

No. 776,061.

PATENTED NOV. 29, 1904.

A. G. HEWETT.
CYLINDER DRAINER.
APPLICATION FILED MAR. 30, 1904.

NO MODEL.

Fig. 1.

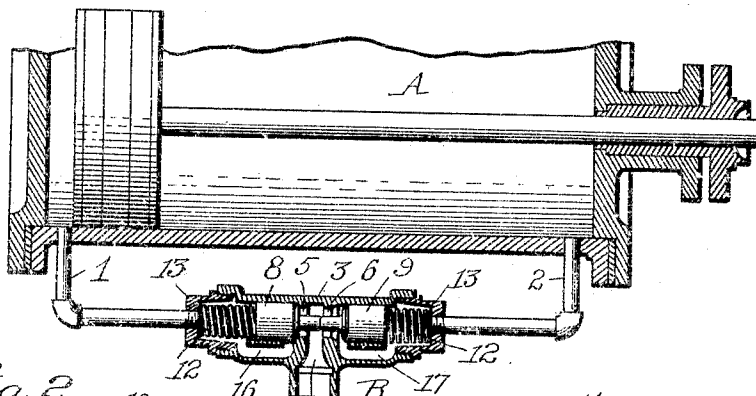
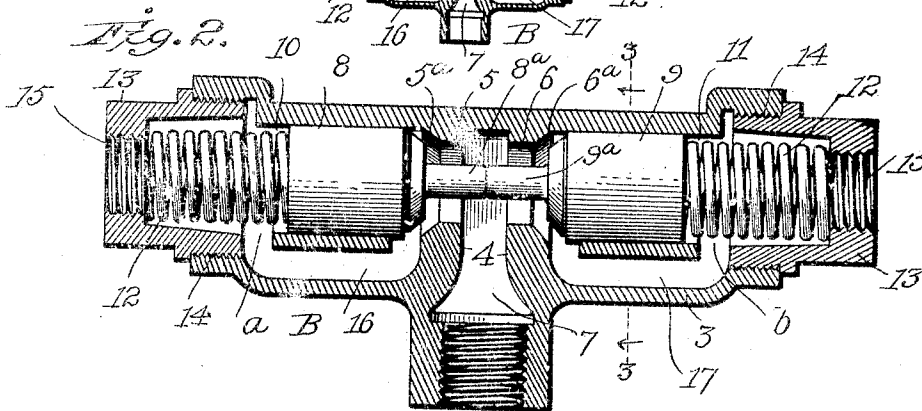
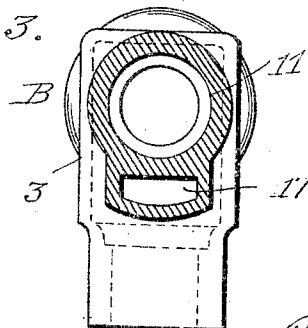


Fig. 3.



Witnesses

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CYLINDER-DRAINER.

SPECIFICATION forming part of Letters Patent No. 776,061, dated November 29, 1904.

Application filed March 30, 1904. Serial No. 200,815. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR G. HEWETT, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful improvements in Cylinder-Drainers, of which the following is a specification.

My invention relates to improvements in drainage devices for steam-cylinders whereby the valves are operated promptly to give relief to the exhaust end of the cylinder and live steam is prevented from escaping from the steam end of the cylinder.

In the accompanying drawings, Figure 1 is a longitudinal vertical section through a steam-engine cylinder and the drainage device connected therewith, the upper portion of the cylinder being broken away. Fig. 2 is a similar view of the cylinder-drainer on a larger scale, and Fig. 3 is a section on the line 3 3 of Fig. 2 with the valve removed.

