

W. McG. GREAVES.
BOILER INSERT.

APPLICATION FILED MAR. 31, 1911. RENEWED MAY 31, 1912.

1,037,241.

Patented Sept. 3, 1912.

Fig. 1.

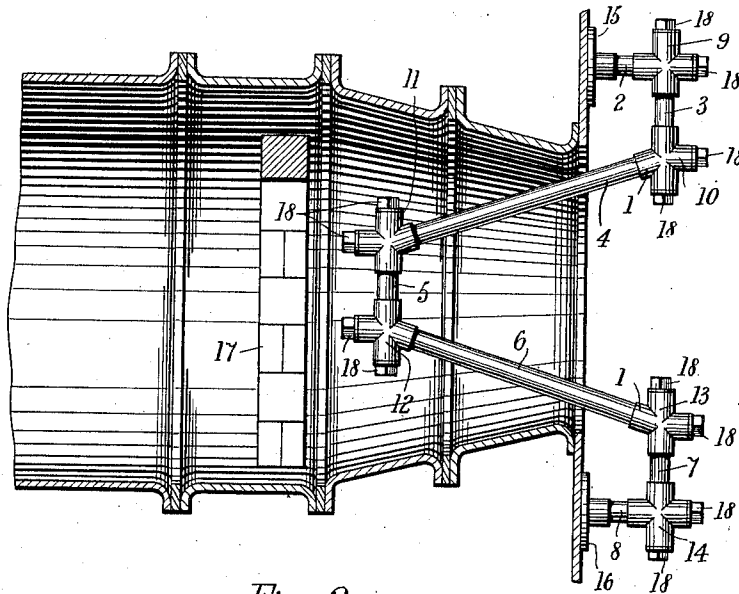
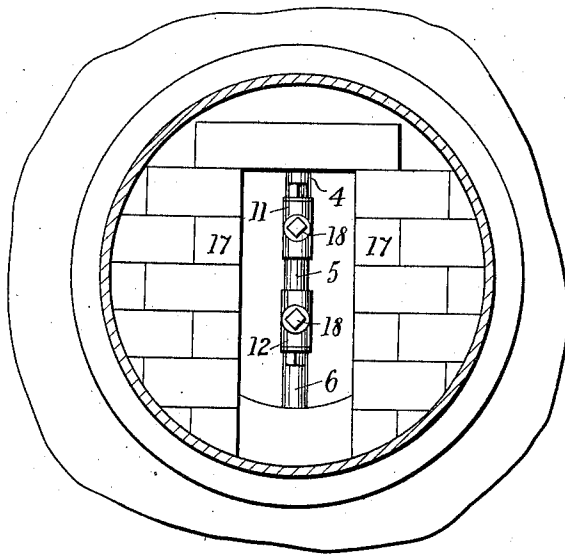


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

WALLACE MCGUFFIN GREAVES, OF MANCHESTER, ENGLAND, ASSIGNOR TO COSMO CONTRACTING SYNDICATE LIMITED, OF LONDON, ENGLAND.

BOILER-INSERT.

1,037,241.

Specification of Letters Patent.

Patented Sept. 3, 1912.

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To all whom it may concern:

Be it known that I, WALLACE MCGUFFIN GREAVES, a subject of the King of the United Kingdom of Great Britain and Ireland, and residing at 1 Northumberland street, Higher Broughton, Manchester, England, have invented a new and useful Improved Boiler-Insert, of which the following is a specification.

10 This invention relates to improvements in steam generators and in particular to improvements in connection with inserts for insertion in the flues of steam generators.

My invention is particularly applicable 15 to steam generators of the Lancashire, the Cornish and like types and also to dry back return fire tube boilers, that is, to the marine type and like types.

20 The object of the invention is to improve the efficiency of such inserts and to improve their construction by making them simpler and more easy to inspect and clean. Further, when this invention is applied to the marine and dry backed boilers, there will be 25 a reduction of the temperature of the gases entering the mouths of the return tubes and thus there will be a great saving through it being no longer necessary to constantly expand and calk said tubes, so that the life of 30 the tubes will be of longer duration.

