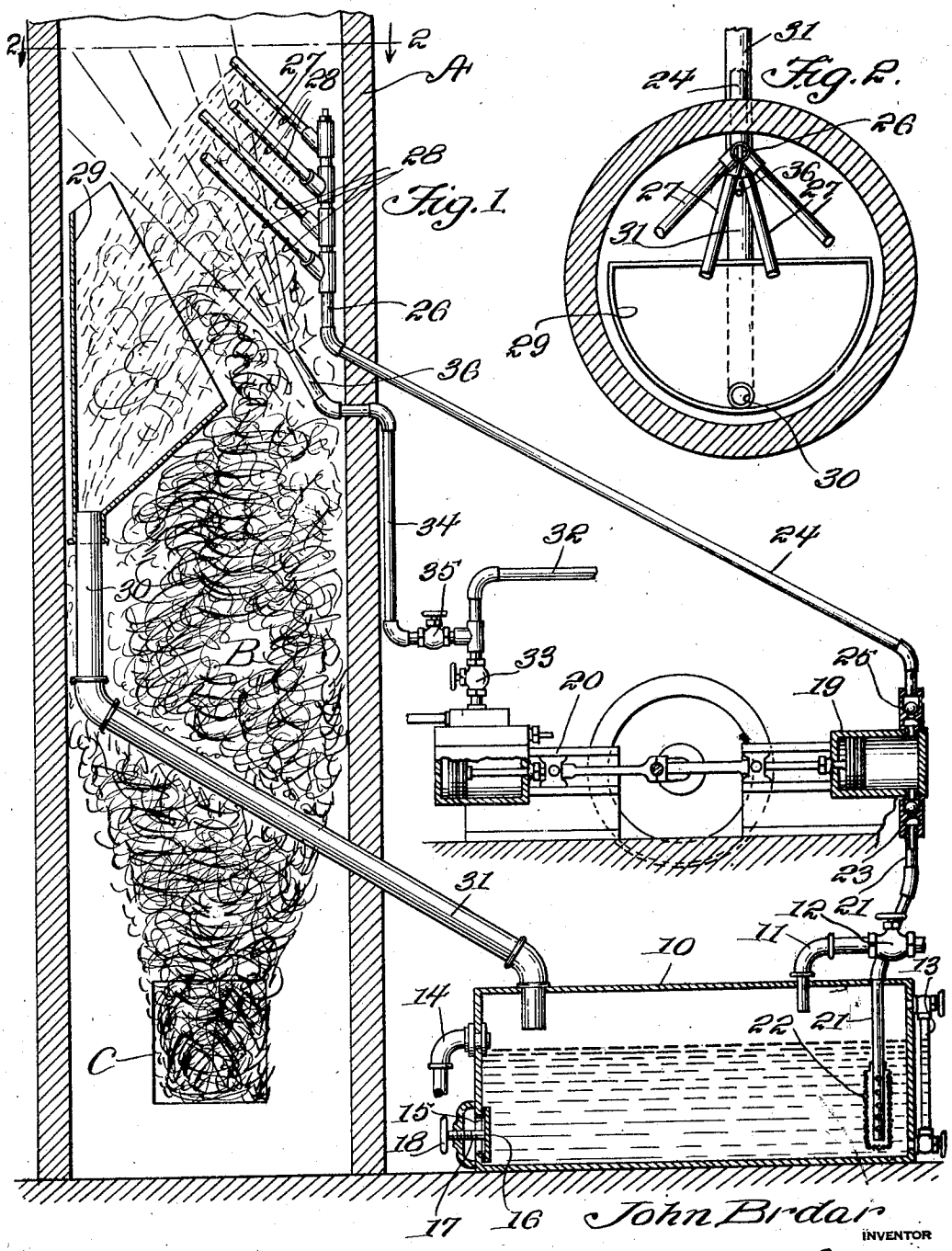
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SMOKE CONSUMER

Filed July 27, 1925



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UNITED STATES PATENT OFFICE.

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SMOKE CONSUMER.

Application filed July 27, 1925. Serial No. 46,430.

This invention relates to smoke consumers and has for its object the provision of a novel device by means of which carbon or soot and noxious and dangerous gases may be entirely removed from smoke, thereby promoting the health of the community and complying with any regulations which may exist regarding the discharge of black smoke into the air.

An important object is the provision of an apparatus of this character embodying means whereby the smoke is positively and actually washed by means of water so as to effect removal of the objectionable matter therein, a peculiarly arranged and pump operated spray means being provided for the purpose.

Yet another object is to provide an apparatus of this character in which a blast of steam is utilized not only for assisting the washing action of the jet or spray devices but also for assisting the draft in the furnace stack.

An additional object is the provision of a device of this character which will be comparatively simple and inexpensive in manufacture, and installation, continuous and automatic in action, efficient and durable in service, and a general improvement in the art.

