

W. DOYLE.
Heating-Stoves.

No. 151,479.

Patented June 2, 1874.

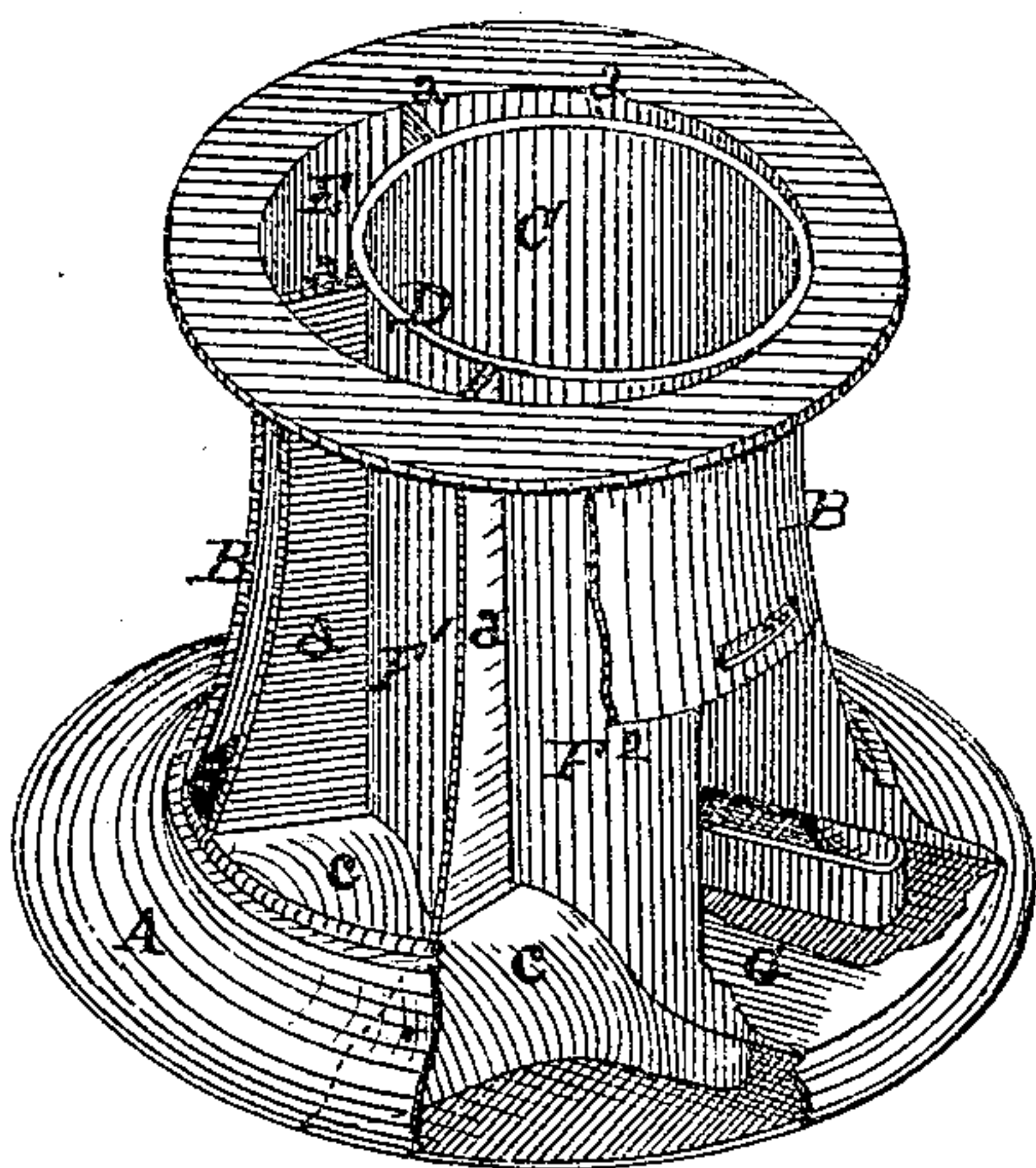


Fig. 1.

