

C. H. MILLER.  
 COMBINED SOLID FUEL AND GAS RANGE FOR KITCHEN AND OTHER USES.  
 APPLICATION FILED APR. 13, 1908.

915,987.

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Fig. 1.

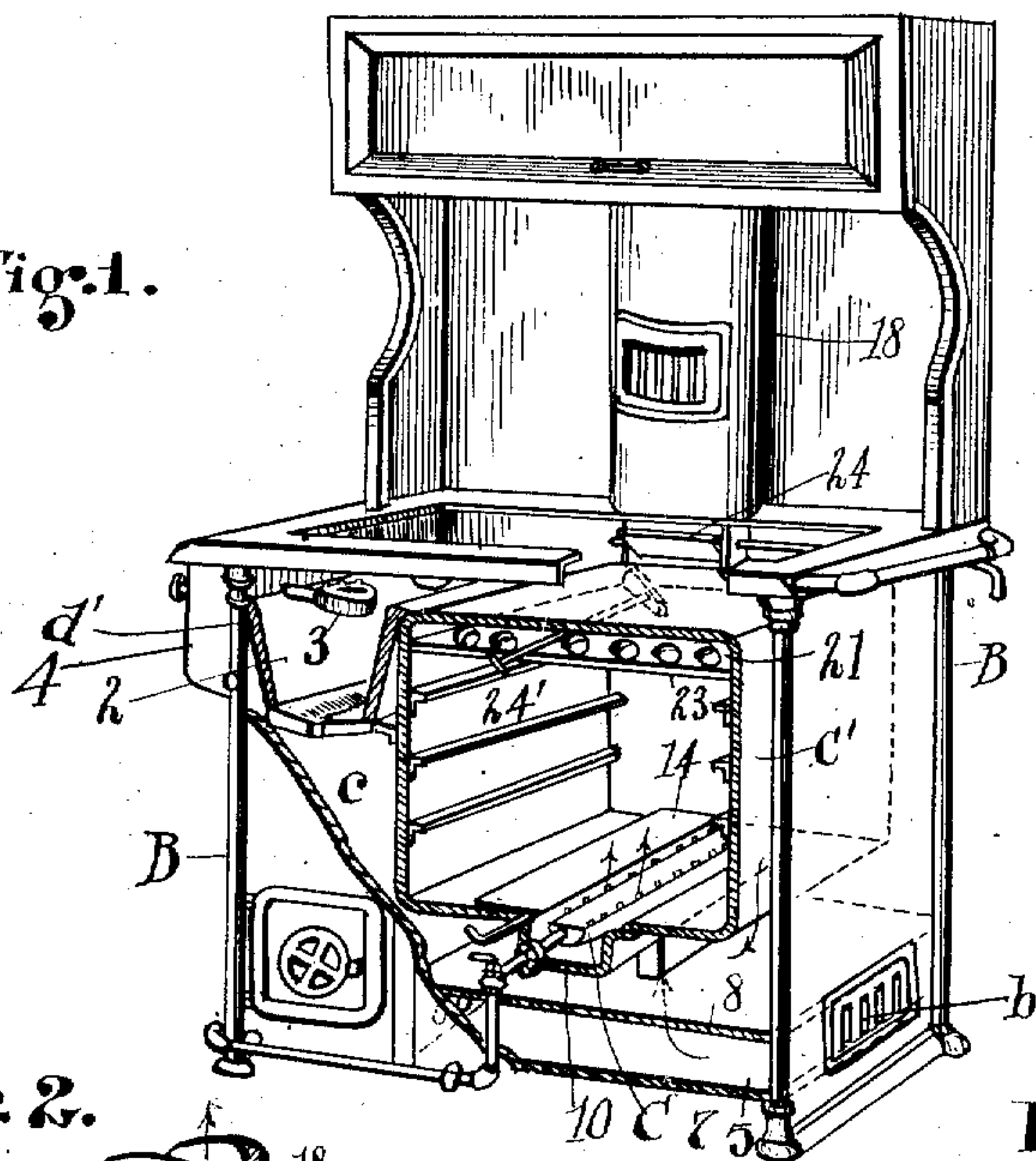


Fig. 2.

