Nov. 12, 1935. F. FRANCIS 2,020,882

FUEL SAVER

Filed Sept. 4, 1934

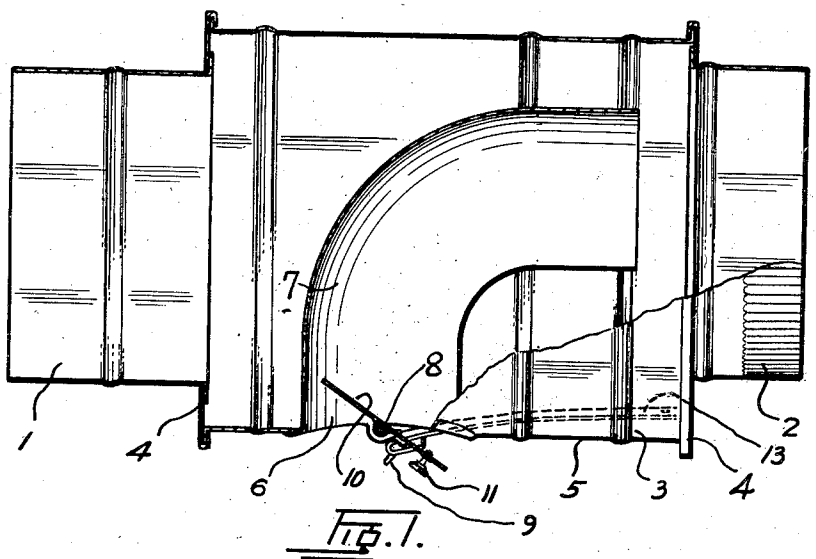

Fig. 1.

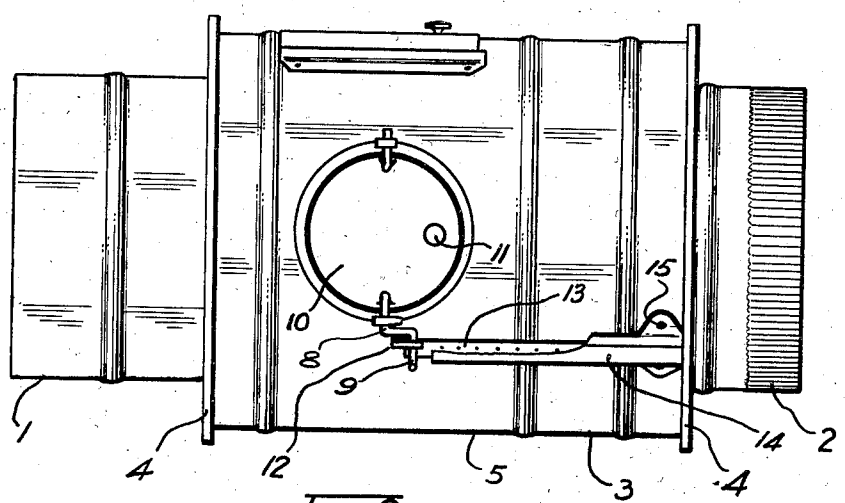

Fig. 2.

INVENTOR
FRANK FRANCIS.

By Fetherstonhaugh & Co

ATTORNEYS.

Patented Nov. 12, 1935 2,020,882

UNITED STATES PATENT OFFICE

2,020,882

FUEL SAVER

Frank Francis, Vancouver, British Columbia, Canada

Application September 4, 1934, Serial No. 742,673

4 Claims. (Cl. 236—96)

My invention relates to improvements in fuel savers the objects of which are to provide means whereby air is admitted to satisfy draught surges in the flue instead of allowing an increased draught through the fire, and to provide a thermostatic control to such air admission so that the fire can be maintained at a suitable temperature after firing.

The invention consists essentially of a drum of greater cross section than the smoke pipe to which it is fitted, an air inlet pipe within the drum and a thermostatically controlled damper for choking the air inlet pipe, as will be more fully described in the following specification and shown in the accompanying drawing, in which:—

Fig. 1 is a part sectional view of the invention.