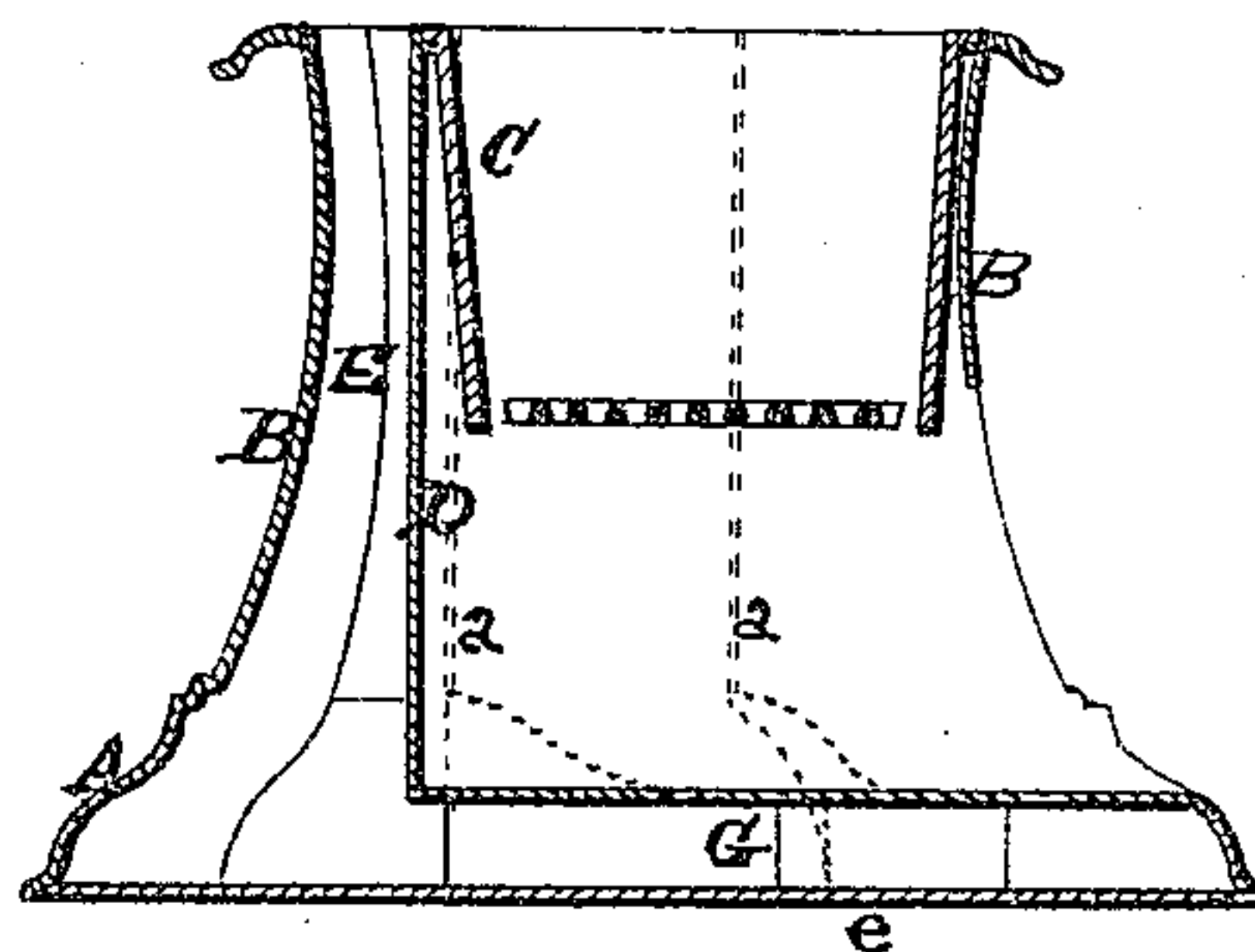


Fig. 2.

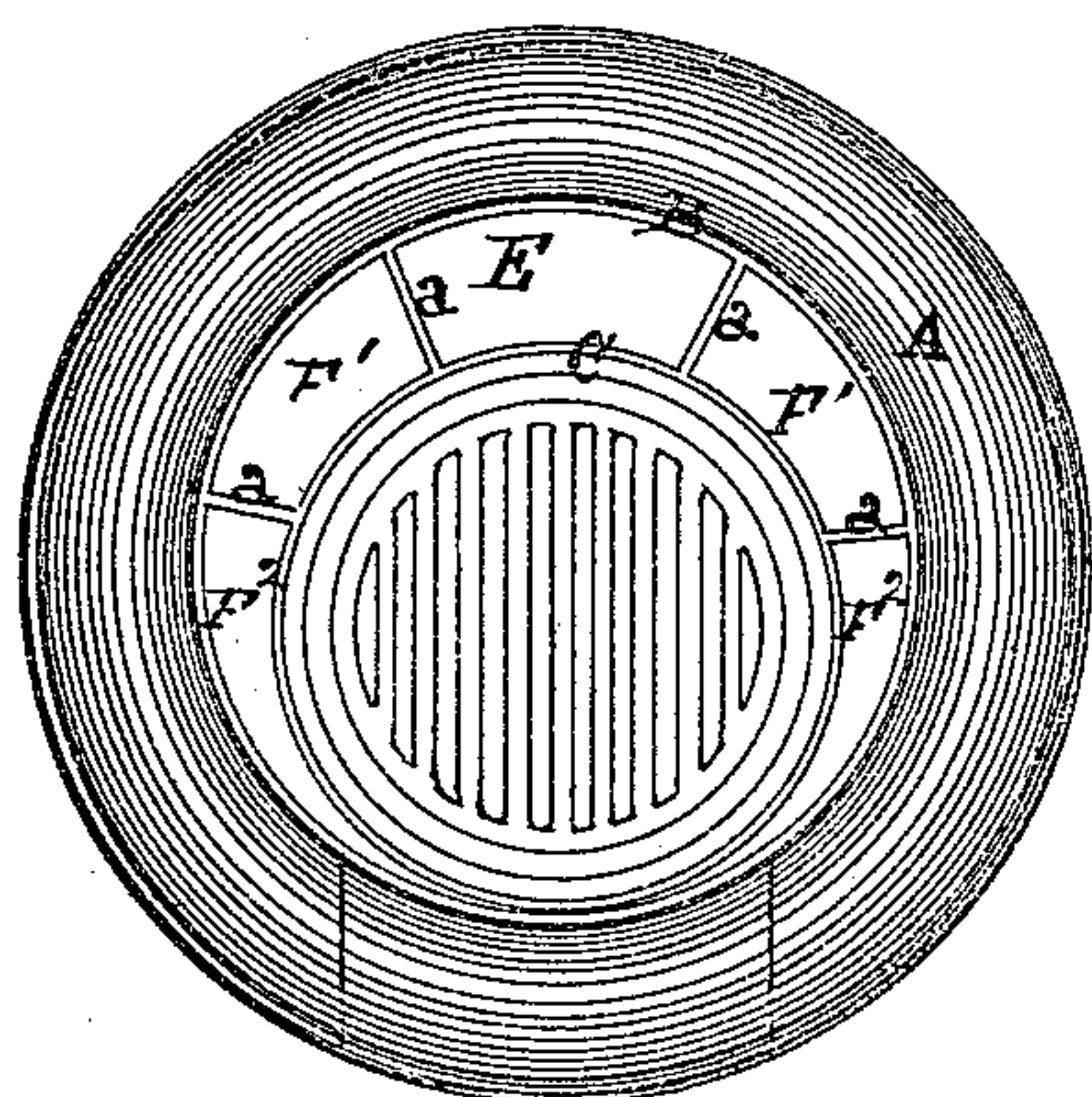


Fig. 3.

