

March 19, 1935.

N. L. SNOW

1,995,132

BOILER CLEANER

Original Filed Jan. 24, 1930 4 Sheets-Sheet 1

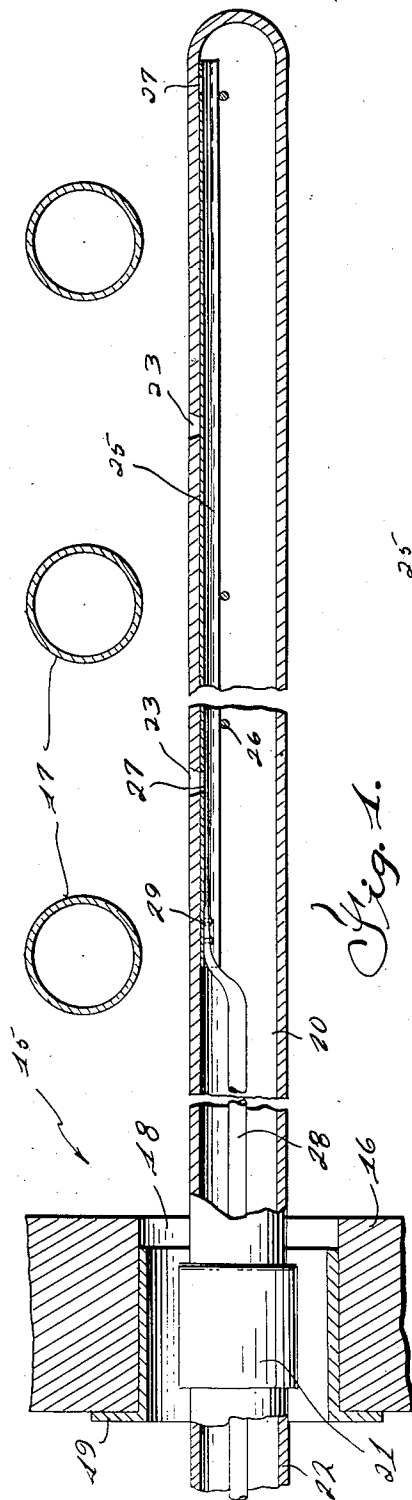


Fig. 1.

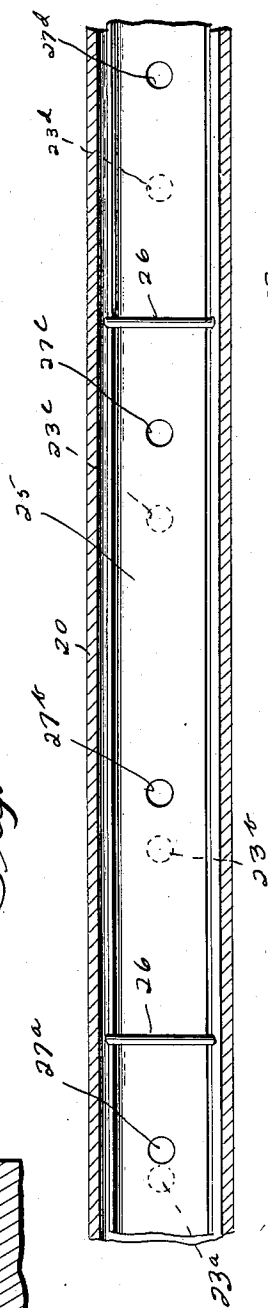


Fig. 2.

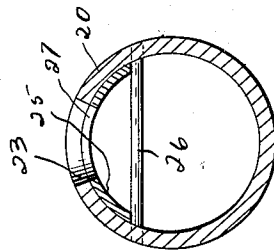


Fig. 3.

INVENTOR
Norman L. Snow
BY *Edw. L. Hutton* *Hubert W. Hutton* *Hubert W. Hutton*

