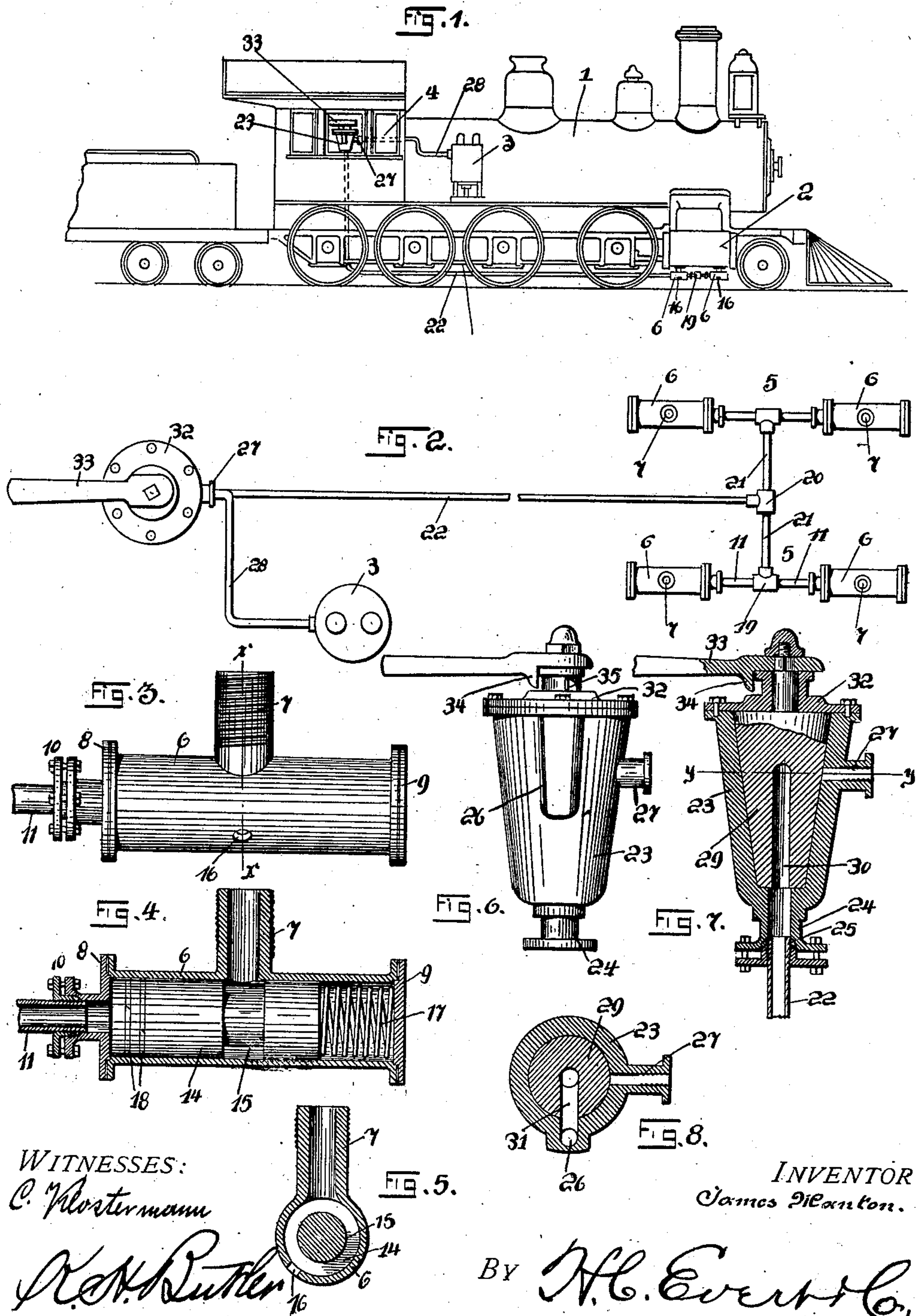


No. 889,535.

PATENTED JUNE 2, 1908.

J. MANTON.
AUTOMATIC CYLINDER VALVE.
APPLICATION FILED JAN. 5, 1907.



UNITED STATES PATENT OFFICE.

JAMES MANTON, OF CLAIRTON, PENNSYLVANIA.

AUTOMATIC CYLINDER-VALVE.

No. 889,535.

Specification of Letters Patent.

Patented June 2, 1908.

Application filed January 5, 1907. Serial No. 350,918.

To all whom it may concern:

Be it known that I, JAMES MANTON, a citizen of the United States of America, residing at Clairton, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Cylinder-Valves, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to cylinder cocks for locomotives and engines, and the invention has for its object to provide positive and reliable means for draining water from the cylinders of a locomotive whereby the cylinders will not be injured by the freezing of water therein.

Another object of this invention is to provide cylinder cocks for locomotive cylinders adapted to be automatically actuated when the air pump or air supply of a locomotive is shut off.

A further object of this invention is to provide a novel form of engineer's valve for simultaneously controlling the air supply of a pump and the cocks used in connection with a cylinder.

With these and other objects in view, which will more readily appear as the invention is better understood the same consists in the novel construction, combination and arrangement of parts to be hereinafter more fully described and then specifically pointed out in the appended claims.

