

(No Model.)

2 Sheets—Sheet 1.

G. KELLY.
Steam Boiler.

No. 234,986.

Patented Nov. 30, 1880.

Fig. 1.

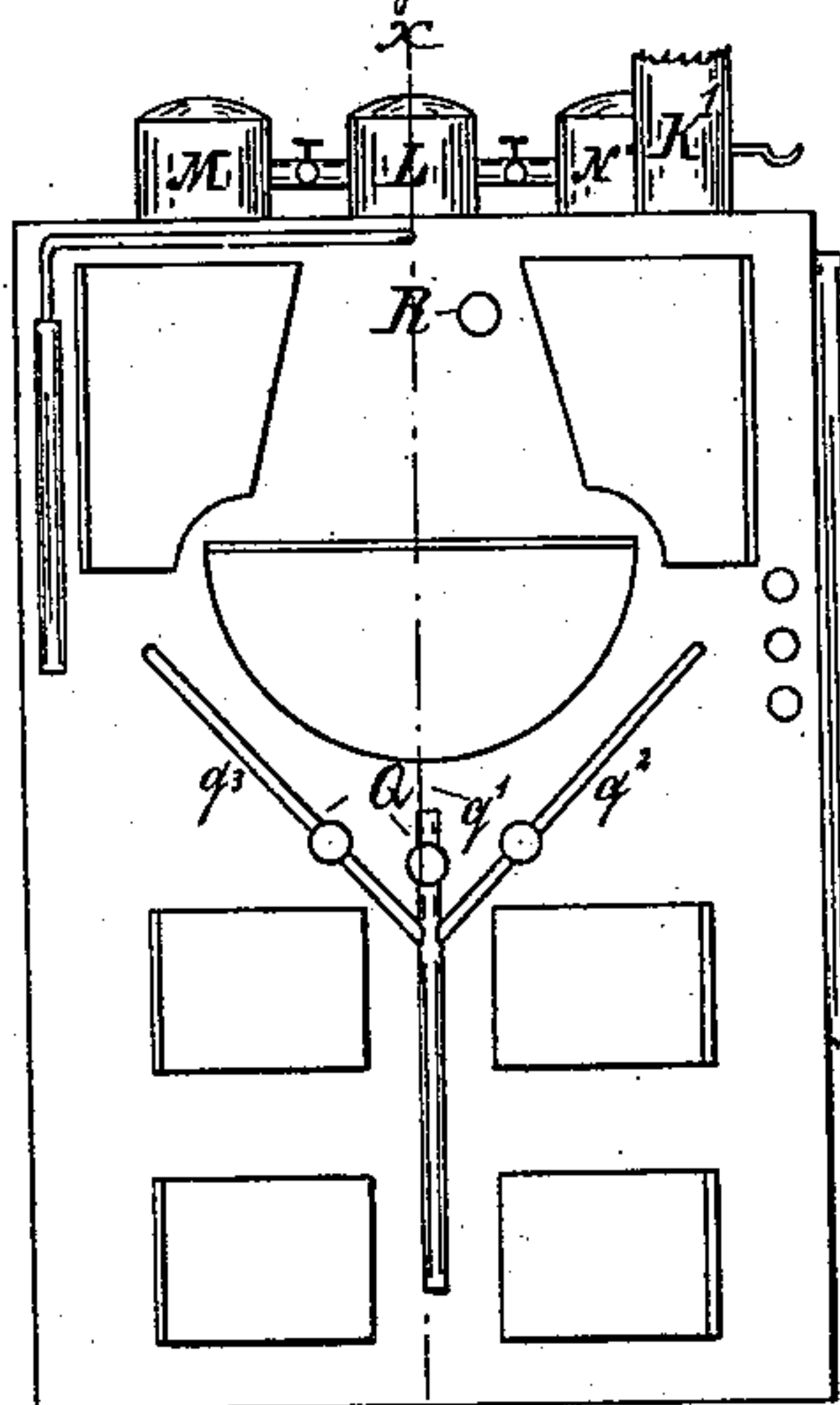
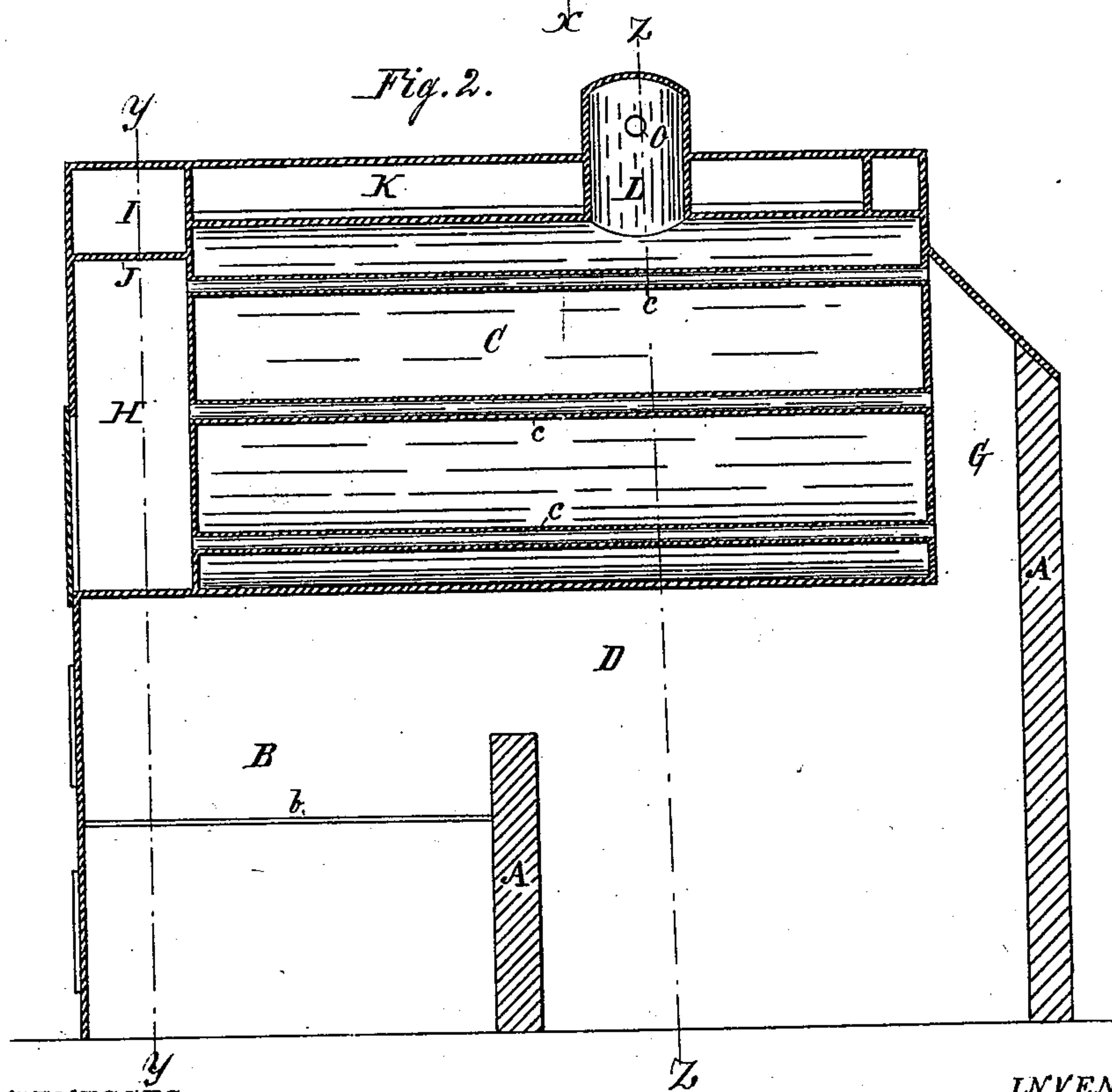


Fig. 2.



WITNESSES.

