

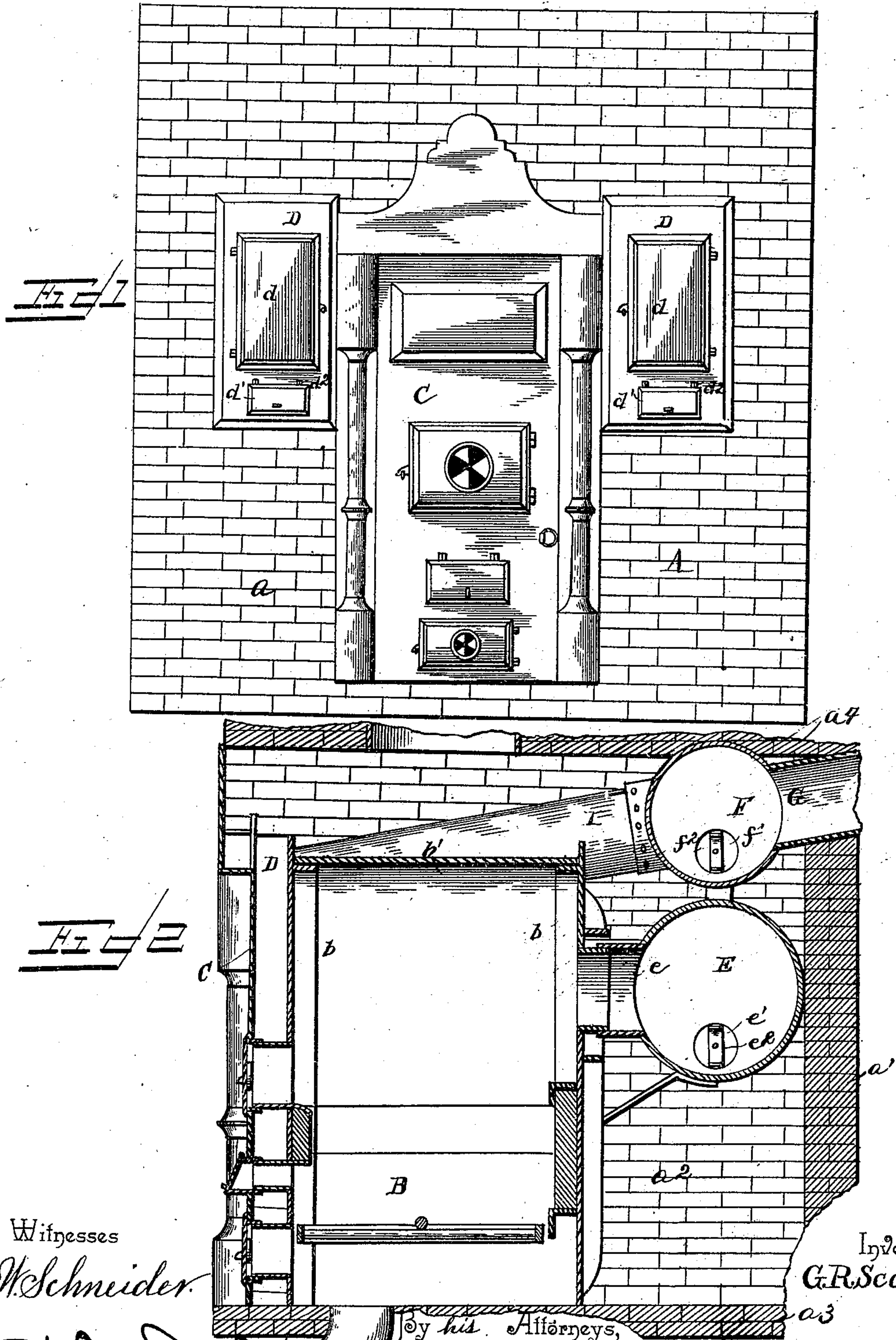
(No Model.)

G. R. SCATES.
FURNACE.

3 Sheets—Sheet 1.

No. 502,208.

Patented July 25, 1893.



