J. P. JURGENSEN.

STEAM BOILER SAFETY DEVICE.

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983,144.

Patented Jan. 31, 1911.

Fig. 1.

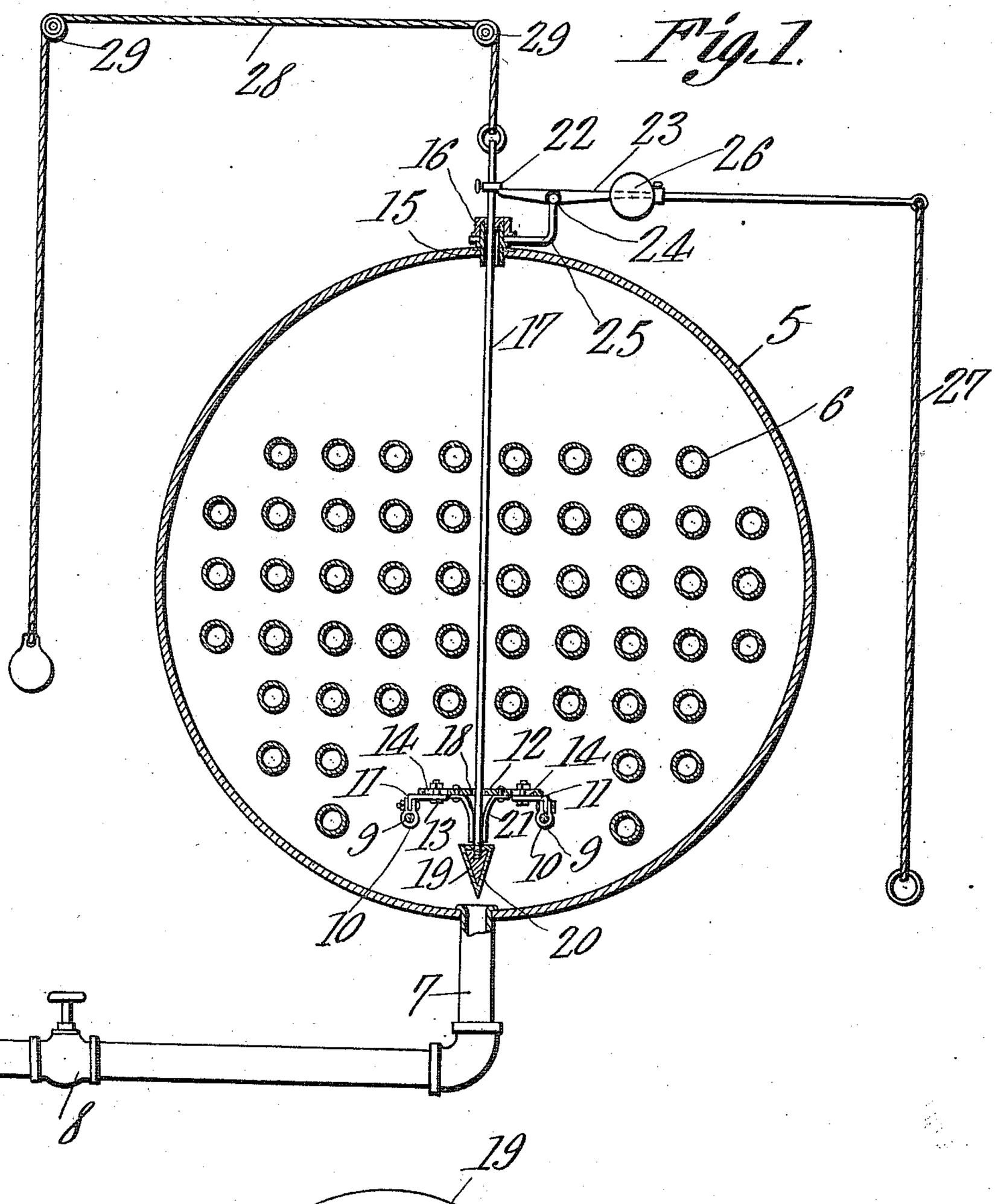

Fig. 2.

Witnesses

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JORGEN P. JURGENSEN, OF TARKIO, MISSOURI.

STEAM-BOILER SAFETY DEVICE.

983,144. Specification of Letters Patent. Patented Jan. 31, 1911.

Application filed June 15, 1910. Serial No. 567,055.

To all whom it may concern:

Be it known that I, JORGEN P. JURGENSEN, a citizen of the United States, residing at Tarkio, in the county of Atchison and State of Missouri, have invented a new and useful Steam-Boiler Safety Device, of which the following is a specification.

