

(No Model.)

4 Sheets—Sheet 1.

J. WAYLAND.
RAILWAY TRAIN GATE.

No. 520,464.

Patented May 29, 1894.

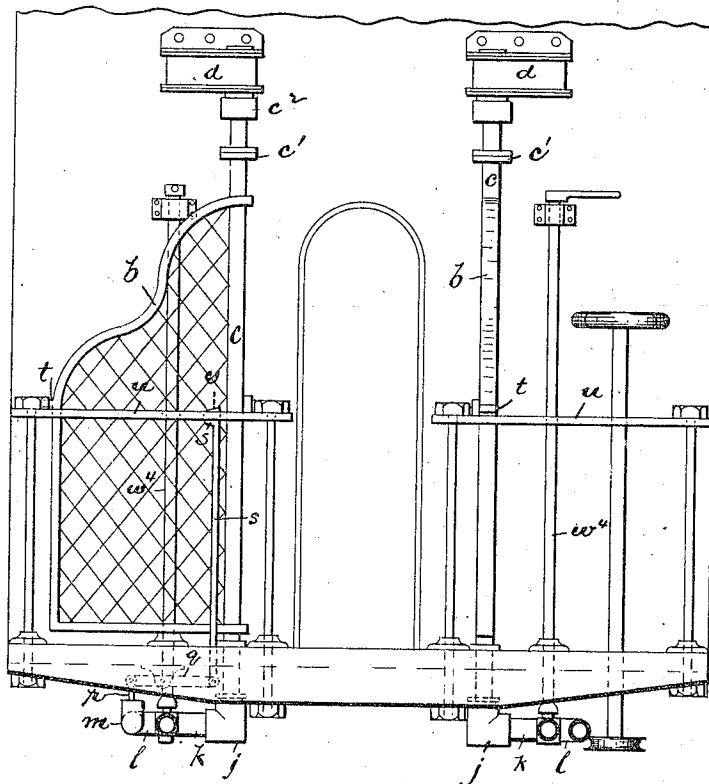


Fig. 1.

Witnesses

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Charles Van Ness

Inventor

James Wayland,

By Drake & Co., Attys.

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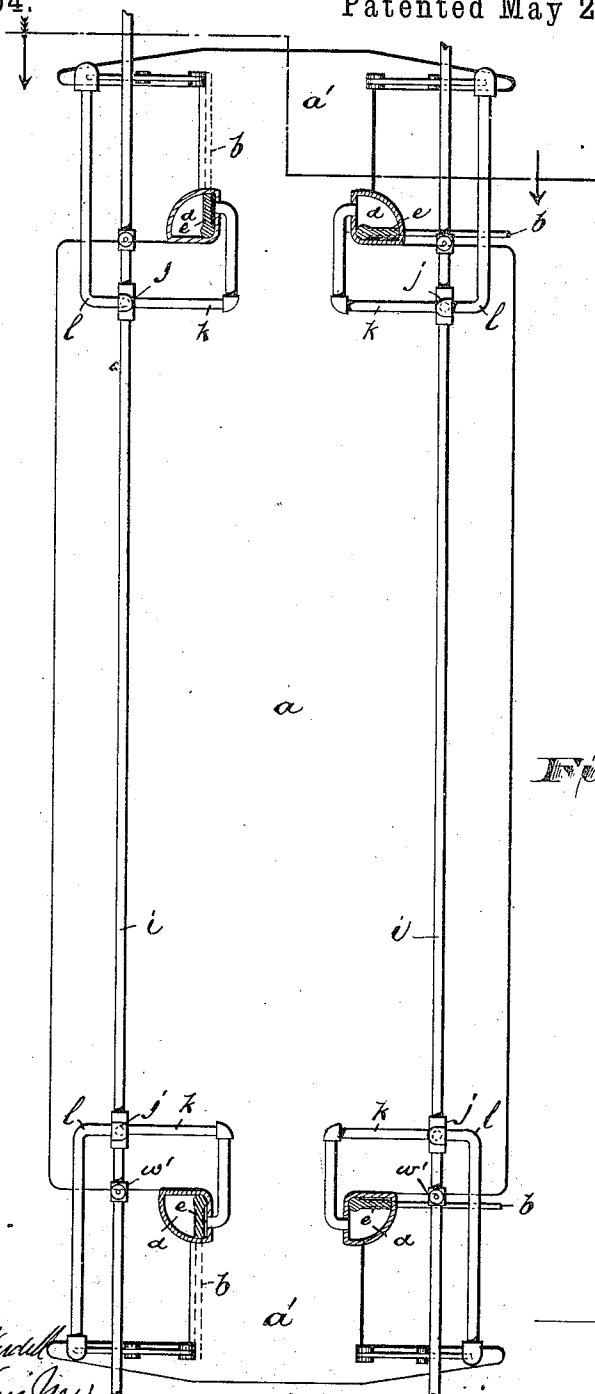


