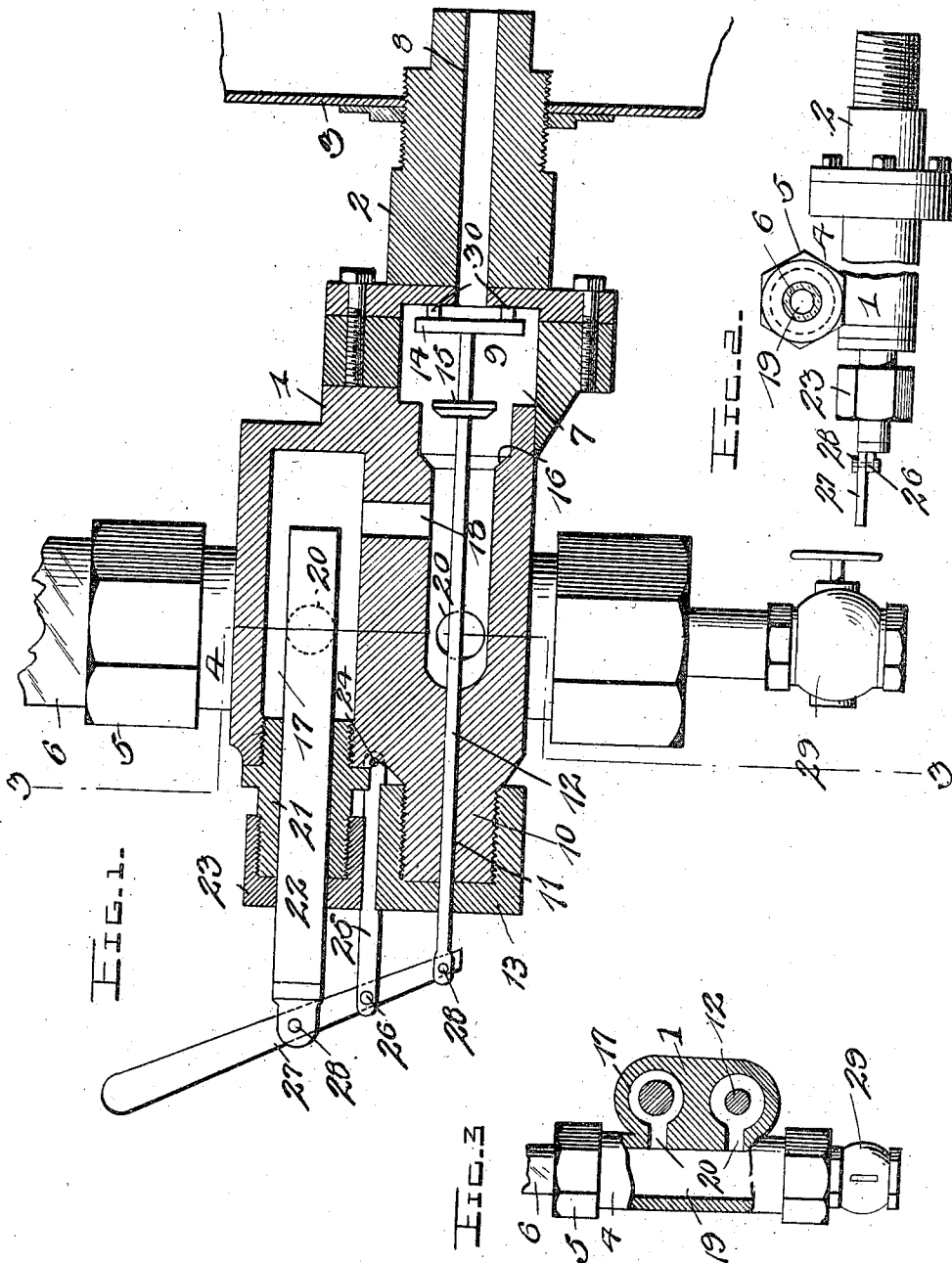


C. F. MATTINGLY & M. L. GRAVES.  
 AUTOMATIC SAFETY VALVE FOR WATER GAGES.  
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Patented Apr. 29, 1913.



Witnesses

Chas. L. Griesbauer. By  
 A. J. Lind

Inventors  
 C. F. Mattingly  
 and  
 M. L. Graves,

Watson E. Coleman,  
 Attorney

# UNITED STATES PATENT OFFICE.

CHARLES F. MATTINGLY AND MARTIN L. GRAVES, OF CAPE GIRARDEAU, MISSOURI.