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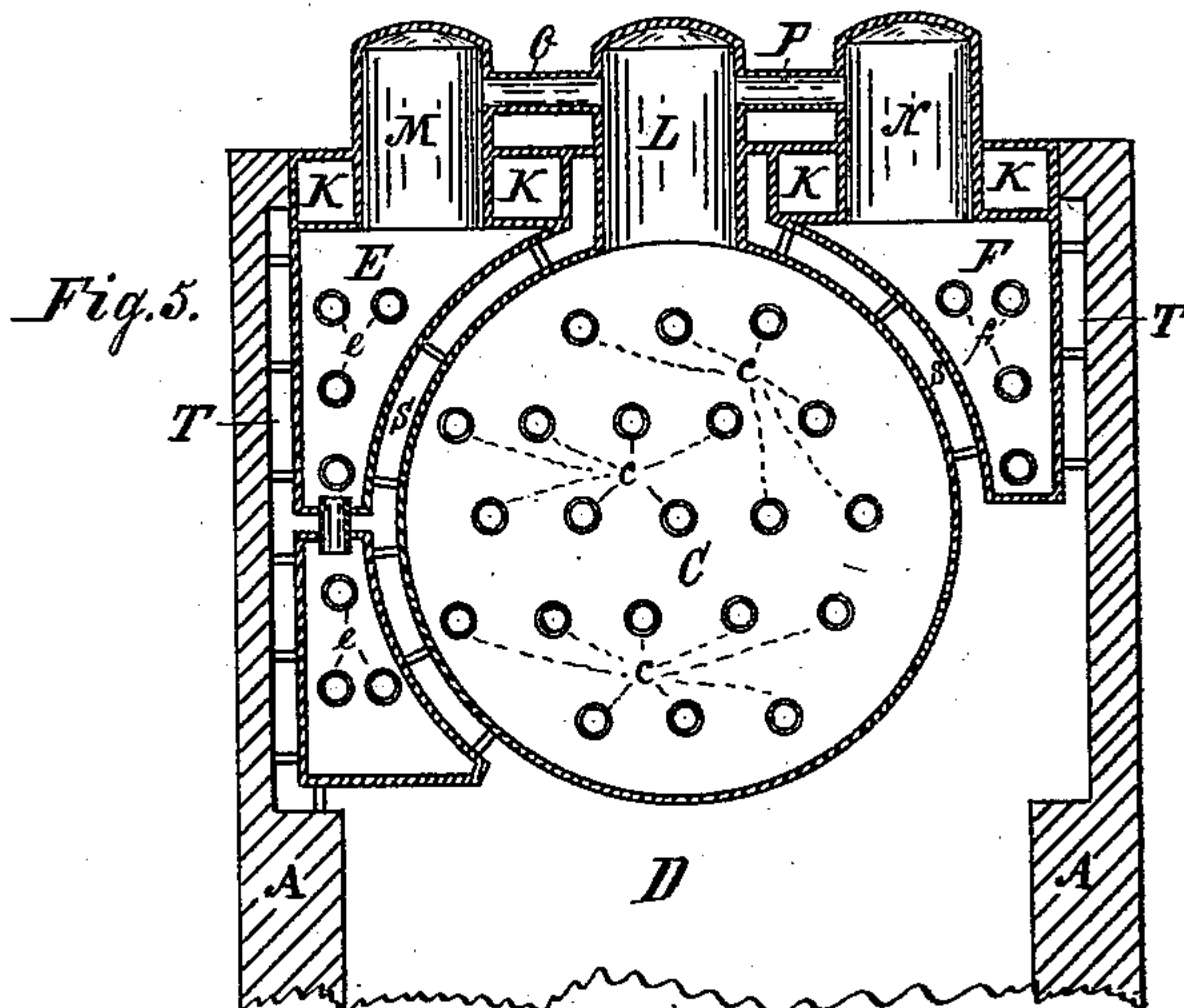
