

J. T. VAN NORMAN & G. A. BAXTER.

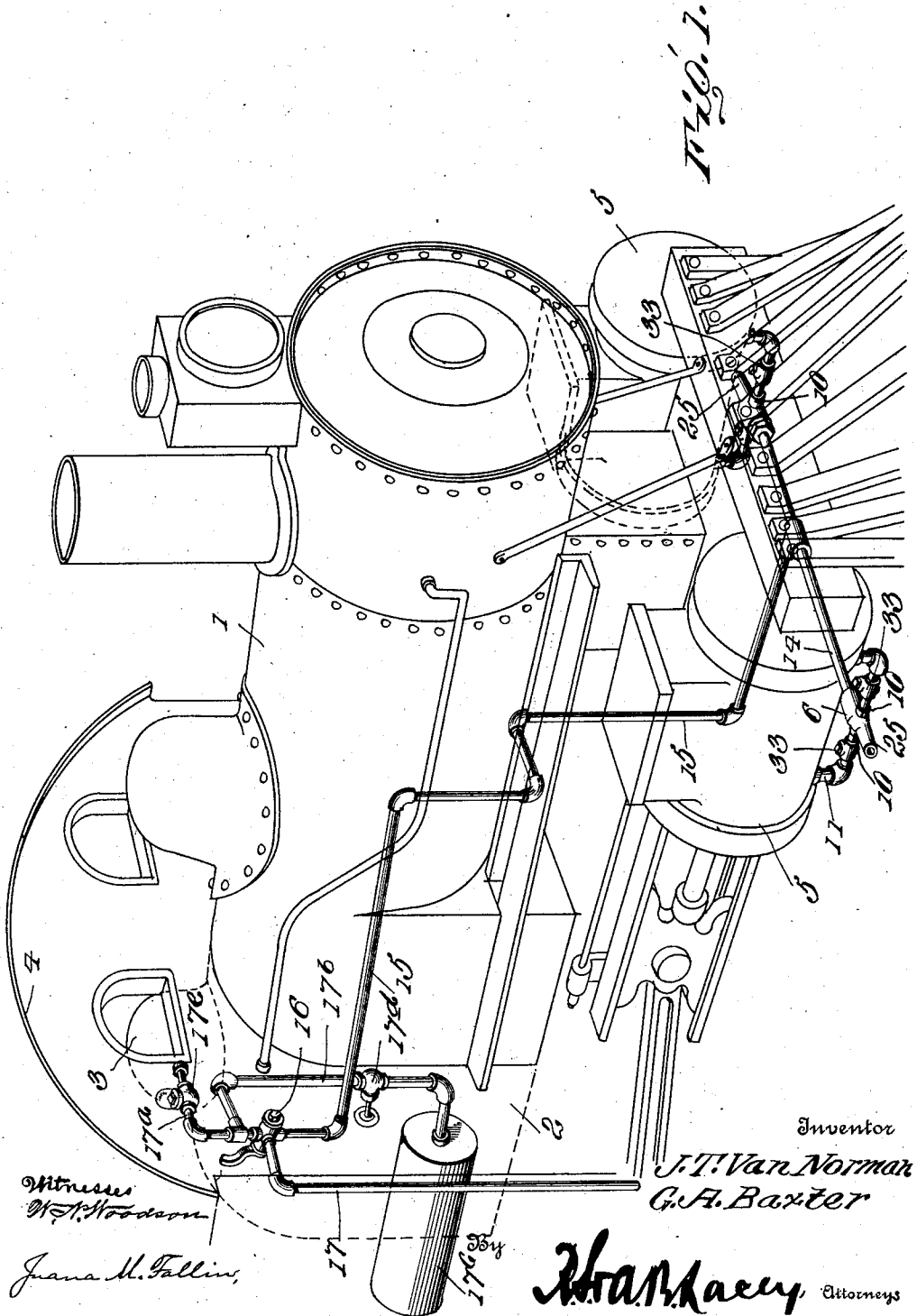
CYLINDER BLEED COCK.

