

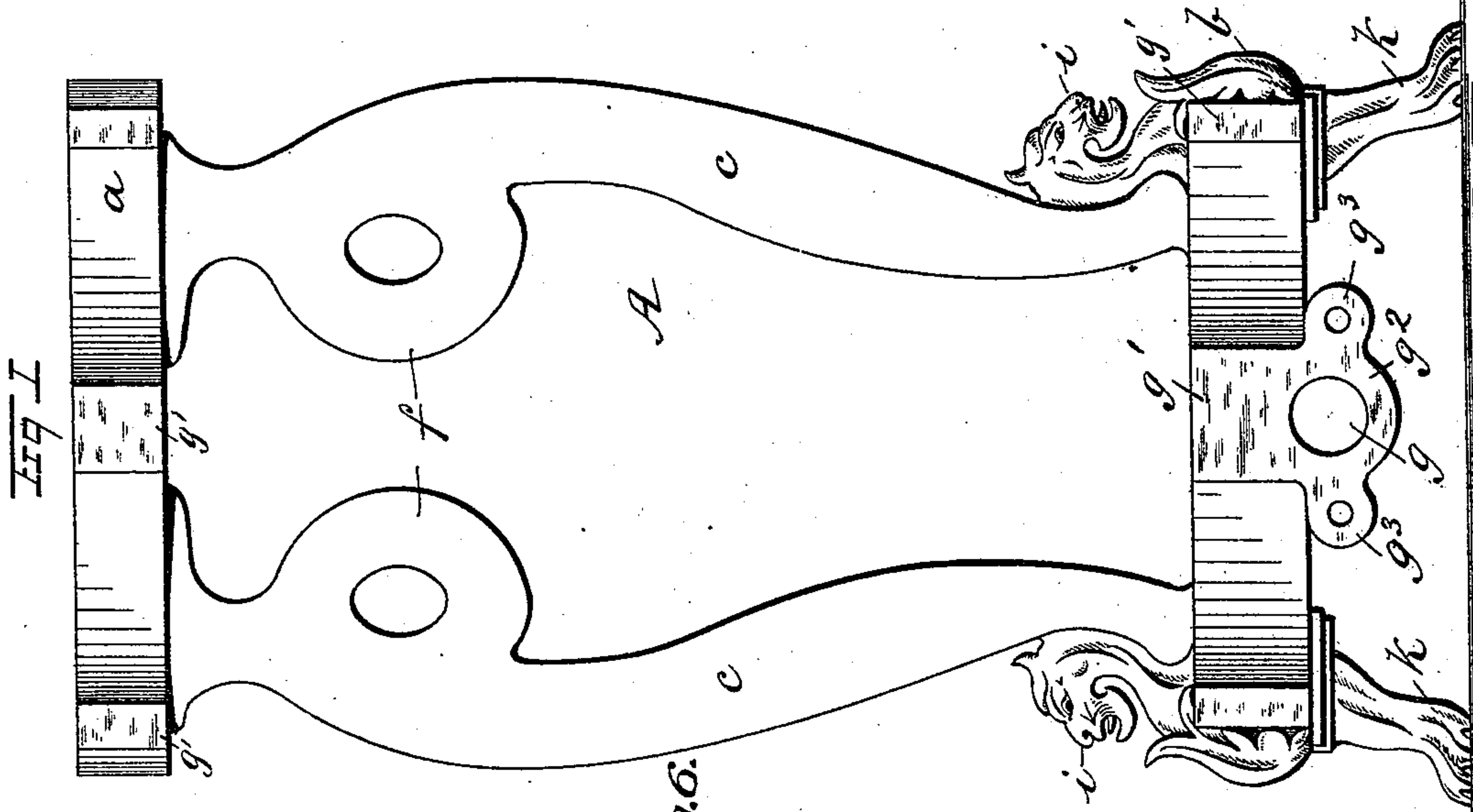
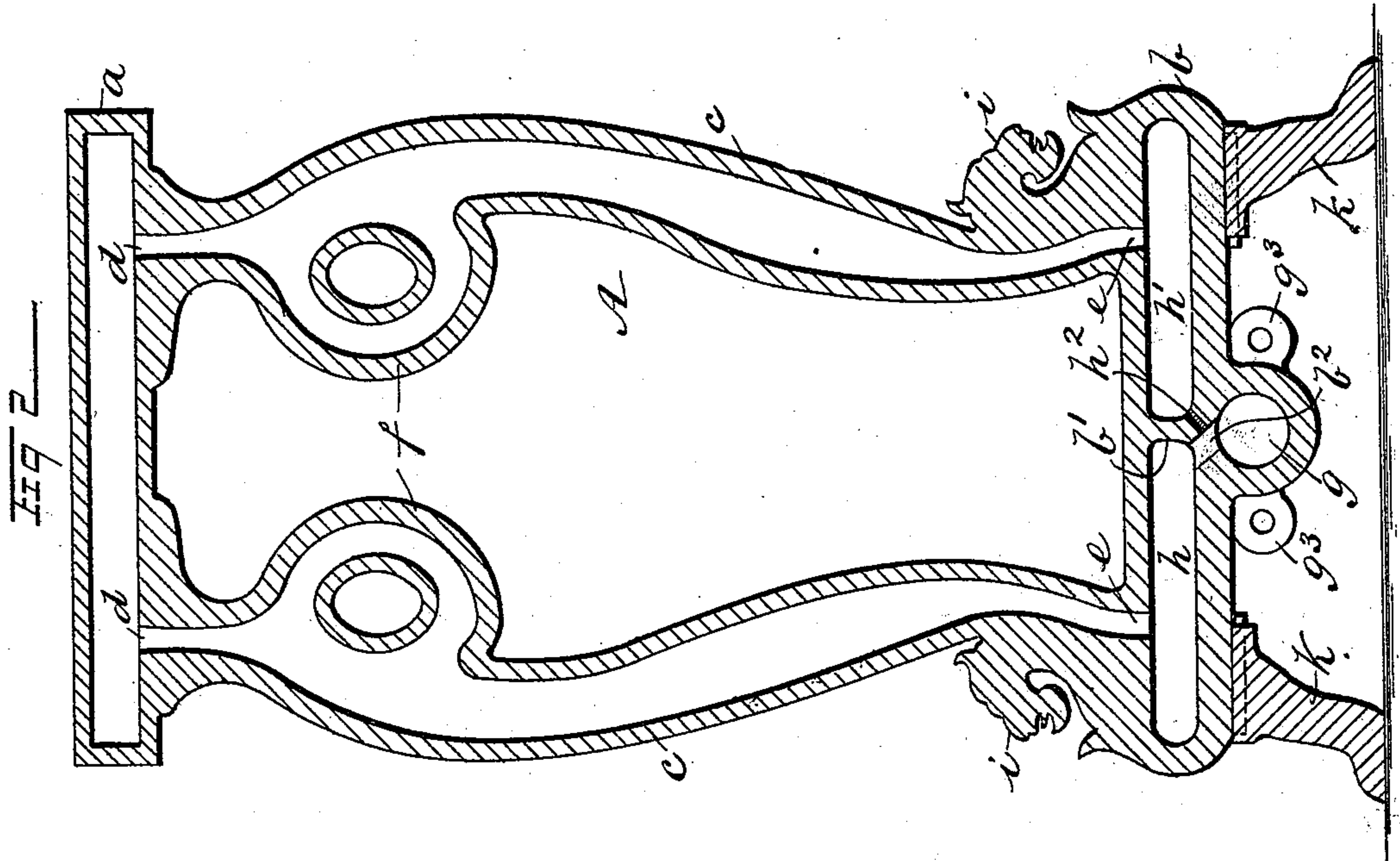