Witnesses

W. Schneider.

Inventor

G. R. Scates

By his Attorneys,

C. A. Snow & Co.

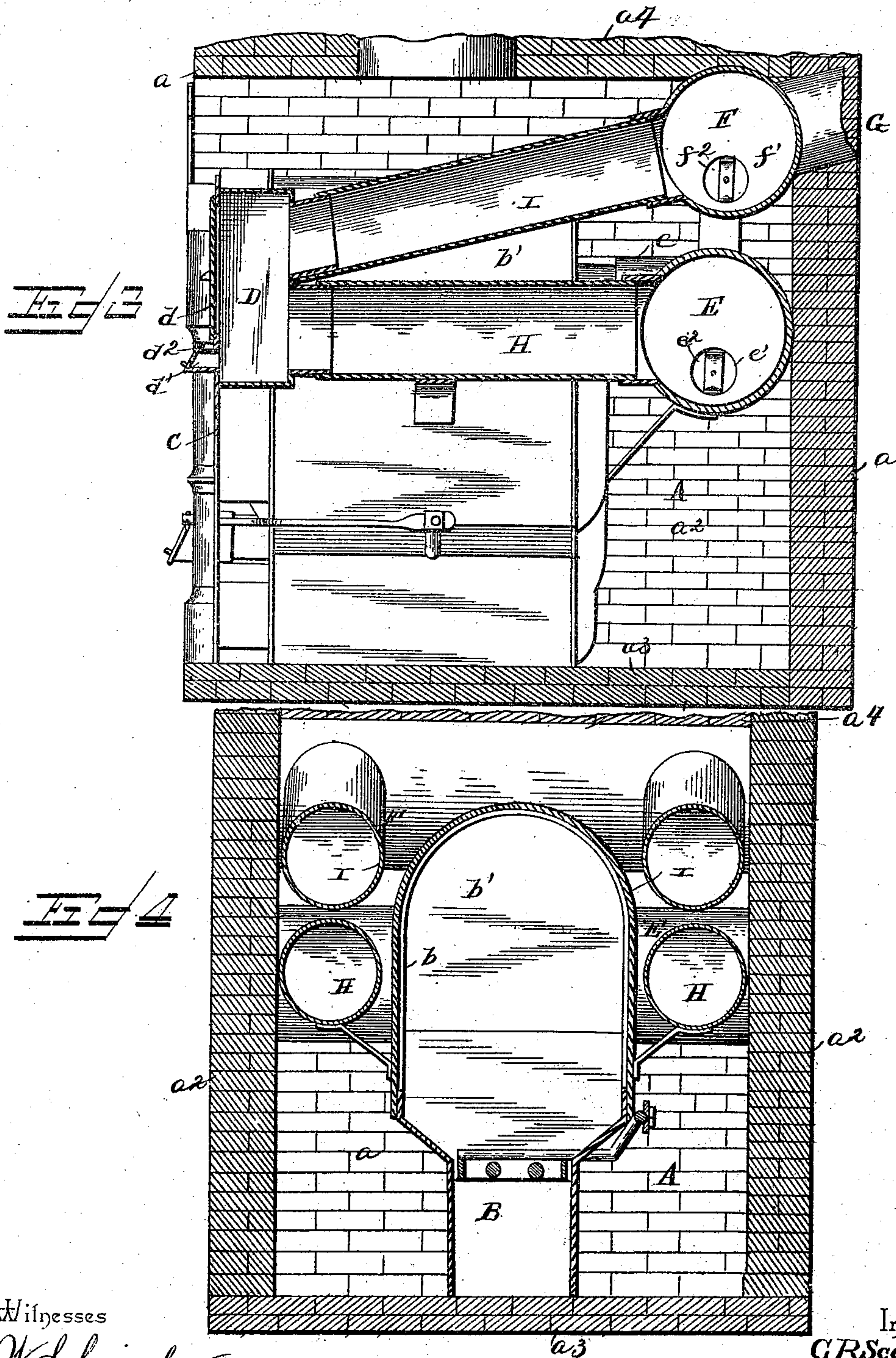
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Fig 5