APPLICATION FILED MAR. 12, 1910. RENEWED MAY 12, 1911.

1,011,531.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.



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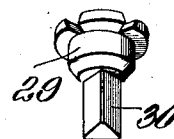
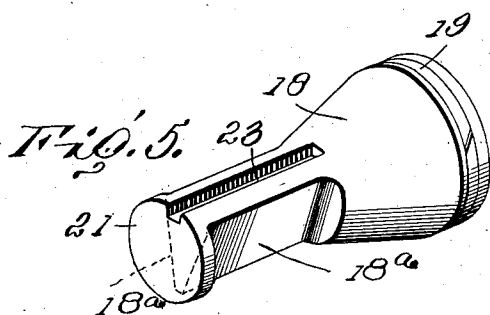
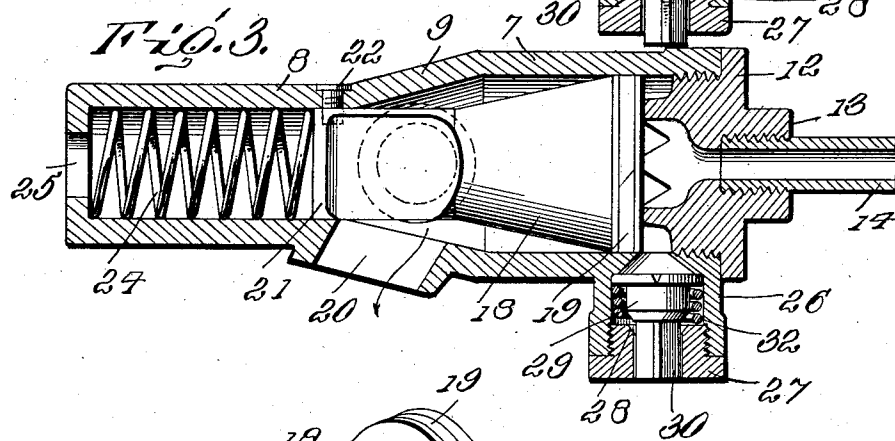
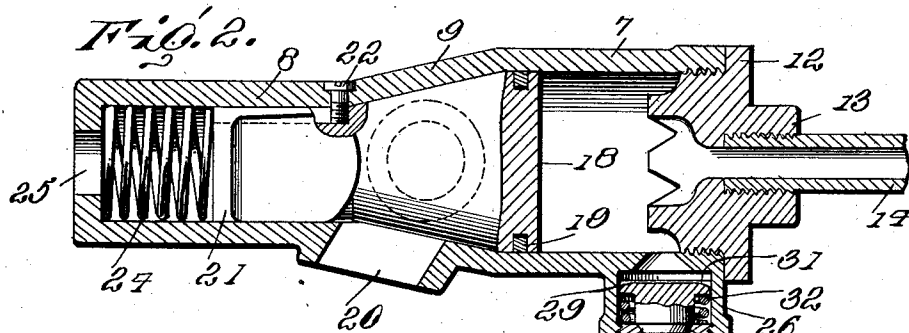
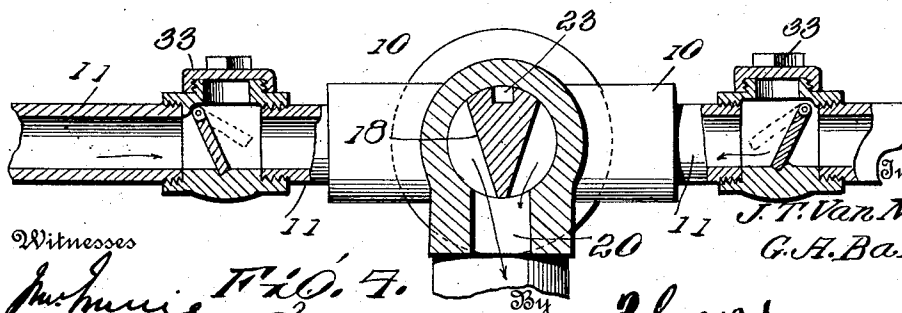


Fig. 6.



