G. PAPPANIKOLAOU.

SMOKE CLEANER.

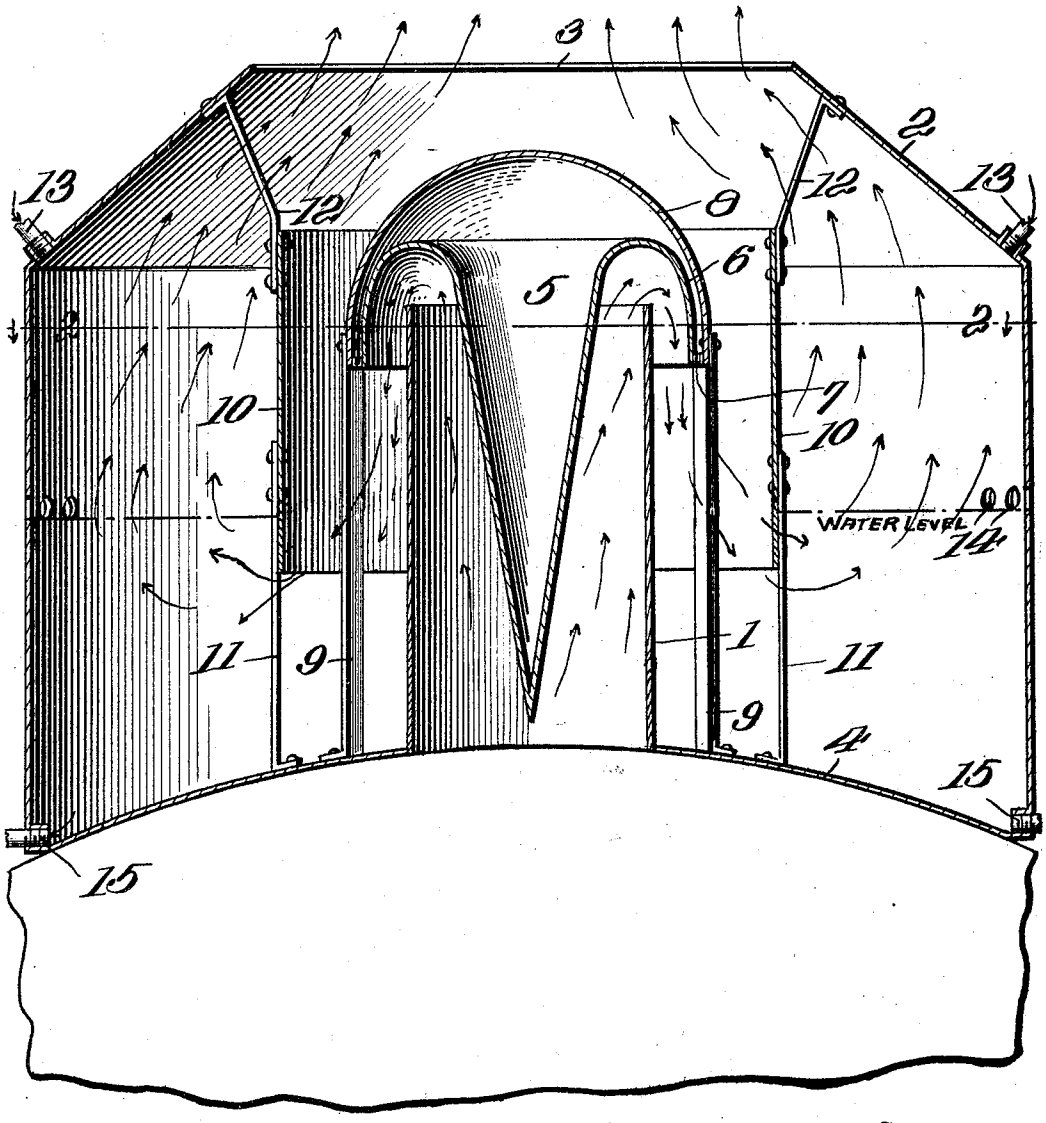
APPLICATION FILED DEC. 9, 1919.

1,404,998.

Patented Jan. 31, 1922.

2 SHEETS—SHEET 1.

Fig. 1.



