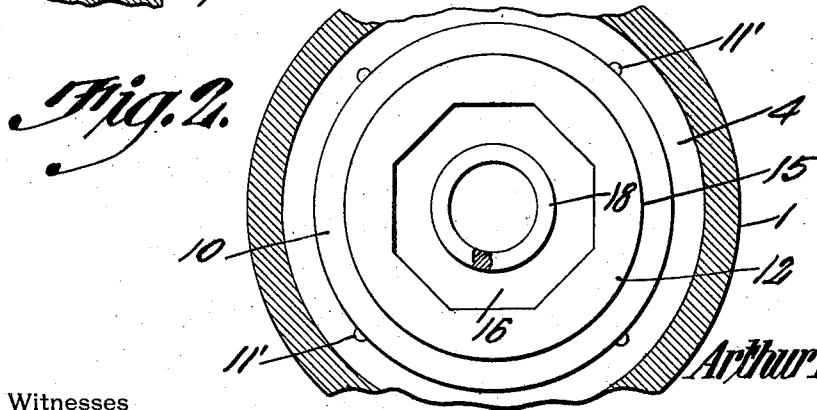
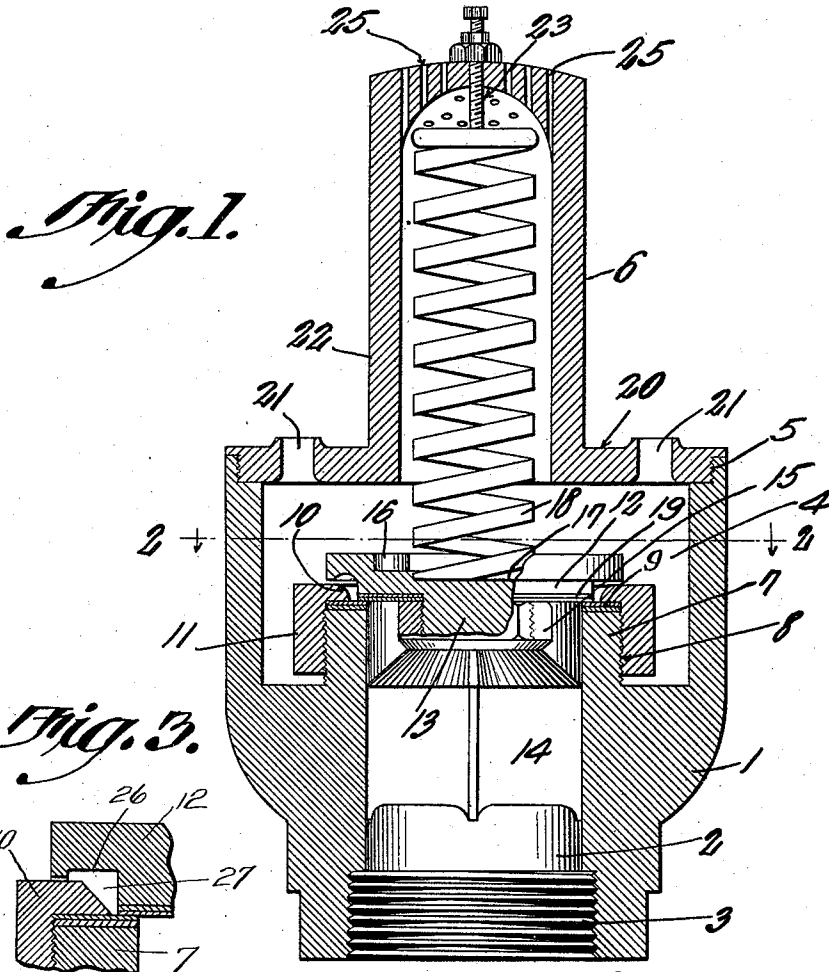


Patented May 20, 1913.



Witnesses

J. R. Torrey
S. Wilcox.

Inventor

by

Cashnow & Co.
Attorneys

UNITED STATES PATENT OFFICE.

ARTHUR L. DELVAUX, OF CHAMPAIGN, ILLINOIS.

VALVE.