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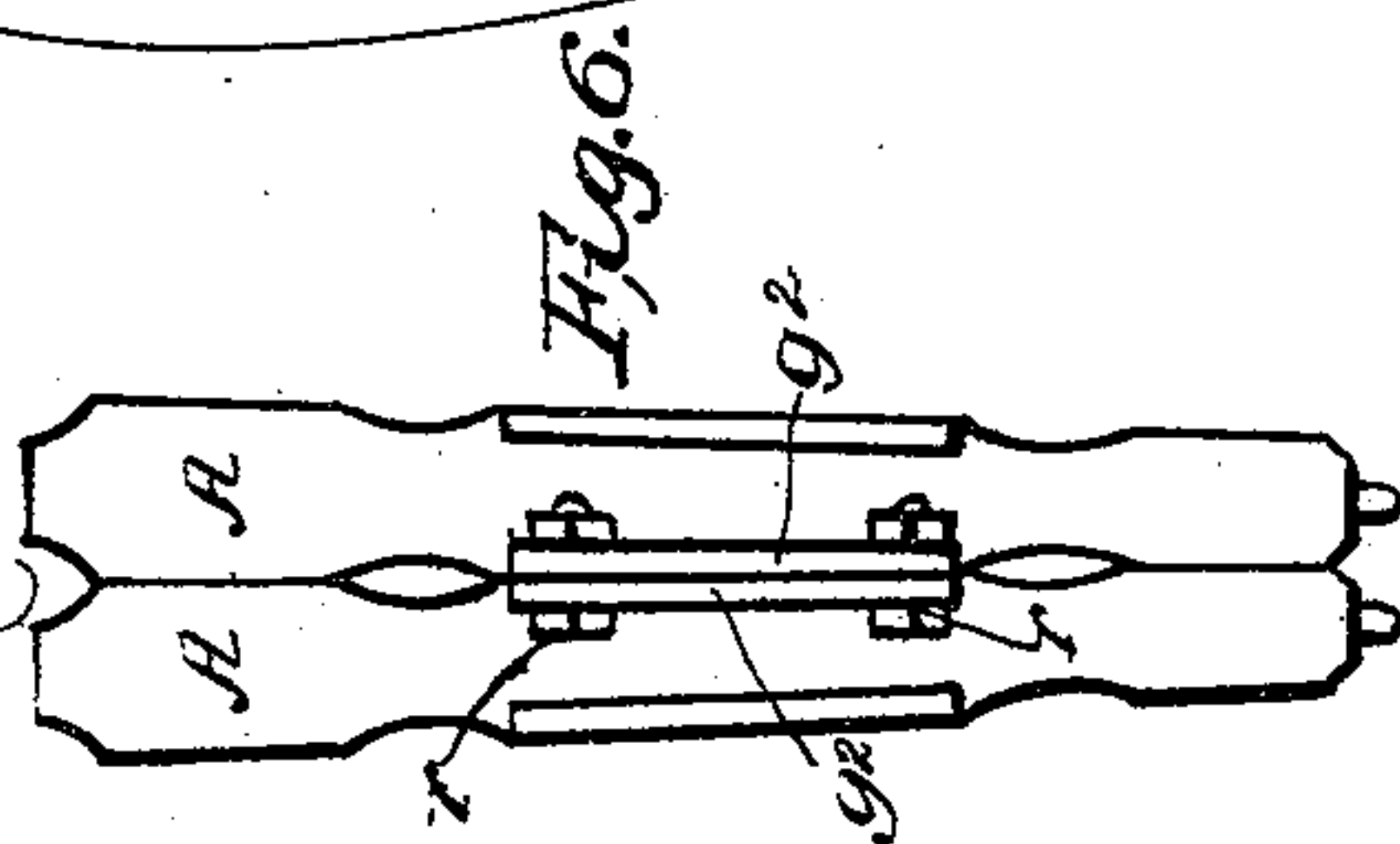
P. B. FOX.  
RADIATOR.

