

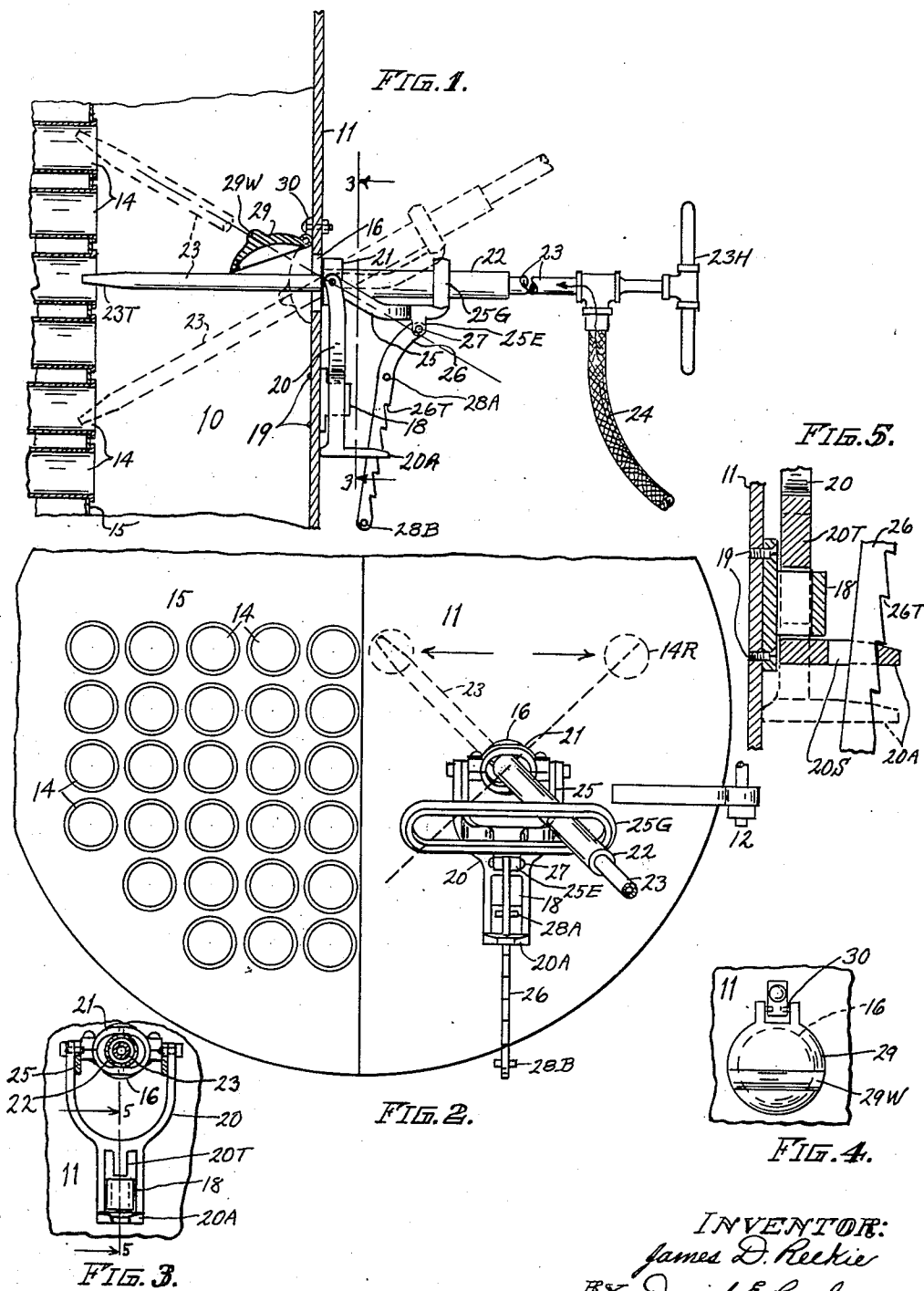
Aug. 10, 1937.

J. D. REEKIE

2,089,710

FLUE BLOWER

Filed Dec. 28, 1936



INVENTOR:
James D. Reekie
BY David C. Carlson.
ATTORNEY.

UNITED STATES PATENT OFFICE

2,089,710

FLUE BLOWER

James D. Reekie, St. Paul, Minn.

Application December 28, 1936, Serial No. 117,780

6 Claims. (Cl. 122—391)

My invention relates to a flue blower attachment for steam boilers and the main object is to provide a highly efficient, simple and inexpensive device the use of which simplifies and facilitates the process of cleaning boiler flues. The accompanying drawing fully discloses my device, in a preferred embodiment and its application to the smoke-box door or doors of a horizontal type boiler as hereinafter fully set forth.

