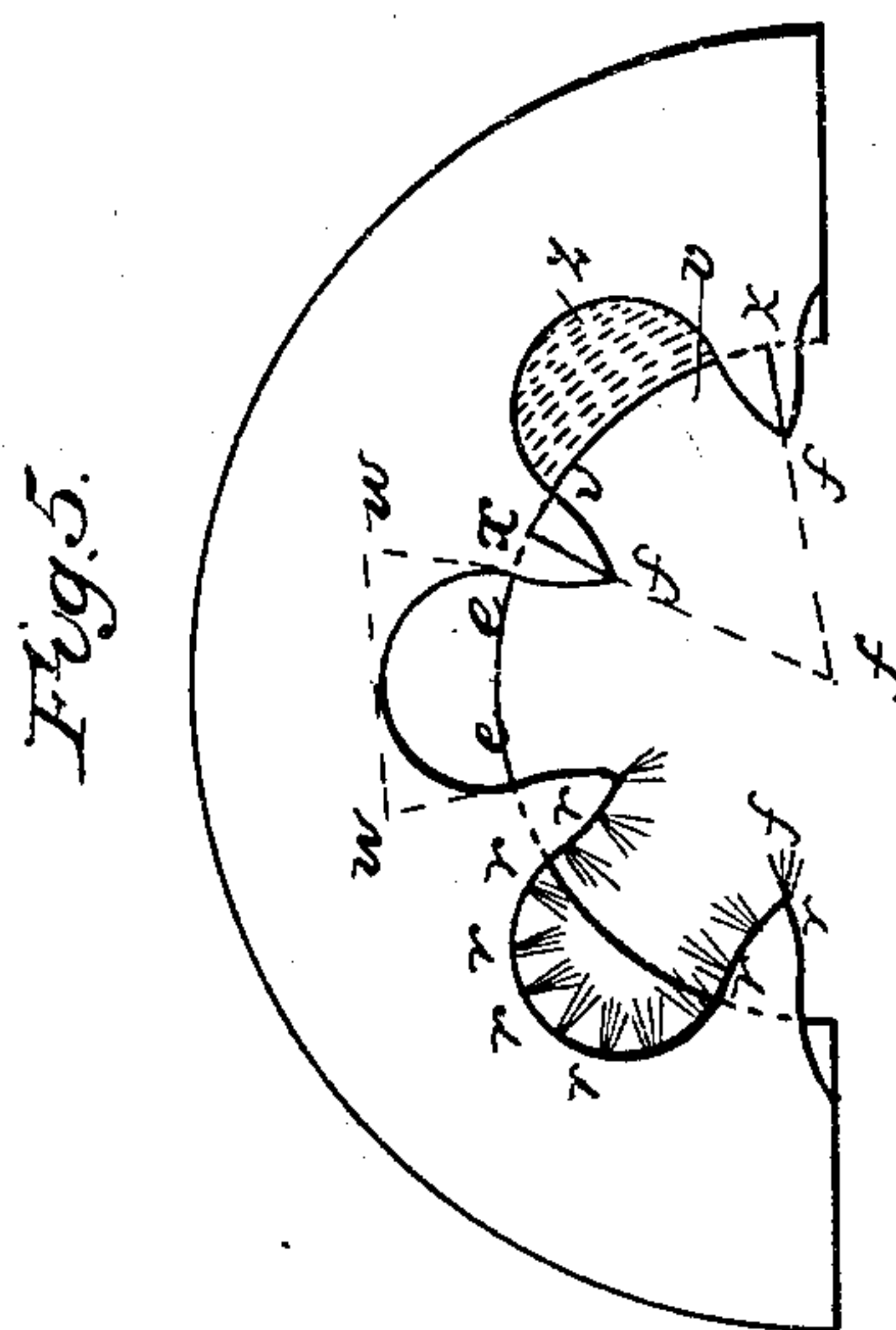