Fig. 2.

Witnesses

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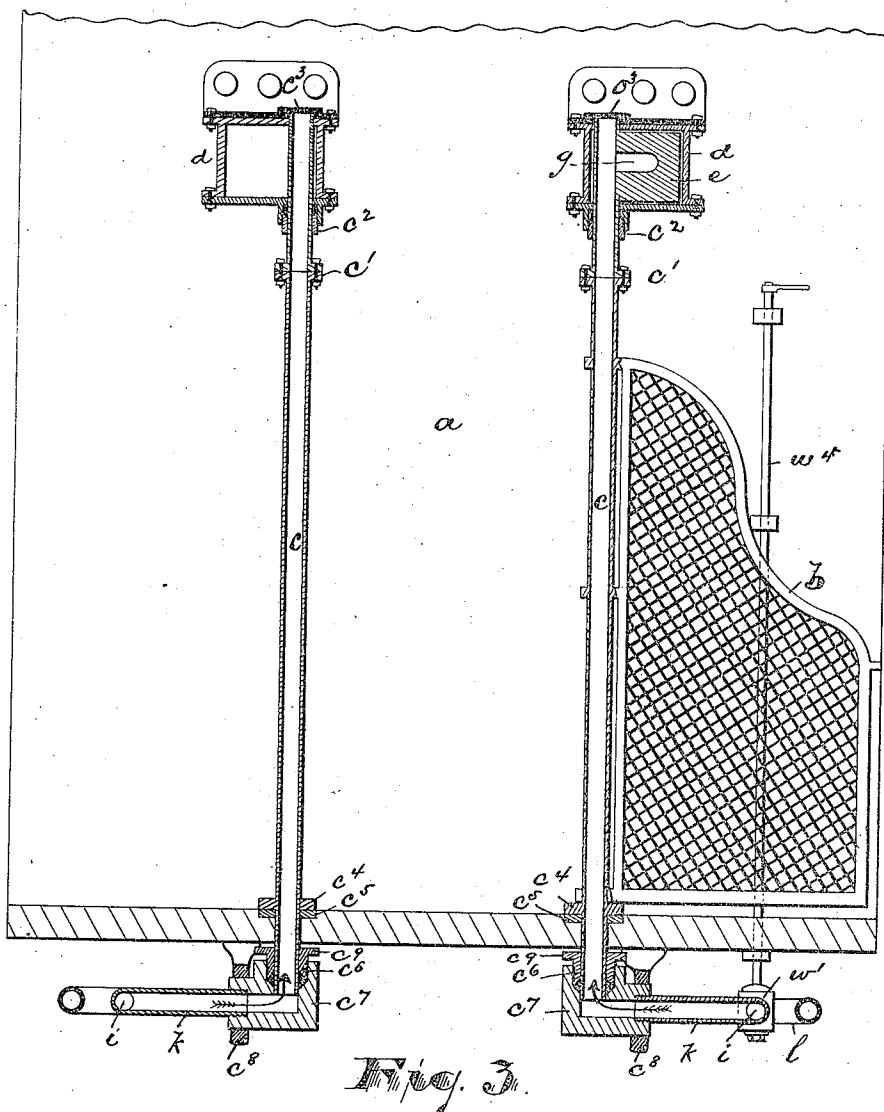
James Wayland.

By Drake Co. Atty's.

