

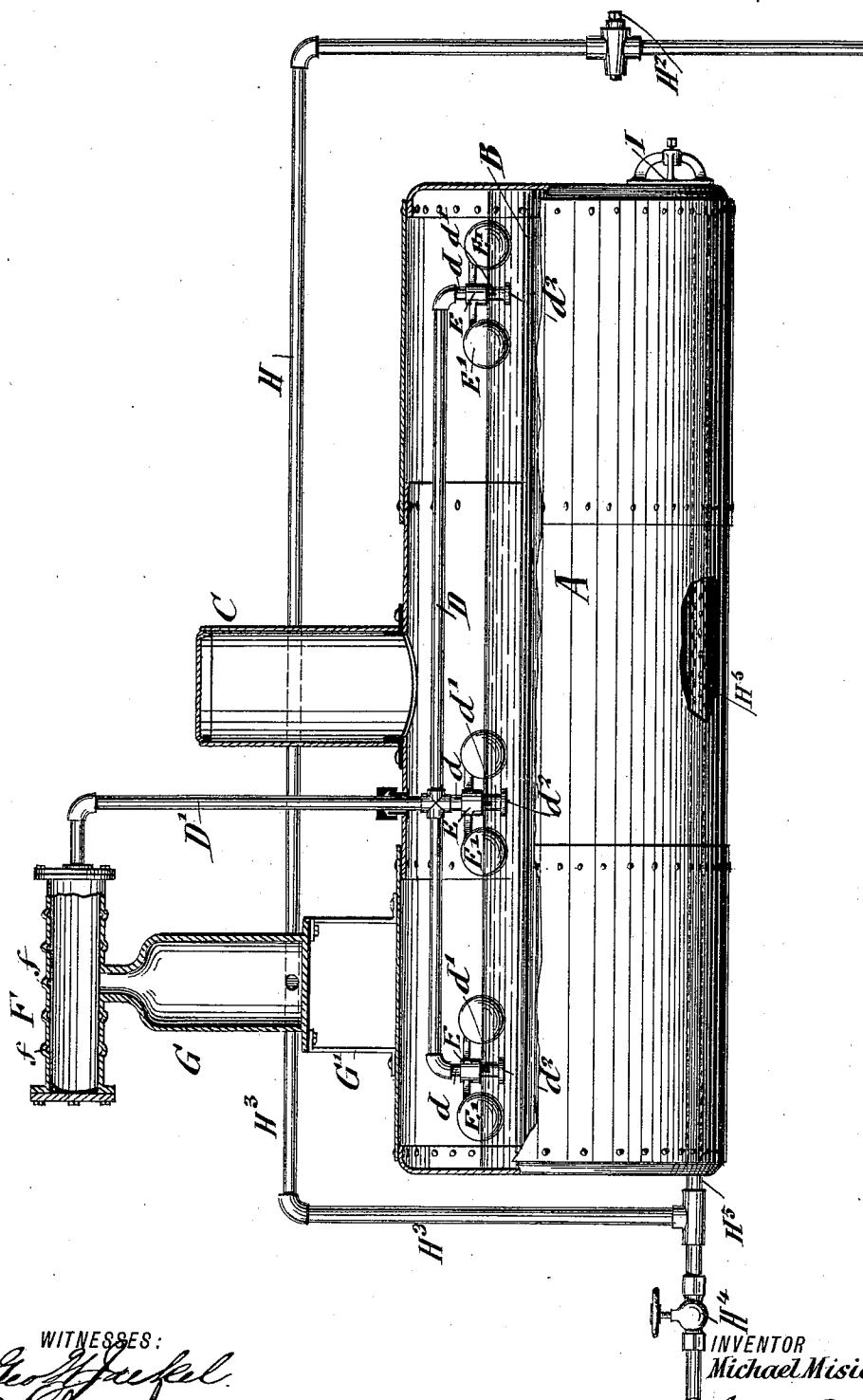
(No Model.)

2 Sheets—Sheet 1.

M. MISIC.
BOILER CLEANER.

No. 557,007.

Patented Mar. 24, 1896.



WITNESSES:

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(No Model.)