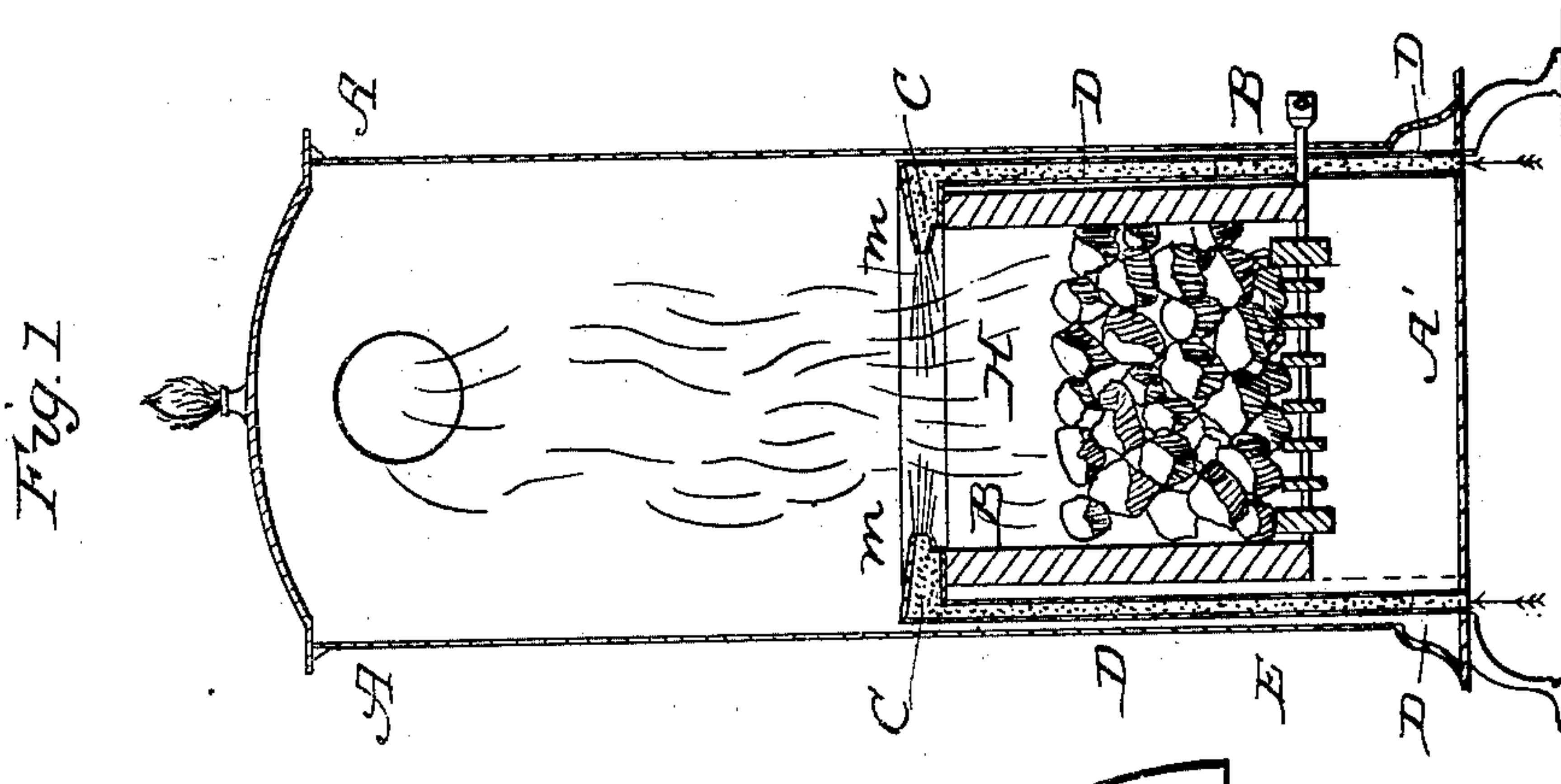
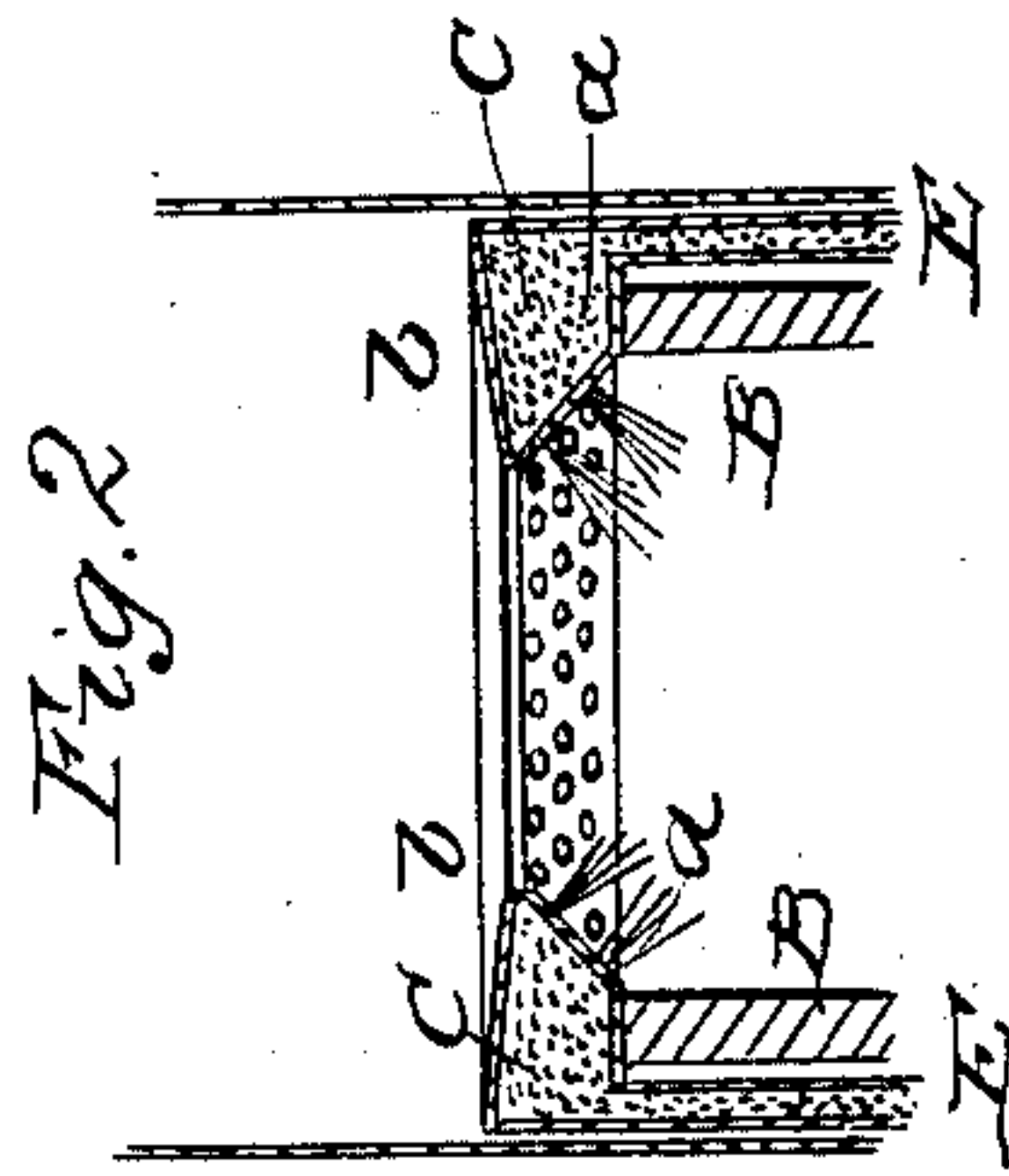
