J. L. AXEN.

FORCED DRAFT DEVICE.

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1,314,563. Patented Sept. 2, 1919.

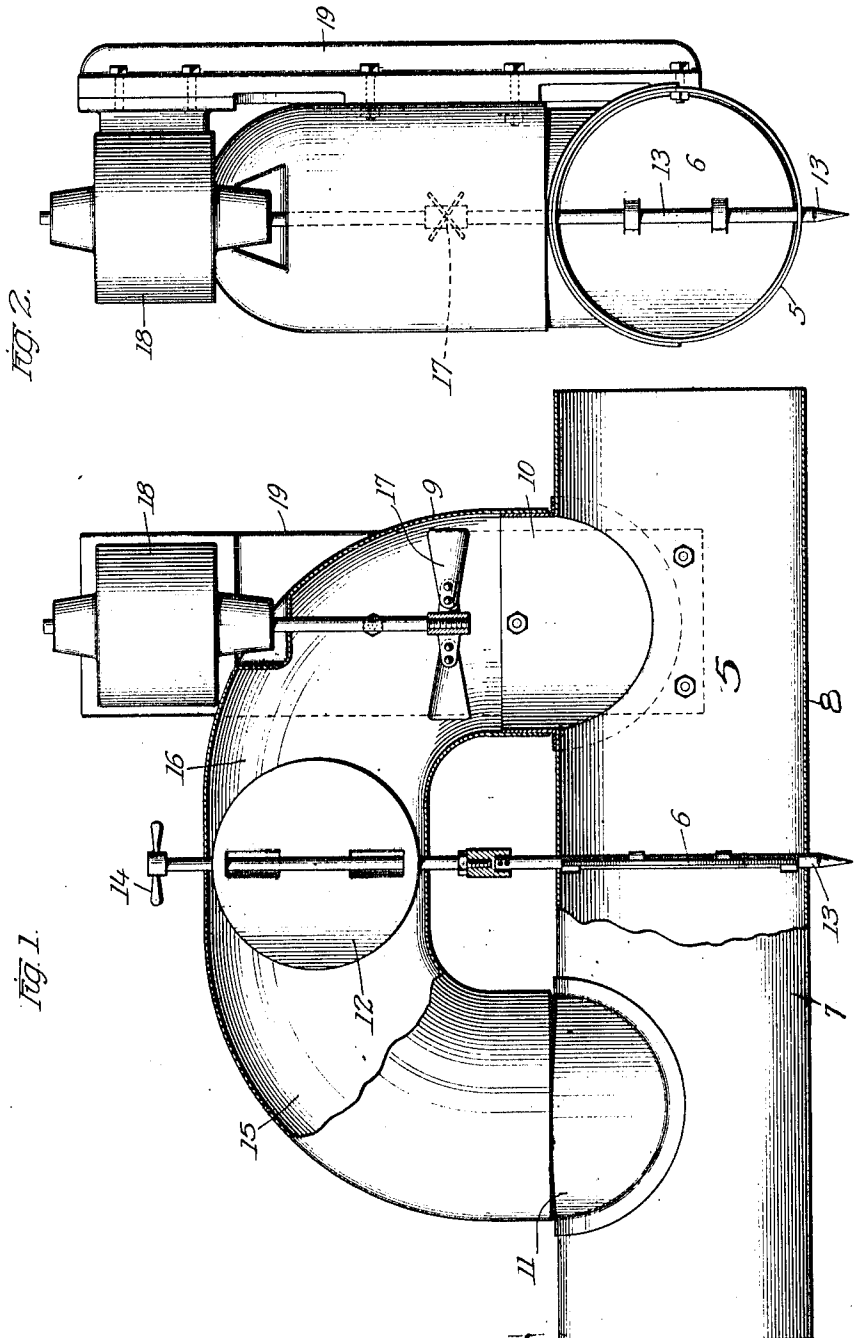


Fig. 2.

Fig. 1.

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UNITED STATES PATENT OFFICE.

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FORCED-DRAFT DEVICE.

