

(No Model.)

A. C. NUNN.
KETTLE.

No. 432,067.

Patented July 15, 1890.

Fig. 1

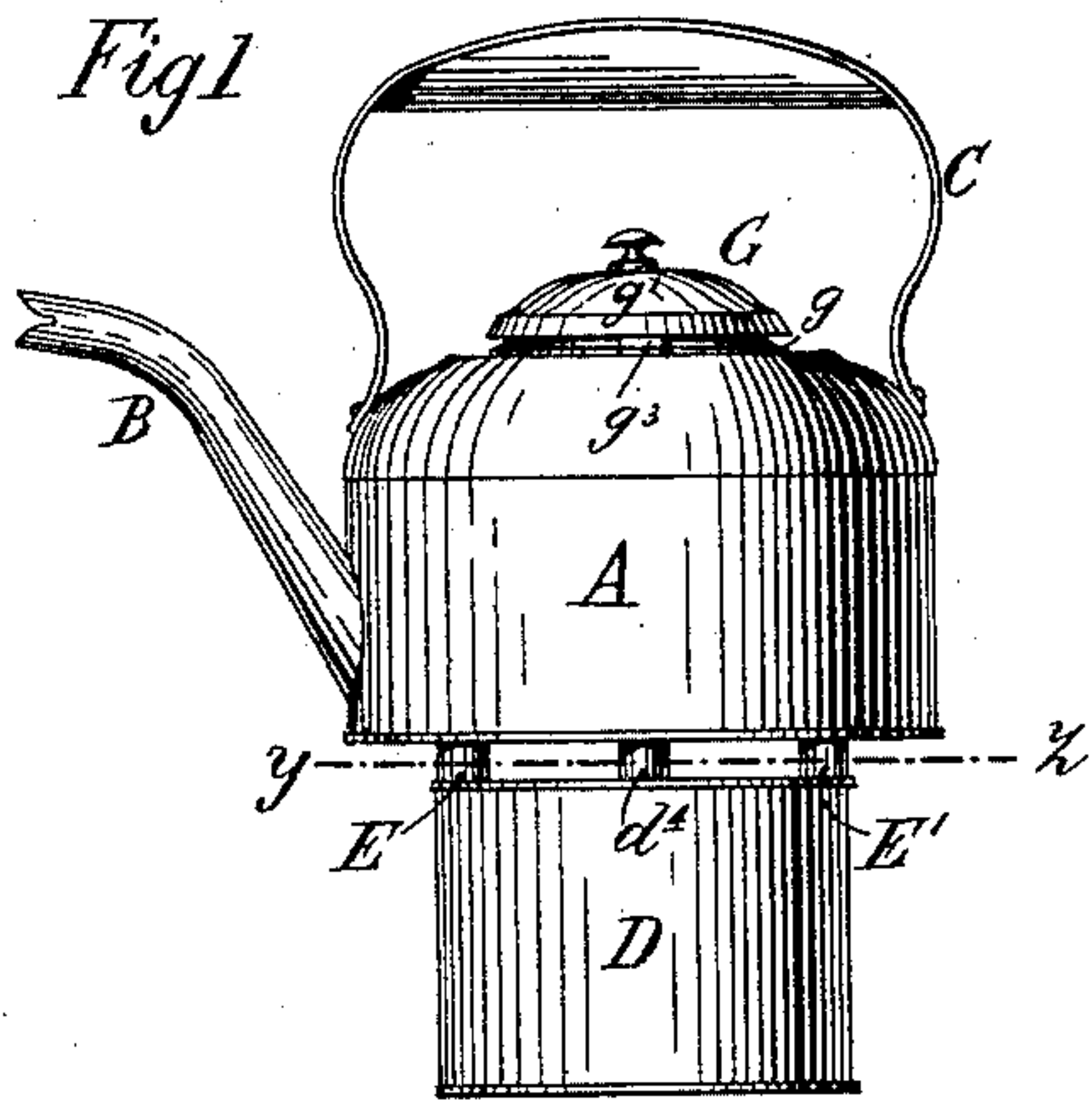


Fig. 2