AUTOMATIC SAFETY-VALVE FOR WATER-GAGES.

1,060,472.

Specification of Letters Patent.

Patented Apr. 29, 1913.

Application filed November 12, 1912. Serial No. 731,007.

*To all whom it may concern:*

Be it known that we, CHARLES F. MATTINGLY and MARTIN L. GRAVES, citizens of the United States, residing at Cape Girardeau, in the county of Cape Girardeau and State of Missouri, have invented certain new and useful Improvements in Automatic Safety-Valves for Water-Gages, of which the following is a specification, reference being had to the accompanying drawings.

The present invention apprehends new and useful improvements in an automatic safety valve and relates primarily to a valve of this character which is used in conjunction with water gages whereby the ports connecting the boiler with the water gage will be automatically closed should the gage glass become broken to prevent the escape of the steam and water of that class of invention as illustrated in the co-pending application filed September 3rd, 1912, Serial No. 718,361.

The invention has for its primary object to provide an automatic safety valve for water gages which will be held open by the pressure contained within the boiler, but should the gage glass become broken the pressure within the boiler will automatically close the valve to prevent the escape of the steam and water until a new glass could be substituted therefor.

The invention has for a further object to provide a simple apparatus of this character which will be comparatively inexpensive in the cost to manufacture, strong, durable and reliable when in use and having the parts thereof constructed so that they may be readily assembled and installed and which will require practically no attention to maintain its proper running order.

The invention also aims to generally improve this class of devices to render them commercially desirable.

With the above and other objects in view the invention consists of the novel details of construction, combination, formation and arrangement of parts as will be hereinafter more fully described, claimed and illustrated in the appended drawings in which—

Figure 1 illustrates a vertical section of the improved automatic water gage valve arranged at the lower end of the water gage glass, a portion of it being shown, Fig. 2 is a plan view of the same, and Fig. 3 is a

vertical transverse section taken on the line 55 3—3 of Fig. 1.

Reference now being had to the accompanying drawings wherein like and corresponding parts are designated by similar reference characters throughout the several views, the numeral 1 indicates the water gage valve casing used in conjunction with this invention said casing being detachably secured to a coupling or nipple 2, which is adapted to be adjustably mounted within the boiler 3 in any preferred or well known manner. Extending laterally from one side of the casing 1 adjacent the medial portion thereof and formed integral therewith is provided a vertical extension 4 which is connected at its upper extremity by means of a coupling 5 of any preferred or well known construction to the lower end of an ordinary water gage glass 6.

While in the accompanying drawings we have illustrated the automatic valve to be used in conjunction with the lower end of the gage glass 6 it is of course, understood that a similar construction will connect the upper end of the gage glass with the boiler, but which is not shown or hereinafter described.

The casing 1 is provided with a longitudinally extending chamber 7, and the nipple 2 has a longitudinal passage 8 formed therein affording communication between the boiler and said chamber, said passage opening into an enlargement 9 of the chamber 7. The purpose of this enlarged end portion of the chamber 7 will more fully hereinafter appear.

A projection 10 is formed integral with one end of the casing 1 and has an opening 11 formed therein which is in communication with the chamber 7 and slidably mounted within the opening 11 is a valve stem 12 which projects within the chamber 7 and its enlargement 9. A packing gland 13 is secured to the extension 10 to insure a tight connection between the opening 11 and the valve stem 12. The inner end of this valve stem 12 is provided with a circular disk 14 which is adapted to operate within the chamber enlargement 9 and also secured upon the said stem adjacent the inner end thereof is a valve disk 15 being adapted to rest upon a valve seat 16 formed within the casing when in a closed position.

Formed within the upper end of the casing 1 is a chamber 17 being in communication with the chamber 7 by means of a vertically extending passageway 18, and the said chambers 7 and 17 are in communication with a vertically extending opening 19 formed within the extension 4 by means of transversely extending passageways 20. A threaded plug 21 is adjustably mounted within the outer end of the chamber 17 and forms a guide for a cylindrical rod 22 which extends therethrough into the chamber 17 as shown and which is of considerably larger diameter than the valve stem 12 for a purpose which will be hereinafter also described. A packing gland 23 is adjustably mounted upon the plug 21 to insure a tight connection between the rod 22 and the chamber 17.

Pivotally connected as at 24 to one side of the casing 1 is a link 25 to which is fulcrumed as at 26 an operating lever 27. This operating lever 27 is connected to the rod 22 and the valve stem 12 by means of the pivot pins 28.