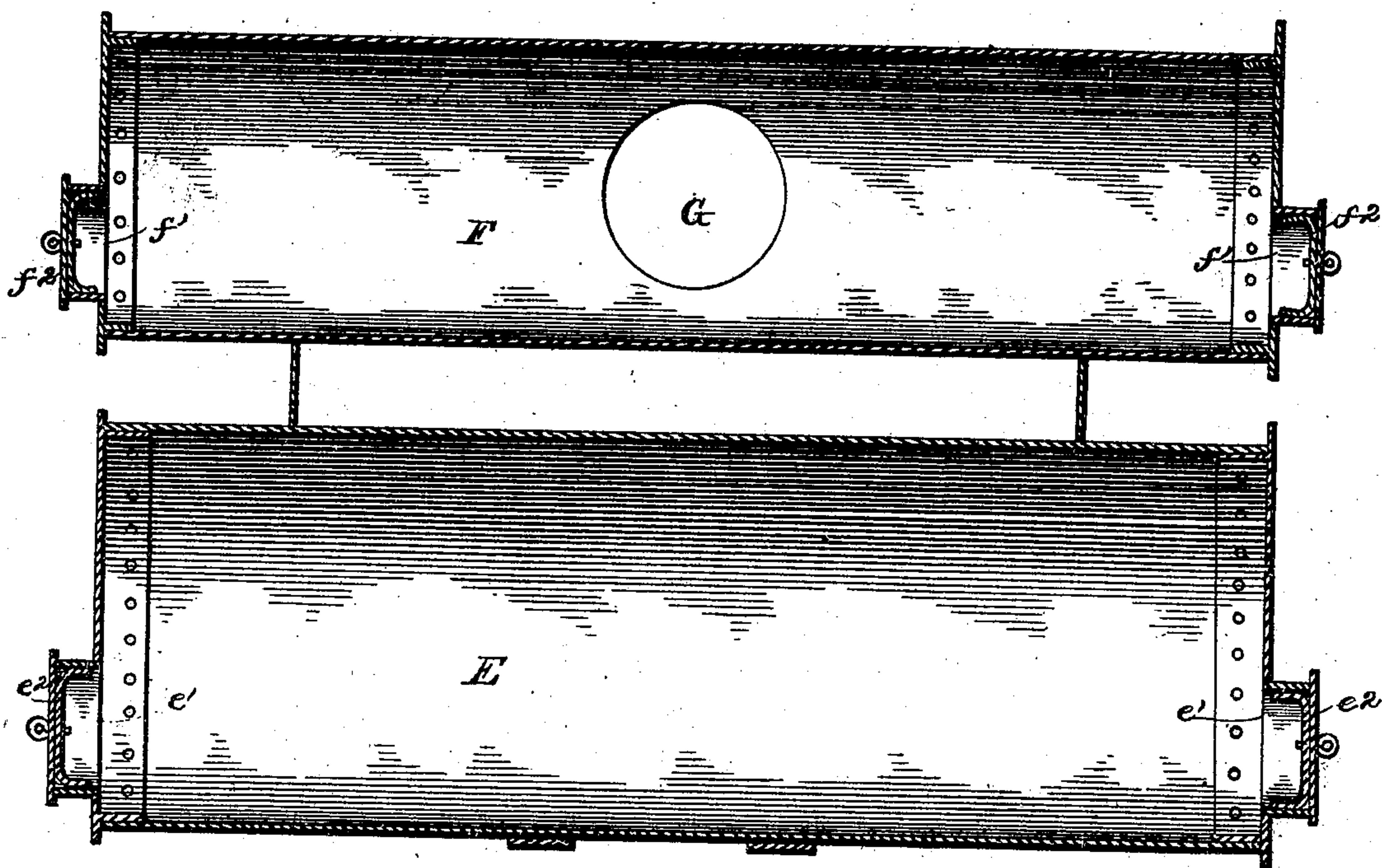