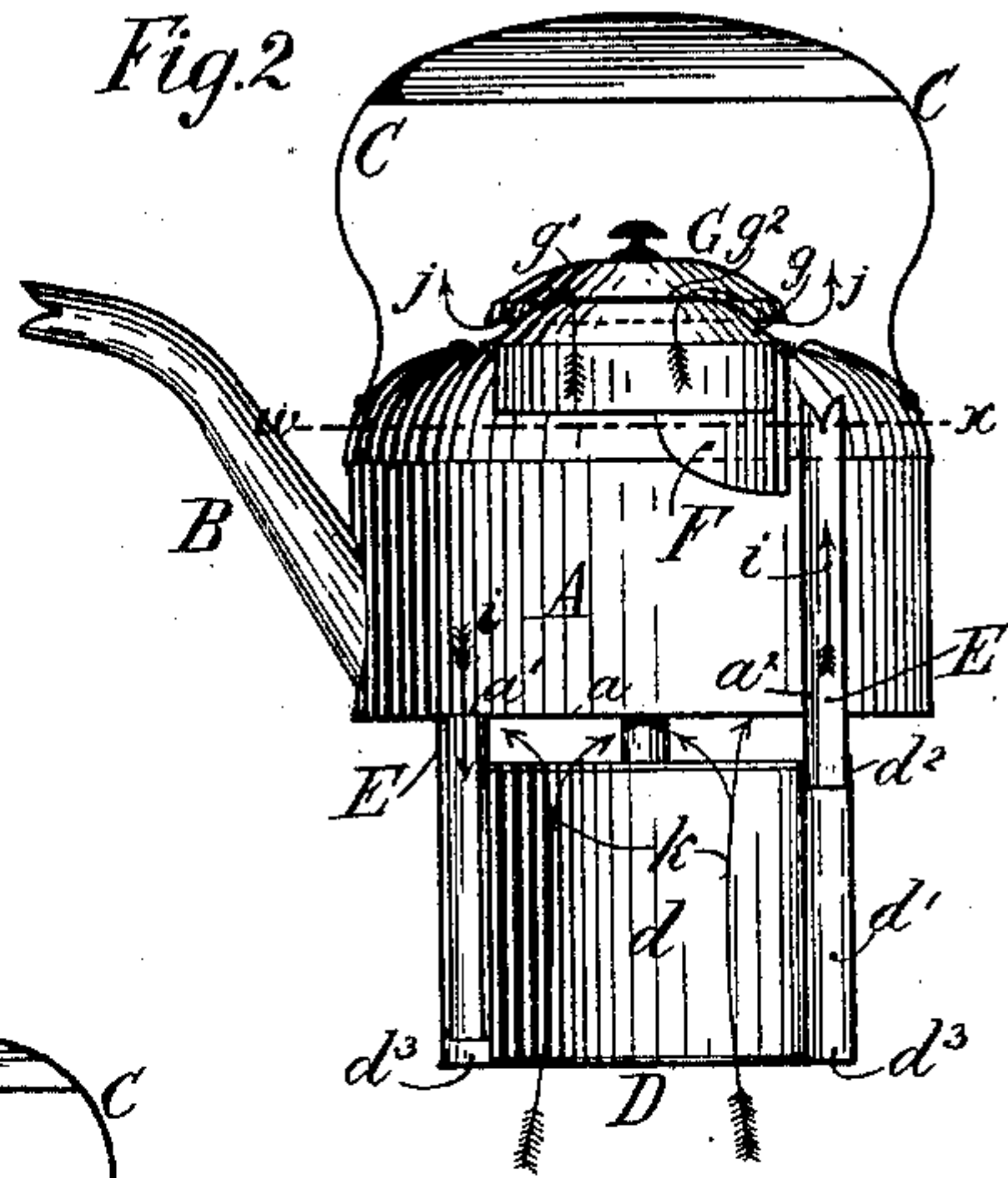


Fig. 5

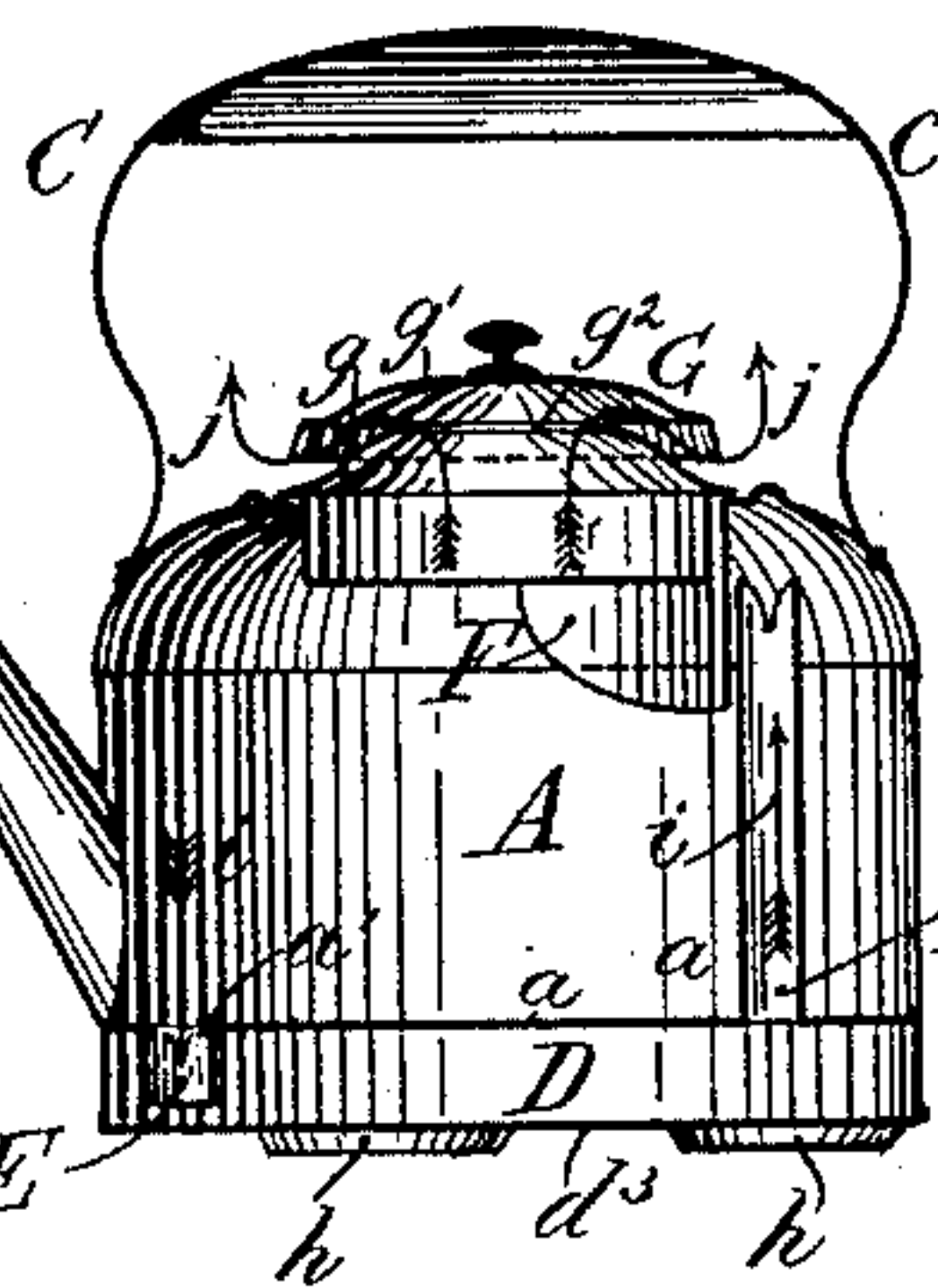


