No. 848,082. PATENTED MAR. 26, 1907.

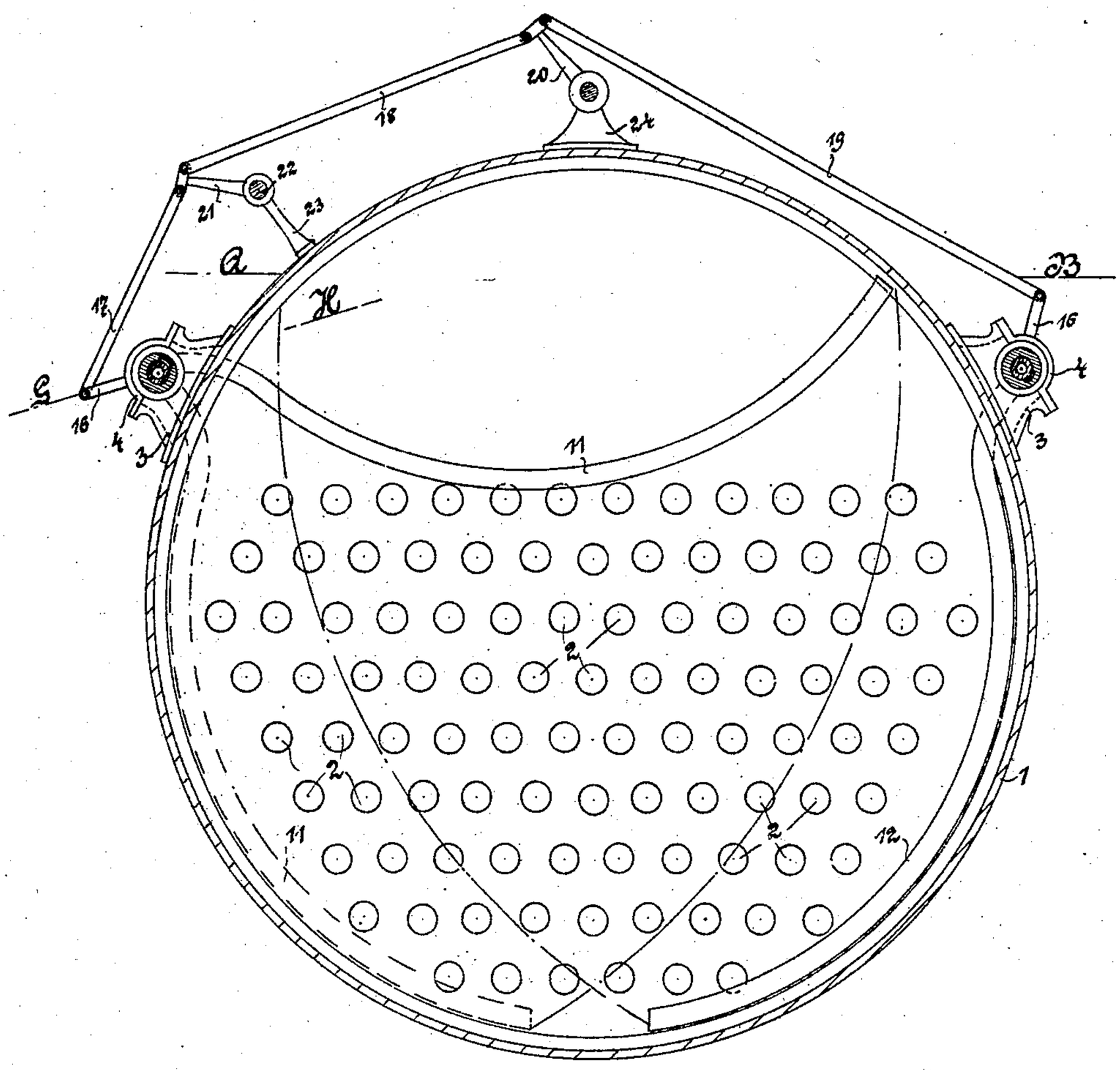
J. ALEXANDER.

MULTITUBULAR BOILER CLEANING DEVICE.