Referring to the drawings, A indicates a steam-engine cylinder to which the drainage device B is connected by the drain-pipes 1 and 2, leading from the ends of the cylinder to the ends of the drainage-valve casing 3. The valve-casing is tubular in general form and divided into two similar compartments *a* and *b* by a double valve-seat partition 4, having drainage-ports 5 and 6, which communicate with a drainage-outlet 7 and the compartments *a* and *b*, respectively. Valve-seats 5^a and 6^a are formed around the ports 5 and 6, and piston-valves 8 and 9, arranged within the compartments *a* and *b*, are adapted in operation to fit against their respective valve-seats 5^a and 6^a alternately, and thus open and close the ports 5 and 6. The piston-valves 8 and 9 fit closely within cylindrical openings or bores 10 and 11, which are formed in the compartments *a* and *b*, respectively, in line with one another. Stems 8^a and 9^a upon the adjacent ends of the pistons project through the ports 5 and 6 and abut against one another. These stems are of such length that when one valve is seated the other will be forced off of its seat. The valves are normally centered by springs 12, interposed be-

tween the outer or rear ends of the valves and tubular adjusting-nuts 13, which are screwed into the open ends 14 of the body of the casing and form parts of the casing. These nuts or end pieces of the casing are provided with threaded openings 15 for connection with the drain-pipes of a cylinder, and these openings are directly in the rear of the pistons, so that the steam entering the casing is applied directly to the pistons. In order to conduct the drainage-water from the inlet-openings to the outlet-opening, water passage-ways 16 and 17 are formed in the body of the casing below the cylindrical openings 10 and 11 and connect the outer ends of the compartments with the ports 5 and 6. These passage-ways conduct the water from the rear to the front ends of the valves and serve as pockets for drainage collecting in the compartments while the valves are closed.

The operation will be clear from an inspection of Fig. 1. As soon as steam is admitted to the left-hand end of the cylinder the valve 8 is closed immediately by the direct application of the steam-pressure, and the valve 9 in the compartment connected with the exhaust end of the cylinder is simultaneously forced open and remains open until the end of the piston-stroke, the drainage-water flowing out through the passage-way 17 and port 6 under the pressure of the exhaust-steam. When steam is admitted to the right-hand end of the cylinder, the pressure through the pipe 2 closes the valve 9 and prevents the escape of steam and simultaneously opens the valve 8 in the compartment *a* to permit the escape of drainage-water from the left-hand end of the cylinder. The collection of drainage-water in the passage-ways or pockets 16 and 17 obstructs the escape of steam past the forward ends of the valves when live steam is admitted to the compartments and causes the steam to exert its full force upon the valves, closing the valve on the steam side almost instantly and opening the valve on the exhaust side, giving instant relief to the exhaust end of the cylinder. The escape of live steam is thus practically prevented, and as the valves

are given a quicker movement than heretofore the valve on the exhaust side is opened immediately. Whatever water is forced out of the water-pockets by the live steam before the valves are seated carries with it the sediment collecting in the pockets and washes off the valve-seats.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a cylinder-drainer, a hollow casing having openings for admitting steam and drainage-water into the ends of the casing, a central outlet-opening, valve-seat partitions in said casing dividing the casing into two compartments, said partitions having ports communicating with said outlet-opening, cylindrical openings in said compartments in line with said ports, valves fitting closely within said cylindrical openings and preventing the passage of steam therethrough, said valves having abutting stems extending through said ports and springs arranged between said valves and the ends of the casing, said casing also having water passage-ways extending around the valves from their rear

to their front ends and connecting the inlet-openings with said ports.

2. In a cylinder-drainer, a hollow casing having openings for admitting steam and drainage-water into the ends of the casing, a central outlet-opening, valve-seat partitions in said casing dividing the casing into two compartments, said partitions having ports communicating with said outlet-opening, cylindrical openings in said compartments in line with said ports, valves fitting closely within said cylindrical openings and preventing the passage of steam therethrough, said valves having abutting stems extending through said ports and springs arranged between said valves and the ends of the casing, said casing also having water passage-ways extending beneath the valves from their rear to their front ends and connecting the inlet-openings with said ports.

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

ARTHUR G. HEWETT.

Witnesses:

JOHN P. BUTLER,

MAX F. HENKELMAN.