

Sept. 16, 1924.

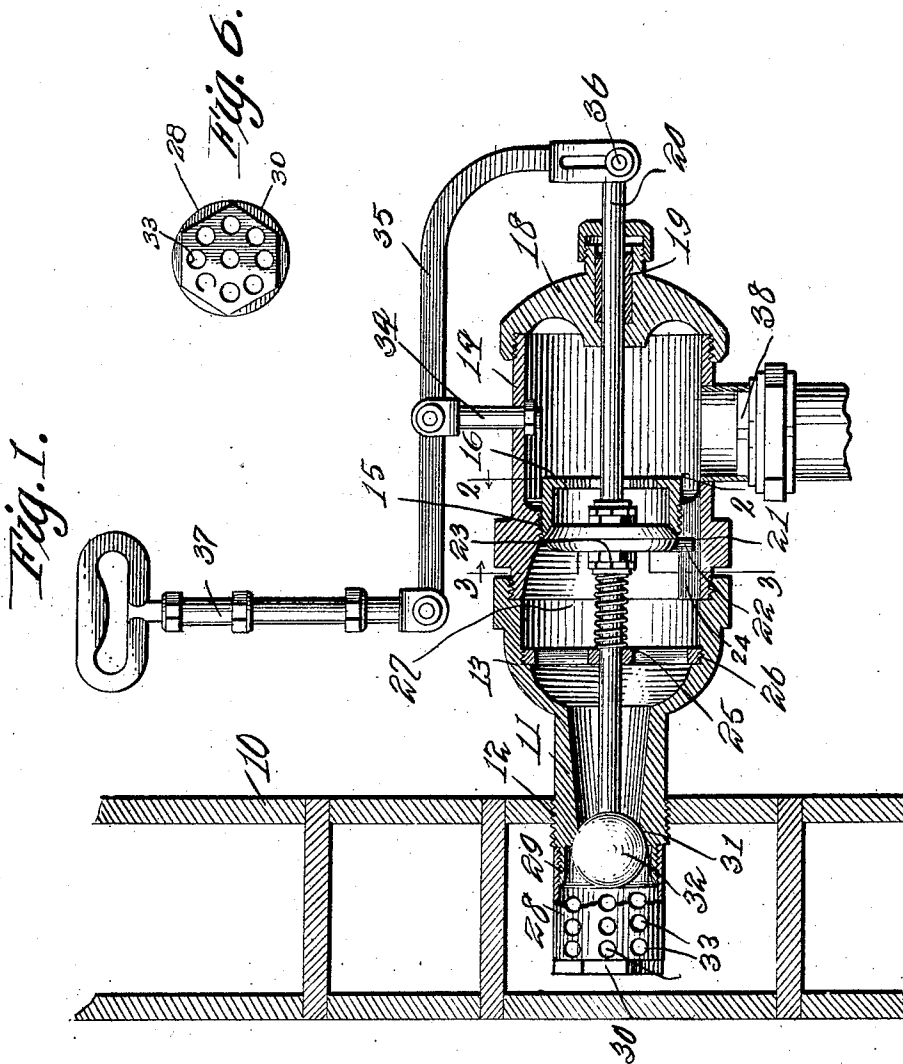
1,508,635

R. C. WOODHAM

SAFETY BLOW OFF VALVE

Filed Sept. 16, 1922

2 Sheets-Sheet 1



WITNESSES
Guy M. Spring
Frank Traylor

R. C. WOODHAM Inventor

By Richard B. Owen Attorney

Sept. 16, 1924.

