May 19, 1925.

1,538,698

M. C. HALL

ROTARY FLUE CLEANER

Filed Aug. 25, 1923

2 Sheets-Sheet 1

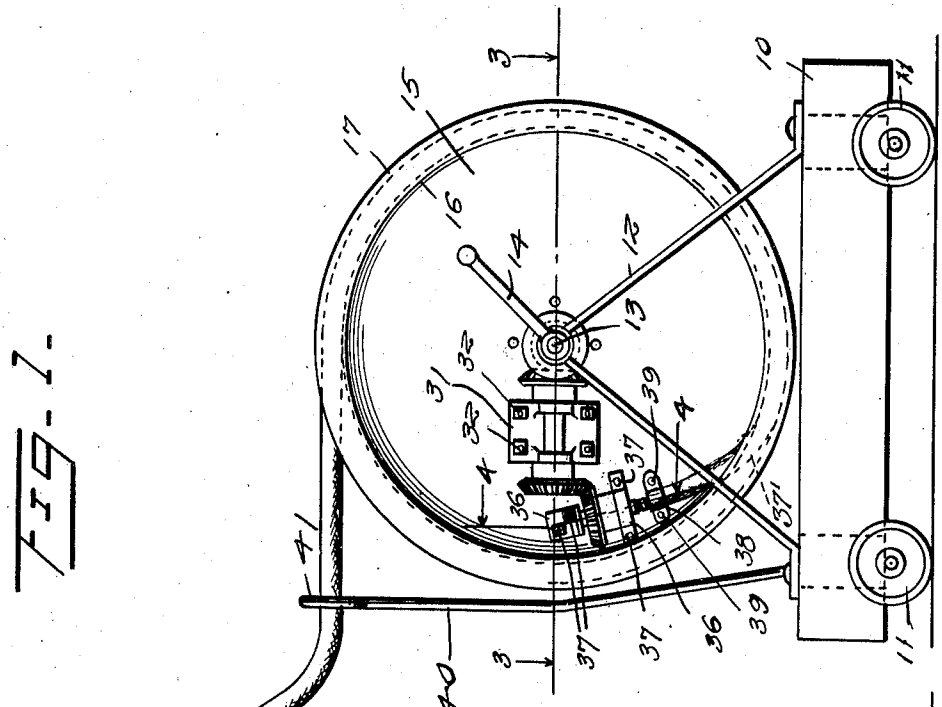


Fig. 1.