Fig. 4

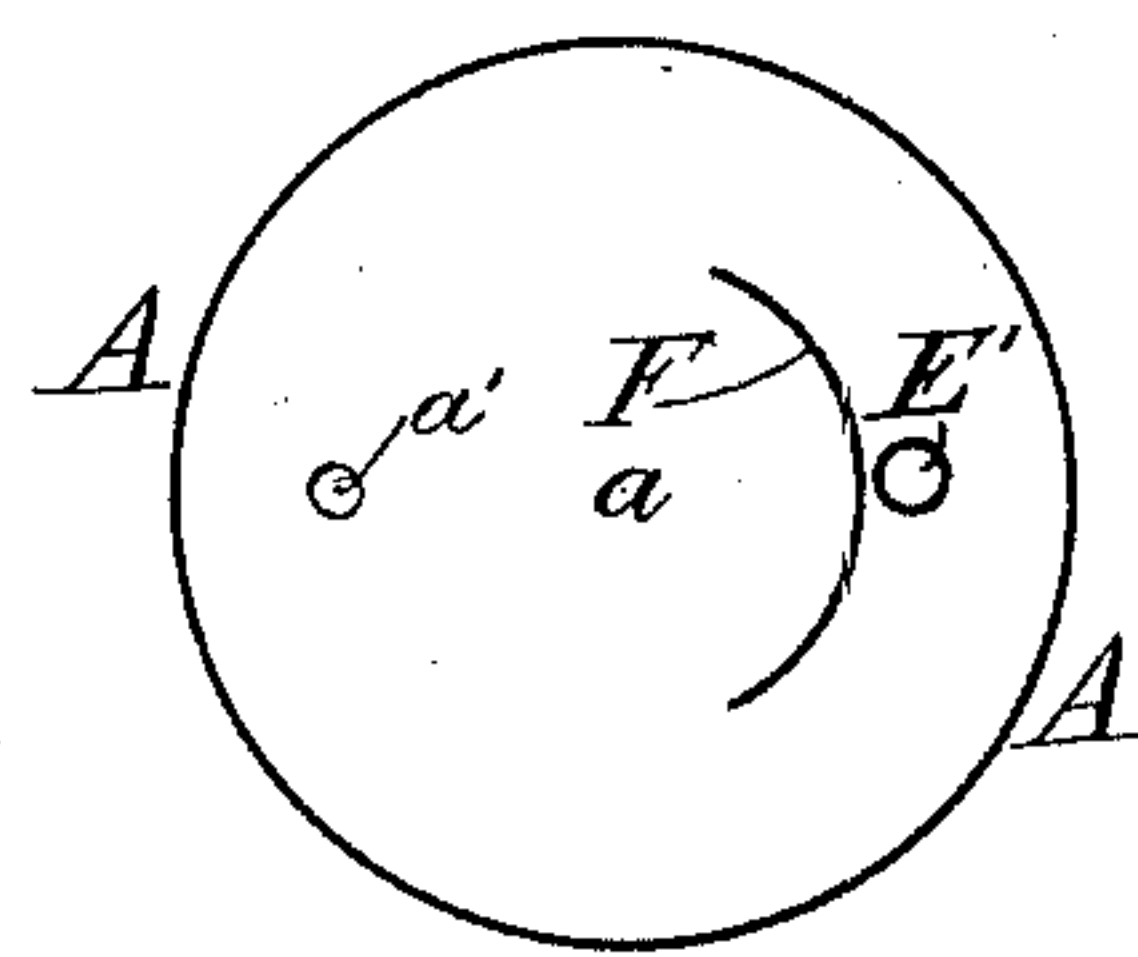