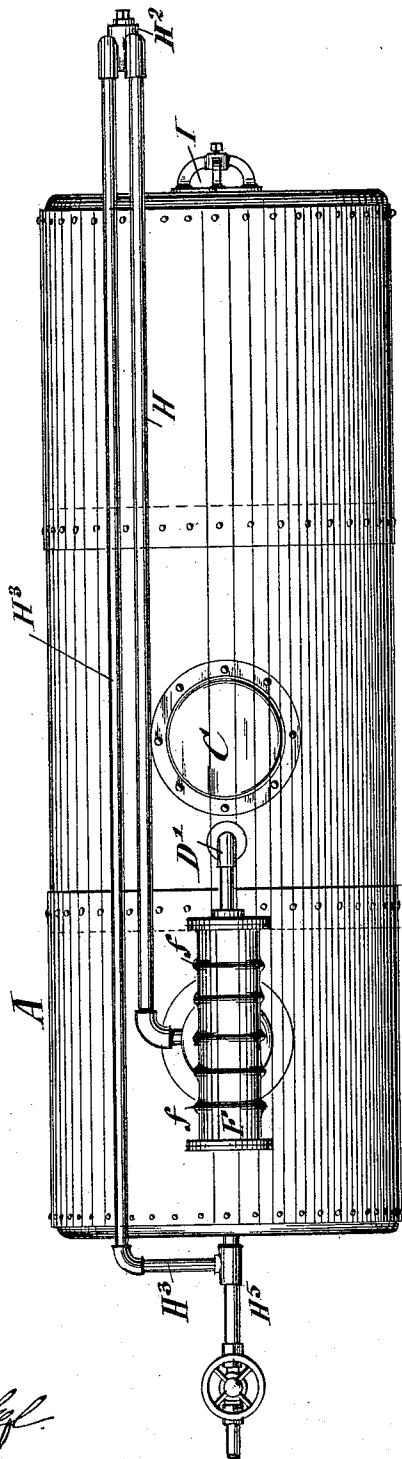
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Fig. 2.



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UNITED STATES PATENT OFFICE.

MICHAEL MISIC, OF BROOKLYN, NEW YORK.

BOILER-CLEANER.

SPECIFICATION forming part of Letters Patent No. 557,007, dated March 24, 1896.

Application filed December 11, 1895. Serial No. 571,739. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL MISIC, a citizen of the United States, residing in the city of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Devices for Preventing Scale in Steam-Boilers, of which the following is a specification.

This invention relates to an attachment for preventing scale in steam-boilers, by which the formation of scale is prevented in an effective manner, and thereby the inconvenience arising from the presence of scale in the interior of the boiler avoided; and the invention consists of an attachment for preventing scale in steam-boilers, which comprises a pipe located within the upper part of the steam-space of the boiler and provided with downwardly-extending branches that are closed at their lower ends and provided at the water-level with a slot-like opening or openings, which is opened or closed, more or less, as the water-level rises or falls, by a sleeve supported by floats. The main pipe is connected through the top of the boiler with a condenser, the lower part of which communicates with a receiver below the condenser, from which the water of condensation is collected and drawn off from time to time by a suitable pipe, as will be fully described hereinafter and finally pointed out in the claims.

In the accompanying drawings, Figure 1 represents a sectional side elevation of a steam-boiler with my improved scale-preventing attachment applied to the same, and Fig. 2 is a plan view of Fig. 1.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a steam-boiler of any approved construction, preferably of that class provided with fire-tubes B and a steam-dome C. At the upper part of the interior of the steam-boiler is arranged a longitudinal main pipe D, which is provided with a number of downwardly-extending branch pipes *d* that extend at some distance below the ordinary water-level of the boiler. The short branch pipes *d* are closed at their lower ends and provided with one or more slot-like openings *d'* that are opened more or less by means of a sleeve E, with the diametrical arms of which symmetrically-ar-

anged floats E', of copper, cast-iron, or other suitable material, are attached. The sleeves E rise or fall, by means of the floats, with the level of the water in the boiler, and open thereby the openings *d'* more or less. The extreme limits of the rising and falling motion of the sleeves E are the closing-cap *d*² at the lower end of the pipe *d* and the couplings by which the branch pipes *d* are connected with the main pipe D.

