(No Model.)

# F. C. WILSON.

## STOVE.

No. 602,118. Patented Apr. 12, 1898.

Fig. 1.

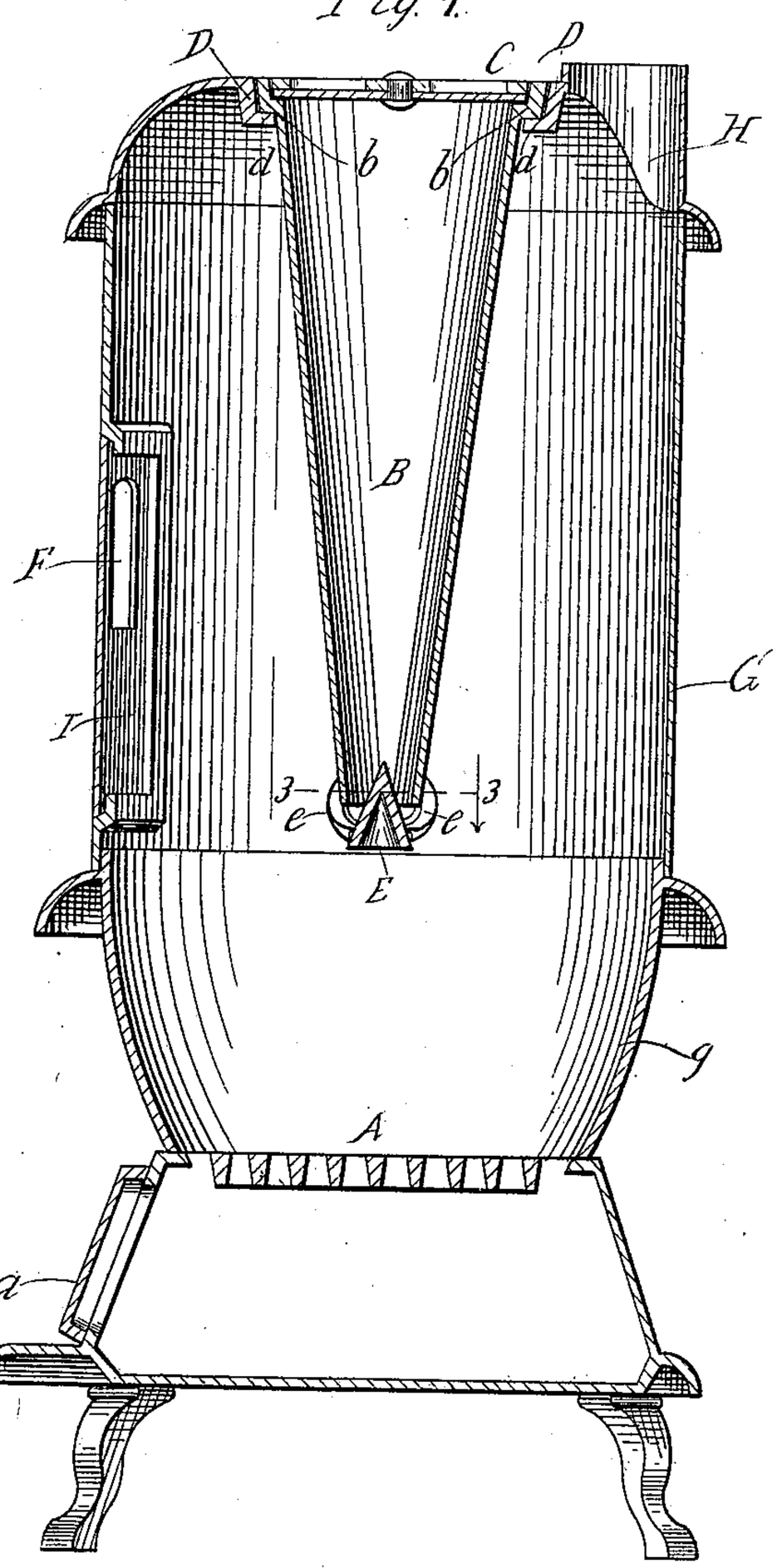



Fig. 2.

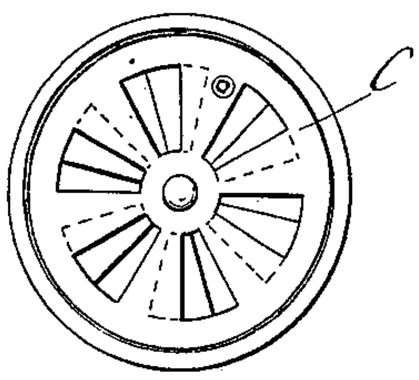
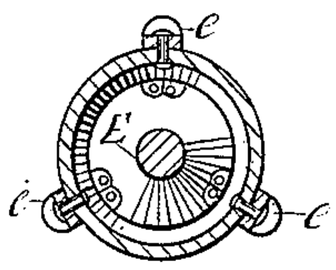



Fig. 3.

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# UNITED STATES PATENT OFFICE.

FRANK C. WILSON, OF AURORA, ILLINOIS.

## STOVE.

SPECIFICATION forming part of Letters Patent No. 602,118, dated April 12, 1898.

