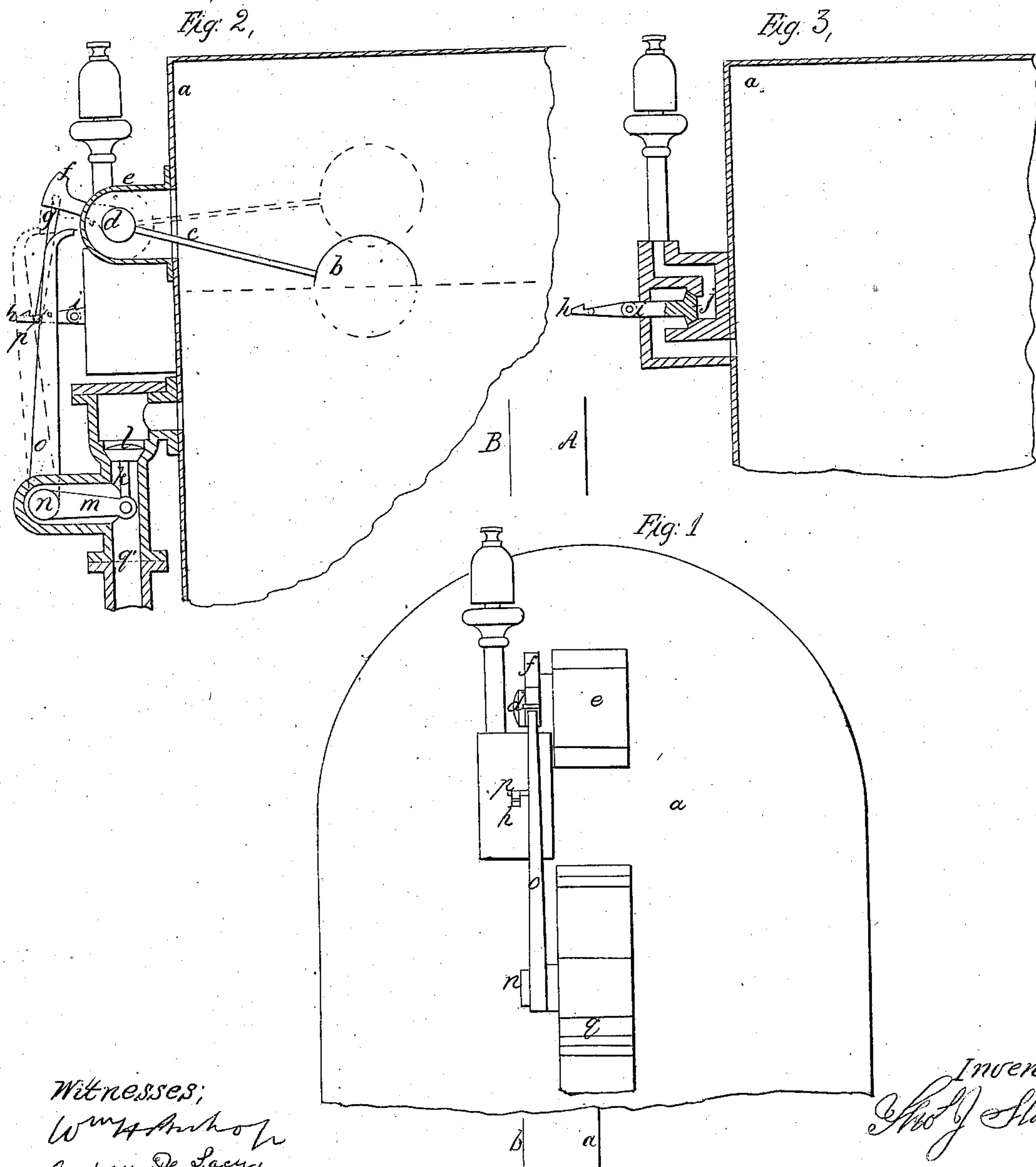


Steam-Boiler Indicator.

N^o 12,835.

Patented May 8, 1855.



Witnesses;
Wmth Anthon
Andrew De Lacy.

Inventor
Thos J Sloan

UNITED STATES PATENT OFFICE.

THOMAS J. SLOAN, OF NEW YORK, N. Y.

APPARATUS FOR REGULATING SUPPLY OF WATER TO STEAM-BOILERS.

Specification of Letters Patent No. 12,835, dated May 8, 1855.

To all whom it may concern:

Be it known that I, THOMAS J. SLOAN, of the city, county, and State of New York, have invented a new and improved apparatus for regulating the supply of water to steam boilers and generators and for giving an alarm in case the water should get too hot in the boiler or generator, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is an end elevation of a steam boiler with my improved apparatus applied; and Figs. 2, and 3, vertical sections taken at the lines A, *a*, and B, *b*, of Fig. 1.

The same letters indicate like parts in all the figures.