APPLICATION FILED SEPT. 4, 1906.

2 SHEETS—SHEET 1.

Fig. 1.



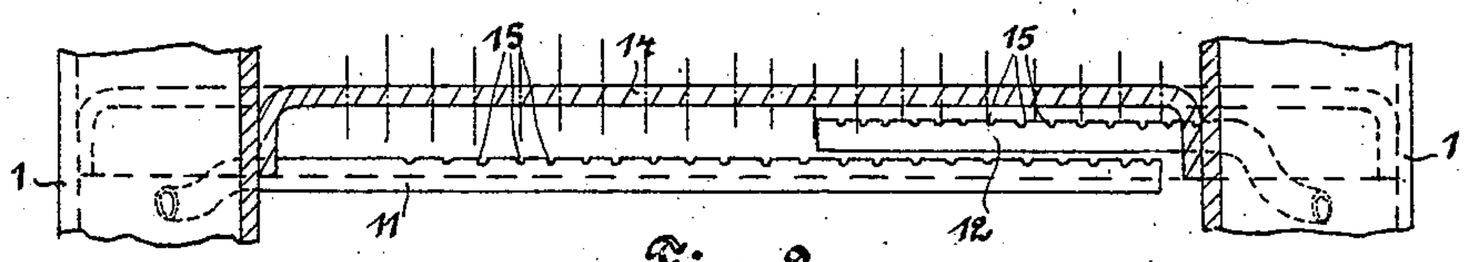


Fig. 2.

Witnesses:
Max Lewy.
Curt Hoppe.

Inventor:
Julius Alexander

No. 848,082. PATENTED MAR. 26, 1907.

J. ALEXANDER.

MULTITUBULAR BOILER CLEANING DEVICE.

APPLICATION FILED SEPT. 4, 1906.

2 SHEETS—SHEET 2.

Fig. 4.

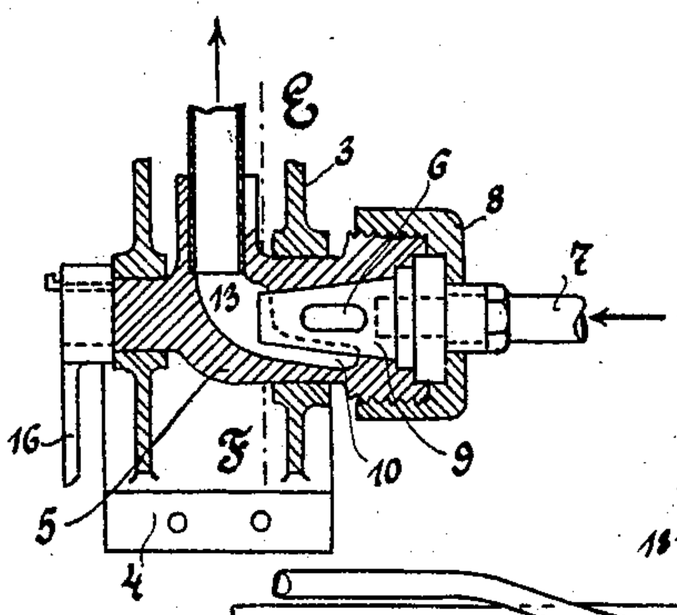


Fig. 5.

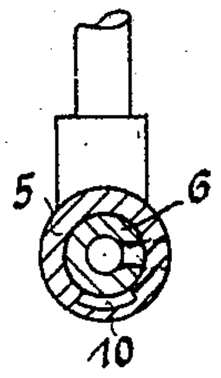


Fig. 6.

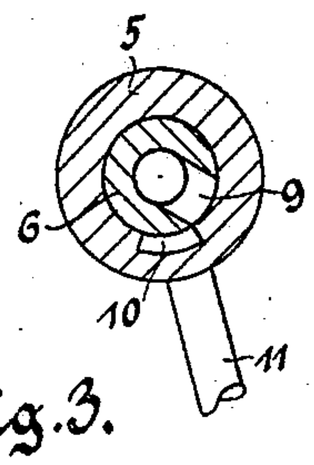


Fig. 7.

