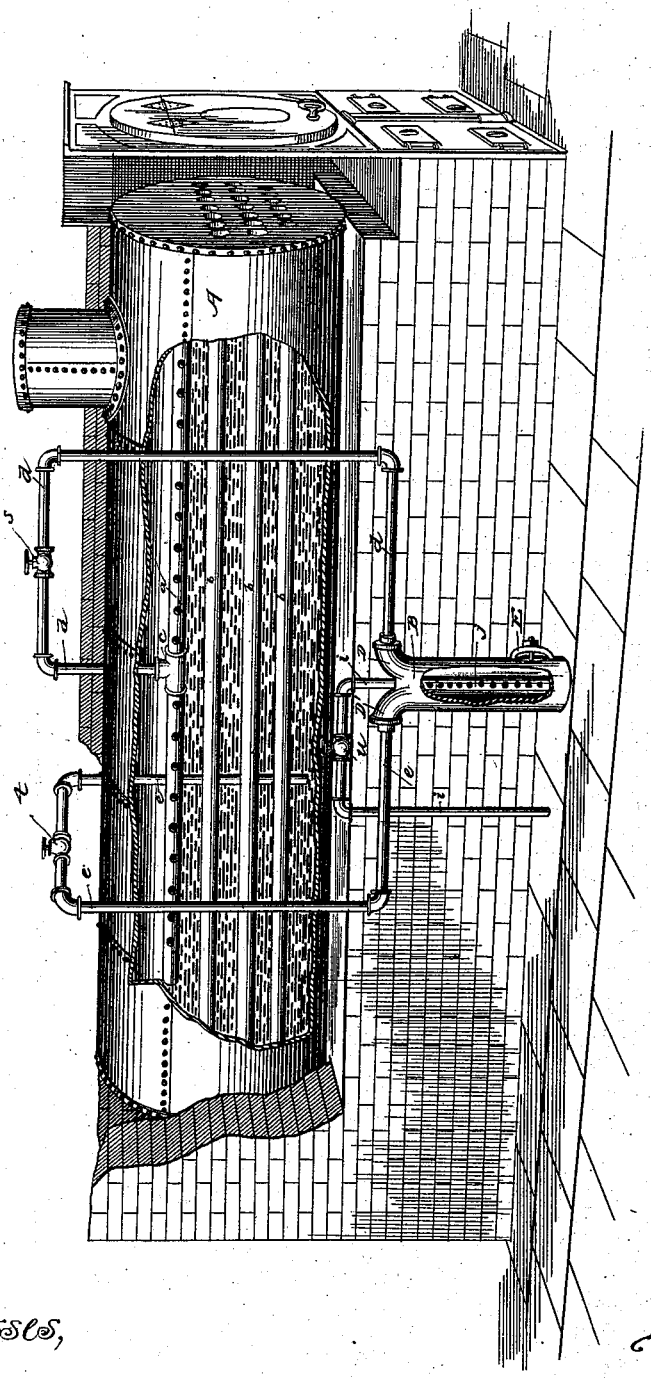
(No Model.)

J. BINKS.

REMOVING IMPURITIES FROM STEAM BOILERS.

No. 382,508. Patented May 8, 1888.



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UNITED STATES PATENT OFFICE.

JOSEPH BINKS, OF CHICAGO, ILLINOIS.

REMOVING IMPURITIES FROM STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 382,508, dated May 8, 1888.

Application filed November 19, 1887. Serial No. 255,671. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BINKS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Apparatus for Removing Impurities from Steam-Boilers, which I desire to protect by Letters Patent of the United States, of which the following is a specification.

The object of my invention is to remove the impurities of the water in the boiler before incrustation has taken place. The tendency of impurities in boilers is to accumulate upon or near the surface of the water during ebullition or under the boiling operation. This tendency is taken advantage of in my improvement, and the sedimentary matter is removed while in such condition.

