T. GRUENWALD.

FLUID JET BLOWER FOR THE CLEANING OF THE FLUES OF STEAM BOILERS.

APPLICATION FILED OCT. 23, 1914.

1,185,089.

Patented May 30, 1916.

2 SHEETS—SHEET 1.

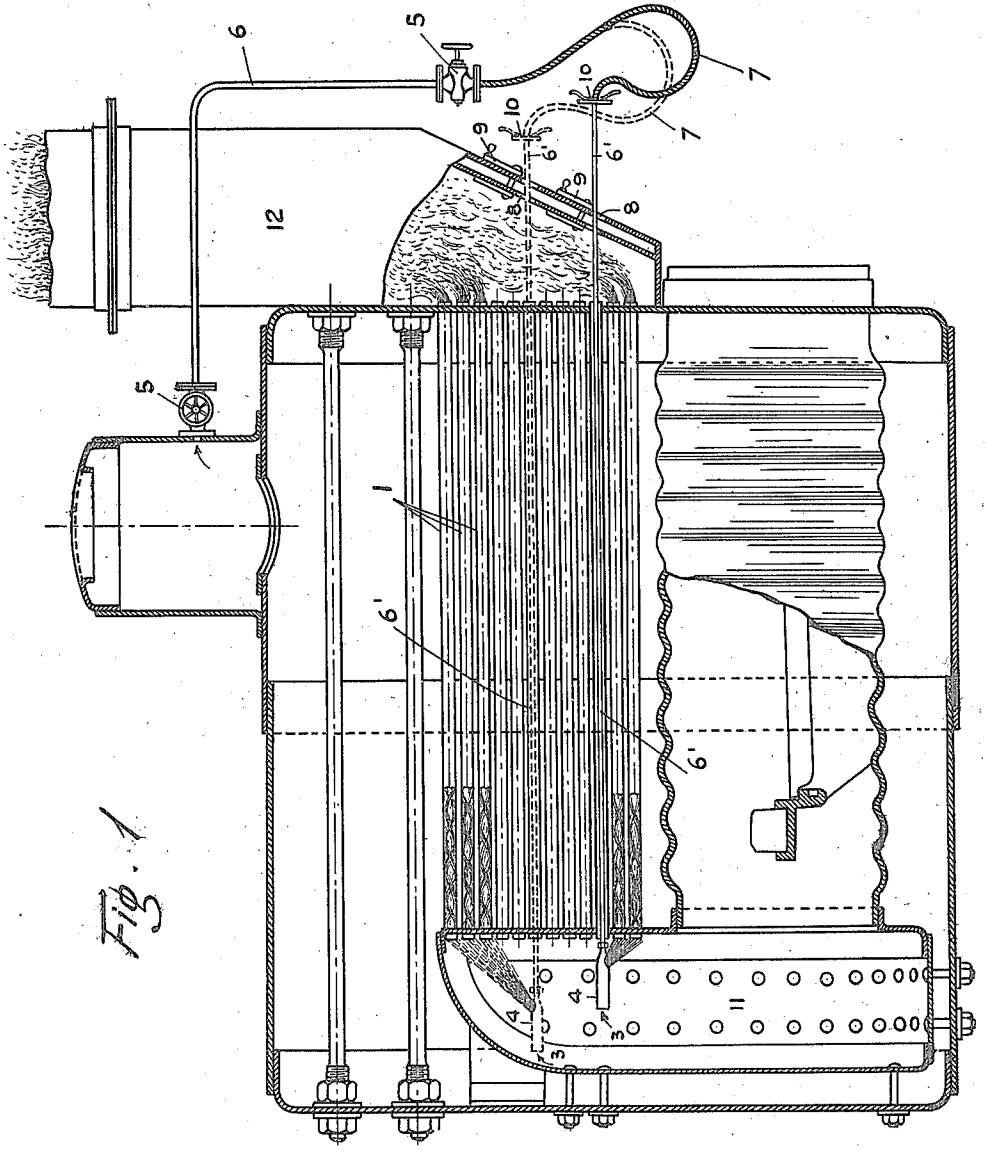


Fig. 1

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