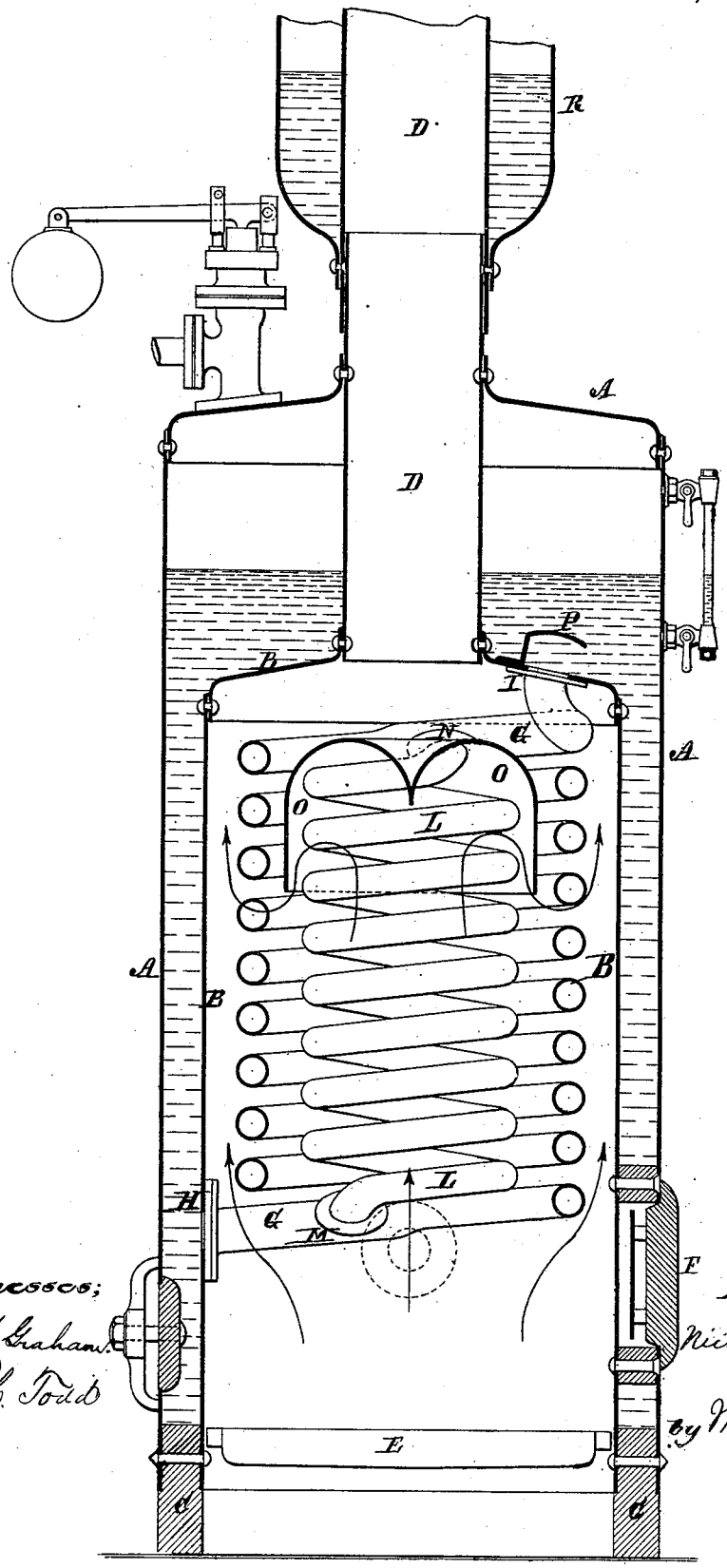
N. ROSER.

Steam-Boiler.

No. 196,482. Patented Oct. 23, 1877.



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UNITED STATES PATENT OFFICE.

NICOLAS ROSER, OF PARIS, FRANCE.

IMPROVEMENT IN STEAM-BOILERS.

Specification forming part of Letters Patent No. **196,482**, dated October 23, 1877; application filed August 4, 1877.

To all whom it may concern:

Be it known that I, NICOLAS ROSER, of the city of Paris, Republic of France, have invented certain new and useful Improvements in Steam-Boilers; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification.

The object of my invention is to produce a steam-boiler in which the water will circulate with great speed and steam be rapidly produced, which will obviate to a great extent incrustations and calcareous deposits in its parts most actively employed, and which will not, if it should be ruptured or exploded, produce disastrous effects upon surrounding objects; and it consists in the devices, and their combination, hereinafter fully described and claimed.

The figure of the drawing is a vertical section of a boiler, showing my invention, a small portion being broken away at the top.

A is the outer shell, of suitable material and strength. B is the inner shell, of a somewhat smaller diameter than the shell A, a space being left between them for water. These shells are secured at the bottom to a ring, C, and at the top to a third shell, D, which forms a portion of the chimney.

Within the shell B grate-bars E are provided, to which fuel is fed through a door, F, of common and well-known construction, the frame of which is arranged in the two shells A B, as shown in the drawing.

G is a coil of pipe, made of any suitable material, preferably of copper, connected by flanges to the shell B at H and I. It is made of a greater diameter for about the length of the first half-coil or so from the flanges that join it to the shell B than throughout the rest of its extent. At points M and N on their greater diameters it is provided with openings and flanges, whereby a second coil, L, arranged within and made from a material similar to the first, may be secured to and communicate with the first, as shown in the drawing, to increase the circulation of the water, and consequent production of steam.

A baffle-plate, O, is placed over the coil L, extending down some distance, to deflect the flame and cause it to come in contact with the coils G L and shell B before it escapes. A cap, P, secured to the shell B, overhangs the exit to the coils, serving to break up the current of water escaping from them, and thus prevent a too great disturbance of the water between the shells A B.

The shell D, prolonged to form the chimney, is surrounded by a casing, R, forming a space within which the feed-water is forced before entering the boiler, so as to be heated by the escaping products of combustion. This casing is connected, by suitable pipes, valves, and forcing apparatus, with the shell A. This latter shell is provided with the usual devices, such as safety-valves, steam-gage, water-gage, man-holes, &c., in any well-known manner.

The space between the shells A B being supplied with water to a suitable height, and a fire started on the grate-bars E, the flames take the direction of the arrows, being deflected by the baffle-plate O, and, escaping through the shell D, heat the feed-water in the casing R, which water is supplied to the space between the shells A B in any well-known manner. The heat causes the water in the coils G L to circulate with great velocity, causing a large production of steam. The expansion of these coils by heat and their contraction by cold, or at the time of stopping the use of the boiler, disaggregates, breaks, and prevents the formation of incrustations or calcareous deposits, and the water moving with such velocity drives them out.

Any rupture or explosion of the boiler would occur at those points which are the weakest and most in use, which are the coils G L, and their rupture would allow the water to fall upon the fire and extinguish it.

If found desirable, fusible washers might be placed between the flanges described, as connecting the coils to each other and the shell B, which, if the heat became too great, would melt, allow the excess of steam to escape, and thus prevent the rupture or explosion of the boiler from taking place.

Having thus described my invention and the merits it possesses, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the coils G and L, the latter arranged within and connected to the former, substantially as described, with the shells A B, as and for the purpose set forth.

2. The combination of the coils G and L, the latter arranged within and connected to the former, substantially as described, with the shells A B and baffle-plate O, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

NICOLAS ROSER.

Witnesses:
ALFRED COINY,
BAILLOT AUGUSTE.