No. 822,575. PATENTED JUNE 5, 1906.

J. G. BROMAN.

BOILER CLEANER.

APPLICATION FILED DEC. 7, 1905.

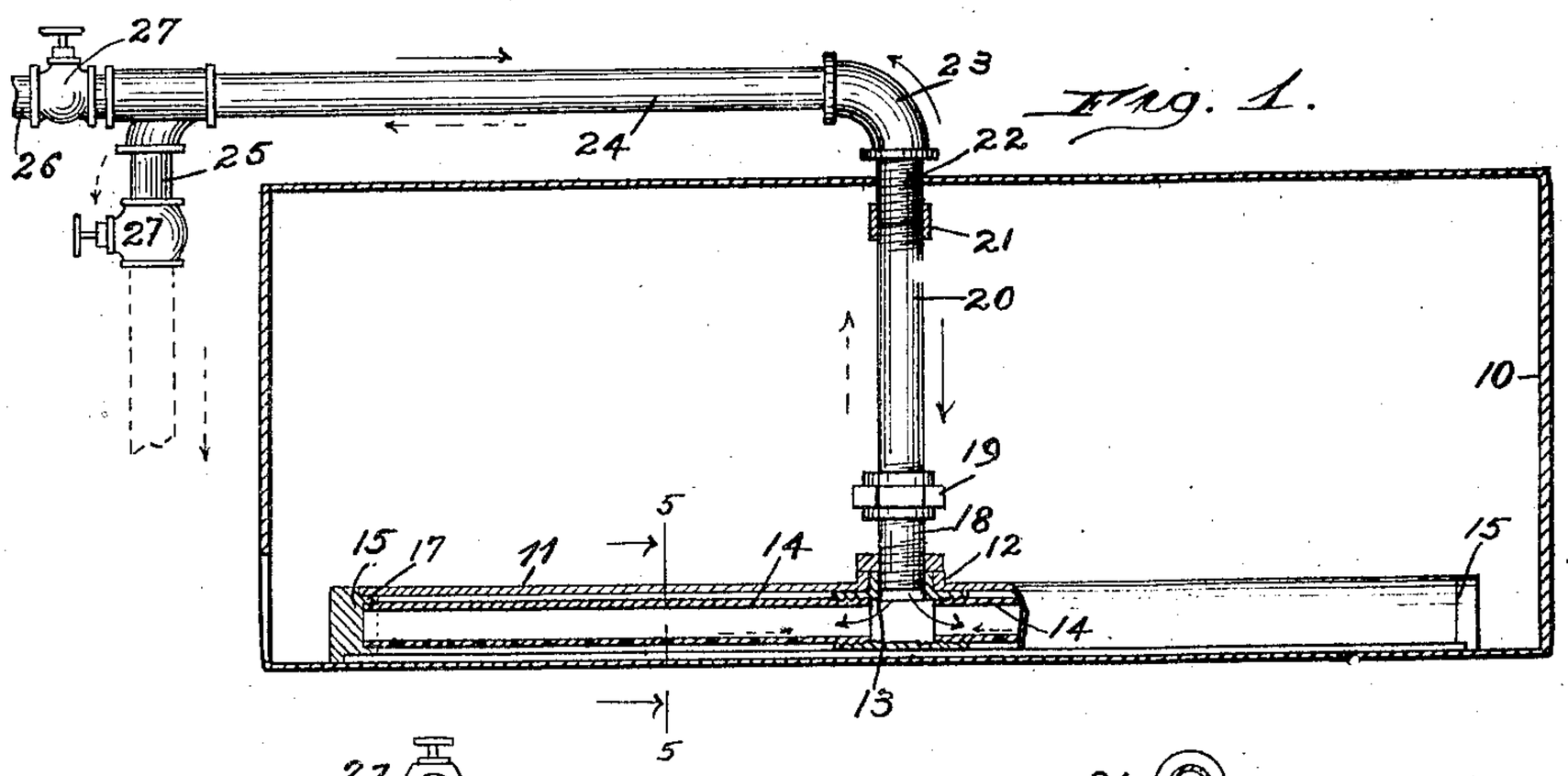

Fig. 1.