ATTORNEYS

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N. L. SNOW

1,995,132

BOILER CLEANER

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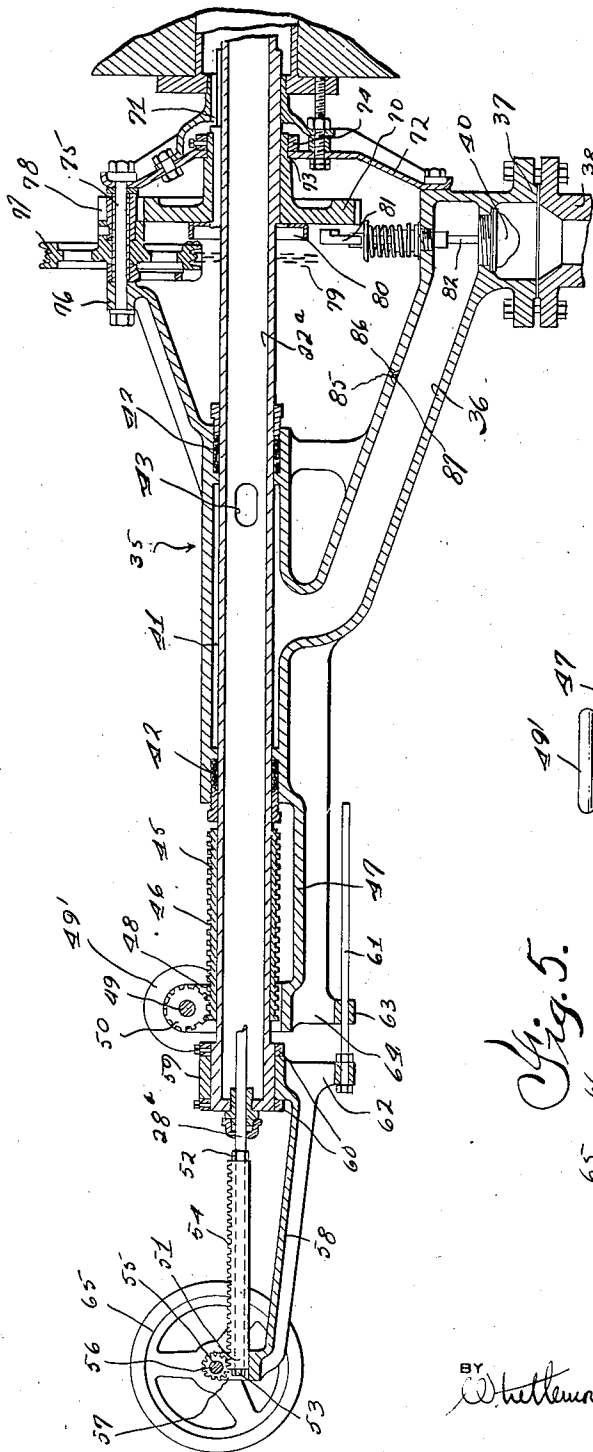


Fig. 4.

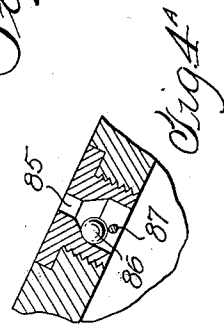
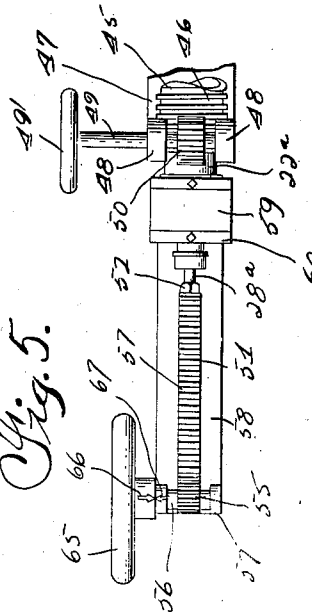


Fig. 4A

Fig. 5.



INVENTOR

Norman H. Snow

BY *Whittemore Hulbert, Whittemore Hulbert*

ATTORNEYS

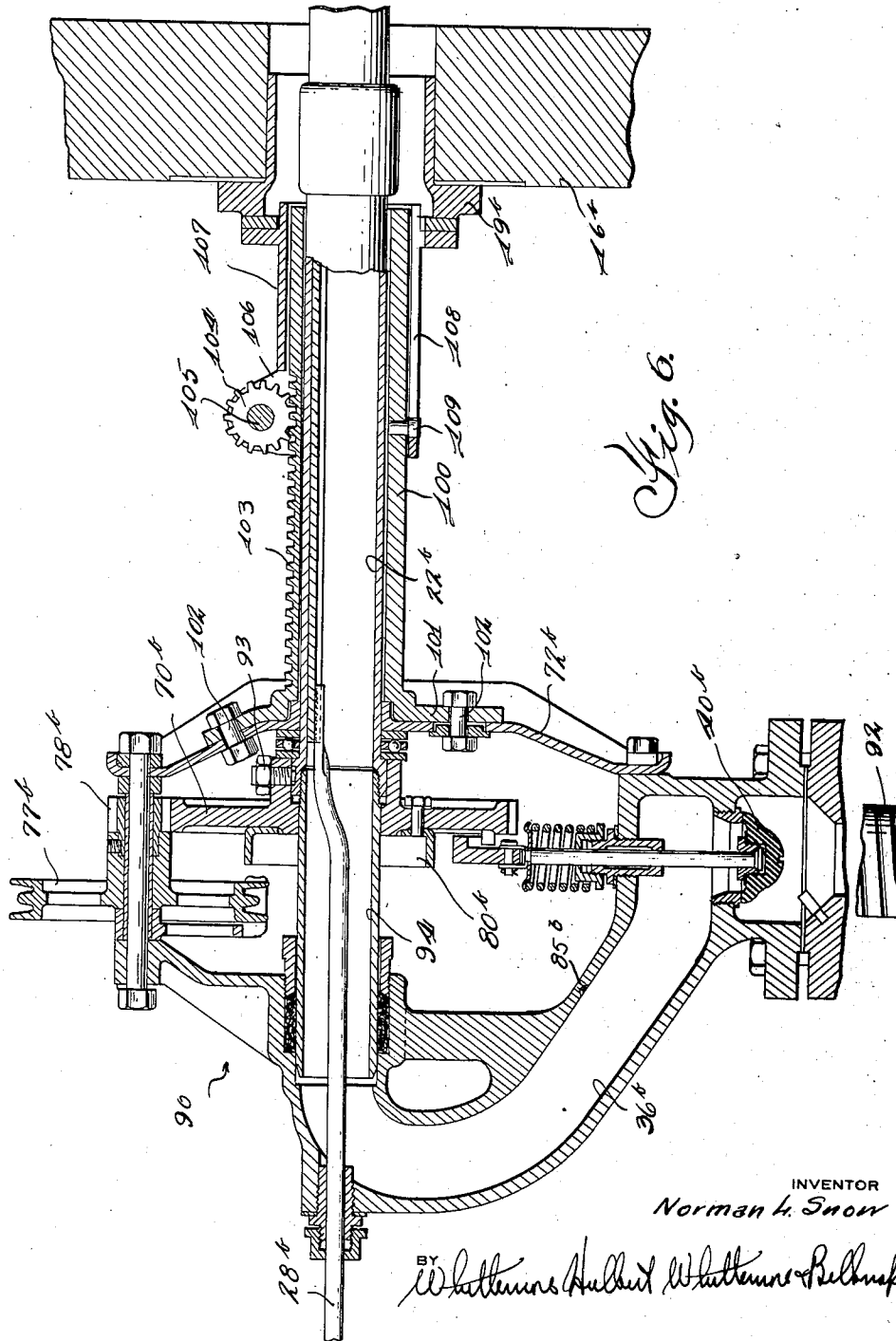
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BOILER CLEANER

