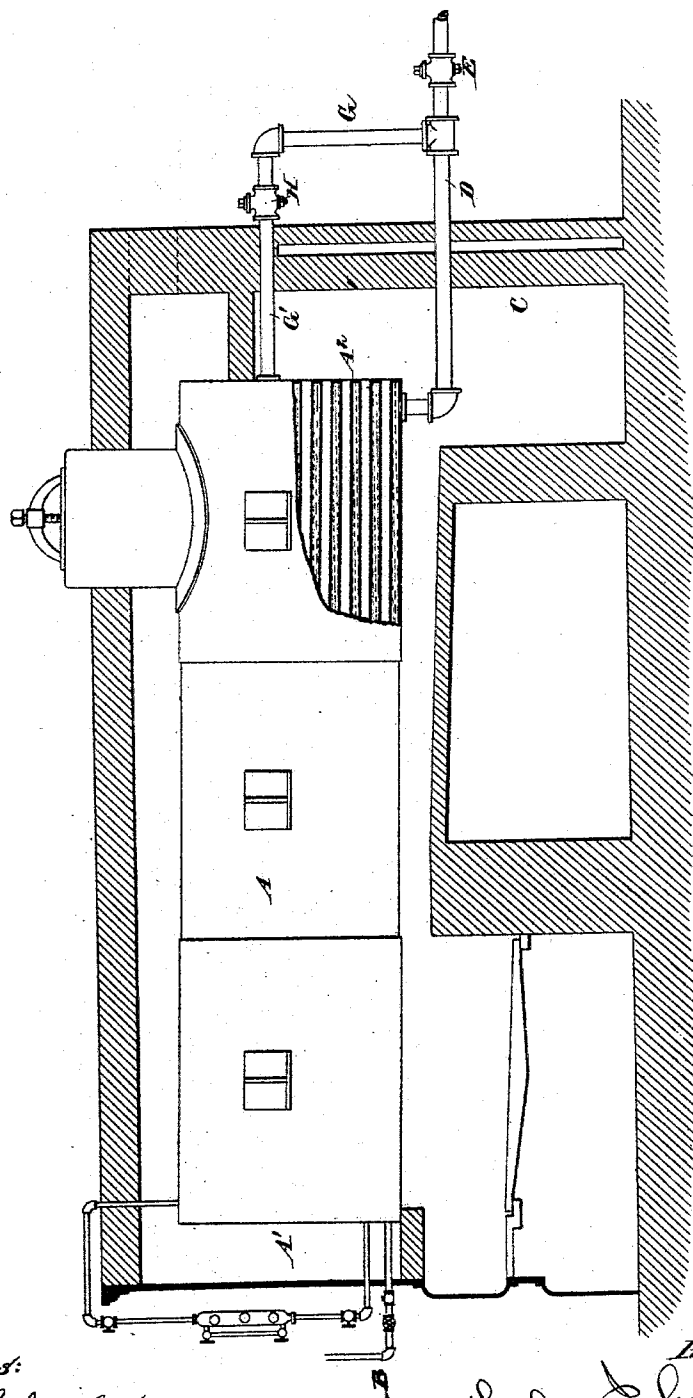


(No Model.)

S. J. GEOGHEGAN.
STEAM BOILER ATTACHMENT.

No. 548,360.

Patented Oct. 22, 1895.



Witnesses:

Charles R. Searle
Joe L. Fingleton

Inventor:

Stephen J. Geoghegan
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UNITED STATES PATENT OFFICE.

STEPHEN J. GEOGHEGAN, OF NEW YORK, N. Y.

STEAM-BOILER ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 548,360, dated October 22, 1895.

Application filed April 29, 1892. Serial No. 431,110. (No model.)

To all whom it may concern:

Be it known that I, STEPHEN J. GEOGHEGAN, of New York city, in the State of New York, have invented a certain new and useful Improvement in Steam-Boiler Attachments, of which the following is a specification.

My invention provides for inducing a constant circulation of water through that portion of the blow-off pipe which is within the fireplace. The blow-off is taken from near the rear end of the boiler.

It has long been known that blowing off from near the rear end is conducive to the success of the operation and the removal of all the scale and sedimentary matter from the bottom of the boiler, because the feed-water, being usually introduced at the front and directed backward, tends to wash all such matter toward the rear but there has heretofore been a serious objection to such location with a boiler liable to be strongly fired in the risk of burning out the portion of the blow-off pipe which is adjacent to the boiler and which when thus arranged is bathed in flame. The steam generated in the part of the blow-off pipe thus exposed to heat is liable to drive out the water, and the dry pipe becomes red hot and in a short time, sometimes only a few weeks, oxidizes quite through and fails, with a noise and escape of steam certain to cause serious alarm and annoyance and to involve the disuse of the boiler and its dependencies until by hasty action a new pipe can be supplied, soon to fail in a similar manner if hard firings shall be continued. My invention avoids all this. I prefer to set the boiler with its rear end a little lower than the front to promote the accumulation of the sediment at and near the rear. I connect the blow-off pipe to the bottom near the rear and lead away in any required direction, usually rearward, running almost necessarily through the passage which is filled with hot products of combustion, and I fit the blow-off cock or valve in its usual position or a little farther from the boiler outside the wall, and from a point in the blow-off pipe nearer the boiler than such cock I lead a pipe directly upward to or near the water-line of the boiler and there provide an L, or, if convenient, a

