June 24, 1930. H. C. BAUMGARTEN 1,767,869

AUTOMATIC DAMPER

Filed Oct. 29, 1928

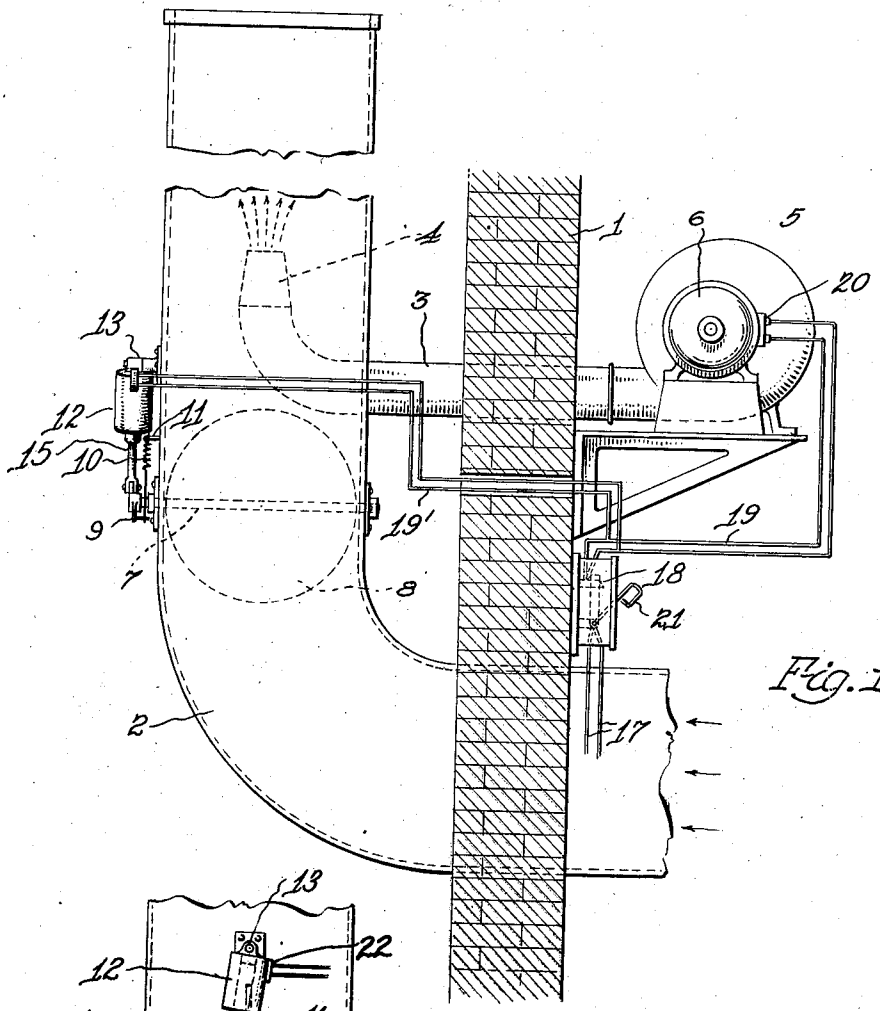


Fig. 1.

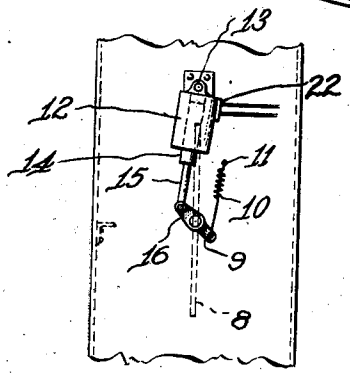


Fig. 2.

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AUTOMATIC DAMPER

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The present invention pertains to a novel mechanism for controlling a damper in a ventilating stack such as the stack usually associated with a spray booth. An upward draft is induced in the stack by means of a nozzle through which air is blown by means of a blower. The stack is obviously open to the atmosphere, as a consequence of which considerable heat from the building is lost to the atmosphere in cold weather after the blower has stopped running. Although manual dampers have been provided in the stacks, experience shows that the workmen often fail to close them. In a large plant, such as the spraying department of an automobile factory, where a large number of spray booths and stacks are installed, the loss of heat by the causes described is considerable.

