

(No Model.)

L. BOUDREAU.
STEAM CYLINDER VALVE.

No. 530,503.

Patented Dec. 11, 1894.

Fig. 1.

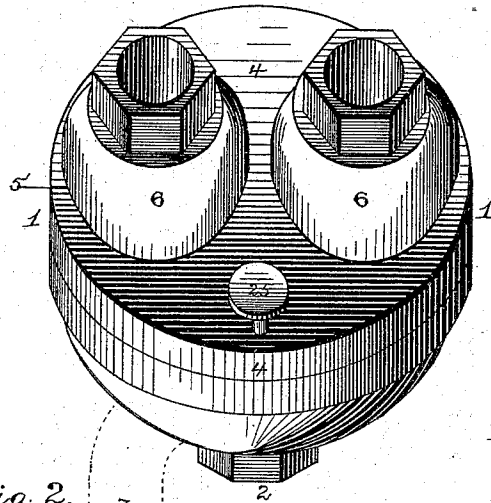


Fig. 2.

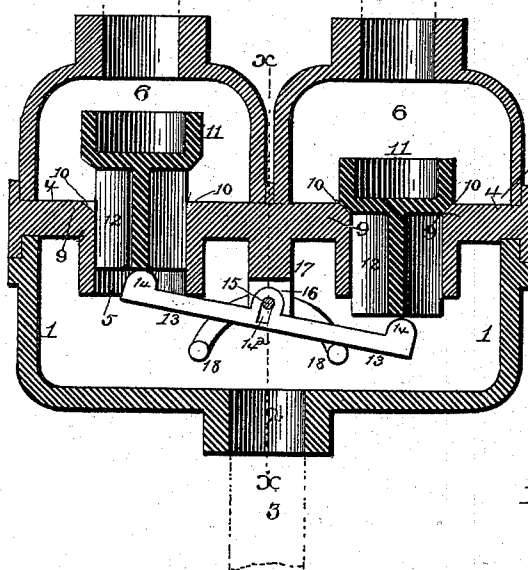


Fig. 3.

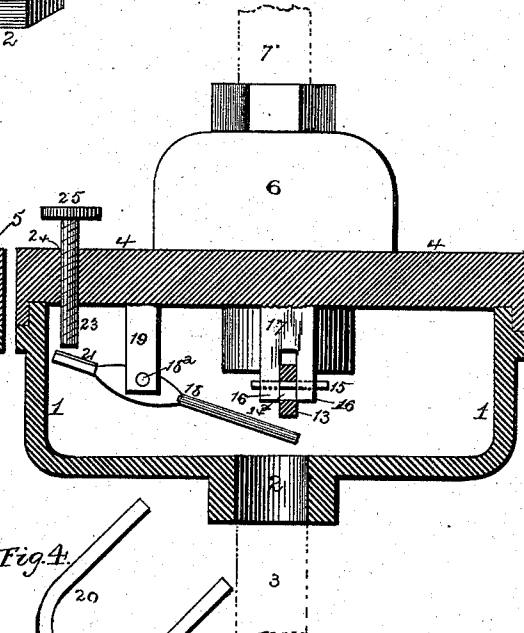
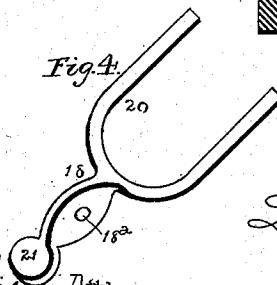


Fig. 4.



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UNITED STATES PATENT OFFICE

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STEAM-CYLINDER VALVE.

SPECIFICATION forming part of Letters Patent No. 530,503, dated December 11, 1894.

Application filed July 18, 1894. Serial No. 517,918. (No model.)

To all whom it may concern:

Be it known that I, LEANDRE BOUDREAUX, a citizen of the United States, residing at Thibodeaux, in the parish of Lafourche and State of Louisiana, have invented a new and useful Steam-Cylinder Valve, of which the following is a specification.

This invention relates to steam cylinder valves or cocks; and it has for its object to effect certain improvements in automatic valves of that character which receive and discharge the water of condensation which accumulates in a steam cylinder after and during each stroke of the piston.

To this end the main and primary object of the present invention is to make a new and useful automatically operating steam cylinder valve or cock providing simple and efficient means for automatically relieving a steam cylinder of accumulations of condensed steam during the operation of the engine, and also for completely draining the cylinder when the engine is inactive.

With these and other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of an automatic steam cylinder valve constructed in accordance with this invention. Fig. 2 is a central transverse sectional view thereof showing in dotted lines the connections with an ordinary steam cylinder. Fig. 3 is a similar view on the line $x-x$ of Fig. 2. Fig. 4 is a detail in perspective of the forked adjusting lever.