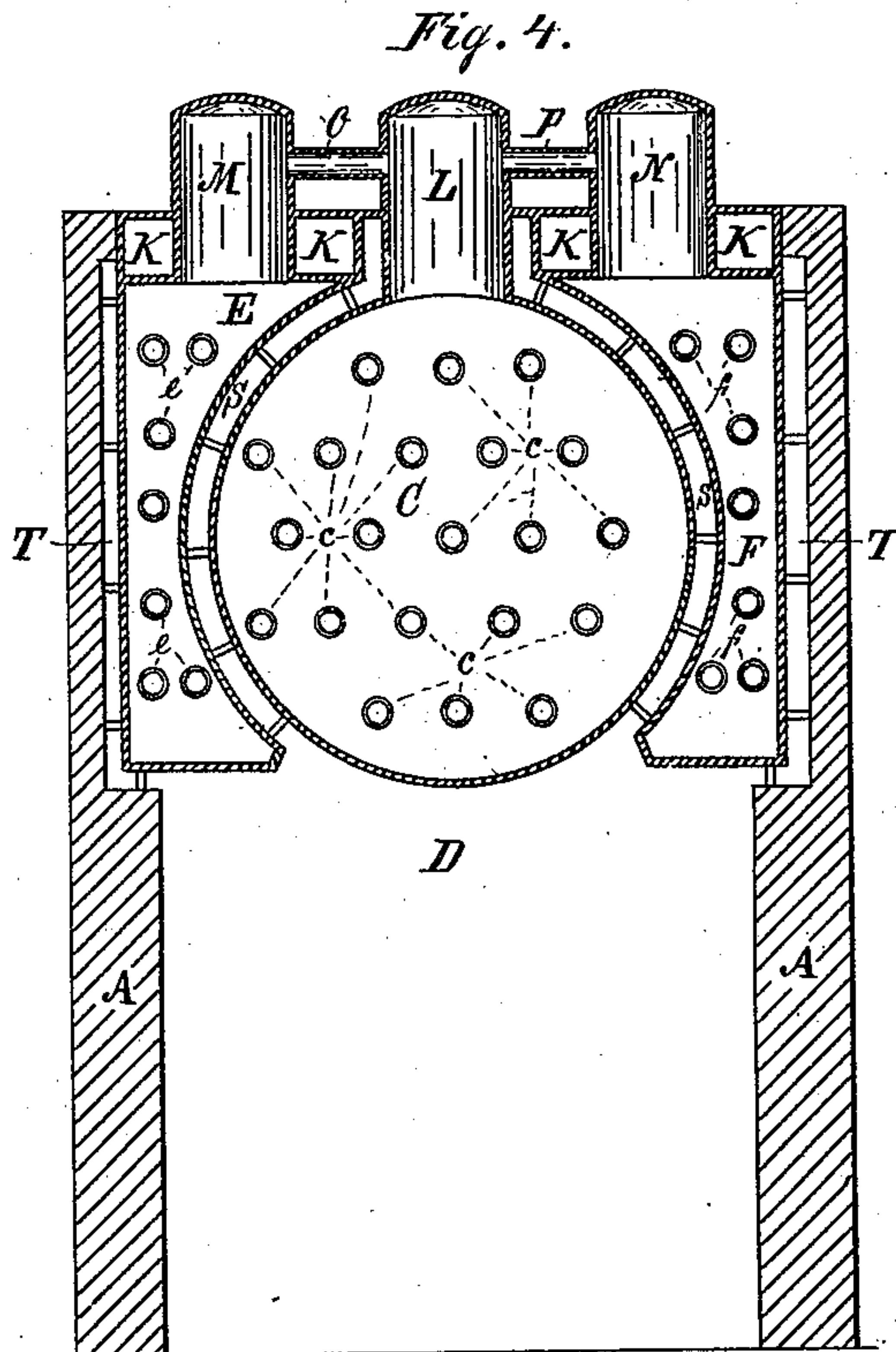
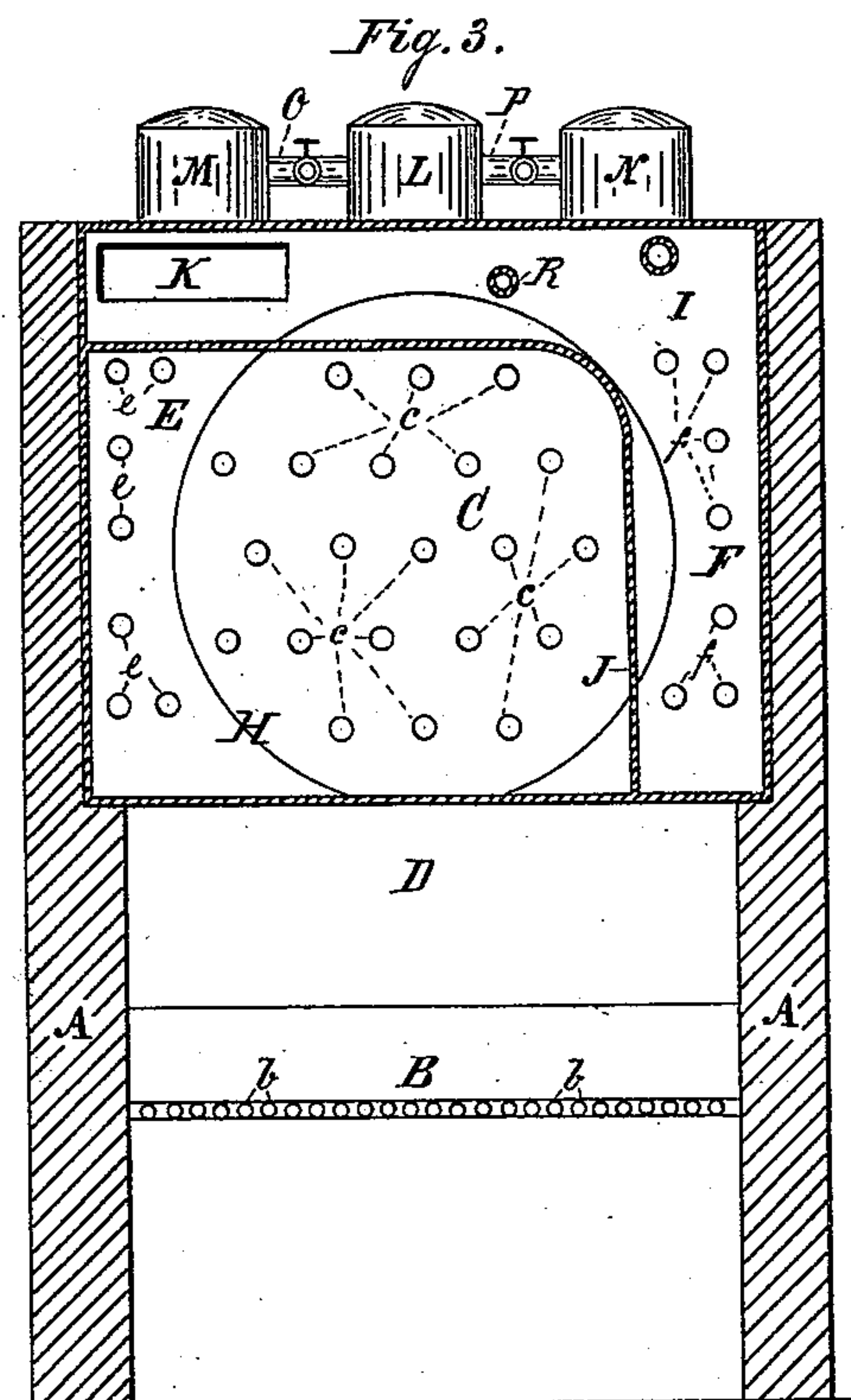
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UNITED STATES PATENT OFFICE.

