

V. MacKAY.
BOILER CLEANING DEVICE.
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1,004,052.

Patented Sept. 26, 1911

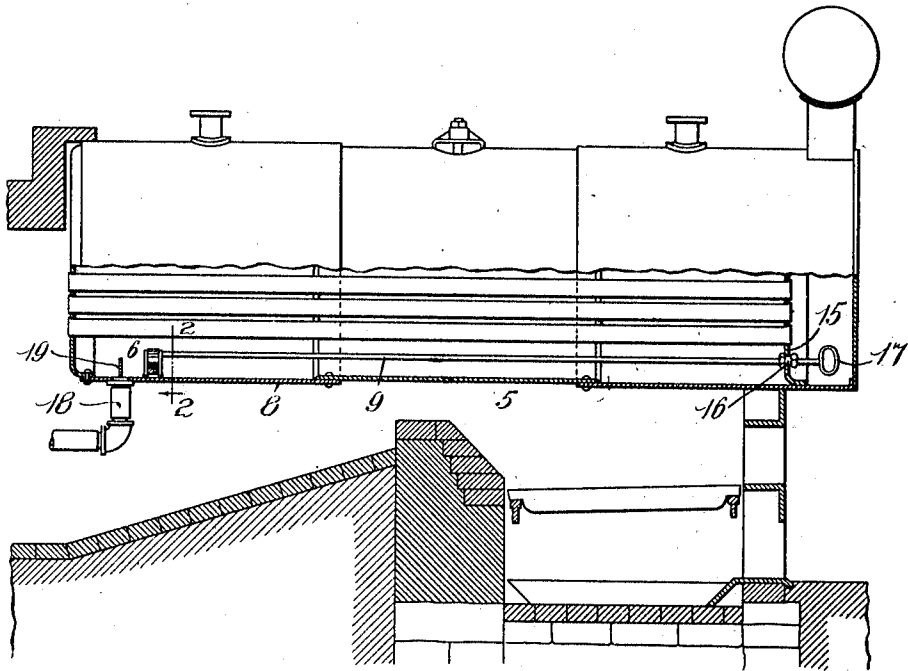


Fig. 1.

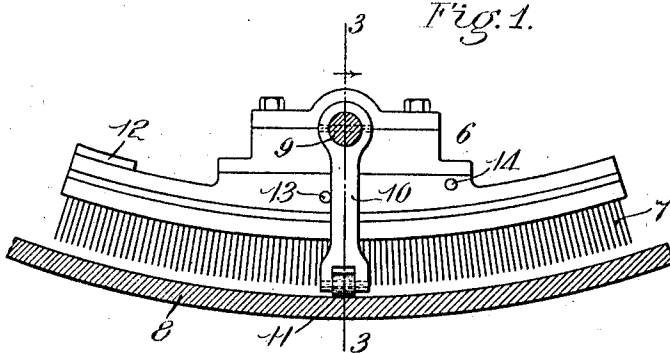


Fig. 2.

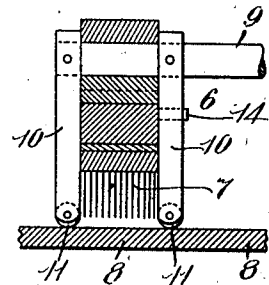


Fig. 3.

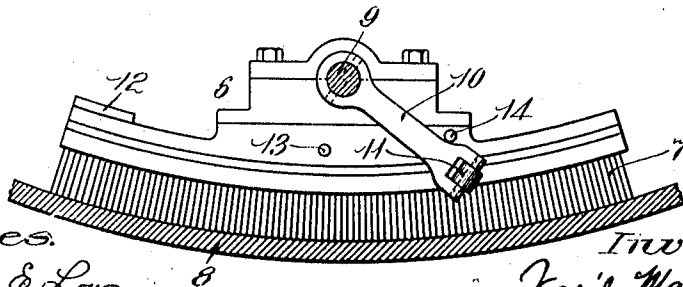


Fig. 4.

Witnesses.

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UNITED STATES PATENT OFFICE.

VASIL MacKAY, OF BOSTON, MASSACHUSETTS.

BOILER-CLEANING DEVICE.

1,004,052.

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To all whom it may concern:

Be it known that I, VASIL MacKAY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Boiler-Cleaning Devices, of which the following is a specification.

This invention relates to improvements in devices for cleaning dirt, scale, oil and other accumulations from the bottom of the internal surfaces of steam boilers, drums, tanks and the like, and has for its object to provide a practical device for cleaning out such accumulations at any time whether or not the boiler be in operation. Some of the devices to accomplish this result heretofore have been open to several disadvantages owing to inherent faults which the invention hereinafter claimed is intended to obviate.

The object of my invention is further to provide a device of this class which shall be simple in construction, easy to operate and certain in its action.

To these ends, my invention consists in the novel features of construction and in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims.

Referring to the drawing: Figure 1 is a longitudinal sectional view of a steam boiler and cleaning device therefor embodying my invention. Fig. 2 is an enlarged detail sectional view taken on line 2—2 of Fig. 1, looking toward the left showing the brush raised out of contact with the boiler. Fig. 3 is a sectional view taken on line 3—3 of Fig. 2, looking toward the right. Fig. 4 is a sectional view similar to Fig. 3 except that the brush is shown in contact with the bottom of the internal surface of the boiler.