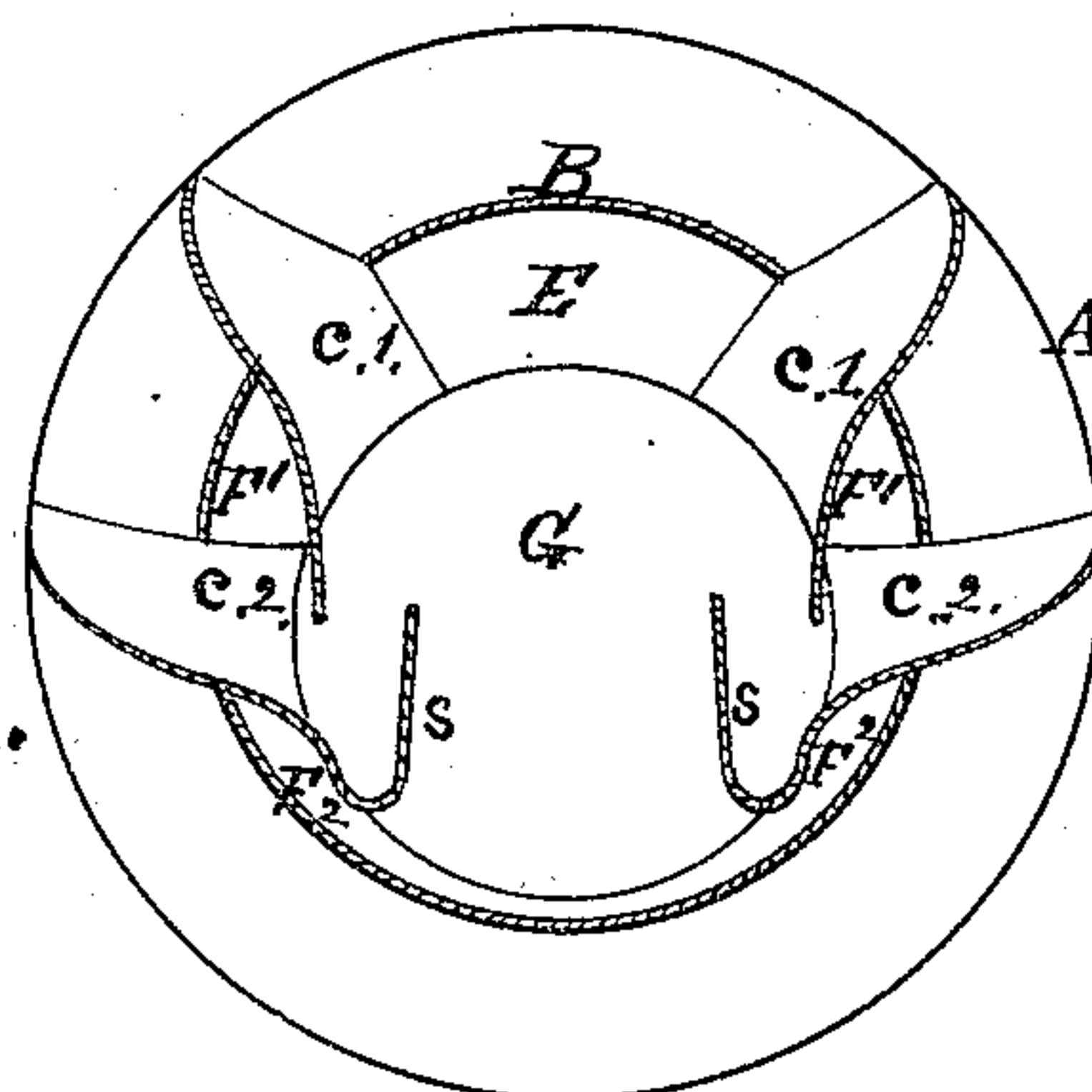
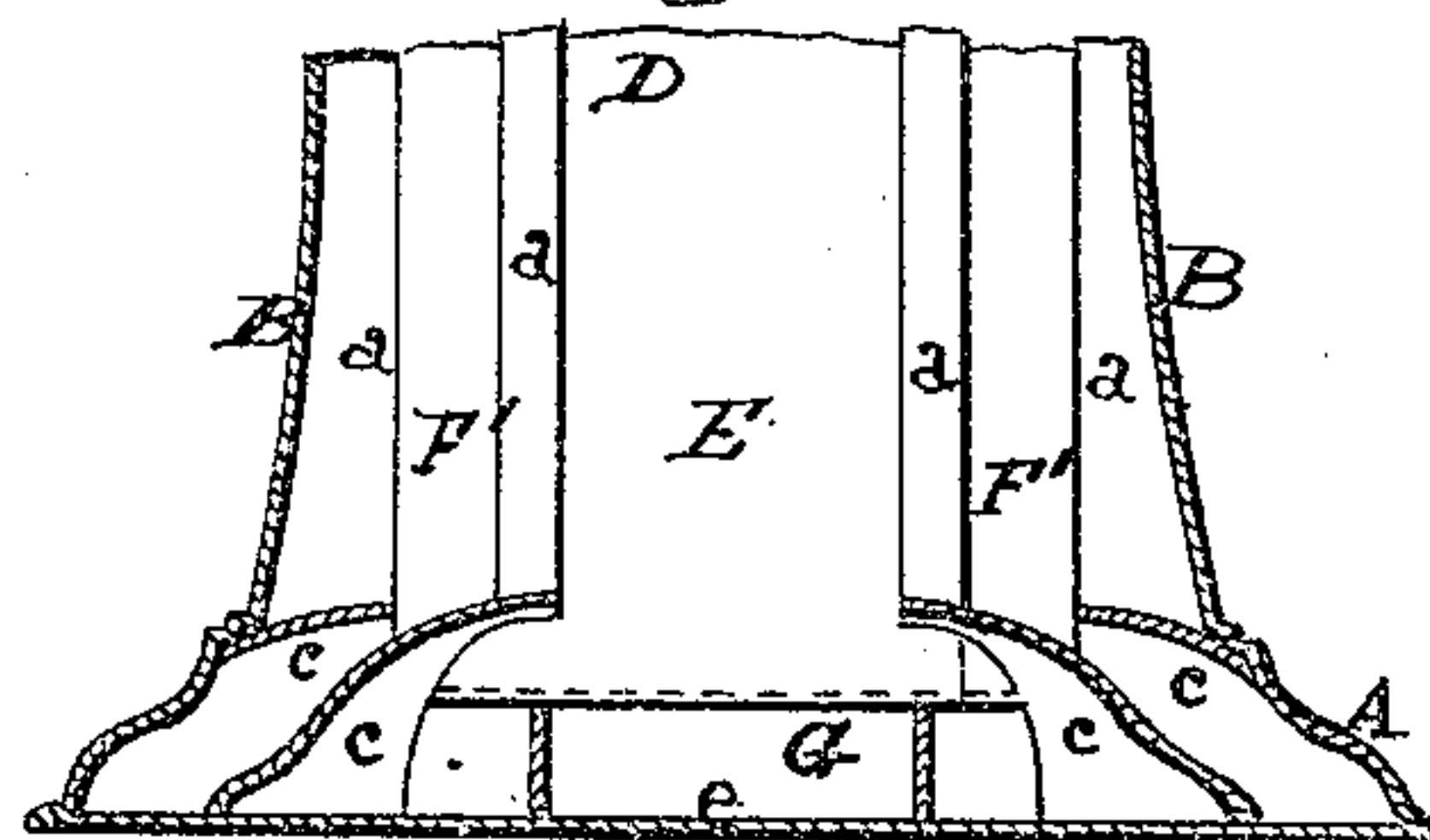


