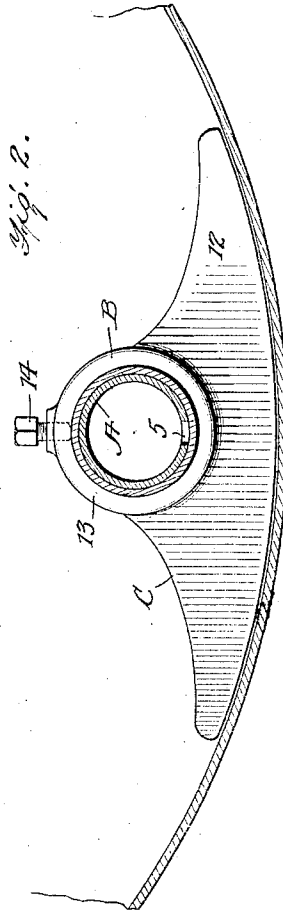
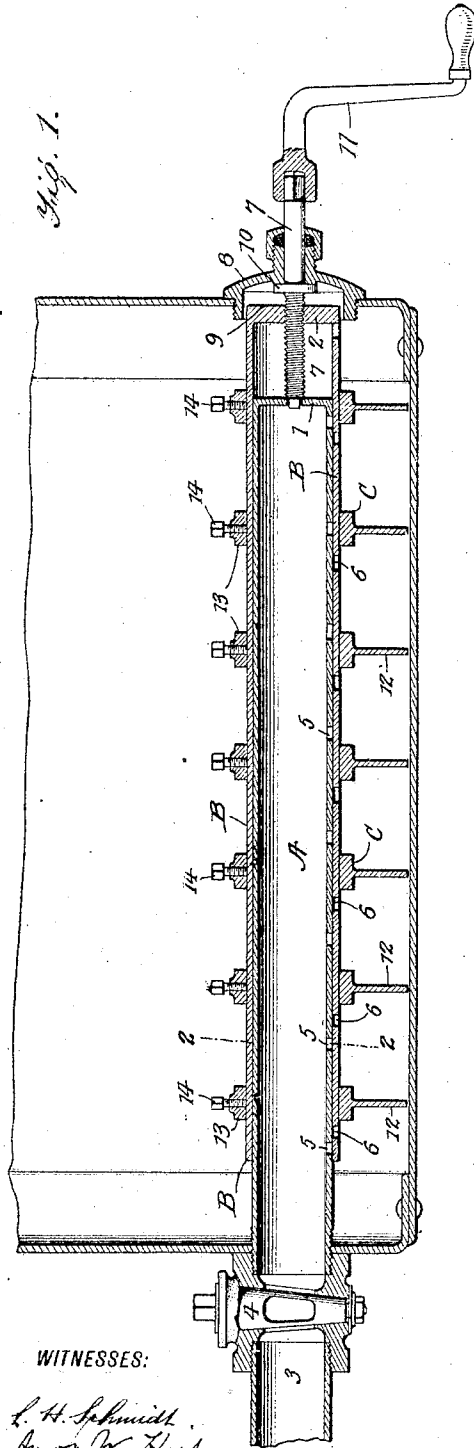


M. HUFFMAN.
 SEDIMENT REMOVER FOR STEAM BOILERS.
 APPLICATION FILED JULY 7, 1910.

974,064.

Patented Oct. 25, 1910.



WITNESSES:

L. H. Schmidt.
Amos W. Hart.

INVENTOR
 MIKE HUFFMAN,
 BY *Wm. W. Co.*
 ATTORNEYS

UNITED STATES PATENT OFFICE.

MIKE HUFFMAN, OF GIBSON CITY, ILLINOIS, ASSIGNOR OF ONE-HALF TO LESLIE A. CRANSTON, OF GIBSON CITY, ILLINOIS.

SEDIMENT-REMOVER FOR STEAM-BOILERS.

974,064.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, MIKE HUFFMAN, a citizen of the United States, and a resident of Gibson City, in the county of Ford and State of Illinois, have invented certain Improvements in Sediment-Removers for Steam-Boilers, of which the following is a specification.

My invention is an improvement in that class of devices consisting of a blow-out pipe arranged within the boiler close to the bottom thereof and provided with openings through which the sediment is expelled by pressure of steam acting on the water surrounding the pipe.

The details of construction, arrangement, and operation of parts are as hereinafter described, and illustrated in the accompanying drawing, in which—

Figure 1 is a sectional elevation of the lower portion of a steam boiler with my improved attachment applied thereto. Fig. 2 is a vertical transverse section on the line 2-2 of Fig. 1.

A pipe A is screwed into the end of the boiler and is closed at its inner end by a stop-cock 4. An opening which is provided for the adjusting screw. The outer end of this pipe projects from the boiler sufficiently to provide for detachable connection of a blow-off pipe 3; and between them is arranged a rotatable spigot 4 which is provided with a central opening so that it may be adjusted to open or close the pipe A as required. The said pipe is provided with a series of openings 5 in its lower side, the same being spaced apart a uniform distance, and serving, in practice, as escapes or outlets for sediment. Upon this fixed pipe A I arrange another pipe B in such manner as to fit somewhat loosely thereon so that it may be adjusted lengthwise. It is also provided with openings 6 which are arranged an unequal distance apart; that is to say, they are arranged at progressively greater distances apart, starting from the inner end of the pipe.