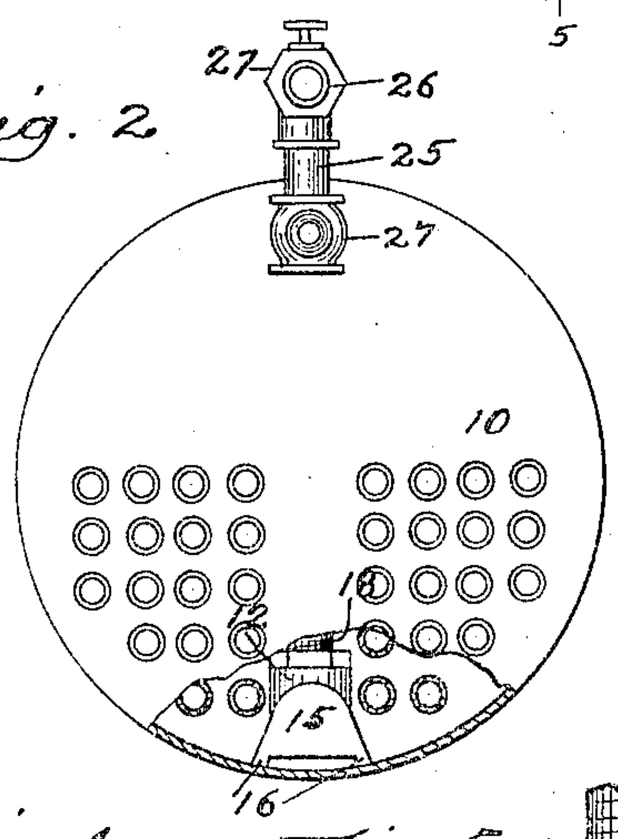

Fig. 2.

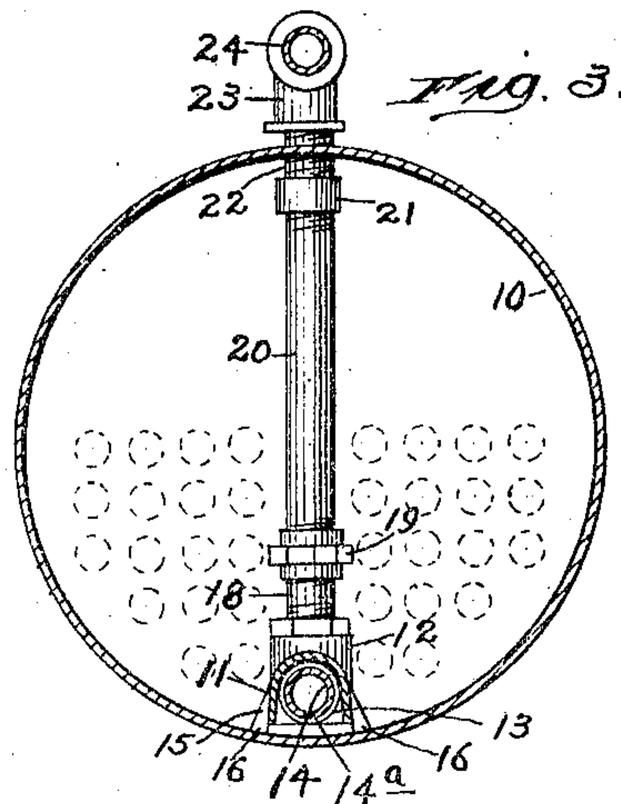

Fig. 3.

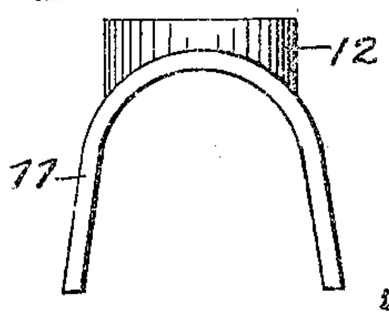

Fig. 4.