The lower extremity of the extension 4 has secured thereto the usual drain cock 29.

It is obvious from the foregoing description taken in connection with the accompanying drawings that upon pulling outwardly upon the lever 27 the valve 15 will be removed from its valve seat and the pressure disk 14 will rest upon the lug extensions 30 extending into the chamber enlargement 9 thereby permitting the water contained within the boiler to enter into the passageway 8 around the pressure disk 14, into the chambers 7 and 17 and thence through the passageways 20 to the gage glass whereby the exact amount of water contained within the boiler will be properly registered as is common. When the steam has been generated within the boiler it will obviously exert a pressure through the gage glass 6 into the chambers 17 and 7 respectively and as the rod 22 is of considerably greater diameter than the valve stem 12 it will exert a strong pressure upon the rod 22 which forces the lever 27 outwardly and holds the valve upon the valve stem 12 away from its seat thereby permitting the water contained within the boiler to enter through the valve casing into the gage glass. Should the gage glass 6 become broken the pressure within the chambers 7 and 17 will be relieved and the water and steam contained within the boiler will flow through the passageway 8 and exert a pressure upon the disk 14 thereby forcing the valve 15 to its valve seat and cutting off all communication between the boiler and the atmosphere.

Should any dirt or other foreign matter accumulate upon the valve seat 16 the pin connecting the valve stem 12 with the lever 27 may be removed and the valve stem ro-

tated by any suitable means thereby grinding the dirt or other foreign matter upon the valve seat by means of the valve.

What we claim is:

1. In a device of the character described, 70  
a valve casing having communicating chambers, a supply connection between said casing and a boiler to supply water from the boiler to one of the chambers, a gage glass 75  
mounted upon said casing, said casing having ports connecting the respective chambers with the gage glass, a valve arranged within said latter chamber to close communication between the supply connection through said chamber to the other of said 80  
chambers, and means arranged within the other chamber and connected to said valve to hold the valve in its open position by the pressure within the boiler.

2. In a device of the character described, 85  
a valve casing having a chamber and a valve seat in said chamber, a nipple to connect the casing to a boiler, said nipple being provided with a passage opening into the chamber to supply water thereto from the boiler, 90  
a gage glass mounted upon the casing, said casing also having a port connecting said chamber with the gage glass, a valve arranged in said chamber to engage upon said seat, and close communication between the 95  
passage in the nipple through said port to the gage glass, and means acted upon by the boiler pressure and connected to said valve to normally hold the valve in its open position.

3. In a device of the character described, 100  
a valve casing having communicating chambers, a gage glass connected to said casing, said casing being further provided with ports connecting the respective chambers 105  
with said gage glass, a valve mounted within one of said chambers, means movably mounted in the other chamber, and an operating connection between said latter means and the valve whereby the pressure contained within the boiler acting against said 110  
means will hold the valve in its open position.

4. In a device of the character described, 115  
a valve casing having communicating chambers, a gage glass mounted upon said casing, said casing being further provided with ports connecting the respective chambers 120  
with said gage glass, a valve mounted within one of said chambers, a supply connection between said chamber and the boiler, a rod slidably mounted in the other chamber, and a connecting element between the rod and said valve whereby the pressure contained in the boiler acting against said 125  
rod will hold the valve in its open position.

5. In a device of the character described, 130  
a casing having communicating chambers, a valve stem slidably mounted in one of said chambers, a supply connection between said

chamber and the boiler, a rod slidably mounted in the other chamber, a valve on said stem, said rod being of greater diameter than the valve stem, connecting  
5 means between the rod and the valve stem, a gage glass mounted upon said casing, said casing being provided with ports connecting the gage glass with the respective chambers, substantially as and for the purpose specified.  
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6. In a device of the character described, a casing having communicating chambers, a valve stem slidably mounted in said casing and extending into one of the chambers,  
15 a valve on said stem, a disk fixed to the inner end of the valve stem, an extension integrally formed with the casing and having a longitudinal bore, said casing being pro-

vided with ports connecting said bore with the respective chambers, a gage glass mounted upon said extension, a rod slidably mounted in the other of the casing chambers, and a lever pivotally mounted upon said casing and connected upon opposite sides of its fulcrum with said rod and the  
25 valve stem respectively, substantially as and for the purpose specified.

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

CHARLES F. MATTINGLY.  
MARTIN L. GRAVES.

Witnesses:

P. MATTINGLY,  
P. ROBERT.

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