Fig. 3

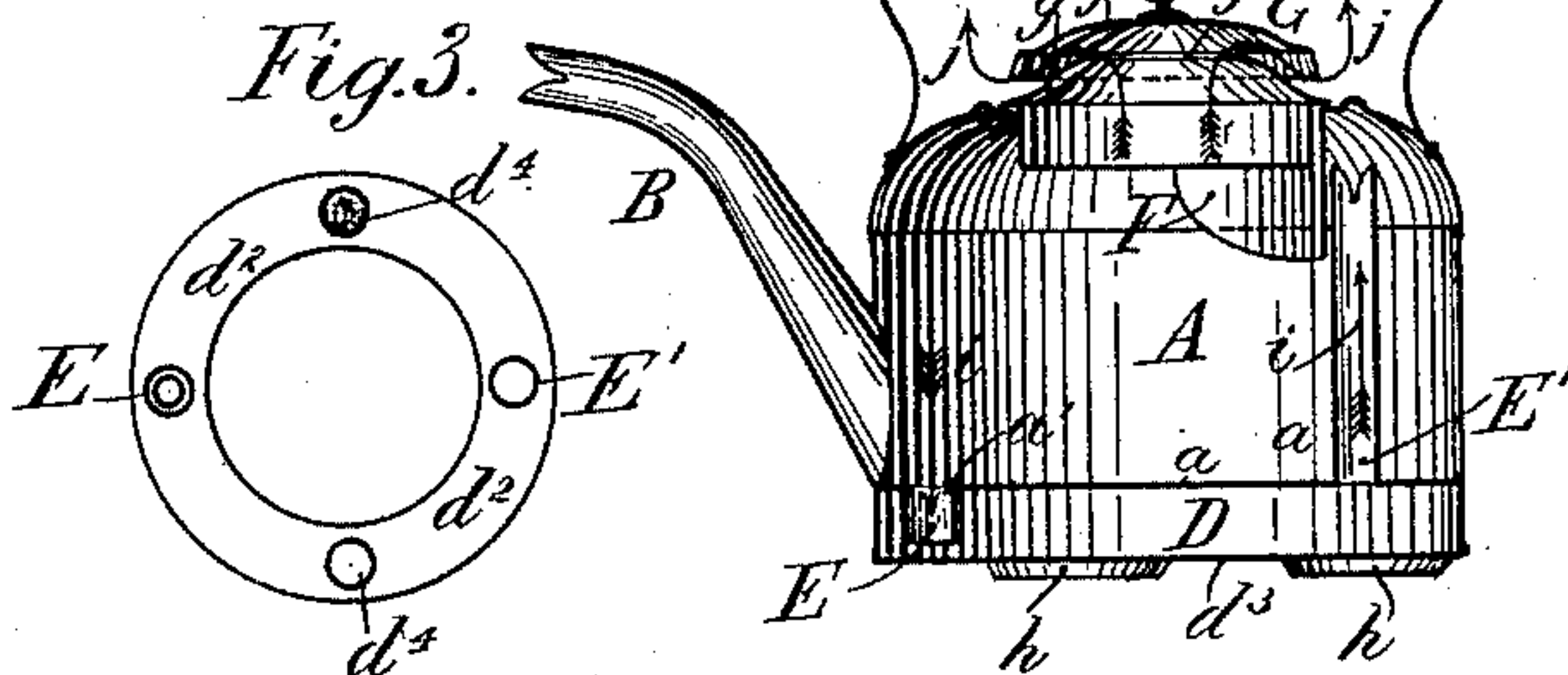


Fig. 6