10 In the drawing—

Fig. 1 is a vertical sectional elevation of a portion of a boiler including portions of the front boiler head, a section of the smoke-box door and my blower in operative position. Fig. 2 is a front view of a boiler and my improved boiler flue blower in operative position. Fig. 3 is a detail view as on line 3—3 in Fig. 1, of the portable main frame of my device in position about to be set on the permanent door bracket. Fig. 4 is a fragmentary detail view of the boiler door and a closing lid of my device used to automatically close the boiler door aperture necessary with the use of my device. Fig. 5 is an enlarged sectional view as on line 5—5 in Fig. 3.

25 Referring to the drawing by reference numerals, similar numerals and characters designate corresponding parts in the several views.

For descriptive purposes a horizontal type of boiler is shown, 13 designating the usual smoke-box the forward end of which is closed by two doors 11, hinged as at 12, to opposite sides of the boiler. 14 are the flues, 15 the boiler head, one half of said flues shown in Fig. 2, the others covered by the right hand door. The depth of 35 smoke-box varies but, for example in a 72 inch boiler is usually about 21 inches.

The use of my device involves the provision of an aperture 16 in each smoke-box door, said aperture located to register horizontally with a point about central of the group of flues inwardly of the door. Below each aperture 16 on the outer face of the door I affix a permanent bracket 18, as at 19 (see Figs. 1 and 5) and having a vertical bore to removably retain the vertical central 45 tongue 20T in the lower part of a Y-shaped main frame 20.

In and between the upper extremities of the arms of the yoke 20 is pivotally mounted a normally vertical pivot member 21 the central part of which comprises a ring in which is pivotally retained the front end of a pipe or tubular sleeve 22. Said sleeve slidably retains a steam pipe 23 which is projectable toward and into any and all of the boiler flues 14 to blow steam thereinto to 55 clean them out. Said steam pipe, exteriorly of

the boiler, may have a handle 23H and receives live steam as from a flexible tube 24. The front end of pipe 23 is preferably tapered as at 23T, as shown.

25 is a secondary yoke member of Y-shape and normally in horizontal plane with its forked end forward and also pivotally retained between the upper ends of the upright member 20. This yoke 25 is offset downwardly toward its rear end which latter end has an integral transverse, slotted guide 25G which of course is therefore parallel to the face of the boiler door and the boiler head.

The outer or free end part of the sleeve 22 extends through and is guided for horizontal reciprocating movement in the guide 25G, said horizontal guide and action being highly important. When the steam pipe is held in horizontal plane the guide 25G is in horizontal registering position with relation to the aperture 16 in the door 11.

If the device is mounted as in Fig. 1, the steam pipe 23 is then directable into any one of the flues 14 inwardly thereof and in a single horizontal row. When higher or lower horizontal rows of flues are to be cleaned the steam pipe is manipulated vertically to bring the nozzle end 23T of the pipe 23 into alinement. For example, to clean the upper row of flues the handle 23H is moved downward until the nozzle is at the proper height to blow steam into any and all of the flues in the top row. The said vertical manipulation of the steam pipe is gauged accurately by a toothed rack bar 26 hanging pivotally as from a pin 27 retained in ears 25E at the under side of the yoke 25. Said rack bar extends through a slotted horizontal arm 20A extending forward integrally from the lower part of the frame 20, the teeth of the bar being designated 26T, the slot in the arm 20A being designated 20S (in Fig. 5) said slot being elongated so that the bar 26 can swing toward the door and disengage the toothed side from the arm 20A. The pitch of the teeth 26T must be precalculated so that the rack accurately positions the steam pipe to deliver steam into each row of flues.

28A and 28B are respectively an upper transverse pin and a lower transverse pin in bar 26 to limit its vertical movement.

As previously implied an important feature of my device is the straight, horizontally slotted guide 25G. In Fig. 2 the steam pipe is shown directed initially to the upper left flue in the right half of the boiler head, interiorly of the door 11. When steam has been used to blow out carbon, soot and other foreign matter from the

said flue, the steam pipe is retracted slightly then moved in successive steps into each tube on said upper horizontal tier, as from said initial position to the last flue on the right (in said row) designated 14R.

In making these successive flue contacts the handle end of the steam pipe is moved from right to left, or vice-versa, being guided horizontally in member 25G which insures proper positioning of the nozzle end into all flues in the row although the operator cannot see the said nozzle.

