

No. 864,118.

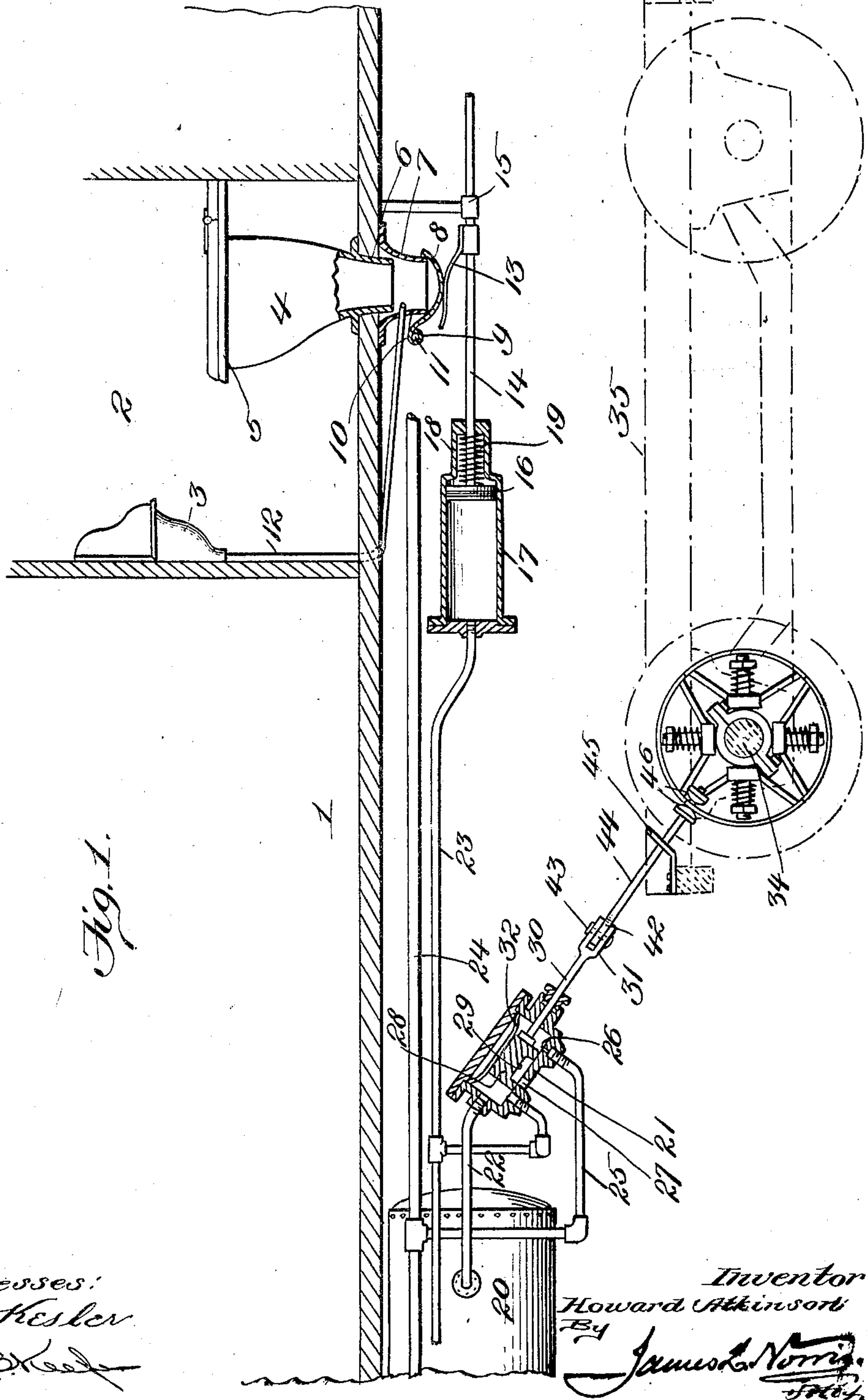
PATENTED AUG. 20, 1907.

H. ATKINSON.

AUTOMATIC OPENING AND CLOSING DEVICE FOR WATER CLOSET BOWLS.