Application filed August 24, 1896. Renewed March 5, 1898. Serial No. 672,777. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK C. WILSON, a citizen of the United States, residing at Aurora, in the county of Kane and State of Illinois, have invented certain new and useful Improvements in Stoves; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The invention relates more directly to heating-stoves, though it may be applied to coal or wood burning stoves of any type. Its object is to provide a supply of hot air above the burning fuel in such manner as to maintain the most active combustion around its edges and cause the discharge of the gases from the burning mass entirely outside of the annular zone of greatest intensity of combustion; and it consists in carrying a column of air downwardly to the fuel and discharging it thereupon in the form of a conical sheet spreading from a central point above the vertical axis of the fire-pot, and in a peculiar form of air-feed and heating tube entering the combustion-chamber from the top of the stove, and in various details of construction, as hereinafter fully pointed out.

I show in the accompanying drawings in Figure 1 a central vertical sectional view of a stove provided with my improved air-feeding device; in Fig. 2, a plan view of the damper used in connection with the air-feed tube, and in Fig. 3 a central vertical section of the deflector located at the bottom of the tube for spreading the air.

I have shown in the drawings a bituminous-coal-burning stove of the type known as the "Oak" stove, which has a cylindrical body G, mounted upon a fire-pot *g* and having a grate A and feed-door I and a discharge-flue H.

The top of the stove is centrally apertured, the aperture being inclosed by a pendent annular flange D, having an inturned lip *d* at its lower edge.

The air-feed tube B is fitted within this central aperture and is in the form of an inverted truncated cone. The upper end of the tube is adapted to the lip *d* by being outwardly offset, so as to form a shoulder *b*, and this construction also provides an upwardly-directed annular shoulder at the mouth of the tube, upon which rests the damper C. This damper is of ordinary construction, and I have not deemed it necessary to either describe or illustrate it in detail.

The lower end of the tube B is a little above the normal level of the burning fuel and is partially closed by a conical deflector E, the apex of which is inserted within the open end of the tube B, the walls of the cone E and of the tube B being, however, spaced apart, so as to provide an annular discharge-aperture from the tube B into the combustion-chamber of the stove. The deflecting-cone E is secured in position by means of arms *e e*, secured to it and to the tube B.

The tube B is not secured within the stove in any manner and may readily be removed therefrom, and the aperture within which it is set may be closed by an ordinary stove-plate, if desired.

The feed-door I is shown as being provided with mica F—a common form of construction, but forming no part of this invention.

While I show grate-bars A and a draft-door *a*, these features may be dispensed with, as ample draft may be provided through the tube B to maintain combustion upon the surface of the fuel, and I find this to be a much more desirable and economical method of burning the fuel than by means of an updraft through its mass.

By making the air-tube B in the form of an inverted cone I secure the advantage of an extended area of cold air pressing in at its top, while the discharge into the combustion-chamber is contracted, and for this reason the air enters the combustion-chamber at considerable velocity. By reason of this form of tube also there is a more direct contact of the descending current of air with its walls and also a more direct contact of the ascending burning vapors within the combustion-chamber with its outer walls, so that the descending column of air becomes much more highly heated than would be the case were the tube of uniform diameter or of other form than that shown. The deflecting-cone, being conical in form, spreads the air uniformly and over a considerable area of the surface of the

fuel, this area being dependent upon the inclination of the walls of the deflector and also upon its height above the fuel. The deflector, being hollow, becomes more highly heated than it would were it flat, not only because of the increased surface area exposed to the heat, but also because of the concentration of the heat within its chamber. The air is delivered to the fuel in the form of an annular sheet and cuts off the updraft within this circle, so that the gases distilled from the fuel within the area of this circle must escape under the edges of the sheet of air, and consequently ascend in close proximity to the side walls of the stove, thereby concentrating the heat upon these walls.

By maintaining combustion by means of an air-feed above the fuel instead of through its mass the consumption of the fuel is much more uniform and the objectionable tendency to constant variation of temperature is obviated.

The air enters with sufficient force to provide the necessary oxygen to support combustion within the mass of the fuel and in sufficient volume to provide an excess of oxygen, which, mingling with the gases as they rise from the fuel, entirely consumes them before they enter the smoke-flue, thereby economizing fuel and preventing the clogging of the flue. The forcing of the gases to the sides of the fire-pot in order that they may escape from under the cone of inrushing air secures a thorough admixture of them with the air as it eddies up after its contact with the fuel.

While I have shown the device as applied to a bituminous-coal-burning stove, it may also be applied to a wood or an anthracite-coal stove.

I claim as my invention—

1. The combination with a stove, of an air-feed flue tapering toward its inner end, such flue entering the stove above and terminating directly over the fire-pot, and having an annular discharge-aperture directed downwardly and outwardly.

2. The combination in a stove, of an air-feed flue entering the stove above and terminating directly over the fire-pot, and having an annular discharge-aperture directed downwardly and outwardly.

3. The combination in a stove, of a fire-pot and an air-flue entering the combustion-chamber from above and terminating at the top of the fire-pot and upon the vertical axis thereof, with a conical deflector centrally entering the mouth of the flue but spaced apart from its walls to form an annular discharge-port.

4. The combination with a stove, of an air-feed flue tapering toward its inner end, such flue entering through the top of the stove and terminating approximately at the top of the fire-pot, a conical deflector having its apex located within the inner end of the flue, whereby a downwardly and outwardly directed annular discharge-aperture is formed.

5. The combination with a stove having a fire-pot, of an air-feed flue entering the combustion-chamber and having an annular discharge-aperture directed downwardly and outwardly from the center of the chamber and above the fire-pot.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK C. WILSON.

Witnesses:
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MABEL A. HELMICH.