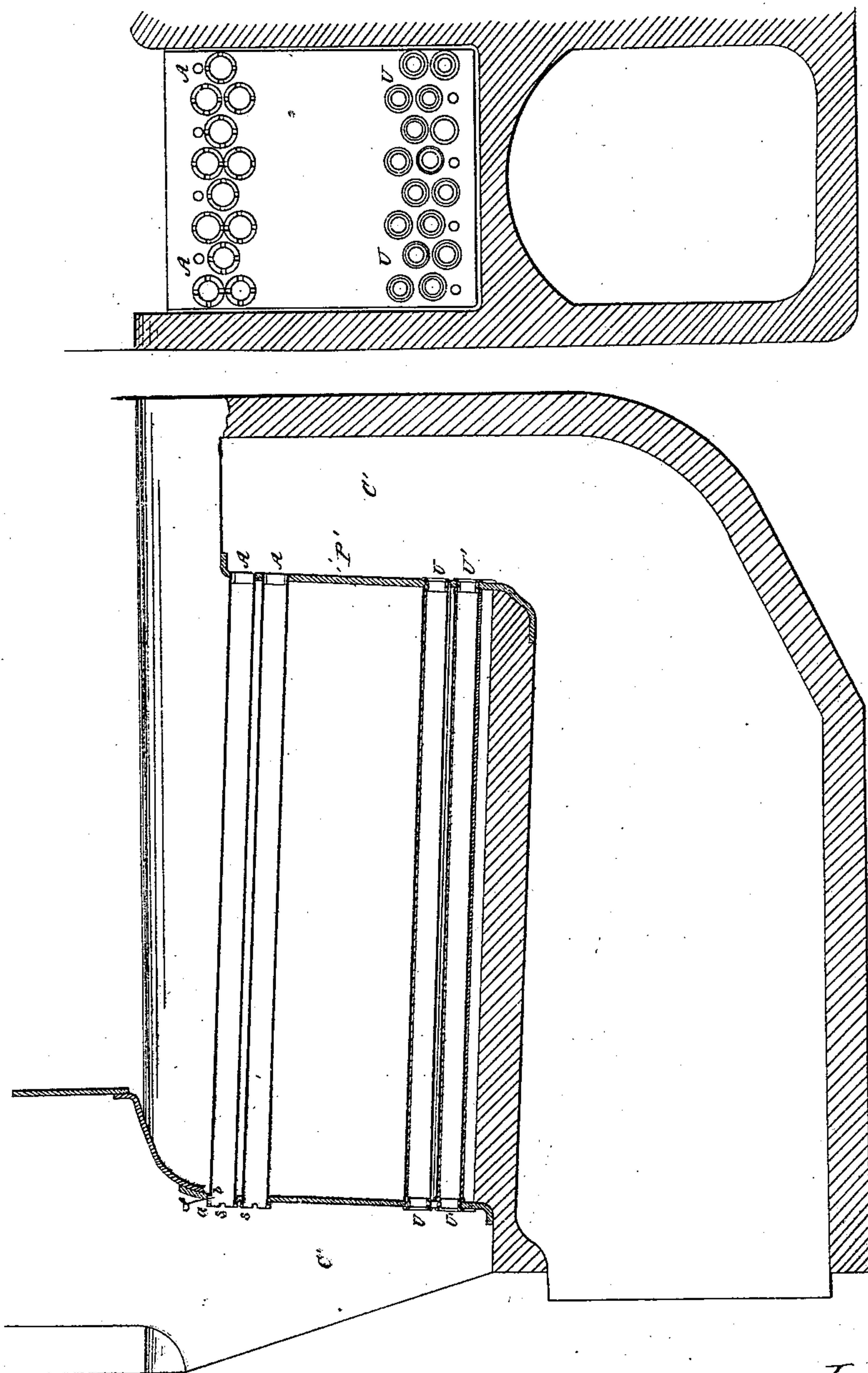


2 Sheets-Sheet 1.

V. Langlois,
Steam-Boiler Tube.

N^o 82,534.

Patented Sep. 29, 1868.



Witnesses.