GEORGE KELLY, OF CHICAGO, ILLINOIS.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 234,986, dated November 30, 1880.

Application filed April 17, 1880. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KELLY, of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful
5 Improvements in Compound Steam-Boilers, of which the following is a specification.

The object of my invention is to produce a steam-boiler which shall produce a drier quality or greater amount of steam in proportion to the fuel consumed than those of ordinary construction. This object is accomplished
10 by partially surrounding the ordinary cylindrical boiler with other or supplemental boilers, as shown, in such relation to the first
15 named that the greater part of the heat generated may act also upon said supplemental boilers, and they are thus operated without any additional expenditure in the way of fuel.

My invention therefore consists of a compound boiler composed of an ordinary cylindrical boiler, partly surrounded by supplemental boilers in close relation, and in the peculiar formation of such supplemental boilers
20 as will accomplish my object. This formation is also such that it occupies no space that could ordinarily be utilized in any other manner.

Reference is had to the accompanying drawings, forming part hereof, of which Figure 1
30 is a front elevation of a boiler embodying my invention; Fig. 2, a longitudinal vertical section on the dotted line xx . Fig. 3 is a transverse vertical section on the line yy . Fig. 4 is a transverse vertical section on the dotted
35 line zz , and Fig. 5 a view similar to Fig. 4 of an alternate construction, showing how my improvements are applied to old boilers, or to boilers where they are only desired for superheating purposes.

40 In said drawings, the portions marked A represent the ordinary brick-work in which boilers are mounted; B, the fire-box, having gate-bars $b b$ therein; C, the ordinary cylindrical tubular boiler, having tubes cc ; D, the
45 passage-way between the boilers from the fire-box; E F, the supplemental boilers, arranged on each side of the main boiler with only a small space intervening, and provided with tubes ef ; G, a space behind the boiler C, which
50 is in effect a continuation of the passage-way D;

H, an inclosed space above the fire-box, in front of the boiler C and the supplemental boiler E; I, a space alongside the space H, in front of the supplemental boiler F; J, a dividing-wall between the spaces H and I; K, a smoke-space
55 above the boilers, leading rearwardly over the boiler E and forwardly over the boiler F to the smoke-stack K'; L M N, steam-domes to the boilers C E F, respectively, and which are connected by pipes O P; Q, a supply-pipe hav-
60 ing branches $q' q^2 q^3$, by which the boilers are fed with water in case each is used as a separate water-boiler; R, a cock by which the steam is admitted to the supplemental boilers
65 from the regular boiler when the former are used as superheaters; S, an open space between the main boiler and the supplemental boiler, into which the heat freely enters, but in which there is intended to be no draft, and
70 T, a similar space between the supplemental boilers and the brick wall A.

In operation the heat passes from the fire-box B along the passage D G and back through the flues cc in the boiler C, in the manner of ordinary boilers. It then passes
75 through the flues e in the boiler E and back through the flues f in the boiler F, and then over the boiler E and back over the boiler F through the spaces K K' to the smoke-stack K'.

It will be readily understood that this arrangement of boilers utilizes the heat to a far
80 greater extent than in the ordinary single boiler, while the space occupied is but little if any greater.

When the supplemental boilers are used for
85 superheating or drying the steam generated in the central boiler, (which is the principal purpose for which I have designed them,) it is only necessary to use the upper halves thereof, as shown in part of Fig. 5, and there-
90 fore in many cases the lower halves will probably be omitted.

It is obviously necessary to construct these supplemental boilers of upper and lower halves, as shown in part of Fig. 5, when they are ap-
95 plied to boilers already set, as it would be very difficult to place such ones as are shown in Fig. 4 in position to operate without tearing down the brick-work.

Having thus fully described my said inven- 100

tion, what I claim as new, and desire to secure by Letters Patent, is—

1. A compound steam-boiler composed of the main boiler C and the supplemental boilers E F, constructed in the manner shown and arranged and operating substantially as set forth.

2. A steam-boiler constructed as shown, and provided with flues and tubes, so that the heat and smoke may pass through each of several

parts consecutively on its way to the smoke-stack, all substantially as set forth.

In witness whereof I have hereunto set my hand and seal at Chicago, Illinois, this 8th day of April, A. D. 1880.

GEORGE KELLY. [L. S.]

In presence of—

BION A. DODGE,
LEWIS L. WOOD.