E. V. COULSTON.

HEATING STOVE.

APPLICATION FILED AUG. 8, 1917.

1,368,701.

Patented Feb. 15, 1921.

2 SHEETS—SHEET 1.

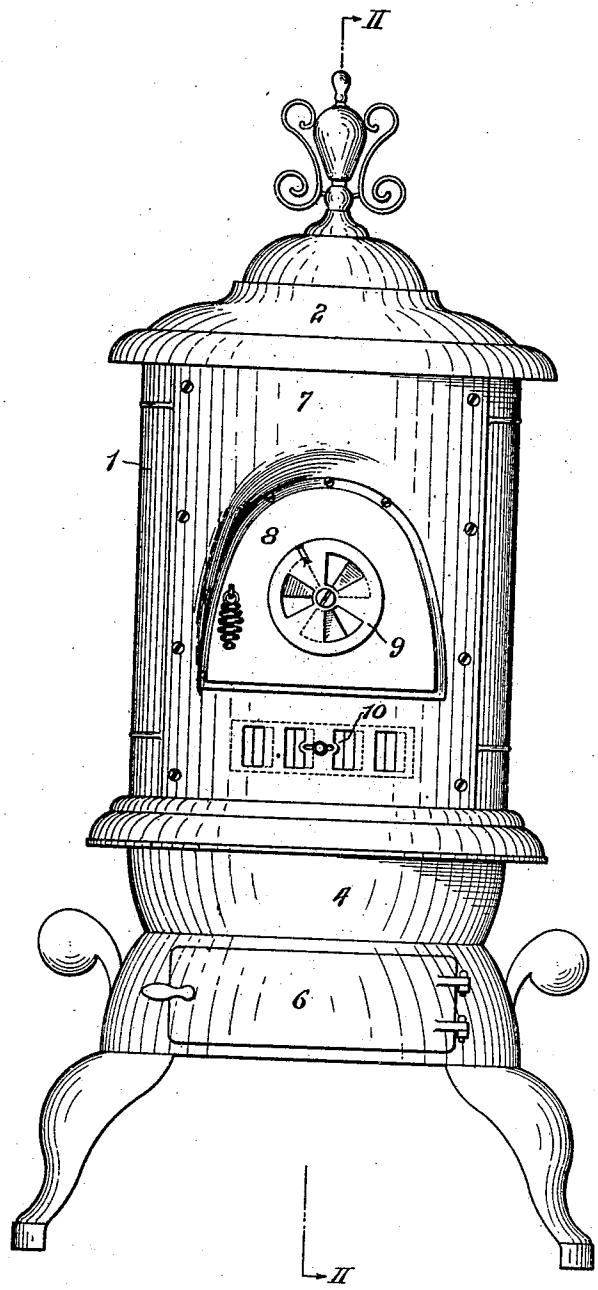


Fig. 1

Inventor
Earl V. Coulston
by Merkel and Saywell
his attorneys

E. V. COULSTON.

HEATING STOVE.

APPLICATION FILED AUG. 8, 1917.

1,368,701.

Patented Feb. 15, 1921.

