

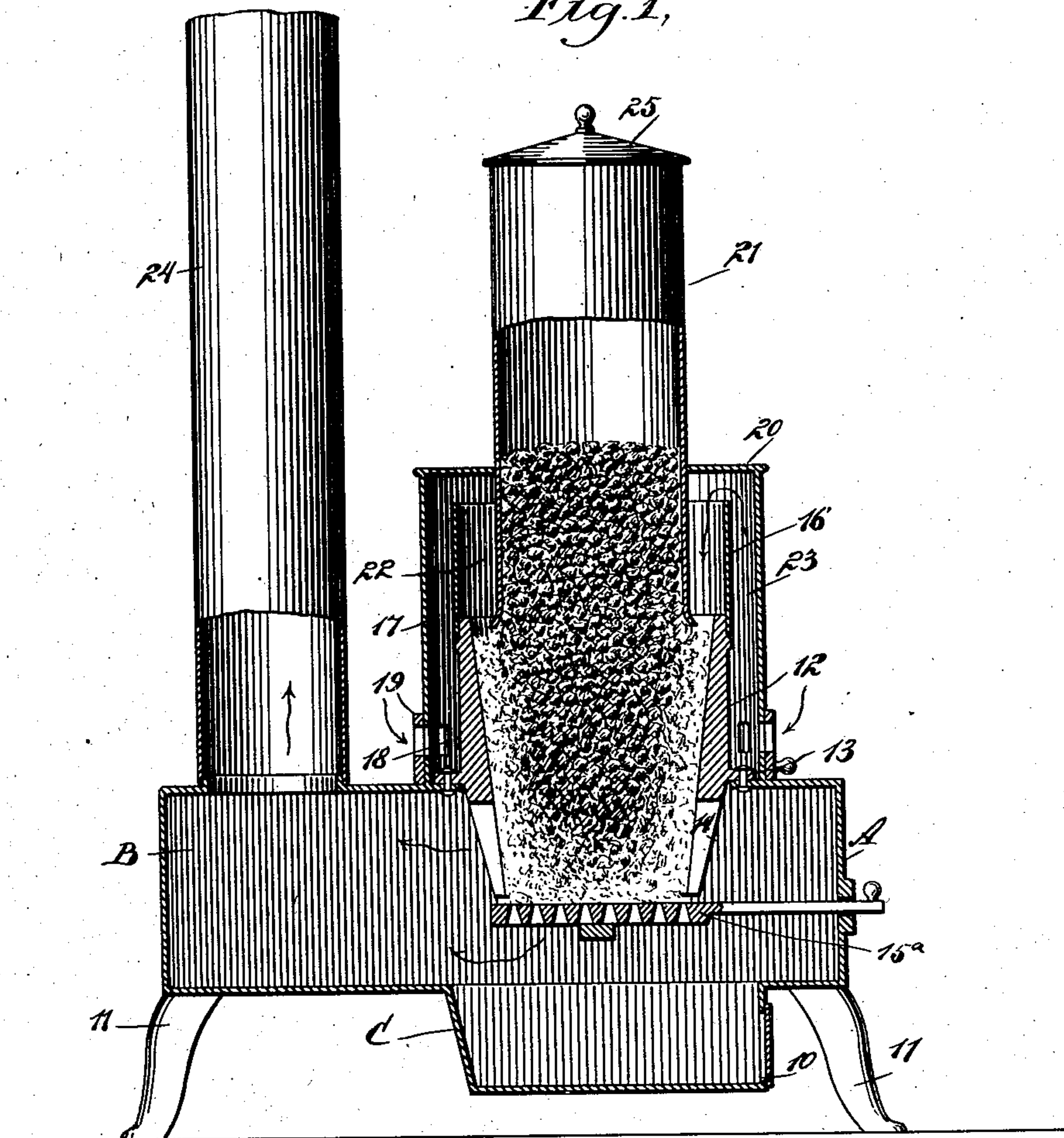
(No Model.)