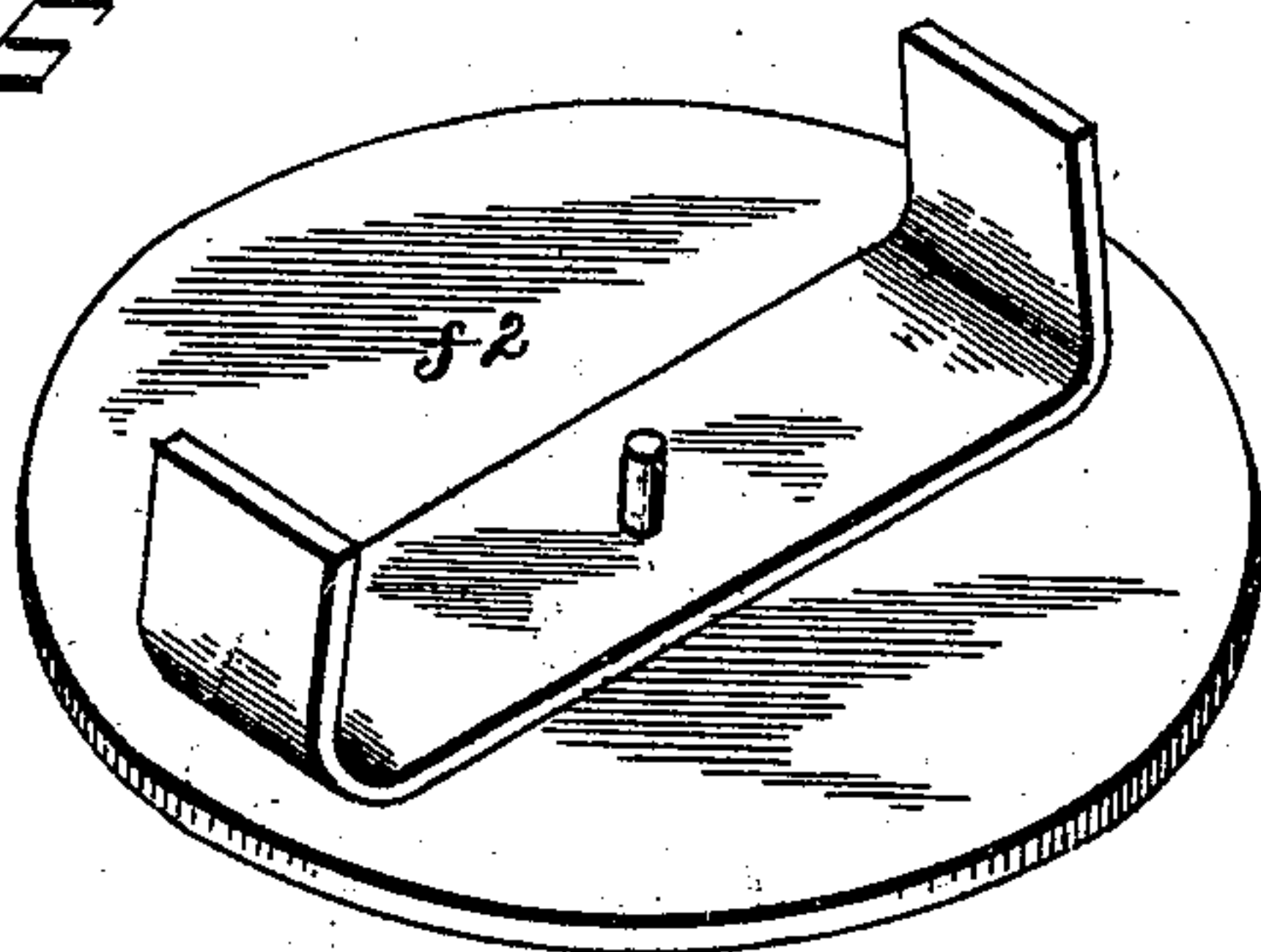