2 SHEETS—SHEET 2.

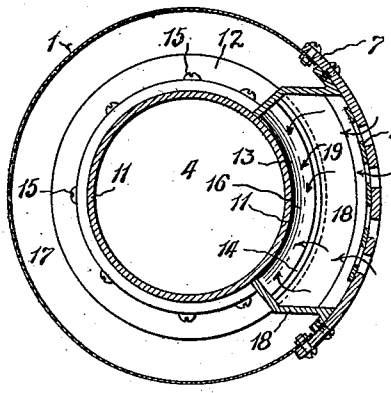


Fig. 3

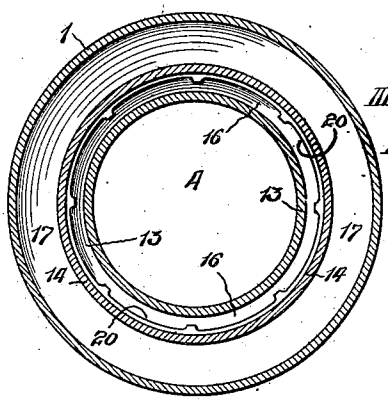


Fig. 4

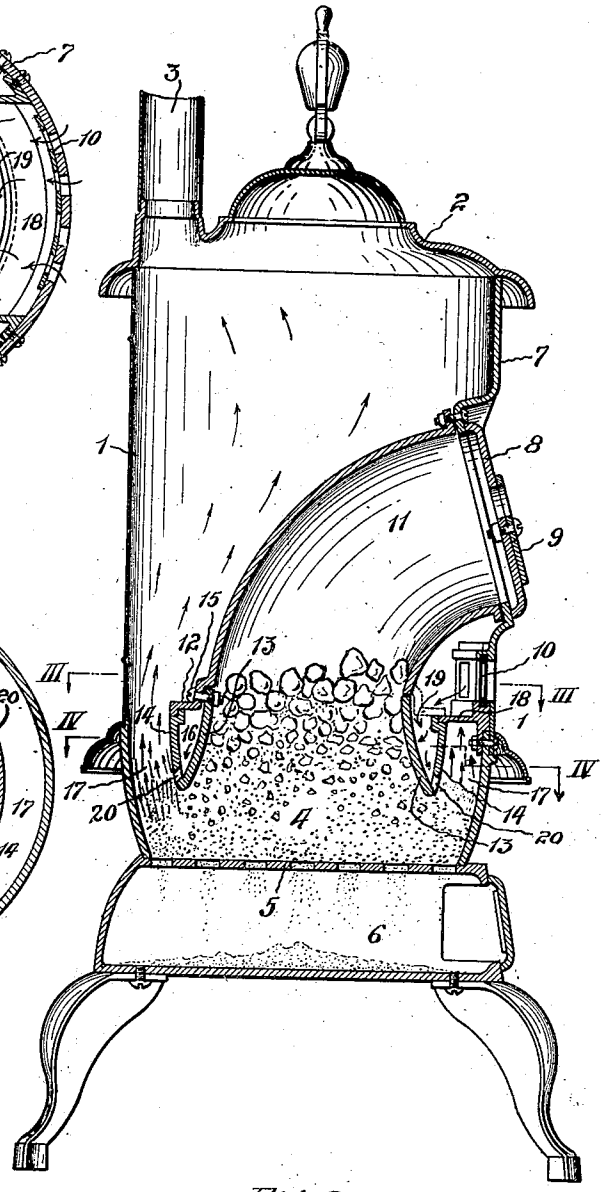


Fig. 2

Inventor

Earl V. Coulston

by Merkel and Saywell

his attorneys

UNITED STATES PATENT OFFICE.

EARL V. COULSTON, OF ROCK ISLAND, ILLINOIS.

HEATING-STOVE.

1,368,701. Specification of Letters Patent. Patented Feb. 15, 1921.

Application filed August 8, 1917. Serial No. 185,202.

To all whom it may concern:

Be it known that I, EARL V. COULSTON, a citizen of the United States, resident of Rock Island, county of Rock Island, and State of Illinois, have invented new and useful Improvements in Heating-Stoves, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to heating stoves and particularly to that class of such devices wherein the process of combustion is the opposite of that usually employed by said devices. Whereas, the usual method of burning fuel in a stove is to locate the fire in the lower zone thereof, furnish fresh fuel on top of said fire and arrange the current of the draft to rise from below so that the distilled gases, smoke and carbon, and other products of combustion, are thrown off from the top of the fuel and often pass up through the flue in the form of heavy smoke, now in my improved stove, hereinafter to be fully described, the fuel burns as if it were fed into the fire from below and there is nothing to choke off said fire or smother the same beyond the point of combustion or interfere with the plentiful supply of oxygen, so that thereby smokeless combustion is accomplished.

The annexed drawings and the following description set forth in detail certain means embodying my invention, the disclosed means, however, constituting but one of various mechanical forms in which the principle of the invention may be applied.

In said annexed drawings:

Figure 1 represents a front elevation of a conventional form of stove provided with my improvements; Fig. 2 represents a vertical section taken in the plane indicated by the lines II—II, Fig. 1; and Figs. 3 and 4 represent horizontal sections taken in the planes represented by the lines III—III and IV—IV, respectively, Fig. 2.