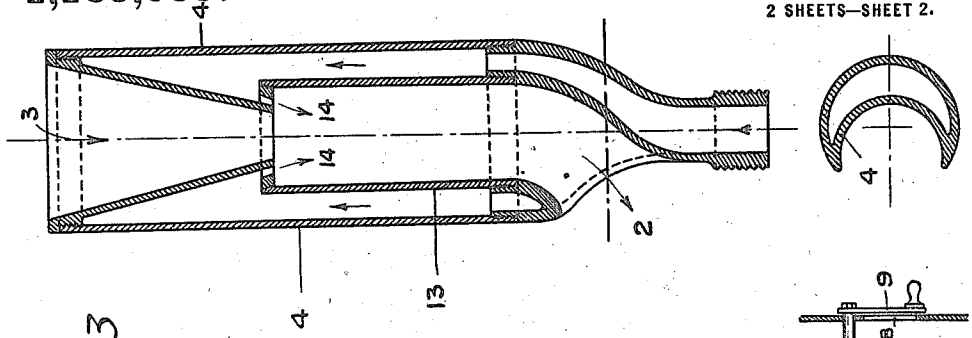


Fig. 3

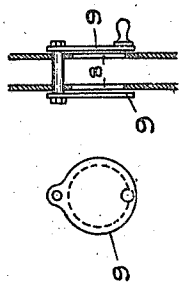


Fig. 4

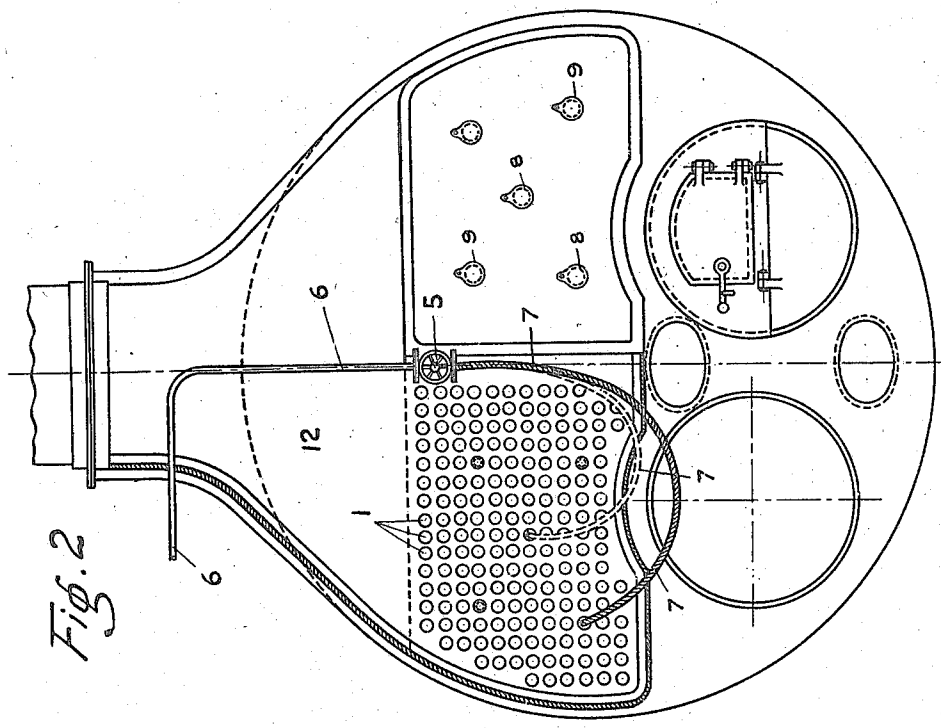


Fig. 2

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UNITED STATES PATENT OFFICE.

TEODORO GRUENWALD, OF GENOA, ITALY.

