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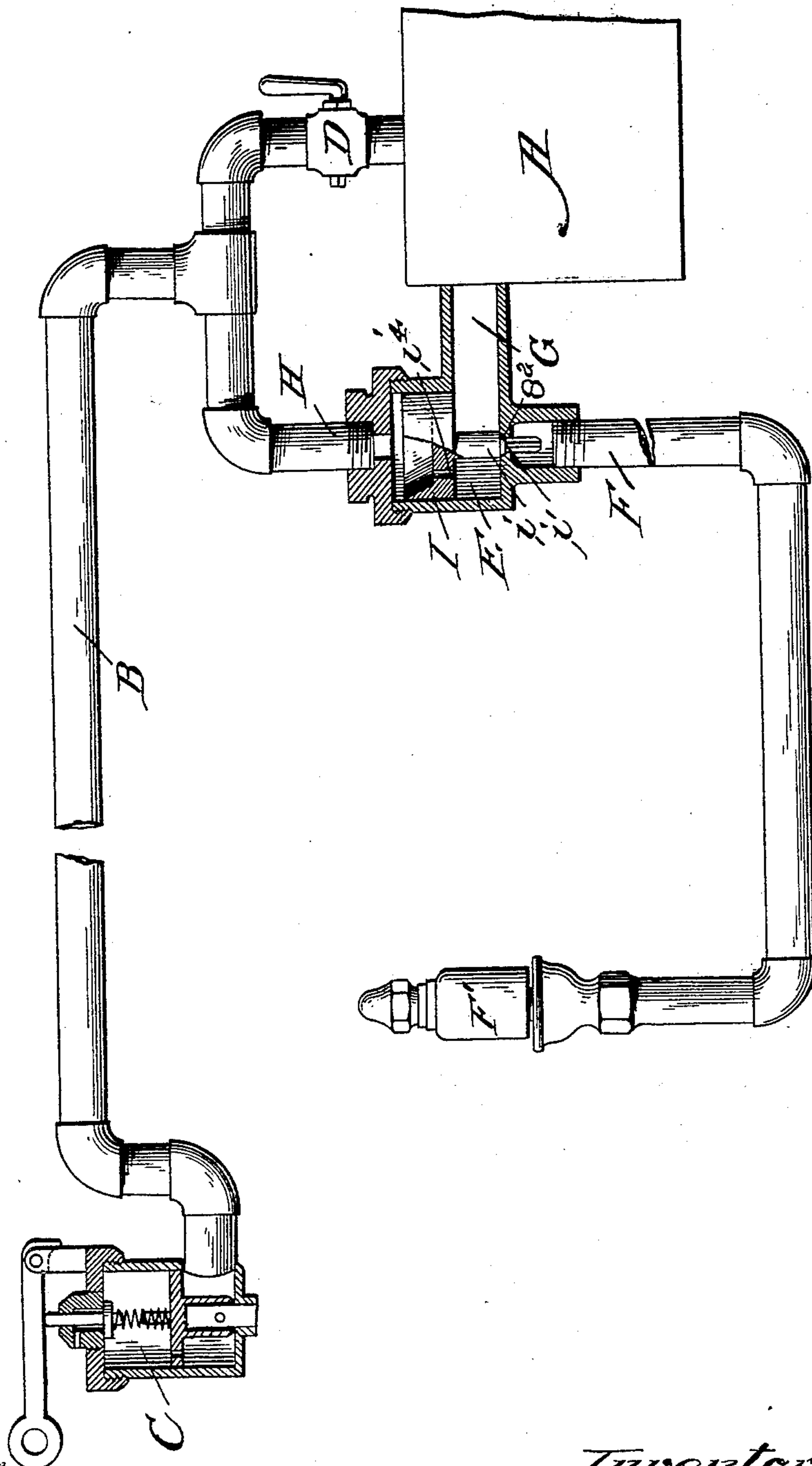
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C. GULLAND.

PNEUMATIC SIGNAL FOR RAILWAY TRAINS.

(Application filed Jan. 17, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

CHARLES GULLAND, OF PITTSBURG, PENNSYLVANIA.

PNEUMATIC SIGNAL FOR RAILWAY-TRAINS.

SPECIFICATION forming part of Letters Patent No. 632,813, dated September 12, 1899.