APPLICATION FILED SEPT. 28, 1906.

2 SHEETS—SHEET 1.



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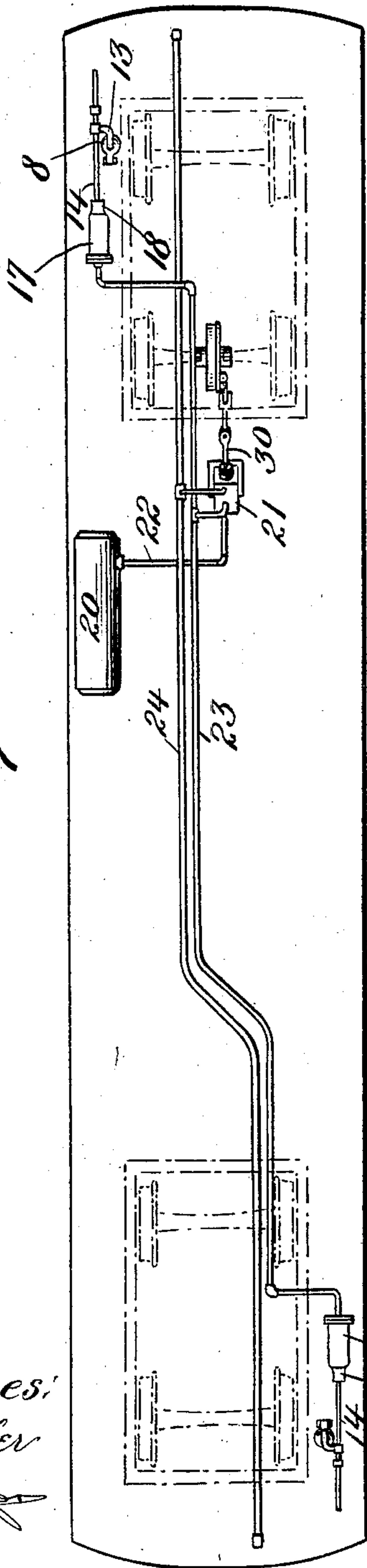
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APPLICATION FILED SEPT. 28, 1908.

2 SHEETS—SHEET 2.

Fig. 2.



Witnesses:
C. D. Kester
J. B. Kester

Fig. 4.