Witnesses

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Fig. 7.

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UNITED STATES PATENT OFFICE.

JOSEPH T. VAN NORMAN AND GEORGE A. BAXTER, OF MERIDIAN, MISSISSIPPI.

CYLINDER BLEED-COCK.

1,011,531.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed March 12, 1910, Serial No. 561,025. Renewed May 12, 1911. Serial No. 626,827.

To all whom it may concern:

Be it known that we, JOSEPH T. VAN NORMAN and GEORGE A. BAXTER, citizens of the United States, both residing at Meridian, in the county of Meridian and State of Mississippi, have invented certain new and useful Improvements in Cylinder Bleed-Cocks, of which the following is a specification.

10 This invention has for its primary object a simple, durable, and efficient construction of mechanism for bleeding the water of condensation from steam cylinders, the present embodiment of the invention being shown as
15 applied to a locomotive, although it is to be understood that the invention is not limited thereto, but is equally applicable for steam engines generally where there is condensation of steam and the drawing off of
20 water from the cylinder or cylinders consequently required.

The invention also has for its object an improved duplex cylinder bleeder capable of being easily controlled by the engineer to
25 bleed the two cylinders at once.

The invention also has for its object, improved mechanism of the character hereinbefore set forth capable of operating either by steam or air and at the will of the engineer, the mechanism when air is used for
30 the fluid pressure medium, constituting a safety appliance particularly for road locomotives, owing to the fact that should the air pump get out of order, and the supply
35 of air become depleted, the bleed cocks will open and continue to blow, thereby attracting the attention of the engineer and rendering it at once evident that the air brake system cannot be depended upon, the engineer, in such event, having no excuse for
40 going upon the road with the air system in a partially inoperative condition.

The invention also has for its object, a cylinder bleeder in which the parts are so
45 arranged that the air or steam supply pipe leading to the bleed cock will be automatically vented or bled so as to avoid the liability to freeze in cold weather. And a further object of the invention is a simple,
50 durable and efficient construction of bleed cock for engine cylinders which will be sensitive in its action and not liable to get out of order, and which will be composed of comparatively few parts which may be
55 cheaply manufactured and easily assembled and disassembled.

With these and other objects in view as will more fully appear as the description proceeds the invention consists in certain constructions, arrangements and combinations of the parts that we shall hereinafter fully describe and claim.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawings in
65 which:

Figure 1 is a perspective view of a portion of a locomotive equipped with the improvements of our invention; Figs. 2 and 3 are enlarged longitudinal sectional views of a
70 valve, the parts being illustrated in different positions; Fig. 4 is a transverse sectional view through the valve casing and a similar view of the end portions of the connecting pipes; Fig. 5 is a detail perspective view
75 of one of the main valves; and Fig. 6 is a similar view of an auxiliary valve.

Corresponding and like parts are referred to in the following description and indicated in all the views of the accompanying
80 drawings by the same reference characters.

Referring to the drawings, and now more particularly to that embodiment of the invention illustrated in Fig. 1, the numeral 1 designates the boiler of a locomotive, 2, the boiler head with its steam fountain 3 located in the cab 4 and 5 designates the steam cylinders. 6 designates the casing of the bleed
85 cocks of which there is one for each cylinder. Each casing 6 preferably embodies cylindrical end portions 7 and 8 one smaller than the other, being connected by a tapered portion 9, the casing being provided at the tapered portion 9 with diametrically disposed
90 nipples 10 which are connected by pipes 11 to the ends of the cylinder as clearly illustrated in the drawing. When the mechanism is duplex, that is, arranged to bleed two cylinders simultaneously, as herein illustrated, the casings 6 of the cocks are arranged with their larger ends 7 pointing
100 toward each other and are horizontally disposed, extending transversely of the cylinders underneath the same as shown. The larger end of each casing (which is the inner end in the arrangement of parts illustrated in the accompanying drawings) has a screw cap 12 secured thereto, the screw cap
105 being provided with a nipple 13 by which it is designed for connection to a branch pipe 14, the two branch pipes 14 being connected to a common fluid pressure supply