Fig. 4.

Fig. 5.



Witnesses.

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Fig. 6.

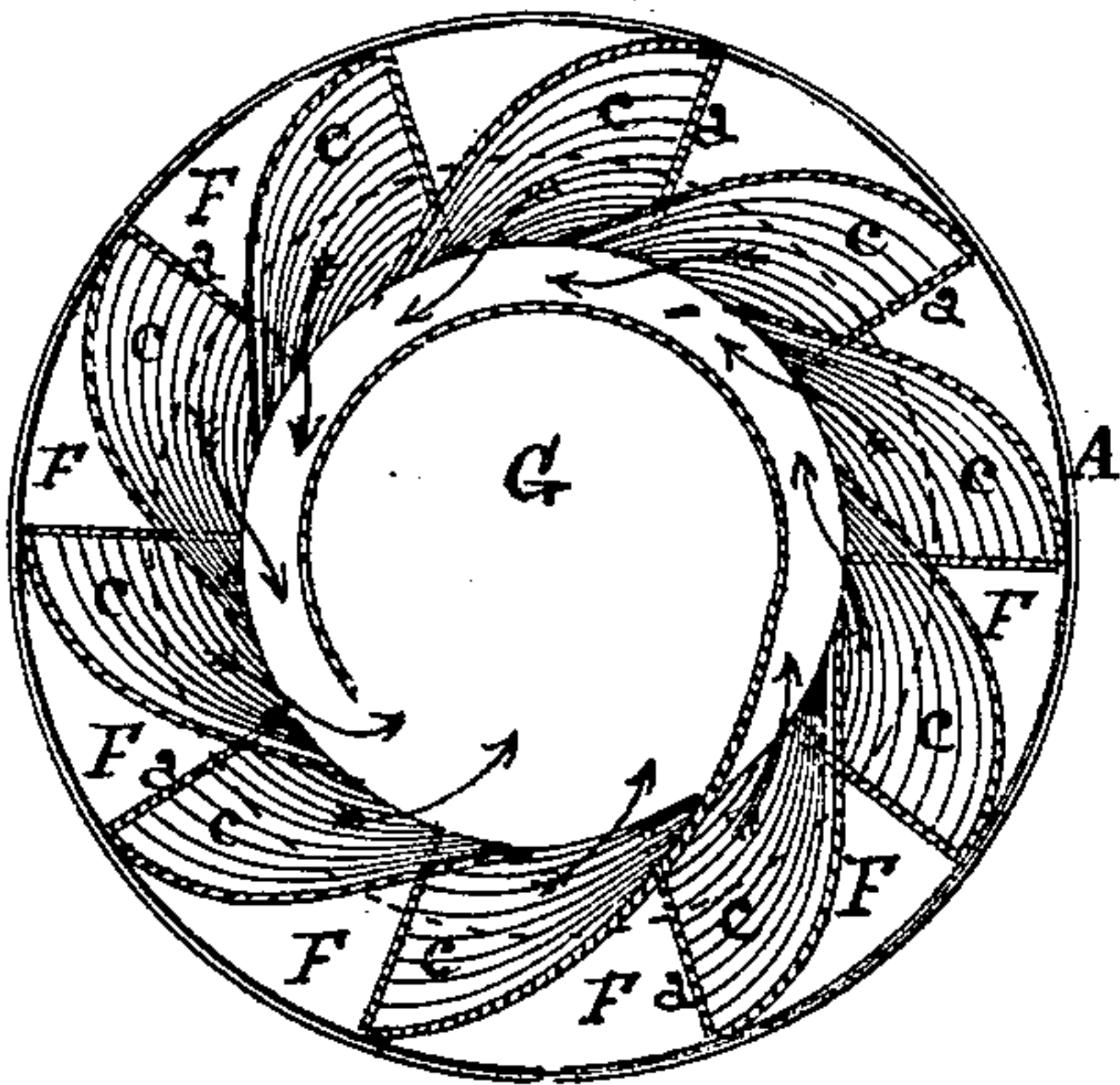


Fig. 7.