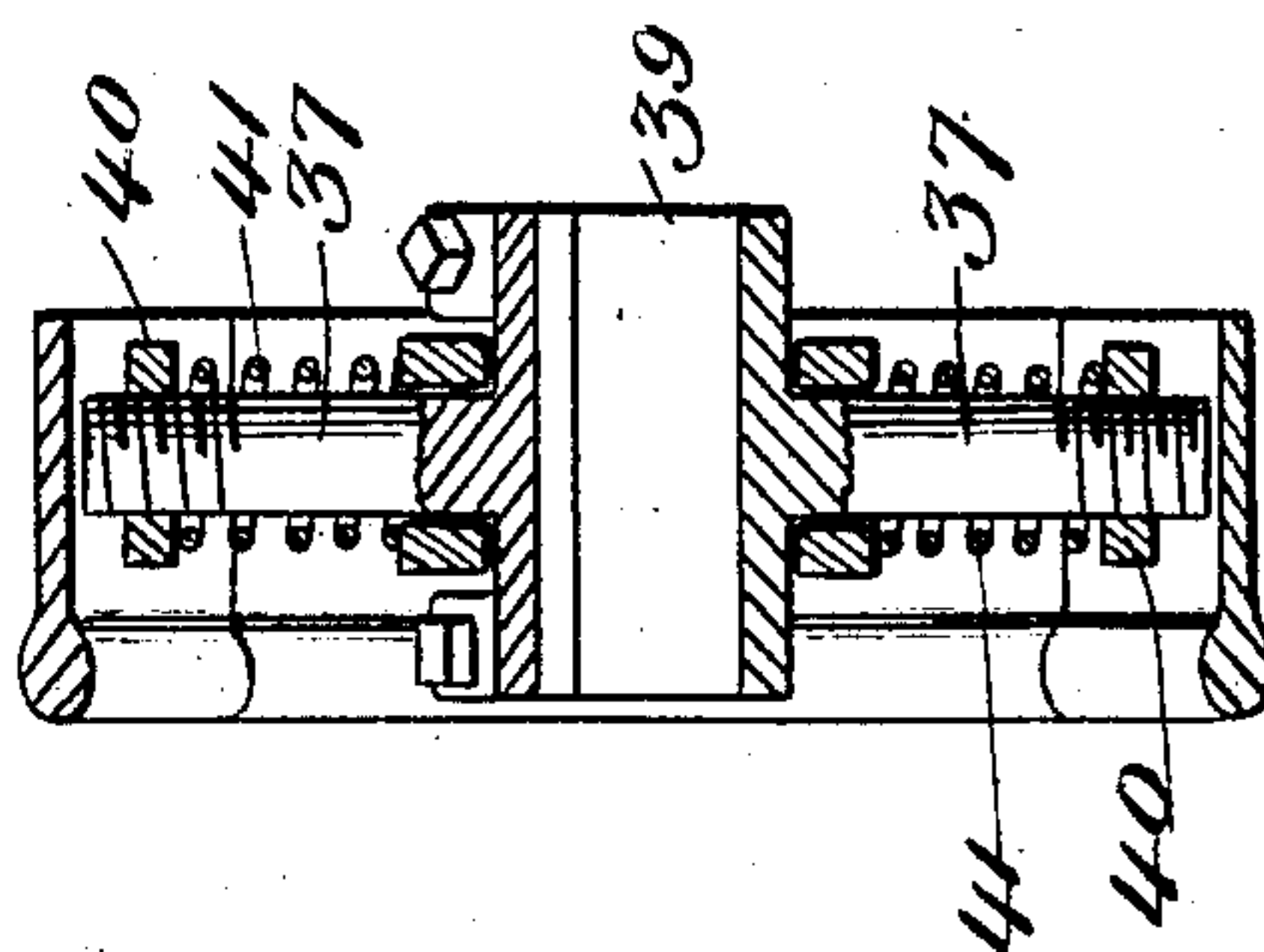
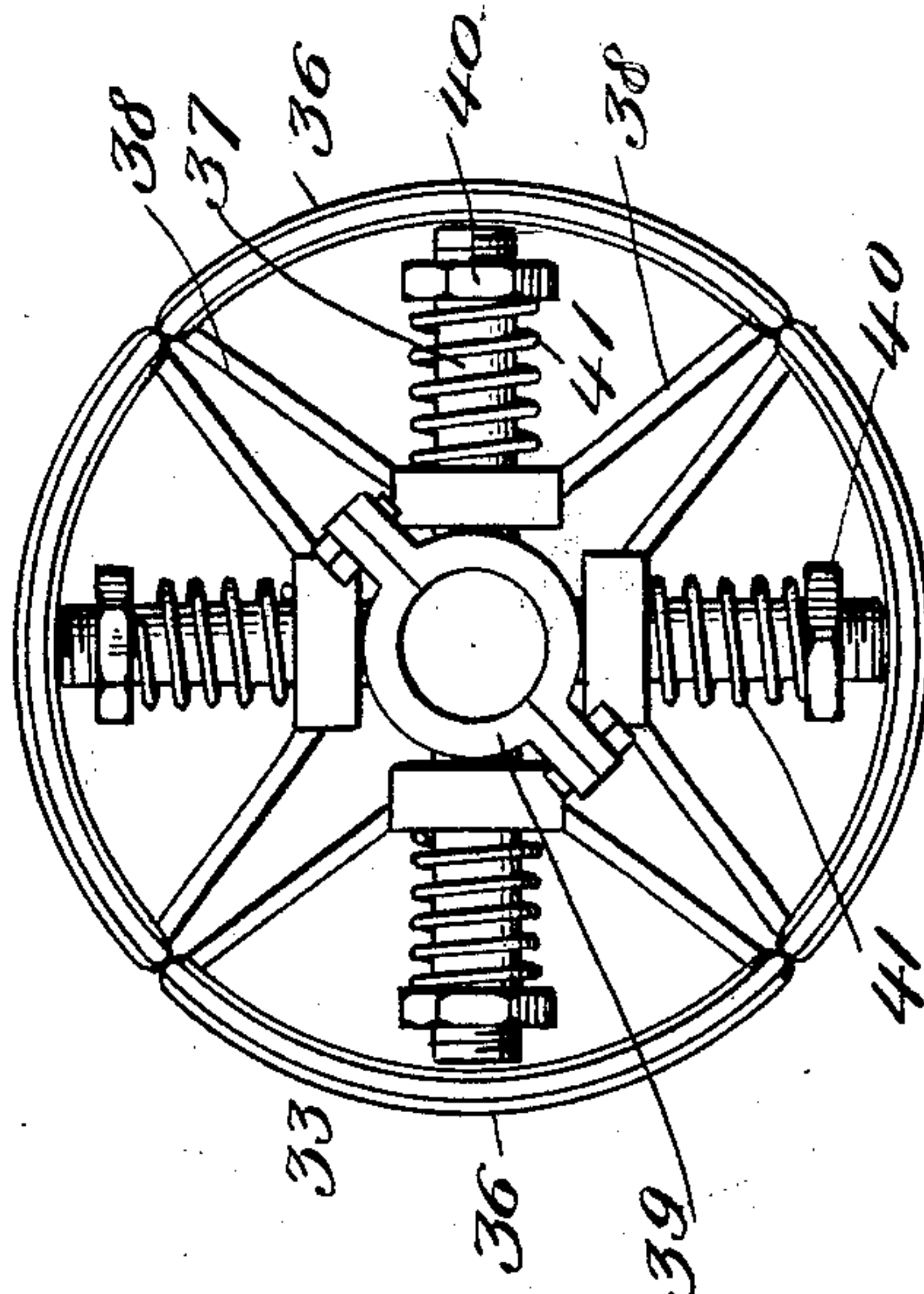