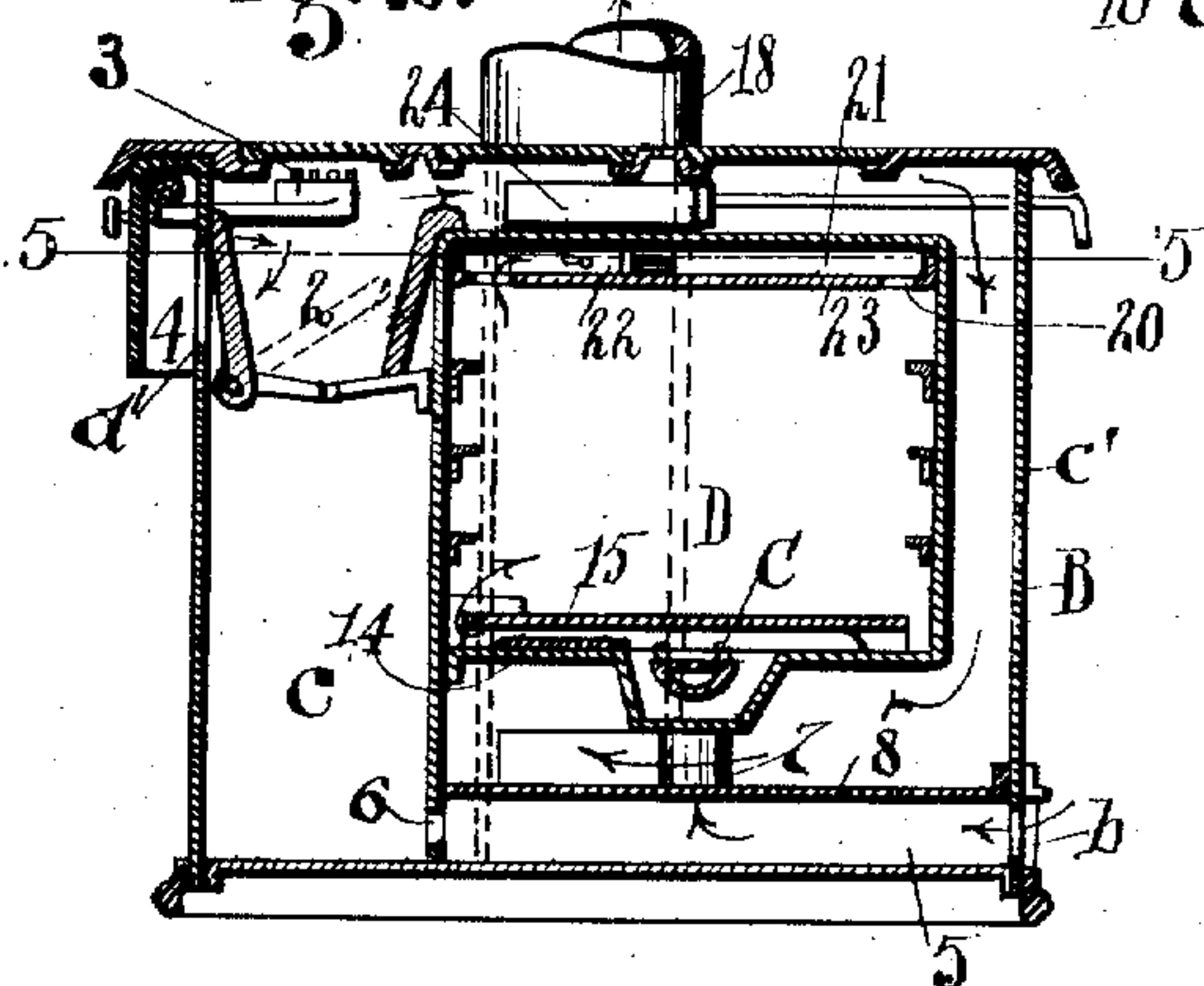


Fig. 3.