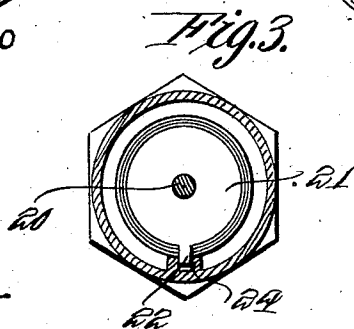
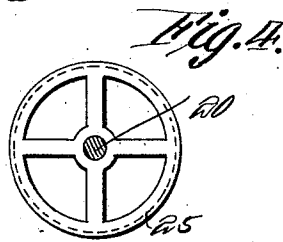
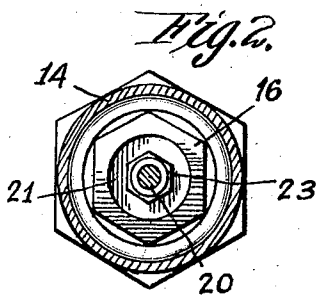
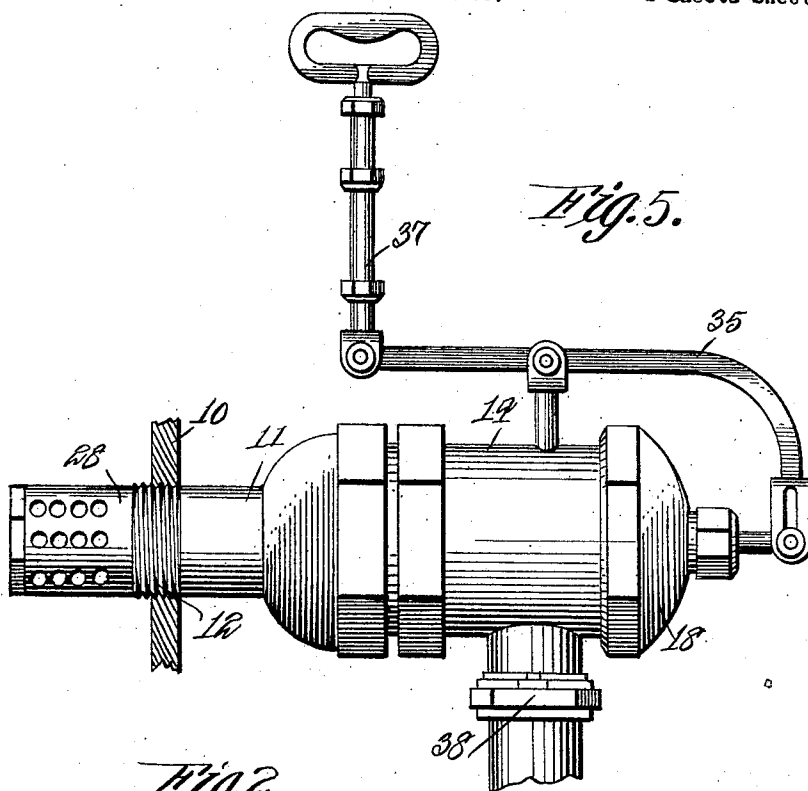
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

RAYBON C. WOODHAM, OF MONTGOMERY, ALABAMA.

SAFETY BLOW-OFF VALVE.

Application filed September 16, 1922. Serial No. 588,727.

To all whom it may concern:

Be it known that I, RAYBON C. WOODHAM, a citizen of the United States, residing at Montgomery, in the county of Montgomery and State of Alabama, have invented certain new and useful Improvements in a Safety Blow-Off Valve, of which the following is a specification.

My invention relates to improvements in safety blowoff valves.

An object of my invention is to provide a safety blowoff valve wherein, if the operating mechanism therefor becomes broken, the steam is positively prohibited from escaping, thereby preventing burning or otherwise injuring persons who might be standing nearby.

A still further object of my invention is to provide a safety blowoff valve wherein if the engine had a side rod get loose and break, the operating mechanism for my safety blow-off valve, there would be no loss of water and steam and the engineer could make the necessary repairs and proceed without blocking the traffic which would be the case if the old form of valve was used.

A still further object of my invention is to provide a safety blowoff valve that will not allow the steam to escape when the engine is wrecked thereby insuring the safety of the lives of the engineer and others against burning by the steam.

A still further object of my invention is to provide a safety blowoff valve which may be easily opened when desired and that is strong, durable, simple and inexpensive in construction and that is well adapted to the use for which it is designed.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings, wherein like numerals are employed to designate like parts throughout the same,

Figure 1 is a longitudinal section through the valve structure,

Figure 2 is a section taken on line 2—2 in Fig. 1, looking in the direction of the arrow,

Figure 3 is a section taken on line 3—3 of Fig. 1, looking in the direction of the arrow,

Figure 4 is a detail view of the valve stem guide yoke used in conjunction with my invention,

Figure 5 is a side elevation of apparatus embodying my invention, and

Figure 6 is an end elevation of the cage member.

In the drawings, wherein for the purpose of illustration is shown the preferred embodiment of my invention, the numeral 10 designates the boiler wall which is provided with a threaded opening adapted to receive the body portion 11 which is of hollow cylindrical formation provided adjacent one end with the threads 3, while the other end thereof is provided with a hollow semi-spherical extension 13 having internal threads adjacent its end for receiving the casing member 14 which is provided with internal threads 15 intermediate its ends for receiving the valve seat 16, which is preferably provided with hexagonal faces 17 as is clearly shown in Fig. 2 of the drawing, so that an ordinary wrench may be used to remove the valve seat when it is necessary. A head 18 is threadedly mounted on the end of the casing member 14 being provided with a centrally located aperture for receiving the bushing 19 through which the rod 20 slides to project interiorly of the casing member 14.

