

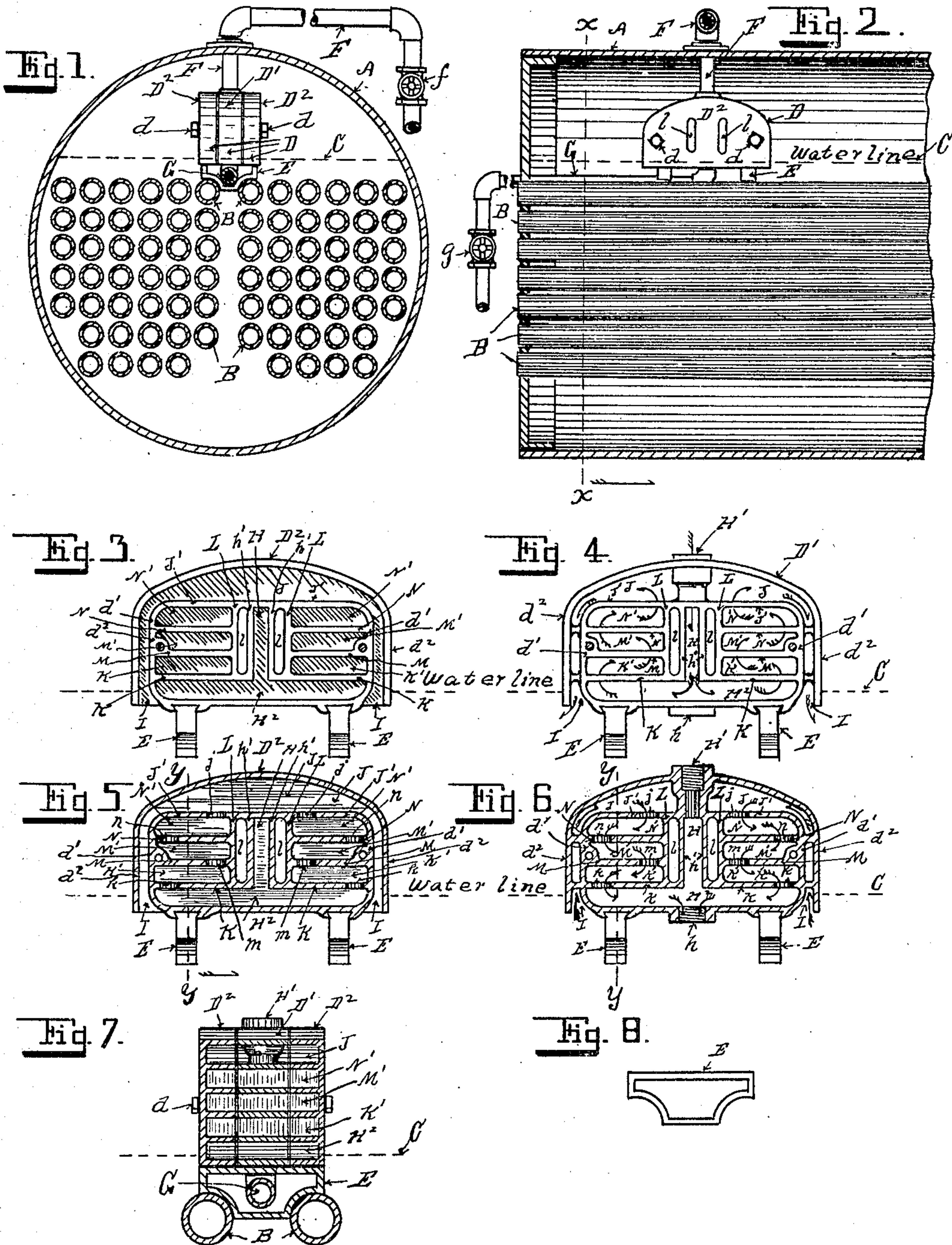
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J. M. LYNCH.

FEED WATER DISTRIBUTING PAN MECHANISM.

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Witnesses.

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FEED-WATER DISTRIBUTING-PAN MECHANISM.

No. 872,299.

Specification of Letters Patent.

Patented Nov. 26, 1907.

Application filed July 29, 1907. Serial No. 386,115.

To all whom it may concern:

Be it known that I, JOHN M. LYNCH, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Feed-Water Distributing-Pan Mechanism; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, forming part of this specification.

This invention relates to feed-water distributing-pan mechanism for steam boilers.

The objects of this invention are to so construct a feed-water pan that it may be inclosed within a steam boiler, receive the feed-water, heat it, and distribute it when so heated over a comparatively large area of the water in the boiler and thereby not produce any undue contraction in any part of the boiler due to the introduction of the feed-water therein, and also that any sediment accumulating therein may be blown off at any time, and when desired it can be quickly taken apart for inspection or repair. These and other features of my invention are hereinafter fully set forth and explained and illustrated in the accompanying drawings, in which:

Figure 1 is a transverse section of a steam boiler on the line $x-x$ in Fig. 2, showing an end view in elevation of one of my improved feed-water distributing-pans therein with its connections. Fig. 2 is a longitudinal vertical section of a portion of a steam boiler, showing a side view in elevation of the feed-water distributing-pan with its connections. Fig. 3 shows a view in elevation of one of the side sections of my device. Fig. 4 is a side view in elevation of one of the intermediate sections of my device, showing arrows indicating the path of traverse of the feed-water through the device. Fig. 5 is a central longitudinal section of the part shown in Fig. 3. Fig. 6 is a central longitudinal section of the part shown in Fig. 4, and also showing arrows indicating the path of traverse of the water through the device when it is being blown off. Fig. 7 is a vertical transverse section of the device on the line $y-y$ in Figs. 5 & 6. Fig. 8 is a side view in elevation of

one of the supporting legs or brackets of my device.