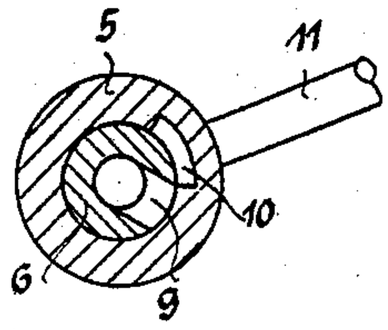
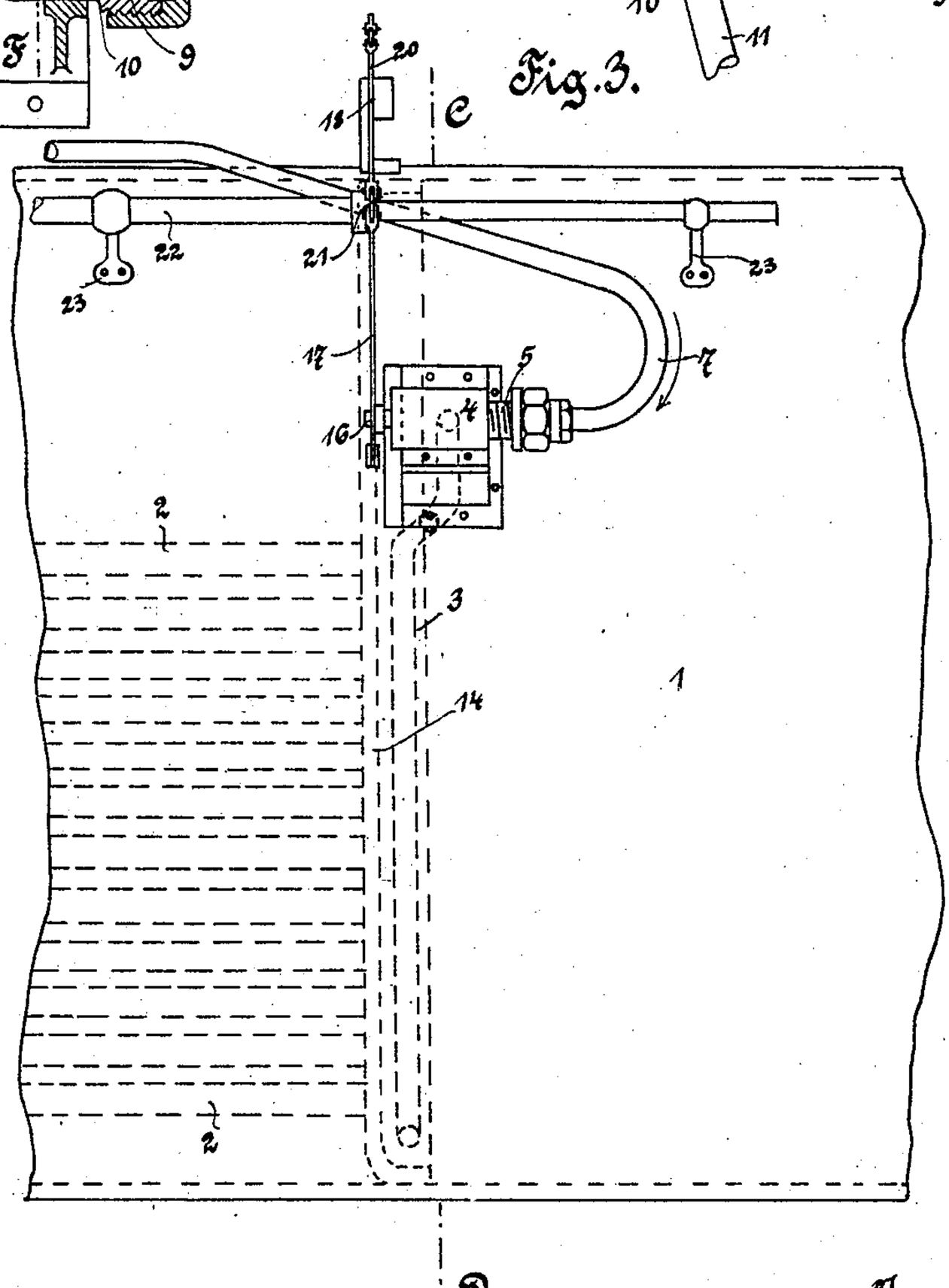


Fig. 3.



