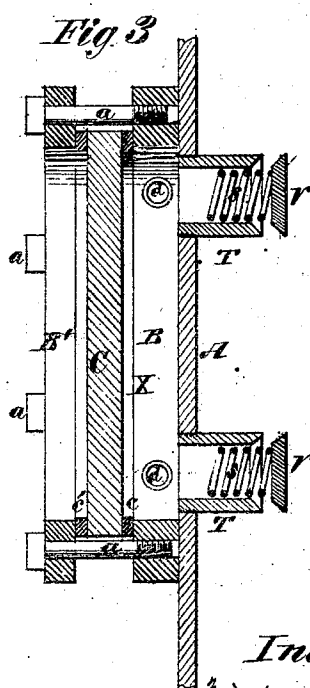
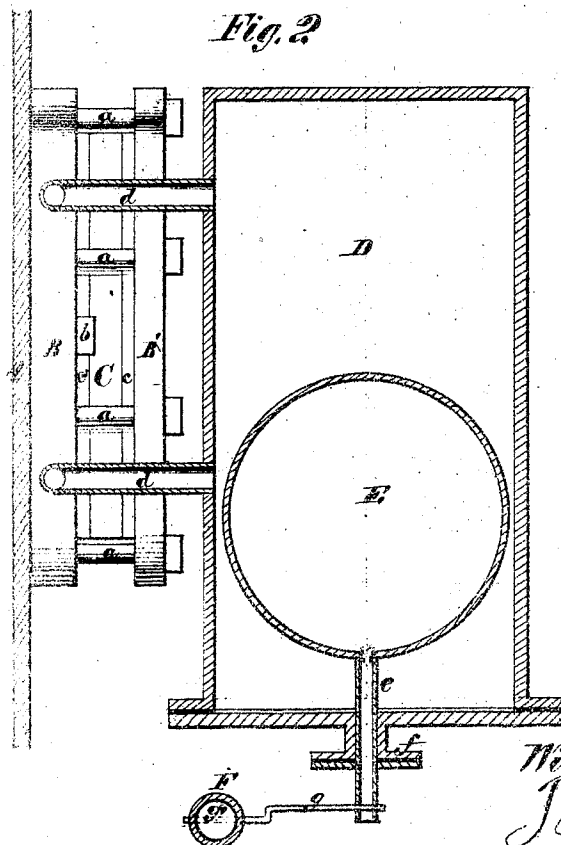
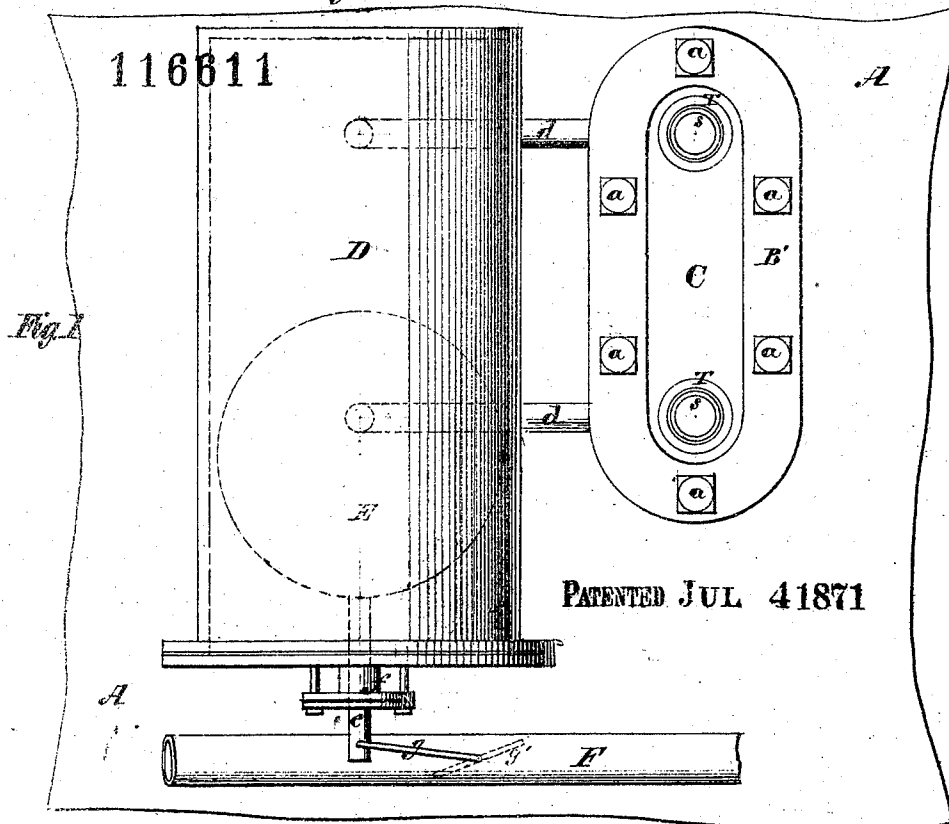


