(No Model.)

2 Sheets—Sheet 1.

C. BRANDT.

COMBINED STOVE AND FURNACE.

No. 482,466. Patented Sept. 13, 1892.

Fig. 1.

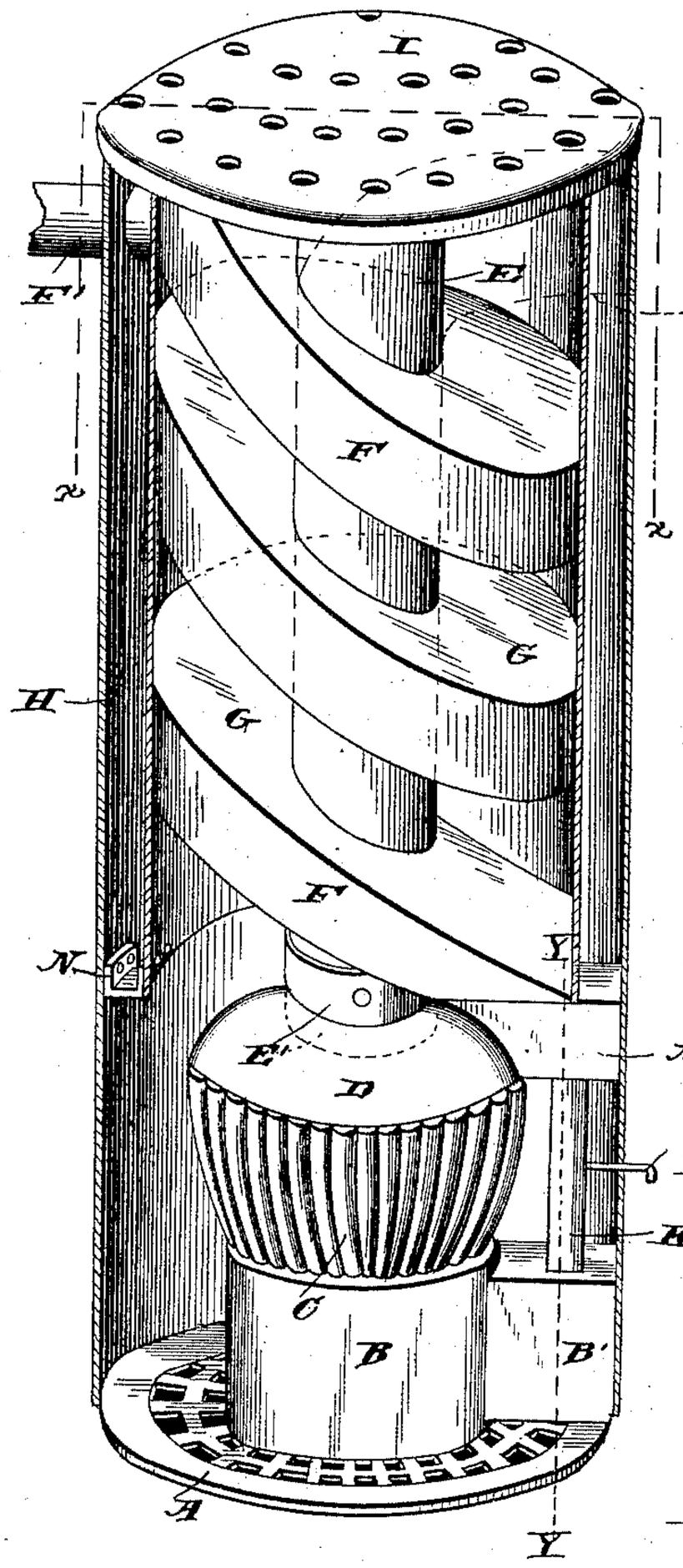
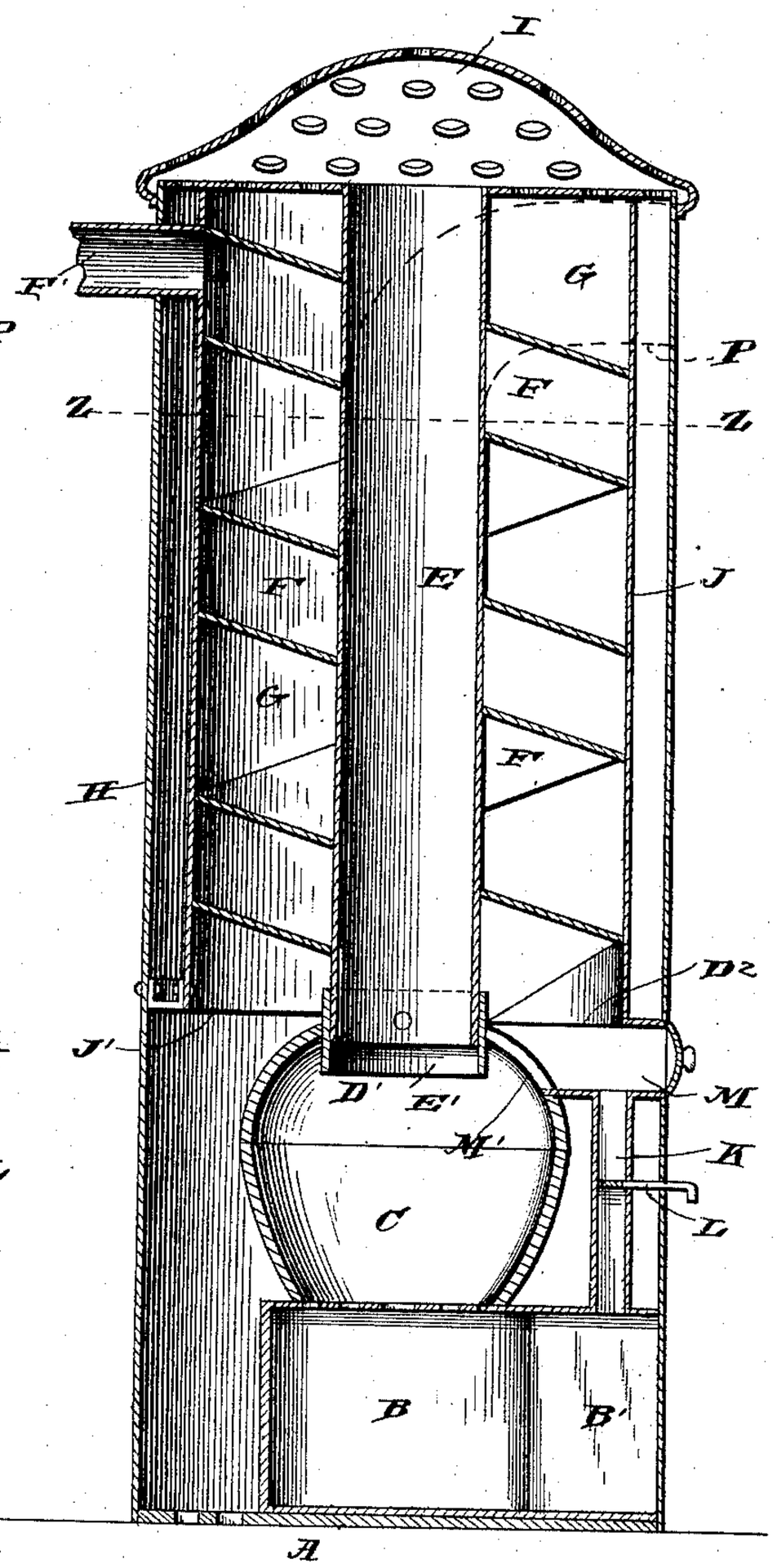