Fig. 3.



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att'y

UNITED STATES PATENT OFFICE.

HOWARD ATKINSON, OF FALLING SPRINGS, WEST VIRGINIA.

AUTOMATIC OPENING AND CLOSING DEVICE FOR WATER-CLOSET BOWLS.

No. 864,118.

Specification of Letters Patent.

Patented Aug. 20, 1907.

Application filed September 28, 1906. Serial No. 336,605.

To all whom it may concern:

Be it known that I, HOWARD ATKINSON, a citizen of the United States, residing at Falling Springs, in the county of Greenbrier and State of West Virginia, have

5 invented new and useful Improvements in Automatic Opening and Closing Devices for Water-Closet Bowls, of which the following is a specification.

This invention relates to automatic opening and closing devices for water-closet bowls particularly adapted

10 for use in connection with railway cars, and aims to provide a device of such a class in the manner as hereinafter set forth for retaining the closet-bowl closed when the car is traveling at a low rate of speed or when the car is stopped.

15 In all the coaches, sleeping cars etc., hauled as trains by the railroads, convenience and comfort, as well as safety, has become a basis of advertisement for the railroads in their endeavor to secure patronage. Cars are carried for long distances without change, and transferred from railroad to railroad. This interchange,

20 together with the necessity of awaiting for connecting trains etc., causes the holding of cars for different periods of time at stations. Now the public demands as well as railroad competition has developed a station

25 system that is most elaborate, and which is generally located above or beneath traffic in the center of the cities. Under such circumstances the necessary attention to hygiene will compel a railroad, when any of its cars are awaiting connection, to remove the cars from

30 the station to outside switches because if left in or near the station it will be necessary to lock the saloons or water-closets. The locking of the saloons or water-closets at connecting points or stations of any size is a source of annoyance to passengers as well as a matter of

35 considerable annoyance to train crews when they are busiest. Again, at the approach of a train to any way station, the closets are again locked, depriving the passengers of this necessity.