No. 452,028.

Patented May 12, 1891.



WITNESSES:  
*H. Walker*  
*C. Sedgwick*



INVENTOR:  
*P. B. Fox*  
BY *Munn & Co*

ATTORNEYS

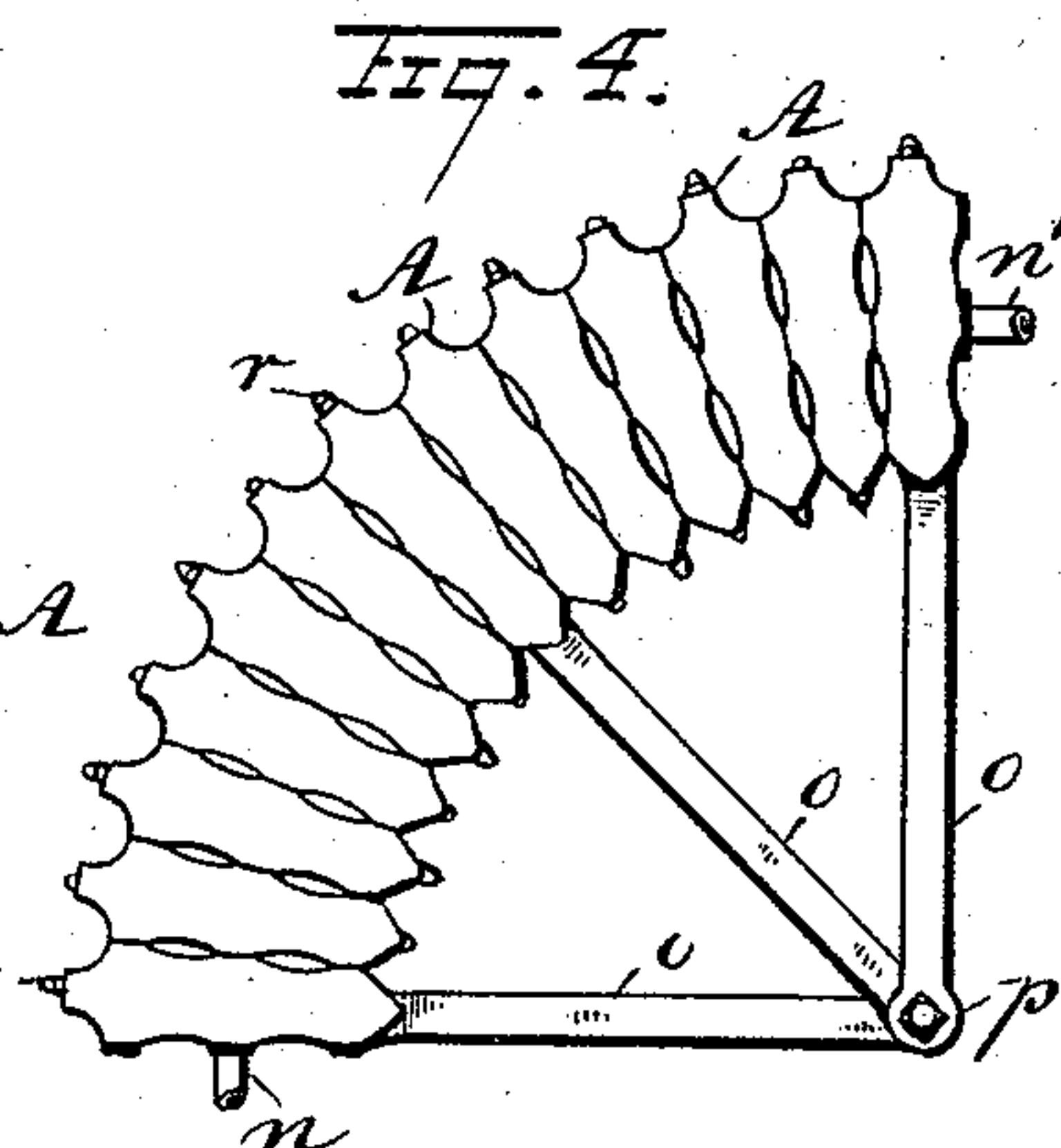
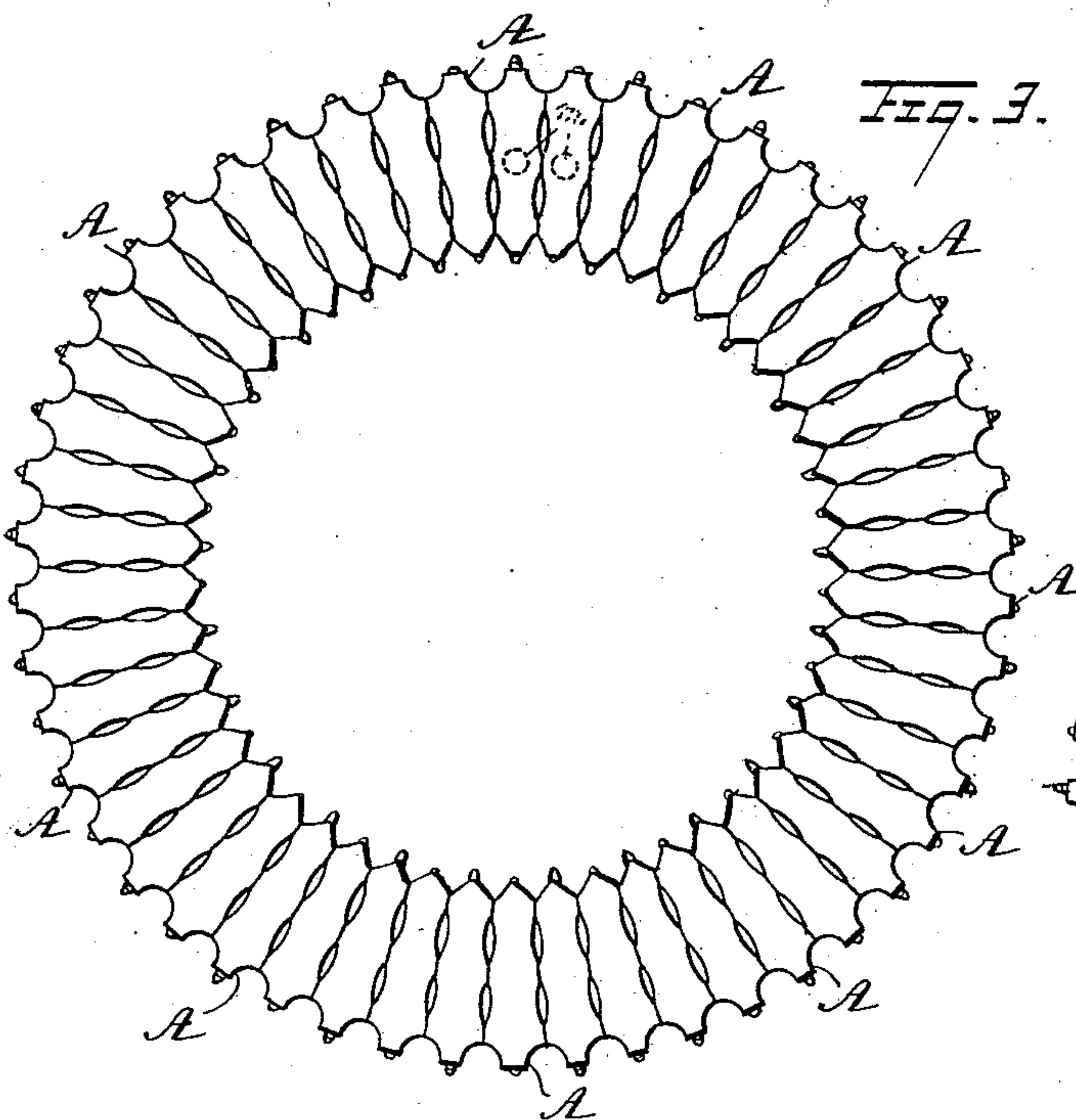
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2 Sheets—Sheet 2.