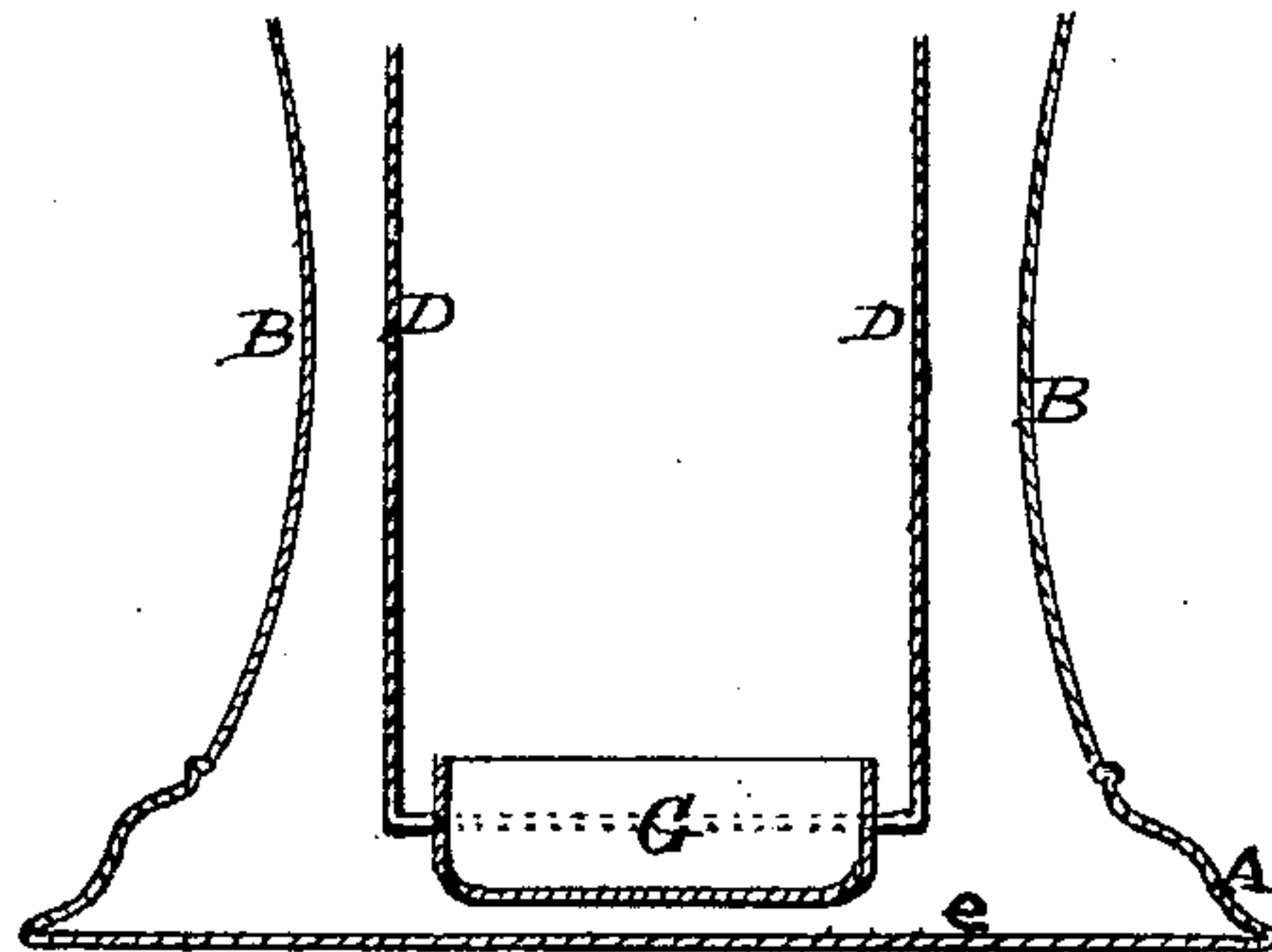


Fig. 8.

