United States Patent

Sargent

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[54] **ANTI-POLLUTION APPARATUS**

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[52] **U.S. Cl.** **55/124,** 55/122, 55/136, 55/139, 55/152, 55/228, 55/387, 55/DIG. 41, 110/119, 110/162, 110/184, 204/312, 261/118, 261/DIG. 9

[51] **Int. Cl.**.....**B03c 3/14**

[58] **Field of Search**.....55/124, 123, 122, 126, 136, 55/139, 152, 387, 228, DIG. 41; 110/119, 184, 162; 204/312, 323, 324, 325, 326, 327, 328; 261/118, DIG. 9

[56] **References Cited**

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[57] **ABSTRACT**

An anti-pollution device for insulation in factory smoke stacks. This device includes a charcoal filter through which the smoke is pulled by fan blades.

The device also includes high voltage electrodes for producing an arc from point to point which is accomplished by a distributor.

4 Claims, 2 Drawing Figures

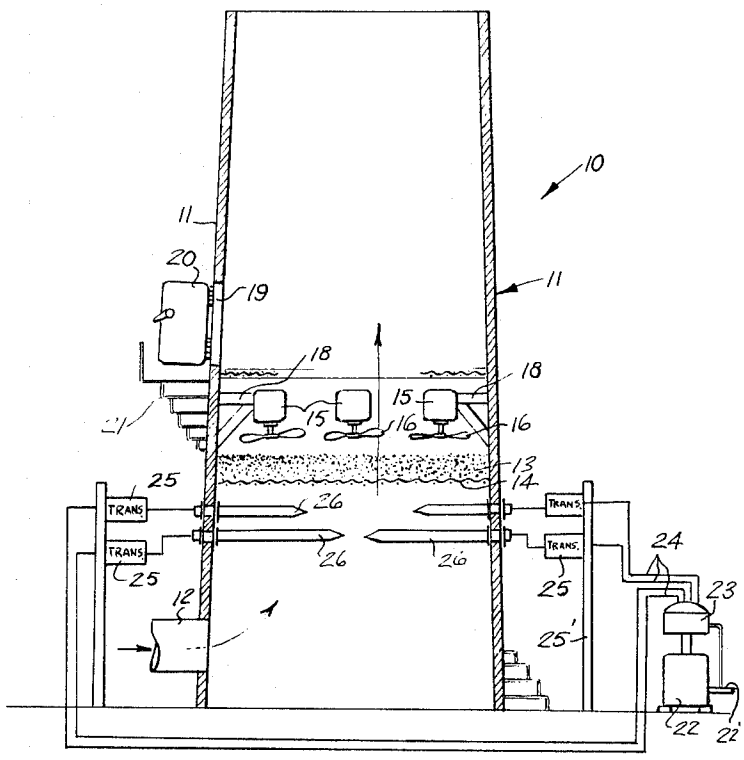


Fig. 1

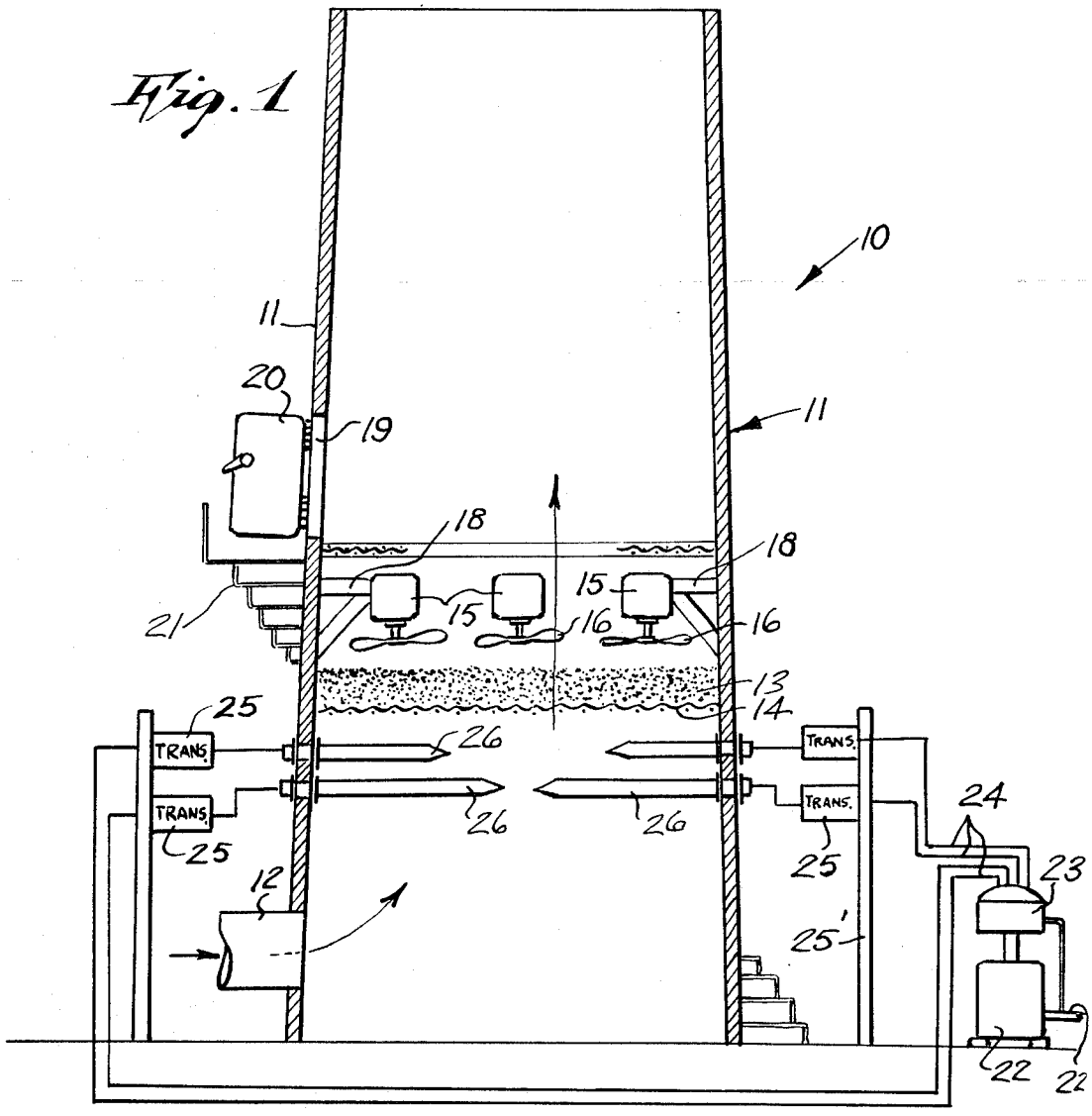
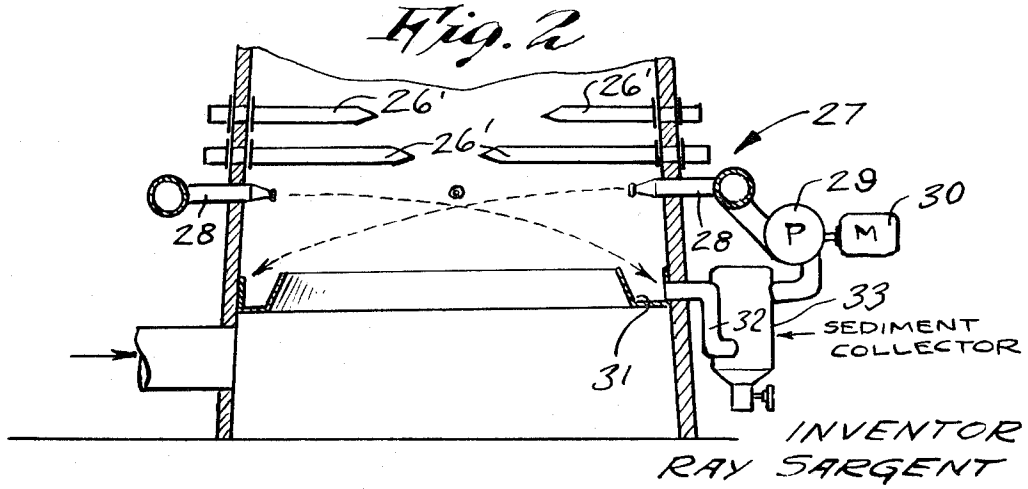


Fig. 2



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ANTI-POLLUTION APPARATUS

This invention relates to air pollution control devices, and more particularly to an anti-pollution apparatus for smoke stacks.

It is therefore the primary purpose of this invention to provide an anti-pollution apparatus which will greatly lessen the outpouring of smoke and noxious gases from smoke stacks.

Another object of this invention is to provide an anti-pollution apparatus which will include a charcoal filter within the smoke stack through which is pulled the smoke by means of a plurality of motor driven fan blades, the charcoal filter serving to remove the toxic gases and smoke particles.

