April 2, 1929. E. G. GROSS 1,707,264

FLUID PRESSURE CONTROL FOR CYLINDER COCKS

Filed Nov. 4, 1925 2 Sheets-Sheet 1

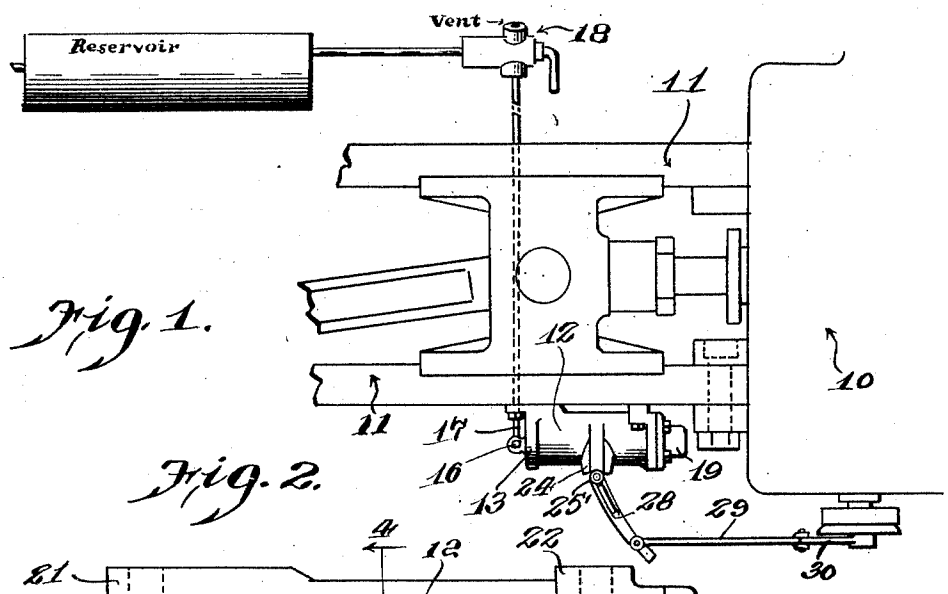


Fig. 1.

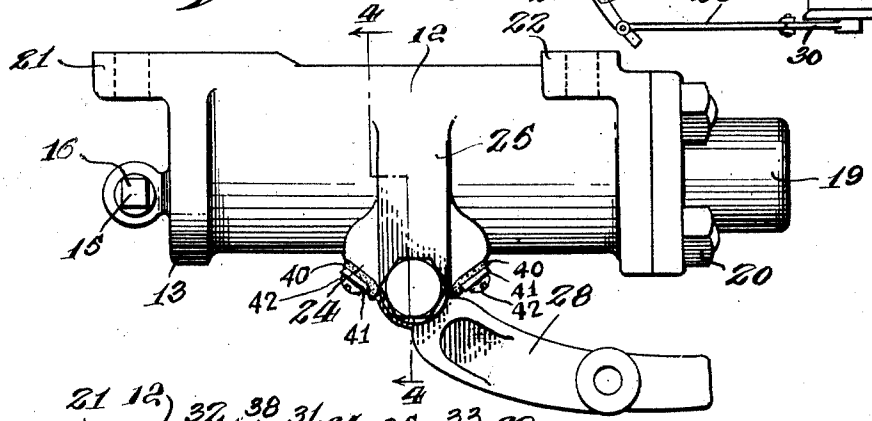


Fig. 2.

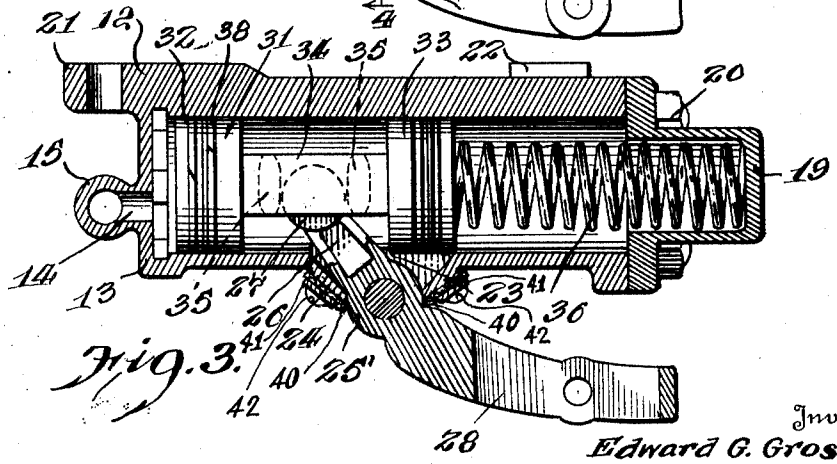


Fig. 3.