In the accompanying drawing, making a part of this specification, a furnace and boiler are shown, the walls of the latter being broken away to show the interior thereof.

The boiler, of usual construction, is designated A. Tubes *b*, also of ordinary construction and application, are shown in said boiler.

As a principal feature of my invention, I locate within and longitudinally of the boiler one or more perforated tubes, *a*. This tube I preferably make equal or nearly equal to the length of the boiler, and support it by securing its ends to the boiler-stays, or in any manner most convenient. Tube *a* is so located in the boiler as to be somewhat beneath the surface of the water. By the application of a sleeve or coupling, *c*, tube *a* is connected with a pipe, *d*, extending through the top of the boiler, by which tube *a* may be partly or wholly supported. An extension of pipe *d*, or connections of pipes therewith, is brought from above the boiler to a position below, and is connected with a deposit-chamber, B. Connected with chamber B, and extending above the boiler, thence through the top of the boiler, and terminating near the bottom on the interior of said boiler, is a pipe, *e*. The chamber B at its upper end consists of two curved branches, D and D′, to which the connections, respectively, with tubes *d* and *e* are made. Centrally and longitudinally of chamber B is inserted a tube, *j*, perforated, as permitted to appear through the broken wall of said chamber. A continuation of tube *j* is shown in pipe *i*, terminating downwardly. Pipe *d* is supplied with a cock, *s*, pipe *e* with a cock, *t*, and pipe *i* with a cock, *u*. The first two are normally open.

The operation of discharging the sedimentary matter from the boiler has its first stage in the tendency of such matter, through agitation or pressure, to enter the tube *a* through the perforations thereof. It is then forced through pipe *d* to chamber B. At this point the curved form of the entrance-branch D tends to direct the water, with its freight of foreign matter, to the bottom of chamber B, and, being acted upon by gravity and retarded within the chamber, the foreign matter is deposited, and the water thus relieved passes out through pipe *e* and into the boiler below the sediment.

Tube *j* and pipe *i* are for the purpose of cleaning out chamber B, which may be done by closing cock *t* of pipe *e* and opening cock *u* of pipe *i*, when the water from the boiler through pipe *d* is forced to find exit through said cleaning-tube and pipe, thus "blowing out" the chamber B. To relieve the chamber of any incrustation not acted upon by the blowing-out process, a hand-hole, E, is provided in the side of the chamber, to give access to the latter and permit removal of such deposit.

I am aware that it is not new to carry off the accumulation of foreign matter by appliances in some respects similar to mine, and I therefore do not broadly claim every device that may be used for collecting the matter at or near the water-surface in the boiler, nor broadly claim a deposit-chamber interposed between pipes leading from and returning to the boiler.

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

1. In a steam-boiler, the combination, with a perforated sediment-collecting tube located within and longitudinally of the boiler at the water-line, a deposit-chamber exterior to the boiler, a pipe communicating with the sediment-collecting pipe in the boiler and with the upper end of the sediment-chamber, a return-pipe leading from the upper end of the deposit-chamber and with the interior of the boiler below the water-line, a blow-off pipe

extending longitudinally of the deposit-chamber and perforated therein and opening outside thereof, each of said pipes being provided with suitable cocks, substantially as and for the purpose set forth.

2. In a steam-boiler, the combination, with a perforated tube or tubes, *a*, and pipes *d* and *e*, the latter provided with a cock, *t*, of a deposit-chamber, B, exterior to the boiler, having therein a perforated tube, *j*, with which latter is connected a pipe, *i*, provided with a cock, *u*, substantially as and for the purpose set forth.

3. In a steam-boiler, the combination of a perforated tube or tubes, *a*, pipe *d*, leading therefrom, chamber B exterior to the boiler, provided with curved branches D and D′, perforated tube *j*, pipe *i*, and hand-hole E, and a pipe, *e*, leading from the chamber to the interior of the boiler, substantially as specified.

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