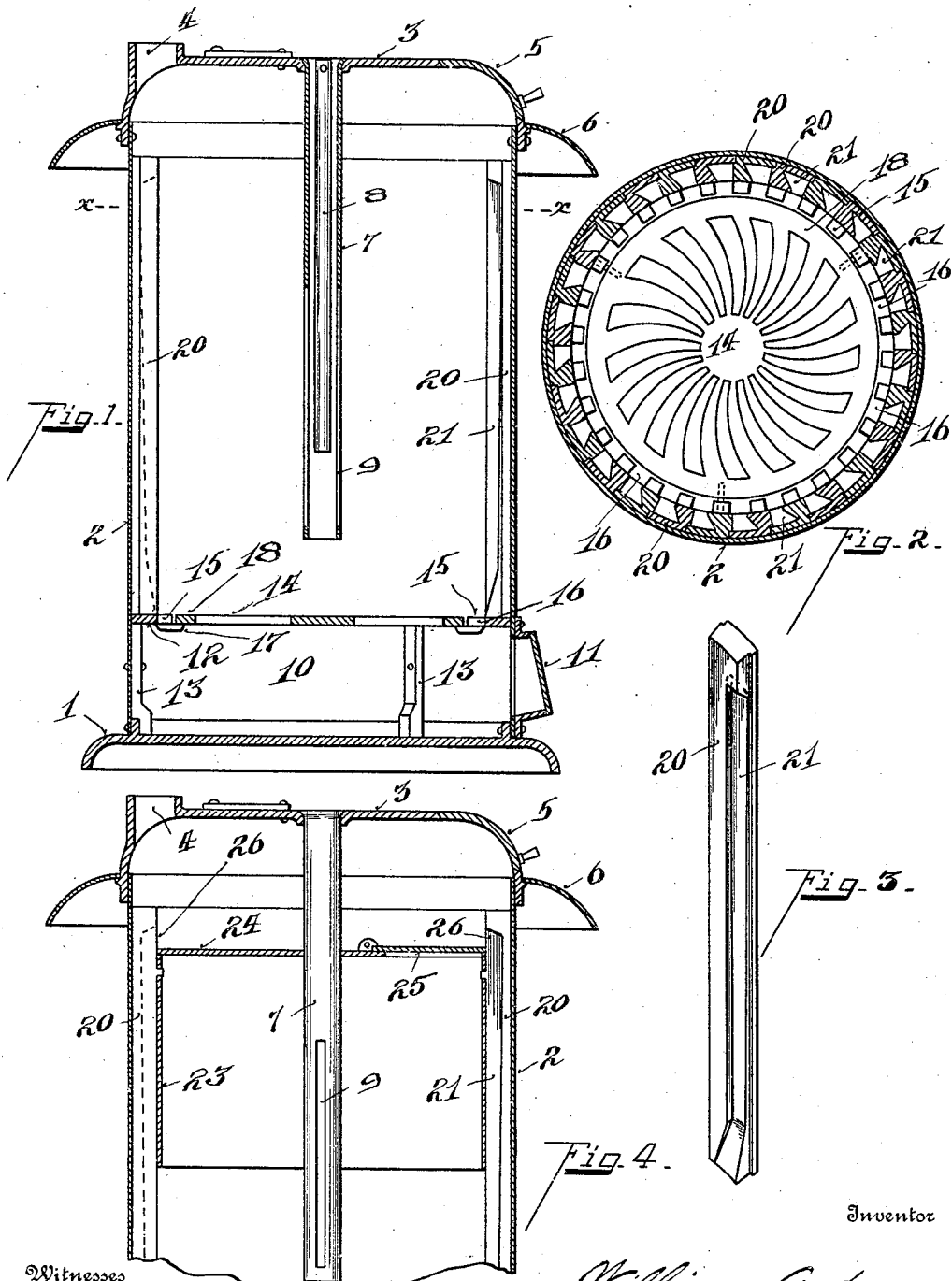


No. 870,153.

PATENTED NOV. 5, 1907.

W. ANDREW.
STOVE.

APPLICATION FILED APR. 30, 1906.



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UNITED STATES PATENT OFFICE.

WILLIAM ANDREW, OF NORWOOD, OHIO.

STOVE.

No. 870,153.

Specification of Letters Patent.

Patented Nov. 5, 1907.

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To all whom it may concern:

Be it known that I, WILLIAM ANDREW, a citizen of the United States, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Stoves, of which the following is a specification.

My invention relates to an improvement in stoves for burning coal, and is primarily adapted to burning slack coal.