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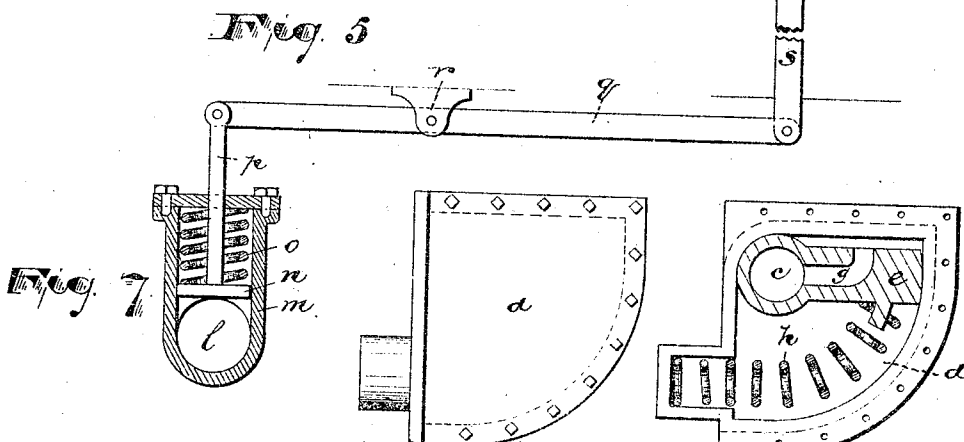
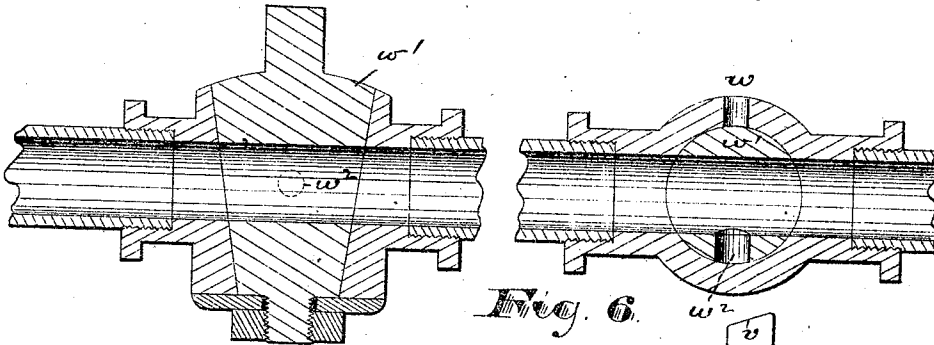
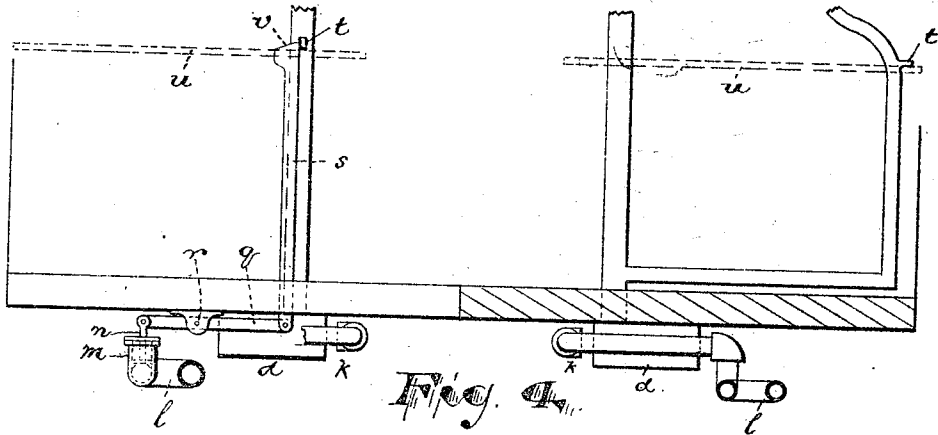
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Witnesses

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Charles Van Ness.

Fig. 8.

James Wayland,

Fig. 9.
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UNITED STATES PATENT OFFICE.

JAMES WAYLAND, OF NEWARK, NEW JERSEY.

RAILWAY-TRAIN GATE.

SPECIFICATION forming part of Letters Patent No. 520,464, dated May 29, 1894.