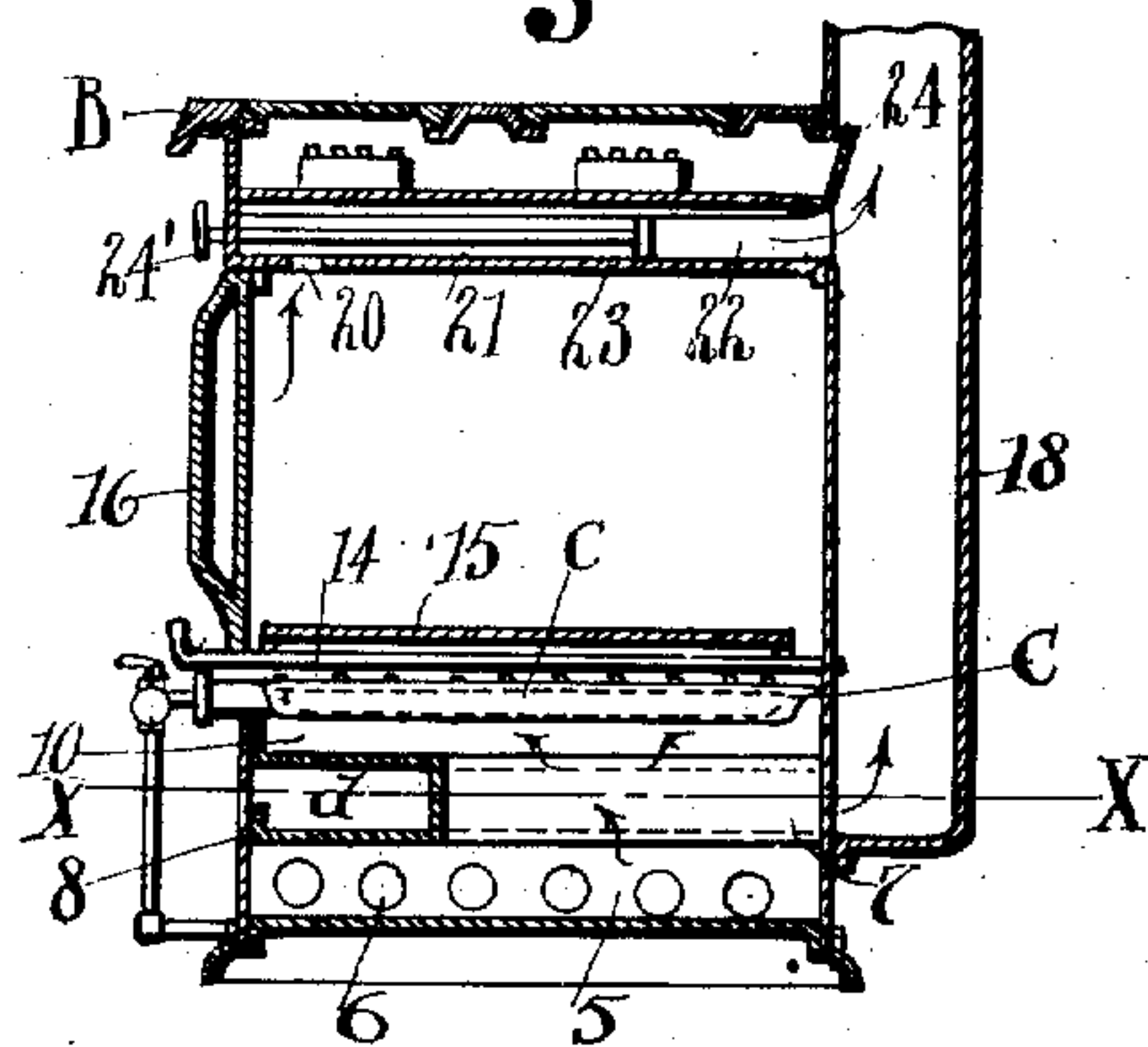


Fig. 4.

