometer. The connecting rod  $e^5$  is engaged on the rear end of the actuating lever and the closet is ready for use.

In flushing actuation of the flushometer by means of the lever  $e^4$ , acts to deliver a sufficient jet of water through the passage  $d^3$  and the annular passage  $a^6$ , at the top of the bowl which discharges into the bowl and pan through the numerous apertures at the top. A considerable portion of the water however passes downwardly into the closed chamber  $A^3$  at the front of the bowl, and between the same and the side wall and gradually flows out through the restricted passage  $a^9$ , after the pan has been returned to position to close the bowl thus giving an after fill. Obviously any required amount may be delivered into said chamber by providing a sufficient number of inlet apertures of suitable size leading from the passage  $a^6$  in the rim of the closet. As the flushing begins the pan has already started to swing downwardly under the action of the lever  $E$  or  $E'$  and in consequence the pans are thoroughly washed with the use of a small quantity of water. After the flushing is complete the spring  $e$  or  $g$  or if preferred a spring within the flushometer acts to stop the flow and to carry the forward end of the lever  $E$  or  $E'$  upwardly and the rear end downwardly again returning the pan to position to close the outlet and to receive the flow for the after fill from said closed chamber. In the construction shown in Fig. 3 the flush may be accomplished by pressing the stem  $d^{10}$  downwardly with the hand thereby simultaneously moving the pan to partly or wholly open the outlet or if desired the seat may be lifted when the pin  $g^5$  engaging the ends of the link elevates the rear end of the lever  $E'$  moving the pan downwardly and at the same time actuates the flushing valve to provide the flush. With either of the constructions should the supply of water fail, the pan may be immediately adjusted to remain at all times at its lower position or in other words as shown in position such as shown in dotted lines in Figs. 2 and 3, thus having an unobstructed discharge from the bowl. To accomplish this referring first to Figs. 1 and 2 the link  $e$  is disconnected from the crank



$c^6$  when of course the pan swings downwardly by gravity and is unaffected by the actuation of the lever  $e^4$ .

In the construction shown in Fig. 10 the push pin  $g^3$  is removed from the spring casing G by first removing the cap  $g^2$ , and the cap is then replaced with the push pin inverted in the casing. This permits the spring casing to slide freely upward in the yoke on the lever E' as shown in dotted lines in Fig. 3 permitting the pan to swing downwardly.

In the construction described freezing can never occur under any natural temperature owing to the fact that the pan is protected on its bottom the only place at which the same is exposed to the outside air by a double layer of metal and of non-conducting material such as asbestos and is also provided with an interior air chamber which is in open communication with the warm air of the car or room through the tubular shaft or pipe C'.

Should breakage occur all parts of the closet are accessible and any repairs can be effected to the flushing or pan actuating mechanism without releasing the closet from the floor.

For convenience in attaching the closet to the floor and to permit the same to be readily detached when desired the base flange is slotted to receive the attaching studs H. Each of these studs is integrally connected at its bottom with an attaching plate  $h$  drilled and countersunk to receive screws whereby the same is attached to the floor Y, as shown in Fig. 16. Said attaching plates extend inwardly beneath the flange which is recessed to receive the same and said studs are secured in place to correspond with the slots in the closet flange when inserted over said stud.

Obviously various means may be employed for actuating the pan in unison with the flushing means and many details of construction may be varied without departing from the principles of my invention.

I claim as my invention:

1. The combination with a gravity discharge closet embracing a bowl having a large discharge orifice of greater length than width and centrally situated in the bottom thereof, of a hollow pan hinged to close said orifice adapted to be inserted therethrough, flushing means for the closet, means providing an after fill for the pan and means admitting a heating fluid to said pan to prevent freezing the fluid contained therein.

2. The combination with a gravity discharge closet, embracing a bowl having a large discharge orifice centrally situated in the bottom thereof, a hollow pan adapted to be inserted through said orifice, a peripheral lip on said pan, extending above the lower edge of said bowl when closed, a tubular

shaft journaled in the outer casing and communicating with said hollow pan, means adapted to simultaneously flush the bowl and open the pan and means providing an after-fill for said pan.

3. In a device of the class described a toilet closet embracing the bowl, a gravity discharge aperture at the bottom thereof, a pan hinged below the same, for closing said orifice and adapted to be passed downwardly therethrough in assembling and insulating means within said pan to prevent freezing.

4. A toilet closet of the class described embracing a bowl having a gravity discharge aperture opening downwardly from the middle thereof, a concave pan pivoted at one side of said aperture and shaped to close said aperture, a tubular shaft on which said pan is secured, an air chamber within the pan communicating with the bore of the shaft and therethrough with the warmer atmosphere within the car or room, means for flushing the bowl, a spring casing connected with the shaft and the flushing means and a spring in the casing adapted to automatically actuate the casing to return the pan and the flushing means to normal after flushing.

5. In a device of the class described, a pan comprising an inner and an outer lining, an air chamber therebetween, a tubular shaft open at its ends and on which said pan is rigidly secured and the bore of which opens into the air chamber therein, a flushometer, means connecting the same to operate with the pan, manually operated mechanism for actuating the pan and flushometer in flushing and means automatically actuating the pan and flushometer after the flushing to return both to normal.