To overcome the objection of locking the water-closets, and to enable the passengers to use closets at all

40 times, the automatic opening and closing device for the closet bowl, in accordance with this invention, is provided. The said device is so arranged that the exit to the closet bowl will remain closed while the car is standing still, but will open when the train has reached

45 a momentum of any given number of miles per hour that the device is set at. From the employment of such a device it will be seen that the closets will not be dumped while the train is moving slowly through a town or city, or standing at a station, but will open and remain open when the train is running at a given speed

50 or over. Therefore, it will be seen that the employment of the device as hereinafter set forth will avoid the necessity of closing the closets and enable the passengers to have access to them at all times and still avoid

the dumping of the closet bowl except when the train is outside of the city limits and going at the rate of speed set.

The invention further aims to provide an automatic opening and closing device for closet bowls in the manner as hereinafter set forth and which shall be simple

60 in its construction and arrangement, strong, durable, efficient in its use, automatic in its action, readily set up without changing the appurtenances depending from the bottom of the car body, or changing the car

65 body, and inexpensive to manufacture.

With the foregoing and other objects in view the invention consists in the novel construction, combination and arrangement of parts as hereinafter more specifically described and illustrated in the accompanying

70 drawings, wherein is shown the preferred embodiment of the invention, but it is to be understood that changes, variations and modifications can be resorted to which come within the scope of the claims hereunto appended.

In describing the invention in detail reference is had

75 to the accompanying drawings wherein like reference characters denote corresponding parts throughout the several views, and in which—

Figure 1 is a longitudinal sectional view of one end of a car broken away showing the adaptation of a closet

80 bowl opening and closing device in accordance with this invention. Fig. 2 is a bottom plan showing the adaptation of the device for the closet bowls which are arranged at each end of the car. Fig. 3 is a side elevation of an expansible wheel for controlling the operation

85 of the device, and, Fig. 4 is a vertical section of said wheel.

Referring to the drawings by reference characters 1 denotes the car-body and which is of the ordinary construction, that is to say, is provided with a water-closet

90 at each end thereof. Only one closet is shown and which is indicated by the reference character 2 and is provided with a urinal 3, and a bowl 4 having the seat 5.

The outlet end 6 of the bowl 4 extends down through the bottom of the car and is surrounded by a depend-

95 ing conducting sleeve 7 secured to the underneath face of the bottom of the car-body. The conducting sleeve 7 is closed through the medium of a cup-shaped member 8 which is provided with flanges 9, each having a

slot 10 to enable of the loosely mounting of the member 8

100 upon a supporting rod 11, the latter being suitably connected with the car-body. The slots 10 are of greater diameter than the rod 11 so that when the member 8 is moved to closed position the member 8 will adjust

itself tightly against the lower edge of the conducting

105 sleeve 7. The reference character 12 denotes the carrying off pipe for the urinal 3, the said pipe 12 opening in the sleeve 7. The member 8 is retained in a closed position through the medium of an L-shaped spring

arm 13 projecting laterally from a carrying rod 14 which

110

operates through a guide or keeper 15 and is connected to a piston 16.

The reference character 17 denotes the cylinder for the piston 16, and the said cylinder 17 is provided as
 5 at one end with a tubular extension 18 in which is mounted a coiled compression spring 19, the latter surrounding the carrying rod 14. This carrying rod 14 is shifted in one direction so as to bring the L-shaped arm 13 into engagement with the cup-shaped member 8 and
 10 retain it in closed position through the medium of fluid pressure supplied to the cylinder 17 from the main reservoir 20 of the fluid pressure brake and when the fluid pressure is relieved from the piston 16 the latter is moved in an opposite direction, carrying the rod 14
 15 therewith through the medium of the expanding of the spring 19, the latter remaining under state of compression when the fluid pressure is against the piston 16. When the spring 19 expands the rod 14 is shifted in an opposite direction which carries the arm 13 therewith.
 20 The latter is then moved from below the member 8, which permits the member 8 to open so that the matter collected in the member 8 can be dumped. The cylinder 17 is suspended from the car-body in any suitable manner.