C. T. LITCHFIELD & J. T. BAUGHER.  
STOVE.

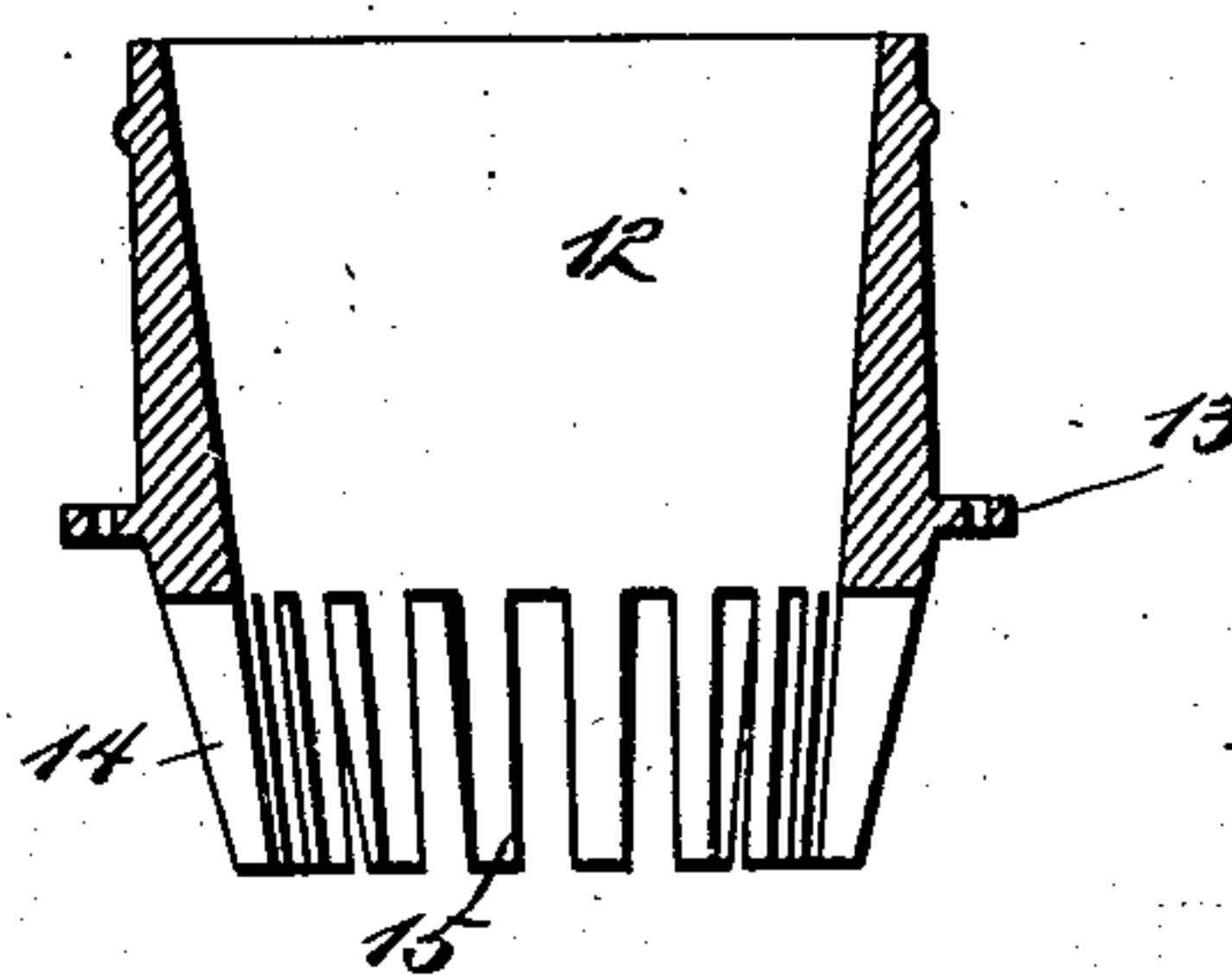
No. 604,991.

Patented May 31, 1898.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## STOVE.

SPECIFICATION forming part of Letters Patent No. 604,991, dated May 31, 1898.

Application filed July 27, 1897. Serial No. 646,087. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES TIFFANY LITCHFIELD and JOSEPH T. BAUGHER, of Spokane, in the county of Spokane and State of Washington, have invented a new and useful Improvement in Stoves, of which the following is a full, clear, and exact description.

The object of the invention is to provide stoves which will have a down and strong draft through the fuel, and so constructed that a coking or charring surface will be formed in the fuel above the grate and beneath the fuel-supply, and whereby, further, a draft-supply will be provided above the fuel so direct as to throw the incoming air through the outer portions of the fuel, confining the combustion to said outer surface of the fuel; and a further object of the invention is to construct a stove in such manner that a maximum of heat will be obtained by the consumption of a minimum of fuel, and whereby the feed from the reservoir to the fire-pot may be continuous and the danger of the material in the reservoir becoming ignited will be removed.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in both figures.

Figure 1 is a vertical central section through the main portion of a stove, the upper portion of the magazine and the upper portion of the smoke-pipe being shown in elevation; and Fig. 2 is a central vertical section through the fire-pot of the stove.

The stove is provided with a base A, which is provided with a single chamber B, and at the bottom of the base an ash-pan C is constructed communicating with the chamber in the base, the ash-pan being provided with a suitable door 10. The base is supported by legs 11 or the equivalents thereof. The fire-pot 12 is passed through an opening in the top of the base into the chamber B of the latter, the fire-pot being provided with an exterior flange 13, which is bolted to the top of the base, and the bottom of the fire-pot is

provided with a series of slots 14, forming fingers 15. The inner portion of the fire-pot is inclined in a downwardly direction, the bottom being of less diameter than the top. The flanged portion of the fire-pot approaches more or less closely a grate 15<sup>a</sup> of any suitable or approved construction.

At the top of the fire-pot a jacket 16 is secured, which jacket extends a desired distance above the fire-pot and is attached to or held in engagement with the outer face of the fire-pot. This jacket is circular and may be made of sheet metal, if desired.