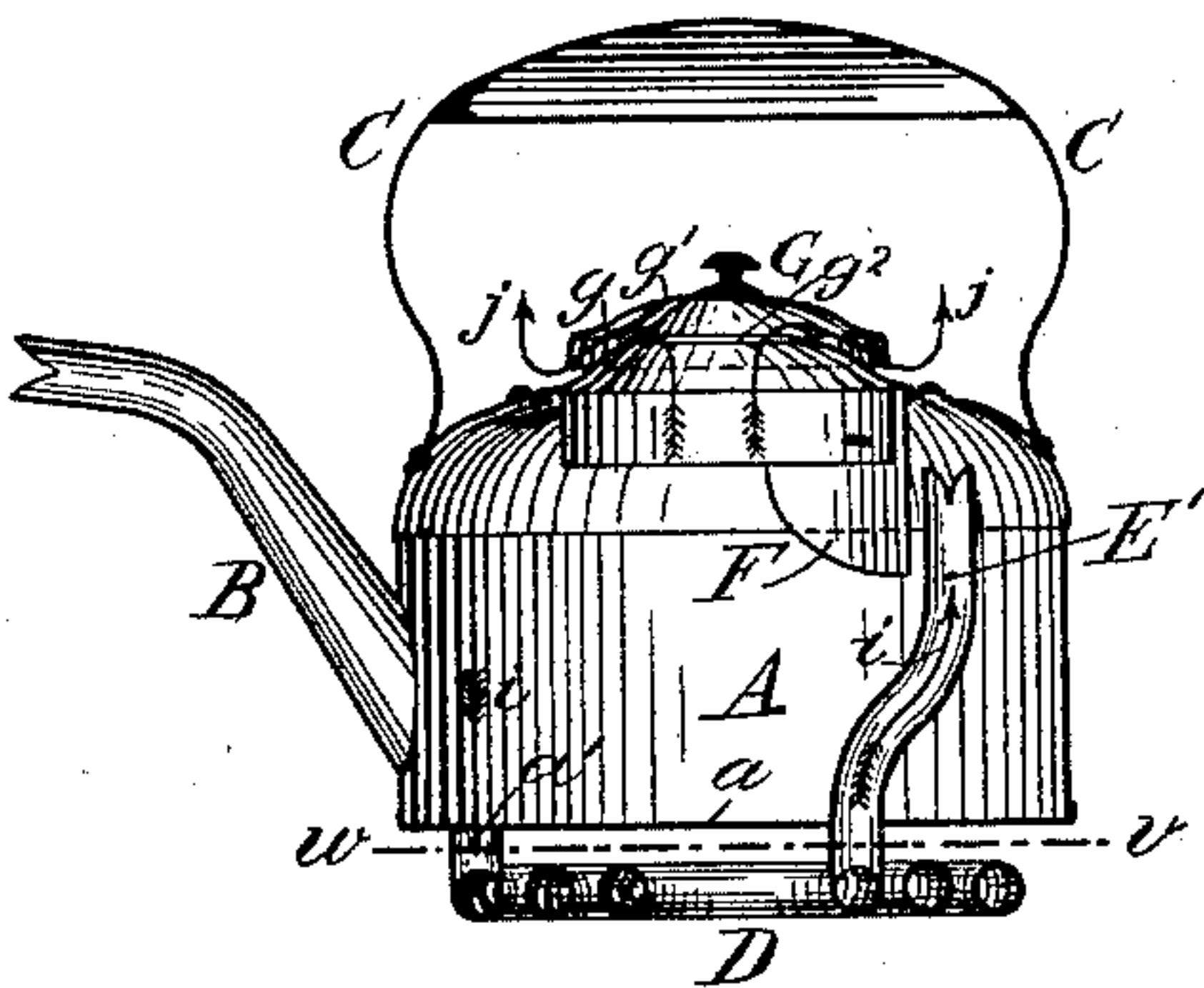


Fig. 8

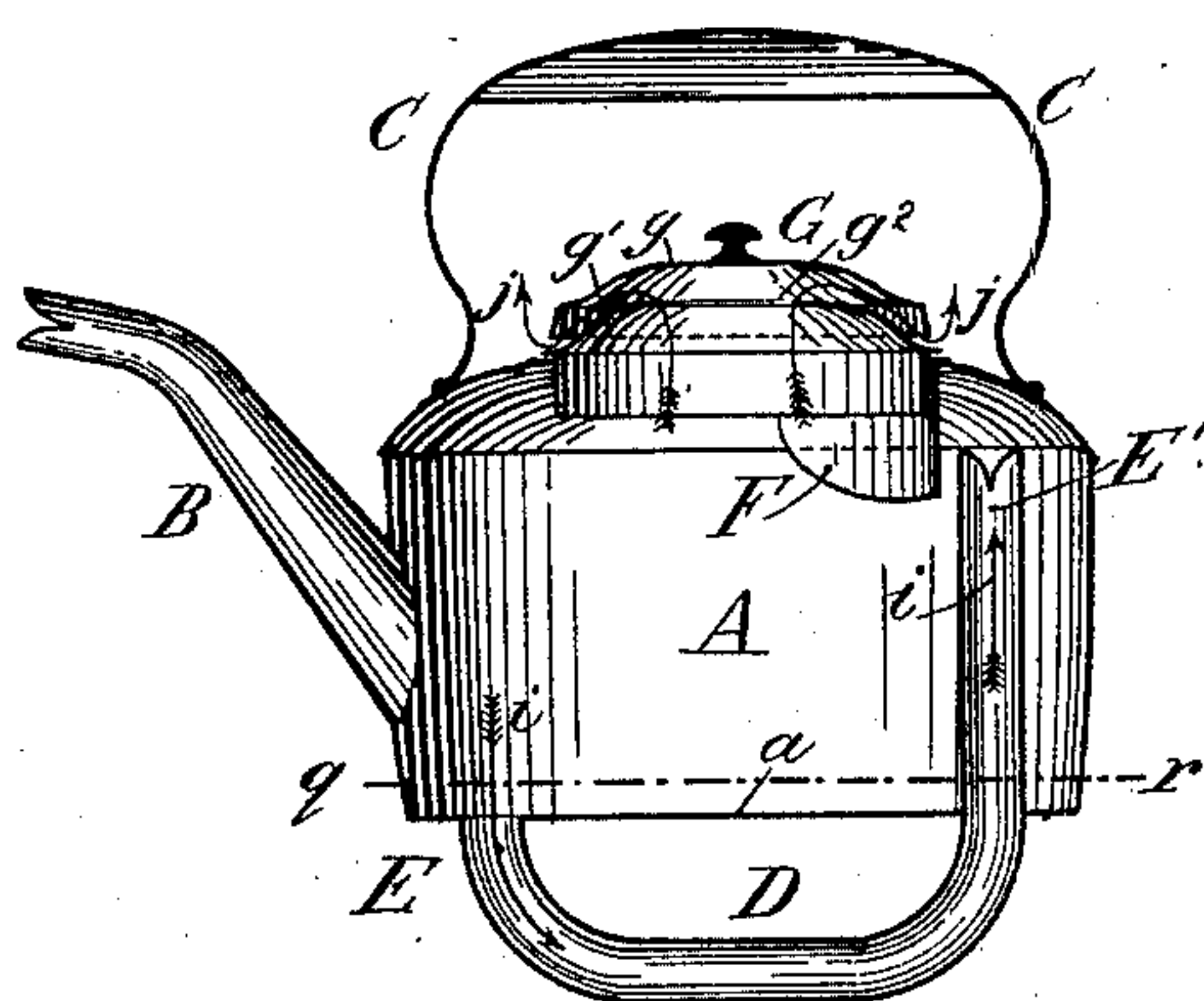


