(No Model.) 2 Sheets—Sheet 1.

R. R. FINCH.

HOT AIR FURNACE.

No. 345,293. Patented July 13, 1886.

Fig. 1

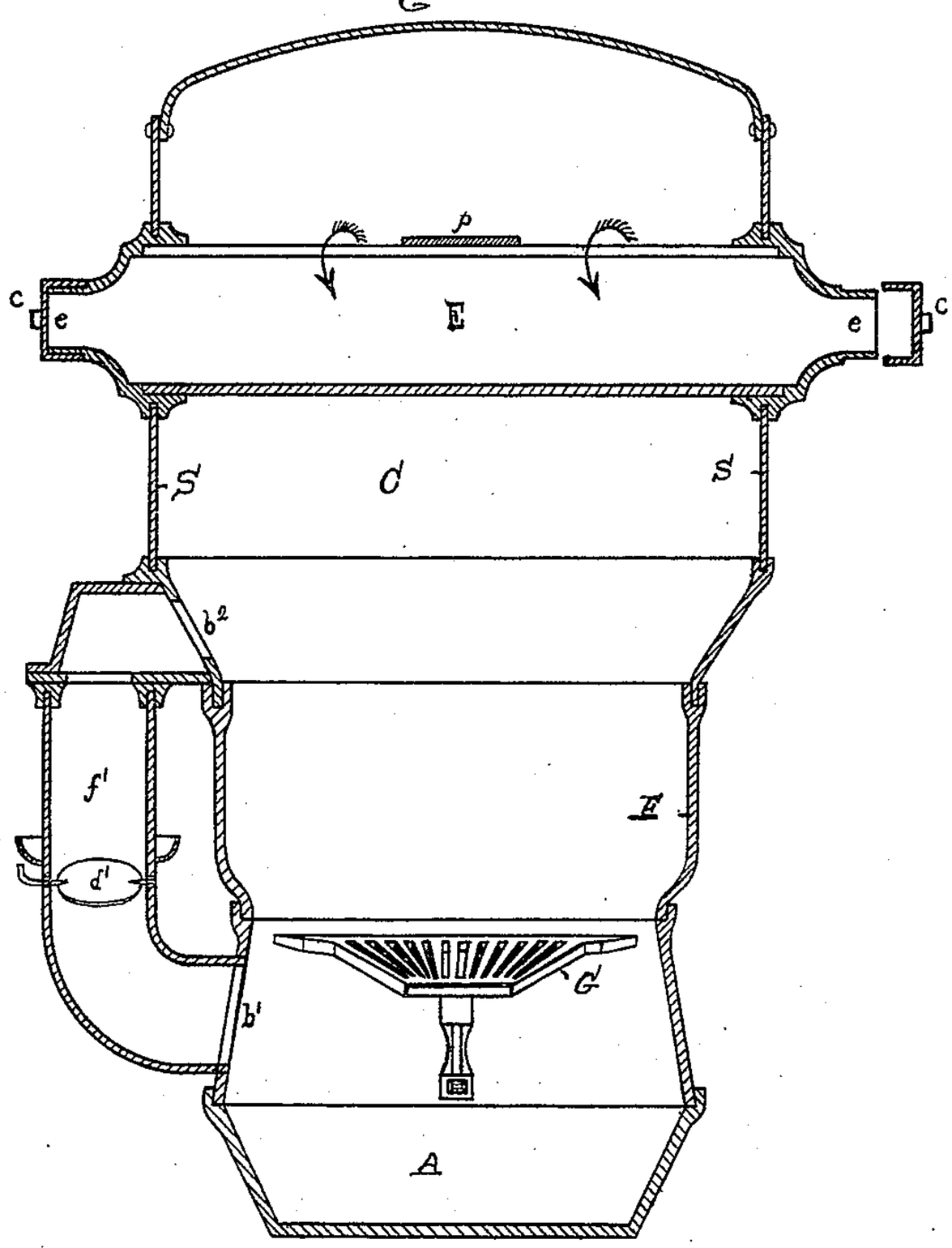
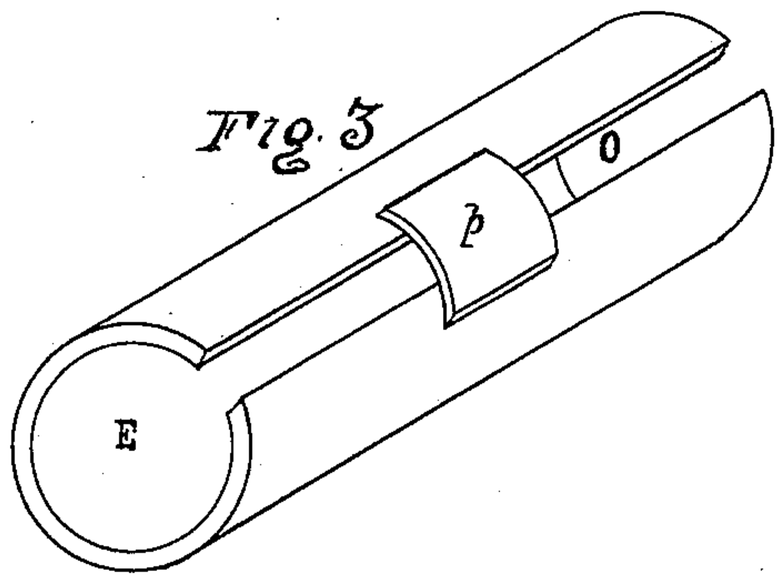


Fig. 3



WITNESSES:

Stanley M. Holden.