1,314,563. Specification of Letters Patent. Patented Sept. 2, 1919.

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To all whom it may concern:

Be it known that I, JOHN L. AXEN, a citizen of the United States, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Forced-Draft Devices, of which the following is a specification.

My invention relates to means for accelerating or producing movement of air or other fluid, or liquid, through a conduit or pipe.

In many environments, it is desirable to accelerate the draft of air, at times, as in smoke pipes, or breeching of a furnace or boiler, to intensify combustion, or to assist in the distribution of heated air, as in hot air furnaces or the like, or for accelerating the movement of other fluids or liquids through pipes or conduits.

In carrying my invention into effect I place a damper, or valve in a conduit and construct a bypass around the damper, or valve, and place another damper, or valve in the bypass, and employ, preferably, a single instrumentality to operate the two valves, so arranged that when one valve is open the other is closed.

In the bypass, on either side of the bypass valve or damper, I insert a power driven propeller, such for example, as a fan or liquid propeller, to accelerate or initiate the movement of the contents of the conduit.

In a preferred embodiment of my invention, shown by the accompanying drawings—

Figure 1 is a side elevation, partly in section, of a conduit and bypass.

Fig. 2 is an end view of the same.

In both views the same reference characters are employed to indicate similar parts.

5 is a straight conduit with a damper 6, dividing it into sections 7 and 8, when closed.

A bypass 9 is connected to the section 8, as at 10, and to the section 7, as at 11. In the bypass I have placed another damper or valve 12, set at right angles to the damper 6. A rod or stem 13 passes through the bypass and through the conduit 5, and operates the angularly disposed dampers 6 and 12 by means of a handle 14. The arrangement is such that when the sections 7 and 8 of the conduit 5 are separated, by the damper 6, the sections 15 and 16 of the bypass are open. When the damper rod 13 is rotated so as to place the dampers, or valves, in their alternative positions, then the conduit will be open and the bypass closed.

In the branch 16 of the bypass 9, I have placed a propeller, or fan 17, driven by an electric motor 18, that may be supported by a suitable frame 19. The fan, or propeller 17, may be adapted for moving liquids, gases or other fluids through the conduit. When the motor is energized the propeller 17 will be rotated, and with the valve 6 closed, air or other fluid will be driven through the bypass by the effect of the rotating propeller. When the dampers, or valves, are arranged so that there is an unobstructed passageway through the conduit 5, the damper 12 in the bypass will be closed and the bypass will have no effect whatever upon the fluids or liquids that are passing through the conduit, and when it is desired to accelerate the movement of the fluid, or liquid through the conduit, then the damper 6 is closed and the damper 12 opened, and the propeller 17 set in motion.

It will, of course, be manifest that the propeller may, instead as shown, be placed in the branch 15, of the bypass and that without material modification the fluid may be made to pass forcibly from the section 7 to the section 8 of the conduit, or from section 8 to section 7, as desired.

In the claims I have used the term "valve" to include dampers or other forms of valves that are substantial equivalents.

While I have herein shown a single embodiment of my invention, for the purpose of clear disclosure, it will be manifest to persons skilled in the art, that changes may be made in the general arrangement and disposition of the parts within the scope of the appended claims.

Having described my invention, what I claim is:—

1. In combination with a conduit; a valve in the conduit dividing the conduit into two sections, when closed; a bypass connecting said sections; a valve in the bypass arranged to be open when the conduit is closed; a valve stem for operating both valves; a propeller in one side of the bypass and an electric motor mounted on the bypass and conduit to operate the propeller.

2. In combination with a conduit, a bypass having a parallel yoke part and a vertical leg on each end thereof communicating with the conduit; a valve in the conduit,

between the leg openings; a valve in the parallel yoke part, to separate said legs; a stem extending through both valves, when rotated, to open one valve and close the other; an air propeller in one said vertical leg, a motor having its shaft extending into said leg to operate said air propeller and a mounting connected to said conduit and said vertical leg upon which to support the motor.

In testimony whereof I hereunto subscribe my name.

JOHN L. AXEN.