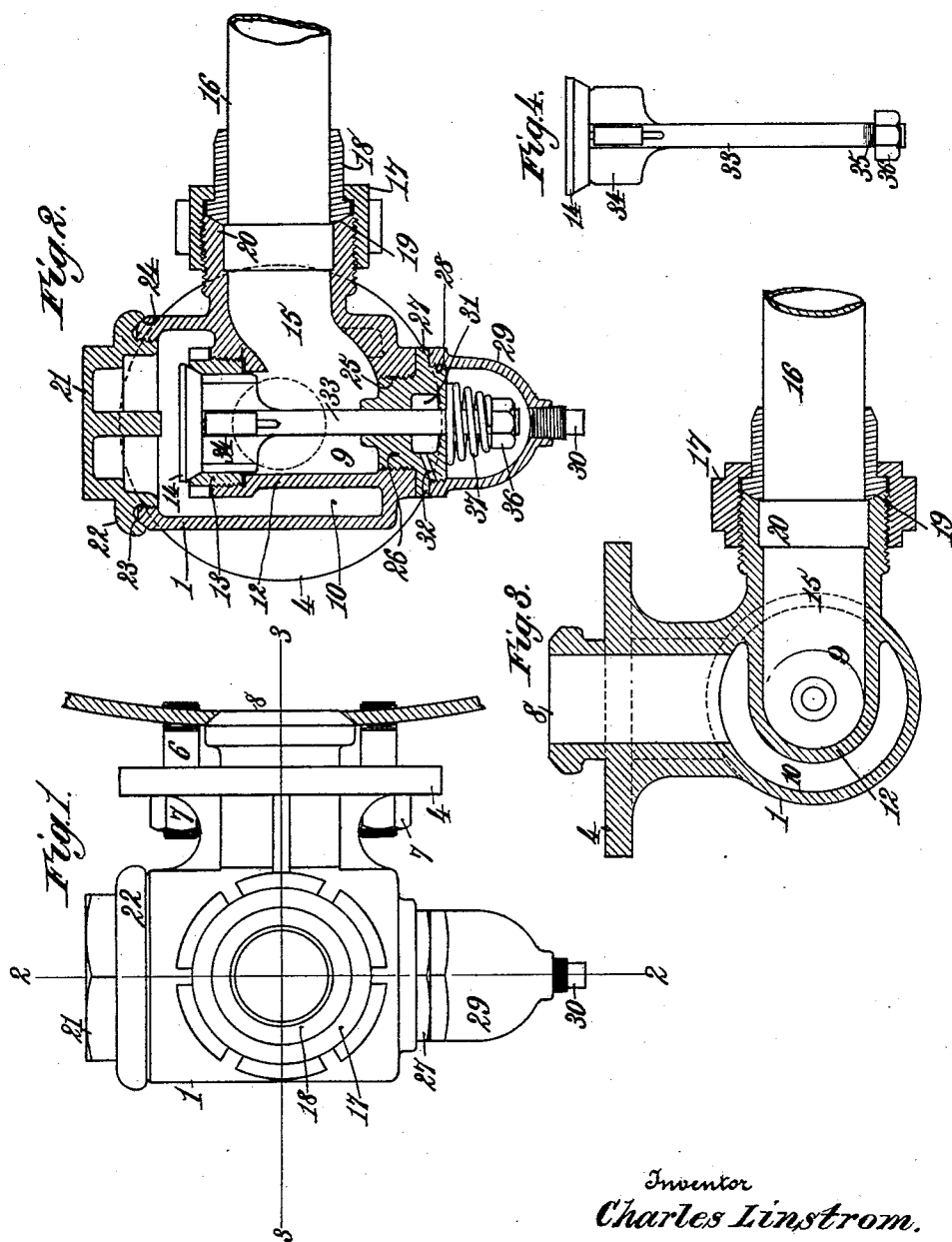


(No Model.)

C. LINSTROM.
BOILER CHECK VALVE.

No. 573,788.

Patented Dec. 22, 1896.



Witnesses
Maur H. Hume.
Robert Conitt.

Inventor
Charles Linstrom.

By James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

CHARLES LINSTROM, OF VICKSBURG, MISSISSIPPI.

BOILER CHECK-VALVE.

SPECIFICATION forming part of Letters Patent No. 573,788, dated December 22, 1896.

Application filed April 21, 1896. Serial No. 588,508. (No model.)

To all whom it may concern:

Be it known that I, CHARLES LINSTROM, a citizen of the United States, residing at Vicksburg, in the county of Warren and State of Mississippi, have invented new and useful Improvements in Boiler Check-Valves, of which the following is a specification.

This invention has for its object to provide a new and improved check-valve particularly designed for preventing steam-pressure from forcing water from the steam-boiler of a locomotive or other engine, but useful for many other purposes not necessary to specifically mention.

To accomplish this object, my invention consists in the features of construction and in the combination or arrangement of parts hereinafter described and claimed, reference being made to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved boiler check-valve, a portion of the boiler to which the valve is attached being in section. Fig. 2 is a vertical sectional view taken on the line 2 2, Fig. 1. Fig. 3 is a horizontal sectional view taken on the line 3 3, Fig. 1. Fig. 4 is a detail elevation of the valve disk, plate, or plug and its guide-stem; and Fig. 5 is a detail view of the spiral spring for reseating the valve disk, plate, or plug.