more gradual curve, and an extension horizontally therefrom connects to the boiler. This connection may be just at the water-line or a little above or below such line. The water-line may vary, so as to be sometimes above and at other times below such connection, and no appreciable difference in the action will be observed, because the motion of the water and steam through it is always inward, being the opposite of that in the devices sometimes used to cause a deposit of sediment in the pipes or in chambers attached for boiler-cleaning. My invention does not clean the boiler except by the ordinary operation of blowing out at the brief periods when the blow-off is open. I make the pipes thus added for circulation nearly or quite as large as the blow-off pipe, but no larger, and I carefully avoid having any enlargement or chambers in which sediment may deposit, because I wish the current through my pipes to be as smooth and rapid at all points as possible, the water descending from the boiler into the blow-off pipe from the bottom becoming heated and expanded there and partially formed into steam and then escaping therefrom by rising through the relatively-long upright part of the circulating-pipe, and thence moving horizontally into the boiler near the water-surface, again to circulate in the boiler, and in due course to repeat the movement. I provide a valve or cock in the circulating-pipe, which must be closed when the boiler is to be blown off, so as to compel the boiler at that period to discharge from its bottom alone. It is important that if any form of screw-valve or the like be applied in the circulating-pipe it be of the straightway class, so as to interpose no resistance to the movement of the water and steam by the slight force available for circulation during the long periods when the boiler is in its proper use between the several periods of blowing off.

The accompanying drawing forms a part of this specification and represents what I consider the best means of carrying out the invention. It is a central longitudinal vertical section.

A is the boiler; A', the front end thereof, receiving the feed-water, as usual, through the

feed-pipe B, and A² the slightly-lower end at the rear.

C is the usual masonry wall and other setting, and D is the blow-off pipe.

5 E is the usual blow-off cock.

G is a pipe connected to the blow-off pipe D just within or nearer the boiler than the cock E and leading upward, as shown, nearly or quite to the level of the water-line of the boiler, where it turns and connects by a cock H with a further horizontal extension G', leading into the end of the boiler.

10 In working the boiler for supplying steam for power or for any other purpose, as heating or the like, the blow-off cock E is closed and the circulating-cock H is open. Thus conditioned, the water in the blow-off pipe near the boiler is expanded and partially changed to steam and rises through the pipe G and passes through the cock H into the boiler, while its place is supplied by dense water descending from the bottom of the boiler, as will be obvious. It will tend to insure that the current never shall commence in the reverse direction if the pipe G connects to the boiler above the water-line; but I do not consider this condition essential.

When at long intervals or at any period desired a portion or the whole of the boiler contents are to be blown out, the cock H should be closed, and then the blow-off cock E being opened the water is driven out as usual. The action is the same if the cock H is allowed to remain open or if no such cock is introduced, except that the steam freely escaping through the pipe G when the blow-off period arrives is liable to reduce the pressure of the steam before a sufficient quantity of the water has been driven out.

40 I attach importance to the introduction of the feed at the front and the setting of the boiler with its rear end lower than the front, because these features promote the movement of the sedimentary matter toward the rear end of the boiler, ready to be blown out when the cock E is opened. The invention tends to draw a portion of the solid matter

into the blow-off pipe by the gentle continuous current during the whole period while the boiler is in use, and it is certain to have the main part of the precipitated material favorably deposited or lying in a half-deposited condition near the blow-off whenever the circulating-valve H is closed and the blowing off is commenced.

55 When the pipe G connects to the boiler below the water-line, the current may circulate in the reverse direction; but in such case the effect will be very nearly the same.

I do not claim any arrangement of pipes to promote circulation, except in connection with a blow-off pipe exposed to the products of combustion, so as to render it liable to be overheated. I attach importance to the fact that the cocks H and E are outside of the brickwork and can be operated with convenience in any condition of the boiler and of the fire. I attach importance to the simplicity of my apparatus and the small quantity of pipe or other parts required to attain effective circulation and a favorable connection for removing mud.

I claim as my invention—

The combination with a steam boiler A and adjacent rear wall C of a feed pipe B arranged to wash the sediment rearward, and a pipe D leading from the bottom of the boiler rearward through such wall, a controlling valve E therein, outside of the fire flue, adapted to serve as a blow-off valve, a pipe G, G', connected with the pipe D, nearer the boiler than said valve and connecting to the boiler at a higher level than the pipe D and above the pipe D, and a controlling valve H in such pipe outside of the flue, all arranged for joint operation substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

STEPHEN J. GEOGHEGAN.

Witnesses:

CHARLES R. SEARLE,
JOSE L. FINGLETON.