P. B. FOX.  
RADIATOR.

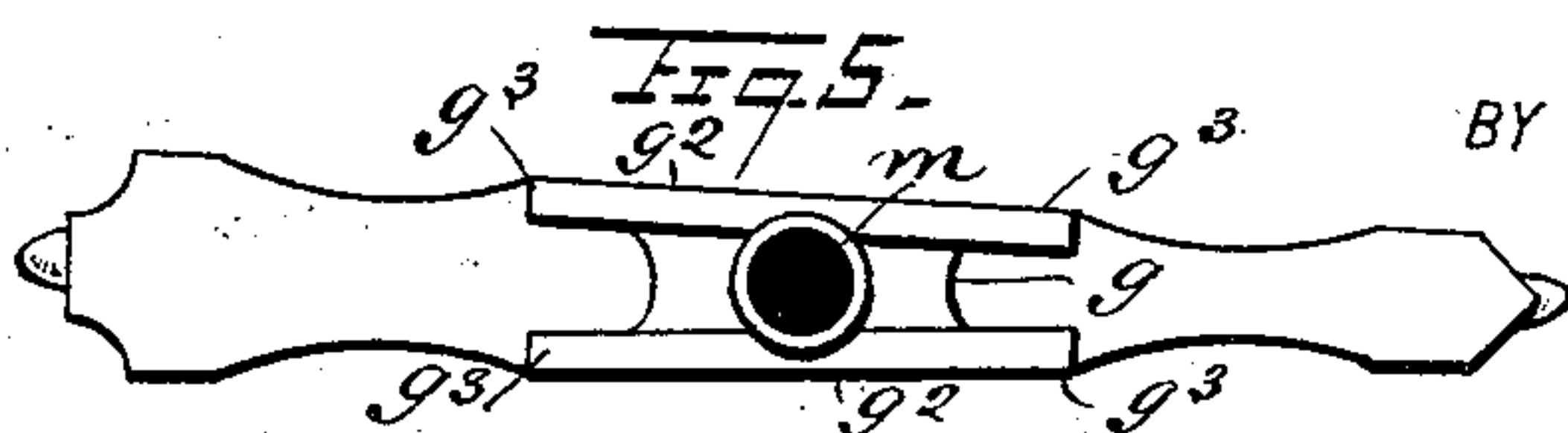
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# UNITED STATES PATENT OFFICE.

PATRICK B. FOX, OF JERSEY CITY, NEW JERSEY.

## RADIATOR.

SPECIFICATION forming part of Letters Patent No. 452,028, dated May 12, 1891.

Application filed April 29, 1890. Serial No. 349,904. (No model.)

*To all whom it may concern:*

Be it known that I, PATRICK B. FOX, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Radiator, of which the following is a full, clear, and exact description.

This invention relates to improvements in radiators for the dissemination of heat contained in steam or hot water that is circulated through the radiator, the object being to provide a radiator formed of similar sections, which are so constructed as to produce a radiator of cylindrical or quadrantal form, as may be desired when suitably connected to each other in series.

To these ends my invention consists in certain features of construction and combination of parts, as is hereinafter described, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of a radiator-section. Fig. 2 is a sectional side elevation of a section taken on the line 2 2 in Fig. 4. Fig. 3 is a plan view of a series of the radiator-sections connected to form a cylindrical radiator. Fig. 4 is a plan view of a series of the radiator-sections, combined to produce a quarter-cylinder, which is adapted to fit into the corner of an apartment. Fig. 5 is a reverse plan view of one radiator-section enlarged, showing method of connecting inlet and outlet steam-conduits to the radiator when in cylindrical form; and Fig. 6 is an enlarged detached reversed plan view of two radiator-sections arranged together to form a cylindrical radiator and coupled by short bolts.

As shown in Figs. 1 and 2, the radiator-section A is comprised of an upper steam-chamber *a* and a lower chamber *b*, that are connected by the opposite laterally-curved hollow standards *c*, which standards afford steam-conduits between the chambers named. As seen in Fig. 2, the tubular conduits *c* are increased in caliber between the points *d* and *e*, where they connect with the steam-chambers *a* and *b*, and at *f* are enlarged into circular form, which construction of parts increases the radiating-surface and affords an ornamental shape to the radiator-section similar