With the above and other objects and advantages in view, the invention consists in the details of construction, the arrangement and combination of parts, to be hereinafter more fully described and claimed, and illustrated in the accompanying drawings, in which:

Figure 1 is a vertical section through a smoke stack showing the invention in applied position, and

Figure 2 is a detail in cross section taken on the line 2—2 of Figure 1.

Referring more particularly to the drawings, the letter A designates a conventional smoke stack and B represents a mass of smoke therein issuing from the outlet C of a furnace or other heating device.

In carrying out the invention, I provide a suitable tank 10 adapted to contain water which is supplied thereto through a suitable inlet pipe 11 leading from a source of supply and preferably equipped with a control valve 12. At some convenient point in its length is provided a gage glass 13 whereby the operator may ascertain the water level at any time. Near its upper portion the tank is equipped with an overflow pipe 14 for the purpose of conducting said water to the sewer. Furthermore, at the lower portion of the tank is a cleanout opening 15 normally closed by a disk or other valve device 16 carried as for instance by means of a screw rod 17 having an operating wheel 18 or the like. When this opening is uncovered it is obvious that the contact, that is sediment or other accumulations of solid matter may be effectually removed.

The invention also contemplates the provision of a pump of ordinary construction indicated by the numeral 19, which pump is adapted to be driven by means of a conventional steam engine indicated at 20, though obviously electricity or other motive means might be employed for effecting the driving. Leading from the tank 10 into the pump is a pipe 21 at the inlet end of which is provided a strainer 22 to prevent foreign matter from entering the pump as will be apparent. The usual check valve mechanism 23 is provided at the inlet to the pump, and leading from the pump is an outlet pipe 24 check valved at 25 and leading into the stack A.

Mounted within the stack and connected with the pipe 24 is a header pipe 26 carrying a plurality of upwardly inclined and radially extending spray pipes 27 connected thereto in any desired manner and arranged in any preferred or specific manner to give the best results. At their under sides these spray pipes are perforated in an obvious manner as indicated at 28 so that when water is supplied to these pipes a plurality of jets will be forced out, the jets extending downwardly across the rising column of smoke B in an inclined direction.

Mounted within the stack is a funnel member 29 carried by the upper end of a pipe 30 which extends downwardly and which connects with an inclined pipe 31 discharging into the tank 10 so that the water discharged from the jet will be returned to the tank 10 for subsequent use.

In case the engine 20 is of the steam operated type, the numeral 32 designates the steam supply line within which is interposed a suitable control valve 23 for regulating the introduction of the steam to the engine. Connected with the pipe 32 is a discharge pipe 34 having a valve 35 therein and extending upwardly and into the stack A where it is equipped with a discharge nozzle 36 located beneath the various pipes 27 and so arranged as to direct a blast of steam into an

upwardly inclined direction transversely to the path of the jet of water.

In the operation of the device, it will be seen that when the water supply is turned on and the engine is in operation, the pump 19 will act to draw water from the tank 10 and force it through the pipe 24 and the various sub-pipes 27 so as to produce a spray or plurality of jets which will be discharged in a downwardly inclined direction transversely of the rising column of smoke. Quite naturally, this water will act to wash the smoke and not only remove the carbon therein but also absorb the poisonous gases which may be present. The water falls into the funnel member 29 and passes back through the pipes 30 and 31 into the tank 10 so that there will always be a constant circulation through the apparatus. The blast of steam issuing from the nozzle 36 traverses the jet of water and not only acts to assist the water in the cleansing action on the smoke but also acts to promote the draft within the stack so that better combustion in the furnace will result. Quite naturally, the water will accumulate within the tank 10 and the surplus amount therein will be discharged through the pipe 14 into the sewer.

From the foregoing description and a study of the drawings it will be apparent that I have thus provided a simply constructed and easily arranged and installed apparatus for the purpose specified which will have many advantages especially as it will prevent the emission of objectionable black smoke from the smoke stack, thus complying with the regulations which exist in many localities and saving the user the cost of fines. Furthermore, dangerous and poisonous gases ordinarily discharged into the atmosphere will be absorbed so that the air will be in a much better condition and the health of the community improved. It is believed that the construction, operation and advantages will be readily apparent to one skilled in the art without further explanation.

While I have shown and described the preferred embodiment of the invention, it should be understood that I reserve the right to make such changes in the form, construction and arrangement of parts as will not depart from the spirit of the invention or the scope of the subjoined claim.

Having thus described the invention, I claim:—

A device for cleaning the smoke rising in a stack, comprising the combination of a perforated pipe located within the stack, a receiving funnel located within the stack in position to catch water discharged from said perforated pipe, a tank connected with said receiving funnel to receive the water collected therein, a pump having its inlet connected with said tank and having its outlet connected with said perforated pipe, for maintaining a constant circulation of the water, strainer means interposed between the tank and the inlet to said pump for preventing recirculation of dirt and soot, and a steam engine connected with said pump for operating the same and having its exhaust connected with a pipe leading into the stack beneath said perforated pipe whereby the discharge of steam will pass transversely thru the falling curtain of water discharged from said perforated pipe.

In testimony whereof I affix my signature.

JOHN BRDAR.