Application filed May 24, 1893. Serial No. 475,374. (No model.)

To all whom it may concern:

Be it known that I, JAMES WAYLAND, a citizen of the United States, residing at Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Railway-Train Gates; 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, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The object of this invention is to provide a series of gates, on the platforms of a train of cars, that can be operated by a single brakeman simultaneously, standing on the foremost car of a train and to relieve the engineer, whose duties are already sufficient to occupy his time when starting or stopping a train, from the care of the platform gates, to enable the gates to be closed automatically when the opening power or force is removed, to enable a special car to be cut out of the system, so that, when the head brakeman opens the gates of the system, those of the said special car will remain closed; to enable the gates of a special car of the system to be opened without affecting those of the others; to reduce the cost of construction, and to secure other advantages and results some of which will be referred to in connection with the description of the working parts.

The invention consists in the system of railway train gates and pneumatic means for operating the same, and in the arrangements and combinations of parts, all substantially as will be hereinafter set forth and finally embodied in the clauses of the claim.

Referring to the accompanying drawings in which like letters indicate corresponding parts in each of the views, Figure 1 is an end view of a portion of a car of a railway train having my improvements, the view showing the gate at one side of the platform open and the one on the other side closed. Fig. 2 is a plan illustrating the device in connection with the under side of the car. Fig. 3 is a view similar to Fig. 1, the pneumatic parts being in vertical section. Fig. 4 is a section on line *a*, Fig. 2. Figs. 5 and 6 are sections of a valve or stop cock for admitting pressure to the gate

operating mechanism. Fig. 7 is a detail view of a gate catch for holding the gate closed. Fig. 8 is a detail plan of a pneumatic chamber containing the gate operating piston and Fig. 9 is a section of said chamber and showing the interior operating piston and its spring.

In said drawings, *a* indicates a car of a train and *a'*, *a'*, are the platforms thereof at which the gates *b*, *b*, are pivoted or hinged to open or close the platform passages to or from the interior of the car. The gates are preferably carried by hollow tubes *c* with which they turn pivotally, the tubes serving as ducts for conveying the steam or compressed air to the chambers, *d*, in which the pistons, *e*, connected with said tubes, are arranged. The chambers, *d*, may be arranged beneath the floor or platform of the car, as indicated in Fig. 2, but owing to the multiplicity of mechanisms in that position, serving various purposes, I ordinarily prefer to arrange the pneumatic or steam chambers at the upper part of the car as indicated in Figs. 1 and 3, in which latter case, the tubular pivots or hinge pins are employed. When the chambers are beneath the car, said pivots or hinge pins may be solid rods.

The pneumatic or steam chambers are preferably of quadrantal or segmental form, as shown more clearly in Figs. 8 and 9, and the pistons arranged therein are preferably in the form of a flange or flat plate, pivoted at one edge upon the gate pivot, which latter extends into the angle of the quadrantal chamber, and carries said flange-like piston so that it will vibrate with said pivot from side to side under the power of the compressed fluid and spring. In said piston, in the preferred arrangement, is formed a duct or port, *g*, which opens into the chamber at one side of said piston and into the tube, *c*, so that the compressed air or steam will be led into the cylinder or chamber, *d*, from the storage reservoir of said compressed air or fluid, and thus turn said flange-like piston and the gate with which it is connected to its opened position. The gates could, by similar mechanisms, be closed by compressed air, but the action of the air under ordinary conditions I deem to be too positive for the most practical results.

The pipe or pivotal tube, *c*, is preferably in sections, especially where the duct or port in the flange-like piston is employed, the sections being imperviously joined as at *c'*, and the section immediately connected to the piston being preferably integral therewith. A stuffing box, *c²*, serves to make an impervious joint at the point where the tube *c* enters the cylinder or chamber, *d*, and the tube, *c*, is held steadily, so as not to spring when under pressure, by a suitable bearing, *c³*, at the upper part of the chamber. The lower end of the tube, *c*, is provided with a shoulder or bearing, *c⁴*, which bears against a co-operating bearing, *c⁵*, set on the platform or other fixture of the car so as to sustain the weight of the tube and its appendages. At its lower extremity where it is coupled to the horizontal pipes beneath the car body, the said tube enters a stuffing box, *c⁶*, of the pipe coupling, *c⁷*, fixed upon the car by the hanger, *c⁸*, or other connecting device. By means of the gland, *c⁹*, the packing in the stuffing box is compressed around the tube and the escape of air prevented.

