

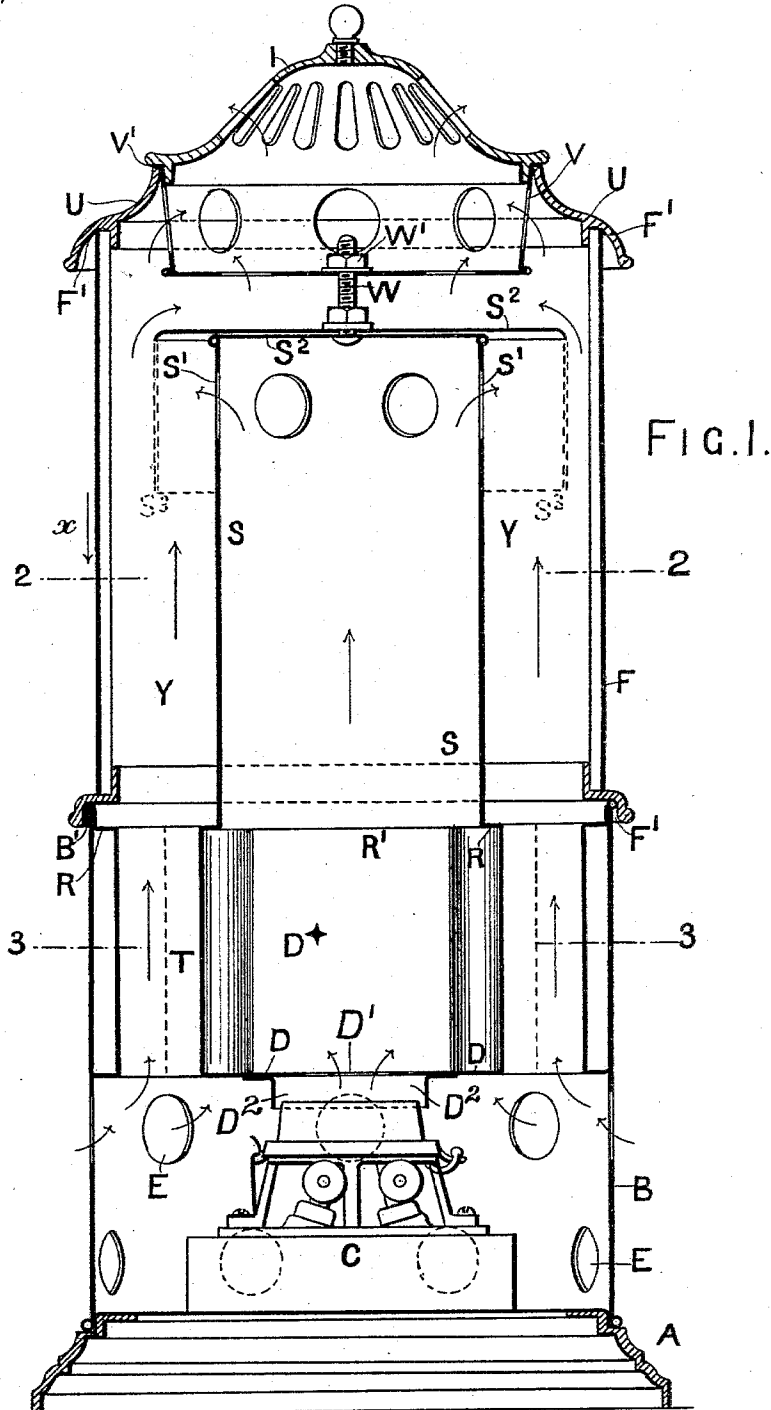
(No Model.)

3 Sheets—Sheet 1.

W. & I. DARBY & J. H. PUNCHARD.
HEATING STOVE.

No. 569,816.

Patented Oct. 20, 1896.



Witnesses
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(No Model.)

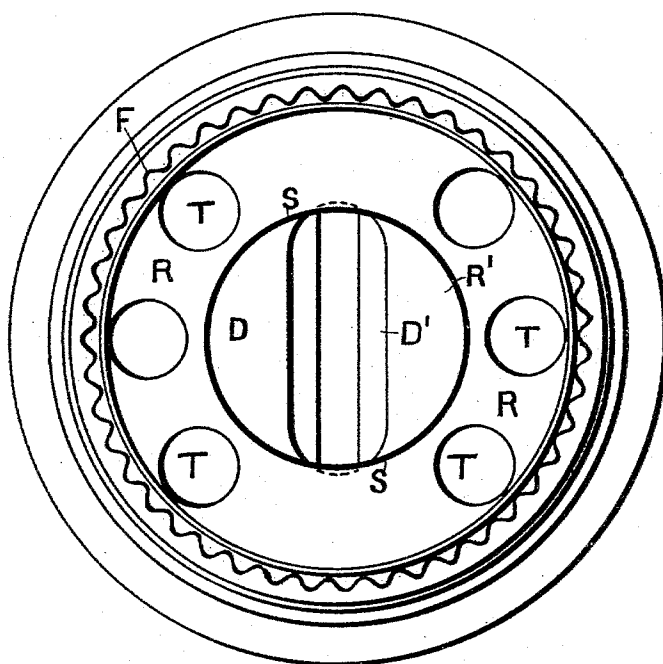
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FIG. 2.



