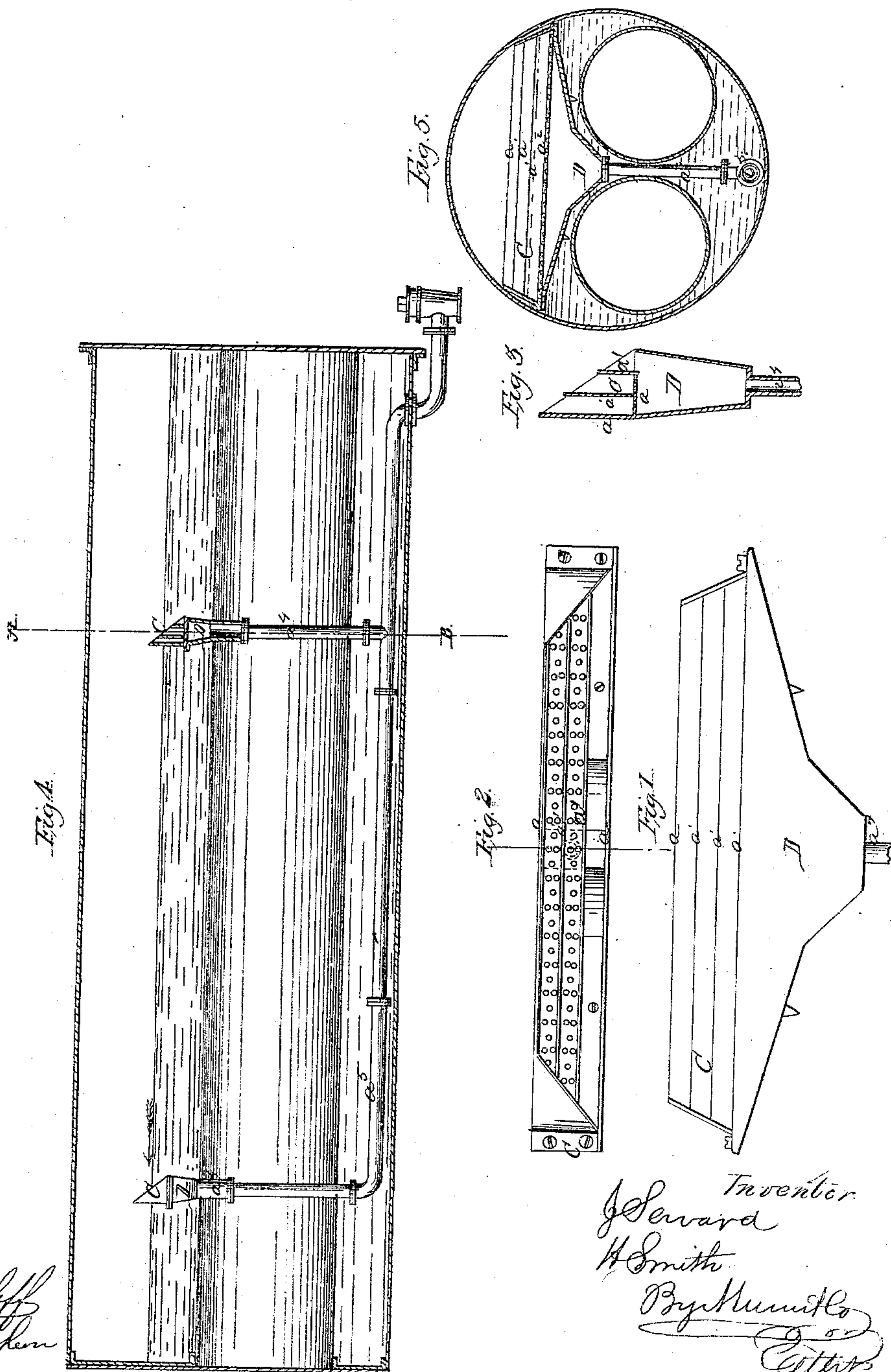


*Serraval & Smith,  
Steam-Boiler Cleaner.*

*No 61,881.*

*Patented Feb. 5, 1867.*



*Witnesses.  
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# United States Patent Office.

JAMES SEWARD, OF CLITHEROE, ENGLAND, AND HENRY SMITH, OF  
ENFIELD, ENGLAND.

