J. D. JACKSON.

APPARATUS FOR CLEANING SMOKE.

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1,100,307. Patented June 16, 1914.

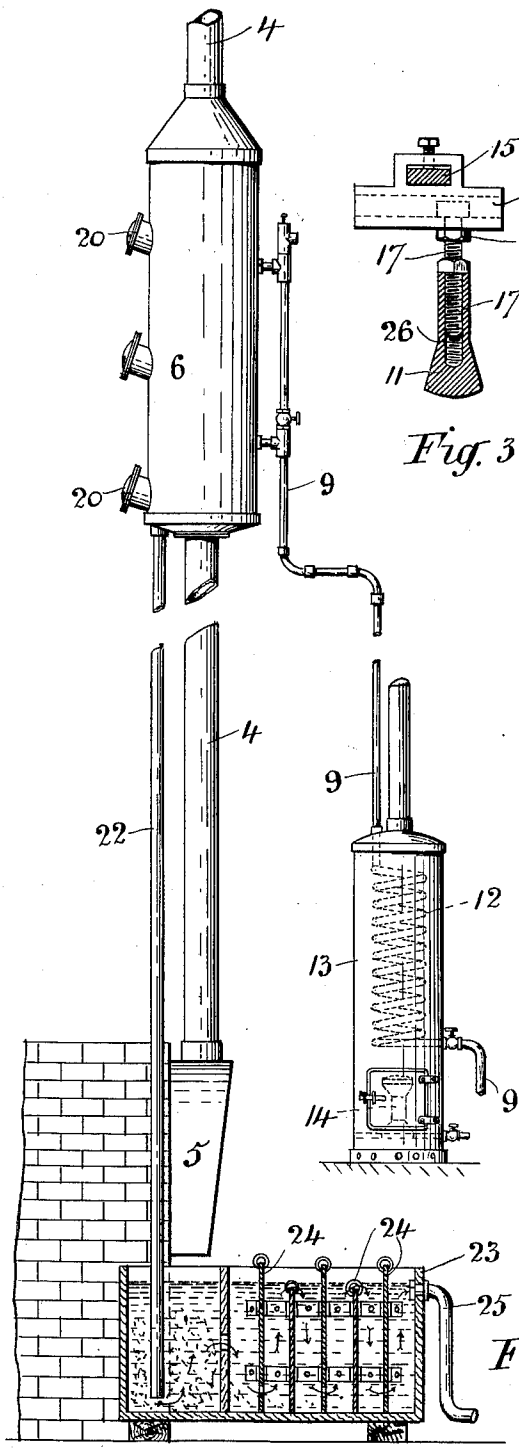


Fig. 2

Fig. 3

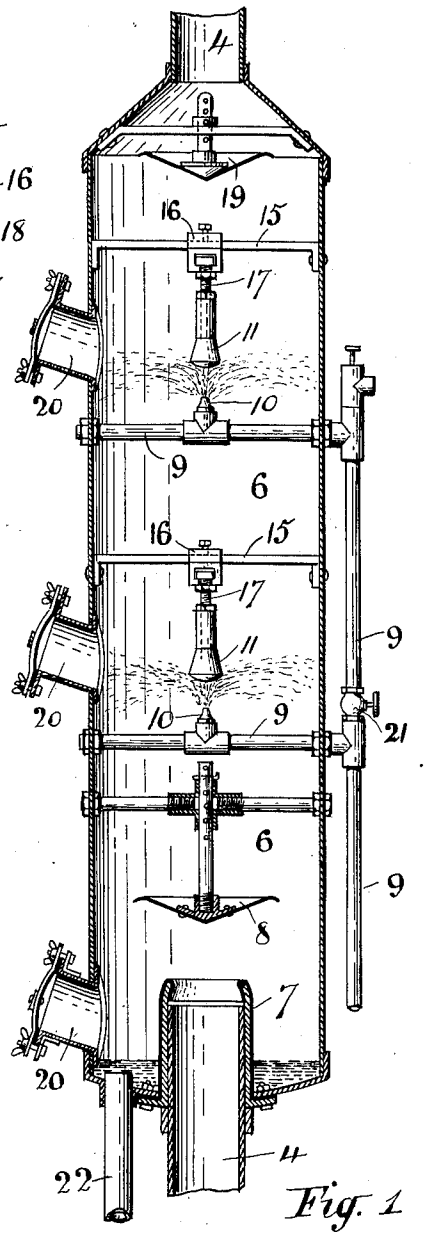


Fig. 1

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APPARATUS FOR CLEANING SMOKE.

1,100,307. Specification of Letters Patent. **Patented June 16, 1914.**

Application filed August 26, 1913. Serial No. 786,763.