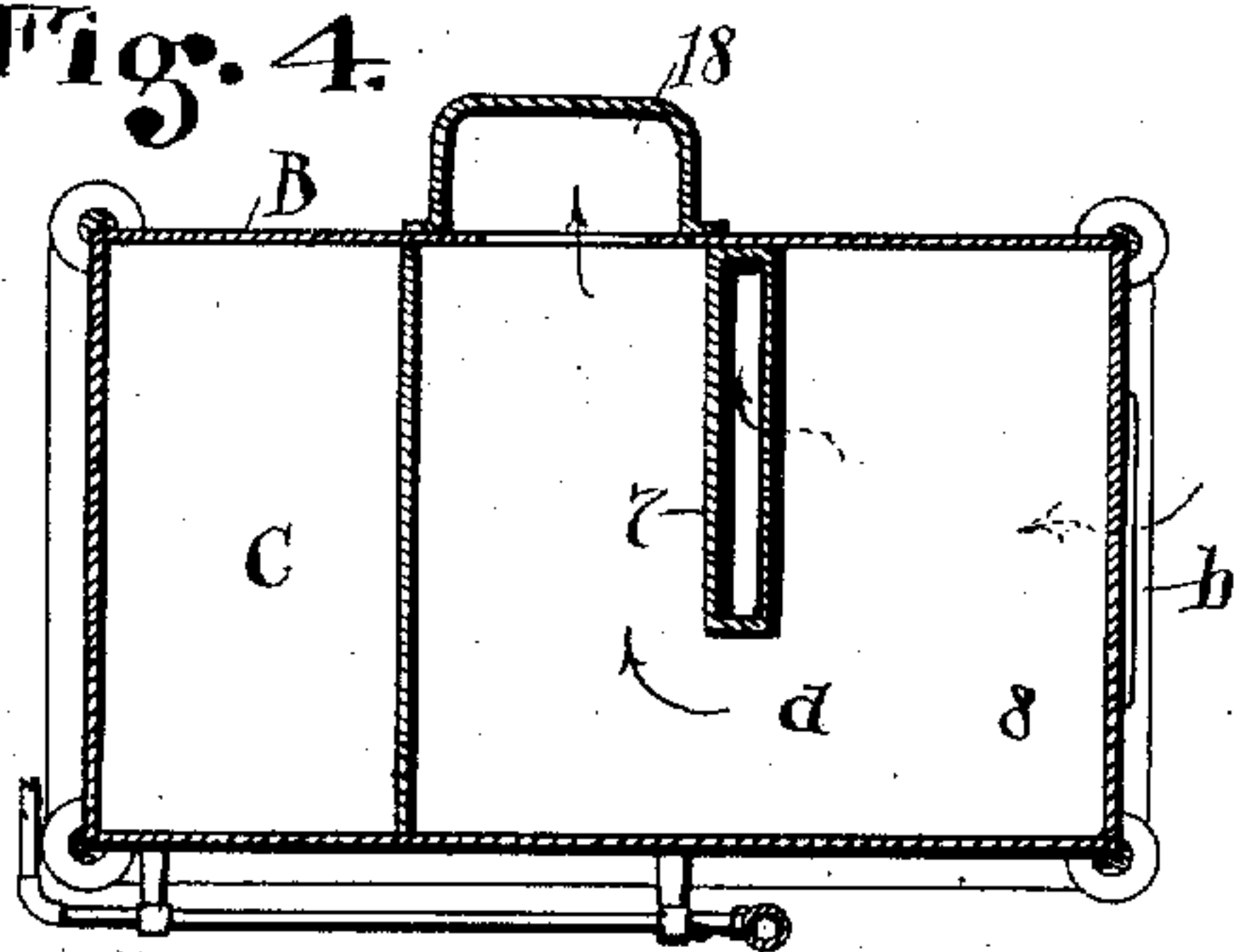
