(No Model.)

P. ORIOLLE, FILS.

MEANS FOR PREVENTING SMOKE FROM CHIMNEYS.

No. 368,682. Patented Aug. 23, 1887.

Fig. 1.

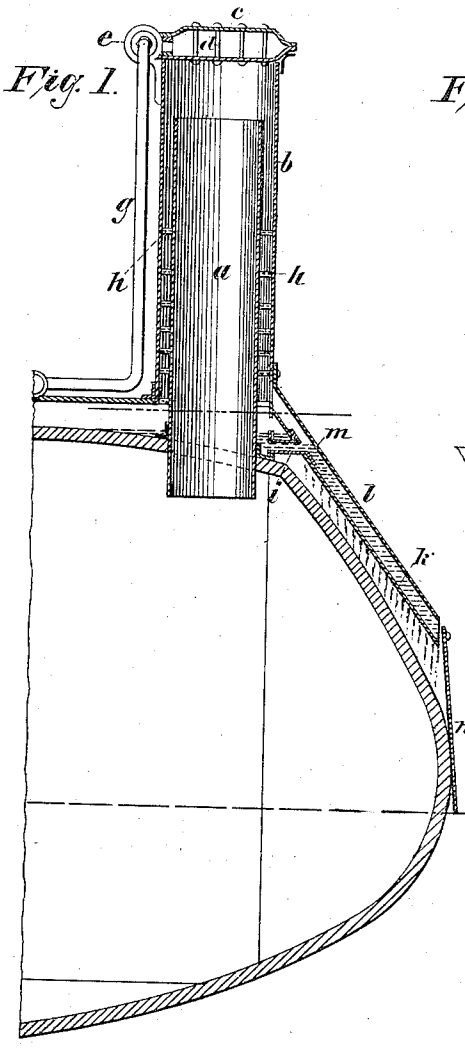


Fig. 3.

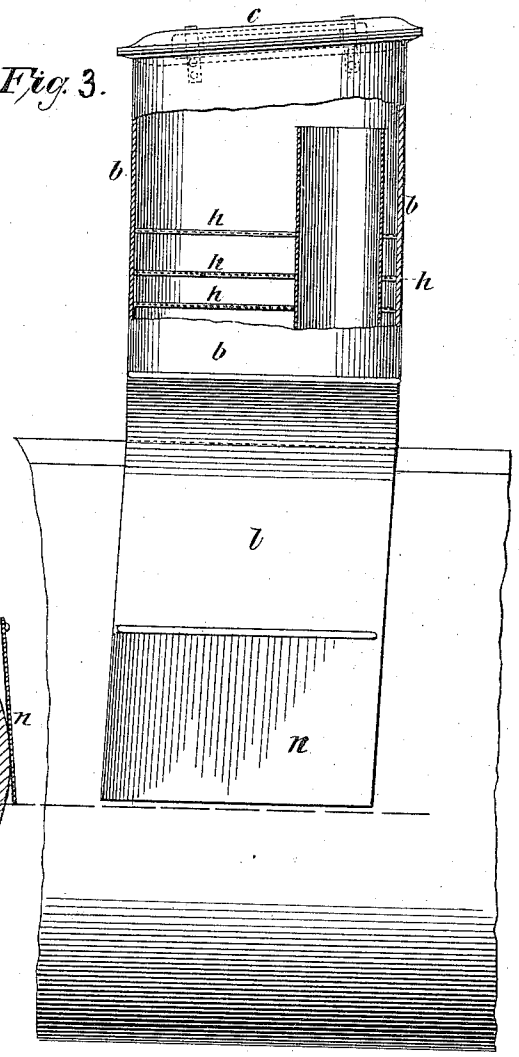
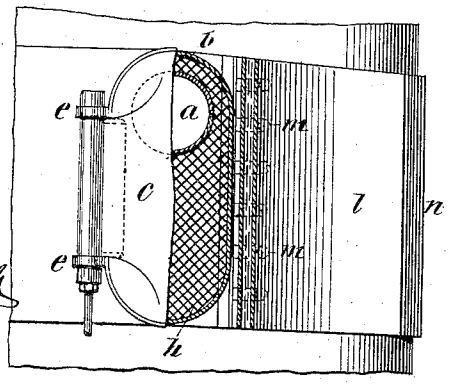


Fig. 2.



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UNITED STATES PATENT OFFICE.

PAUL ORIOLLE, FILS, OF NANTES, FRANCE.

MEANS FOR PREVENTING SMOKE FROM CHIMNEYS.