Fig. 2.



Witnesses

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 5.

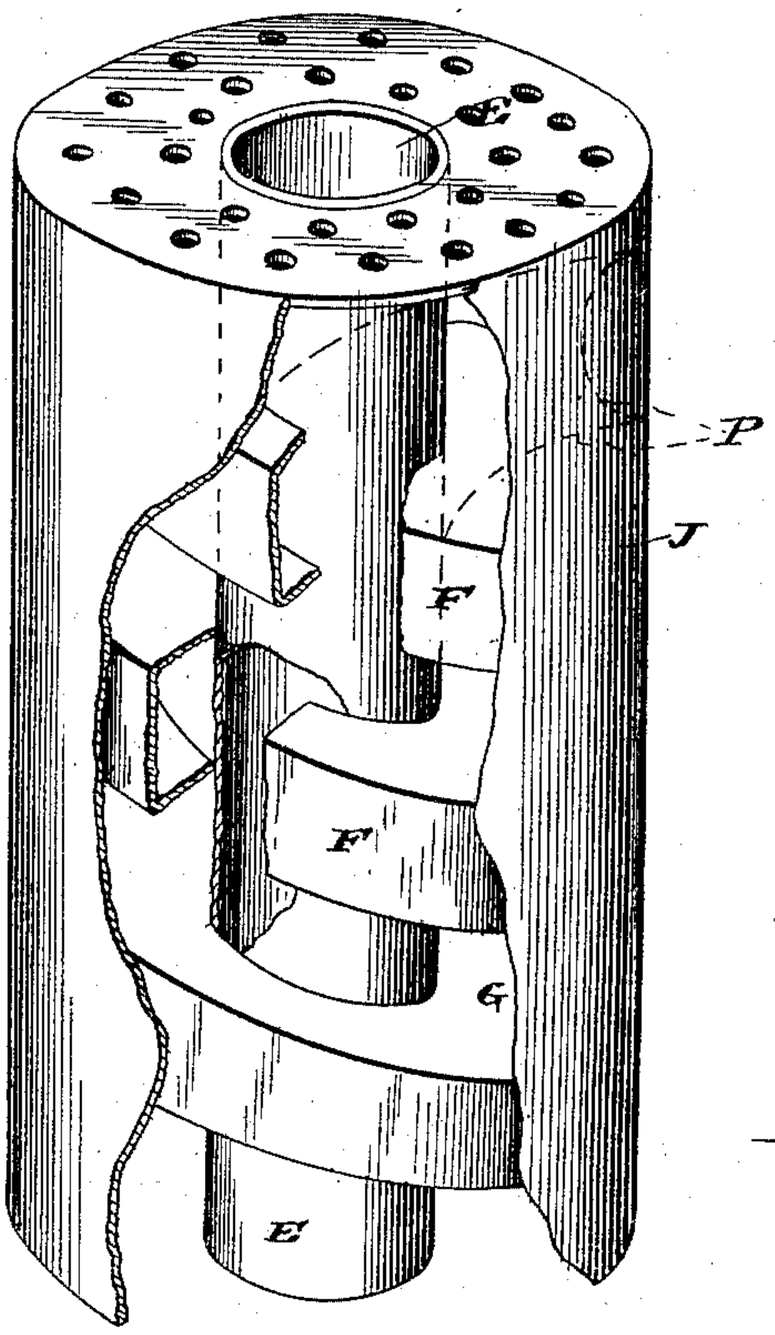


Fig. 4.

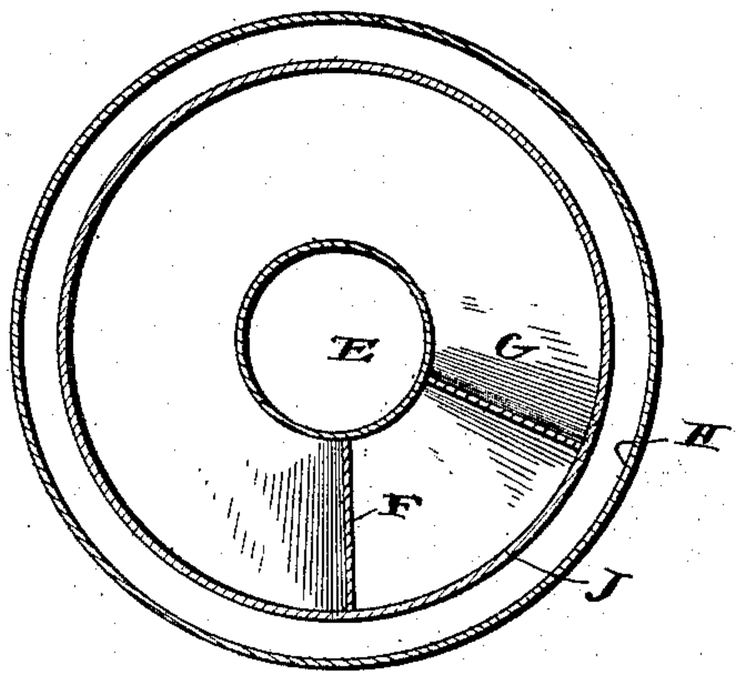
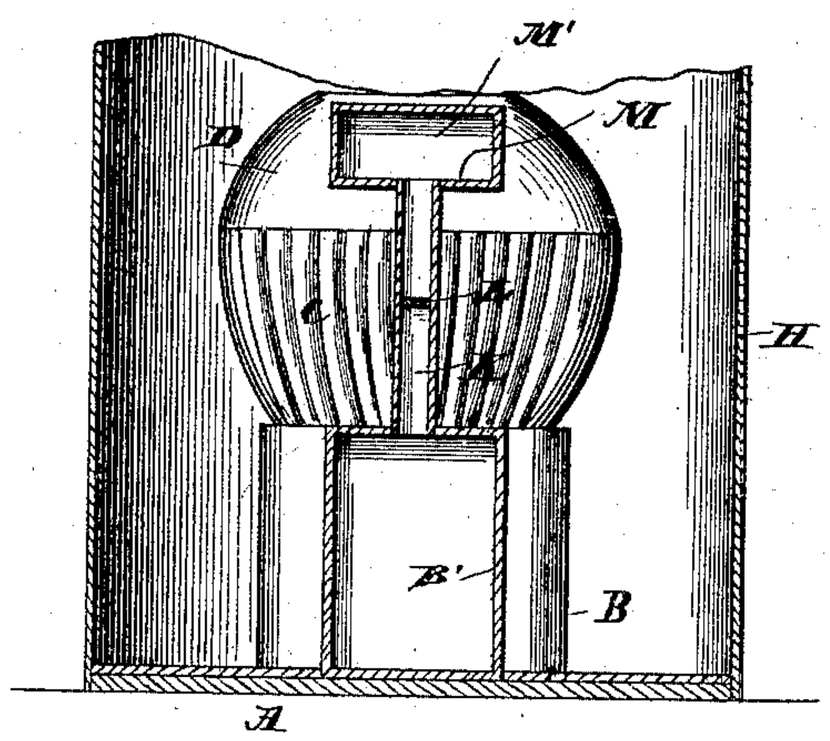