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N. L. SNOW

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BOILER CLEANER

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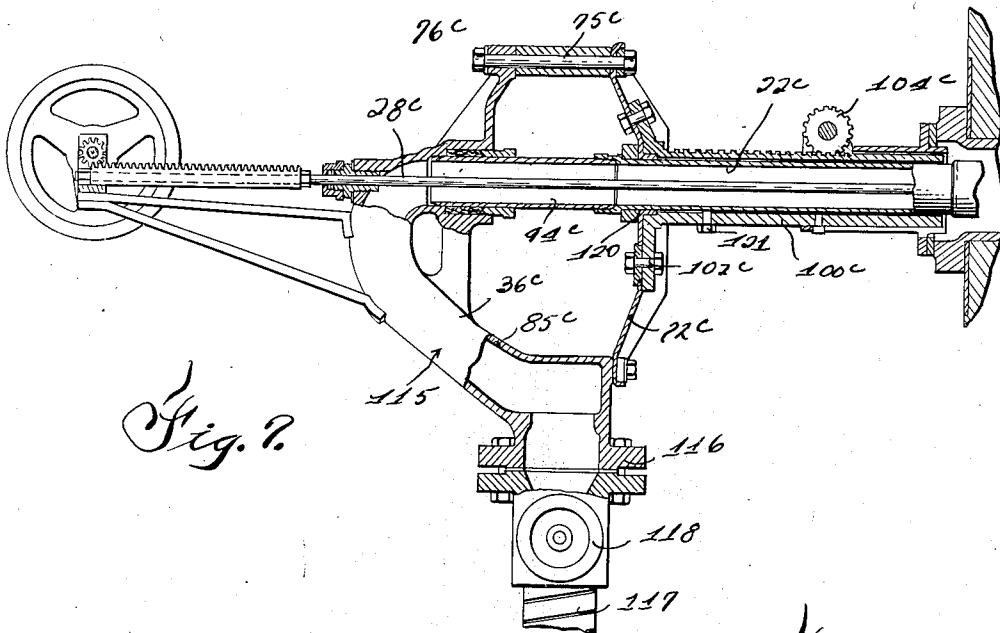


Fig. 7.

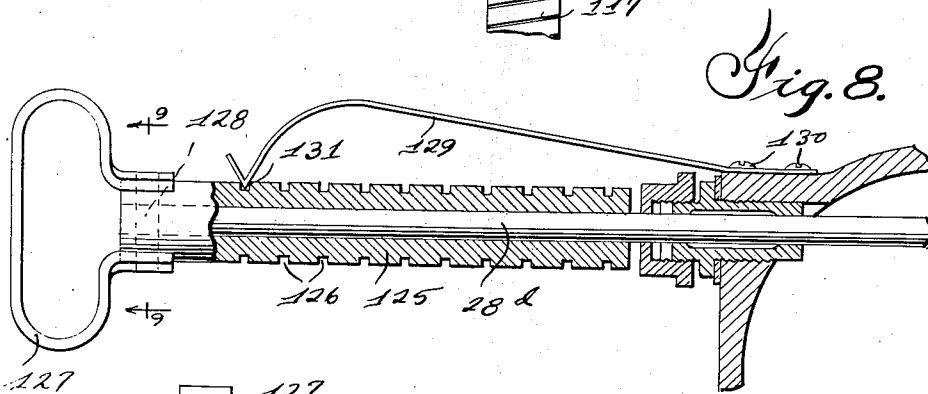


Fig. 8.

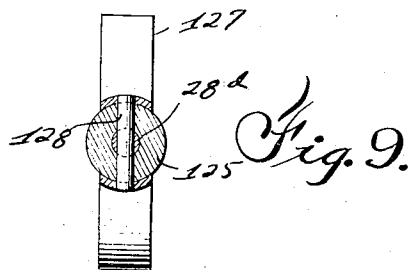


Fig. 9.