A further object of this invention is to provide a first means of treating the smoke before it is passed through the charcoal filter, the first means being a plurality of spaced apart electrodes from which a high voltage spark is produced from point to point by means of a distributor which causes the electrodes to fire alternately.

A further object of this invention is to provide an apparatus of the type described which will have the interior of the smoke stack accessible by means of a door in order to service the motors and fan blades therein.

Other objects of the present invention are to provide an anti-pollution apparatus which is simple in design, inexpensive to manufacture, rugged in construction, easy to use and efficient in operation.

These and other objects will be readily evident upon a study of the following specification and the accompanying drawing wherein:

FIG. 1 is a vertical view of the present invention shown in section; and

FIG. 2 is a fragmentary view similar to that of FIG. 1, but showing a modified form which includes water spray means for removing the smoke particles, the water being carried into a sediment collector device which allows removal of the particles and the water can be recirculated by pump means to the spray nozzles.

According to this invention, an anti-pollution apparatus **10** is shown to include a common smoke stack **11** having a smoke inlet **12** at its lower extremity, the smoke entering through the stack wall **11'**.

A charcoal filter **13** extends across the entire air diameter of stack **11**, the filter **13** being supported upon the screen **14**. A plurality of spaced apart electric motors **15** having fan blades **16** are supported upon mounting brackets **18** which are secured fixedly to the interior of wall **11'**.

The rotating fan blades **16** provide a means of pulling the air through the charcoal filter **13**, the filter **13** serving to remove the noxious gas and smoke particles from the smoke.

It will be noted that an opening **19** through wall **11'** is covered by a hinged door **20**, the arrangement allowing for the motors **15** and the fan blades **16** to be serviced.

A stairway **21** secured to the outer extremity of wall **11'**, allows for the worker to ascend stack **11** in order to reach door **20**. An electric motor **22** is provided with a cable **22'** which is connected to a power source and motor **22** rotates the distributor **23**.

The wires **24** extending from distributor **23** are secured to the high voltage transformers **25** which are mounted to posts **25'**.

The output of transformers **25** are secured to the electrodes **26** which are secured fixedly to wall **11'** of

stack **11**, the electrodes **26** serve to cause a high voltage electric arc for further purifying the smoke.

Looking now at FIG. 2 of the drawing, one will see a modified apparatus **27** similar to that described in the main embodiment of the present invention.

Apparatus **27** has an additional method of further cleaning the smoke by having a plurality of nozzles **28** which produce a fine spray, the nozzles **28** being supplied with water by means of a pump **29** which is driven by a motor **30**.

The water from nozzles **28** serve to collect the smoke particles which by gravity means, will fall into the annular sump **31**, the water then carrying the smoke sediment by means of pipe **32** to the sediment collector **33** wherein the water is then recycled through the pump **29** and back into the nozzles **28**.

It will be noted further that the smoke particles, by gravity means will settle in the bottom of sediment collector **33** and the clean water will be taken off at the upper extremity of sediment collector **33** by means of the water pump **29**.

What I claim is:

1. An anti-pollution apparatus for smoke stacks, comprising, a vertical smoke stack, a plurality of motor and fan blades carried within said stack providing a means of pulling air up through said stack, a charcoal filter carried within said stack providing purifying means for the gases being pulled through said stack, support means for said filter carried within said stack, a plurality of electrodes carried by said stack for producing an intermittent electric arc, high voltage transformer means carried by said apparatus with distributor and motor means for alternating the arcing within said stack.

2. The combination according to claim **1**, wherein said stack is provided with an inlet opening at its lower extremity for smoke to be pulled into said stack and said electrodes produce a high voltage arc which is intermittent between the oppositely opposed electrodes by means of a rotating distributor, said distributor supplying voltage from a power source for the input of said high voltage transformer, the output of said transformers carrying the high tension voltage to said electodes on the interior of said stack and simultaneously as said electrodes are arcing, said fan blades are pulling air through said filter.

3. The combination according to claim **2**, wherein said fan blades are secured to electric motors that are fixedly secured and spaced apart on the interior of said stack and a partial vacuum is created in order to pull said air through said charcoal filter, said charcoal filter serving to remove the noxious gases and smoke particles from said air being drawn through said stack and said high voltage electrodes serve to further break up said smoke particles and to purify said air, said charcoal filter being the final purifying element which will cause substantially clean air to be egressed from said stack.

4. The combination according to claim **3**, wherein repair of said motors and said fan blades within said stack is accomplished by a worker ascending stairs secured to the wall of said stack, said workman having access to said motors by means of a hinged door secured to said stack, said hinged door covering an opening through said wall of said stack.

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