Fig. 3.



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UNITED STATES PATENT OFFICE.

CARL BRANDT, OF CEDAR FALLS, IOWA.

COMBINED STOVE AND FURNACE.

SPECIFICATION forming part of Letters Patent No. 482,466, dated September 13, 1892.

Application filed March 23, 1892. Serial No. 426,111. (No model.)

To all whom it may concern:

Be it known, that I, CARL BRANDT, a citizen of the United States, residing at Cedar Falls, in the County of Black Hawk and State of Iowa, have invented a new and useful Combined Stove and Furnace, of which the following is a specification.

This invention relates to new and useful improvements in combined stoves and furnaces; and it consists in the construction, arrangement, and combination of the several parts, as will be more fully hereinafter described and claimed.

The object of this invention is to obtain from an equal amount of fuel greater heating power than can be afforded by a stove or furnace of any of the ordinary types now in use, or, in other words, to more thoroughly utilize the products of combustion before they are carried off by the smoke-flue.

In the drawings, Figure 1 is a sectional perspective view of the improved combined stove and furnace. Fig. 2 is a transverse vertical section of the same on the line *x x*, Fig. 1, showing all the parts in position. Fig 3 is a similar view on the line *y y*, Fig. 1. Fig. 4 is a horizontal section on the line *z z*, Fig. 2. Fig. 5 is a detail perspective view of the drum removed and showing the arrangement of the spiral smoke and air flues, the parts being broken away at different points.

Referring to the drawings, A designates the base, made with open-work for the passage therethrough of currents of air, and on which is arranged an ash-box B, having a cleaning-vent B′, and on and above said ash-box is mounted a fire-pot C, preferably of cast metal, which is covered with a detachable dome D, provided with openings D′ and D^2 in the top portion thereof. A centrally-arranged vertical feed-chamber or magazine E is connected to the dome D over the opening D′ therein by a removable collar E′, located at the lower end of the said chamber or magazine E, the said collar E′ being made removable for the purpose of substituting other collars of similar construction and location for those which may become burned out. Over the opening D^2 in the dome D the lower end of the smoke-flue F is secured and is spirally arranged within a drum J around the said feed-chamber or magazine E, which extends upward centrally therethrough and within said drum, the upper end of said smoke-flue F being connected to an escape-pipe F′, leading to any desirable place of exit. Between the coils of the smoke-flue F an air-flue is formed, as shown at G, and opens out of one side of the lower end of the drum J, as at J′, adjacent to the fire-pot C and dome D, so that the air from the exterior of the stove and furnace coming through the bottom A may pass into said air-flue and directly in contact with the walls of the smoke-flue F, as well as the chamber or magazine E. The whole structure thus far described is inclosed by a suitable casing H, preferably of sheet-iron or other metal, having a perforated top I over the top of the drum J, which also is formed with perforations or openings, to thereby allow the air in a heated condition to escape from the air-flue G and be conveyed either by pipes, if the device is employed as a furnace, to points at a distance, or if the device be employed as a stove the heated air will pass directly into the room or other place where the stove may be situated. The drum J is of less diameter than the casing H and is preferably concentrically arranged in said casing by brackets N, arranged at different points, and thereby form a chamber between the same and the wall of the casing, through which the air may pass and circulate upward through the perforated top or dome I. A vent M extends through the casing H and connects with an opening M′ in the one side of the dome D, to thereby provide means for starting or otherwise manipulating the fire in the pot C from this point, it being understood that said vent M will be supplied with a suitable door. The lower end of the smoke-flue F connects with the dome D adjacent to the connection of said vent M with said dome, so that the smoke in starting the fire will be immediately carried off by the draft created at this point and by this arrangement. Between the vent B′ and the vent M is vertically located a dust-flue K, which is connected at its opposite ends to said vents and has a damper L therein to open and close communication between said vents for a purpose well understood. It will also be understood that the fire-pot C will be provided with a suitable grate having suitable shaking connections, all of which is well