INVENTOR
Norman L. Snow

BY *Whittemore Hubert W. Whittemore & Belknap*

ATTORNEYS

UNITED STATES PATENT OFFICE

1,995,132

BOILER CLEANER

Norman L. Snow, New Canaan, Conn., assignor
to Diamond Power Specialty Corporation, De-
troit, Mich., a corporation of Michigan

Application January 24, 1930, Serial No. 423,139
Renewed January 26, 1934

11 Claims. (Cl. 122—392)

This invention relates to boiler cleaners and has particular reference to a boiler cleaner of the type in which a blower element discharges cleaning fluid adjacent the portions of the boiler to be cleaned.

One of the objects of this invention is to provide a boiler cleaner of the above mentioned character in which the cleaning fluid may be discharged in the form of a relatively large and powerful jet adapted to thoroughly clean the surfaces toward which it is directed.

A further object of this invention is to provide a boiler cleaner adapted to discharge a powerful jet of cleaning fluid adjacent the portions of the boiler to be cleaned and having means whereby the position of this jet relative to the boiler surfaces may be varied to effect a cleaning of spaced portions of the boiler.

Other objects and advantages of the invention will become more apparent as the following description proceeds, particularly when reference is had to the accompanying drawings wherein

Figure 1 is a semi-diagrammatic sectional view through a boiler showing a blower element constructed in accordance with the teachings of this invention associated with the same.

Figure 2 is a fragmentary sectional view through the blower element shown in Figure 1.

Figure 3 is a sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a sectional view through an operating mechanism adapted to be associated with the blower element shown in Figure 1.

Fig. 4A is an enlarged sectional view of a portion of the structure shown in Fig. 4.

Figure 5 is a fragmentary top plan view of the structure shown in Figure 4.

Figure 6 is a view similar to Figure 4 showing a slightly modified form of construction.

Figure 7 is a view similar to Figure 6 showing a still further modified form of construction.

Figure 8 is a fragmentary sectional view showing a modification of the structure shown in Figure 4, and

Figure 9 is a sectional view taken substantially on the line 9—9 of Figure 8.

Referring then particularly to the drawings wherein several embodiments of the inventive idea are disclosed and wherein like reference characters designate corresponding parts throughout all views, there is shown in Figure 1 a boiler designated generally by the reference character 15, this boiler including the wall 16 and the boiler tubes 17. Formed in the boiler wall is an opening 18 in which a wall box 19 is

mounted, and projecting through this wall box is a blower element 20 coupled as at 21 to a swivel tube 22 which extends to a point exteriorly of the boiler. The blower element is provided with a plurality of discharge openings 23 spaced throughout its length for directing jets of cleaning fluid adjacent portions of the boiler, such as the tubes 17, to be cleaned. The openings 23 may or may not be provided with extended nozzles, dependent upon the type of jet desired.

Heretofore it has been customary in constructions of this character to form sufficient nozzle openings in the blower element to simultaneously direct jets of cleaning fluid adjacent all portions of the boiler to be cleaned. The practice has been to admit cleaning fluid to the blower element and to permit this cleaning fluid to be discharged through all of the openings simultaneously whereby a plurality of relatively small jets of cleaning fluid are produced, the size of the jets depending upon the capacity of the blower element and the number of discharge openings.

The present invention contemplates an improvement in this practice by providing first, means whereby the openings 23 in the blower element may be separately closed so that during the blowing operation only one of the openings will be uncovered and all of the cleaning fluid in the blower element will be discharged through this opening with the result that the cleaning fluid is discharged in the form of a single powerful jet. The invention further contemplates the provision of closures for the openings, so arranged that the openings may be individually opened according to a predetermined sequence so that the strong jet of cleaning fluid may be discharged from different points throughout the length of the blower element. The invention further contemplates the provision of means for imparting a longitudinal or shuttling movement to the blower element whereby each discharge opening in the element may be moved to a plurality of spaced blowing positions. Thus the number of discharge openings may be decreased, the blower element being longitudinally movable to align these discharge openings with all portions of the boiler to be cleaned.

In Figures 2 and 3 there is disclosed one type of valve which may be provided for closing the openings 23, and by reference to these figures it will be noted that a curved flexible plate 25 is mounted within the blower element and held in place adjacent the openings 23 therein by cross pins 26. The plate 25 is provided with a plurality of openings 27 adapted upon longitudinal move-

ment of the plate to register with the openings 23. A rod 28 fixed to the end of the valve strip as at 29 provides means for effecting a longitudinal movement of the valve strip, as will hereinafter be more fully described.

It will be apparent that the openings 27 may be so arranged in the plate 25 as to register with the openings 23 in any desired sequence. The arrangement may be such that one discharge opening at one end of the blower element may first be uncovered and then a discharge opening at the other end may be the next one uncovered upon longitudinal movement of the plate 25. For convenience, however, the arrangement may be such as disclosed in Figure 2 wherein the openings 23 are successively uncovered longitudinally of the blower element. As shown, all of the openings 23 are closed, but the opening 27^a is but one step removed from the opening 23^a, while the opening 27^b is two steps removed from the opening 23^b. The openings 27^c and 27^d are respectively three and four steps removed from their respective cooperating openings 23^c and 23^d.