1,062,144.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ARTHUR L. DELVAUX, a citizen of the United States, residing at Champaign, in the county of Champaign and State of Illinois, have invented a new and useful Valve, of which the following is a specification.

This invention relates to safety valves and more particularly to one adapted to be used upon locomotives.

An object of the present invention is to provide a safety valve having a flat valve seat and head with detachable seat plates secured thereto.

A further object is to provide a valve which may be easily and readily taken apart and the valve seat and head plates renewed.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the detail of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, can be made within the scope of what is claimed, without departing from the spirit of the invention.

In the drawings accompanying this specification and forming a part thereof, the preferable form of my invention is illustrated, in which:—

Figure 1 is a cross sectional view in elevation of my improved valve. Fig. 2 is a top view thereof in which the valve cap has been removed. Fig. 3 is an enlarged fragmental view showing the manner in which a cushion is formed between the valve and the valve seat.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 1 is a circular valve casing provided with a cylindrical bore 2 extending partially there-through, the said bore 2 being internally threaded as at 3, at its lower extremity. The upper portion of the casing is enlarged and comprises a valve chamber 4 which is an enlarged extension of the cylindrical bore 2. The upper portion of the valve casing 1 is provided with the internal threads 5 to which is secured the valve cap, generally designated by the numeral 6.

The flat shoulder between the cylindrical bores 2 and 4 is provided with an annular rim 7 extending upwardly therefrom which rim is externally threaded as at 8 and upon

the upper surface of the said rim 7 are disposed a plurality of detachable seat plates 9 securely held in place by means of the ring 10 which ring 10 is provided with the depending cylindrical flange 11 threadedly engaging the rim 7. In order that the ring 10 and flange 11 depending therefrom which constitutes means for holding the valve seat plates 9 in position, may be easily and readily unscrewed from the rim 7, the projecting lugs 11' are formed on the outer periphery thereof and are such as may be readily engaged by the use of a spanner wrench.

The valve head 12 is composed of the two cylindrical plates of different diameters and projecting from the lower plate or portion of the valve head is the cylindrical valve stem 13 which is externally threaded and to which is secured the upper portion of the spider 14. The spider 14 is of the usual construction and is adapted to slidably engage the side walls of the bore 2 and insure the proper seating of the valve head. Disposed between the spider 14 and the valve head 12 are a plurality of valve head plates 19 which are detachably secured therebetween. In order that the spider 14 may be removed from the valve stem 13 to thereby allow for the renewing of the valve head plate 19 the upper portion of the spider is provided with a wrench engageable surface as at 15. In order that the valve head may be engaged by a wrench a hexagonal recess 16 is provided, it being understood that the said recess may be of any wrench-engageable configuration. A second recess 17 is provided in the valve head in which is positioned the lower extremity of the valve spring 18.

The valve cap, generally designated by the numeral 6 comprises the circular plate 20 which threadedly engages the upper portion of the valve casing 1 and is provided with the apertures 21 therein. A housing 22 is provided and may be of any length to accommodate the valve spring 18. The upper portion of the housing is provided with the apertures 25 therein and preferably located centrally of the upper portion of the said housing is the bolt 23 or similar means whereby the length of the spring 18 may be varied by which it will be understood that the pressure at which the valve head will be raised from the seat may be adjusted.

From the foregoing it will be understood that the threads 3 of the casing 1 are de-

signed to engage a pipe or suitable threaded member communicating with the boiler or pressure supply. Pressure will pass readily through the cylindrical bore 2 beyond the spider 14 and act directly against the valve head tending to raise the latter. By reason of the spring 18, the pressure at which the valve head will raise and allow for the escape for the pressure may be adjusted.

From the foregoing it will be apparent that I have devised a valve of simple construction and one which is adapted to be readily taken apart and in which the valve seat and head plates are flat and which will therefore be subject to little or no wear. Furthermore should the valve and head plate become corroded or faulty and it is desired to replace the same, this may be accomplished by removing the cap 6 and the spring 18 therewith. The valve head and spider may be readily withdrawn from the valve casing and by means of two wrenches the spider may be removed from the valve head and the valve head plates 19 removed and new ones substituted therefor. By a removal of the ring 10 and depending flange 11, the valve seat plates 9 may be removed and new ones substituted therefor. From which it will be apparent that the valve may be easily maintained in an operative condition and furthermore by reason of the flat surfaces of the valve head and seat there will be no likelihood of the valve becoming wedged or jammed as often happens with safety valves provided with conical seats, this being an important item and one which will be readily appreciated by those familiar with the art.