SPECIFICATION forming part of Letters Patent No. 368,682, dated August 23, 1887.

Application filed April 20, 1887. Serial No. 235,572. (No model.)

To all whom it may concern:

Be it known that I, PAUL ORIOLLE, Fils, of the city of Nantes, France, have invented new and useful Improved Means for Preventing Smoke from Chimneys, of which the following is a full, clear, and exact description.

This invention relates to means for preventing the emission of flame and smoke from the chimneys of furnaces having a forced draft, and particularly from the funnels of torpedo-boats, cruisers, and other vessels. This is effected by causing the products of combustion, after giving up all their utilizable heat, to be carried away along with a sufficient quantity of water in a finely-divided condition to lower to a notable extent the temperature of the gases, and to condense them and wash the soot which they carry off under the forced draft. In the case of steam-vessels the cooled and washed gases are discharged into the sea at the side of the vessel. They remain, by reason of their density, upon the surface of the water invisible, or nearly so, being composed of carbonic acid, carbonic oxide, and nitrogen.

Reference is to be had to the accompanying drawings, forming part of this specification, which illustrate the invention as applied to a torpedo-boat.

Figure 1 is a transverse vertical section, Fig. 2 a top plan, and Fig. 3 a part sectional side elevation, of the apparatus.

The same letters of reference represent the same parts in the three figures.

The funnel *a* only rises about a yard above the deck and is inclosed in a casing, *b*, which is of oblong section and extends aft of the funnel, as shown in Fig. 2, its sectional area being four or five times that of the funnel, in order that the velocity of the furnace-gases may be reduced by two-thirds to three-fourths in passing downward through the casing. The casing is itself water-jacketed, and is closed at top by a cover, *c*, made of two buckled plates connected by stays *d*, the plates being riveted together on three sides, and on the fourth side is a hollow hinge, *e*, through which water is admitted to the cover, so as to be showered down from the perforated under side thereof and caused to mix with the gases as they pass down through the casing. The cooled gases, soot, and water are discharged through an outlet at the base of the casing leading down the side of the hull to about the water-line. The cover *c*, being hinged, can be raised for cleaning the perforations or to permit of an extra length being fixed on the funnel when firing up or when the vessel rolls too much to allow of the washer being used. The hinge *e* is connected at one end by a stuffing-box joint to the delivery-pipe *g* of a pump capable of supplying sufficient water. The cover *c* is preferably slightly inclined, in order that the resultant of the movement of the gases and that of the drops of water which they meet may be vertical.

The downcast space between the funnel *a* and the casing *b* is divided horizontally by wire-gauze partitions *h* of large mesh, for the purpose of causing a more intimate contact of the water and gases. The washed gases pass out through a passage, *i*, where they traverse a series of wicks, *k*, depending from the under side of a hollow casing, *l*, into which the water which has washed the gases passes by one or more pipes, *m*, the water in its descent filtering through the wicks *k*, which are traversed by the gases before they are discharged near the water-line beneath the screen *n*. The volume of water employed will vary with the quantity of fuel consumed, but it should be equal to at least six times the weight of the steam generated.

In order to avoid as much as possible the effect of the rolling motion upon the working of the apparatus, one or other of the following arrangements may be adopted, according to the number of funnels. If the vessel has one funnel, the exit-channel for the washed gases and water will be bifurcated, and if it has two funnels the casings inclosing said funnels will communicate with each other at bottom.

The form, dimensions, and details of the various parts may be varied without departing from the principle of the invention.

The invention is applicable to boilers and furnaces, generally, in which a forced draft is used.

I claim—

1. The herein-described apparatus for preventing the escape of flame, smoke, and cinders from furnaces having a forced draft, and

for washing the smoke and gases, which consists in the smoke-funnel *a*, and casing *b* surrounding it, combined with the water-inlet pipe *g*, and with a cover, *c*, having a perforated under plate, the pipe *g* entering the cover *c*, substantially as herein shown and described.

2. The funnel *a*, and casing *b* surrounding same, cover *c*, having a perforated under plate, and water-inlet pipe *g*, opening into the cover *c*, combined with the wicks *k*, under a casing, *l*, connected with the casing *b*, substantially as described.

The foregoing specification of my improved means of preventing the emission of flame and smoke from the chimneys of furnaces working with a forced draft signed by me this 2d day of April, 1887.

PAUL ORIOLLE, FILS.

Witnesses:
L. VERBRUGGI,
F. POUCHARD.