The pipe D is connected by a pipe D', which passes through a stuffing-box at the top of the boiler to a condenser F that is supported above the boiler, said condenser being provided with exterior ribs *f* for enlarging the surface of the same and being closed by suitable heads at its ends, with one of which the discharge-pipe D' is connected. A receiver G is connected with the bottom of the condenser F and is supported by suitable legs G' on top of the boiler. The bottom of the receiver G is connected with a drain-pipe H, said drain-pipe being provided with a three-way cock H², with which a second pipe, H³, is connected that extends over the top of the boiler and connects with a pipe H⁴ that extends longitudinally through the boiler at the bottom of the same and that is provided with perforations, so as to take up the sediment or mud and conduct it off. A stop-cock H⁴ serves for blowing off from time to time the sediment from the boiler. A manhole and manhole-cover I in the opposite boiler-head near the bottom of the same serve to enable the cleaning of the boiler from time to time.

My improved scale-preventing attachment operates as follows: The steam passes from the upper or steam space of the boiler through the openings *d* into the main pipe D and through the upwardly-extending pipe D' into the condenser, in which the steam condenses, the water of condensation passing into the receiver and being drawn off from time to time. Owing to the partial vacuum established in the condenser the scum which collects on the surface of the water by the boiling of the same is sucked off through the pipes D D' into the condenser, the condensing action continuing to suck up the scum and remove it during the ebullition of the boiling water into the condenser and to the receiver. With the rising or falling of the water-level the float-governed

sleeves E are likewise raised or lowered, so as to open the opening d' more or less, so as to keep them always open for drawing off the scum that is formed on the surface of the water in the boiler. During the boiling action the lighter particles forming the scum are first forced up to the surface of the water. It is obvious that by the suction action exerted at various points on the surface of the water in the boiler the impurities that collect in the form of scum or film on the surface of the water are continuously drawn off into the condenser and collected into the receiver, through which they are blown off from time to time through outlet-pipe H^6 under the action of the steam-pressure by opening the three-way cock H^2 , while the mud or sediments collected at the bottom of the boiler are drawn off simultaneously through the longitudinal pipe H^5 , pipe H^3 , and stop-cock H^2 . Instead of drawing off the mud or sediment through the pipe H^3 the same may be passed directly out of the pipe H^5 by opening the cock H^4 , the cock H^2 being of course closed.

My improved scale-preventing attachment is very reliable and effective in action, as owing to its simple construction it cannot get out of order or be likely to choke up, as the suction action prevents the closing of the openings d' in the branch pipes d , the suction action ceasing, however, as soon as the water-level falls below the lower ends of the openings d' , as in this case the sleeves close the openings entirely and prevent any further condensation of steam in the condenser. As soon as the proper water-level is established, the outlet-openings are opened again by the raising of the sleeves and the proper functioning of the attachment is again established.

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

1. The combination, with a steam-boiler, of a main pipe arranged in the steam-space of

the boiler, downwardly-extending branch pipes closed at their lower ends and provided with slot-like openings, a sleeve fitting snugly on and guided on each of said branch pipes and forming a valve to control said opening, floats supported on the sleeves, an upwardly-extending discharge-pipe connected with the main pipe and leading out of the boiler, and means for condensing the steam and collecting the scum drawn from the surface of the water in the boiler, substantially as set forth.

2. The combination, with a steam-boiler, of a main pipe arranged in the steam-space of the boiler, and provided with means for conducting scum from the surface of the water, a discharge-pipe connected with the main pipe, a condenser, a receiver, a mud-pipe in the lower part of the boiler, pipes leading from the mud-pipe and receiver, a three-way cock common to the last-named pipes, and an outlet-pipe leading from the three-way cock, substantially as set forth.

3. In a scale-preventing attachment to steam-boilers, the combination, with a longitudinal main pipe arranged in the steam-space of the boiler, and provided with branch pipes extending below the water-level, said branch pipes being provided with closing-caps at their lower ends and provided with openings, of float-governed valves for opening or closing said openings, with the rising or falling of the water-level, so as to permit the drawing off of the scum collecting on the surface of the water through said discharge-openings, said closing-caps limiting the downward movement of the valves, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

MICHAEL MISIC.

Witnesses:

PAUL GOEPEL,
GEORGE W. JAEKEL.