Charles S. Brimhall

Reuben R Finch INVENTOR

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W C Hagan his ATTORNEY

N. PETERS, Photo-Lithographer, Washington, D. C.

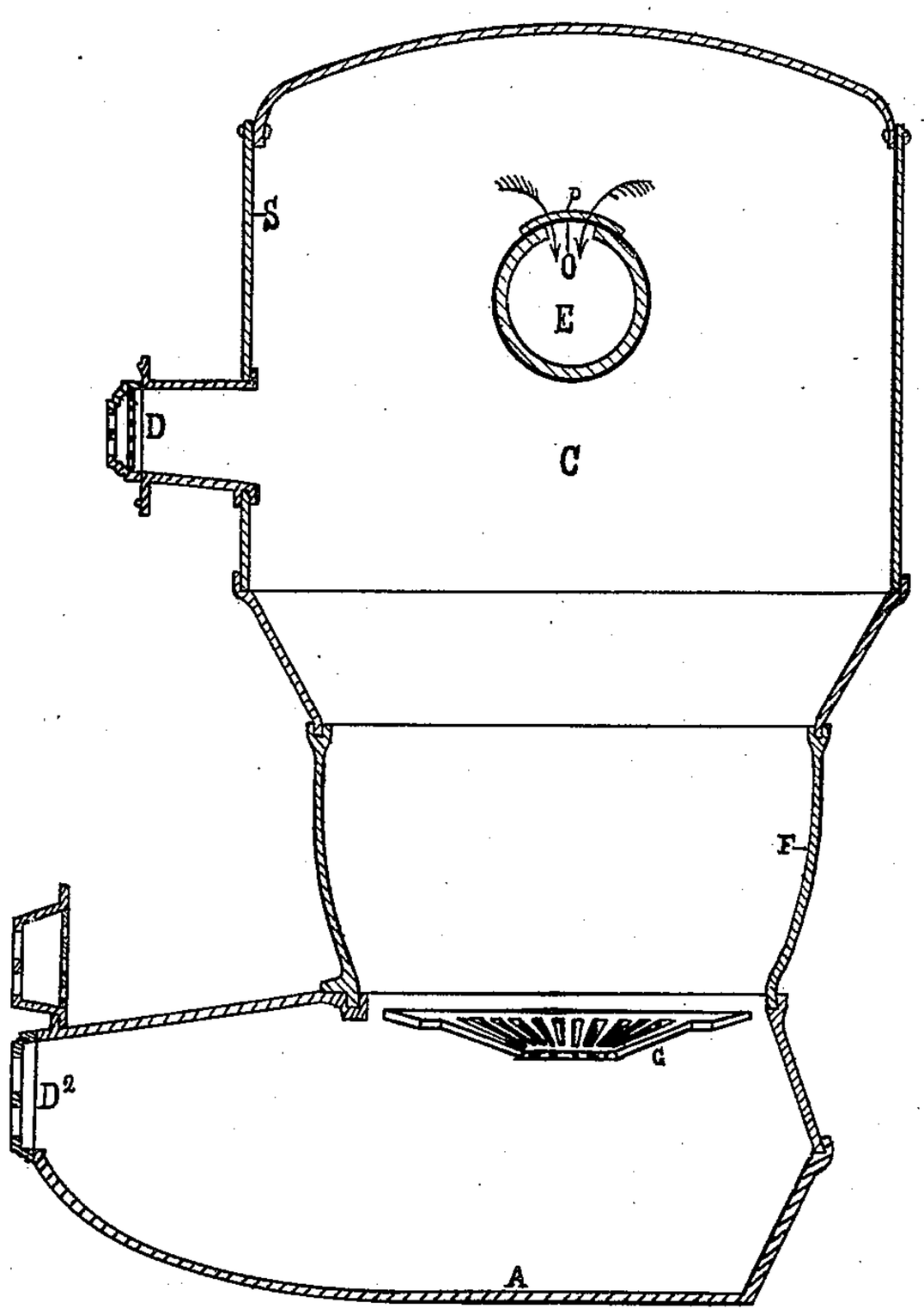
(No Model.) 2 Sheets—Sheet 2.

R. R. FINCH.

HOT AIR FURNACE.

No. 345,293. Patented July 13, 1886.

Fig. 2



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UNITED STATES PATENT OFFICE.

REUBEN R. FINCH, OF PEEKSKILL, NEW YORK, ASSIGNOR TO THE UNION STOVE WORKS, OF SAME PLACE.

HOT-AIR FURNACE.