25 The reference character 21 denotes a valve casing which communicates with the reservoir 20 through the medium of pipe 22, with the cylinder 17 through the medium of pipe 23 and with the train pipe 24 by the pipe connection 25. The inlet port for the valve casing 21 is indicated by the reference character 26, the
 30 exhaust by the reference character 27 and the supply port for the pipe 23 by the reference character 28. Within the casing 21 is arranged a reciprocatory slide valve 28 which is grooved as at 29 and has connected
 35 thereto the valve stem 30, the outer end of which is forked as at 31 to engage with shifting mechanism of the valve to be hereinafter referred to. When the valve 28 is in the position as shown in Fig. 1 communication will be had between the cylinder 17 and the main res-
 40 ervoir 20, consequently fluid pressure will be supplied against the piston 16 and cup 8 will be retained in a closed position. If the valve is shifted to uncover the port 26 and to establish communication between the ports 25 and 28 by the groove 29 the air will be sup-
 45 plied from the train pipe to the reservoir 20 and the air will exhaust from the cylinder 17, consequently allow the spring 19 to expand and shift the arm 13 from below the member 8 so that the said member can lower. A spring 32 arranged within the casing 21 bears against
 50 the valve 28 retaining it upon the bottom of the casing 21. The casing 21 is suspended from the car-body in any suitable manner.

The operating with what may be termed the controlling means for shifting the valve stem 30, thereby
 55 moving the valve 28 to uncover or close the port 26 and to establish communication between the ports 25 and 28 through the medium of the groove 29, consists of an expansible wheel 33 mounted upon one of the
 60 axles 34 of the car-truck 35. The expansible wheel is formed of a plurality of sections 36 slidably mounted upon the spokes 37 through the medium of the connecting members 38. The spokes 37 are connected to the hub 39 and carry on their outer ends an adjustable
 65 abutment 40 and between the abutments 40 and the connecting members 38 and surrounding the spokes

37 are the coiled compression springs 41. The valve stem 30 is bifurcated as at 42 and has pivotally connected thereto as at 43 a shiftable link 44 which extends through a guide-plate 45 and carries a rim en-
 70 gaging means in the form of a pair of disks 46 which are suitably spaced apart so as to straddle the rim of the expansible wheel 33. The pivot connecting the link 44 with the valve stem 30 compensates for the
 75 shifting of the car-truck when rounding curves or from other causes. The wheel 33 is expanded owing to centrifugal force and when the wheel expands it will be evident that the valve stem 30 through the medium
 80 of the link 44 will be shifted towards the valve casing carrying the valve therewith and opening the pipe 23 to the atmosphere, and that when the wheel 33 contracts the stem 30 will be carried therewith consequently closing pipe 23 to the atmosphere, establish-
 85 ing communication between the pipe 23 and reservoir 20 so that the piston 16 will be moved by a fluid pressure to the position shown in Fig. 1, thereby retaining the member 8 closed. The springs 41 are adjusted
 90 through the medium of the abutment 40 so that the tension of the springs can be increased or decreased thereby regulating the revolutions at which the wheel will expand under centrifugal force and cause the opening of the closet bowl.

When the car is provided with more than one water-closet as is generally the case the pipe 23 is extended
 95 as shown in Fig. 2 and opens in a cylinder 17 positioned in close proximity to the location of the water-closet. The parts arranged at these positions under the car are the same as arranged at the other end of the car, so, therefore, it is unnecessary to described them, the same reference characters being applied thereto.