For adjusting the outer pipe B on the inner one, I employ a rotatable screw-shaft 7 which is journaled in a stuffing-box 8 secured to the side of the boiler as shown, the threaded portion of the shaft working in a threaded hole 2 in the head 9 of the pipe B, and its inner end being seated in a hole in the head 1 of the inner pipe A, while a collar 10 is provided adjacent to the stuffing-box.

By this means, it is apparent that, upon rotating the screw-shaft 7 in one direction or the other, the outer pipe B will be adjusted, longitudinally, to the left or right, correspondingly. For the purpose of rotating the shaft, a crank 11 may be employed as shown.

The outer slidable pipe B is provided with a series of scrapers whose form, attachment, and manner of operation are as follows. As shown in the drawing, the scraper proper 12 is a flat blade or plate whose outer edge is curved corresponding to the curve of the bottom of the boiler, it being thus approximately crescent-shaped. The plate is cast integral with a hub 13, which is adapted to fit slidably on the pipe B and is provided with a clamp-screw 14 for securing the scraper at any desired point on the pipe. A series of these scrapers is provided, there being preferably one arranged between each two of the openings 6 in the outer pipe. The lower curved edge of each scraper is arranged to slide with easy friction over the bottom of the boiler. When it is desired to clean the latter, that is to say, when it is desired to remove mud or other sediment which may have accumulated upon the bottom thereof, the stop-cock 4 is opened and the crank 11 is turned, whereby the outer pipe B, together with all the scrapers attached thereto, is pushed endwise on the inner pipe A, and such movement may be continued until the head 9 of the outer pipe comes in contact with the head 1 of the inner pipe or with the collar 10 with which the screw-shaft 7 is provided. When either of these contacts occurs, the crank 11 is rotated in the opposite direction, whereby the outer pipe B, with all the scrapers, will be moved in the opposite direction, and thus the bottom of the boiler will be thoroughly scraped.

As shown in Fig. 1, the adjustment of the two pipes relative to each other is such that all the openings of the inner one are closed; but, as the outer pipe is pushed one way or the other, the openings 5 and 6 in the respective pipes successively register, that is to say, register one at a time, and the mud or other sediment lying beneath or adjacent to the exposed opening is expelled by pressure of steam acting on the water surrounding the pipes. In practice, the scrapers 12 drag or push the sediment toward the openings when the pipe B is pushed one way or

the other, and thus the sediment is accumulated directly beneath the openings 5 of the inner pipe, which facilitates taking up and expulsion of the sediment. As before intimated, the arrangement of the openings of the respective pipes is such that but one registration occurs at a time, this being due to the fact that the openings of the outer pipe B are progressively greater distances apart. The arrangement of the scrapers is such that, in practice, they move between the adjacent openings 5 of the inner pipe. The scrapers 12 working close to the bottom of the boiler, will remove scale as well as take up and push along mud or other loose sediment. The holes 5 in the inner pipe are of the same width in the direction of the length of said pipe, but are of greater length in the direction of the circumference of the pipe. This construction is adopted in order that if the outer pipe should turn slightly, owing to friction with the screw-shaft, the full area of the outer holes or openings 6 would still register with those of the inner pipe. It is to be understood, however, that the form and arrangement of the scrapers relative to the bottom of the boiler will prevent such movement of the outer pipe upon the inner one when the crank is rotated, save to a very slight degree. It is a matter of course that the length and thickness of the scraping blades 12 will correspond more or less to the size of the boiler. A thickness of one-half to three-quarters of an inch will suffice. The blades 12 and collars 13 may be made

of malleable cast iron and the clamping screws 14 may be made of the same material, to avoid rust.

What I claim is:—

1. The combination with a boiler, of a sediment remover comprising a fixed inner pipe having a cut-off valve located exterior to the boiler, and an outer pipe which is slidable thereon lengthwise, the same being arranged near the bottom of the boiler and both provided in the under side with openings which are adapted to register, the openings of one of the pipes being at progressively greater distances from each other, and those of the other pipe being arranged equidistantly, whereby the openings register successively when the outer pipe is slid on the inner, and a screw-shaft attached to the closed head of the inner pipe and arranged in a threaded opening in the head of the outer pipe, for adjusting the latter in the manner described.

2. The combination with a boiler and a fixed pipe and an outer pipe slidable lengthwise thereon and both provided with openings adapted to register successively, of a series of scrapers comprising portions adapted to work on the bottom of the boiler and having hubs that are adjustable along the outer pipe, and clamp-screws for securing the scrapers in any required adjustment, substantially as described.

MIKE HUFFMAN.

Witnesses:

M. L. SPEERS,

E. W. STRAUSS.