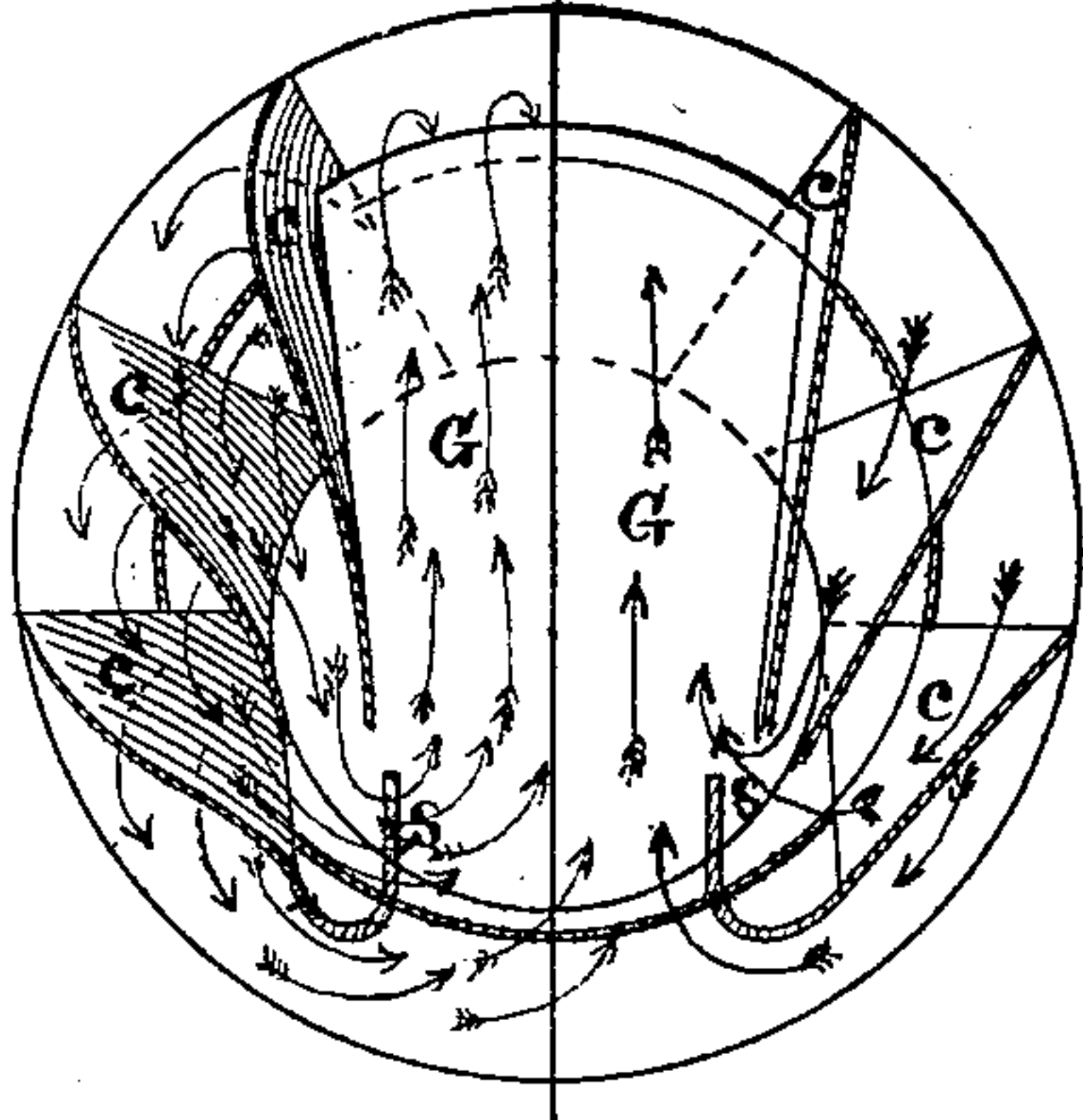


Fig. 9.

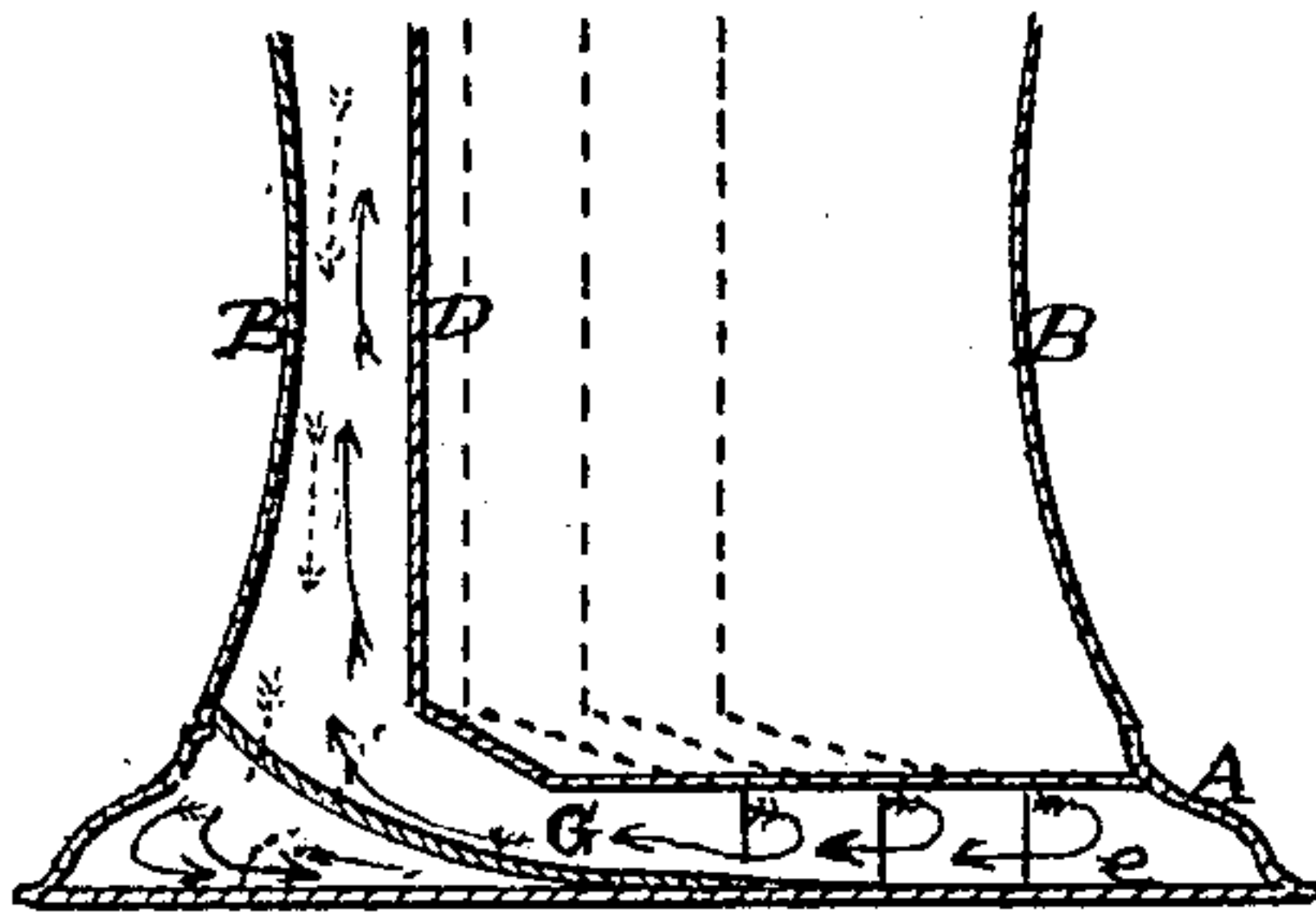
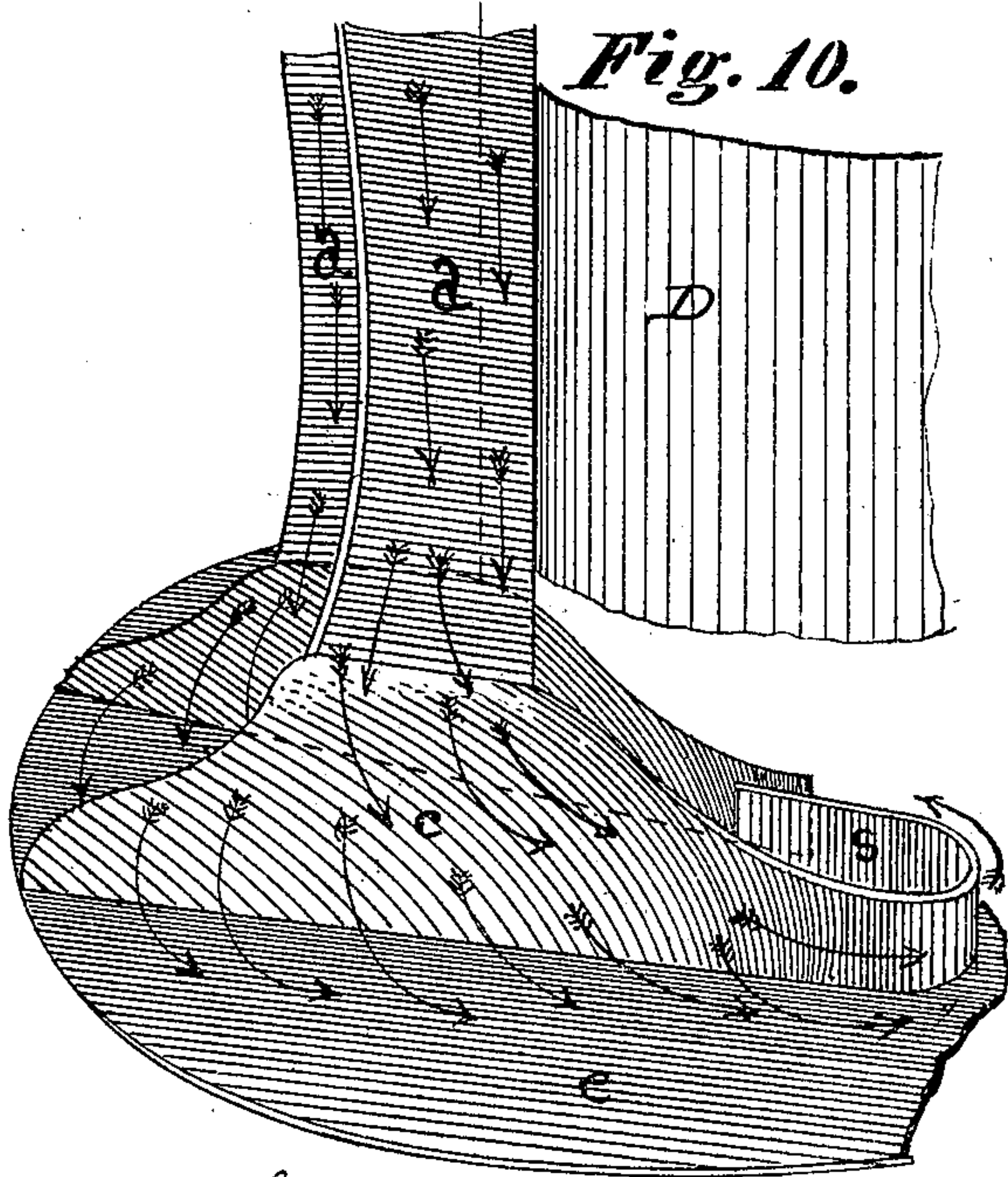