In the said apparatus my invention consists in the employment of a float placed inside the boiler, and forming a connection with the outside thereof to indicate the level of water in the boiler, and to make it carry and set a mechanism for giving an alarm so that the said alarm shall then be operated by a mechanism combined therewith receiving motion from the forced current of supply water as it is forced toward the boiler, whereby the whole power required to work the alarm is derived solely from the supply water as a motor, while the float simply performs the offices of indicating the height of water and setting the mechanism that the operating mechanism may perform its office in turn. And I also combine the float inside the boiler to check the motion of the mechanism which permits water to be supplied to the boiler so that when there is sufficient water in the boiler the supply shall be stopped, the float simply indicating the level and setting a stop to arrest the supply.

In the accompanying drawings *a*, represents the head of a steam boiler of any desired construction, and *b*, a float within the boiler and attached to an arm *c*, that passes through an aperture in the head of the boiler, and attached to a rocker *d*, outside the boiler, the aperture through which the arm passes being sufficiently large to permit the arm to play freely as the float follows the level of the water. The escape of steam through the aperture is prevented by a surrounding cap or casing *e*, secured to the boiler in which the rocker *d*, is mounted, one end of the rocker passing through to the outside of the casing, and the joint thereof

being suitably packed to prevent the escape of steam, although I prefer to make this joint of an india rubber sleeve attached to the casing and to the rocker as described in Letters Patent granted to me on the 16th day of May 1854. The outer end of the rocker is provided with an arm *f*, which vibrates as the level of the water in the boiler rises and falls. And this arm is connected by a link *g*, with a catch *h*, jointed to the stem *i*, of a steam whistle valve *j*, for giving an alarm when the valve is drawn out.

To the lower end of the stem *k*, of the check valve *l*, of the supply pump is jointed an arm *m*, of a rock shaft *n*, the outer end of which carries another arm *o*, sufficiently long to strike against the arm of the float rocker *d*, when the float is so high as to indicate a sufficiency of water in the boiler, but when the float is below the high water mark then the arm *o*, is forced to vibrate. The said arm *o*, carries a pin *p*, which engages the catch *h*, of the whistle valve when elevated to the required position by the sinking of the float below low water mark, so that the vibration of the said arm shall open the valve to blow the whistle and give the required alarm to indicate that the water has descended to a dangerous level.

The check valve *l*, of the supply pump is placed as usual in the supply pipe *q*, through which the water is forced to the boiler, the valve being interposed between the boiler and the supply pump, and hence the valve is opened by the force of the current of supply water, and closed by the return stroke of the pump piston to prevent the supply water from returning. From this it follows that if the valve be kept open by any means the water forced in by the advancing stroke of the piston of the supply pump instead of remaining in the boiler, will return to the pump by the back stroke of the piston. And it will be equally obvious that if the valve be free to work the intermediate strokes of the piston of the supply pump will impart an intermittent motion to the valve, and thence to the rocker connected therewith, and to the arm *o*, so that as the rocker and arm *o*, vibrate, if the float is carried down by the water descending below the low water mark, the pin on the rocker arm *o*, will strike against the shoulder of the catch *h*, and open the whistle valve to give an alarm. But when the float

is carried up above the high water mark then the sector arm on the rocker of the float will cross the line of vibratory motion of the arm *o*, and thus stop its vibration 5 which will keep the valve open and permit the water which is forced in at every stroke of the piston of the pump to follow the piston back and run out of the boiler again, until the float sinks and indicates that the 10 water has fallen below the high water mark which carries the sector above the line of vibration of the arm *o*, that it may be free to vibrate when the check valve is again set in motion by the supply pump. In this way 15 the float is simply employed to indicate the level of water in the boiler and to determine the position of a sector or other equivalent stop to stop the motions of the valve which regulates the supply of water to the boiler, 20 and also to set the mechanism so that the alarm shall be given by power derived from the current of supply water from the supply pump.

I have above described the mode of construction and arrangement which I believe 25 to be the simplest and most practical for the application of my invention; but I do not wish to be understood as limiting myself to such special construction and arrangement

so long as the same results are produced by 30 equivalent means, as for instance instead of the check valve the required motion may be taken from the induction valve of the supply pump this being one of the modes contemplated although others may be sub- 35 stituted.

What I claim as my invention and desire to secure by Letters Patent is—

1. The employment of the feed water before it enters the boiler as a motor for giving the alarm when the water is too low in a steam boiler or generator, substantially as described, in combination with the float inside the boiler for indicating the level of water and setting the mechanism that the 45 alarm may be operated by the mechanism receiving motion from the feed water, substantially as specified.

2. And I also claim stopping the supply of water to the boiler by the employment 50 of a stop to check the working of the valve, substantially as specified, but this I only claim when the said stop is simply set by the float within the boiler—as set forth.

THOS. J. SLOAN.

Witnesses:

WM. H. BISHOP,

ANDREW DE LACY.