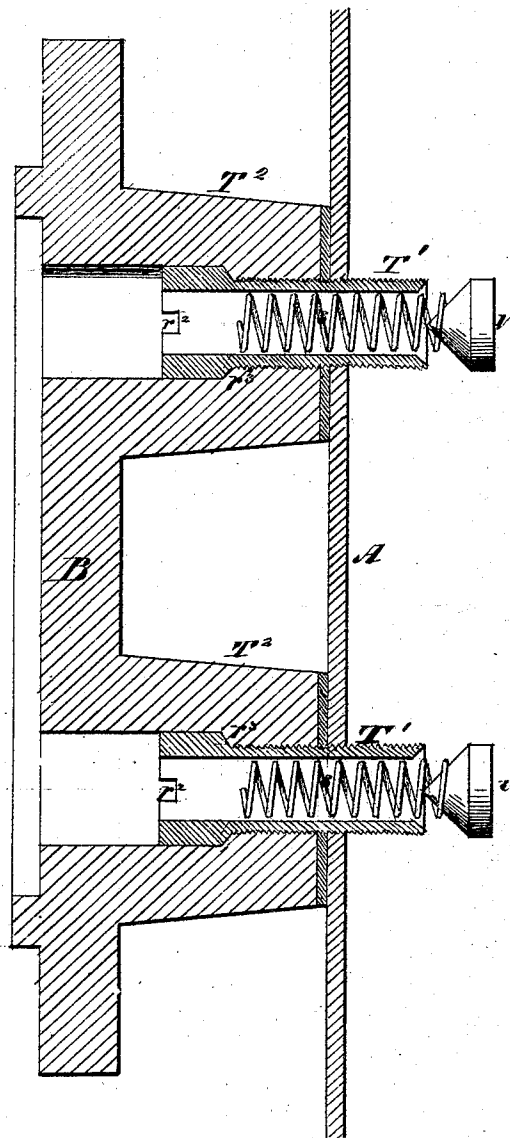
Plate 1. *Mirabeau N. Lynn's Boiler Feeder & Water Indicator.*



Inventor
Mirabeau N. Lynn
by
Witnesses: Maria J. Lynn & J. H. Campbell.
J. H. Campbell.

Mirabeau N. Lynn's Boiler Feeder & Water Indicator
Plate 2

Fig 4



Witnesses

A. J. Campbell.
J. N. Campbell

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Mirabeau N. Lynn
by
Marion K. Smith & Son

UNITED STATES PATENT OFFICE.

MIRABEAU N. LYNN, OF NEW ALBANY, INDIANA, ASSIGNOR TO HIMSELF AND EDWARD H. MANN, OF SAME PLACE.

IMPROVEMENT IN WATER-GAUGES WITH FEEDER ATTACHMENT

Specification forming part of Letters Patent No. 115,611, dated July 4, 1871.

To all whom it may concern:

Be it known that I, MIRABEAU N. LYNN, of New Albany, in the county of Floyd and State of Indiana, have invented certain Improvements which are applicable to Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1, plate 1, is a front view of portion of the shell of a steam-boiler, showing the feeder and indicator applied to it. Fig. 2, plate 1, is a view partly in section of the feeder and indicator. Fig. 3, plate 1, is a vertical section through the indicator. Fig. 4, plate 2, is a modification of the mode of fastening the back plate.

Similar letters of reference indicate corresponding parts in the several figures.

The nature of my invention consists: 1st, in the combination of a glass window with a steam-boiler shell for exposing to view the interior of the boiler and for indicating the height of water therein, the same consisting in confining the glass plate or window between two strong metal frames and in packing the glass between India rubber, thereby making a steam-tight joint, and at the same time protecting the glass against injurious concussions. 2d, in the combination, with a boiler-shell, of an automatic feed-water attachment, which is in communication with the space inclosed by the glass indicator or gauge, its frame and the boiler-plate, and also with tubes which lead into the boiler, and which are provided with valves opening inward, so that should the window be broken from any cause the said valves will shut and prevent the escape of steam and water. 3d, in connecting the window-frame to the boiler-plate by means of hollow screw-bolts, which form communications between the interior of the window-chamber, and which also afford seats for safety-valves which are used to prevent the escape of water should said window be broken, as will be hereinafter explained.

To enable others skilled in the art to understand my invention, I will explain its construction and operation.