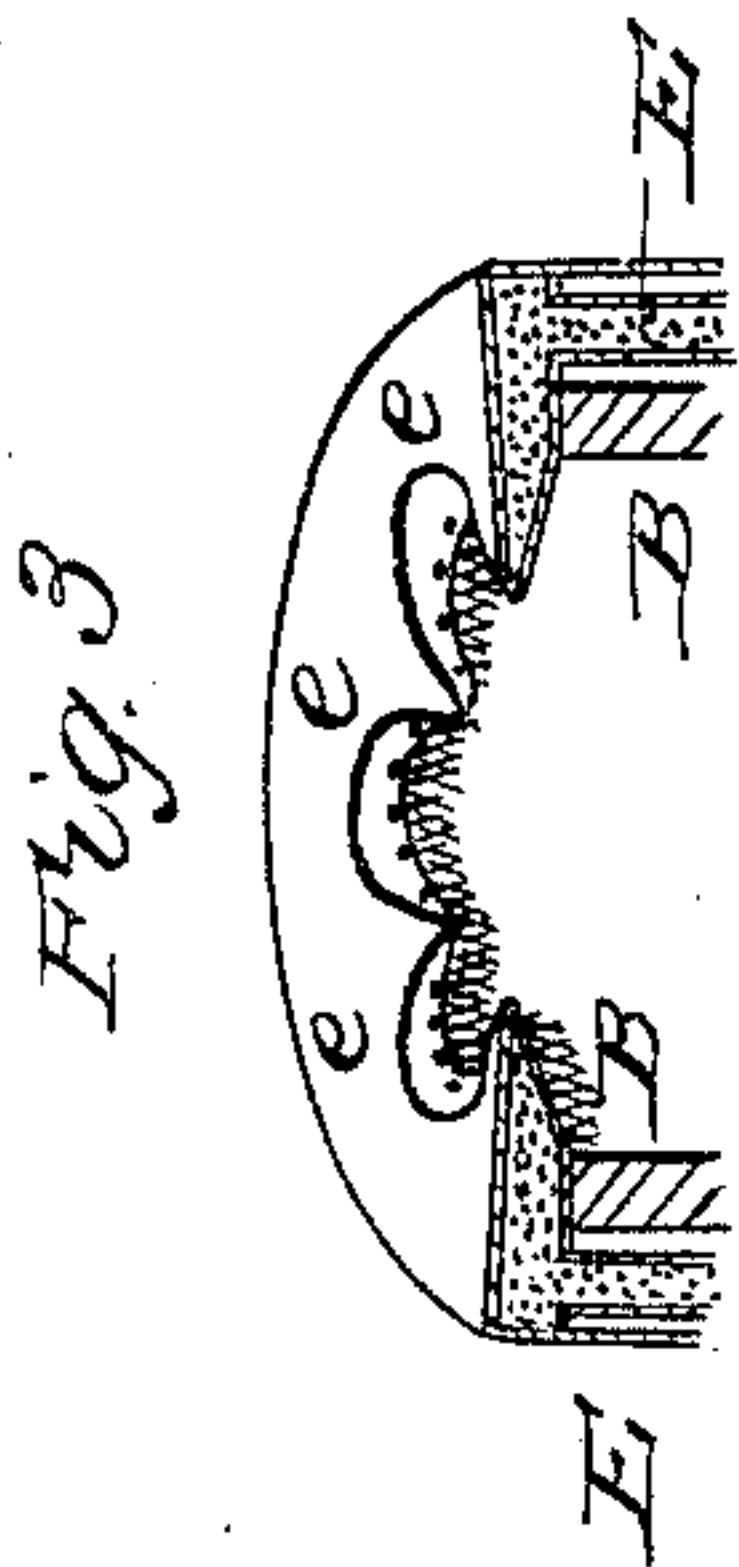