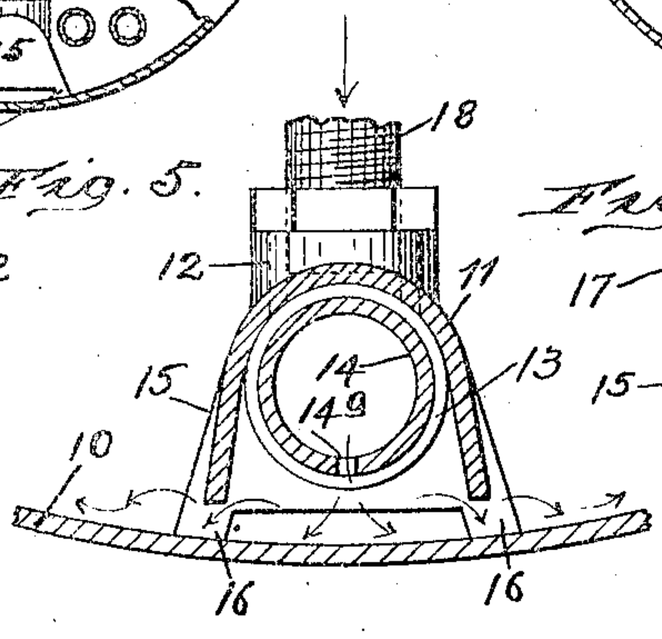

Fig. 5.

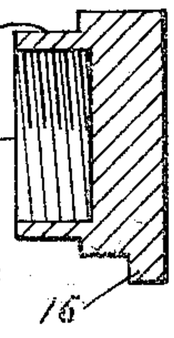

Fig. 6.

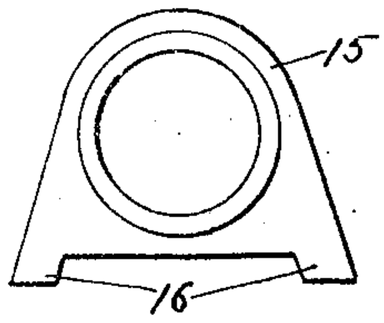

Fig. 7.

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UNITED STATES PATENT OFFICE.

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BOILER-CLEANER.

No. 822,575. Specification of Letters Patent. Patented June 5, 1906.

Application filed December 7, 1905. Serial No. 290,688.

To all whom it may concern:

Be it known that I, JOHN G. BROMAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Boiler-Cleaners, of which he following is a specification.

This invention has relation to improvements in a device to be used for removing from boilers of various types sludge, sediment, and other deposits which may accumulate therein; and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The principal object of the invention is to provide a contrivance for the above-named purpose which shall be simple and inexpensive in construction, easily placed in the boiler or removed therefrom, and which will coöperate with the steam-pressure in the boiler for removing the accumulations of various kinds therefrom.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of a boiler, showing a cleaner therefor embodying the invention and illustrating the same partly in section and partly in elevation. Fig. 2 is an end elevation of the boiler, showing the cleaner in position thereon and illustrating a part of the boiler-head broken away to disclose a portion of the cleaning mechanism. Fig. 3 is a cross-sectional view of the boiler, showing the cleaner partly in section and partly in elevation. Fig. 4 is an end view of the cleaner casing or housing. Fig. 5 is a transverse sectional view taken on line 5 5 of Fig. 1 looking in the direction indicated by the arrows and illustrating a part of the boiler and a portion of the cleaner. Fig. 6 is a sectional view of one of the end pieces or caps for the cleaner-casing, and Fig. 7 is an inner face view thereof.

Like numerals of reference refer to corresponding parts throughout the different views of the drawings.

The reference-numeral 10 designates the boiler, which may be of the ordinary or any preferred type and has located longitudinally on the inner surface of its lower portion the main part of the cleaner. The cleaner consists of a casing or housing 11, which is substantially horseshoe-shaped in cross-section, but is somewhat flared toward its lower portion. At about its middle the casing or housing 11 is provided with a tubular boss 12, in which is located an internally-screw-threaded upper portion of a T-coupling 13, to each of the horizontal extensions of which is connected a section of a perforated pipe 14, the outer ends of which are screw-threaded to engage internally-screw-threaded caps or end pieces 15, which are employed to close the outer ends of the perforated pipes 14, as well as the ends of the casing 11, in which said pipe is located. Each of the end pieces or caps 15 is provided with extensions 16, which will rest on the bottom of the boiler, and thus hold the pipe and the side edges of the casing or housing at a slight distance therefrom, as will be readily understood by reference to Figs. 1 and 5 of the drawings. Each of the caps or pieces 15 is formed in its upper inner portion with a recess 17, in which the upper portion of each end of the casing will rest when said caps are screwed up on the outer ends of the sectional pipe 14, which has in its lower portion a series of perforations 14^a, arranged along its entire length. Engaging the upper portion of the T-coupling 13 and extending upwardly from the casing 11 is a pipe-section 18, which is connected, by means of a suitable coupling 19, to another section of pipe 20, which extends to near the top of the boiler and is connected, by means of a coupling 21, to a nipple 22, located in a suitable opening in the top of the boiler, and which nipple is connected at its outer end to an elbow 23, from which leads a pipe 24, which is provided with a blow-off or discharge pipe 25 and an inlet or supply pipe 26, which latter may lead to a source of water-supply. (Not shown.) Each of the pipes 25 and 26 is provided with a valve 27 to shut off or control the flow of fluid therethrough.