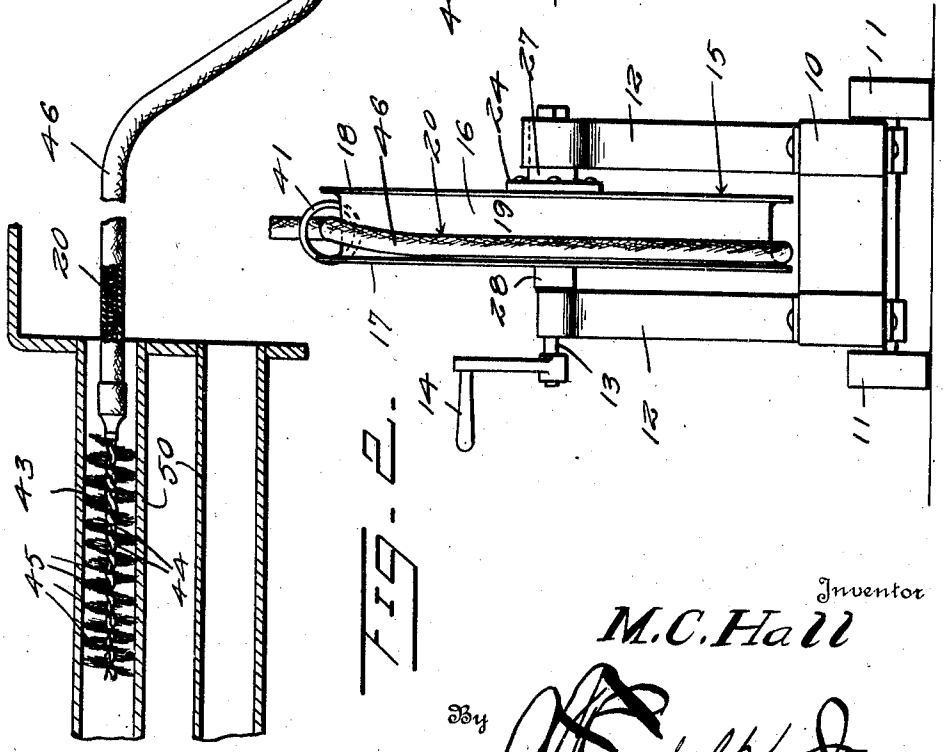


Fig. 2.

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Fig. 3

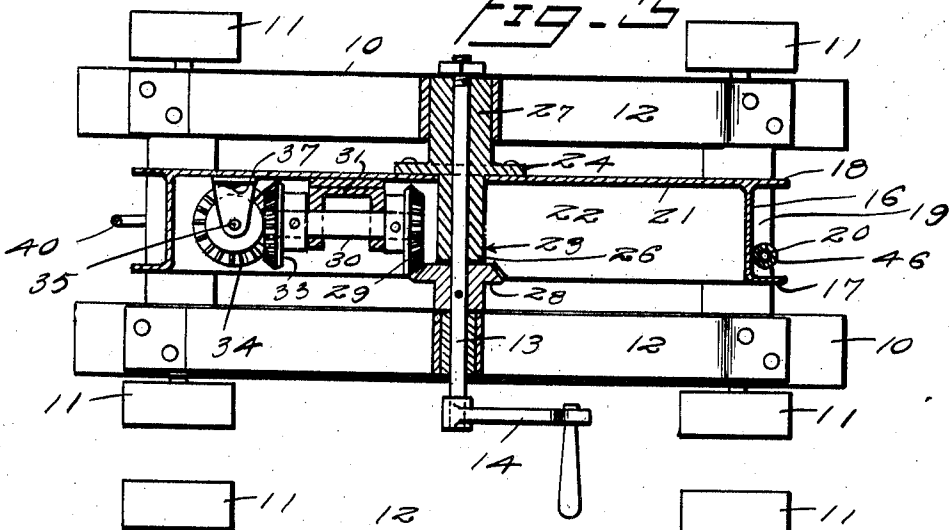


Fig. 5.

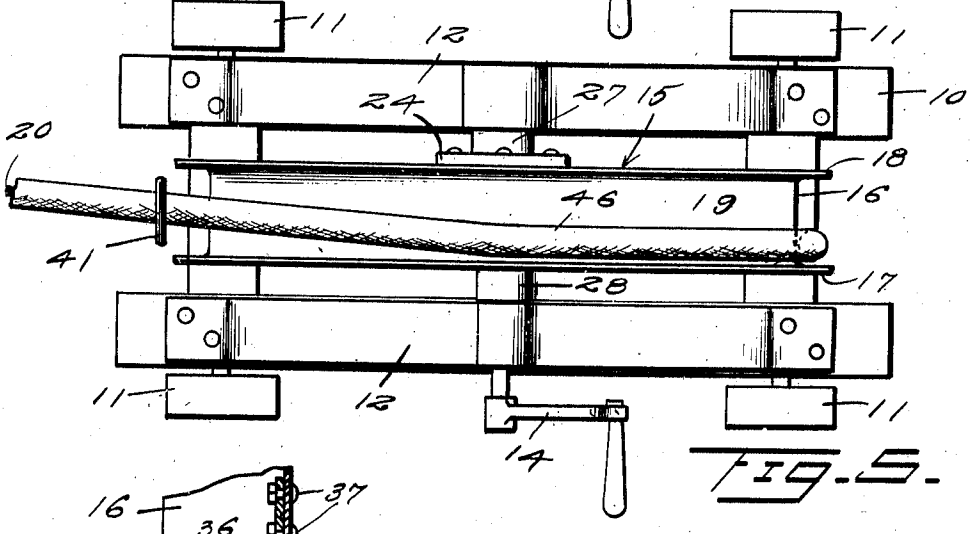
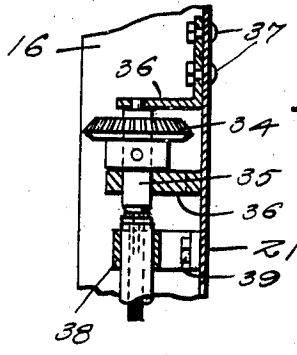


Fig. 4.