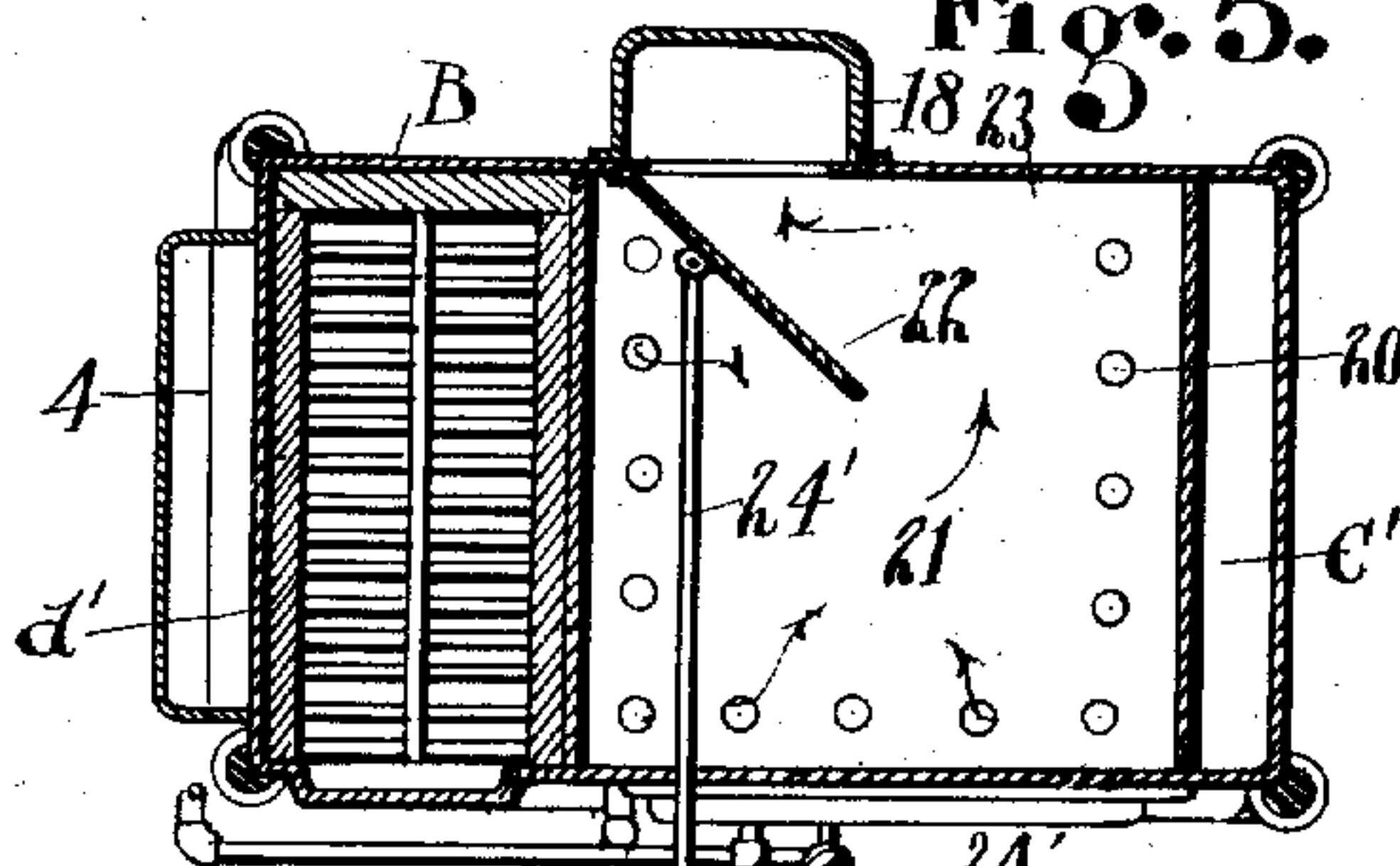