As more clearly illustrated in Fig. 3, the valve head 12 is provided with the recess 26 therein and the ring 10 is also cut away with the result that a cushion chamber 27 is formed immediately before valve seat with the result that any and all knocking is eliminated. Furthermore by the forming of the recess in the valve head as shown, when the valve opens to a slight extent the steam or fluid escaping therethrough will strike against the valve head with the result that the said valve will be thrown wide open and the pressure thereby immediately relieved.

Having thus fully disclosed my invention, what I claim to be new and original with me is:—

1. A valve comprising a casing provided with a cylindrical chamber therein, and a cylindrical bore communicating therewith, a valve seat secured within said chamber, a plurality of flat valve seat plates positioned thereon, means for holding said valve seat plates in position, a valve head, a valve stem secured thereto, a spider secured to said valve stem and slidably engaging the side walls of said cylindrical bore, a plurality of valve head plates disposed between said spi-

der and said valve head, a cap secured to said casing at the upper extremity thereof, resilient means disposed between said valve head and said cap adapted to maintain said valve head in a seated position.

2. In a valve of the character described the combination of, a casing provided with a valve chamber provided with a cylindrical bore communicating therewith, an upstanding valve seat disposed within said chamber, a plurality of valve seat plates secured upon the upper extremity thereof, means for holding said valve seat plates in position thereon, a valve head disposed within said cylindrical chamber, a valve stem depending therefrom, a spider slidably engaging the side walls of said cylindrical bore secured to said valve stem, a plurality of valve head plates disposed between and held in position by said valve head and said spider, said valve head provided with a wrench-engageable recess therein, said spider provided with a wrench-engageable surface thereon, a cap secured to the upper extremity of said valve casing, a compression spring disposed between said cap and said valve head.

3. In a valve of the character described, a casing provided with a cylindrical valve chamber therein and with a cylindrical bore communicating therewith, a valve seat disposed within said cylindrical chamber and externally threaded, a plurality of valve seat plates positioned upon the upper surface of the valve seat, a ring provided with a depending flange extending therefrom threadedly engaging said valve seat and adapted to secure said valve seat plates in position, a valve head, a valve stem extending therefrom, said valve stem externally threaded, a spider slidably engaging the side walls of said cylindrical bore and threadedly engaging said valve stem, a plurality of valve head plates secured between said valve head and said spider, said valve head and said spider provided with wrench engaging surfaces, a cap threadedly engaging the upper portion of said valve casing, a compression spring disposed within said cap and contacting with said valve head, means secured to the upper portion of said cap to vary the compression of said spring.

4. A pressure safety valve comprising a casing, said casing provided with a cylindrical valve chamber therein, and with a cylindrical bore communicating therewith, an upstanding rim disposed within said valve chamber, said rim provided with external threads thereon, a plurality of valve seat plates positioned upon the upper extremity of said rim, a ring provided with a depending cylindrical flange therefrom threadedly engaging said rim and adapted to secure said valve seat plates in position, a valve head comprising two cylindrical plates of different diameters, the upper of

said plates provided with a wrench engaging recess therein, and provided with a nut engaging and spring engaging recess therein, said lower plate provided with a threaded valve stem extending therefrom, a spider threadedly secured to said valve stem and slidably engaging the side walls of said cylindrical bore, a plurality of valve head plates disposed between said spider and said lower plate of said valve head, a valve cap threadedly engaging the upper portion of said valve casing and provided with a spring housing extending upwardly therefrom, a spring disposed within said housing and contacting with said valve head, means to vary the compression of said spring, said cap provided with apertures therein. 15

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

ARTHUR L. DELVAUX.

Witnesses:

JAMES S. HANSHAN,

ROBERT NELSON THURMOND.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."