Witnesses:
Max Lewy.
Curt Hoeppe.

Inventor:
Julius Alexander

UNITED STATES PATENT OFFICE.

JULIUS ALEXANDER, OF STENDAL, GERMANY.

MULTITUBULAR-BOILER-CLEANING DEVICE.

No. 848,082. Specification of Letters Patent. Patented March 26, 1907.

Application filed September 4, 1906. Serial No. 333,269.

To all whom it may concern:

Be it known that I, JULIUS ALEXANDER, a citizen of the Empire of Germany, residing at Stendal, in the Empire of Germany, have invented a new and useful Multitubular-Boiler-Cleaning Device, of which the following is a specification.

My invention relates to a device disposed on a multitubular boiler, such as a locomotive-boiler or the like, and adapted to clean the several tubes by blowing steam through them. This device is composed of two or more rocking sweeping-tubes, which are arranged to be simultaneously turned through an angle in parallel planes near the tube-plate and in opposite directions, so that those boiler-tubes which may contain the greater part of the soot and ashes can be blown through twice or several times, respectively, during either turn of the rocking sweeping-tubes. The device normally occupies such a position that the several rocking sweeping-tubes remain without the paths of the fire-gases escaping from the boiler-tubes. Preferably the several rocking sweeping-tubes are balanced.

I will now proceed to describe my invention with reference to the accompanying drawings, in which—

Figure 1 is a vertical cross-section through a locomotive-boiler provided with my cleaning device on the line C D in Fig. 3. Fig. 2 is a horizontal section through the same on the line A B in Fig. 1. Fig. 3 is an elevation of the same. Fig. 4 is a section, on an enlarged scale, through the line G H in Fig. 1. Fig. 5 is a cross-section through the line E F in Fig. 4; and Figs. 6 and 7 are similar sections, on an enlarged scale, and show two different positions of the one rocking sweeping-tube.

Similar characters of reference refer to similar parts throughout the several views.

The multitubular boiler shown is assumed to be a locomotive-boiler which is provided with a plurality of horizontal tubes 2 2. On both sides of the smoke-box of the boiler 1 two suitable bearings 3 3 are fastened and are provided with covers 4 4. In these bearings 3 3 the casings 5 5 of two cocks are mounted to rock, the plugs 6 6 of which are rigidly connected with two bent supply-tubes 7, leading to the dome or other steam-space of the boiler 1. The plugs 6 6 are tightened by means of covering-nuts 8 and are prevented from turning by the tubes 7. Each plug 6 is provided with an aperture 9, which can communicate with a channel 10 in the casing 5. The two casings 5 5 are rigidly connected with two sweeping-tubes 11 and 12, respectively, which communicate with their channels 10 through bent passages 13. Of course the boiler 1 requires to be provided with two slots beneath the two casings 3 3, so as to permit the two sweeping-tubes 11 and 12 to pass through them and to move therein. The two sweeping-tubes 11 and 12 are closed at their free ends and are on their sides facing the tube-plate 14 provided with holes 15 15 at distances from each other, which may be about half the distances between the tubes 2 2. The two tubes 11 and 12 are preferably so bent as to remain without the scope of the boiler-tubes 2 2 if they occupy their extreme positions, as is shown at Fig. 1. Thereby they are withdrawn from the paths of the fire-gases escaping from the boiler-tubes 2 2, so that they may not be burnt. Moreover, they do not disturb the fire-gases, so that the production of steam is not reduced.

The aperture 9 of each plug 6 and the channel 10 of its casing 5 are so disposed as to break the communication between the supply-tube 7 and the sweeping-tube 11 or 12 in either extreme position of the latter, (see Figs. 6 and 7,) but to establish the said communication for any intermediate position of the sweeping-tube. Two levers 16 16 are fastened on the pins of the two casings 5 5 and are pivotally connected with each other by means of suitable rods 17 18 19 and levers 20 21. They may be actuated from the driver's stand in any convenient manner, for example, by means of a crank (not shown) and a shaft 22, mounted in supports 23 23 to rock and carrying the one lever 21. The other lever 20 may be mounted to turn on a pin fastened on a support 24.