pipe 15. The supply pipe 15 is controlled by a three way cock 16 which has a release pipe 17 connected to it. Also connected to the three-way cock 16, is a pipe 17^a leading to the steam fountain 3 and a pipe 17^b leading to the air reservoir 17^c. The pipe 17^b is provided with a globe valve 17^d, and the pipe 17^a is provided with an emergency valve 17^e. This emergency valve is merely a one-quarter turn valve with a removable handle and the valve face where the handle fits on is covered with a glass case, whereby access may be had to the valve 17^e to turn the same only after fracturing the glass. It is to be understood that the emergency valve 17^b is only to be used in case the air supply becomes depleted, under which circumstances, the engineer will break the glass and turn on the steam pressure so as to get the locomotive to a station or other place of relief. When the engine arrives at the repair shop, and the repairs have been made to the air equipment, another glass top will be put over the emergency valve. Ordinarily it is preferred that air pressure be used as the fluid pressure medium for actuating the blower cocks, and under normal conditions, the globe valve 17^d is maintained in open position, the pressure being controlled by the three way cock 16. When steam is to be used, the valve 17^d will be closed.

Referring now again particularly to the blower cock construction, it will be seen especially by reference to Figs. 2 and 3 that the casing 6 contains a plug or valve 18 which is preferably packed as at 19 and which embodies a tapered portion corresponding to the tapered inner wall of the intermediate portion of the case so as to accurately seat thereon and cut off the communication between the pipes 11 and the end outlet pipe 20 which is formed in the wall of the case and which preferably points downwardly, as shown. In addition to this tapered part, the plug or valve 18 embodies a cylindrical stem 21 which fits within the smaller or outer end 8 of the case and the valve is preferably prevented from turning by a key 22 which extends through this portion of the case into a longitudinal groove 23 formed in the cylindrical outer end of the valve. This end of the valve bears against a coil spring 24 which is fitted within the outer end of the case the tendency of the spring being to move the valve or plug 18 to open position so as to establish communication between the ends of the cylinder (through the pipes 11) and the vent or outlet 20 leading to the atmosphere. Preferably the outer end of the case 6 is formed with one or more openings 25 (one in the present instance) so that the valve may work freely, said opening relieving the pressure which would otherwise be in the end of the case when the valve is being closed, causing

the valve to be unable to seat itself. The opening 25 also provides means whereby should the valve stick from any cause, it may be easily released by running a pin into the hole and lightly touching the valve. The casing 6 is provided at its inner end back of the plug or valve 18 with a nipple 26 which is arranged to face downwardly as shown and to which is secured a screw cap 27. This cap is formed with an upwardly facing valve seat 28 against which a valve 29 is adapted to close, said valve having a stem 30 which works within the cap 27 so as to guide the valve. The valve 29 is formed at its upper end with a head 31 and an expansion spring 32 works within the nipple 26 and presses upwardly against the head 31 with a tendency to hold the valve in open position. It will be noted that the valve stem 30 is so shaped with reference to the opening in which it moves, that communication is established between the supply pipe 15 and its branch pipe 14 and the atmosphere, when the valve 29 is raised from its seat. When the cylinder cock is working the pressure is off of this valve and the spring 32 will thereupon raise the valve 29 from its seat 28 so as to permit the pipes 15 and 14 to drain and thereby prevent freezing in cold weather. In the preferred construction of the valve or plug 18, the same is formed in its tapered portion with two longitudinally extending and laterally facing channels 18^a that are separate or distinct from each other as best illustrated in Fig. 5, so that they will both discharge into the outlet 20, and at the same time, prevent the steam and water from flowing from one end of the cylinder to the other through the pipes 11, said pipes being directly in line with each other, as shown. If desired, although we do not regard it essential, as we may introduce into the pipes check valves 33 which will also prevent the steam and water from passing from one of the pipes 11 across the valve case 6 into the other pipe 11.