J. VAN WORMER.

Stove.

No. 26,938.

Patented Jan'y 24, 1860.



WITNESSES
W. D. Smith
Paul Young

INVENTOR
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UNITED STATES PATENT OFFICE.

JASPER VAN WORMER, OF ALBANY, NEW YORK.

STOVE.

Specification of Letters Patent No. 26,938, dated January 24, 1860.

To all whom it may concern:

Be it known that I, JASPER VAN WORMER, of the city of Albany, State of New York, have invented a new and useful Improvement in the Construction of Coal-Stoves; and I declare the following specification, with the drawings hereto attached as part of the same, to be a full and perfect description of my invention, which is an improvement in the method of supplying atmospheric air to the incandescent gases and product of combustion after they have passed off from the fuel in order to effect a more perfect combustion of them.

There are now in common use two methods of supplying air for the purpose above referred to, the one known as George E. Waring's patent, which is represented in vertical profile section at Figure 1, where A is the external body of a cylinder (called) hall stove; B, the internal cylinder with fire clay lining; D, external flue for a reversed draft; E, tubes introducing air from without and below into the hollow chamber or annular throat C, from which it passes, by small apertures *m* in the edge of its inner periphery, into the throat of the fire chamber H, where it meets the compressed volume of incandescent material and furnishes the oxygen to perfect the incomplete combustion.