10 The object of my invention is to provide a stove lining made of a series of sections, said sections being provided with vertical flues for the passage of products of combustion inside of the fire-box. The drawing shows the staves as adapted to stoves of round form, but they may be made so as to conform to stoves of different shapes, the outer circumference of the staves not necessarily being greater than the inner circumference of said staves.

15 The features of the invention will be more fully set forth in the description of the accompanying drawings forming a part of this specification, in which:—

Figure 1 is a central vertical section of my improvement. Fig. 2 is a section on line x, x, Fig. 1, with the draft tube omitted. Fig. 3 is a perspective view of one of the segmental linings. Fig. 4 is a modification of Fig. 1.

1 represents the base of the stove.

2 represents the outer shell.

3 represents the top of the stove, preferably made of cast iron.

4 represents the up-take.

5 represents the removable door.

6 represents a circular rim on the top plate.

7 represents an open depending draft tube.

35 8 represents an open draft tube suspended inside of the draft tube 7.

9 represents slots pierced into the tube 7, extending some distance above the bottom of the tube 8.

10 represents the ash-box.

40 11 represents the ash-pit door.

12 represents an annular rim supported upon post 13.

14 represents an ordinary open grate.

In the preferred form of construction the annular ring 12 is provided with an annular row of teeth 15. Between the teeth are open spaces 16 for the descent of ashes, and for the admission of air. The lining and flues thereof are constructed as follows:—20 represents a series of segmental lining staves preferably made of cast iron and of the form shown in Fig. 3. When these staves are placed together around the inside of the outer shell they form a lining for the shell. The cut-away portions, as shown in Figs. 2 and 3, form vertical flues 21. The staves themselves form the boundary of the vertical flues, being closed at the top and back and open at the bottom at or near the base of the fuel chamber, and are continuously open into the fuel and com-

bustion chamber. These staves are shown as supported upon the annular rim 12 and posts 13.

To further provide for the proper admission of air to produce complete combustion by the mixture of the gases generated in the fuel bed, the down draft tube 7, being open at the top, admits the requisite amount of air passing out through the slots 9, said tube being also open at the bottom for the admission of air down in the bed of fuel. The inside tube is open at the top and bottom but is provided with no slots so that a portion of the air is always carried down the requisite distance and some distance below the top of the slots 9.

Fig. 4 shows a modification which is provided with an inside box in which 23 represents the annular shell of the same, 24 the covered top, and 25 a feed door. When this inside box is employed and the feed door closed all the products of combustion are compelled to pass into the side flues or spaces 21 and pass out into the fire chamber at a point 26, see Fig. 4. This construction is preferably adapted for burning coal in which a comparatively small amount of gas is generated, such as coke or anthracite coal.

Mode of operation. For burning slack or gaseous coal after a fire has been started in the usual manner, a considerable bed of fuel is fed into the stove and instead of compelling all the products of combustion to pass up through the bed of the coal, these products pass readily into the side flues 21 mix with air and pass into the combustion chamber above the bed of fuel, and complete combustion is insured by the further admission of air through the down flue 7.

It will be noted that the staves in which the side flues are formed rest on the grate, and that no air can pass up into the flue from the ash-pit. The air which supports combustion in the fuel bed passes up through the grate, and mixes with the gases generated, and passes laterally into the side flues, and thence escapes back into the combustion chamber for a more complete combustion, the flues being closed at the top as well as at the bottom. I thus provide an economical means for burning all the products of combustion substantially within the shell of the stove, and prevent waste by the escape of unconsumed gases.

The ash pit door is of course provided with the ordinary register for regulating the amount of air admitted into the ash pit and thence through the grate bars into the combustion chamber.

When the inside box, shown in Fig. 4, is employed for burning hard coal or coke the products of combustion are practically consumed in this fire box and the gases escape through the side flues and thence through space 16 and thence over the inside box to the uptake.

In the lining, as shown, there is a vertical flue formed between each two sections or staves. This construction is cheap and it obviates to a great degree the danger of the shell warping, but in case any of said sec-

tions become defective they are readily renewed. Again, by casting said lining in sections undue expansion is provided for and the liability of cracking of the lining is avoided.

5 Having described my invention, I claim:—

A lining for heating stoves, formed of a series of staves, portions of the staves being cut away forming within themselves a series of complete vertical flues closed at the bottom and at the top, the uncut away portions of the
10 staves forming the front, sides and back of said flues,

said flues having contracted openings above the grate into the combustion chamber, whereby the air supporting combustion in the fuel is compelled to pass up through the grate and mix with the generated gases and then pass into the side flues and thence into the combustion chamber above the fuel bed, substantially as described. 15

In testimony whereof, I have hereunto set my hand.

WILLIAM ANDREW.

Witnesses:

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