Referring to the accompanying drawings, 1 designates an enlarged valve casing constructed in either a circular or other convenient shape and said valve casing is provided with a central bottom drain opening 2, into which is fitted one end of a drain pipe 3, that provides means for carrying off from the casing the water of condensation that is received thereby. The said enlarged valve casing 1, is inclosed at the top by the removable top cap 4, which cap is provided with the valve openings 5, into which are fitted the pipe necks 6, to which are connected one end of the cylinder pipes 7, the other ends of which

are connected to a steam cylinder (not shown) at both ends thereof to provide for receiving and directing into the valve casing the water of condensation that accumulates in the ends of the cylinders during and after each stroke of the piston.

Fitted inside of the casing 1 directly under the valve openings 5 and in a line with the necks 6, are the valve seats 9, provided with upper beveled seat edges 10, onto which work the self-opening and closing cup-valves 11. The self opening and closing cup valves 11 are provided with the winged valve stems 12, projected from their undersides and working through and below the valve seats on which the said valves work, and it is to be noted that the pipe necks 6, are somewhat enlarged or flared to act in the capacity of supplemental casings to accommodate the movement of the valves 11 that work inside of the same.

The valve stems 12, projected from the undersides of the valves 11, properly termed twin valves and located or arranged as close together as the construction of the casing will admit in order that the several working parts of the device will occupy as little space as possible, are adapted to work over the opposite ends of the intermediate valve lever 13.

The valve lever 13, is provided with opposite rounded ends 14, which contact with the lower ends of the stems 12, in order to provide an easy sliding contact therewith, and centrally of its ends the said valve lever is provided with a transversely disposed slot 14^a, which receives the pivot pin 15, passed through the lower bifurcated end 16, of the supporting arm 17, that is projected centrally from the top of the casing between the valve seats, or at least the valves working thereon.

From the construction described, it will be easily understood that when the piston in the steam cylinder is being driven in one direction by the live steam, such live steam at one side of the piston will pass through one of the pipes 7, and pressing on the cup valve in the line of such pipe will close the same. The closing of this valve will operate upon or depress one end of the intermediate valve lever 13, the other end of which will operate upon the stem of the other valve so as to open the same wide and allow the water of condensa-

tion driven before the piston to escape freely into the valve casing 1, and out through the drain opening 2.

Arranged at one side of the intermediate valve lever 13 and within the casing 1, is a separate adjusting lever 18. The separate adjusting lever 18, is pivotally mounted at a point intermediate of its ends as at 18^a, in the lower bifurcated end of a supporting arm 19, depending within the valve casing from the top thereof, and at one end the said lever 18, is provided with a U-shaped fork 20, that works below the lever 13, and has the opposite arms thereof engage under said lever at both sides of its point of pivot. At its opposite end the adjusting lever 18, is provided with a flattened screw plate 21, onto which works the inner end of an adjusting screw 23, that is mounted to work in the threaded opening 24 in the top of the casing 1, and is provided on its outer end with a thumb knob 25, for manipulating the same.

The operation of the valves for automatically draining the steam cylinder during the operation of the engine has already been noted and is easily understood, and relative to the function of the lever 18, it will be obvious, in adjusting the screw 23, down onto one end of the said lever 18, the other forked end thereof will be pressed upwardly on the intermediate lever 13, and uniformly elevate both ends thereof, the slot 14^a, of said intermediate valve lever admitting of this movement. This adjustment of the intermediate valve lever 13, will elevate both of the valves 11, from their seats, so as to open such valves and allow both ends of the cylinder to be drained at the same time when the engine is stopped. By relieving the screw 23, from the lever 18, the same will be lowered out of the path of the valve 13, in its automatic movements.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what

is claimed, and desired to be secured by Letters Patent, is—

1. In a valve of the class described, the combination of a single enlarged valve casing, a removable top cap fitted on said casing and provided with separate valve openings and valve seats, enlarged pipe necks fitted into said valve openings, cup valves working over said seats within the pipe necks and provided with depending stems, an intermediately arranged fixed pivot pin, an intermediate valve lever having a central transverse slot receiving said pivot pin, and opposite rounded ends contacting with the lower projecting stems of the valves, and a separate adjusting device for moving the valve lever upwardly on its pivot pin to uniformly adjust the ends of the valve lever under the valves, substantially as set forth.

2. In a valve of the class described, the combination of a valve casing provided with a central bottom drain opening and with separate valve openings in the top, pipe necks fitted into said top valve openings, the valve seats arranged below said pipe necks, the valves working over said valve seats, an intermediately arranged supporting arm carrying a pivot pin at its lower end, an intermediate valve lever supported in the lower end of said supporting arm and having a central transverse slot receiving said pivot pin, a separate adjusting lever pivotally supported at one side of said valve lever and provided with a U-shaped fork at one end adapted to work under said valve lever at both sides of its pivot, and an adjusting screw mounted in the top of the valve casing and having its inner end engaging the other opposite end of said separate adjusting lever, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

LEANDRE BOUDREAUX.

Witnesses:

PHILIP F. LEGENDRE,
EDGAR F. RIVIÈRE.