A casing 17 constitutes, practically, the outer body portion of the stove. This casing rests upon or may be attached to the base and extends around the fire-pot and the jacket 16 and above the latter, a space intervening the casing, the jacket, and the fire-pot, and likewise the upper portion of the jacket and the top 20 of said casing. Draft-openings or air-inlets 18 are made in the bottom portion of the casing, the apertured portion of the casing being covered by one or more draft-slides 19, having openings capable of registry with those in the casing. A magazine or a feeder 21 is passed through the top of the casing 20 and within the jacket 16, being spaced from the latter, and the lower end of the magazine or feeder 21 is made flaring and is contained within the upper portion of the fire-pot, as illustrated in Fig. 1. Under this construction it will be observed that an air-supply chamber 22 is provided between the jacket 16 and the magazine or feeder 21, the said chamber being in communication with the fire-pot, and that an air-heating space 23 is provided between the casing 17, the jacket 16, and the fire-pot 12 above the base of the stove.

The feeder or magazine 21 is provided with a removable top or cover 25, preferably attached thereto in an air-tight manner, and a smoke-pipe 24 is connected with the base-chamber B at the rear of the body portion of the stove.

In operation air to support combustion enters through the openings in the draft-slide and the openings 18 in the casing 17. The said air passes through the annular passages 23 and 22, thence through the fuel along the inner periphery of the fire-pot 12, into the com-



bustion or base chamber B, and out through the smoke-pipe 24 into the atmosphere. The fuel intended to support combustion is placed in the feeder 21, being entered at the top when the cover 25 is removed. The air entering above the fuel through the annular space formed between the reservoir or magazine 21 and the jacket 16 is deflected from the center by reason of the flaring lower end of the magazine and passes downward along the side of the fire-pot through the fuel, forming a ring of burning fuel, as shown by the lighter shadings in Fig. 1. The central portion of the fuel in the fire-pot does not obtain air sufficient to burn, except in its extreme lower portion and immediately over the grate, and therefore the central mass of fuel in the fire-pot is slowly coked or charred. The gases formed are drawn through the burning fuel and are consumed, and smoke production is therefore reduced to a minimum. As the outer or incandescent ring of fuel is consumed the ashes fall through the openings in the fire-pot and grate, and the coke or charred fuel forming the core of the fire takes the place of said ashes. The magazine or feeder can therefore be filled with fuel from above, and a constant supply of fuel to the fire-pot may be secured. As the draft is all in a downwardly direction, there will be little or no heat above the fire-pot, and therefore no gases will be formed in the fuel inside of the reservoir, nor can combustion take place therein. The air in passing through the annular chambers 22 and 23 is highly heated, combustion is easily regulated, and heat is more economically imparted to the air in the room than under the ordinary construction of stove, and little, if any, waste heat passes up the chimney. Furthermore, a small quantity of fuel is burned at a time in comparison with the amount in the stove, thus providing ample time for the generation and combustion of the gases. All the gases must of necessity be drawn through the burning fuel and consumed. The fuel is confined within the fire-pot, and the inner portion will be practically coked by the heat imparted by the outer or incandescent ring of fuel. Where the draft is not confined to the outer edges of the fuel, the fuel burns equally throughout the mass, and an imperfect combustion is the result; but by confining the zone of combustion to the outer portion of the fuel a coking-space is formed at the center or core of the fuel mass.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In a stove, a combustion-chamber, a casing on the combustion-chamber and having a

closed top and draft-openings in its lower portion, a fire-box having its lower portion projecting into the combustion-chamber and provided at its upper end with an extension, said fire-box and its extension forming with the casing a heating-space, and a feeder or magazine projecting through the top of the casing and extending into the upper end of the fire-box, said magazine forming with the extension of the fire-box an annular chamber through which the air from the heating-space passes to the fire-box, substantially as described.

2. In a stove, the combination with a base having a combustion-chamber from which leads a smoke-pipe, of a casing secured upon the top of the combustion-chamber and having a closed top and draft-openings in its lower portion, a fire-box supported upon the top of the combustion-chamber with its lower portion projecting into the same, a jacket secured to the upper portion of the fire-box, the fire-box and its jacket being spaced from the casing to form an annular air-space, a feeder or magazine projecting through the top of the casing and extending into the jacket and upper portion of the fire-box, the said feeder being of less diameter than the upper end of the fire-box and its jacket to form therewith an annular chamber and having its end flared outwardly, and a grate in the combustion-chamber below the lower end of the fire-box, substantially as described.

3. In a stove, the combination, with a base having a chamber therein, a smoke-pipe connected with the said chamber, a fire-pot attached to the base and extending downward into the chamber, the portion of the fire-pot in the chamber being slotted, forming a series of fingers, and a grate in the said chamber below the end of the fire-pot, of a jacket attached to the upper portion of the fire-pot, a casing on the base and extending above the said jacket and surrounding it and the upper portion of the fire-pot to form an annular air-space, the said casing being provided with openings at its bottom, a draft-slide located at the apertured portion of the casing, and a magazine or feeder passed through the upper portion of the casing and also through the jacket to the upper portion of the fire-pot, the lower end of the magazine or feeder being outwardly flared, and a space being provided between the magazine or feeder and said jacket, as specified.

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