

C. H. FELDMANN.
 REMOVABLE WATER HOLDING ARCH PLATE.
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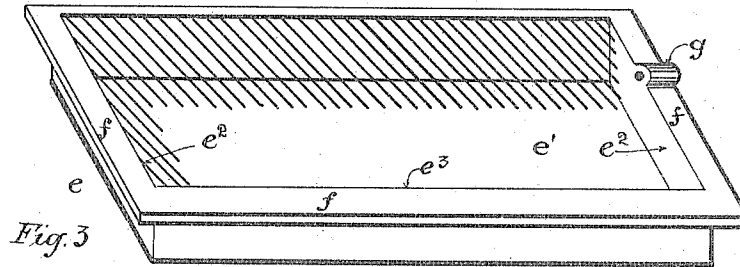


Fig. 3

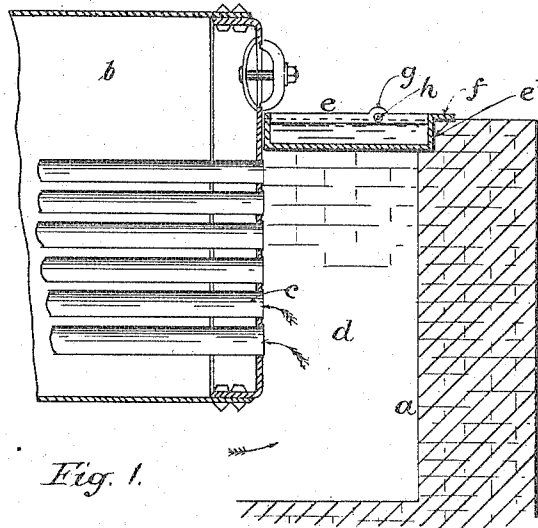


Fig. 1.

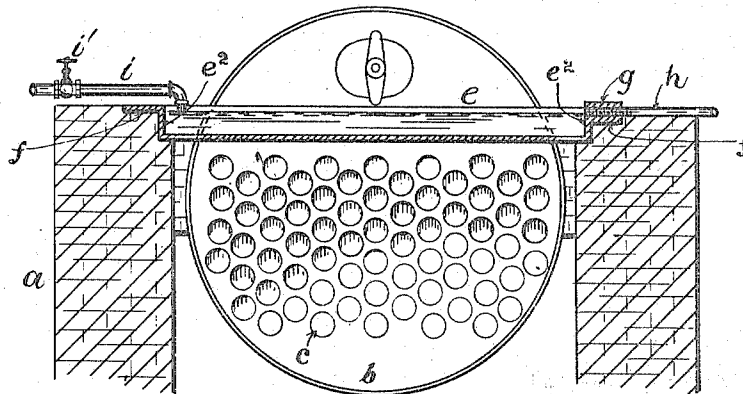


Fig. 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

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REMOVABLE WATER-HOLDING ARCH-PLATE.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CHARLES H. FELDMANN, a citizen of the United States, and a resident of Portland, in the county of Multnomah and State of Oregon, have invented a certain new and useful Improvement in Removable Water-Holding Arch-Plates, of which the following is a specification, reference being had to the accompanying drawings as constituting a part thereof.

My invention relates to boiler-furnaces of the type generally used, at present, in saw-mills, consisting of brick work supporting a horizontal boiler, comprising a plurality of parallel tubes, the rear ends of which open through the rear flue sheet of the boiler into a return flue-chamber, of which the brick work constitutes three sides of the inclosing walls, and the top of such chamber being closed by a removable cast-iron arch-plate. This construction presents a very convenient type, especially because it affords such ready access to the return flue-chamber for cleaning the same, etc. But said arch-plate, by reason of being exposed to intense heat on its under side, and the cooler atmosphere above, frequently cracks and warps out of shape, and then there is danger of fire being caused by reason of the flames and sparks shooting through the cracks and crevices.

My invention, therefore, has for its primary object to overcome this dangerous condition, and I accomplish the same by means of a pan-like water-holding arch-plate adapted to be removably supported over the top of the return flue-chamber, in combination with means causing a constant circulation of cool water through the arch-plate and maintaining the water therein at a constant depth, which means may consist of an inlet pipe, and an overflow pipe provided in one wall of the arch-plate, arranged to discharge the water overflowing a certain level. The flow of water through the pan-like arch-plate is controlled by a valve so as to cause a sufficient volume of cold water to flow into the heated water of such arch-plate, to prevent the evaporation of the water in the arch-plate and maintain the same at a constant level.