As shown in Figs. 1, 2, and 5 of the drawings, the cleaner is located longitudinally in the boiler, so that it will extend to near each of its ends, and that the casing or housing 11, which partially surrounds the pipe 14, will be supported at its ends by means of the projections or legs 16 on the cap or pieces 15 at a distance from the bottom of the boiler, thus providing an open space on each side of the

perforations 14ª in the sectional pipe 14, which has communication through the pipe-sections 18, 20, 22, and 24 with the discharge and supply pipes 25 and 26, respectively.

While the above-described pipe sections and couplings afford a convenient means for communicatingly connecting the cleaning or perforated pipe 14 to the discharge and supply pipes, yet it will be understood that I do not desire to be limited to the precise arrangement or construction above set forth, for it is obvious that other ways of accomplishing such connection may be employed.

The operation is simple and as follows: When it is desired to clean the boiler or to remove therefrom the accumulations or deposits therein, the valve 27 in the supply-pipe 26 should be closed and the valve 27 in the blow-off or discharge pipe opened, when the steam-pressure will cause the sludge, sediment, and deposits to be forced through the perforations 14ª in the cleaning-pipe and out through its connections with the discharge-pipe. In this operation the sediment or accumulations all along the bottom of the boiler and on each side of the cleaner will be caused to pass out through the perforated pipe by reason of the casing or housing which partially surrounds the same and which, as before stated, is flared toward its bottom, for it will be understood that as the water and sediment or deposits located directly beneath the pipe 14 and between the sides of the casing or housing 11 are removed the sludge or deposits lying on either side of the casing will be caused to pass therein and out through the cleaning-pipe. In other words, the casing or housing will cause a widespread circulation or movement of the water and deposits which would not otherwise be produced. In some instances the sludge and sediment adheres to the boiler with such tenacity that ordinary steam-pressure will not loosen it, and in such cases the valve in the discharge-pipe may be closed and the valve in the supply-pipe opened, when water may be forced through said pipe and the connections uniting it with the cleaning-pipe, so that it will pass through the perforations 14ª and out under each side of the casing or housing 11 in such a manner as to greatly agitate the water at the bottom and sides of the boiler, thus loosening or liberating the sediment or deposits thereon, after which it may be removed by again opening the valve in the discharge-pipe and closing the one in the supply-pipe. It will be understood that the housing or casing 11 surrounding the cleaning-pipe will be firmly held against the bottom of the boiler by reason of the pipe sections and couplings, or the connections uniting the cleaning-pipe to the discharge and supply pipes, or by any other suitable mean.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a boiler-cleaner, the combination with an elongated housing having its entire lower portion open and adapted at its ends to rest on the inner lower portion of the boiler, of a pipe located longitudinally therein and having perforations in its lower portion, a supply-pipe and a discharge-pipe located externally of the boiler and having communication with the perforated pipe at about its middle and through the boiler and housing to hold the latter in contact with the boiler.

2. In a boiler-cleaner, the combination with an elongated housing having its entire lower portion open, of a pipe located longitudinally therein and having perforations in its lower portion, a cap-piece having legs or projections and secured on each end of the pipe to close the ends thereof as well as the ends of the housing, the legs or projections of said cap-pieces adapted to rest on the lower inner portion of the boiler to hold the side edges of the housing at a distance therefrom, and means communicating with the pipe and extending through the boiler and said housing.

3. In a boiler-cleaner, the combination with an elongated housing having its entire lower portion open, of a perforated pipe located longitudinally therein, a cap-piece having legs or projections and secured on each end of the pipe to close the ends thereof as well as the ends of the housing, the legs of said cap-pieces adapted to rest on the inner lower portion of the boiler to hold the side edges of the housing at a distance therefrom, a supply-pipe and a discharge-pipe located externally of the boiler, means extending through the boiler and said housing and communicating at one of its ends with the perforated pipe and at its other end with the supply and discharge pipes.

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