Like numerals refer to like parts throughout the several views of the drawing.

In the drawing, 5 is a steam boiler, drum, tank or the like of any desired construction and which, in the present embodiment of my invention, consists of a horizontal tubular boiler of the fire tube class in which a space is provided below the tubes. Within this space is located a suitable cleaning device 6 which, in the present instance, consists of a brush having suitable bristles 7 preferably formed of flat spring steel, this cleaning device being suitably curved to fit the internal surface of the boiler shell 8.

To this cleaning device is connected suitable means for moving the same horizontally along the bottom of the internal surface of the boiler shell and vertically toward and away therefrom, such means preferably consisting of a flexible rod 9 journaled in a suitable bearing on the cleaning device 6 and having secured thereto a suitable arm or pair of arms 10, these arms being preferably provided, respectively, with rollers 11 journaled thereon. The rollers 11 constitute in effect parts of the arms 10 and the length of said arms from their lower extremities, that is, from the lowermost point in the periphery of each of the rolls to the axis upon which said arms rock is greater than the distance from said axis to the nearest point of contact of the brush 7 with the internal surface of the boiler shell. These arms are of such length that when swung into the position shown in Fig. 2 they lift the cleaning device out of contact with the boiler, as shown, but when said arms are swung into the position shown in Fig. 4, the cleaning device is carried by gravity into contact with the bottom of the boiler. To counteract any tendency of the cleaning device to tilt toward the right, the same may, if desired, be provided with a weight 12. The swinging movement of the arms 10 is limited by two suitable means such, for example, as two stops 13 and 14, the former being engaged by one of the arms 10 when in vertical position, and the latter being engaged by said arms when the same is carried into the position shown in Fig. 4.

The flexible rod or shaft 9 passes through the front head 15 of the boiler and there is provided a suitable stuffing box 16 through which said shaft extends, said stuffing box permitting said shaft to be moved freely to and fro, but preventing any leakage around said shaft. The shaft is provided externally of the front head 15 with suitable means for manipulating the same, such, for example, as a handle 17 by means of which the shaft may be reciprocated or rotated on its axis at will.

The boiler is provided with a suitable blow-off pipe 18 leading from the bottom thereof preferably at the rear end. Located above the entrance to this blow-off pipe is a plate 19 extending transversely of the line of travel of the cleaning device 6 and constituting a barrier which limits the movement of said cleaning device toward the

rear end of the boiler, thus preventing the dirt, scales and other accumulations from being carried across the orifice of the blow-off pipe 18 by the cleaning device 6 and insuring at all times a free passage for the escape of water, scales, dirt and other accumulations when the boiler is blown off.

The operation of the device is as follows: Assuming that the brush or other cleaning device 6 is located at the rear end of the boiler, as shown in Fig. 1, and assuming that the arms 10 stand in a vertical position, as shown in said figure, and also in Figs. 2 and 3, the operator opens the usual door of the boiler front and grasping the handle 17 exerts an outward pull thereon, thus causing the cleaning device to be carried to the front end of the boiler, it being understood that the rollers 11 will easily roll along the boiler shell. During this movement, the cleaning device itself is out of contact with the internal surface of the boiler shell and is separated therefrom by a substantial space, as shown in Figs. 2 and 3, so that none of the accumulations in the bottom of the boiler are carried toward the front. The cleaning device being now at the front of the boiler, the operator rotates the shaft 9 in the proper direction to swing the arms 10 toward the right from the position shown in Fig. 2 into the position shown in Fig. 4, thus lowering the brush into contact with the boiler shell. The operator then pushes the cleaning device inwardly toward the rear end of the boiler and the accumulations of scale, dirt, and oil are carried to the entrance of the blow-off pipe 18 and can be blown off by operating the blow-off valve in the usual manner. The brush is then raised out of contact with the boiler by rotating the shaft in the proper direction, after which the brush is again carried to the front of the

boiler, it being understood that since the brush is raised it cannot carry any of the dirt or other accumulations forward. A few repetitions of the scraping action of the cleaning device will serve to free the bottom of the boiler from all accumulations of foreign matter.

Having thus described my invention, what I claim and desire by Letters Patent to secure is:

1. A cleaning device for steam boilers and the like having, in combination, a cleaner, means for moving said cleaner horizontally within the boiler, and other means supported on said cleaner to move relatively thereto and operated by the first mentioned means for imparting to said cleaner a vertical movement independently of said horizontal movement.

2. A cleaning device for steam boilers and the like having, in combination, a cleaner, a shaft journaled on said cleaner, and an arm carried by said shaft and adapted to be moved thereby relatively to said cleaner, said arm being greater in length from the extremity of its free end to its axis than the distance from said axis to the nearest point of the operating surface of said cleaner.

3. A cleaning device for steam boilers and the like having, in combination, a cleaner, a flexible shaft journaled on said cleaner, a pivoted arm carried by said shaft adjacent to said cleaner, and means to limit the swinging movement of said arm.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

VASIL MACKAY.

Witnesses:

LOUIS A. JONES,
SADIE V. MCCARTHY.