G. Smith.
W. Smith.

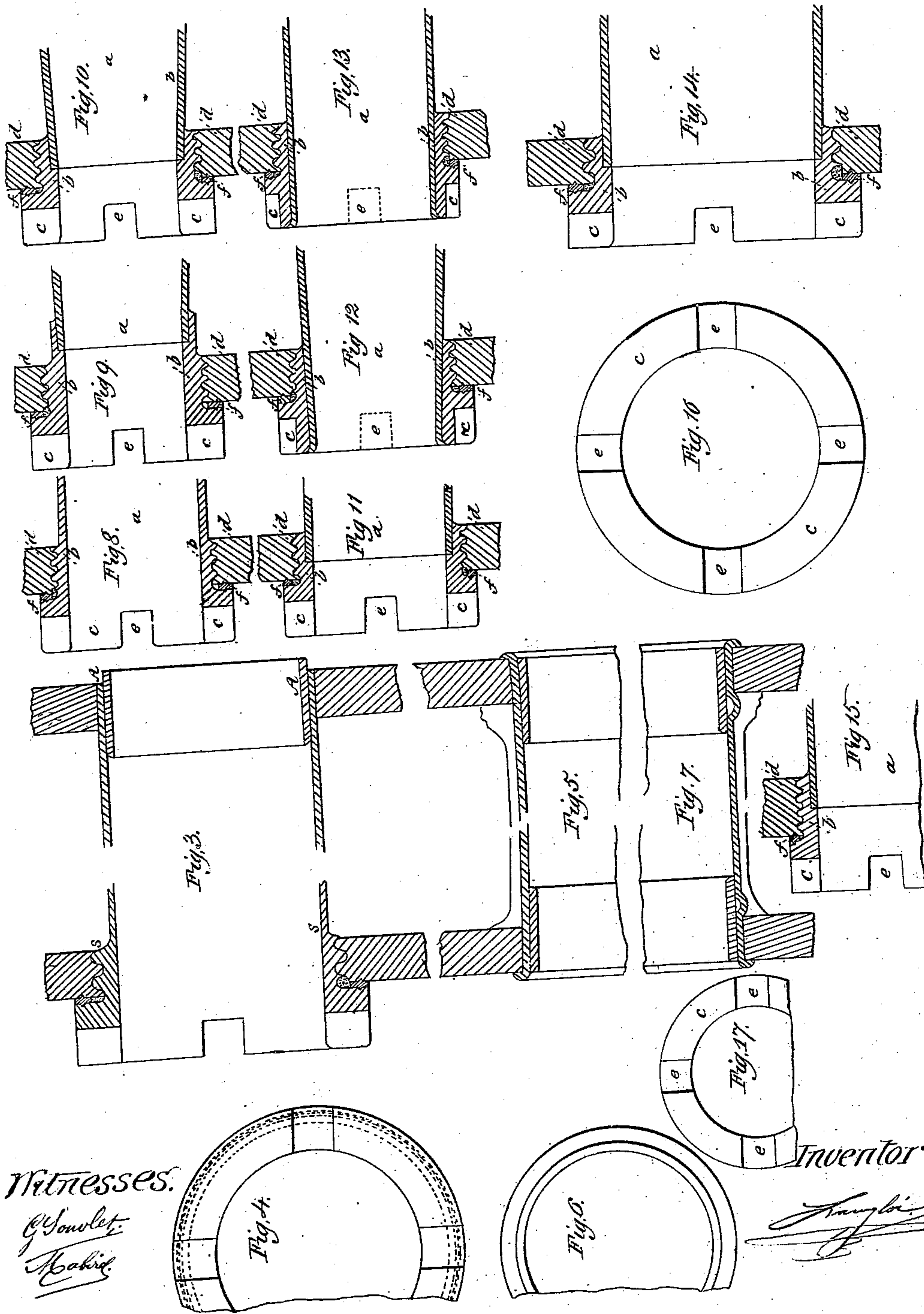
Inventor.

V. Langlois.

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Steam-Boiler Tube.

Patented Sep. 29, 1868.

N^o 82,534.



Witnesses:
G. Sawlet
H. Kirk

Inventor

V. Langlois

United States Patent Office.

VICTOR LANGLOIS, OF CHERBOURG DOCK-YARD, FRANCE.

Letters Patent No. 82,534, dated September 29, 1868.

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 I, VICTOR LANGLOIS, head master at Cherbourg dock-yard, France, have invented Movable Tubes in Steam-Generators or Boilers of the polytubular system, also applicable to polytubular condensing and distilling-apparatus, and new or improved tools for the installing thereof; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed sheets of drawings, making a part of the same.

My invention refers to improvements in steam polytubular generators or steam tubular boilers, as used for steamers, locomotives, locomobiles, stationary, &c., engines, the same improvements being also applicable to tubular condensing and distilling-apparatus; and it consists in the construction and arrangement of parts, as will be hereinafter more fully described.

The advantages resulting from this new arrangement are—

First, ready disincrustation of the tubes, and the consequent saving of fuel and repairs resulting therefrom.

Second, a preventive means against the inconvenience of tubular dilatations.

The tubes for generators and other apparatus are practically set up by fitting a metallic (steel generally) ring, which admits the tube-ends round between its sides and the plates or partitions which support and limit the said tubes.

In order to mobilize the tubes within tubular generators and other apparatus of the mentioned description, I thought of securing them up at one end by a screw on the receiving-plate, whereby said tubes are readily taken off, cleaned, and disincrustated, the result of which being a saving both of fuel and of repairs, and also a preventive means against the inconveniences of tubular dilatations, which are free to be produced without any injury resulting therefrom for the plates in the holes of which the tubes are inserted.