If, therefore, plate 25 is moved to the left, as viewed in Figure 2, opening 23^a will first be uncovered and cleaning fluid may be discharged from the blower element through this opening. After this jet has been in operation for a desired period of time, the plate may again be shifted one step to the left whereupon opening 23^a will be closed and opening 23^b will be opened by virtue of the registration of opening 27^b with the same. Obviously, movement of plate 25 may be continued in steps until all of the openings 23 have been successively uncovered in the order of their arrangement longitudinally of the blower element 20.

Thus the plate 25 provides for the discharge of a powerful jet of cleaning fluid from any one of a plurality of spaced points throughout the length of the blower element. Further, by virtue of the fact that the blower element itself may be moved longitudinally, each jet opening may itself be placed in one of several spaced positions within the boiler so that with a relatively small number of discharge openings, jets of cleaning fluid may be directed toward all portions of the boiler to be cleaned. Thus all of the openings 23 may be successively uncovered with the blower element in one position of its longitudinal movement, after which the blower element may be shifted longitudinally and all of the discharge openings again be opened to successively direct jets of cleaning fluid adjacent other portions of the boiler. The blower element may be mounted for shifting movement to any desired number of positions, it being preferable, however, to limit the movement to two or three positions since with this movement sufficient discharge openings may readily be provided in the blower element to accomplish the desired cleaning.

Disclosed in Figures 4 and 5 is one form of head for supplying cleaning fluid to a blower element such as disclosed in Figure 1, this head being provided with means for effecting the above described shuttling of the element and movement of the valve strip. Referring then particularly to Figure 4, it will be noted that the swivel tube 22^a is elongated and is rotatably mounted in a head mounted exteriorly of the boiler wall and designated generally by the reference character 35.

This head includes a goose-neck 36 connected as at 37 to a cleaning fluid supply pipe 38, there being provided a valve 40 for controlling the flow

of cleaning fluid from the supply pipe through the goose-neck. The upper end of the goose-neck is shaped to provide an elongated chamber 41 in which the swivel tube 22^a is rotatably and slidably received. The opposite ends of the chamber 41 are closed by suitable packing glands 42 and the swivel tube is provided with a laterally opening port 43 for receiving cleaning fluid from the chamber 41, as will be readily apparent.

In this form of construction the head is stationary and the swivel tube moves longitudinally through the head to effect a shuttling of the blower element. Accordingly the swivel tube is extended through and beyond the chamber 41 and is provided adjacent its outer end with a sleeve 45 provided on its outer periphery with the teeth 46. An extension 47 of the goose-neck carries at its outer end the ears 48 for rotatably supporting a shaft 49 above the swivel tube for actuating a pinion 50 which meshes with the teeth 46 on the swivel tube 45. A hand wheel 49' fixed to the end of this shaft provides means for rotating the pinion to effect a longitudinal movement of the swivel tube and the blower element.

For imparting a longitudinal movement to the valve strip to effect a registration of the ports therein with the ports in the blower element, the rod 28^a is extended through the outer end of the swivel tube to receive a sleeve 51. This sleeve is rotatable on the rod 28^a but is fixed against movement longitudinally thereof by the nuts 52 and 53 which engage its opposite ends. The sleeve 51 is provided on its upper face with a series of teeth 54 for engagement with a pinion 55 fixed to a shaft 56 rotatably mounted in ears 57 carried by the end of an extension 58 formed on a bushing 59 which is rotatably mounted on the outer end of the swivel tube and beyond the end of the extension 47. Suitable bars 60 fixed to the outer end of the swivel tube prevent movement of the bushing 59 longitudinally of the swivel tube while permitting rotation of the same thereon. A guide rod 61 carried by a downwardly extending lug 62 formed on the bushing 59 engages a bearing 63 formed in a portion 64 of the extension 47 for preventing rotation of the bushing 59 with the swivel tube 22^a. A hand wheel 65 fixed to the shaft 56 provides means for rotating the pinion 55 to effect a longitudinal movement of the sleeve 51 and rod 28^a, and the hub of this hand wheel is preferably provided with suitable indicia 66 adapted to cooperate with indicia 67 formed on the adjacent ear 57 to indicate the rotative position of the hand wheel.

The arrangement is such that the hand wheel may be rotated to effect a longitudinal movement of the valve strip and to thus effect a registration of the ports in this strip with the ports in the blower element. The indicating marks on the hand wheel and supporting bracket may be so spaced as to indicate sufficient rotative movement of the hand wheel to advance the valve strip one step and to thus indicate registration of one of the ports therein with one of the ports in the blower element.

To provide for rotating the blower element to direct the jet of cleaning fluid in an arc about the axis of the element, there is provided a gear 70 slidably keyed to a sleeve 71 fixed to the swivel tube. A bracket 72 fixed at its lower end to the goose-neck engages between a shoulder 73 formed on the hub of the gear and a ring 74 carried by the hub of the gear for preventing movement of the gear upon longitudinal movement of the swivel tube. A tie rod 75 connects the upper end

of the bracket 72 with an extension 76 formed on the goose-neck, and rotatably mounted on this tie rod is a sheave wheel 77 carrying a pinion 78 which meshes with the gear 70 to drive the same. The sheave wheel may be actuated in accordance with the usual practice by a chain 79.

