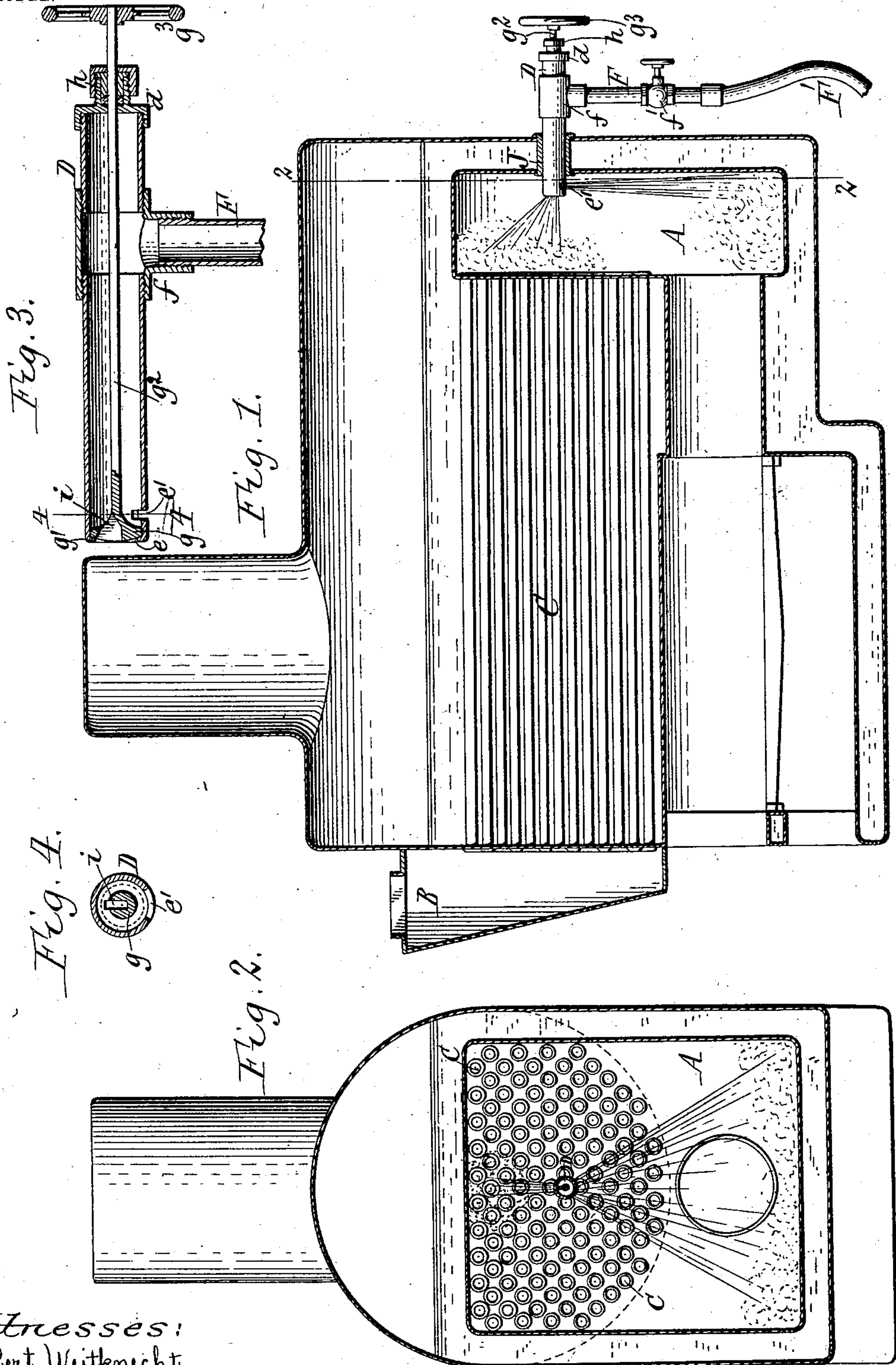


No. 720,252.

PATENTED FEB. 10, 1903.

R. B. HODGE.
STEAM BOILER CLEANER.
APPLICATION FILED JUNE 20, 1902.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

ROBERT B. HODGE, OF BUFFALO, NEW YORK.

STEAM-BOILER CLEANER.

SPECIFICATION forming part of Letters Patent No. 720,252, dated February 10, 1903.

Application filed June 20, 1902. Serial No. 112,402. (No model.)

To all whom it may concern:

Be it known that I, ROBERT B. HODGE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Steam-Boiler Cleaners, of which the following is a specification.

This invention relates to that class of steam-boiler cleaners which consist of a steam nozzle or tube adapted to be introduced into the smoke box or space behind the flues for directing a steam-jet into the rear ends of the flues and blowing the soot forwardly into the chimney.

The principal object of my invention is to provide a cleaner of this character by which the steam jet or blast is concentrated upon a small number of flues at a time for effectually detaching and blowing out the soot and which can be adjusted to move the blast over the entire area of the flue-sheet for bringing all the flues under its cleaning action. The invention has the further object to so construct the cleaner that the same also serves to blow out any soot or sediment which may accumulate in the smoke-box.

In the accompanying drawings, Figure 1 is a side elevation of my improved cleaner applied to a marine boiler, which latter is shown in longitudinal section. Fig. 2 is a transverse section in line 2 2, Fig. 1. Fig. 3 is a longitudinal central section of the cleaner on an enlarged scale. Fig. 4 is a cross-section thereof in line 4 4, Fig. 3.

Similar letters indicate similar parts throughout the several views.

A indicates the usual upright smoke-box located in the rear portion of the boiler, B the chimney, and C the flues extending from the smoke-box to the chimney.