Fig. 5.



ATTEST

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# UNITED STATES PATENT OFFICE.

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## COMBINED SOLID-FUEL AND GAS RANGE FOR KITCHEN AND OTHER USES.

No. 915,987.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed April 13, 1908. Serial No. 426,664.

*To all whom it may concern:*

Be it known that I, CHARLES H. MILLER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in a Combined Solid-Fuel and Gas Range for Kitchen and other Uses; and do declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in a combined solid fuel and gas range for kitchen and other uses, all substantially as shown and described and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a front perspective view of the range complete, with the immediate front thereof mostly broken away to disclose the internal parts and constructions. Fig. 2 is a vertical sectional elevation of the body of the range, and Fig. 3 is a cross section at right angles to Fig. 2. Fig. 4 is a plan view of the base of the range on a line corresponding to  $x-x$ , Fig. 3. Fig. 5 is a sectional plan view on line 5-5, Fig. 2.

The range as shown in the drawings comprises a body B of any suitable form and style and provided with the usual fire pot 2 at the front, which may be adapted to burn any suitable solid fuel, such as wood or coal, but which is also provided with a suitable gas burner 3, designed to serve as a substitute for solid fuel when gas may be preferred. Either solid fuel or gas may, therefore, be used in the fire pot for heating the range for cooking and baking, but for the latter purpose I provide a special gas burner, C, which may be used alone for baking, or in connection with either hard fuel or gas in the fire pot when baking is done. Furthermore, the hard fuel, particularly, may be used alone for baking, as with ranges ordinarily which have no gas fitting or equipment connected with the oven. This particular range is, furthermore, provided with a fresh air channel or space 5 over its entire bottom, and has suitable inlet openings  $b$  through the wall of the range from the outside, and the air flows therefrom by openings 6 into the ash-pit  $c$  beneath the grate bars, or through the so-called flue strip 7, shown in section Fig. 4, and side elevation, Fig. 3, and arranged to

conduct fresh air from said bottom chamber 5 through secondary plate 8 over said chamber into a transverse depression or recess 10 which extends across the full depth of the bottom 12 of the oven from front to rear and provides a burner chamber of limited area as compared with the bottom of the oven proper. The oven heating gas burner C is located in the said recess 10, and is substantially coextensive therewith, as seen in Fig. 1 and located slightly beneath the surface of the oven bottom so that when the said burner is not being used the said recess may be covered over flush with said bottom by the hinged plate or cover 14. However, when the said burner C is in use, the said plate or cover 14 is open, as seen in Figs. 1 and 2, and the products of combustion from burner C flow directly into the oven. In this case a false bottom or grid member 15 is placed upon the oven bottom 12 and covers the same quite completely, as seen in Figs. 2 and 3, but permits the products of combustion to pass into the oven about the edge thereof, while the heat from the burner is radiated more or less directly through said bottom plate 15 into the oven and affords an even distribution of the heat.

Any suitable style of burner C may be employed, and the depression or recess in the bottom of the oven is preferably rectangular in cross section but might be circular or of equivalent shape. It is important, however, that whatever shape this recess may have it should not materially interfere with the heating of the bottom 12 of the oven when gas burner C is shut off and only solid fuel is used. In such case, also, the false bottom 15 is withdrawn from the oven and the cover or lid 14 is closed over the burner to give a flat bottom surface to the oven. To this end the said recess is relatively narrow, as compared with the entire width of bottom 12 and leaves the balance of said bottom undisturbed or as it is usually made, and the said recess is otherwise so narrow and completely exposed to the heat beneath at its sides and bottom that it does not materially or unfavorably affect the distribution of heat to the space covered thereby. The damper or cover 14 also cuts off all intake of air into the oven from the bottom when the burner C is not being used, and in this case the damper 22 also is closed to prevent escape of the heat from the oven. But



even if damper cover 14 should remain open when hard fuel is being used, all communication with the flue space C is closed and the products of combustion of the hard fuel can not enter the oven, and in this event, all air taken into the oven through hollow flue strip 7 will be heated by radiation from the walls which inclose said flue spaces over space—5—.

It will be especially observed that the flue strip 7 and air conduit is of such length that it admits fresh air to approximately the entire length of the said burner C and thus promotes the freest possible combustion in said burner. The portion of the burner not directly exposed to said strip or flue is abundantly supplied through the trough or recess 10 which is open to the said flue. The space not occupied at the end of the said flue strip indicated by *d* affords a passage for the products of combustion from the fire pot over the oven and down through flue spaces C' at the side and beneath the same and thence through space *d* back to the smoke flue or exhaust pipe 18 at the rear of the range, thus exposing the entire under surface of the oven to the heat with the same effect practically as formerly.