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UNITED STATES PATENT OFFICE.

MARCELLUS C. HALL, OF WEST MARION, SOUTH CAROLINA.

ROTARY FLUE CLEANER.

Application filed August 25, 1923. Serial No. 659,341.

To all whom it may concern:

Be it known that I, MARCELLUS C. HALL, a citizen of the United States, residing at West Marion, in the county of Marion and State of South Carolina, have invented certain new and useful Improvements in Rotary Flue Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to a rotary brush construction primarily adapted to clean flues and particularly boiler tubes or flues which are not ordinarily accessible for expeditious cleaning.

It is aimed to provide an inexpensive, durable and efficient machine of this character particularly having a brush operated by a flexible shaft in connection with a drum about which the shaft may be wrapped and which drum is of a particular construction compactly disposing the operating gearing for the flexible shaft.

Various additional objects and advantages will become apparent from a consideration of the description following taken in connection with accompanying drawings illustrating an operative embodiment.

In said drawings:—

Figure 1 is a view of the apparatus in side elevation with the brush applied as in use in connection with a boiler, the latter being shown fragmentarily;

Figure 2 is a front elevation;

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

Figure 4 is a sectional view taken on the line 4—4 of Figure 1, and

Figure 5 is a plan view.

Like reference characters designate like or similar parts in the different views.

In reducing the invention to practice, a suitable base is provided as at 10 and either devoid of or provided with wheels or rollers 11 so that it may be readily portable from place to place. Substantially inverted V-shaped bearings 12 rise from the base 10 and at their top have a power shaft 13 journaled therein which may be operated in any suitable manner and usually by hand through the medium of a crank 14 as shown or from any other source of power in any approved manner.

Loose on the shaft 13 so as to be capable of rotation independently of the shaft 13 is a drum 15. Drum 15 may be of any suitable construction. In the present instance it has a rim 16 from which spaced outwardly extending flanges 17 and 18 extend in order to provide a channel 19 in which a flexible shaft 20 may be wrapped. One side of the drum 15 is closed by a wall or web 21 while the other side is open to provide a recess or housing space as at 22. A hub 23 is provided for the drum 15 and it has a flange 24 exteriorly overlapping the web 21 and riveted or otherwise fastened thereto as at 25. The hub has sleeves 26 and 27 directly journaled on shaft 13, the latter sleeve being larger than the former and also journaled in one of the bearings 12.

Keyed on the power shaft 13 is a bevel gear wheel 28 which is in mesh with a bevel gear wheel 29 carried by a shaft 30. Shaft 30 is disposed radially of the drum and journaled in a suitable bearing 31 bolted or otherwise fastened as at 32 to the web 21. Shaft 30 has a bevel gear wheel 33 keyed thereto at the end opposite to the gear wheel 29.

In mesh with the gear wheel 33 is a bevel gear wheel 34 fastened to a stub shaft 35 journaled in a bearing 36 bolted or otherwise fastened as at 37 to the web 21. The flexible shaft 20 is connected to the stub shaft 35 and such flexible shaft passes through an opening 37′ in the rim 16. A suitable guide bracket 38 is also bolted or otherwise fastened as at 39 to the web 21 and over the flexible shaft 20.

It will be realized that all of the gearing is located within the recess or housing space 22 of the drum and that an exceedingly compact structure is thus produced.

A standard or guide rod 40 rises from the base 10 and has an eyelet 41 at its top through which the flexible shaft 20 passes and is guided.