In the accompanying drawing, plate 1, A represents a portion of the shell of a steam-boiler. At suitable points two holes are cut through this shell, one above the other, and tubes T T (see

Fig. 3) are screwed into them. The inner ends of these tubes are valve-seated for two valves, V V, which are connected to said tubes by means of springs *s s*. These springs, under ordinary circumstances, keep the valves V V free from their seats, and allow steam and water from the boiler to pass freely through the said tubes T into chamber X. In this way there will be a communication between the chamber X and the steam-boiler as long as valves T remain open; but should the glass plate C be broken the outward pressure of steam and water in the boiler will close said valves and thus cut off all communication between the interior of the boiler and the chamber X. The chamber X is formed in front by a glass plate, C; behind by the boiler-plate A, and it is surrounded by a cast-iron frame, B. The glass plate C will expose to view the height of water in chamber X, which height will correspond precisely with the level of water in the interior of the boiler, thus affording a very accurate gauge or water-indicator. The plate C is confined between two strong metal frames, B B, (with India-rubber packing *c c'* interposed,) by means of bolts *a a*. The surfaces of the frames against which the rubber packing impinges are placed smooth and level, so that, when the packing *c c'* and plate C are clamped between said frames, a perfectly steam-tight joint is produced which will remain secure for years. By thus employing two frames, B B', I am enabled to properly secure the frame B against the boiler-plate A in a permanent and proper manner, and after I apply to said frame the glass window and packing.

I do not claim, broadly, glass windows applied to steam-boiler shells; nor do I claim under this petition, broadly, the use of rubber packing in combination with such windows.

Before proceeding further I will state that while joints can be made between iron and iron by means of the well-known cements, it is not practicable to make good joints between iron and glass with such cements; hence my combined clamping-frames and rubber gaskets are necessary to make a durable and perfect joint.

The frame B is perforated at one side as shown in Figs. 2 and 3, and from these perforations pipes *d d* extend to a cylinder, D, and form communications between this cylinder and the chamber X. Within the cylinder D is a spherical

float, E, from which a stem, *e*, descends through a stuffing-box, *f*, and has a cranked valve-stem, *g*, applied to its external end. If the float E is made of metal the stem *e* will be hollow to allow the escape of any water which permeates through its walls. The cranked valve-stem *e* is applied to a butterfly-valve, *g'*, in a pipe, F, which leads to the feed-pump of the boiler operated by the engine. By properly adjusting the valve-stem *g* and the parts which are connected therewith, it will be seen that the rise and descent of the water in the boiler and cylinder D, acting on the float E, will cause the boiler to be supplied with water from pipe E, and will maintain the water-level at proper height in the boiler. The stem *e* may be made so small that its friction in the stuffing-box *f* will be of no material consequence.

On plate 2 I have represented the best mode known to me for securing the frame B to a boiler-shell to prevent leakage. In the case of Figs. 1, 2, and 3, the back of frame B is open, and difficulty would be experienced in keeping the joint between this frame and the boiler steam-tight, but the plan shown by Fig. 4 will effectually obviate this difficulty. The frame B, of Fig. 4, is cast with tapering hollow bosses T² T² on its back, which are centrally bored out so as to leave beveled annular shoulders at *r*³ *r*³, between which and the extremities of the bosses the bore is screw-threaded. Into and through these bosses tubular screws T¹ T¹ are inserted, having notched heads *r*² *r*² formed on them. Each screw is valve-seated in that end which extends into the boiler to receive a cone-valve, V, which is connected to the interior of the screw by a helical spring, *s*. The spring will hold the valve away from its seat unless the glass plate C should be broken, in which event the valve will instantly close against its seat, as before ex-

plained. Thus constructed, the ends of the bosses T² T² are adjusted against a boiler-plate which has been tapped, and the screws T¹ T¹ are forced through the holes and set up tightly. Suitable packing will be introduced between the ends of the bosses and the boiler-plate, and also between the heads on the screws and the beveled shoulders *r*³ *r*³, which will make steam-tight joints.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the metal plates B, B, glass plate C, elastic packing *c c*, and hollow-valved plugs T extending into the boiler, all constructed to form a water-gauge with a chamber, X, and inlet-passages from the boiler, substantially in the manner and for the purposes described.

2. The plate B, having formed on it perforated screw-tapped and shouldered bosses T², in combination with tubular valve-seated screws T¹ and their valves V, substantially as described.

3. The automatic feed-water attachment, consisting of a cylinder, D, float E, stem *e*, crank-stem *g*, and valve *g'*, in combination with pipes *d*, communicating with the boiler through a chamber, X, having a glass face, C, substantially as described.

4. The hollow plugs T, with spring-valves applied at the back of the chamber X and opposite a glass plate, C, said tubes with valves being located within the boiler when the gauge is applied, substantially as and for the purpose described.

MIRABEAU N. LYNN.

Witnesses:

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D. R. SCOTT.