One of the parts of the invention consists in making an insert substantially in the form of a V the vertex of the same being directed inward, or of a series of such 35 V's placed side by side, and a second part of the invention consists in building up said V's of ordinary boiler tubes and cross T's fitted where necessary with screw plugs.

40 A third part of the invention consists in the provision of a specially shaped deflector for directing the flue gases against the insert.

45 The invention will now be described with reference to the accompanying drawing, in which an insert with a deflector embodying improvements according to the invention are illustrated; Figure 1 being a part sectional longitudinal elevation of the down- 50 take end of a boiler flue fitted with the insert and deflector, and Fig. 2 being a part sectional end elevation of the same viewed from the front end of the flue.

55 The insert 1 which is substantially of the shape of a V placed in a vertical plane with the axis through its vertex situated in a

horizontal position and with its vertex projecting a short distance into the flue is composed of pieces of boiler tube 2, 3, 4, 5, 6, 7 and 8 joined together by the cross T's 9, 10, 11, 12, 13, 14 and connected with the 60 downtake end of the boiler by the flanged unions 15, 16. All those ends of the cross T's which are not united to one of the pieces of boiler tube are stopped up by means of 65 screwed plugs 18 which can be readily unscrewed when desired. In front of the vertex of the V-shaped insert there is preferably arranged in the flue a deflector 17 which is in the form of two lateral walls of 70 fire-brick which do not extend quite up to the top of the flue and which are separated from one another by a central passage through which the flue gases flowing along the sides of the flue are deflected on to the insert. A cross slab of fire-brick preferably 75 interconnects the two walls.

The action of the insert is as follows:— On the flue gases heating the insert the water rises in the same, entering at the 80 inlet below the flue and rising up the inclined shanks 6, 4 of the V and the boiler piece 5 and entering into the boiler above the flue where it produces a current of water directed toward the front end of the boiler.

85 The insert can be readily inspected and cleaned by unscrewing the plugs 18, each of the pieces of boiler tube being able to be opened at both ends by unscrewing the proper plugs.

What I claim as my invention and desire 90 to secure by Letters Patent is:—

1. The combination with a steam generator of the Lancashire, the Cornish, the marine or other type, of an insert for insertion in the flue of the generator, consisting of 95 one or more substantially V-shaped devices comprising straight water tubes and situated in a vertical plane with the vertex projecting into the flue, the upper and lower ends being connected with the downtake end 100 of the boiler above and below the flue respectively.

2. The combination with a steam generator of the Lancashire, the Cornish, the marine or other type, of an insert for 105 insertion in the flue of the generator, consisting of one or more substantially V-shaped devices comprising straight water tubes and cross T's interconnecting said tubes and provided with radially movable members on 110

those branches not interconnecting said tubes, said V-shaped devices being situated in a vertical plane with the vertex projecting into the flue, the upper and lower ends
5 being connected with the downtake end of the boiler above and below the flue respectively.

3. The combination with a steam generator of the Lancashire, the Cornish, the marine or other type, of an insert for insertion
10 in the flue of the generator, consisting of one or more substantially V-shaped devices comprising straight water tubes and situated in a vertical plane with the vertex
15 projecting into the flue, the upper and lower ends being connected with the downtake end of the boiler above and below the flue respectively, and of a deflector consisting of two lateral walls of fire-brick situated inside
20 the flue at a short distance in front of the vertex of the insert.

4. The combination with a steam gener-

ator of the Lancashire, the Cornish, the marine or other type, of an insert for insertion
25 in the flue of the generator, consisting of one or more substantially V-shaped devices comprising straight water tubes and situated in a vertical plane with the vertex projecting into the flue, the upper and lower
30 ends being connected with the downtake end of the boiler above and below the flue respectively, and of a deflector consisting of two lateral walls of fire-brick situated
35 inside the flue at a short distance in front of the vertex of the insert, and of a cross-slab of fire-brick interconnecting said walls.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALLACE MCGUFFIN GREAVES.

Witnesses:

ARTHUR DONN PIATT,
ARCHIBALD PRESTON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