From the foregoing description in connection with the accompanying drawings, the operation of our improved duplex cylinder bleeders will be apparent.

In the practical use of the device, the valve or valves 18 are held by the fluid pressure back of them, on their seats and the outlet opening or openings 20 will be closed. Whenever the engineer desires to drain the cylinder or cylinders, it is only necessary to relieve some of the pressure back of the valve or valves 18 whereupon said valves will open and allow the water of condensation to flow out of the cylinders while at the same time, the auxiliary valve 29 will automatically open and permit the fluid pressure supply pipe to be drained, thereby avoiding the liability to freeze in cold weather.

It will be evident that by using air as the fluid pressure medium for normally controlling the operation of the bleed cocks, an incidental feature of safety is contained in the invention, owing to the fact that should the air pump get out of order or the air supply pipe fail for any reason, the valve or valves 18 would open and permit the bleed cocks to turn and blow continuously thereby attracting the attention of the engineer to the fact that there is something wrong with the air brake system. It is of course known that the latter provides that when an engine has an air failure on the line of road, the engineer shall take his train to the first point of relief in such condition. To do this, he must of course have control of the cylinder cocks, and provision is made for this by having the emergency valve 17^b, the same supplying steam as a fluid pressure and enabling the engineer to handle the locomotive. Furthermore, it is common practice for reliable engineers and locomotive hostlers when leaving the engine to open the cylinder cocks and close the throttle tight, yet this is not always done, and serious accidents have occurred under such circumstances, owing to the fact that engines with leaky throttles and closed cylinder cocks would move away without the notice of the watchman; but with our invention, it is clear that such an accident is impossible.

It is to be understood that our invention is not limited to the precise construction, arrangement and proportion of the parts herein shown and described, but that various changes may be made without departing from the scope of the invention as defined in the appended claims.

Having thus described the invention, what is claimed as new is:

1. A bleed cock for engine cylinders, comprising a casing provided at opposite sides with nipples and with a drain opening communicating with both of said nipples, a valve mounted in the casing and adapted to control the communication between the drain opening and both of said nipples, said valve being formed with laterally facing channels arranged to register with the drain

opening in the open position of the valve, a spring mounted in one end of the casing and bearing against said valve with a tendency to open it, a cap secured to the front end of the valve and arranged for the connection of a fluid pressure supply pipe thereto, the casing being formed back of said valve with a laterally extending nipple, a cap secured to said last named nipple and formed with a valve seat, and a valve mounted in said nipple and having a stem passing through said last named cap and adapted to rest on the seat thereof, the last named valve being spring pressed away from its seat for the purpose specified.

2. A device of the character described, comprising a casing provided at opposite sides with nipples and with a drain opening between and communicating with both of said nipples, a valve mounted in the casing and adapted to control the communication between the drain opening and both of said nipples, the casing embodying a relatively small cylindrical portion and the valve being formed with a cylindrical end working in such portion, a spring mounted in such portion and bearing against such valve with a tendency to open it, the valve being formed with laterally facing channels adapted to establish communication between the respective nipples, and the outlet or drain opening in common and simultaneously, and the valve being formed in its cylindrical portion between such channels with a longitudinal groove, a guide pin secured to the casing and working in such groove, whereby to hold the valve against turning in its seating and unseating movements, means for admitting fluid pressure back of the valve to seat the same, and a spring in the cylindrical end of the casing bearing against the valve and tending to unseat the same.

In testimony whereof, we affix our signatures in presence of two witnesses.

JOSEPH T. VAN NORMAN. [L. S.]
GEORGE A. BAXTER. [L. S.]

Witnesses:

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JAMES O'BRYAN.