On the opposite side of the piston, *e*, from that at which the compressed fluid enters the chamber, *d*, is arranged a spring, *h*, Fig. 9, against which the piston is forced by said compressed fluid, and which spring throws the piston back to its normal position when the air or steam pressure is removed. This spring may be arranged outside of said chamber, or be arranged in connection with the piston, the pivot, or the gate in any suitable manner to close the gate automatically as the pressure diminishes in the air chamber. The strength of the spring is not such as to do damage to a passenger, should one be caught between the gate and the car body. The pneumatic connections are arranged with the gates so as to unite the gates at one side of the train in one series and those at the other side of the train in another series. Of said pneumatic connections, *i*, *i*, are the main supply pipes which are in sections joined at the ends of the cars by hose or other flexible connections in any suitable manner and connecting with the reservoir commonly found on locomotives containing compressed air and ordinarily employed in connection with the air brake system. *j* are T-connections from which branch pipes *k* and *l* extend to the chambers, *d*, and catch operating cylinders, *m*, respectively. The branch pipe, *k*, may extend either directly to the chamber, *d*, or to the tubular pivot *c*.

The cylinders, *m*, with which the branches, *l*, connect, contain a piston, *n*, adapted to be moved in the cylinder under the pressure of the air and a spring, *o*, to return said piston to a normal position. The rod, *p*, of the piston connects with the lever, *q*, fulcrumed at *r*, upon a suitable fixture such as the floor of the car and said lever operates a gate catch, *s*, which is adapted to engage a co-operating catch or projection, *t*, upon the gate. The

catch *s*, preferably slides at its upper end in suitable bearings in the hand rail, *u*, of the platform and at its upper end is inclined as at *v* in line with the path of the co-operating catch as it moves with the gate so that, when said projection impinges on the incline, the catch, *s*, will be pressed down and the said co-operating catch will pass into its caught position, the spring, *o*, serving to raise the catch into its holding position after being depressed. When pressure of compressed fluid is brought to bear on the piston, *n*, the latter is moved against the power of the spring and the catches are released from one another simultaneously with movement of the piston *e* so that the gate is allowed to move pivotally to its open position. The catches are thus released automatically by the air pressure which opens the gates. Said catches are also set automatically ready to receive the co-operating gate catch by spring power.

I am aware that the means for securing these automatic results may be varied without departing from the invention.

The cock, *w*, which controls the liquid pressure is operated by a handled socket wrench, *w'*, as shown in Fig. 1, or in any other suitable manner.

To secure the desired escape of air or fluid from the chambers and tubes or pipes connecting with them and to thus reduce pressure so as to allow the springs to recoil and close the gates and reset the gate-holding catches, I employ "bleeders" or small openings, *w*, at suitable points in said pipes or chambers as indicated in Figs. 5 and 6. The said openings are preferably in connection with three-way cocks, *w'*, which are stationed on the main supply pipes *i*, *i*, beneath the car body. Each car of the train is provided with four of these cocks, two at each end of the car, one in connection with each of the two main supply pipes. Ordinarily, these cocks are all turned to their open positions, allowing free communication between the pipes of one car with those of the other or others of the train. The cocks at the rear end of the rear car are, of course, closed and the forward cocks are also closed excepting when a supply of air is sent rearward, and the system is thus under the control of one man stationed at the cocks at the head of the train at or near where the main supply pipes connect with the main reservoir or source of supply. At the arrival of a train at a station, the operator opens said cock at the head of the train, the one at the side next the station platform, and thus allows an inflow of compressed air from the reservoir into the main pipe. All the chambers in connection with the said main pipe thus receive the compressed air and, as a result, the pistons are operated, the pistons, *n*, to release the gate catches and the pistons, *e*, to operate the gates, the latter in the preferred construction turning pivotally with the vibrating or oscillating piston and pivot to open the passage leading

from the car platform to the station platform to allow the exit of passengers from the train. Before starting the train, the cock is closed so as to bring the way, w^2 , into coincidence with the opening, w . This allows a gradual outflow of air and produces a reduction of pressure and the springs h and o are allowed to act on their respective pistons to throw them and the parts depending on them to their normal or return positions.