Fig 6



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Ca Snow & Co

UNITED STATES PATENT OFFICE.

GEORGE RANDOLPH SCATES, OF KNOXVILLE, TENNESSEE, ASSIGNOR TO HIMSELF, RUDOLPH KNAFFL, WILLIAM D. HUME, AND W. O. WHITE, OF SAME PLACE.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 502,208, dated July 25, 1893.

Application filed September 14, 1892. Serial No. 445,902. (No model.)

To all whom it may concern:

Be it known that I, GEORGE RANDOLPH SCATES, a citizen of the United States, residing at Knoxville, in the county of Knox and State of Tennessee, have invented a new and useful Furnace, of which the following is a specification.

My invention relates to improvements in furnaces, the objects in view being to provide a furnace, which is especially adapted for domestic purposes, and which shall possess advantages in the matter of extensive heating and radiating surface, as compared with the grate surface, and in the simplicity, durability and strength of construction, in the accessibility of the flues from the outside of the masonry inclosure, and in the ease and facility with which the flues and other parts may be relieved from accumulations of soot.

Further objects and advantages of my invention will appear hereinafter in the description, and the novel features thereof will be particularly pointed out in the appended claim.

In the drawings:—Figure 1 is a front view of a furnace embodying my improvements. Fig. 2 is a central vertical longitudinal section of the same. Fig. 3 is a vertical longitudinal section taken through one pair of the side radiators or flues. Fig. 4 is a vertical transverse section taken through the fire-box, combustion-chamber and side radiators or flues. Fig. 5 is a transverse vertical section taken through the transversely-disposed drums at the rear of the combustion-chamber. Fig. 6 is a detail view of one of the caps or closures for the outlets.

In carrying out my invention I employ inclosing walls, A, including the front wall, a , the rear or back wall, a' , and side walls, a^2 , a bottom, a^3 , and a top wall or roof, a^4 , all of which are formed of brick or masonry, in the usual well-known manner.

B designates the fire-box or furnace proper, which is inclosed within the walls, A, and arranged at or near the front wall thereof, said fire-box being formed of metal and being protected at its front and rear sides by fire brick which is held in place by radially disposed webs, b , as shown in Fig. 2. The fire-box or combustion-chamber is provided with an

arched hood, b' , vertical upper sides, convergent lower sides, a pivoted grate, a subjacent ash-pit, with the accompanying fuel-door, ash-door, fire-door, and means for operating the same, substantially as shown and described in detail in my prior Letters Patent No. 376,785, dated January 24, 1888.

The front plate or casting, C is separated slightly from the front end of the combustion-chamber, and is set flush with the front inclosing wall, and connected to this front plate or casting at opposite sides, and close to the top, are the rectangular soot-boxes, D D, provided with inspection-doors, $d d$, respectively, and below the latter, on the planes of the bottoms of the boxes, with the cleaning ports, $d' d'$, having hinged closures, $d^2 d^2$.

In rear of the combustion-chamber are arranged the transversely-disposed heating-drums, E and F, the lower and larger drum, E, communicating by means of short connecting flues, $e e$, with the combustion chamber, and the upper drum, F, communicating with the smoke-flue, G. At opposite ends of these drums, close to their bottoms are formed outlets, $e' e'$ and $f' f'$, as shown clearly in the sectional view, Fig. 5, said outlets being normally closed by the caps or closures e^2 and f^2 , one of which is shown in detail in Fig. 6.

Extending from the lower drum, E, to the lower end of the soot-boxes, D D, are the approximately horizontal radiators or side flues, H H, the front ends of which are opposite the doors, $d d$, in the fronts of said boxes. These radiators are inclined upward, slightly toward their front ends. Extending from the upper ends of said soot-boxes to the extremities of the upper drum, F, are the upwardly inclined flues or radiators, I I, the front ends of these, also, being opposite the doors of the soot-boxes. Hence, by opening the doors in the front sides of the soot-boxes, the entire lengths of the side flues or radiators may be viewed, and by means of a long handled scraper cleaned, all of the soot being drawn down into the soot-boxes from whence it may be removed through the cleaning ports, above described. The drums are similarly cleaned by removing the caps or closures which cover their terminal outlets, and scraping the soot therethrough.

The other parts of the device, necessary for the supply of fresh air, and the delivery of the heated air to the points of utilization, &c., form no part of this invention and are similar to those described in the former patent granted to me, above-mentioned.

It will be noted in connection with this invention, that each flue, drum, radiator, &c., is provided with a terminal outlet, through which the entire interior of said part or member may be viewed, each outlet being provided with a suitable closure to be used when the outlets are not being utilized.

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

In a furnace, the combination with a casing or inclosure, a centrally-located fire-box and a smoke-flue at the rear, of a horizontal transverse drum E arranged in rear of the fire-box and communicating therewith at its center, a smaller drum F arranged above the drum E and communicating at its center with the

smoke-flue, the duplicate soot-boxes arranged near and accessible from the front of the casing or inclosure, side flues or radiators H disposed at opposite sides of the fire-box and communicating at opposite ends, respectively, with the drum E and the soot-boxes, and side flues or radiators I disposed at opposite sides of the fire-box, respectively above the flues or radiators H, and communicating at their extremities respectively with the drum F and the soot boxes, said soot-boxes being provided in their front sides with doors *d* and *d'*, the doors *d* being in alignment with the side flues or radiators, whereby the latter may be reached for cleaning, substantially as specified.

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

GEORGE RANDOLPH SCATES.

Witnesses:

SETH ARNOLD,
ROBT. L. CULTON.