Fig. 10.



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UNITED STATES PATENT OFFICE.

WILLIAM DOYLE, OF ALBANY, NEW YORK.

IMPROVEMENT IN HEATING-STOVES.

Specification forming part of Letters Patent No. **151,479**, dated June 2, 1874; application filed November 12, 1873.

To all whom it may concern:

Be it known that I, WILLIAM DOYLE, of the city and county of Albany, State of New York, have invented certain new and useful Improvements in Heating-Stoves and Furnaces; and I do hereby declare the following to be a description thereof, reference being had to the drawings forming a part of this specification, in which—

Figure 1 represents a perspective view of the lower section of a stove or furnace with parts broken away, illustrating the improvements in this invention. Fig. 2 is a sectional elevation from front to rear. Fig. 3 is a view from above, taken at a horizontal line in Fig. 2. Fig. 4 is a view of the base-plates of the descending flues, the bottom plate being removed. Fig. 5 is a sectional view from the rear, illustrating the position of the base-plates of the descending flues. Fig. 6 is a plan of the base of a stove, illustrating a modification of the number, form, and arrangement of the base-plates of the descending flues. Fig. 7 is a sectional elevation, illustrating the return-flue used with the same. Fig. 8 represents two other modifications of the base-plates in number, form, and arrangement. Fig. 9 is a sectional elevation from front to rear, illustrating the return-flue that may be used with the modifications used in Figs. 6 and 8. Fig. 10 is a perspective view of a base-plate on an enlarged scale, and the flue-strips connected with the same.

My invention relates to the flues leading from the margin of the fire-pot into the base of the stove, and the return-flues leading from the base to the exit.

To enable others skilled in the art to make and use my invention, I will proceed to describe it with reference to the drawings and the letters of reference marked thereon, the same letters indicating like or similar parts.

In the drawings, A represents the base of the stove. B is the outer wall of the fire-pot section. C is the fire-pot. D is the inner casing of the fire-pot, from which inner casing the fire-pot may be suspended or supported. The inner casing D is placed eccentrically with the outer casing B, so that the portion of the walls of the said casings in front will about contact, as shown in Figs. 1, 2, and 3, while

the rear portions of the said walls or casings will be at a distance apart sufficient to form the full depth of the rear vertical return-flue E, as shown in Figs. 1, 2, 3, 4. By this form of construction the rear return-flue is contained wholly within the casing B, and all necessity for making a projecting wall from the rear of the said casing for such a flue, as heretofore required in stoves having the inner casing central within, is obviated, and the weight and expense of the construction of the stove are very materially reduced, while the stove itself is made to present a better appearance, and the heated gases are thrown more toward the front portion of the walls in their descent into the base. The space between the inner and outer casing D and B is divided by the flue-strips *a a* to form the flues E and F¹ F², as shown. The number of flue-strips used to form such flues may be varied according to the size of the stove. In some cases I would use two such flue-strips on a side, as shown in Fig. 4, while in others three may be used, as in Fig. 8, or a greater number, as in Fig. 6.