to the frame of an ancient lyre or harp. The lower steam-chamber *b* is divided transversely at *b'* by a partition-wall integrally formed at about the longitudinal center of the chamber, and below this point of division a transverse tubular conduit *g* is integrally formed, which is connected to one division *h* of the steam-chamber *b* by an intersecting port *b<sup>2</sup>*, thus permitting steam that enters the transverse conduit *g* to traverse the vertical steam-conduits *c* and enter the divisional compartment *h'* of the lower steam-chamber *b*. A small tubular passage *h<sup>2</sup>* is formed between the compartment *h'* and the transverse steam-conduit *g* for escape of condensed water into the conduit, and as the pressure of steam will be equal throughout the radiator-section any water of condensation produced by radiation of heat from contained steam will flow by gravity into the steam-passage *g*, and thence to a trap or other point of discharge. Preferably the junctions of the steam-chamber *b* with the tubular steam-conduits *c* are ornamented on the outer surface by the heads of lions or griffins, as shown at *i* in Fig. 1, and adjustable feet *k* are thereto attached in ways *k'* for the support of the sections in a manner to permit the connection together of a series of sections. As will be seen in the plan views of the assembled sections A, each of these are made tapering from one side toward the other, this wedge-shaped form being given to the steam-chambers *a* and *b* of each section.

At the center and near each end of the steam-chambers *a* and *b* of a radiator-section A, considered laterally, as shown in Fig. 1, joint-bearings or chipping pieces *g'* are formed, which are rendered true by any suitable means. When it is desired to construct a circular radiator, or one in cylindrical form, as shown in Fig. 5, the series of sections are assembled with their wedge-shaped steam-chambers all converging toward a common center, the taper of their bodies being arranged to adjust the wide portion of each on the outer side of the cylinder. The flanges *g<sup>2</sup>* are coupled together in pairs, preferably when a cylindrical radiator is formed of the radiator-sections, short bolts *r* (see Fig. 8) being employed that are introduced to connect two adjacent flanges or the ears on the same, the flanges



$g^2$  being attached on all adjacent sections with similar bolts and nuts. When the radiator is of cylindrical form the steam inlet and outlet orifices are produced in the bottom of the transverse steam-conduits  $g$ , as shown at  $m$  in Fig. 7, said inlet-orifice being screw-threaded for the introduction of a threaded end of a steam-conduit pipe (not shown) which may extend from a steam-generator to supply steam to the radiator.

As shown in Fig. 5 in dotted lines, two adjacent radiator-sections are provided with apertures for the attachment of steam-conduit pipes, or one of said pipes may be utilized to remove water of condensation from the radiator.

In Fig. 6 the radiator represented is comprised of a sufficient number of sections to produce a curved structure equal in area to one-fourth of the radiator shown in Fig. 5, the manner of connecting the series of sections being similar to that employed to bolt the sections of the cylindrical radiator together, an inlet steam-conduit  $n$  being secured to the outer section at one end of the curved radiator and a waste-pipe  $n'$  to the section at the opposite end of the radiator, whereby steam circulation is provided for and efficient service secured.

To afford stability to the radiator shown in Fig. 6, there are extending pieces  $o$  formed integral with each outer section and also with the section that is central between the outer sections, the overlapping ends of the extension-pieces being bolted together, as at  $p$ , any suitable means being employed to sustain

these ends and to support the radiator upright in the corner of a rectangular apartment.

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

1. A radiator-section comprised of an upper elongated wedge-shaped chamber having a depending integral tubular conduit in open connection with its lower side near each end, and a lower steam-chamber divided into two compartments, each one of which compartments is intersected by one of the tubular conduits that extend from the upper steam-chamber, one of the compartments of the lower transversely-divided chamber being in open communication with a transverse steam-conduit below it, and the other compartment provided with a smaller draining-orifice leading into said transverse steam-conduit, substantially as set forth.

2. A radiator composed of a series of similar wedge-shaped radiator-sections, which are each adapted to receive and discharge steam or hot water from and into an integral transverse supply-conduit that is located below each radiator-section and integral with it, the sections of the radiator being held together by a bolted connection of flanges on the sections of the steam or hot-water-supply conduit, substantially as set forth.

PATRICK B. FOX.

Witnesses:

ISAAC M. CLARK,  
ROBERT BECKET.