The products of combustion which flow into the oven from burner C are drawn up and along the sides and front of the oven and pass through the outlet openings 20 in the false top —23— of the oven, whence they pass into flue chamber 21 and out past damper 22 into the discharge flue to the chimney. Damper 22 is preferably located and arranged to serve as a flue strip to check direct outflow of the heat which passes upward at the left of the oven, or in other words to provide an indirect travel of the exhaust heat over false top 23. Any suitable gas burner 3 in or over the fire pot may be employed, and one or more of such burners may be used as may be deemed desirable. The usual direct damper 24 at the top of the range is shown, and this may be closed when only the oven burner C is being used. Obviously, a sliding damper or cover may be used in place of hinged member —14— or one that may be bodily placed in position and removed through the oven door 16.

Damper 22 may be substituted by a fixed flue strip over false top 23, as I find in actual use of the stove, as herein described and constructed, that perfect baking is obtained within the oven even though the outlet from chamber 21 is constantly open and hard fuel is the sole source of the heat. However, an adjustable damper 22 having a suitable controlling handle 24' is preferred as the same provides regulation when either or both kinds of fuel are being used.

One advantage in locating gas burner C in the bottom of oven D, is that the burner can not become clogged by soot or become inop-

erative when coal or hard fuel is being used, because the waste products of the hard fuel must pass out of the range through channels of their own which are distinct and separate from the flues and chambers which have to do with gas burner C. The outlet for the waste products from the oven is preferably located at the top of the oven in line with the natural draft therefrom to the end that the oven itself is and always will be free and clear of the products of combustion from the fire pot although both the fire pot and oven burner be placed in use at the same time. Again, the gas burners —3— which are shown in fire pot 2 are also adapted to be used to heat cooking or other vessels or utensils upon the stove at the top thereof, and because of the construction shown the heated products of combustion from said burners will pass around the oven and contribute to the heating of the same with the burner C at the bottom.

For practical purposes, and when solid fuel is being used, the gas burners 3 in the fire pot are mounted to swing into the side chamber 4 at the left of the range and in doing this the fire pot wall *d'* which is pivoted at its bottom, is thrown inward as seen in dotted lines, Fig. 2. This specific construction is not a part of my invention, but may be applied to combine with the oven burner, and flues as arranged and described herein so that gas may be used either at the fire pot or at the oven or at both places, or gas and solid fuel may be used together, that is, solid fuel in the fire pot and gas within the oven, the two combining to give their heat to the oven without in any way affecting their respective independent operations at their place of being.

What I claim is:—

1. A combined solid fuel and gas range having an oven and heat flues about the oven, and the oven provided with a trough shaped depression in its bottom from front to rear across its center, a burner in said depression and a combined flue strip and air conduit discharging into said depression and subdividing the heat flue partway at the bottom of the oven, and an exhaust flue open to said heat flue.

2. A range having an oven with a trough shaped depression across its middle from the front to the rear of the oven and an air inlet space in the bottom of the range over the bottom plate thereof, in combination with a gas burner in said depression substantially the full length thereof, a spreader plate over said burner and raised above the bottom of the oven, and a hollow flue strip extending lengthwise with said depression and open thereto along its top and to said air space in the range at its bottom and subdividing the heat flue at the bottom of the oven partway from rear to front.



3. A range having an oven and a heat space beneath the same, the oven being provided with a depression centrally at its bottom, and an air supply conduit open from  
5 beneath said space and dividing the same into two flues, whereby the heated gases are caused to travel forward and back under the oven, in combination with a gas burner in said depression and a plate over said de-

pression and burner closing the bottom of the 10 oven.

In testimony whereof I sign this specification in the presence of two witnesses.

CHARLES H. MILLER.

Witnesses:

R. B. MOSER,

E. M. FISHER.