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FLUID PRESSURE CONTROL FOR CYLINDER COCKS

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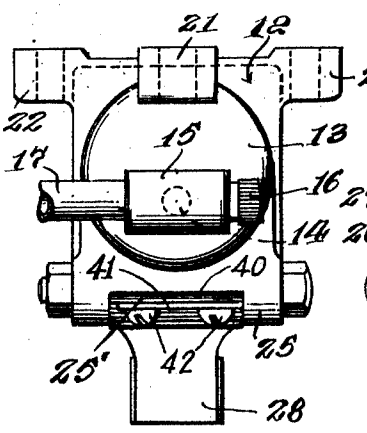


Fig. 5.

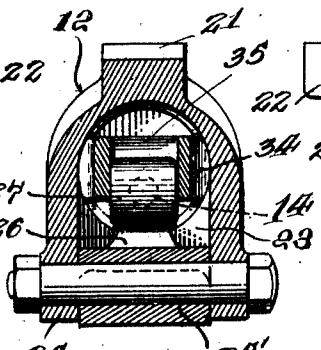


Fig. 4

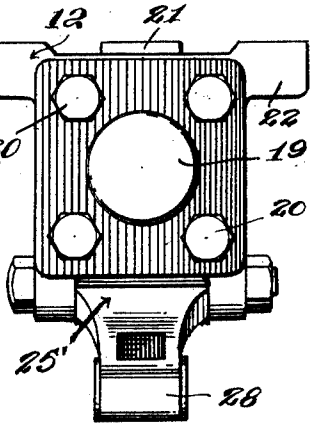


Fig. 6.

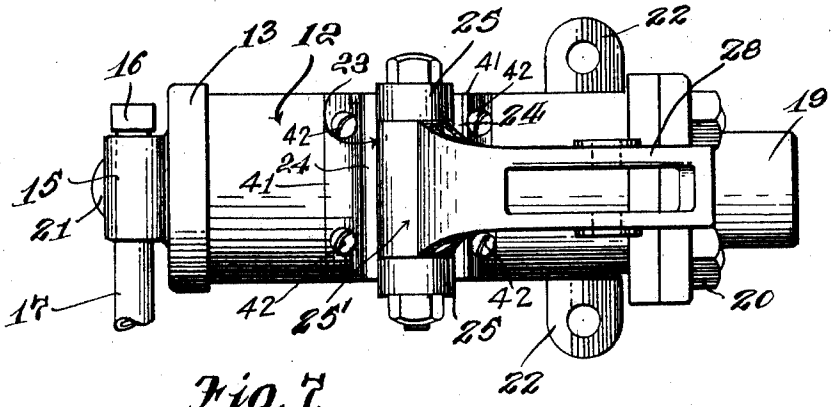


Fig. 7.

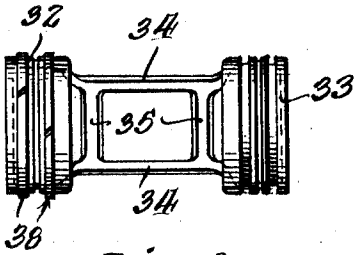


Fig. 8.

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UNITED STATES PATENT OFFICE.

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FLUID-PRESSURE CONTROL FOR CYLINDER COCKS.

Application filed November 4, 1925. Serial No. 66,768.

The invention has for an object to effect improvements in devices for the control of cylinder cocks of locomotives by an air or steam line and valve in the cab. It relates particularly to that type in which a reciprocating piston operates a lever connected to the ordinary cylinder cock by link or otherwise. It is an important aim of this invention to simplify the connections required between the engine parts and the cylinder of the cock control device. A further important aim is to provide a device of this kind which is adapted to be manufactured at a low cost with extremely simple parts, and which will be liable in a minimum degree to damage and depreciation. One of the foremost purposes of the invention is to embody a device of this kind which will also eliminate access of dust and grit to the working parts.

Additional objects, advantages and features of invention reside in the construction, arrangement and combination of parts as may be more readily understood from the following description and the accompanying drawings, wherein,

Figure 1 is a side elevation of a locomotive cylinder with my control device applied thereto and connected to the cocks.

Figure 2 is an enlarged side elevation of the control device detached.

Figure 3 is a longitudinal sectional view thereof.

Figure 4 is a cross section on the line 4—4 of Figure 2.