known in the art. The smoke passes through the flue F and heats the same, and the air entering the drum J through the mouth or opening J′ circulates upward through the air-flue G in close contact with the walls of the flue F and also with the wall of the chamber or magazine E, and thereby becomes thoroughly heated before passing out the perforated top or dome I. Further, the air passing between the walls of the drum J and casing H also becomes more or less heated and in like manner passes out through said dome or top I. It will also be understood that as the air strikes directly against the fire-pot C it will attain a very high degree of temperature before entering the flue G and its upward course will be accelerated by the spiral arrangement of said flue and the caloric thereof be sustained by the heated temperature of the smoke-flue F.

The slant or inclination of the smoke-flue F renders it self-cleaning in that the soot and deposit of the particles of combustion will gravitate toward the lower end of said flue and be within reaching distance through the vent M.

It is understood that the fuel placed in the chamber or magazine E will be fed automatically to the fire-pot in a manner well understood by those skilled in the art, and further, all the parts may be made of any suitable size and material, as it will be understood that increasing the length of the drum J and the pipe F, as well as the other parts proportionately, also increases the heating capacity of the combined stove and furnace.

As shown in Figs. 1, 2, and 5, the magazine E is extended centrally through the structure to the top thereof, which is the construction that will be employed in stoves. When the device is arranged as a furnace, said magazine or feed-chamber E will be turned to one side, as shown in dotted lines at P, and have the mouth thereof located in the side of the casing. This will provide for the connection of the flues, as will be readily understood by those skilled in the art.

Having thus described my invention, what I claim as new is—

1. In a combined stove and furnace, a fire-pot having a drum mounted thereover, provided with a spirally-arranged smoke-flue connected with said fire-pot and a spiral air-flue between the parts of the said spirally-arranged smoke-flue, said smoke-flue connecting with a smoke-pipe in the side of the stove or furnace and the air-flue opening at its upper end through the top of said stove or furnace, substantially as described.

2. In a combined stove and furnace, the combination of a fire-pot, a drum mounted thereon having a spirally-arranged smoke-flue therein connected at its lower end with said fire-pot and at its upper end with an escape-pipe located in the side of the furnace or stove, a spirally-arranged air-flue between the parts of said smoke-flue and opening out of the top of said drum, and a chamber or magazine extending centrally through said flues, substantially as described.

3. In a combined stove and furnace, the combination of a casing having a base made with open-work for the passage therethrough of currents of air, an interior drum open at the bottom and having a perforated top and a perforated top fitted over said casing and said drum, an ash-box on said base having a cleaning-vent, a fire-pot above said ash-box having a detachable dome and a top and side opening, a vent connected to said side opening of the dome, a dust-flue vertically disposed and connecting the said vent of the ash-box and of the last-named vent and having a damper therein, a removable collar located in the top opening of the dome and depending above and below the same, a central magazine having its lower end connected to said collar and the upper end thereof secured to the said drum, a smoke-flue spirally arranged within the said drum around the magazine and having the lower end thereof communicating with the vent entering the side of the dome of the fire-pot and the upper end of the same opening into a smoke-pipe passing through the side of the casing and drum, and an air-flue spirally arranged between the upper and lower surfaces of the smoke-flue, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CARL BRANDT.

Witnesses:
L. O. ROBINSON,
F. B. MILLER.