

(No Model.)

E. AINSWORTH & L. J. LINGO.
STEAM BOILER CLEANER.

No. 418,147.

Patented Dec. 31, 1889.

Fig. 1.

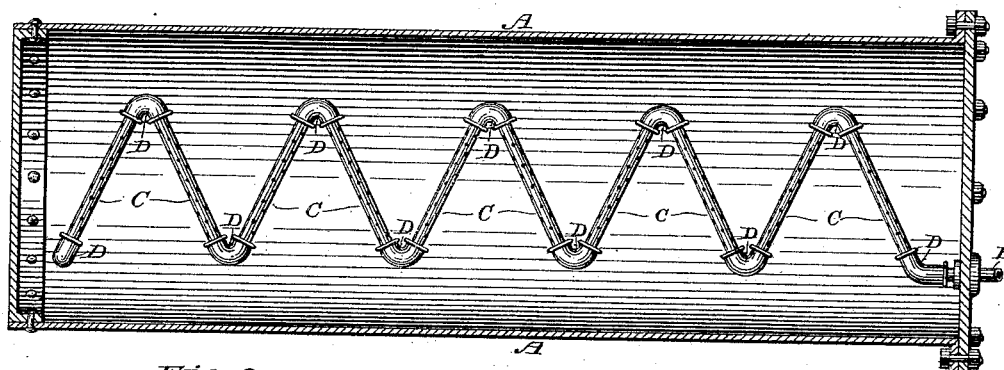


Fig. 2.

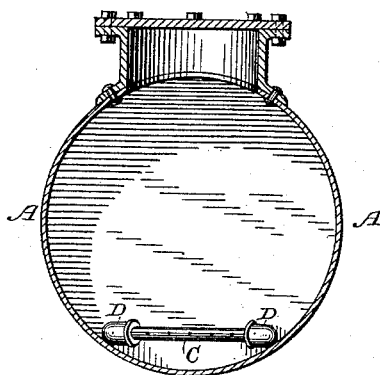
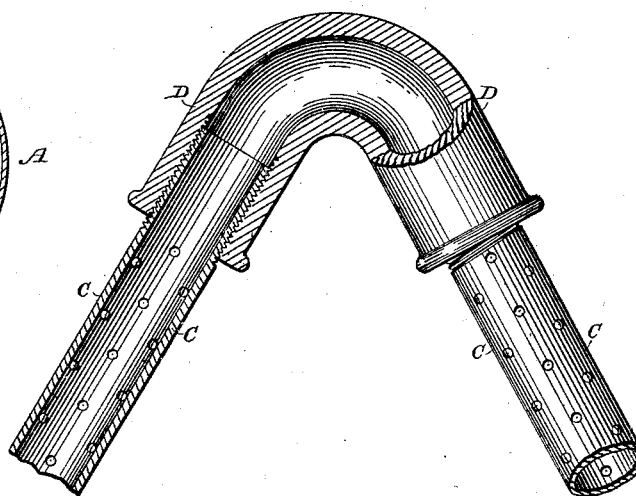


Fig. 3.



Witnesses
Joseph S. Linn
Carleton E. Snell

Inventors
Eleazer Ainsworth
and
Louis J. Lingo
Arthur B. Brown
their Attorney

UNITED STATES PATENT OFFICE.

ELEAZER AINSWORTH AND LOUIS J. LINGO, OF WILMINGTON, DELAWARE.

STEAM-BOILER CLEANER.

SPECIFICATION forming part of Letters Patent No. 418,147, dated December 31, 1889.

Application filed July 25, 1889. Serial No. 318,608. (No model.)

To all whom it may concern:

Be it known that we, ELEAZER AINSWORTH and LOUIS J. LINGO, of Wilmington, in the county of New Castle and State of Delaware, have invented certain new and useful Improvements in Steam-Boiler Cleaners, of which the following is a specification.

This invention relates to that class of steam-boiler circulators and cleaners wherein a perforated pipe is employed, resting on or near the bottom of the boiler and connected to a blow-off, so that when the blow-off cock is opened the pressure of the steam within the boiler will force out of the boiler, through said perforated pipe, the oil, grease, and impurities which may have collected in the bottom of the boiler. Hitherto such perforated cleansing-pipes have been straight pipes, either continuous or sectional, extending lengthwise of the boiler, and either lying directly on the bottom of the boiler or supported a short distance above the bottom of the boiler by special brackets or equivalent devices. It is very undesirable to have the perforated pipes lie on the bottom of the boiler, since in that case perforations can only be placed in their upper part, and consequently the oil, grease, and sediment lying directly on the boiler-bottom are not removed, and, on the other hand, when extraneous supports are used for raising the perforated pipes above the boiler-bottom, they add to the expense and to the difficulty of inserting and removing the pipes.