It is well known that, in stoves having a reversible draft to and from the base, the draft is frequently so affected by the atmosphere as to move in a very sluggish manner. In my invention I wholly overcome such defective operation in the stove by causing each individual flue to operate with its contiguous flues in such a manner as to stimulate their action, and the same means used to prevent a sluggish draft also prevents all back passage of the gases from the return-flue. The flue-strips *a* are continued down from the top of the fire-pot section to the lower portion of the inner casing D, and connect with the base-plates *c c*, Figs. 1, 2, 3, 5, 6, 8, and 10, which base-plates reach down to the bottom plate *e* of the stove, and are extended out toward the wall of the base, so as to connect or intersect with the same, while their inner ends terminate free from any contact with any walls or equivalents to obstruct the passage of the hot gases from the space between such base-plates, as shown in Figs. 4, 6, and 8. The said base-plates may be made of any form to adapt them to the style or conformation of the base they are to be used in, and may be modified

size, form, and position according to the number to be used. In practice I prefer to make the said plates with a form of surface somewhat undulating or twisted, or similar to the surfaces of a mold-board of a plow, or the feathers of a propeller-wheel, as shown in Figs. 4, 6, and by full shaded lines in Fig. 8, though they may be made with a plain surface, as shown in outline in Fig. 8; yet in all cases, whatever may be their form of surface, I so arrange them, relatively with the bottom plate *c* of the stove and each other and their flue-strips *a*, that their lower parts or edges will be set considerably out of line with their top portions connecting with the flue-strips, as shown in Figs. 1, 4, 5, 6, 8, and 10. I also so arrange the said plates that their lower portions will set oblique, as shown in the said figures.

By this form of construction and arrangement of the said base-flues within the base portion of the stove, the heated gases, entering into the base from the flues F^1 F^2 , will pass into the spaces between the said plates, and, contacting with the said plates, will highly heat the same—that is to say, the heated gases passing down the flue F^1 in Fig. 4 will strike the upper surface of the plate c^1 at the rear of the flue, and will pass underneath the plate c^2 at the front of the said flue; and both plates, thus having their respective surfaces acted on by the passing hot gases, will become heated, and will radiate their heat outward and toward the spaces of the contiguous flues, and thereby stimulate their action. When several such flues are employed, each having a base plate or plates at their lower terminations, the heated gases, passing down, will act on the base-plates, separating such flues, and cause them to be heated, and operate with the adjoining flues to stimulate their action.

In arranging the lower portions of the said base-plates so as to incline outward from the flue-strips, the heated gases are directed outward toward the outer wall of the base of the stove and beneath the plate immediately forward; and by setting the plates oblique, the heated gases will be made to enter the larger place or space at the walls of the base, and from thence escape through a more contracted space inward in the base, as shown in Figs. 4, 6, and 8 by arrows.

When I use two base-plates, with flue-strips, on a side, as shown in Figs. 4 and 8, I prefer to make them rights and lefts, as shown; but when many such plates are used, as shown in Fig. 6, I would prefer to have them run in one direction.

With right and left plates I terminate their inner ends past the rear end of the plate in front, connecting with the flue-strips, as shown in Figs. 4 and 8, so as to cause the heated gases to pass toward the front portion of the base, as indicated by arrows. I also use with the front base-plate the curved plate *s*, which

will direct the heated gases backward toward and into the horizontal base return-flue *G* as they escape from the flues back of the front flue F^2 in Fig. 4, the said curved plates acting as a wall for the separation of the heated gases passing from the flues F^1 and F^2 in Fig. 4, and also acting so as to cause the heated gases to contact with the front portion of the base as they pass from the front flues around the said curved plates *s*.

It will be readily seen that by the improvements in this invention the arrangement and construction of flues above described will cause a stronger draft to the stove, as the hot gases will be drawn from the margin of the fire-pot into separate flues, having their base portions of larger capacity, with more contracted openings into the return-flue, which will cause a better and sharper draft; and that, by the peculiar arrangements of the base-plates, the hot gases will be made to heat the flues adjoining those it is made to pass through, and thereby stimulate such flues to greater activity.

It is also seen that these features may be modified to adapt them to the several styles of stoves now in use for heating purposes; and that their form may be varied to suit the forms of the stoves, or bases of the same they are to be applied to.

When made with base-plates, as shown in Fig. 6, the return-flue *G* may be made as shown in Figs. 7, 8, and 9, in which its rear portion may be elevated, as shown in Fig. 9, so that the hot gases passing down the rear vertical flues F^1 , adjacent to the rear vertical return-flue *E*, may pass beneath, as shown by arrows in said figure. This form of construction for the said flue *G* is preferred, though it may be modified when a series of base-plates set in the same direction is used, as in Fig. 6.

Stoves constructed with these improvements will have their bases more highly heated than in the old method of construction, as the heated gases will be made to circulate the whole periphery of the base, so as to impinge on all parts of the iron composing the walls of the same.

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

1. In a stove having draft-flues descending into the base, the base-plates *c c*, made continuous with the flue-strips *a a*, and sloped downwardly and outwardly toward the periphery of the base, substantially as set forth.

2. In combination, a series of base-plates, *c*, connecting with the flue-strips *a* at their lower ends, and a horizontal return-flue, *G*, located centrally within the base, substantially as set forth.

WILLIAM DOYLE.

Witnesses:

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JAMES WRIGHT.