In order to enable those skilled in the art to make and use my invention, I will now describe the same in detail, referring to the drawings, wherein—

The numeral 1 indicates the valve-casing, having at one side a base-plate 4, by which the valve is secured to the shell 5 of a boiler through the medium of suitable attaching-bolts 6 and nuts 7.

The base-plate is provided with a suitable outlet 8, which opens into the boiler, so that the feed-water passing through the check-valve will flow into the boiler when the injector or the feed-pump is working.

The check-valve casing is constructed interiorly with a water-chamber 9 and a steam-chamber 10, which is cut off from the water-chamber by the dividing partition or web 12, which is constructed at its upper end portion with a screw-threaded socket, into which is screwed the ordinary brass ring 13, which constitutes the valve-seat for the disk, plate, or

plug of the check-valve 14. The brass ring is in the form of an ordinary wing-nut, so that it can readily be removed and replaced; but obviously the construction of the valve-seat may be variously modified without altering my invention.

The water-chamber 9 of the check-valve connects by an elbow-shaped passage 15 with the feed-water pipe 16, which connects in the ordinary manner with an injector or with a feed-pump. (Not necessary to illustrate.) The connection of the feed-pipe 16 with the valve-casing is preferably through the medium of a union coupling or nut 17 and a sleeve 18, having a ball-joint connection, as at 19, with the inlet 20 of the valve-casing.

The upper end of the valve-casing is constructed with an internal screw-thread, with which engages an external screw-thread on a valve-case cover 21, having a marginal flange 22, constructed at its under side with a somewhat conical bearing 23, which fits a conical bearing 24, formed on the upper end of the valve-casing and arranged at an angle of about thirty degrees to the axis of said casing, all in such manner that by screwing the valve-case cover into position the wedging action of the bearings 23 and 24 produces a perfectly steam-tight joint, while at the same time the joint is elastic, due to a slight elasticity of the flange 22 of the valve-case cover, whereby the cover will nicely and perfectly adapt itself to the valve-casing.

The lower end of the valve-casing is constructed with an internal screw-thread, into which is screwed an external screw-thread 25 on a guide-thimble 26, having a flange 27, which bears against the lower end of the valve-casing. The guide-thimble is also constructed with an external screw-threaded extension 28 to engage internal screw-threads on a cover-cap 29, having at its center a relief-plug or air-cock 30 of any desired or suitable construction. The guide-thimble is also provided internally with a chamber 31, from which a narrow channel 32 leads to the exterior of the thimble, so that the pressure of steam or water in the chamber can escape when the cover-cap 29 is removed by unscrewing it from the thimble.

The guide-thimble is constructed with a central vertical bore, through which extends

a cylindrical or other suitably-shaped guide-stem 33, which depends from the check-valve disk, plate, or plug 14.

5 The check-valve proper, as here shown, is composed of a winged body 34, having a beveled or inclined disk or plate seating against a beveled or inclined valve-seat, but this valve proper may be a disk, plate, or plug of any ordinary form, shape, or configuration 10 which will suit the conditions required.

The guide-stem 33 is preferably formed integral with the valve disk, plate, or plug, but obviously it may be a separate part detachably connected therewith.

15 The lower end of the guide-stem is constructed with an external screw-thread 35, on which is screwed an adjusting-nut 36, and between this adjusting-nut and the guide-thimble 26 is arranged a spiral or other suitable spring 37, which acts to positively and promptly reseat the valve disk, plate, or plug 20 whenever it has been opened or unseated by the working of the injector or feed-pump.

The stem of the valve disk, plate, or plug 25 is guided perpendicularly or longitudinally by the guide-thimble 26, and consequently the valve disk, plate, or plug is accurately centered and seated, and, since the guide-stem extends to the exterior of the valve-casing, it will be obvious that the outer end of 30 the stem is accessible for the purpose of adjusting the tension of the spring or for manipulating or operating the stem and valve

disk, plate, or plug should the latter adhere or stick to its seat and fail to properly act 35 when the injector or feed-pump is working.

It will of course be understood that the cover-cap 29 is detached or removed from the valve-casing whenever it is desired to gain access to the outer end of the guide-stem of 40 the check-valve disk, plate, or plug.

Having thus described my invention, what I claim is—

The combination with a check-valve casing, of a check-valve disk or plug having a 45 guide-stem extending to and operative from the exterior of the valve-casing, a guide-thimble inserted into the valve-casing and provided with an interior chamber and an escape-channel leading therefrom, a spring ar- 50 ranged on the guide-stem and bearing against the guide-thimble, an adjusting-nut mounted on the guide-stem and serving to adjust the tension of the spring, and a removable and replaceable cover-cap covering the outer end 55 of the guide-stem and serving to cover and uncover the said escape-channel of the guide-thimble substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing wit- 60 nesses.

CHARLES LINSTROM.

Witnesses:

W. H. DUPRÉ,
G. B. HARPER.