Now the present invention provides a perforated circulating and cleansing pipe which overcomes the recited objections. The improved pipe can be readily placed in any existing boiler and can be readily removed therefrom, and it is supported above the bottom of the boiler without extraneous supports. To accomplish these results, the improved perforated pipe is composed of separable or detachable sections, each short enough to be inserted through the usual man-hole, and to support the same above the lowest part of the boiler the sections are united so as to constitute a zigzag pipe. Since the zigzag perforated sectional pipe lies in a horizontal plane, the angles are supported by resting on the curved walls of the boiler, and

consequently the perforated sections are raised above the lowest portion of the boiler.

The improved sectional perforated boiler circulating and cleansing pipe is illustrated in the accompanying drawings, in which—

Figure 1 is a horizontal section of a boiler, showing the improved cleansing-pipe in position therein. Fig. 2 is a vertical section of the same, and Fig. 3 is a fragmentary detail view of a portion of the circulating and cleansing pipe.

In the drawings, A is the shell of a cylindrical steam-boiler, and B is the blow-off pipe. The circulating and cleansing pipe is composed of straight perforated sections C C, the screw-threaded ends of which fit into bent or elbow-shaped coupling-sleeves D D. Owing to the coupling-sleeves being bent, it follows that the compound sectional pipe is of a zigzag shape. The sectional pipe thus formed is placed in the boiler in a horizontal position and is connected with the blow-off B. The coupling-sleeves rest on the curved walls of the boiler, so that the sections C C extend across the lower portion of the boiler, but above the lowest part of the boiler, as shown in Fig. 2. Owing to the pipe being made in sections which can be readily detached from the bent coupling-sleeves, the entire pipe can be easily inserted through the usual man-hole and can be easily removed for circulating and cleansing and for other purposes.

The sectional perforated pipe not only serves for circulating and cleansing the boiler, but it also serves for maintaining a circulation of the water in the boiler, owing to the fact that the water is forced into the pipe from all directions and not in a single direction, the pipe being provided with perforations around its entire periphery.

In addition to the separability of the zigzag sectional pipe and its being supported above the lowest part of the boiler, a number of other advantages are incidental to the construction and arrangement of the zigzag pipe. The zigzag shape enables a maximum of the area of the boiler to be operated upon with a minimum length of pipe. Not only is the entire length of the boiler covered by the zigzag pipe, but a width is covered equal to the lateral extent of the pipe-sections. Conse-

quently when the impurities are blown off all portions of the lower part of the boiler in which impurities can collect are affected. The large area covered by the zigzag pipe 5 also insures a vigorous circulation of the water within the boiler when it is blown off. Since the length of each of the several sections of the zigzag pipe is determined by the size of the boiler and is necessarily limited 10 to such length as can be conveniently inserted and withdrawn from the boiler, it consequently follows that fewer sections (and consequently fewer joints) are required to form the zigzag pipe than in other known 15 forms of sectional cleansing-pipes covering an equal area—such as, for example, a longitudinal pipe having laterally-projecting branches. In the improved sectional zigzag pipe the several sections are connected to- 20 gether end to end by the bent coupling-sleeves, so that the completed zigzag pipe has only two open ends, one of which is coupled to the blow-off. Consequently there is only a single open end to be plugged or stoppered. 25 The open end is necessarily plugged or stoppered, since, as is well known, in order to

give the best results, the combined area of the several perforations or openings into the pipe should be approximately equal to and certainly not much greater than the area in 30 cross-section of the interior of the pipe. The portions of the zigzag pipe which rest on the inner walls of the boiler consist of the rounded surfaces of the coupling-sleeves, which do not cut into the boiler or wear out the same. 35

We claim as our invention—

A perforated zigzag circulating and cleansing pipe for steam-boilers, composed of straight perforated pipe-sections connected end to end by bent coupling-sleeves which 40 rest on the inner walls of the boiler and support the straight perforated pipe-sections above the bottom of the boiler, substantially as set forth.

In witness whereof we have hereunto signed 45 our names in the presence of two subscribing witnesses.

ELEAZER AINSWORTH.
LOUIS J. LINGO.

Witnesses:

HENRY C. CONRAD,
THOMAS GIFFIN.