It will be seen that if the locomotive-driver turns his crank in one direction, so as to turn the one sweeping-tube 11 from its extreme position (indicated by dotted lines in Fig. 1) upward to its other extreme position shown in full lines, the other sweeping-tube 12 will be turned downward into its lower extreme position shown, and vice versa. To permit the two sweeping-tubes 11 and 12 to pass each other, they are made to move in two parallel planes, as is shown in Fig. 2. It is preferable to move the two sweeping-tubes 11 and 12 in parallel planes near the tube-plate

14, so that the steam-jets may enter the boiler-tubes 2 2 before spreading out. Should the flange of the tube-plate 14 require it, the two sweeping-tubes 11 and 12 will have to be bent in the manner shown in Fig. 2. Preferably the two sweeping-tubes 11 and 12 are balanced as far as possible by means of the connections 16, 17, 21, 18, 20, 19, and 16, so as to render their operation easy.

The cleaning device is operated as follows: When the locomotive-driver desires to clean the boiler-tubes 2 2, he first opens the respective stop-valve to allow steam from the boiler to enter the two supply-tubes 7, and then he turns his crank in one direction, so that the two sweeping-tubes 11 and 12 will move in opposite directions and the steam entering the boiler-tubes 2 2 in jets will blow through them. From an inspection of Fig. 1 it will be clear that all the boiler-tubes 2 2 within the two dotted arcs will be twice swept, once by the one sweeping-tube 11 and once by the other sweeping-tube 12, during one turn of either of them. These tubes, which in general may contain the greater part of the soot and ashes, will therefore be twice cleaned, so that a better cleaning effect of the device is obtained than hitherto. If the locomotive-driver thinks it fit, he may turn his crank once more, but in the opposite direction, and if he so prefers he may rock his crank several times.

The cleaning device differs from other known cleaning devices in that more than one sweeping-tube is employed and that the several sweeping-tubes are made to rock and to pass each other, while they are positively connected and made to move in opposite directions, so that during either turn of them the boiler-tubes containing the greater part of the soot and ashes may be blown through several times.

The cleaning device described above may be varied in many respects without departing from the spirit of my invention.

I claim—

1. In a multitubular-boiler-cleaning device, the combination with a plurality of casings on the boiler-shell, of a plurality of sweeping-tubes mounted to rock with their ends in said plurality of casings and to pass each other in parallel planes near the tube-plate, connections between said plurality of sweeping-tubes, means for supplying steam from the steam-space through said plurality of casings to said plurality of sweeping-tubes, and means for actuating said connections.

2. In a multitubular-boiler-cleaning device, the combination with a plurality of casings on the boiler-shell, of a plurality of hollow bodies mounted to rock in said plurality of casings, a plurality of sweeping-tubes secured with their ends in said plurality of hollow bodies and adapted to pass each other in parallel planes near the tube-plate, they being closed at their free ends and perforated on their sides facing the tube-plate for blowing steam through the tubes, a plurality of levers fastened on said plurality of hollow bodies, connections between said plurality of levers, means for supplying steam from the steam-space through said plurality of hollow bodies to said plurality of sweeping-tubes, and means for actuating said connections.

3. In a multitubular-boiler-cleaning device, the combination with two casings on the boiler-shell on two sides, of two holllow bodies mounted to rock in said two casings, two sweeping-tubes secured with their ends in said two hollow bodies and adapted to pass each other in parallel planes near the tube-plate, they being closed at their free ends and perforated on their sides facing the tube-plate for blowing steam through the tubes, two levers fastened on said two hollow bodies without said two casings, connections between said two levers whereby said two sweeping-tubes are coupled and balanced, means for supplying steam from the steam-space through said two hollow bodies to said two sweeping-tubes, and means for actuating said connections.

JULIUS ALEXANDER.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.