To clean out the next lower row of flues the operator merely retracts the steam pipe slightly, then raises the handle end of the pipe, causing guide 25G to rise correspondingly until the next tooth of the rack bar engages the arm 25A at which time the nozzle 23T is on a level to clean out the next highest row of flues in the same manner as the uppermost row. The successive horizontal rows of flues are thus cleaned out quickly and efficiently, and all the rows are easily accessible, it being understood of course that when the lowermost flues are being cleaned the steam pipe is directed downwardly and inwardly from its pivotal point in the frame 20.

The slot in member 25G being horizontal the nozzle end of the steam pipe is definitely and positively directed into any one of the flues in each horizontal row, the nozzle being necessarily retracted after each flue has been cleaned to move it into the next flue to the right or left.

In Figs. 1 and 4, 29 designates a drop lid or interior cover for each aperture 16. It comprises preferably a concaved circular metal member, weighted below center as at 29W to cause the lid to normally hang from its pivot 30 and close the aperture 16. Its forward side (nearest the door 11) being concaved and the steam pipe projected inwardly through aperture 16 will contact the lid and swing it inwardly, the lid riding on the pipe 23 yieldably but not interfering with its reciprocating action (see Fig. 1). When pipe 23 is withdrawn the lid merely drops back to close the aperture, as to dotted line position in Fig. 1.

After all the flues in one side of the boiler, interiorly of one door 11, have been cleaned the steam pipe 23 is withdrawn, the main frame 20 with its connected parts 25 and 26 disconnected from the bracket 18 by merely raising the said main frame until its tongue 20T is free of the bracket 18, then moving said frame to similar mounting on the bracket 18 of the other boiler door, or to other boilers thus equipped.

I claim:

1. A flue blower device for steam boilers having smoke-box doors in spaced parallel relation to the boiler head; each said smoke-box door provided with an aperture in predetermined location relative to the flues in the boiler, an upright main frame of Y-shape removably mounted on the door, a Y-shaped normally horizontal yoke pivotally mounted with its two arms in and between the upper termini of the main frame, a rocker member traversing the space between said arms and pivoted therein and having a central aperture registering horizon-

tally with said aperture in the door, a sleeve member pivotally secured in said central part of the rocker member and extending thence outwardly over said yoke, a steam pipe slidably retained in said sleeve and means integral of the outer end of said yoke for retaining and guiding the sleeve in horizontal plane and rack means for holding said sleeve guide in predetermined elevations, to direct the steam pipe into predetermined horizontal rows of said flues.

2. The structure specified in claim 1, in which said latter means comprises a toothed rack bar pivotally suspended from the under side of said horizontal yoke member, said main frame formed with a slotted, horizontal foot piece in which said rack bar engages and supports the yoke in selective positions, said guide means at the outer end of the yoke comprising an integrally formed horizontally slotted guide freely engaged by the said sleeve and permitting the latter to be reciprocated in horizontal plane.

3. The structure specified in claim 1, and an automatic aperture closing lid for the aperture in the boiler door and comprising a concaved member pivotally suspended and normally closing the aperture and adapted to swing inwardly when the steam pipe is projected through said door aperture toward and into the boiler flues, the lower part of said lid being weighted.

4. A flue blower device comprising an upright main frame member of Y-shape and means for removably mounting the same on the exterior face of a boiler door in predetermined relation to a group of boiler flues inwardly thereof, said door provided with an aperture intermediate the ends of the upper arms of said main frame when mounted as stated, a secondary frame member of Y-shape pivotally mounted between the upper extremities of the main frame and extending outwardly therefrom, a transverse guide formed integral of said secondary frame at its outer end and comprising an elongated horizontally slotted guide in parallel relation to the outer face of the boiler door, a sleeve member pivotally retained between the connected arms of the main frame and secondary frame but permitting free swinging movement of the said sleeve from right to left and vice-versa in said slotted guide, a steam pipe slidably retained in said sleeve and projectable through the door aperture to and into the adjacent flues in the boiler, means engaging said sleeve and steam pipe vertically to direct the latter accurately into any and all of a horizontal row of flues for each vertical position of the sleeve.

5. The structure specified in claim 4, in which said means for mounting the main frame comprises a fixed bracket on the boiler door below the aperture therein and provided with a vertical bore, the stem or lower part of the said main frame formed with an integral downwardly directed finger adapted to engage in said bore of the bracket.

6. The structure specified in claim 4, in which said steam pipe is tapered to a restricted outlet at the end projectable into the boiler flues.

JAMES D. REEKIE.