Application filed January 17, 1899. Serial No. 702,449. (No model.)

To all whom it may concern:

Be it known that I, CHARLES GULLAND, a citizen of the United States, residing at Pittsburg, Pennsylvania, have invented certain new and useful Improvements in Pneumatic Signals for Railway-Trains, of which the following is a specification.

My invention relates to certain improvements in pneumatic signals for railway-trains of that class in which the reduction in the pressure in the train signal-pipe effects the opening of a valve to permit air to pass directly to the whistle or other signal to sound the same.

The object of the invention is to provide a signal in which I dispense with the use of springs or diaphragms and materially reduce the number of parts and provide an arrangement which is simple, positive, sensitive, and sure in its action, responding instantly to the slightest variation in pressure in the signal-pipe.

The invention consists in the construction and arrangement hereinafter set forth, and particularly pointed out in the claim.

The invention is illustrated in the accompanying drawing, in which the figure represents the signal in diagrammatic view, with parts shown in section.

In the figure, A represents the main storage-reservoir of the train, supplied with compressed air in the usual or any desired manner, and B represents the train signal-pipe, extending throughout the train in the usual manner.

The train signal-pipe is provided at each car with a car discharge-valve C of the ordinary or any desired construction, designed to be operated by the conductor to reduce the pressure in the train signal-pipe in the manner common in such devices. I also preferably provide a stop-cock D, controlling the flow of air from the storage-reservoir to the train signal-pipe, this cock being of the ordinary or any desired construction.

E represents the whistle-valve casing, which is cylindrical and is provided with three pipe connections, one of which, F, extends downwardly from the bottom of the valve-casing and connects with the whistle or other signal F', while the second, G, leads from the lower part of the casing direct to the main storage-reservoir, and the third, H, leads from the

valve-casing above the valve and connects with the train signal-pipe.

The signal-valve is shown at I and comprises a disk or piston freely movable in the cylinder and preferably fitting therein with sufficient looseness to allow the passage of air around and past it to equalize the pressure on opposite sides of the valve at all times. It is provided with a downwardly-extending stem *i*, terminating in a valve-seat *i'*, adapted to cooperate with a valve-seat *8*² to control the passage of air from the storage-reservoir to the signal. If desired, in order to further insure equalization of pressure on opposite sides of the valve an opening or openings *i*⁴ may be made through the disk or piston.

In the operation of the device supposing the car discharge-valves to be closed, as indicated in the drawing, so that no air can escape from the signal-pipe, the pressure on opposite sides of the piston of the valve will be equal, air passing to both sides thereof from the storage-reservoir and train signal-pipe, the equalization being further insured by the looseness of the piston or the opening therein, and the valve will be held closed by gravity. On the opening of the car discharge-valve, however, the pressure in the train signal-pipe is reduced, and as the air is admitted to the valve-casing beneath the piston direct from the main reservoir faster than it can escape past the disk the impulse will lift the valve against the force of gravity, thus permitting air from the reservoir to flow directly to the signal to sound the same. On the closing of the car discharge-valve the equalization of pressure allows the force of gravity to immediately restore the valve to normal position. It will therefore be observed that I provide an exceedingly simple, effective, and positively-acting signal in which there are no springs to corrode, break, or stick and no diaphragms to freeze. Further, that the device is extremely sensitive, responding at once to the slightest opening of the car discharge-valve, and again that I dispense with the use of any auxiliary reservoirs or chambers, sounding the signal direct from the main storage-reservoir, thus insuring a stronger and more effective signal than when auxiliary reservoirs are employed. Further, that without recourse to pressure-equalizing feed-

valves or pressure-reducing valves or any combinations of such valves the action of my valve is positive under any pressure, either high or low.

5 Having thus described my invention, what I claim is—

10 In a signal, the combination with the main storage-reservoir, of a valve-case, a signal having a pipe connection to the lower portion of said valve-casing, a valve-disk freely movable in the casing and allowing the passage of air between the valve-casing and piston at all times, having a valve controlling the passage

to the signal, a pipe connection from the main storage to the case beneath the valve-disk, a train signal-pipe connected with the storage-reservoir and provided with discharge-valves, and a pipe connection from the case above the valve-disk to the train signal-pipe, substantially as described. 15 20

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES GULLAND.

Witnesses:

THOMAS RIDLEY,
JAMES SMITH.