FLUID-JET BLOWER FOR THE CLEANING OF THE FLUES OF STEAM-BOILERS.

1,185,089. Specification of Letters Patent. Patented May 30, 1916.

Application filed October 23, 1914. Serial No. 868,312.

To all whom it may concern:

Be it known that I, TEODORO GRUENWALD, subject of the Emperor of Austria-Hungary, residing at Genoa, Italy, have invented certain new and useful Improvements in Fluid-Jet Blowers for the Cleaning of the Flues of Steam-Boilers, of which the following is a specification.

This invention relates to devices for cleaning the tubes of steam boilers, the object being to provide an improved device by which a mixture of steam and hot gases is adapted to be blown through any desired tube or tubes in the direction of the ordinary draft, such device being also adapted to be moved about to cover the whole set of tubes.

In the accompanying drawings which illustrate the invention applied to a marine boiler, Figure 1 is a longitudinal section through the boiler; Fig. 2 is an end view of the same, the left hand half being a section taken through the smoke box and the right hand half an outside view; Fig. 3 and Fig. 4 are details of the cleaning apparatus.

In these figures 6 designates a rigid steam pipe; this pipe is connected with the boiler dome by a valve 5 and by another valve 5 with a flexible tube 7. The flexible tube 7 connects with a rigid tube 6′ while the latter is inserted into the boiler flues inside which it may be moved longitudinally in either direction.

The tube 6′ is provided on its end toward the fire box with an aspiration head 4 (Fig. 3) which takes its position in the fire box space in the part where the fire gases are immediately influenced by the draft of the chimney. The aspiration head may be moved at pleasure with reference to the ends of the flues as indicated in Fig. 1 by dotted and full lines. The aspiration head is provided with an interior tubular piece 13 in connection at one end with a conical piece through the larger aperture of which the fire gases are aspirated. The tubular piece 13 is provided on its other end with an aperture 2 of the shape shown in Fig. 3 of the drawings.

The tube 6′ is generally inserted into one of the central flues of the boiler; for this purpose holes 8 (Fig. 4) are provided in the smoke box door which can be closed by shutters 9. The special construction or size of the boiler may require more than one hole 8 for the cleaning operation, for example five, as shown in the drawings and in such a case the cleaning tube 6 after having served for the cleaning of the flues in the central part of the boiler will be inserted in the flues corresponding with the other holes 8 so as to clean the flues situated on the periphery of the flue system.

The steam entering by tube 6′ in the aspiration head 4 passes by small holes 14 provided in the tube 13 so as to create a vacuum by means of which an aspiration of the hot gases from the fire box is effected. The mixture of hot gases and steam obtained in this manner leaves the aspiration head through the opening 2 in a direction which is approximately opposed to the direction of the entering steam into the aspiration head. This mixture is leaving the head under pressure and in possession of a very efficient blowing effect and enters into the flues, whereby the combustion residues are rapidly and efficiently blown into the smoke box chamber 12. The blowing effect is at the same time sustained by the draft of the chimney. In turning the handle 10 and the tube 6′ with aspiration head 4 there will be cleaned by the cleaning mixture one or another part of the flues. According to the longitudinal position of the aspiration head in the fire box with reference to the ends of the flues the working radius for the cleaning mixture may be varied.

I claim:—

Means for cleaning the tubes of steam boilers comprising a tube adapted to be inserted into one of the tubes from the rear or smoke box end, a steam supply pipe connecting said tube to the steam space of the boiler, and an aspiration head arranged on the front end of said tube comprising two concentric tubular members having their front ends connected by a conical member forming an inlet for the hot combustion gases, means for permitting steam to pass in a rearward direction from the outer tubular member to the inner tubular member, and a lateral, rearwardly pointing outlet from said inner tubular member.

In testimony whereof I have affixed my signature in presence of two witnesses.

TEODORO GRUENWALD.

Witnesses:
NICOLA FISCHETTI,
A. BORAGINO.