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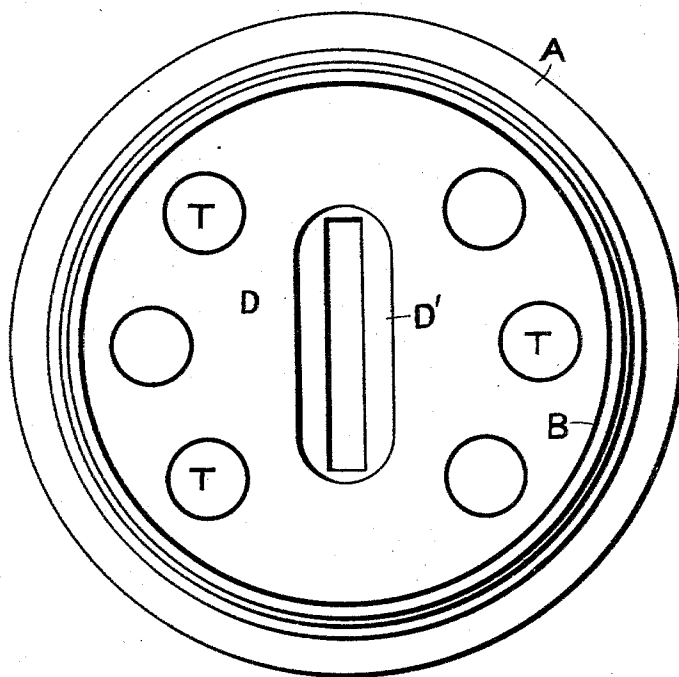
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FIG. 3.



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UNITED STATES PATENT OFFICE.

WALTER DARBY, ION DARBY, AND JOHN H. PUNCHARD, OF LONDON,
ENGLAND.

HEATING-STOVE.

SPECIFICATION forming part of Letters Patent No. 569,816, dated October 20, 1896.

Application filed August 3, 1896. Serial No. 601,547. (No model.)

To all whom it may concern:

Be it known that we, WALTER DARBY, ION DARBY, and JOHN HENRY PUNCHARD, subjects of the Queen of Great Britain, residing at 249 Pentonville Road, King's Cross, London, England, have invented Improvements in Heating-Stoves, of which the following is a specification.

This invention relates to improvements in or in connection with heating-stoves for domestic heating purposes generally, warming greenhouses or other places, or other purposes or uses to which same may be applicable; and in order that our present invention may be easily understood and readily carried into practice we will proceed to fully describe same with reference to the drawings hereunto annexed; but we wish to here first remark that, although we may use any suitable burner or burners, (for instance, a gas or oil burner,) yet our said invention will be found specially advantageous when used with hydrocarbon-burners, (for burning heavy mineral oils, if desired,) in which two parallel long flat wicks are used, with a large central air supply between the two wicks and the hood over same, with a single slit or opening therein for the said central air supply, (or three parallel long flat wicks may be used with separate large air-supply passages between each of the wicks and a hood with a single slot or aperture therein over said central air-supply openings.) the lower part of the wick-tubes being set wide apart, and then these wick-tubes incline toward one another—but not so as to meet—at the top thereof.

For the sake of example we will describe a heating apparatus according to our present invention having a liquid hydrocarbon-burner of the aforesaid character.

Referring now to Figures 1, 2, and 3, Fig. 1 is a vertical section of our air-heating stove. Fig. 2 is a cross-section on the horizontal line 2-2, Fig. 1; and Fig. 3 is a similar view on line 3-3, Fig. 1, both looking in the direction of the arrow α .

A is the stand upon which the apparatus rests.

B is the burner base or chamber, which rests on the stand A and contains the burner C.

D is a division-plate or partition formed or mounted in any suitable manner in the said burner-base B, either horizontal or otherwise suitably disposed so as to completely cut off all communication from the lower part of the chamber B to the upper part thereof, except through the tubes T (hereinafter described) and the central slot or opening D', the size and shape of which latter correspond to the form of the burner.

D² D² are flanged plates or strips secured to the under side of the division D to serve as guides by which the top of the burner C is brought into the correct position beneath the aperture D', or these guides D² may be dispensed with and the burner C guided on the bottom thereof and made to fit up close under the aperture D' in the division-plate or partition D.

E E are air-admission holes, by which the air can freely pass into the interior of the lower part of the chamber B (besides passing in at the aperture through which the burner is inserted, or said opening may be closed by a suitable cover) below said division-plate D.

