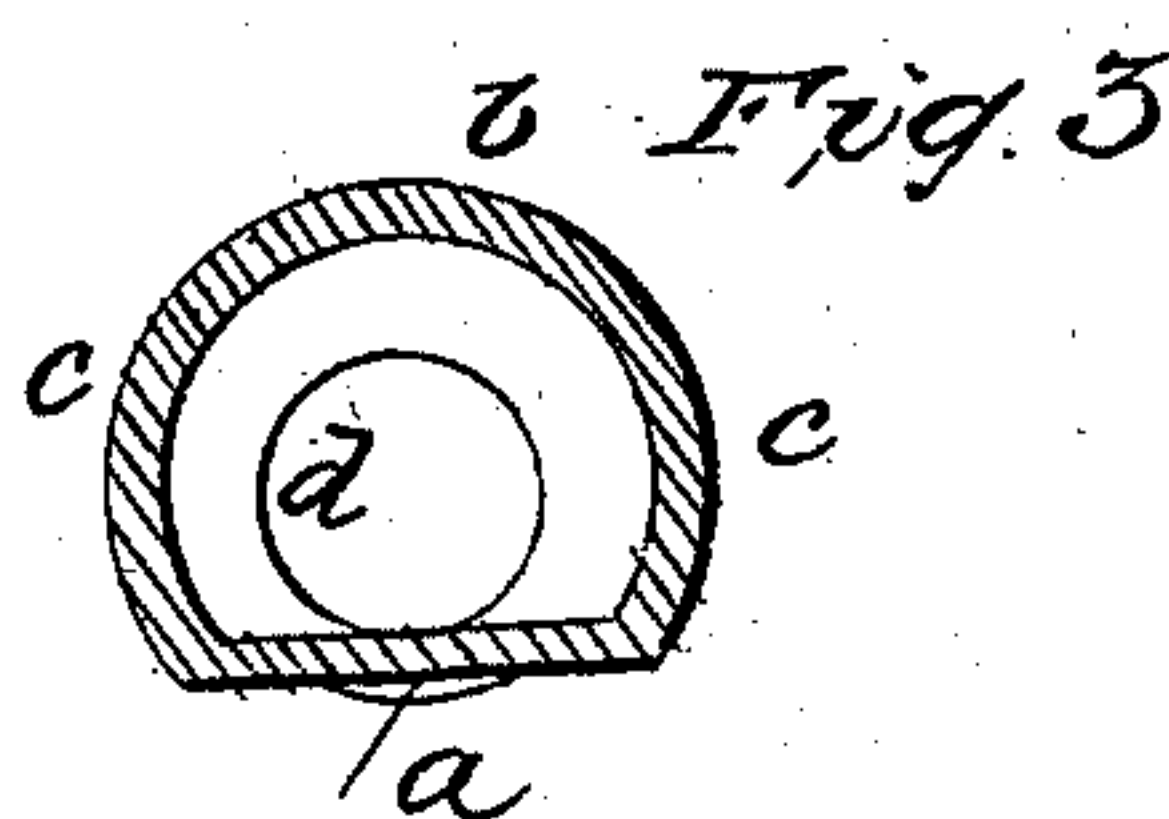
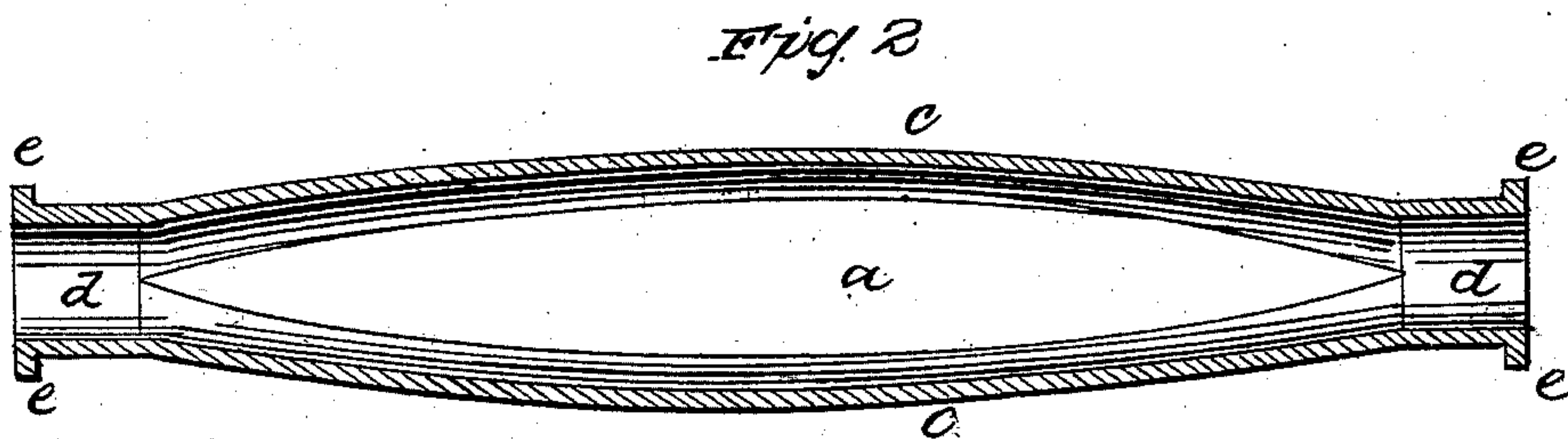
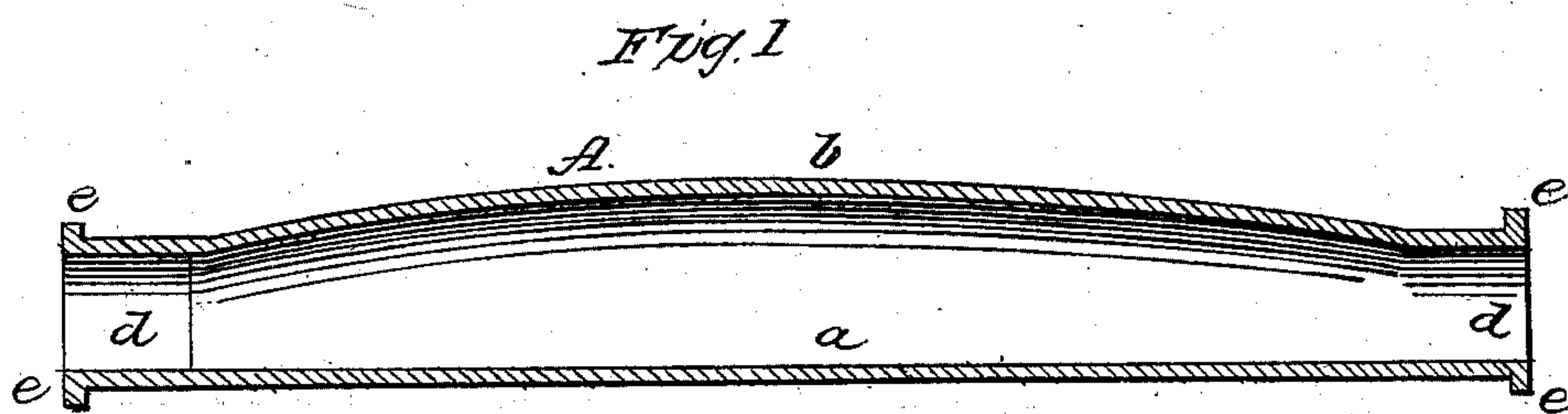