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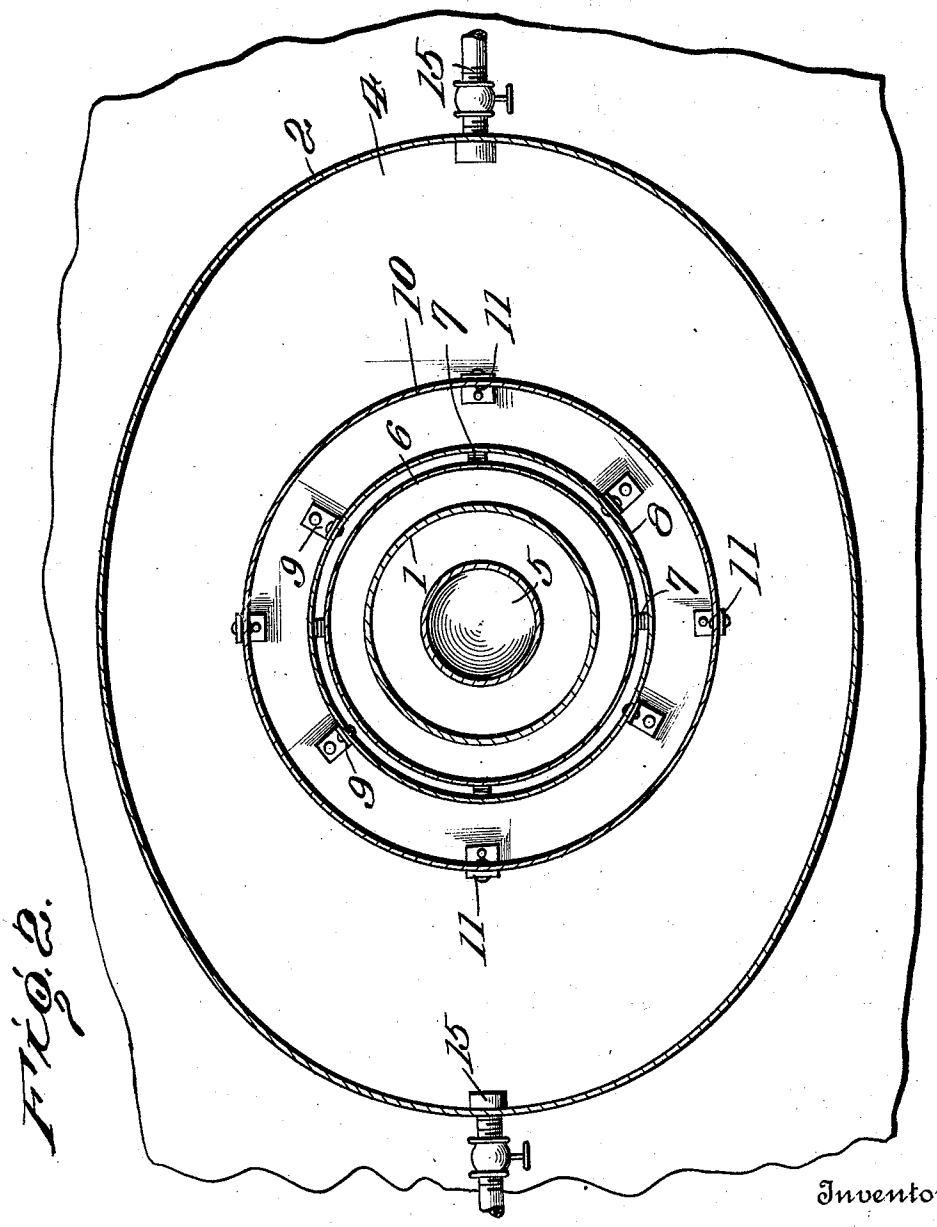


Fig. 2.

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UNITED STATES PATENT OFFICE.

GEORGE PAPPANIKOLAOU, OF PETERSBURG, VIRGINIA.

SMOKE CLEANER.

1,404,998. Specification of Letters Patent. **Patented Jan. 31, 1922.**

Application filed December 9, 1919. Serial No. 343,486.

To all whom it may concern:

Be it known that I, GEORGE PAPPANIKOLAOU, a subject of the King of Greece, residing at Petersburg, in the county of Dinwiddie and State of Virginia, have invented certain new and useful Improvements in Smoke Cleaners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in smoke cleaners or filters and it is particularly designed for use in connection with the smoke exit pipe or smoke stack of railway locomotives.

One of the objects of my invention is to provide a smoke cleaner capable of attachment to an ordinary smoke stack without altering or changing the construction of the stack.