The valve 40 may be actuated in timed relation to the rotation of the blower element by means of a cam 80 fixed to the face of the gear 70, this cam being arranged to engage a trigger 81 which in turn is connected to the stem 82 of the valve 40. Thus each time the blower element is rotated the valve 40 is opened for a predetermined portion of the rotative movement of the blower element to permit cleaning fluid to flow through the goose-neck to the chamber 41.

The arrangement may be such that in the normal position of parts with the valve 40 closed and the blower element therefore not discharging cleaning fluid, the valve strip may be in such a position that one of the openings 23, and preferably that opening at the extreme inner end of the blower element, will be left open so that air may pass through the blower element when the latter is not in use to effect a cooling of the same. To form an inlet for this air, a port 85 may be formed in the goose-neck 36 and a ball valve 86 may be supported adjacent this port by a pin or the like 87, the arrangement being such that when cleaning fluid is flowing through the goose-neck the pressure of the same will force the ball against the port to close the port, while when cleaning fluid is not flowing through the goose-neck the ball will fall away from the port to permit air to enter the same. Thus in the position of rest of the blower element air may be drawn through the normally open discharge opening thereof by the furnace draft, this air passing through the goose-neck, entirely through the element and out through the end discharge opening. If desired, air might be forced through the blower element by a suitable blower (not shown) carried by the head adjacent port 85.

From the above it is believed that the structure and operation of the structure as thus far disclosed will be clearly apparent. When associated with a head such as disclosed in Figures 4 and 5, the blower element will be mounted for rotation as well as for shuttling movement, the head however being fixed relative to the boiler wall. The shuttling of the blower element may be effected by rotation of pinion 48, the chamber 41 being sufficiently long to supply cleaning fluid to the swivel tube through the port 43 in the extreme positions of movement of this tube. The hand wheel 65 may be actuated to actuate the valve strip and to thus close all of the discharge openings in the blower element or to open these ports one at a time in accordance with a predetermined desired sequence. The normal position of the valve strip may be such that one of the discharge openings will be uncovered whereby air may be circulated through the blower element to cool the same, although all of the discharge openings may be closed if desired, as will be readily apparent.

The blower element may be rotated or oscillated by the gear 70 which in turn is driven from the sheave 77, and the valve 40 will be periodically opened and closed during a predetermined arc of rotation of the blower element. Thus a powerful jet of cleaning fluid may be discharged from the blower element at any one of a plurality of spaced points throughout the length of the element and the element itself may be shifted axially

to change the location of all of the discharge openings thereof relative to the portions of the boiler to be cleaned.

In Figure 6 a slightly modified form of construction is shown in which the blower head is adapted to move with the blower element upon shuttling of the latter. Referring then to this figure of the drawings, the numeral 90 designates generally the blower head, this head being similar in construction to the head 35 and including a goose-neck 36^b. This goose-neck is connected at its lower end to a cleaning fluid supply pipe 92 which in this case is flexible to permit the movement of the head incident to the shuttling of the blower element.

The swivel tube 22^b is journaled adjacent its outer end in the bracket 72^b, the gear 70^b being in this case directly fixed to the swivel tube by a set screw 93. An extension 94 may be threaded into the end of the swivel tube and may be journaled at its opposite end in one end of the goose-neck to receive cleaning fluid therefrom.

The gear 70^b is driven by the pinion 78^b which in turn rotates with the sheave wheel 77^b and the cam 80^b is connected to the gear for actuating the valve 40^b as described in connection with head 35. The rod 28^b provided for effecting a longitudinal movement of the valve strip extends through the goose-neck for connection to the actuating mechanism disclosed and described as being associated with head 35.

For effecting a shuttling of the swivel tube and the head, there is provided a sleeve 100 provided at its end with an annular flange 101 bolted to the bracket 72^b as at 102. This sleeve is provided on its upper face with the teeth 103 with which a pinion 104 meshes. This pinion is fixed to a shaft 105 journaled in a bracket 106 carried by a bushing 107 which is fixed in any desired manner to the outer flange of the wall box 19^b. The bushing 107 is preferably slotted as at 108 to receive a pin 109 carried by the sleeve 100 whereby this sleeve is prevented from rotating with the swivel tube.

The arrangement is such that the blower element may be rotated, the swivel tube 22^b being rotatable within the sleeve 100 for this purpose. To effect a shuttling of the blower element the pinion 104 may be rotated by any suitable hand wheel (not shown) fixed to the shaft 105.

Rotation of the pinion 104 effects a longitudinal movement of the sleeve 100 which in turn moves the head 90 toward or away from the boiler wall 16^b to thus effect a longitudinal movement of the blower element.

Thus the blower element may be shuttled to move the discharge openings thereof to any one of several spaced blowing positions, while the rod 28^b may be actuated to effect the desired opening of the several discharge ports of the blower element.