In the accompanying sheets of drawing—

Figure 1, Sheet I, is a longitudinal section, taken through the centre of a marine-boiler furnace. The upper tubes are set up and secured by screws, which connecting-device is my invention, whilst the lower ones are fixed by means of the usual ring, to show the difference between the two connections.

Figure 2 is a front view of the same marine boiler.

Figures 3 and 4, Sheet II, are a longitudinal vertical section and an end view of a tube secured by screw, on a larger scale than figs. 1 and 2.

Figures 5 and 6 show the vertical section and an end view of a fragment of tube secured by the usual ring-connection, also on a larger scale than figs. 1 and 2.

Figure 7 shows the central vertical section of a fragment of tube, connected likewise by means of the usual ring-device, also on a larger scale than figs. 1 and 2.

P and P' show the plates which support and limit the tubes.

C and C' are the fire and smoke-boxes, arranged in the most usual manner.

A S show the new tubular connection.

At S is formed, or otherwise fitted on the tube, a threaded ring, screwing into a correspondent threaded hole or nut, formed on plate P', said hole being larger than the diameter of the tube, which allows of the latter being readily taken out when covered with a layer of tartar, and as easily put up when once freed from it.

At A is a ring-connection allowing the longitudinal dilatation, still preserving the proper adjustment with the tubular plates. The two bases, being cylindrical, are kept in perfect contact by the annular tight-acting dilatation.

At U and U', figs. 5, 6, and 7, is shown the ordinary connection of tubes in tubular boilers. Above the metallic sheet is traced a line, showing the tartar or incrustation-level, whereby is prevented the putting off of the tube through the openings in the plates, upon which are screwed the two ends of the tube.

In order to take out the tubes thus incrustated, it is necessary either to cut both their ends, or emboss them, or otherwise impair their proper shape.

On first survey it is easy to ascertain the superior importance of the system of movable tubes over the common improvidence of the various methods of tubular connections, as actually used and shown at figs. 1, 2, 5, 6, and 7, and recall to mind the expenses resulting from their work and their consequent repairs.

The movable tubes, by their ready setting up and off, may be freed from incrustations, the deposits and settlings of every nature being periodically removed; hence will first result a notable saving of fuel, a greater and more constant production of steam; the required repairs in the fire-box being rendered easier, will be more efficiently made, which improvements will insure a regular working of the apparatus, and also a longer wear.

The application of these improvements, in shortening the work relative to the tubes, will really increase the security of the attendants on the motive-apparatus, who will be at all times enabled to ascertain exactly the conditions of the tubular parts in the boiler, which it is actually very difficult to do even for the most accessible tubes, and quite impossible in the central parts of the groups. But it is needless to longer describe the advantages of this new connection of the tubes, as their application will better prove the good results thereof.

Figures 8, 9, 10, 11, 12, 13, 14, and 15, show central vertical longitudinal sections of one end of the movable tubes connected by screws, in accordance with my system, wherein is seen a variable number of threads, and the said tube-ends diversely put up, together with the thread-bearing part.

Figures 16 and 17 are end views, and in these figures the same letters of reference indicate the like parts.

a, tube; *b*, threaded end; *c*, external cap or adjutage, projecting from the fire-box plates, and provided with notches for screwing said tube in and off.

In fig. 8, the external adjutage *c* is formed with the tube.

In fig 9, the adjutage *c* is cast with an extension, which is welded on to the tube.

In fig. 10, the same adjutage is cast with a ledge, intended to receive the tube, the ends of which are bevelled.

In fig. 11, the adjutage *c* is cast with a ledge, for receiving the unbevelled tube.

In fig. 12, the adjutage *c* is formed in a ledge, which is to receive the bevelled tube riveted on both its ends.

In fig. 13, the adjutage *c* is formed in a ledge, for receiving the unbevelled and riveted tube.

In figs. 10, 11, 12, and 13, the various extensions are obtained by welding the end of the tube on to the adjutage.

In order to prevent oxidation, which would greatly impair the thread, I use a stuff composed with tallow and very fine powder of zinc or oxide of zinc. With this stuff I lubricate the adjutage-threads, for the purpose of rendering the set of the tube easier. After a few hours' heating there no longer remains any grease, but the zinc-powder is left on the threads, and prevents oxidation.

f is a small leaden cap, fitting on a similar hemp-head, to better insure the joint. After a certain time the hemp will be off, but the lead will fit on and form a tight joint.

Claims.

1. The construction and arrangement of the tubes *a*, having the threaded ends *b* and external caps *c*, the lead packing *f*, rings A, and plates P P', substantially as herein shown and described.

2. The various tools for effecting such work of the plates and tubes as I have described, and also for putting up and off the said movable tubes, substantially as described.

LANGLOIS.

Witnesses:

G. SONOLET,
MABIRE.