Another object of the invention is to provide a liquid container and means combined with the smoke stack, for directing the smoke into the liquid, after leaving said stack.

A further object of the invention, is to furnish a smoke filter having means for readily cleaning the same without removing the device from the smoke stack.

A still further object, is to provide a smoke cleaner with means for automatically removing some of the collected matter.

With the foregoing objects outlined and with other objects in view, which will appear as the description proceeds, the invention consists in the novel features hereinafter described in detail, illustrated in the accompanying drawing and more particularly pointed out in the appended claims.

Referring to the drawing:

Fig. 1 is a vertical transverse sectional view of a locomotive smoke stack and my improvements applied thereto.

Fig. 2 is a horizontal sectional view of the same, taken on line 2—2 of Fig. 1.

In the drawing, 1 represents an ordinary locomotive smoke stack, which is enclosed by a liquid containing casing or housing 2, having an open upper end 3 to permit the exit of the smoke and a curved bottom 4 conforming to the curvature of the top of the locomotive boiler. As shown in Fig. 2, the side wall of the casing is elliptical in shape in order to rest on the boiler without interfering with the head light which is usually located forward of the smoke stack.

Extending into the stack 1, is a cone 5 having its upper end flared downwardly in a bell shaped manner, to provide a baffle 6 which acts to deflect the smoke from the stack downwardly into the liquid contained within the casing 2. The part 6 is supported by tie members 7 which are arranged between the member 6 and the dome 8, and said dome is carried by supporting legs 9 which extend upwardly from the bottom 4 of the casing. The dome functions as a cover for the cone 5. Surrounding the lower portion of the dome 8 and extending beneath the surface of the liquid in the casing 2, is a muff or sleeve 10 carried by supporting legs 11 and braced by upwardly extending brackets 12. This muff or sleeve causes smoke issuing from the stack to pass downwardly beneath the surface of the water before passing to the outlet 3, and it will be understood that smoke issuing from the stack will be ordinarily propelled with such force as to pass through the liquid rather than between the lower edge of the dome and the inner wall of the muff or sleeve. If desired, however, the lower edge of the part 6 and the dome 8 can be extended downwardly flush with the lower edge of the muff or sleeve 10.

The side walls of the casing 2 are provided with outlet openings 14 arranged just above the normal level of the liquid in the casing and as the dirt, ashes, dust, etc., accumulate in the liquid, a portion of the same will automatically overflow with the water and pass out through said openings.

The lower portion of the casing is provided with valved clean-out pipes 15 and the upper portion of the casing has water or steam inlets 13. When it is necessary or desirable to clean out the casing 2, water or steam is admitted through the pipes 13 and the contaminated liquid is driven out through the outlet pipes 15.

From the foregoing, it will be understood that smoke issuing from the stack will be directed downwardly beneath the surface of the liquid and that any dirt, dust or the like carried by the smoke, will be deposited in the liquid, while the cleaned or filtered smoke will rise from the water and pass off through the outlet 3.

I am aware that various changes and

modifications may be made in the construction illustrated, without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim and desire to secure by Letters Patent is:—

1. The combination with a smoke stack, of a cone having its apex extending into the stack to a point near its lower extremity, and the base of the cone being flared and forming a baffle around the upper portion of the stack, the sides of the cone forming with the sides of the stack, a passage of gradually decreasing diameter for the outgoing products of combustion, thereby increasing the velocity of movement of the same, a sleeve or muff surrounding the base of the cone and a liquid receptacle enclosing the stack and muff, the lower edge of said muff extending beneath the surface of the liquid contained in the receptacle.

2. The combination with a smoke stack, of a cone having its apex extending such a distance within the stack as to provide between the walls of the cone and the sides of the stack, a passage of gradually diminishing diameter for the outgoing products of combustion, the base of said cone being flared to form a baffle which directs smoke from the stack downwardly, supporting means for said cone, a muff surrounding the flared portion of the cone and extending below the upper edge of the stack, a liquid containing receptacle enclosing the stack, cone and muff, supporting legs for the muff extending upwardly from the bottom of the receptacle, brace rods extending from the upper portion of the muff to said casing, the lower edge of the muff extending below the liquid level of the casing and a smoke outlet for said receptacle.

3. The combination as defined in claim 2, in which the bottom of the receptacle is curved to conform with the upper surface of a locomotive boiler.

In testimony whereof I affix my signature.

GEORGE PAPPANIKOLAOU.