The distal end of the flexible shaft 20 carries a brush head or cleaner 43 of any suitable construction, that shown being a brush which having central twisted strands 44 securing bristles 45 in place and along a spiral. The flexible shaft 20 is preferably covered by a casing 46 of rubber tubing or other suitable material.

The apparatus is primarily adapted for cleaning the flues or tubes of steam boilers and such a flue or tube is shown diagrammatically as at 50 with the brush head 43 disposed therein.

In the operation of the device, the base 10 is moved to the desired location and the flexible shaft 20 is unwound from the drum 15, the latter rotating on the power shaft 13 and the brush head 43 is disposed in the flue or tube 50, or otherwise in operative relation to the work. The crank 14 is then turned whereby the shaft 13 is rotated so that through the medium of the gears 28 and 29, shaft 30 is rotated and the latter by means of the gears 33 and 34 drives the stub shaft 35 and flexible shaft 20 and accordingly rotates the brush head 43 so that the bristles thereof will be moved in cleaning relation with the tube or work. While the crank is being operated by one hand, the operator with the other hand may move the flexible shaft 20 in a reciprocatory manner so that the brush head will engage the complete surface to be cleaned. If preferred, one operator may actuate the shaft 13 while another operator may position and reciprocate the brush. Attention is called to the fact that the drum 15 is free for rotation to pay out or take up the flexible shaft even while the power shaft is in operation. Also attention is called to the fact that the passage of the flexible shaft through the eyelet 41 tends to prevent accidental rewinding of the flexible shaft about the drum and in the groove 19.

Various changes may be resorted to provided they fall within the spirit and scope of the invention as claimed.

What is claimed is:—

1. An apparatus of the class described having a flexible tool-operating shaft, a take up drum for said shaft, and driving means associated with the drum and operable to drive said shaft.

2. An apparatus of the class described having a flexible tool-operating shaft, a take up drum for said shaft, a power shaft supporting said drum, and means primarily carried by the drum operable from said power shaft to drive said flexible shaft.

3. An apparatus of the class described having a flexible tool-operating shaft, a take up drum for said shaft, said drum having a housing space at one side thereof, and gearing located in said space and operable to drive said flexible shaft.

4. An apparatus of the class described having a power shaft, a flexible tool-operating shaft, a take up drum for said flexible shaft journaled on said power shaft, a shaft driven from said power shaft carried by and disposed substantially radially of the drum, and a connection to drive said flexible shaft from the radially disposed shaft.

5. An apparatus of the class described having a flexible tool-operating shaft, a take-up drum for said shaft, said drum having a hub provided with sleeves, a power shaft on which said sleeves are journaled, bearings for said power shaft, one of said sleeves being disposed in one of said bearings, and means operable from the power shaft to drive said flexible shaft.

6. An apparatus of the class described having a flexible tool-operating shaft, a take-up drum for said shaft having a web at one side, a rim extending from the web and about which the flexible shaft is adapted to be wrapped, said web having an opening through which said flexible shaft passes, the drum being open at the side thereof opposite to the web in order to provide a housing, and gearing carried by the drum and located in said housing adapted to drive the flexible shaft from the power shaft.

7. An apparatus of the class described having a flexible tool-operating shaft, a rotatable take-up drum therefor, means to mount the drum, and a guide means carried by the last means through which the flexible shaft passes and by which it is held against accidental wrapping on the drum.

8. An apparatus of the class described having a flexible tool-operating shaft, a take up drum for said shaft having a web at one side thereof, a rim extending laterally from the web, side flanges for the rim providing a groove in which said shaft is adapted to wrap, said rim having an opening therethrough through which the flexible shaft passes, a stub shaft in said housing space, a bearing for the stub shaft extending from the web, a shaft disposed radially of the web, a bearing for the latter shaft on the web, a driving connection between the last mentioned shaft, a power shaft on which the drum is journaled, a driving connection between the power shaft and the radially disposed shaft, bearings for the power shaft, and a base from which said bearings rise.

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

MARCELLUS C. HALL.

Witnesses:
L. D. LIDE,
J. ROLAND COLLINS.