In Figs. 1 & 2 of these drawings A represents the front end of an ordinary tubular boiler; B the tubes therein; C the normal water line; D my improved feed-water distributing-pans; E the legs or brackets resting on the uppermost of the tubes B and supporting the device D; F the feed-water inlet pipe and G the blow-off pipe, as ordinarily assembled in practice.

The pan D, as illustrated in the drawings is constructed of three sections, an intermediate section D' , and two side sections D^2 D^2 secured together by transverse bolts d d . These sections D' and D^2 each contain portions of a central transverse chamber H which connects with a feed-water inlet H' in the top of the central section D' . This chamber H communicates at its lower end with a bottom chamber or pan H^2 , parts of which are found in all of the sections, and which chamber H^2 has a blow-off outlet h in the central section D' . The ends of all of the sections have double walls d' and d^2 between which there are vertical passages I I the lower ends of which open below the normal water-line, on substantially the plane of the base of the chamber H^2 as clearly shown in Figs. 3, 4, 5 & 6. These passages I I communicate at their upper ends with the ends of a chamber J formed in the upper parts of all of the sections. The top of the lowermost chamber of pan H^2 is formed of horizontal plates K which extend from the side walls $h' h'$ of the central chamber H to the walls $d' d'$ at either end of the device, and the bottom of the uppermost chamber J is formed of a horizontal plate J' curved downward at its ends to and joining with the end walls $d' d'$.

Between the plates J' and K there are vertical walls L L, which form one side of transverse openings $l l$ which extend through the outer walls of the side sections D^2 D^2 so as to form open passages therethrough for the steam with which the device is surrounded when in use. Between the walls L L and $d' d'$ there are horizontal plates M and N, the plates K, M, N and J' forming the bottoms of a series of chambers or pans $K' M' N'$ and J one above the other. Through the outer ends of the plates K and N, I make openings k and n , and through the inner ends of the

plates M and J' I make openings *m* and *j*, in all of the sections D' and D² D².

In operation the feed-water enters the chamber H and passes down into the lowermost chamber or pan H² and then flows upwardly in the direction of the arrows in Fig. 4, through the pans K' M' and N' to the uppermost chamber J, from whence it is finally discharged downward through the passages I I whereby the feed-water becomes highly heated before it communicates with the water in the boiler. When however it is desired to blow-off the pans, the cock *f* in the feed-water pipe F is closed and the cock *g* in the blow-off pipe G is opened. This immediately causes water from the boiler to travel upward through the passages I I and downward through the pans in the opposite direction, as indicated by the arrows in Fig. 6 which operates to wash away any sediment deposited on the plates J', N, M, K and the bottom of the lowermost pan H² through the blow-off pipe G.

In the drawings I have shown my device as made of three sections. It is manifest, however, that I can use more or less sections in its construction if desired.

It is also manifest that my device may be modified in many parts of its construction without departing from the spirit of my invention.

Therefore having shown and described my invention so as to enable others to construct and use the same, what I claim as new and desire to secure by Letters Patent is:

1. In a feed-water distributing-pan mechanism adapted to be placed in a boiler, a series of vertical sections forming pans one above the other having openings in alternate ends of the bottoms of all but the lowermost pan and having downward passages leading from the ends of the uppermost pan and extending downwardly below the normal water-line of the boiler, means for securing said vertical sections together, a feed-water pipe extending through the boiler-shell into a passage or chamber leading downwardly through one of said sections to the lowermost pan, and a blow-off pipe extending from the bottom of the lowermost pan out through the shell of the boiler, substantially as set forth.

2. A feed-water distributing-pan mechanism, consisting substantially of a series of vertical sections adapted to be secured together and having horizontal plates therein with openings therethrough and downwardly extending passages from the uppermost pan, which sections when secured together form a series of pans one above the other having a

central passage leading from the feed-water pipe downwardly to the lowermost pan, passages leading upwardly through the pans from the lowermost pan to the uppermost pan and from the uppermost pan downward past the ends of the intermediate pans, substantially as set forth.

3. A feed-water distributing-pan mechanism, consisting substantially of vertical longitudinal sections adapted to be secured together, horizontal pan bottom sections having openings therein and vertical central passage and end passage wall sections in each of said sections, and a feed-water pipe connection leading to said central passage, whereby water entering from the feed-water pipe passes downward through the central passage into the bottom pan, thence from the outer ends of said bottom pan up through openings in the outer ends of the top thereof into the second pan, thence along that pan to the inner ends thereof, thence through openings in the inner ends of the tops thereof into the third pan, thence along said pan to and upward through openings in the outer ends of the bottoms of the fourth pan; thence along the fourth pan to and upwardly through openings in the inner ends of the bottom of the fifth pan; thence outwardly along the fifth pan to the downward passages at the ends of the pans, and thence downward through said passages to the discharge ends thereof, substantially as set forth.

4. In a feed-water distributing-pan mechanism adapted to be placed in a boiler, a series of vertical sections, each comprising substantially parts of a series of horizontal pans and parts of vertical water passages and one of which has a downward passage therein, means for securing said sections together, a feed-pipe connection in the top of said downward passage, and a blow-off connection in the bottom of said structure, substantially as set forth.

5. In a feed-water distributing-pan mechanism, adapted to be placed in a boiler, a series of vertical sections each comprising substantially parts of a series of horizontal pans, parts of vertical water passages and parts of transverse steam passages, and means for securing said sections together, substantially as set forth.

In testimony whereof I affix my signature, in presence of two witnesses.

JOHN M. LYNCH.

Witnesses:

A. M. STURGEON,
G. A. MORGAN.