My improved cleaner consists of a tube or pipe D, closed at its rear end by a cap *d* and provided in its front end with a jet opening or nozzle *e*, through which the steam issues forwardly, and in its lower side near its front end with a similar opening or nozzle *e'*, through which the steam issues downwardly.

F indicates a supply-pipe or branch connected with the rear portion of the tube D by a T-fitting *f* or other suitable coupling, and F' indicates a hose or flexible supply-pipe connected at one end to the branch pipe F

and having its other end connected with the steam-space of the boiler, the latter connection not being shown in the drawings. The branch pipe F has a hand-valve *f'* for controlling the passage of the steam to the cleaner.

The delivery of the steam through the front opening *e* of the tube D is controlled by a rotary head or plug *g*, arranged in the tube in front of its lateral jet-opening *e'* and bearing against an annular seat or inwardly-turned flange *g'*, arranged at the front end of the tube and bounding said front opening, as shown in Fig. 3. Extending rearwardly from this plug is an operating rod or stem *g²*, which passes through a stuffing-box *h*, carried by the cap *d*, the rod being provided at its projecting rear end with a hand-wheel *g³* for turning it. The plug *g* is provided with a jet aperture or passage *i*, which is smaller than the opening *e* in the front end of the cleaner and which is arranged eccentrically or on one side of the operating-rod of the plug, as shown in Fig. 3. This passage registers with said front opening in all positions of the rotary plug.

In the use of the cleaner its nozzle or front portion is introduced into the smoke-box through an opening or thimble J, extending through the rear wall of the boiler and arranged about opposite the middle flues, as shown in Figs. 1 and 2. The cleaner-tube is closely fitted into the thimble to prevent the steam from escaping through the latter. Upon admitting steam into the cleaner the same issues forwardly through the eccentric passage of the plug *g*, and the open front end of the tube D enters the rear end of those flues within the range of the steam-jet and passes forwardly through the same into the chimney, whence it escapes through the smoke-stack. Any soot adhering to or lodging in the flues is thus detached and expelled through the chimney. Owing to the eccentric arrangement of the plug-passage *i* the steam-jet issuing from the front end of the cleaner can be directed in a circular path over the entire area of the flue-sheet by turning the plug in the tube D, thus subjecting all the flues to the cleaning action of the blast. While reaching all the flues in this manner, the steam-blast is not weakened by

diffusing it over all the flues at the same time, but is concentrated in a small and powerful jet upon a small number of the flues at a time, thereby insuring a thorough cleaning of the same.

In order to obtain the best results, the side walls of the plug-passage *i* are preferably parallel, as shown in Fig. 4, the inner wall of the same is straight or parallel with the axis of the plug, and the outer wall is oblique and recedes from the opposing straight wall toward the front side of the plug, as shown in Fig. 3. By this form of the passage the steam issues from the cleaner in a comparatively narrow jet or sheet which extends radially from about the middle of the flue-sheet to the outermost row of boiler-flues.

At the same time that the flues are cleaned a second steam-jet which issues from the lateral opening *e'* of the cleaner-tube is directed downwardly against the bottom of the smoke-box, raising any soot in the same to the level of the boiler-flues and causing the same to be expelled through the latter and the chimney.

After cleaning the boiler the cleaner is withdrawn from the thimble *J* and the latter is closed by a suitable plug. (Not shown in the drawings.)

In the use of the cleaner the plug *g* is held against its seat *g'* by the pressure of the steam.

As my improved cleaner is not inserted in the flues, it does not obstruct the same and does not therefore impair the draft or otherwise reduce the efficiency of the boiler during the cleaning operation.

I claim as my invention—

1. A boiler-cleaner, consisting of a tube having a supply-pipe and a head provided at one side only with an eccentric jet-aperture which opens forwardly in the direction of the axis of the tube, whereby the cleaning-jet may be concentrated upon a number of boiler-flues at a time lengthwise of the flues by a rotary movement of said head, substantially as set forth.

2. A boiler-cleaner, consisting of a tube provided in its front end with a delivery-open-

ing, a rotary head applied to said opening and provided at one side only with an eccentric jet-aperture which opens forwardly in the direction of the axis of the tube, means for rotating said head in the tube, and a supply-pipe connected with said tube in rear of said rotary head, substantially as set forth.

3. A boiler-cleaner, consisting of a tube closed at its rear end and provided in its front end with a delivery opening or nozzle, a supply branch connected with said tube, a rotary head or plug arranged in the front portion of said tube and provided with an eccentric jet-aperture of smaller size than said delivery-opening, and an operating-rod for said head extending through the rear end of said tube, substantially as set forth.

4. A boiler-cleaner, consisting of a tube provided in its front end with a delivery opening or nozzle, a rotary head or plug arranged in the front portion of said tube and provided with an eccentric jet-aperture having substantially parallel side walls, an inner wall arranged parallel with the axis of the plug and an oblique outer wall receding toward the front side of the plug, and means for turning said plug from the outside of said tube, substantially as set forth.

5. A boiler-cleaner, consisting of a tube provided in its front end with a jet opening or nozzle through which the steam issues forwardly, and in its side with a similar opening through which the steam issues laterally, and a supply branch connected with said tube, substantially as set forth.

6. A boiler-cleaner, consisting of a tube provided in its front end with a jet-opening and in its side near said front opening with a similar jet-opening, a rotary plug or head arranged in said tube between said front and lateral jet-openings and provided with an eccentric passage, and means for turning said plug, substantially as set forth.

Witness my hand this 11th day of June, 1902.

ROBERT B. HODGE.

Witnesses:

GEO. F. STILPHEN,
ROBERT O. HODGE.