Referring to the drawing forming part of this specification, like numerals of reference designate corresponding parts throughout the several views, in which:

Figure 1 is a diagrammatic view of a locomotive equipped with my improved cylinder cocks, Fig. 2 is a plan of the cylinder cocks detached from a locomotive illustrating the engineer's valve and air pump in connection with the same. Fig. 3 is a side elevation of one of the cylinder cocks, Fig. 4 is a longitudinal sectional view of the same, Fig. 5 is a cross sectional view of the same taken on the line $x-x$ of Fig. 3, Fig. 6 is an elevation of the engineer's valve for controlling the cylinder cocks, Fig. 7 is a vertical sectional view of the same, Fig. 8 is a cross sectional view taken on the line $y-y$ of Fig. 7.

In the accompanying drawing, I have illustrated diagrammatically a locomotive 1 having a cylinder 2 upon each side thereof and a conventional form of air pump 3 adjacent to the engineer's side of the locomotive cab 4.

My invention resides in providing the cylinders 2 with depending cocks 5 each cylinder being provided with two cocks which are supported from the under side of the cylinder 2. Each cock comprises a cylindrical body portion 6 having a threaded connection 7, whereby the cock can be secured in the cylinder 2. The cylindrical body portion 6 of each cock is provided with detachable heads 8 and 9, the head 8 being provided with a flanged connection 10, to which is connected a pipe 11, a gland 12 being preferably used to insure an air tight connection. In the cylindrical body portion 6 is mounted a plunger 14 having an annular recessed portion 15 to establish communication between the connection 7 and an opening 16 formed in the body 6. The annular recess 15 is normally maintained in communication with the connection 7 and the opening 16 by a coiled spring 17 interposed between the head of the plunger 14 and the head 9 of the cylindrical body 6. Packing rings 18 of a conventional form are carried by the forward end of the plunger 14.

The cylinder cocks carried by each cylinder have their pipes 11 connected to a T 19, which in turn is connected to the cylinder cocks of the cylinder upon the opposite side of the locomotive by a T connection 20 and pipes 21. The T connection and the pipes 21 are located centrally beneath the boiler of a locomotive and the T connection 20 is provided with a rearwardly extending pipe 22 passing upwardly into the cab of the locomotive.

Suitably secured to the boiler of a locomotive within the cab is an engineer's valve comprising a tapering valve body 23 having a depending connection 24 with which the end of the pipe 22 connects, a gland 25 being preferably used to insure an air tight connection. The valve body 23 is provided with an exhaust port 26 and a port 27, said port 27 being connected to the air pipe 3 by a pipe 28. In the valve body 23 is mounted a tapering plug 29 having a vertically disposed port 30 formed therein communicating with a horizontally disposed port 31, the port 31 being adapted to register with the exhaust port 26 and the port 27 at predetermined times, while the port 30 normally registers with the connection 24. The valve plug 29 is re-

tained within the valve body 23 by a cap 32 and it is rotated by a lever 33 detachably mounted upon the upper end of the valve plug 29, said lever being limited in its movement by a depending lug 34 adapted to impinge a lug 35 carried by the cap 32.

When the locomotive is in operation, and the engineer's valve open, the air of the pump 3 passes through the pipe 28, connection 27, ports 31 and 30, connection 24, pipes 22, 21 and 11 to the cylindrical bodies 6 of the cocks carried by the cylinders of a locomotive. Immediately upon the air striking the ends of the plungers 14, the plungers are forced rearwardly compressing the springs 17, and closing the connections 7, whereby steam may be admitted to the cylinders 2 and prevented from escaping through the cylinder cocks. Immediately upon a cessation in the operation of the pump 3, a reduction in the air pressure upon the end of the plunger 14 allows the spring 17 to return said plunger to its normal position, establishing communication between the connection 7 and the port 16 and allowing the cylinders to drain.

At any desired time during the operation of the locomotive, an engineer can drain the cylinders thereof by manually actuating the valve to close the connection 27 and establishing communication between the ports 30 and 26. This operation may necessitate the shutting off of the steam entering the cylinders 2, but in some instances it is not actually necessary. I do not care to confine myself to the specific arrangement of the various connections and pipes of the cylinder cocks with the engineer's valve, and such changes in the size, proportion and minor details of con-

struction entering into my invention as are permissible by the appended claims may be resorted to without departing from the spirit and scope of the invention.

What I claim and desire to secure by Letters Patent, is:—

The combination with a pair of steam cylinders of an engine, of a duplex draining mechanism each communicating with an engine cylinder, each of said mechanisms comprising a pair of drain cylinders arranged in longitudinal alinement and having the opposing heads thereof formed with inlet nipples, pipes for connecting said nipples together, each of said drain cylinders formed with an outlet port at a point intermediate the ends thereof and further provided with a vertically extending tubular exteriorly threaded connection adapted to engage with the engine cylinder whereby communication is established between a pair of drain cylinders and an engine cylinder, a piston mounted in each of the drain cylinders and recessed intermediate the ends thereof, a spring mounted in each of the drain cylinders and bearing against the respective piston therein, combined with a transversely extending pipe branch communicating with the pipe connections between the nipples, a fluid pressure supply pipe communicating with said pipe branch and means for controlling the supply of pressure to said supply pipe.

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

JAMES MANTON.

Witnesses:

IRA P. BRADFORD
P. J. KEATING.