To all whom it may concern:

Be it known that I, JAMES DOWSON JACKSON, a subject of the King of Great Britain, residing at "Valeria," 5 Footscray road, Kensington, in the State of Victoria, Commonwealth of Australia, plumber, have invented certain new and useful Improvements in and Connected with Apparatus for Cleaning Smoke, of which the following is a specification.

My invention relates to means whereby smoke may be cleaned by arresting the solid particles therein as the smoke passes up a chimney, and to save such solid matter, if required, for further treatment and use.

The invention is applicable to factory and other chimney stacks by being built into the same, and in order to thoroughly understand the same, reference is made to the accompanying drawings, in which,

Figure 1 is a longitudinal sectional elevation of the separator. Fig. 2 shows the separator chamber in elevation with the filter or tank in section and heating means for warming the water delivered to the jets in the separator. Fig. 3 is a detail showing the way the jet spreaders are mounted adjustably.

In these drawings I have shown my invention applied to the ordinary iron chimney stack as used in many factories and other places, in which 4 is the chimney for conveying away the smoke from the boiler 5. At a convenient point in the chimney, not too near to the boiler, I cut the same and interpose the enlarged chamber, herein referred to as the separator 6, and connect it up at each end to the chimney or stack 4. The separator will be made of any suitable material not readily acted upon by acids, such as copper, earthenware or glazed iron, and the chimney end which enters the same should be protected by being sheathed with a covering 7 of some suitable material such as sheet copper.

Just above the chimney opening and vertically adjustable in the separator is a deflector or baffle plate 8 which causes the smoke to turn toward the sides of the member 6 on its passage upward. Mounted in the separator above the baffle is a jet or atomizer 10 in a water supply pipe 9 and above the jet again is an adjustable convex knob or spreader 11 against which the issuing jet will impinge and be deflected in all directions in order to meet the ascending smoke. In ordinary installations there will be two jets arranged one above the other in the separator, any smoke passing the first shower of water being intercepted by the second. I do not, however, bind myself to any number of jets as more than two may, in some cases, be necessary.

The water pipe 9 may be one with a coil 12 in a chamber 13 in which is a suitable heater 14. In cold weather I have found that, especially in starting the apparatus in the morning, the warm jet playing in the separator assists the draft from the furnace or fire. When the separator is thoroughly warmed the water heater may be discontinued in ordinary weather.

The jet spreaders 11 are supported on transverse bars 15 by means of a suitable chuck 16 adapted to be secured at different points along the bar. In the lower part of the chuck is a groove along which may be slid the depending bolt 17 on which the knob 11 screws and which can be held in the groove at any point by the nut 18. Thus, the convexity on the knob can be adjusted to come immediately over the water jet to insure an even distribution of the same. The spreaders 11 can further be adjusted vertically by means of the screw threads 26 meshing with bolt 17.

In plants where a forced draft is used the passage of the smoke through the separator may be too rapid to permit of the solid matter being caught and the efficiency of the spray may be impaired by some of the water being taken up the stack. In such cases it may be necessary to check the draft by placing at the upper end of the separator a second baffle plate 19 or other analogous device. In the sides of the separator are openings 20 through which access may be had to the internal fittings, and on the water pipe 9 is a cock 21 for cutting off the supply, if necessary, to the upper jet 10. The solid matter in the smoke as it is intercepted by the water sprays falls with the water in the separator and flows therefrom through the pipe 22 into the tank 23. This tank is fitted with a number of removable, preferably glass, plates or partitions 24 each alternate plate being perforated to permit of the liquid therein taking a tortuous

course on its way to the overflow pipe 25. In passing through the tank most of the solid matter in the liquid will be deposited therein and can be afterward removed the plates 24 being made to lift out for that purpose. It will thus be seen that dense smoke can be cleansed in the separator where it is caught and retained by the water sprays, and then conducted away through the pipe 22 to the filtering tank 23 where the solid matter is filtered out. I have found that the separation is so complete that in burning the ordinary coal of commerce only a discoloration of the gases issuing to atmosphere from the chimney is noticeable.

While I have described the invention with reference to iron chimneys in this specification, it may be used with brick stacks by building thereinto the enlargement constituting the separator and the accompanying water sprays and other parts.

Having now described my invention what I claim as new and desire to secure by Letters Patent is:—

The combination with the chimney of a furnace burning a smoke producing fuel of a casing secured to the upper end thereof and into which chimney opens, a vertically adjustable smoke baffle in the lower part of the casing above the open end of the chimney, a series of superimposed water jets in said casing vertically adjustable spreaders arranged above said jets, hand hole openings opposite each of said spreaders, and means for withdrawing from the separator the mixture of soot and water as it is made.

In testimony whereof I have affixed my signature in presence of two witnesses.

JAMES DOWSON JACKSON.

Witnesses:
A. C. Smith,
A. N. Newton.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."