In Figure 7 a still further form which the invention may assume is disclosed in which the blower element is not mounted for rotation but is merely mounted for shuttling movement. In this form of construction the head 115 is quite similar to the head 90 and includes the goose-neck 36^c connected as at 116 to a flexible supply pipe 117. Since the blower element in this form of construction is not rotatable, there is no automatic valve structure associated with the head, and a suitable manually controlled valve 118 is mounted in the supply pipe to control the supply of cleaning fluid to the blower element.

The goose-neck opens at its upper end into the

end of the extension 94° fixed to the end of the tube 22° which forms an extension of the blower element in the same manner as does the swivel tube 22. The bracket 72° is fixed at its lower end to the goose-neck and at its upper end by the tie rod 75° to the bracket 76° carried by the upper end of the goose-neck and forms a support for the tube 22° intermediate its ends as at 120. In this form of construction the sleeve 100° is fixed as at 102° to the bracket 72° and is also fixed against movement relative to the tube 22° by the set screw 121. Thus the tube 22° is locked against rotation but is movable with the sleeve 100° when the latter is moved axially by the pinion 104°. The rod 28° may be actuated by a mechanism similar in all respects to that disclosed as being associated with the head 35, to effect a shuttling of the valve strip as before described.

20 In this form of construction the head 115 may be moved to effect a shuttling of the blower element and the ports of the element may be opened as desired by a proper actuation of rod 28°. The blower element, however, is fixed against rotation and the supply of cleaning fluid to the same is controlled by the valve 118. In this form of invention it is particularly desirable that the valve strip be so constructed that the same may be moved to a position to close all of the discharge openings in the blower element so that during shuttling of the blower element from one blowing position to the next, the discharge openings themselves will be closed to eliminate the necessity of closing valve 118. As in the above described forms of construction, when the blower element is at rest, air may be drawn through the same through port 85° and discharged through the end discharge opening of the blower element which may be uncovered after valve 118 is closed.

40 In Figures 8 and 9, a slightly modified form of actuating mechanism for the rod 28 is disclosed, which actuating mechanism may be associated with any of the heads above described. In this form of construction there is fixed to the end of the rod 28° for rotation therewith a sleeve 125 provided on its periphery with a plurality of spaced grooves 126. A handle 127 fixed to the end of the sleeve 125 by a pin 128 provides means for manually imparting a longitudinal movement to the sleeve and the rod 28°, while a spring member 129 fixed as at 130 to the adjacent portion of the goose-neck, or any other adjacent non-rotatable member forming a part of the head structure, has its end 131 adapted for engagement in the grooves 126. Thus the spring member serves to indicate the position of the sleeve 125 and the rod 28° which in turn indicates the position of the valve strip relative to the discharge openings in the blower element. Since the grooves are continuous about the periphery of the sleeve 125, this sleeve may be free to rotate with the rod 28° when the latter rotates upon rotation of the blower element.

From the above it will be apparent that the invention provides a shuttling blower element which may be rotatable or non-rotatable as desired. The invention further provides means for uncovering the discharge openings of such a blower element in accordance with a desired sequence so that single powerful jets of cleaning fluid may be discharged from the blower element at any one of a plurality of spaced points. During shuttling of the blower element, all of the discharge openings may be closed, while during the periods of rest of the blower element air may

be circulated through the same to effect the desired cooling of the element.

It will further be apparent that the invention provides a plurality of valves for controlling the discharge of cleaning fluid from a blower element. When the blower element is rotatable, the invention provides means for controlling the flow of cleaning fluid to the blower element in timed relation to the rotation of the element and it further provides means independent of this valve for controlling discharge of cleaning fluid from the element. Thus the flow of cleaning fluid from the supply pipe to the element is automatically controlled in timed relation to the rotation of the element by the valve arranged in the blower head, while the discharge of cleaning fluid from the element through the discharge openings therein is controlled by the valve strip which is operable independently of the automatic valve.

For the sake of convenience the invention has been described as being embodied in a device for cleaning boilers. It will be apparent, however, that the inventive principles disclosed may be incorporated in devices for cleaning apparatuses similar to boilers, and it is to be therefore understood that the term "boiler" wherever used throughout the specification and claims is to be construed as meaning a fluid heater or heat transfer apparatus of any character, while the term "boiler cleaner" is to be construed as meaning a cleaner for any such type of apparatus.

While the invention has been described with considerable detail, it will be clearly apparent that the description is illustrative only of the several mechanical embodiments which the inventive principles may assume. It is to be clearly understood, therefore, that the description is not definitive of the limits of the invention and that the right is reserved to make all changes which will fall within the purview of the attached claims.