When the device is set up the expansible wheel 33
 100 is so adjusted so as to cause it to expand by centrifugal force when the car reaches a predetermined rate of speed. If the car is traveling below the predetermined rate of speed the wheel 33 will not expand and consequently the member or members 8 will be re-
 105 tained in closure position, but if the car travels at the predetermined rate of speed or above such rate the wheel 33 will expand owing to the action of centrifugal force causing thereby the shifting of the valve 28 and the opening of the pipe 23 to the atmosphere
 110 which will exhaust the air from the cylinder 17 and allow the springs 19 to expand, thereby shifting the rod or rods 14 in one direction, the latter in turn carrying the arm or arms 13 from below the member or mem-
 115 bers 8, permitting the said members to lower so that the exit to the water-closet bowl will be opened. If the speed of the car is any way slackened or falls below the predetermined rate of speed set the wheel 33 will contract and consequently move the valve 28 in an
 120 opposite direction closing the pipe 23 to the atmosphere and establishing communication between the pipe 23 and the reservoir 20, and by such an arrangement fluid pressure will be supplied to the cylinder 17, thereby shifting the rods 14 in an opposite direc-
 125 tion and moving the cup-shaped members 8 to closed position, and they will be retained in such position until the car travels at or above the predetermined rate of speed set.

The inlet 26 of the casing 21 for the supplying of air from the train pipe to the reservoir through the casing
 130

21 is of such small diameter as not to cause any material reduction in the train pipe pressure so as to set the brakes. This will be apparent by reference to the drawings and by such an arrangement said inlet remains open from the train pipe to the reservoir all the time, so that when the valve is open to the cylinder of the device any air leaving the reservoir to manipulate the closing device will gradually be replaced in the reservoir and should the train remain stationary for any length of time sufficient air would always be available in the reservoir to replace any leakage of air in the cylinders.

What I claim is—

1. The combination with a water-closet bowl, of a closing device therefor, a fluid pressure means for automatically moving said device to closing position, means for automatically opening said device when the fluid pressure upon said device is relieved, and means adapted to be actuated by the speed of a traveling body for controlling the operation of said fluid pressure operated means.

2. An automatically operable opening and closing device for the closet bowls of railway cars comprising the combination with the bowl and a closure member for the outlet thereof, of means for automatically moving said member to open position when the car is traveling at a predetermined rate of speed, and means for moving said member to closing position and retaining it in said position when the travel of the car falls below the predetermined rate of speed set.

3. An automatically operable opening and closing device for water-closet bowls of railway cars comprising the combination with the bowl and a closure member for the outlet thereof, of a fluid pressure operated means for moving said member to and retaining it in closure position, and an expansible and contractible wheel operative from the axle of the car to throw said means into and out of operation.

4. An automatically operable opening and closing device for water-closet bowls of railway cars comprising the combination with the bowl and a closure member for the outlet thereof, of a fluid pressure operated means for moving said member to and retaining it in closure position,

and means adapted to be actuated by the speed of the car for throwing said fluid pressure operated means into and out of operation.

5. In a railway car, a water-closet bowl having a closing means for the outlet thereof, and means for moving said closing means to closing position when the speed of the car falls below a certain limit and for opening said closing means when the car is traveling at or above a certain speed limit.

6. In a railway car having a water-closet bowl provided with means for closing the outlet thereof, fluid pressure operated means for moving said closing means to a closing position and retaining it in such position when the car is traveling below a certain speed limit or stopped, and means adapted to be actuated by the speed of the car for governing the operation of said fluid pressure operated means, combined with means to permit of the opening of said closing means when the car is traveling at or above a certain speed limit.

7. In a railway car having a water-closet bowl provided with an outlet, a hinged cup-shaped member for closing said outlet, a fluid pressure operated means engaging said member for moving it to and retaining it in closure position when the car is traveling below a certain speed limit or stopped, and means automatically actuated by the speed of the car to permit of the said member swinging to an operative position to open the outlet of the bowl when the car is traveling at or above a certain speed limit.

8. In a railway car having a water-closet bowl provided with an outlet, a hinged cup-shaped member for closing said outlet, a fluid pressure operated means engaging said member for moving it to and retaining it in closure position when the car is traveling below a certain speed limit or stopped, and means to permit of the said member swinging to an operative position to open the outlet of the bowl when the car is traveling at or above the speed limit set, combined with means adapted to be actuated by the speed of the car for controlling the operation of said fluid pressure operated means.

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

HOWARD ATKINSON.

Witnesses:

J. W. ROBINSON,
G. B. ROBINSON.