Fig. 2 is an elevational view showing the thermostat and the damper.

In the drawing like characters of reference indicate corresponding parts in each figure.

The numerals 1 and 2 indicate respectively an inlet and an outlet smoke pipe connection which are offset from each other and communicate with a drum 3 having heads 4 and a peripheral wall 5. An opening 6 is formed in the wall 5, which communicates with one end of a pipe bend 7 the free end of which is directed towards the smoke pipe outlet connection.

Transversely journalled across the opening 6 is a shaft 8 which is provided at one end with a crank 9 and is fitted with a damper 10 having a knob 11 for hand manipulation.

The damper 10 frictionally engages the shaft 8, so that it may be set to any position between fully closed and fully open by rotating it about the shaft.

The crank 9 projects into a loop 12 of a bi-metallic strip 13 which extends in close proximity to the peripheral wall 5 of the drum 3 and is secured to it adjacent the drum head 4. This strip or thermostat is preferably covered by a casing 14 secured to the wall 5 with screws 15, so as to exclude the strip from the influence of room draughts and to ensure a steadier movement due to smoke pipe temperature fluctuation.

In operation, on lighting the furnace to which the device is connected, the damper 10 is set to allow such inflow of air into the pipe bend 7 as the normal draught of the flue may demand. If the flue is high and unobstructed a greater check on the fire is usually wanted than when the flue is a low one or is obstructed by adjacent buildings. The preliminary setting of the damper 10 is obviously made when the device is cold. When the fire is started and heat reaches the drum 3 and through its walls 5 the bi-metallic strip 13 becomes deflected according to its temperature increase, thus swinging the crank 9 and through the shaft 8 opening the damper beyond its original setting. The effect of this further opening is to limit the flow of gases from the furnace to that which will keep the fire burning in an economical way.

The effect of the device is to first reduce the velocity of the gases emanating from the furnace on entering the drum, as the velocity of the gases flowing through the flue exert a pull which is in part satisfied from the room. By virtue of the alignment of the pipe bend 7 with the smoke pipe connection 2, the air from the room flows with less resistance to the said smoke pipe connection than the gases from the furnace which have had their velocity reduced on entering the drum. As the heat in the drum drops, so will the damper be closed proportionately, thus reducing the flow through the pipe bend and increasing the pull on the furnace.

In use on oil burners where intermittent firing takes place, a substantial pull is exerted on the flame on ignition, which ensures proper combustion and the pull is reduced as the heat in the smoke pipe becomes intensified, so that on initial firing proper combustion takes place and carbon deposit on the jets and on furnace surfaces is materially reduced.

What I claim as my invention is:

1. A fuel saver comprising a drum having a smoke inlet and a smoke outlet parallel to and offset from each other, an air inlet pipe extending into the drum terminating in alignment with the smoke outlet, and means extending substantially in contact with the surface of the drum for thermostatically controlling the air flow into said air inlet pipe.

2. A fuel saver comprising a drum having a smoke inlet and a smoke outlet offset from each other, an air inlet pipe extending into the drum terminating in alignment with the smoke outlet, a shaft extending across said inlet pipe, a damper frictionally engaging said shaft whereby the damper can be turned about the shaft, and thermostatic means for rocking the shaft and the damper.

3. A fuel saver comprising a drum having a smoke inlet and a smoke outlet offset from each other, an air inlet pipe extending into the drum terminating in alignment with the smoke outlet, a shaft extending across said inlet pipe, a damper frictionally engaging said shaft whereby the

damper can be turned about the shaft and a bimetallic strip secured at one end of the drum and engaging the shaft at the other for rocking the shaft and the damper.

4. A fuel saver comprising a drum having a smoke inlet and a smoke outlet, an air inlet pipe extending into the drum terminating in alignment with the smoke outlet, a shaft extending across said inlet pipe, a damper frictionally engaging said shaft whereby the damper can be turned about the shaft, and thermostatic means for rocking the shaft and the damper.

FRANK FRANCIS.