What I claim as my invention is:

1. In a boiler cleaner, a blower element extending through a boiler wall and having discharge openings spaced throughout its length for discharging jets of cleaning fluid adjacent portions of the boiler to be cleaned, a head arranged exteriorly of said boiler wall for supplying cleaning fluid to said blower element, means for controlling the discharge of cleaning fluid from said blower element through said discharge openings according to a predetermined desired sequence, and means for moving said head relative to said boiler wall to effect a shuttling of said blower element, said last mentioned means including a sleeve fixed to said head, teeth formed on said sleeve, and a pinion fixed relative to said boiler wall and engaging said teeth.
2. In a boiler cleaner, a blower element projecting through a boiler wall and having discharge openings for directing jets of cleaning fluid adjacent portions of the boiler to be cleaned, a valve strip arranged within said blower element having ports adapted upon movement of the valve strip to register with said discharge openings to permit the discharge of cleaning fluid from said blower element through said openings according to a predetermined desired sequence, a head arranged exteriorly of said boiler wall for supplying cleaning fluid to said blower element, means associated with said head for effecting a shuttling of said blower element, and additional means associated with said head for effecting an actuation of said valve strip to control the discharge of cleaning fluid from said element, said

last mentioned means including a rod fixed to said valve strip, a rack carried by said rod, and a pinion engageable with said rack to move the same.

movement of said blower head, means for moving said blower head and said blower element to position the discharge openings of the blower element in spaced blowing positions, and actuating means for the said valve means carried by the blower head and movable therewith upon movement of the blower element to the said spaced blowing positions.

8. In a boiler cleaner, a blower head fixed relative to a boiler wall, a blower element journaled in said head for receiving cleaning fluid therefrom and projecting through an opening in said boiler wall to adjacent parts of the boiler to be cleaned, means for moving said blower element longitudinally relative to said head, and means for rotating said blower element including a gear carried by said blower head and feathered to said blower element whereby the latter may move relative to the gear during longitudinal movement of the blower element.

9. In a fluid heater cleaner, a blower element, a blower head for supplying cleaning fluid to said blower element, said blower element being journaled in said blower head for rotative and longitudinal movement therein, means carried by said blower head and feathered to said blower element for rotating said blower element, means including a member carried by said last mentioned means and rotatable therewith for controlling the supply of cleaning fluid to the blower element in timed relation to the rotation thereof, and means for moving said blower element longitudinally of said blower head.

10. In a fluid heater cleaner, a blower head fixed relative to a fluid heater wall, a blower element journaled in said head for rotative and longitudinal movements therein, said blower element projecting through an opening in said fluid heater wall and having discharge openings arranged to direct jets of cleaning fluid adjacent portions of the fluid heater to be cleaned, means for rotating said blower element, means carried by said blower head for controlling the supply of cleaning fluid to said blower element in timed relation to the rotation thereof, means for controlling the discharge of cleaning fluid from said openings according to a predetermined desired sequence of said openings and means for moving said blower element longitudinally of the blower head to move the discharge openings of the blower element to spaced blowing positions.

11. In a fluid heater cleaner, a blower element projecting through a fluid heater wall and having a series of discharge openings for directing jets of cleaning fluid adjacent portions of the fluid heater to be cleaned, a head arranged exteriorly of said fluid heater wall and fixed relative to the said fluid heater wall for supplying cleaning fluid to said blower element, a gear carried by said head and feathered to said blower element for rotating the latter and means for effecting a shuttling of said blower element within said head, said last mentioned means including a member fixed for longitudinal movement with said blower element, teeth formed on said member, and a pinion carried by said blower head and engaging the teeth on said member to impart a longitudinal movement to said member.

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3. In a boiler cleaner, a blower element projecting through a boiler wall and having a series of discharge openings for directing jets of cleaning fluid adjacent portions of the boiler to be cleaned, means for controlling the discharge of cleaning fluid through said openings according to a predetermined desired sequence of said openings, a head arranged exteriorly of said boiler wall and fixed relative to the boiler wall for supplying cleaning fluid to said blower element, and means for effecting a shuttling of said blower element within said head, said last mentioned means including a sleeve fixed relative to said blower element, teeth formed on said sleeve, an extension formed on said head, and a pinion carried by said extension and engaging the teeth on said sleeve to impart a longitudinal movement to said sleeve.

4. In a boiler cleaner, a rotatable blower element having a plurality of discharge openings for directing jets of cleaning fluid adjacent portions of a boiler to be cleaned, means for effecting a shuttling of said blower element, a valve for controlling the flow of cleaning fluid to said blower element in timed relation to the rotation thereof, and means operable independently of said valve for controlling the flow of cleaning fluid through said discharge openings according to a predetermined desired sequence of said openings.

5. In a boiler cleaner, a blower element provided with a plurality of discharge openings spaced throughout its length, valve means for controlling said openings according to a predetermined desired sequence, a blower head journaling said blower element for rotation about its axis, means for moving said blower element longitudinally of its axis and relative to said blower head to spaced blowing positions, means carried by said blower head and feathered to said blower element for rotating said blower element, and means for actuating said valve means movable with said blower element upon movement of the latter to said spaced blowing positions.

6. In a boiler cleaner, a blower element provided with a plurality of discharge openings spaced throughout its length, valve means for controlling the discharge of cleaning fluid from said openings according to a predetermined desired sequence, a head for said blower element, means for moving said head to move said blower element to spaced blowing positions, a flexible supply pipe for said blower head providing for the said movement of said blower head, and means for actuating said valve means, said last mentioned means being carried by said head and movable therewith upon movement of the blower element to spaced blowing positions.

7. In a boiler cleaner, a blower element provided with discharge openings spaced throughout its length, valve means for controlling the discharge of cleaning fluid from said openings according to a predetermined desired sequence, a blower head journaling said blower element for rotation about its axis, a flexible supply pipe connected to said blower head to provide for