The details of construction of my invention are fully illustrated in the drawings, in which:

Figure 1 is a longitudinal section showing a portion of the brick work and the rear end

of the tubular boiler therein supported, together with my pan-like arch-plate closing the top of the return flue-chamber at the rear end of the boiler; Fig. 2 is a cross section through the pan-like arch-plate and through the return flue chamber; and Fig. 3 is a perspective of my pan-like arch-plate. Referring now to the letters in the several views:

a represents the brick work which constitutes the foundation for, and in which the tubular boiler, *b*, is supported. The rear ends of the boiler-tubes, *a*, open through the rear flue sheet into the return flue-chamber *d*. The return flue-chamber, *d*, is inclosed on three sides by the brick work *a*, and the top of the three sides or walls of such brick work are provided with flange-seats in which is removably supported the pan-like arch-plate *e*, a detail of which is shown in perspective in Fig. 3. Said arch-plate consists of a body *e*, of sufficient depth, the two end walls, *e*², and the front wall, *e*³, are provided with supporting flanges *f*, by which the hollow arch-plate is removably supported on the brick work *a* above the boiler flues. The right-hand end of the wall *e*² of the arch-plate is made with an apertured enlargement *g*, having an interior thread in which is secured a discharge pipe *h*, arranged to run out the water within the arch-plate *e*, above a certain depth; and a constant supply of cool water is obtained from an inlet pipe *i*, controlled by a valve *j*.

The utility of my pan-like arch-plate is self evident. By reason of having a constant inflow of cold water from the pipe *i*, connected with the water main, or other source of supply feeding by gravity, the quantity of inflow can be so regulated as to cause a continuous circulation through the arch-plate of cool water maintained at a constant depth and thus prevent the arch-plate becoming over-heated by the hot fire underneath. The arch-plate is thus protected against the ill effects of unequal temperatures and is no longer liable to warp or crack, and in short my improvement renders the arch-plate an effective and dependable closure for the top of the return flue chamber.

By reason of having the arch-plate, *e*, removable, ready access is also provided to the return flue-chamber *d*, and other advantages, which are self-evident, are ob-

tained. Furthermore, the pan-like arch-plate, *e*, is an inexpensive casting, and the closure means provided for the top end of the return flue-chamber, *d*, represent an inexpensive construction as a whole.

I claim:

1. The combination with the rear flue-sheet, of a tubular boiler and a three-sided closure therefor constituting a return flue chamber, of an arch-plate constituting a top closure for such return flue chamber, said arch-plate being of pan-like shape and open at the top, a water inlet pipe arranged to discharge into the pan, and said arch-plate being adapted to discharge the water therein above a predetermined level.

2. The combination with a rear flue-sheet, of a tubular boiler and a three-sided closure therefor constituting a return flue chamber, of an arch-plate constituting a top closure for such return flue chamber, said arch-plate being of pan-like shape and open at the top, a water inlet pipe arranged to discharge into the pan, one wall of the arch-plate being provided with an orifice near the top, and a discharge pipe inserted in said orifice.

3. The combination with the rear flue-sheet, of a tubular boiler and a three-sided closure therefor constituting a return flue chamber, the top of said three-sided closure

being provided with a seat recess, of an arch-plate constituting a top closure for such return flue chamber, said arch-plate being of pan-like shape and open at the top, a flange rim formed exteriorly on the arch-plate by which the latter is seated in said recess of the three-sided inclosure, a water inlet pipe arranged to discharge into the pan, and said arch-plate being adapted to discharge the water therein above a predetermined level.

4. The combination with the rear flue-sheet, of a tubular boiler and a three-sided closure therefor constituting a return flue chamber, the top of said three-sided closure being provided with a seat recess, of an arch-plate constituting a top closure for such return flue chamber, said arch-plate being of pan-like shape and open at the top, a flange rim formed exteriorly on the arch-plate by which the latter is seated in said recess of the three-sided inclosure, a valve-controlled water inlet pipe arranged to discharge into the pan, one wall of the arch-plate being provided with an orifice near the top, and a discharge pipe inserted in said orifice.

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Witnesses:

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