Figure 5 is a front end elevation of the device.

Figure 6 is a rear elevation thereof.

Figure 7 is a bottom view of the device.

Figure 8 is a detail of the piston detached.

There is illustrated a locomotive cylinder 10 and a portion of a lower cross head guide 11, upon the under side of which there is mounted a cylinder casting or case 12, having a smoothly finished bore therein. The cylinder body has an integral head 13 closing one end thereof, in which there is cored a longitudinal passage 14 or air duct, which leads into a transversely bored ear or lug 15 formed on the head 13, and interiorly threaded to receive a plug 16 at one side, an air pipe terminal 17 at the other, leading from a two-way valve 18 of any usual construction, formally indicated in the drawings, and which is adapted to form a connection between the terminal 17 and train pipe or reservoir of the engine when in one position, and in another position to vent air from the pipe 17 to the atmosphere. Various valves suitable for this use are well known, commercially, and illustration of the details is therefore considered not necessary.

The end of the cylinder bore opposite the head 13 opens flush through a machined face on the end of the casting, and is closed by a cap 19, the cap and the cylinder casting being flanged, and secured together by bolts 20. The cylinder casting is also formed with a longitudinally projecting foot lug 21 at the upper side adjacent the head 14, and two lateral foot lugs 22 adjacent the opposite end of the cylinder, the three lugs being adapted to set snugly upon a planiform surface. At the lower side of the cylinder midway of the length of the bore in the main casting, an opening 23 is formed beside which transversely extending flanges 24 are formed joined integrally to ears 25 at the sides, the ears and flanges together forming a rectangular opening, in which there is set with a snug fit the hub 25′ of a lever having a short arm 26 extending inwardly and providing a knob 27 of cylindrical form arranged on an axis transversely of the cylinder and parallel to the pivot of the lever adapted to oscillate in a vertical axial plane in the cylinder 12. This lever has also a long arm 28 extending outwardly and curving slightly toward the cap 19, a link 29 connecting this lever to the usual rod or other element as at 30 ordinarily provided on cylinder cocks under the engine cylinder for their operation. The hub receives therethrough a bolt secured in the ears 25.

Slidable in the bore of the cylinder there is a piston 31, having heads 32 and 33, the first adjacent the head 13 of the cylinder, while the other is presented toward the open end of the cylinder and the cap 19. The heads 32 and 33 are connected by two longitudinal bars 34, between which there are cross bars 35 spaced and smoothly finished to snugly engage the knob 27 so that the piston will be reciprocated by oscillation of the lever. The piston heads 32 and 33 may be both similar, smoothly finished to slide freely in the cylinder 12, but the head 32 is provided with packing rings 38 whereby to confine compressed air or steam between this head and the head 13 of the cylinder 12.

It should be noted that the cap 19 is interiorly of somewhat smaller diameter than the bore of the cylinder 12, and set in this

cap there is a helical spring 36, of a strength sufficient to operate the piston and lever and move the cylinder cocks from closed to open position, by expansion of the spring against the piston 31.

If desired, (see Fig. 3) the flanges 24 may stop short of the hub 25′ of the control lever, the outer faces being flattened and formed in a plane intersecting the periphery of the hub adjacent the horizontal diametrical line therethrough and a felt or other resilient packing sheet 40 may be clamped against the hub by means of plates 41 secured thereon by screws 42 engaged in the flanges 24.

It will be seen that the device is adapted to be put in place and connected with the cylinder cocks on locomotives of ordinary construction with a minimum of difficulty, and the nature of the construction is such that the device will not be readily damaged, nor deteriorate excessively, as will be readily understood.

In use, it will be seen that it is only necessary to admit air to the cylinder 12 to close the cocks; and when the engineer's valve is moved properly, it will relieve air pressure in the feed pipe 17 and the spring 34 will function to return the device to initial position, opening the cylinder cocks again. The device is thereby suitable to use when air pressure fails, by manipulation of the arm 28 of the lever, or admission of steam to the feed line 17.

I claim:

In a motor device of the character described, a case having an opening, and a lever pivoted in the opening, an enlargement concentric with the pivot formed on said lever and insertable through said opening, an enlargement on the case at opposite sides of the opening and having inclined faces at the outer side convergent outwardly toward the opening, clamping plates respectively mounted over said faces, means to press the plates toward said faces, and packing pieces adjustable between the plates and said faces to bear upon the said enlargement on the lever and to close the spaces at respective sides of the lever in the opening.

In testimony whereof I affix my signature.

EDWARD G. GROSS.