A valve 21 provided with a downwardly extending pin 22 is movable within the portion of the casing member 14 adjacent the extension 13 and is adapted to engage with the valve seat 16. This valve 21 is mounted on the valve rod 20 and held securely in place by means of jam nuts 23. The downwardly extending pin 22 of the valve 21 is adapted to be received between the spaced upwardly extending flanges 24 formed in the casing member 14. It will thus be seen that by reason of the pin 22 slidably mounted between the upstanding flanges 24, the valve 21 will positively be guarded against lateral movement and swaying from its original seat by whirling sprays of water and steam blowing against it from the boiler when in use. A valve stem yoke guide 25 is mounted within the body member 13 by means of the screw threads 26. The valve stem rod 20 extends through the valve 21, the valve stem yoke guide 25 and projects through the body 11. One end of a coil spring 27 bears against the guide yoke 25 while the other end bears against the jam nut 23, such spring being wound about the valve stem 20 and tends to hold the valve 21 in a closed position upon the seat 16.

A cage sleeve 28 has one end provided with threads 29 for engaging the threaded reduced end of the body 11 and its other end closed by a nut shaped wall 30 so that
 5 a wrench may engage therewith, the end of the body portion 11 being formed with a valve seat 31 engageable by a ball check valve 32 confined within said cage sleeve 28. This cage sleeve and its end wall is formed
 10 with a plurality of apertures 33 so that the water and steam may be passed therethrough whereas foreign matter will be prevented from passing therethrough such as filings or other light foreign substances which are usually found in a boiler. When the check
 15 valve 32 is seated upon the valve seat 31 it is in engagement with the terminal end of the stem 20.

An operating mechanism is provided for the valve stem rod 20 comprising a fulcrumed support 34 upon which is mounted a lever 35 pivoted intermediate its ends and curved downwardly so as to pivotally engage the rod 20 as at 36. A suitable handle
 20 member 37 is engaged with the other end of the lever 35 whereby it may be fulcrumed for pushing inwardly upon the rod 20 thereby unseating the valve 21 which also moves the stem so as to unseat the check valve 32
 25 and allow the boiler steam to escape. The numeral 38 designates a suitable water outlet.

It will thus be seen that I have described a safety blow off valve, that will positively
 35 not allow steam or water to escape, except when the handle 37 is operated. In other words the steam pressure within the boiler will at all times hold the check valve 32 in engagement with its seat 31 until the
 40 rod 20 which is operated by the lever 35, unseats the ball 32 thereby allowing the steam and water to escape through the body 11, the casing 14 and then through the pipe 38. It will further be noted that if the
 45 steam pressure gets so low that the pressure will not be sufficient to hold the ball 32 in its seat 31, the valve 21 will prevent the steam from escaping and as the pressure within the boiler increases, the ball 32 will
 50 be caused to seat in the seat 31. It is to be noted that the valve stem guide yoke 25 is so constructed that the steam and water passing through the body 11 is unhindered but it does form an adequate support for the
 55 valve stem 20. My invention is a decided improvement over the other forms of blow off valves now in use, in that it positively prevents the escape of steam if the operat-

ing mechanism should become broken as the pressure within the boiler will at all times
 60 hold the ball valve 32 in its seat 31 and the necessary repairs required to fix the operating mechanism may be made without the least possibility of the engineer or other persons becoming injured.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred embodiment of the same, and that various changes in the shape, size and arrangement of parts may
 70 be resorted to, without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, I claim:—

1. A device of the class described including a valve body portion having a pair of valve seats therein, a disk valve engageable with one of the valve seats, a ball check valve engageable with the other valve seat,
 80 a cage member for receiving the ball valve when in open position disposed adjacent its valve seat, a stem projecting through the first mentioned valve engageable with the ball valve to move the ball valve from its
 85 seat when the disk valve is moved from its seat, and means for holding the disk valve normally in engagement with its seat, and means for moving the disk valve from its seat when
 90 desired.

2. In combination, a body portion having a valve seat adjacent one end, and an enlarged extension at its other end and a valve casing member threadedly mounted in said enlarged extension and provided with a valve
 95 seat intermediate its ends, a disk valve engageable with said latter valve seat, means for moving the disk valve from its seat, a stem projecting through the disk valve and through said body portion, a valve stem
 100 guide threadedly mounted in said body portion in its enlarged extension, said stem projecting through said guide, a spring disposed about the stem between the guide and the disk valve, a cage on the end of said body
 105 portion adjacent its valve seat, a check valve mounted in the cage and adapted to be moved from its seat by the stem when the disk valve is moved from its seat in the manner and for the purpose specified.

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

RAYBON C. WOODHAM.

Witnesses:

W. B. HODGES,
 CLAXTON C. DE LANEY.