*Letters Patent No. 61,881, dated February 5, 1867.*

## IMPROVEMENT IN STEAM GENERATORS.

*The Schedule referred to in these Letters Patent and making part of the same.*

TO ALL WHOM IT MAY CONCERN:

Be it known that we, JAMES SEWARD, of Clitheroe, in the county of Lancaster, and HENRY SMITH, of Enfield, in the said county, Great Britain, have invented an improved Apparatus for Preventing Incrustation in Steam Boilers; and we do hereby declare that the following is a full and correct description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Our invention relates to an arrangement of apparatus for the collection of the scum or sediment from the water of steam boilers, and by this means preventing, in a great measure, the incrustation of their interior surfaces, which not only obstructs the passage of the heat to the water, but causes great deterioration of the boilers. Hitherto vessels have been used for collecting sediment or scum, placed at various parts of boilers, sometimes at the bottom of the boiler, and sometimes considerably below the water surface, and sometimes at or near the water surface; but such receivers have either been not sufficiently extensive, or, owing to the varying level of the water, they have not acted properly as collectors, their edges being either too much below or too much above the surface water; and if below, the scum or sediment, when it enters, is kept in agitation and driven out again, so that it has not time to settle; and this is the case particularly when one edge is considerably below the water surface and the other above it. To the sediment collectors hitherto used, and known as Scott's, and as improved and rendered self-acting by Robert Armstrong, a pipe is connected, coming to the exterior of the boiler, and provided with a tap, which could be opened when required, to allow the sediment to be forced out by the pressure of the steam.

Having explained the defects and peculiarities of sediment collectors for steam boilers hitherto in use, the advantages and nature of our improvements will be now more readily understood.

Our improvements consist in forming sediment collectors for steam boilers with a series of compartments, so that the upper edges of the sides of the compartments ascend in steps one above the other, these compartments communicating with one common box or receiver, which has its bottom inclined from the ends toward the middle, such incline being varied to suit the different descriptions of boilers. Owing to the incline, the dirt or sediment falling into the collector has a tendency to fall by its own gravity towards the top of the pipe, and is thereby ejected by very little of the boiling water in the boiler. This sediment collector is arranged so that it extends across the boiler, and the upper edge of the side of its lowest compartment is placed at about the level of the lowest water line, and so as to face the direction of the surface current of the water of the boiler, which is from the hottest or furnace end to the coolest end of the boiler. The upper edge of the side of the highest compartment is about on a level with the high-water level of the boiler. By this arrangement there will always be a compartment having its lowest side or edge at a suitable height, in respect to the level of the water, that will properly receive the scum or sediment, giving it time to settle into the cavity or box below, ready to be expelled by the pressure of the steam when the tap at the exterior of the boiler is opened. Any convenient number of compartments, stepped one above the other, may be used. The lowest edges of the partitions forming the compartments descend a little below the upper edge of the lowest compartment, and at this level a perforated plate may be fixed, which will tend to prevent agitation, and thus the disturbance of the sediment which may have been deposited will be prevented; and it will also act to cause water to pass into the receiver equally over the collector from end to end, so that there will be a current at every part of the collector sufficient to carry the deposit or sediment with it when the tap is opened. One or more of our improved sediment collectors may be used in the same boiler.

Figure 1 is a front elevation.

Figure 2, a plan view; and

Figure 3, a cross-sectional view of one of our improved sediment collectors.

Figure 4 is a longitudinal section; and

Figure 5, a cross-section of the line A B, fig. 4, showing the mode of applying our improved sediment collector to a two-flue steam boiler.

The sediment collector is made in two parts, an upper part, C, containing the sides *a* and partitions *a'*, stepped one above the other, and a lower part, D, forming the receiving chamber with an inclined bottom. The two parts C and D are secured together by means of a flange and screw-bolts, and below the lower edges of the

partitions  $a^1$  is placed the perforated plate  $a^2$ . It will be seen that, in the boiler shown in the drawing, two of our improved collectors are used, each of which is placed upon a vertical pipe,  $a^4$ , which descends to a horizontal pipe,  $a^5$ , passing along the bottom of the boiler, and out to a blow-off tap,  $b$ . The arrangement of the piping will vary according to the form of the boiler to which our improved sediment collectors are applied.

We have now particularly described the nature of our invention, and the mode of carrying the same into effect. We do not claim an open skimmer for the collection of scum in a steam boiler, but what we claim is—

A sediment or scum collector for steam boilers provided with a series of compartments, divided from each other by partitions of gradually increasing height, and communicating with a discharge pipe or pipes, substantially in the manner herein set forth.

Witnesses:

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JAMES SEWARD.  
HENRY SMITH.