In said annexed drawings a suitable body 1, a top 2, an outlet 3 for gases, smoke and other products of combustion, a fire pot 4, a grate 5 and the usual ash pit 6 are provided, as in any conventional stove. I provide a front plate 7 to which is secured a fuel door 8 which may be formed with a damper 9. A lower damper 10 is also provided. Disposed within the fire pot 4 is an element 11 provided with two open ends, one of which open ends is disposed adjacent to the fuel door 8, as plainly shown in Fig. 2. The other open end of said element 11 is disposed just above the center of the fire pot 4. This element 11 is provided with a lower flange 12 upon and below which are supported two members 13 and 14 providing between them a laterally inclosed passage 16, said member 14 being formed with a plurality of lower slots 20, as plainly shown in Fig. 2. The flange 12 does not entirely encircle the element 11 but is cut away, as is plainly shown in Fig. 3, said cut away portion being disposed adjacently to the front of the stove. A further element 18 is disposed between the element 11 and the front of the stove and incloses the whole space therebetween with the exception of that comprehended by the damper 10 and the space formed by the cutting away of part of the flange 12, so that a passage 19 is provided from the damper 10 down into the space 16 between the members 13 and 14 and out through the slots 20 into the lower outer zone of the fire pot. This is a fresh air passage and oxygen is thereby distributed to every portion of the lower outer zone of the fire pot, this distribution being effected into an annular space 17 disposed adjacently to the inner wall of the body portion of the stove, as plainly shown in Fig. 2.

The space 17 thus provided is disposed between the extreme outer zone of the fire pot and the member 14, which space provides a passage for products of combustion to the smoke outlet 3.

The operation of the above described device is as follows: A fire is started on the grate in the manner common to any stove, the paper, kindling, etc., being inserted through the door 8. Then additional fuel is poured in through said door 8 and through the element 11 whence it falls on the fire already started on the grate and piles up within the mouth of the member 13 and the element 11. The register 10 is opened and fresh air is admitted which passes down as above described and becomes heated in its passage and drawn by the action of the chimney draft forcibly into the gases which are generated from the fuel while on the fire below. The burning is in a substantially annular flame and impinges against the outer wall of the fire pot and travels

up around the body of the stove so that the entire surface of the same is heated. In this method of combustion, the gases and available combustible parts of the fuel are slowly distilled and when they arrive at the point of combustion toward the outer part of the fire pot, they are immediately mixed with a plentiful supply of heated fresh air so that the combustion is complete and perfect, whereby a great saving is made in the amount of fuel necessary to provide a given amount of heat. Furthermore, this device permits the burning of a very low grade bituminous coal because of the above-described process of slow distillation of the volatile combustible parts of the fuel and the subsequent mixture of fresh air at the point of combustion.

The element 11 is shown in the drawings as being of tubular form but it could be of any shape, square or rectangular or irregular, and also the members 13 and 14, while shown as annular in shape, could be elliptical or any irregular shape, the necessary features being only that the element 11 be fastened tightly to the front and present no opening to the smoke outlet other than the open end at the bottom and that the members 13 and 14 be disposed adjacently to this bottom open end and arranged to receive fresh air and distribute it to every portion of the fire pot adjacent to the wall of the body 1. The movement of the hot gases may be accelerated by opening the draft 9 provided in the door 8 which will force the gases into the outer combustion zone at a more rapid rate, but the stove in practice works satisfactorily with this damper closed all the time.

What I claim is:

1. In a heating stove, the combination of a body member including a suitable fire pot and a smoke outlet; means forming a fuel chamber extending to the front of said body member and provided with a fuel door; members supported by said chamber forming an air ring below the same; and means providing a fresh air chamber above the air ring, said chamber communicating with the atmosphere, communication being provided between said air chamber and said air ring, said ring being slotted in its outer wall to provide an air opening to the outer zone of the fire pot and being spaced from said body member so as to form a passage for the products of combustion between the air ring and the body member, said passage communicating with said fire pot and said smoke outlet, and said outer air ring slot opening into said passage.

2. In a heating stove, the combination of a body member including a suitable fire pot and a smoke outlet; means forming a fuel chamber provided with a fuel door, said chamber being formed with a lower flange; members supported by and below said flange and forming an air ring beneath the latter, said flange being slotted to provide an upper air opening to the space inclosed by said ring; means forming a fresh air chamber above the ring between the atmosphere and said air opening, said air ring being slotted to form air openings in its lower portion, and being spaced from said body member so as to form a passage for the products of combustion between the ring and body member and in the outer zone of the fire pot, said passage communicating with, and disposed intermediately of, said fire pot and said smoke outlet, and said air ring slots opening into said passage.

3. A heating stove comprising a body member including a suitable fire pot and a smoke outlet, a fuel feeding element secured to the front of the stove provided with a fuel door, an air ring fixedly secured to the lower end of said fuel feeding element, a fresh air chamber formed within the body member above said ring and communicating with the top of the ring, said ring being slotted in its outer wall and adapted to discharge the fresh air radially into the outer zone of the fire pot between the air ring and said body member for the purpose set forth.

Signed by me, this 23rd day of July, 1917.

EARL V. COULSTON.