By the employment of the automatically opening and closing gates and the automatically releasing and fastening catches, I am enabled to dispense with the services heretofore required of a brakeman or operator at each end of the car, one man alone being able to secure the desired results in connection with the whole system. Again, the gates being under the control of an operator distant from the gates, and the latter being closed before the cars are in motion, there will be no dangerous attempt at boarding the train after starting, with the hope that the gates will be opened up after personal pleadings.

By employing the cocks, w' , in connection with the cars carrying the gates, rather than cocks upon the engine for the engineer to operate, I am enabled to control the system more perfectly. For example, should the last car of the train be set apart for private use and should it be desired to hold the gates thereof closed at the stations to prevent passengers from boarding the cars, the cock, w' , of the said car can be closed and the fluid prevented from passing to the catch operating and gate operating mechanisms.

Having thus described the invention, what I claim as new is—

1. The combination with a series of cars of a railway train, a series of gates arranged at one side of said train at the exit passages thereof, pneumatic means for operating said gates, and a main supply pipe arranged longitudinally with relation to said train and connecting with said means and adapted to convey the compressed fluid from one car to another, said main supply pipe being provided with a valve at or near each platform of the car and a handle for closing the same convenient to the brakeman of said car, enabling him to control said main pipe independent of the engineer on the locomotive, substantially as set forth.

2. In combination with the gate of a railway car, a pivotal piston carrying said gate, a cylinder and a duct for conveying air to said cylinder and operating said piston and said gate, substantially as set forth.

3. In combination with a platform gate of a railway car, a pivotal rod having a flange like piston, a cylinder or chamber containing said piston and means for conveying compressed air to said cylinder, substantially as and for the purposes set forth.

4. In combination with a car platform, a gate and its cylinder and piston and means for conveying compressed fluid thereto, a catch

and its cylinder and piston operable by the same body of compressed fluid, and valves stationed at the platform at which said gate is situated, and adapted to close communication to said cylinders, substantially as set forth.

5. In combination with an automatically closing gate, a catch for holding said gate in its closed position, a cylinder and piston and a lever q connected with said catch and piston, a spring o and means for conveying compressed air to said cylinder, substantially as set forth.

6. In combination with the platform gate, and platform rail w , a piston and cylinder, a catch and its piston, cylinder and connections, and means for conveying compressed fluid to said cylinders, said catch being supported in a vertical position by the said hand rail and being adapted to hold the gate at or toward its upper part, substantially as set forth.

7. In a railway gate, the combination with the pivotal and tubular rod c , of the connection, c' , having a fluid passage leading to said rod and a stuffing box into which said rod extends and a gland c'' , all arranged and combined substantially as and for the purposes set forth.

8. The combination with the railway car and its platform gate, working on a hollow pivot adapted to convey compressed fluid, a piston operating said pivot and a cylinder or chamber adapted to receive compressed fluid through said pivot, substantially as set forth.

9. The combination with the car and platform gates, the hollow pivotal tube, c , carrying said gate, a piston e movable pivotally with said tube, said piston having the duct or port g , and a cylinder and means for supplying the same with compressed air, substantially as set forth.

10. In combination with the car, gate, cylinder and piston contained in said cylinder and controlling said gate, a three-way cock and supply passage carrying the same and connecting with said cylinder, one of the ways in said cock being materially smaller than the others to produce a slow, "bleeding," escape of the fluid, substantially as set forth.

11. In combination with the car and a pivotal gate and its vibrating or oscillating piston, a cylinder stationed on said car and means for supplying the same with compressed fluid to vibrate or oscillate the piston.

12. In combination with the gate, its pivot and flange-like piston, a quadrantal cylinder and spring interposed between said flange like piston and a bearing in the cylinder, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of May, 1893.

JAMES WAYLAND.

Witnesses:

CHARLES F. PELL,
OLIVER DRAKE.