6. In a device of the class described a closing pan embracing an inner and an outer concave lining rigidly connected at the edges and affording an air chamber therebetween insulating material within said chamber, a tubular shaft open at its end and journaled in the closet wall and opening therethrough and also opening in said air chamber with the pan, said shaft embracing one or more sections adapted to be secured in place by insertion through the discharge aperture in the bowl.

7. In a device of the class described the combination with the closet of a closing pan, containing an inner air chamber for insulating purposes, a tubular shaft on which said pan is rigidly secured and into which said air chamber communicates and a crank on the outer end of said shaft for actuating the pan, a flushometer, a pivoted lever connected at one end to operate the flushometer, means connecting the tubular shaft with the opposite end of said lever, means for actuating the lever to both swing the pan and actuate the flushometer and means for automatically returning the parts to normal.



8. A toilet closet of the class described embracing an outer casing having a thickened wall, a bowl having a passage around the rim and a central discharge aperture, a pipe extending transversely through said thickened wall and apertured, a passage affording communication between the apertured part of said pipe and rim passage of the bowl, flushing means connected with said pipe, a hollow pan pivotally supported to close or open the discharge aperture of the bowl, a hollow shaft communicating therewith adapted to admit a heating fluid thereinto, means for simultaneously opening the pan and actuating the flushing means and means automatically returning the pan and flushing means to normal.

9. A toilet closet of the class described embracing a bowl having a central discharge aperture in its bottom for gravity discharge, a sectional shaft extending through said closet below and at the rear of said bowl, lips engaged to said shaft, a pan secured between said lips, a removable crank engaged to one end of said shaft, a manually operated lever operatively connecting the same and a spring acting to hold said lever in normal position.

10. A closet of the class described embracing an outer casing and a bowl integral therewith and having a central oval aperture in its bottom for discharge, a hollow pan of greater area than said aperture and adapted to fit around the same, a sectional tubular shaft pivoted in the casing at the rear of said aperture and to which said pan is rigidly secured, said shaft communicating with said hollow pan and mechanism adapted to simultaneously flush the bowl and to swing the pan downwardly.

11. A toilet closet having its bowl provided with a central gravity discharge aperture therein, a pan larger in all dimensions than said aperture and adapted to be passed therethrough in assembling and comprising a hollow metallic closure for said aperture and a tubular sectional shaft on which said pan is secured and in which the chamber therein communicates.

12. In a device of the class described the combination with a bowl of a shaft adjacent the same, a pan secured on said shaft to close the bowl, a flushometer adapted to flush the bowl having an upwardly directed stem, a pin projecting outwardly from the stem, a lever pivoted adjacent the flushometer having a slotted end to engage said pin, a crank removably engaged to said shaft, means connecting said crank and lever affording a pivotal connection at each end, and manually operated means for depressing said stem and elevating the crank to simultaneously lower the pan and flush said bowl.

13. In a device of the class described, a

toilet closet having a central bowl and a bottom discharge aperture opening centrally therefrom, a pan to fit upwardly around the bowl closing said aperture, and adapted to be passed through said aperture in assembling a sectional tubular shaft on which said pan is secured and communicating with an air space in the pan, a flushing rim on said closet, a chamber communicating therewith and with the bowl and adapted to retain a portion of the flushing fluid until the completion of the flush, mechanism for flushing the bowl and means connected therewith and with the shaft for said pan adapted to swing the same downwardly at the beginning of the flush and automatically upward at the close of the same, preparatory to receive the afterfill from said chamber.

14. In a device of the class described the combination with a toilet closet having a bowl integral therein and provided with a central gravity discharge aperture of a flushing rim on the bowl, a chamber communicating with said flushing rim and with the bowl to retain water for an afterfill, a pan affording an interior air chamber therein and shaped to fit around the bottom of the bowl and close said aperture and of a size to be passed through said aperture in assembling, a tubular shaft embracing sections, one of which is rigidly secured at the rear of the pan and is passed rearwardly through said bowl in assembling the other of which is passed through the side of the closet and threaded into the end of the other section, a lever on the outer extremity of said shaft for actuating the same in swinging the pan upwardly or downwardly, a flushometer connected in the flushing rim of said closet and operative connections between said flushometer and said lever whereby in flushing the pan is swung downwardly and at the end of the flush is swung upwardly to close the bowl and receive the afterfill from said chamber.

15. The combination with a toilet closet and flushing means of a pan hinged to said closet to close the discharge aperture for the bowl, a sectional shaft on which said pan is secured and extending through the sides of the closet, a crank arm on said shaft, a lever pivoted transversely of said closet and engaging at one end the flushing means, a lever engaging the crank on said shaft at one end and at its opposite end engaged to said transverse lever, manually operated means connected to said transverse lever to simultaneously open the pan and actuate the flushometer and means automatically returning said pan to closed position to receive an afterfill.

16. The combination with a bowl having a gravity discharge orifice, a pan pivoted to close the orifice and said orifice and pan



shaped so that the pan is adapted to be inserted through the discharge orifice in assembling.

17. The combination with a one piece bowl  
5 having a bottom discharge aperture and a pan hinged to close said aperture adapted to be inserted through the bowl in assembling.

In testimony whereof I have hereunto subscribed my name in the presence of two subscribing witnesses. 10

ROBERT A. BROOKS.

Witnesses:

WM. C. SMITH,

W. W. WITHEBURY.