The other method is known as Savage's improvement on Shield's and Cole's patent. In this case the lower surface wall of this annular air-chamber is formed at a considerable angle, say 45 degrees, with the vertical side of the stove, as shown in section Fig. 2, *a b* showing the line of this portion so that it forms a conical throat to the fire chamber. The lower surface is pierced with small holes intended to furnish jets of air obliquely downward into the unconsumed material as shown in the drawing.

That there is a valuable economy in the use of these methods is well known, but there are in them defects preventing the full advantage that may be gained in introducing air above the burning fuel. In the first described method it is impossible to introduce a sufficient quantity of air without keeping the throat so large that a very considerable portion of the products of combustion will still pass off unconsumed beyond the effect of the jets of air, or if it be reduced so as to enable the air to operate efficiently upon them, then the compression of space in the throat will be such as materially to impede

the efficiency of the draft, besides carrying the most heated part of the column of gases up through the center of the drum or upper section of the stove without efficient radiation therefrom.

The second or Savage's improvement was intended to remedy this difficulty by supplying the air to a considerable extent to the gases, &c., before they reached the throat and making it less necessary to keep it so narrow, as then the supply from the edge of the ring was less important if at all necessary. The practical difficulty in this case is, that with an efficient draft the current of gases impinge with such force against the conical throat plate, as to prevent the jets of air from coming out or else confining their exit to the upper tier of holes near the upper edge of the ring. An observation of the jets of flame as they show themselves at each opening, manifests this.

It is the object of my invention to form a hollow throat air-chamber, so as to increase very materially the number of the air jets projecting directly out into the narrow part of the throat, and at the same time give a more liberal passage for the ascending column of gases, &c. It is shown in Fig. 3 in perspective, the apparatus shown as cut off at its transverse diameter; in Fig. 4, in plan. It is a hollow annular chamber whose edge instead of being a simple circle, is formed into semicircular or curvilinear recesses *e e*, the sides projecting out at angles so that those of each pair shall meet in points *f f*, the entire edges being pierced with air-holes *r r*.

In the diagram Fig. 5 the line *x x* represents the circular edge; *x y x*, the proportion of flue used in the construction of a Savage stove; *f z f*, the edge proposed by my construction; *x f v*, the portion of the Savage throat space occupied by my points, and *v z v* the space furnished by me as flue by my recesses. The eye will see at once that while I furnish four times more throat space than I abstract, my air hole edge is at least twice as large as that of the ring. It is manifest that without confining myself to any specific number of these recesses and points—throats can always be constructed upon the principle shown furnishing equal space for the passage of gases with any annular throat, and very much increase the supply of air through the edge of the throat.

I do not confine myself to the form nor

proportion shown in these drawings but shall claim to use rectangular recesses terminating in points, as shown in the diagram *f w w f* or anything substantially covering 5 the principle of using air chambers recessed and with salient points toward the center of the throat, for obtaining the greatest amount of free passage for the gases, in combination with the proper supply of air 10 for the most perfect combustion of them.

One of the important results of my plan of combustion is, that a large portion of the heated gases, that which passes off up through the recesses, is brought into almost 15 immediate contact with the radiating surface of the drum or upper part of the stove, in that respect having the advantage of the two plans above referred to.

Another very important effect of the form 20 which I give to the air-chamber, is that the salient or projecting portions of it, being embraced on both sides by the flame and burning gases, form heating chambers for the air passing through them, thus supplying a hot blast and preparing the air to 25 act more effectively in producing complete combustion of the unconsumed products of combustion. This is of great importance,

inasmuch as in the arrangement of many furnaces and stoves it is not convenient or 30 possible to introduce the air tubes E, E, passing through the downward draft passage of the fire, and some other way must be adopted to heat the supply of air.

My invention is intended to apply to any 35 form of stove or furnace, wherever its principle of operation can be introduced and used.

What I claim and desire to secure by Letters Patent is— 40

The construction of an air chamber whose perforated air-delivering surfaces or edges shall be formed into recesses with salient points projecting toward the center of the throat of the fire chamber, for the purpose 45 of obtaining the largest space for the passage of gases from the fuel, in combination with the proper supply of air to secure the most perfect combustion of the unconsumed gases and fuliginous matter: substantially 50 as set forth in the above specification.

JASPER VAN WORMER.

Witnesses:

A. V. DE WITT,
RICH'D. VAN DE WITT.