This invention is designed to provide a means for automatically shutting off water and steam in a boiler in case of bursting of the blow off pipe or valve; and it is the object of the invention to provide a safety device of this kind which is simple in construction and reliable in operation, it being devoid of all complicated parts, and therefore not liable to get out of order.

A further object of the invention is to provide an improved form of valve which shuts tightly, a soft facing being provided, and the valve being so shaped that it will be driven tightly into the blow off pipe to shut off the same from the boiler.

With these and other objects in view as will appear when the nature of the invention is better understood, the same consists in a novel construction and arrangement of parts to be hereinafter described and claimed, reference being had to the accompanying drawing, in which drawing—

Figure 1 is a transverse section of a boiler showing the application of the invention, the latter being shown partly in section. Fig. 2 is a sectional detail of the valve hereinafter referred to.

Referring more particularly to the drawing, 5 denotes the shell of a tubular boiler, the tubes being indicated at 6. To the bottom of the boiler is connected the usual blow off pipe 7 having a valve 8. As already stated, it is the object of the invention to provide a means for shutting off the boiler from the blow off pipe in case the latter or its valve should burst.

At 9 are indicated two truss rods usually found in boilers of the kind stated. These rods are utilized to support a portion of the safety device. To the truss rods are secured clamps 10 carrying angle irons 11. These angle irons have one of their flanges extending horizontally, and to said flanges is secured a plate 12 by means of bolts 13 passing through said parts, the plate having slots 14 through which the bolts pass, these slots being provided for the purpose of adjustment.

To the top portion of the boiler is applied a nipple 15 provided with a stuffing box 16. A rod 17 passes through the stuffing box and the nipple, and enters the boiler, said rod passing loosely through an opening 18 in the plate 12 and extending a short distance below said plate. The lower end of the rod carries a valve which is adapted to enter the inlet end of the blow off pipe 7 to shut off the same from the boiler. This valve is a conical plug 19 which is faced with a layer 20 of lead or other soft metal. The apex of the plug points downwardly, and the plug is so located that it enters the inlet end of the blow off pipe when the rod 17 is moved downwardly. The connection between the rod and the valve plug is made by screwing the rod into the valve as shown, or in any other suitable manner.

To the bottom of the plate 12 are secured flat springs 21, which are so arranged as to have their free ends engage that portion of the rod 17 which is located between the plate and the valve. The springs engage the rod on opposite sides thereof and serve to hold the same in elevated position, in which position the valve is out of the blow off pipe. The springs also serve to scrape off any scale or incrustations which might collect on the rod.

The upper end of the rod 17 extends a suitable distance from the top of the boiler, and to said end is made fast by a set screw, or in any other suitable manner, a collar 22. The under side of this collar is engageable by one end of a lever 23 fulcrumed intermediate its ends, as indicated at 24 to a bracket 25 carried by the nipple 15. On the other end of the lever is adjustably mounted a weight 26, and to said end is also connected a line 27 extending to any point within convenient reach of the boiler attendant. To the upper end of the rod 17 is also connected a line 28 which passes over guide pulleys 29 and is carried to any suitable point within easy and convenient reach of the boiler attendant.

Fig. 1 shows the normal position of the parts. The valve is open, it being held in this position by the engagement of the weighted lever 23 with the collar 22, as well as by the springs 21. In case of bursting of the blow off pipe or its valve, the pressure in the boiler drives the valve carried

by the stem 17 down into the inlet end of the blow off pipe, in which it will be tightly wedged by reason of its shape, as well as by reason of the soft facing 20. If the water and steam is not entirely shut off, the valve can be driven farther into the blow off pipe from the top of the boiler until a complete shut off is effected. The line 28 is provided for the purpose of holding the valve open in case it is desired to blow off the boiler. It is necessary to do this when blowing off the boiler as otherwise the valve would seat and shut off the blow off pipe from the boiler as before. The line 27 may also be used for the same purpose.

The preferred embodiment of the invention has been herein described, but it will be evident that various minor changes in the structural details, not involving a departure from the invention, may be resorted to. If the invention is applied to a boiler without the stay rods 9, any other suitable supporting means for the plate 12 may be provided.

What is claimed is:

The combination with a steam boiler and its blow off pipe; of a valve located in the boiler adjacent to the inlet end of the blow off pipe, and adapted to enter the same to shut off the boiler therefrom, a stem carrying said valve, an apertured plate mounted in the boiler through which the stem passes, springs carried by the plate and engaging the stem on opposite sides, and automatically releasable means for holding the valve in open position.

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

JORGEN P. JURGENSEN.

Witnesses:

J. B. SHAUM,

E. H. SWIFT.