F is the outer casing, which may be of corrugated sheet metal in a circular form, as shown in Fig. 2, or not, as desired, or of any suitable shape other than cylindrical, as desired, the other parts (stand A, burner-base B, rim U, cover I, &c.) being of course made to correspond. The bottom edge of this casing F rests on the upper edge B' of the burner-base B and the top edge F' of said casing F has the rim or flange U resting thereon; but the latter is either permanently connected thereto or not, as desired.

R is a second horizontal division-plate (above the division or partition D) having a large central aperture R' therein, the latter advantageously of a corresponding size and shape to the central chimney or flue S, and thus forming a closed-in chamber D^x.

S is a central chimney or passage, (advantageously circular or other suitable shape in cross-section,) which chimney at its lower end is riveted to (or otherwise suitably mounted on) the said plate R over the aperture R' therein, so that all products of combustion from the chamber D^x can only pass out of

same up the said chimney S and escape from the upper end thereof, as hereinafter explained.

T T are a number of open-ended pipes, tubes, or passages passing through the division-plates D and R, thus forming a number of air tubes or passages to pass the air from below the division-plate D to above the division-plate R into the annular chamber Y, formed between the wall or casing F and the aforesaid chimney S, such air in its passage through the said tubes T becoming quickly heated, and as it rises up the annular space Y is there further heated and finally discharged from the stove at or near the top thereof, as hereinafter explained, in a very highly-heated condition.

S' S' are a series of outlet holes or openings through the side of the chimney S and near the top thereof.

S² is a plate or cover seamed or otherwise suitably mounted on the top end of said chimney S and extending beyond the latter all round. Around the edge of this cover S² a descending flange S³ (shown in dotted lines in Fig. 1) may be arranged or not, as desired, and of different depths, according to the height of the stove—that is to say, the greater the height of the stove the greater the depth of such flange S³ should be—to thus more or less baffle or retard the escape of the products of combustion from the chimney S.

V is a hollow pan perforated through the bottom and side thereof, as shown, the turned-over edge or lip V' of said pan resting on the upper edge of the aforesaid rim U, while said pan is secured firmly in position by a screw-bolt W, passed upwardly through the cover S² of the chimney S and through the bottom of said pan V, and there secured by a nut W', screwed thereon, thus securely fastening the rim U, the casing F, the pan V, and the chimney S all together, or said parts V and U may be secured and fastened down to the casing F and the chimney S in any other equivalent or suitable manner.

The operation is as follows: The burner being lighted, the products of combustion therefrom pass from the chamber D^x up the chimney S and out through the aperture S' (and under the lower edge of the flange S³, if the latter is used) into the annulus Y, and there meets and mingles with the large volume of highly-heated air rising up the annular chamber Y as aforesaid, the thorough mixing of the two taking place in the space above the cover S² and being assisted by the perforated pan V, through the perforations in which and the cover the mixture now passes to the exterior of the stove, the products of combustion, as same are thus emitted from the stove, being innocuous or inoffensive and inodorous.

If desired, in some cases the products of combustion may be separately led away from the stove through any suitable flue or passage

(not shown) into which the chimney S would alone communicate at the top, (the apertures S' in such case being entirely dispensed with, while a large volume of fresh air can be heated by this stove, (by passing in through E, up passage T, annulus Y, and out through the top I,) and would in such case thus become highly heated by and be discharged from said stove without in any way coming in contact with the products of combustion.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent of the United States, is—

1. An air-heating stove consisting of an outer casing an inner vertical passage or flue arranged concentrically within said casing a vertical annular passage between said flue and said casing a horizontal division-plate or partition below said flue and entirely dividing the upper part of the interior of the apparatus from the lower part thereof an opening in said partition of a size and with respect to which the burner is so arranged as to only permit the flame to pass through said opening and consequently prevent cold air passing into said central flue a second division-plate or partition between the bottom of said flue and the first-named partition so that the products of combustion can alone pass into said flue a series of vertical tubes between said two partitions and arranged concentrically around said burner through which air can freely pass from below the first-named partition into the aforesaid vertical annular passage and be heated *en route* without coming in contact with the products of combustion substantially in the manner and for the purposes hereinbefore described.

2. An air-heating stove consisting of the combination with a casing such as F of a vertical flue such as S arranged centrally within said casing and forming an annular vertical passage such as Y between said flue and said casing a burner such as C in the lower part of said casing a division-plate or partition such as D with an aperture such as D' therein with which latter the burner fits closely and thereby prevents cold air passing through said opening D' a second partition such as R in which the open lower end of the flue S terminates so that the products of combustion can only pass up said flue a series of air-tubes such as T through said partitions D and R through which tubes air can freely pass from around the burner C into said annular passage Y and is heated *en route* and discharged from the latter substantially in the manner and for the purposes hereinbefore described.

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