The object of the present invention is to avoid this waste of heat by providing the stack with an automatic damper which closes automatically when the blower is shut down. The blower is usually driven by a motor, and the automatic device is preferably in the nature of a solenoid controlled by the same switch that controls the current supply to the motor and having a core connected to the damper in such a manner as to operate the same. In the preferred construction there is provided a spring which normally tends to close the damper, while the solenoid holds the damper open while energized during the running of the motor. Thus, when the switch is open to shut down the motor, the flow of current to the solenoid is also broken, and the spring acts to close the damper automatically.

The invention is fully disclosed by way of example in the following description and in the accompanying drawing, in which—

Figure 1 is a side elevation of the apparatus; and

Figure 2 is a detail elevation of the solenoid and associated parts, taken at right angles to Figure 1.

Reference to these views will now be made by use of like characters which are employed to designate corresponding parts throughout.

The numeral 1 designates the wall of a spray booth or other enclosure to be ventilated, and through this wall extends a stack 2 which is directed upwardly to the atmosphere. The wall is also traversed by a pipe 3 passing into the stack 2 and there provided with a nozzle 4 which points upwardly. The pipe 3 connects with a blower 5 driven by a motor 6, during the running of which an upward draft is induced in the stack 2 to draw fumes and the like into the lower end thereof as indicated by the arrows at the lower part of Figure 1.

Beneath the nozzle 4, a diametric shaft 7 is journalled in the stack and provided with a damper or butterfly valve 8 adapted to close the stack. On the outside of the stack, the shaft has a finger 9 fixed thereto, and this finger is joined by an expanded spring 10 to a fixed pin 11 on the stack. This spring normally tends to compress and thereby bring the damper to closed position.

On the outer surface of the stack is pivotally mounted a solenoid 12 on a stud 13. The solenoid contains the usual core 14 connected by a rigid rod 15 to an arm 16 also fixed on the exterior end of the shaft 7. When the solenoid is energized by the means presently to be described, the core 14 is drawn inwardly whereby the valve 8 is opened against the action of the spring 10 as illustrated in Figure 2.

Current is supplied to the motor and solenoid by a pair of conductors 17 connected to the terminals at one side of a switch 18. From the other side of the switch, the conductors are continued at 19 to the terminals 20 of the motor. This circuit is made or broken by a switch arm 21 adapted to be connected or disconnected at will at one side of the switch. The conductors 19 are branched at 19′ and connected to the terminals of the solenoid 12 through a bushing 22 as clearly shown in both views.

It will be obvious that the solenoid is energized only while the motor is running and is de-energized when the motor is disconnected. During the running of the motor the solenoid holds the valve 8 open against the action of the spring 10 as already indi-

cated, but when the apparatus is shut down, the solenoid becomes de-energized, and the spring 10 functions to close the valve, so that no heat from the interior of the building is lost to the atmosphere.

Although a specific embodiment of the invention has been illustrated and described, it will be understood that various alterations in the details of construction may be made without departing from the scope of the invention as indicated by the appended claims.

What I claim is:—

1. In a ventilating device including a stack, a nozzle extending thereinto, a blower for forcing air through said nozzle and a motor for driving said blower, said blower and motor being exterior of said stack, the combination of a damper in said stack, and electrical means for actuating said damper, said means and motor having a common source of current supply, whereby the position of the damper is determined by the operation of the motor.

2. In a ventilating device including a stack, a nozzle extending thereinto, a blower for forcing air through said nozzle and a motor for driving said blower, said blower and motor being exterior of said stack, the combination of a damper in said stack, a solenoid and core connected to said damper and adapted to open the same when energized, said solenoid and motor having a common source of current supply, whereby the position of the damper is determined by the operation of the motor.

3. In a ventilating device including a stack, a nozzle extending thereinto, a blower for forcing air through said nozzle and a motor for driving said blower, said blower and motor being exterior of said stack, the combination of a damper in said stack, a solenoid and core connected to said damper and adapted to open the same when energized, said solenoid and motor having a common source of current supply, whereby the position of the damper is determined by the operation of the motor, and a spring normally tending to close said damper.

4. In a ventilating device including a stack, a nozzle extending thereinto, a blower for forcing air through said nozzle and a motor for driving said blower, said blower and motor being exterior of said stack, the combination of a damper in said stack, means normally tending to close said damper and electrical means adapted to open said damper, said means and motor having a common source of current supply, whereby the position of the damper is determined by the operation of the motor.

In testimony whereof I affix my signature.

HUGO C. BAUMGARTEN.