SPECIFICATION forming part of Letters Patent No. 345,293, dated July 13, 1886.

Application filed June 9, 1885. Serial No. 168,114. (No model.)

To all whom it may concern:

Be it known that I, REUBEN R. FINCH, of Peekskill, Westchester county, State of New York, have invented a new and useful Improvement in Hot-Air Furnaces, of which the following is a specification.

My invention relates to improvements in hot-air furnaces having for their object an arrangement and construction of the exit-flue which will permit of a convenient access thereto for removing accumulations of soot and dust, and which improved construction and arrangement of the exit-flue will adapt the connection between the furnace and the chimney to be made at either side of the furnace.

Accompanying this specification, to form a part of it, there are two plates of drawings containing three figures, illustrating my invention as applied to a hot-air furnace, with the same designation of parts by letter-reference used in all of them.

Of these illustrations, Figure 1 shows a central vertical section taken through the furnace from side to side. Fig. 2 is a central vertical section taken from front to rear. Fig. 3 shows a perspective of my improved exit-flue, shown as detached from the furnace.

The several parts of the furnace, as well as those containing my improvement, are designated by letter-reference, and the function of the parts is described as follows:

The letter F indicates the fire-cylinder, G the grate, and A the ash-pit.

The letter S designates the shell, and C the combustion-chamber above the fire.

As the furnace shown is one adapted to be set in brick, the outer wall, inclosing an air-heating space between the furnace and the inclosure wall, is not shown.

The letter f' designates the dust-flue provided with a damper, d'. This dust-flue connects with the ash-pit at b' and with the combustion-chamber at b^2. When the grate is shaken or the ashes are let down, the damper in said flue is opened, and the dust from the ashes drawn through the flue into the combustion-chamber.

The letter D designates the feed-door, extended from the furnace-body laterally, so as to project beyond the wall inclosing the hot-air space.

The letter D^2 indicates the door to the ash-pit, which is also extended frontwardly, so as to pass through the wall encircling a hot-air space around the furnace.

The foregoing parts constitute the ordinary and well-known parts of a hot-air furnace.

The letter E indicates a horizontal flue extending laterally through the combustion-chamber from side to side. This flue is made with a top opening, O, which may extend throughout its whole length. By forming the flue E with an opening, O, in its upper side an indirect draft is produced. The heat and products of combustion as they ascend from the fire pass up to the top of the combustion-chamber, and, as indicated by the arrows in Fig. 1, the waste products of combustion pass over to the top of said flue and down through the slot O, and from thence the lighter products pass out to the chimney. By this construction and arrangement not only will the heavier particles drop down and be retained within the tube E, so as to be readily removed therefrom, instead of passing directly to the chimney, but a portion thereof that would, were the draft a direct one, otherwise pass to the chimney, be condensed and remain within the flue. The construction also gives the very best distribution of heat possible, since it is directed to all parts of the chamber and escapes only by the indirect draft provided for it.

The letter *p* designates a securing-piece that extends across the top of the opening O, it being secured at each side of the latter to prevent the flue E from spreading out on the line of its opening while acted upon by the heat. The ends of the flue E, designated at *e e*, extend through the outer wall of the hot-air inclosure, and the pipe leading from said flue to the chimney may be applied to either end for convenience, and when it is desired to clear out the flue the cap *c*, which is on the end that is opposite to that connected with the chimney, is removed, and the accumulation of soot and ashes drawn out thereat. As thus made the flue can be reached from its end to thoroughly clean out at a point where the ashes and soot are most likely to lodge and interfere with the draft and the operation of the furnace. Not only this convenience is had, but as arranged

the operation of cleaning the flue can be done without cooling the furnace.

I am aware that a cylinder having a register on one end and a stove-pipe fitted to the other has heretofore been arranged across the top of a combustion-chamber of a stove or furnace, said cylinder being provided with a circular draft-hole in the under side, and a series of disks having central apertures arranged beneath the cylinder to impede the draft and distribute the heat.

My improvements consist in dispensing with the radiating disks and in forming the cylinder with a slot in the upper side, whereby an indirect draft is attained and the heat evenly and thoroughly distributed in the combustion-chamber. I also secure the shell of the cylinder from distortion on the line of the slot by a securing-piece.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with a hot-air furnace, of the flue E, formed with a slot, O, in its upper side, and mounted in the walls of the furnace, across the combustion-chamber thereof, with its ends projected beyond the walls of the furnace, one end of said tube being closed and the other end connected to the chimney, substantially as described, and for the purpose stated.

2. The combination, with a hot-air furnace, of the flue E, mounted in the walls of the furnace, across the combustion-chamber thereof, and having one end closed and one end in connection with the chimney, and a slot, O, in the upper side, provided with a securing-piece, *p*, extending across said slot, substantially as described, and for the purpose set forth.

Signed at Peekskill, New York, this 6th day of May, 1885, and in the presence of the two witnesses whose names are hereto written.

REUBEN R. FINCH.

Witnesses:
STEPHEN LENT,
BENJ. MCCABE.