S. H. & M. C. WALKER.

Gas Retort.

No. 32,019.

Patented April 9, 1861.



Witnesses
J. Coombs
R. S. Spencer

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Attys

UNITED STATES PATENT OFFICE.

SAMUEL H. WALKER AND MATTHEW C. WALKER, OF BOSTON, MASSACHUSETTS.

GAS-RETORT.

Specification of Letters Patent No. 32,019, dated April 9, 1861.

To all whom it may concern:

Be it known that we, SAMUEL H. WALKER and MATTHEW C. WALKER, both of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Horizontal Gas-Retorts; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, forming part of this specification, in which—

Figure 1, is a vertical longitudinal section of the body of a retort constructed according to our invention. Fig. 2, is a horizontal section of the same. Fig. 3, is a transverse vertical section of the same.

Similar letters of reference indicate corresponding parts in the several figures.

Our improvement is more particularly designed for retorts for generating gas from melted rosin or other hydro carbons which are in a naturally liquid state or become liquefied by heat. Its object is to create a greater generating surface with a given weight of metal and to obtain a more uniform distribution of heat throughout the whole length of the retort, and to this end it consists in making the retort of larger caliber and with greater generating surface at the middle of its length and decreasing in caliber from the middle toward both ends.

The example of our invention represented is largest in the middle and contracted in its transverse sectional area toward both ends having a flat or straight bottom *a*, and a transversely and longitudinally arched top *b*, and sides *c*, *c*, and has its ends *d*, *d*, of circular form in their transverse section with flanges *e*, *e*, for the attachment of the heads, which are not represented but are supposed to be of the usual form.

The horizontal retorts heretofore used whatever has been the form of their transverse section have usually been of the same caliber from end to end, (except in cases of some coal retorts whose ends have been somewhat contracted for the reception of a smaller mouth piece) and when set in brick work their ends project through the same into the cold atmosphere without. In such

retorts the heat tends to concentrate in undue proportion at the middle of their length over the middle of the furnace, and while that portion is subjected to too great a heat, which causes them to bulge and crack, the heat cannot be made available at and near the ends for the generation of gas, but on the contrary the last mentioned portions owing to the great proportion of their surfaces being surrounded with brick work, and exposed to the cold atmosphere into which the ends project, have not the heat communicated to them with sufficient facility, and a great cooling and condensing influence is continually being exerted by those parts, during the process of gas making, against the part sufficiently hot for the generating process.

By our improved construction we create a greater generating surface with a less weight of metal being a greater proportionate surface and body of metal at the part where the heat naturally concentrates and also give the retort the power of transmitting its heat with much greater facility toward and into the outer ends, as the heat naturally communicates from the larger to the smaller parts of the body, and thus decreases the cold metal surface near and at the ends; and nearly the whole surface of the retort is made available for generation of gas by the uniformity of a sufficient degree of heat upon nearly the whole surface, and consequently more gas is made with less material and in less time and with less fuel and the retorts are much less liable to be overheated, bulge, crack, or burn out.

By the use of the term "horizontal" as applied to the retort in this specification we do not intend to confine ourselves to the arrangement of the retort in a strictly horizontal position but we use that term to distinguish the retorts to which our invention is applicable from those which are termed "upright."

We do not confine ourselves to any particular form for the transverse section of the retort as it may be of any of the forms commonly adopted and of other forms; but, What we claim as our invention and de-

sire to secure by Letters Patent as an improvement in apparatus for the generation of hydro carbon gas from resin or analogous substances is—

- 5 A horizontal retort formed with a flat bottom and cylindrical flanged ends and tapering gradually in size from the center toward each end in the manner herein

shown and described and for the purposes explained.

SAMUEL H. WALKER.
MATTHEW C. WALKER.

Witnesses:

SAML. F. McCLEARY,
B. W. HORLL.