Fig. 7

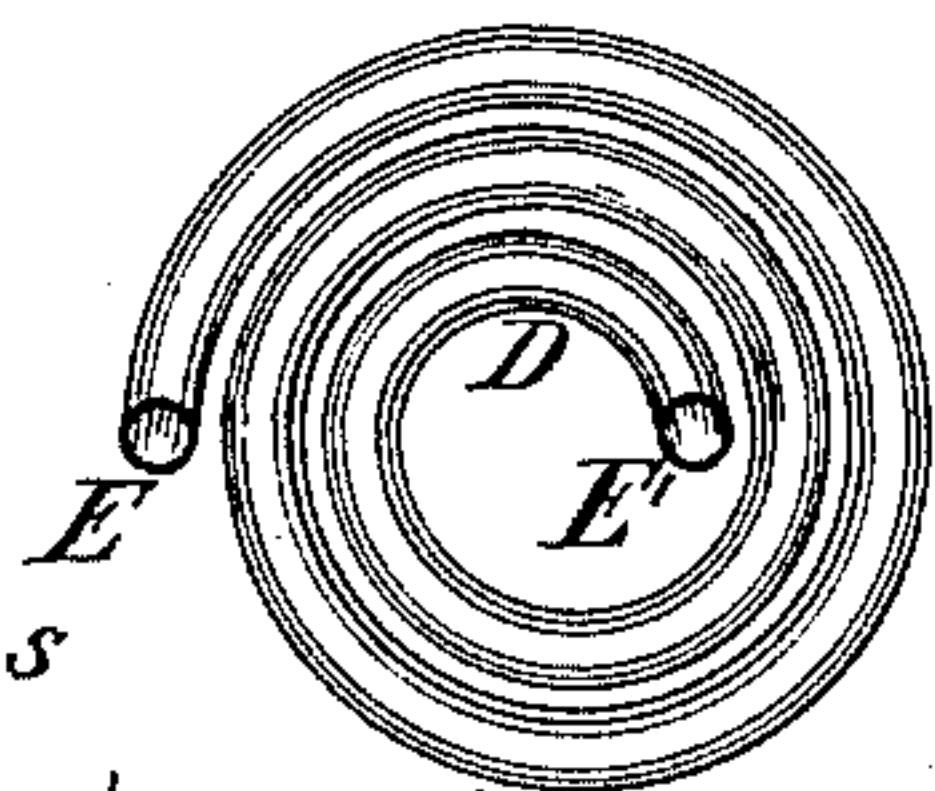
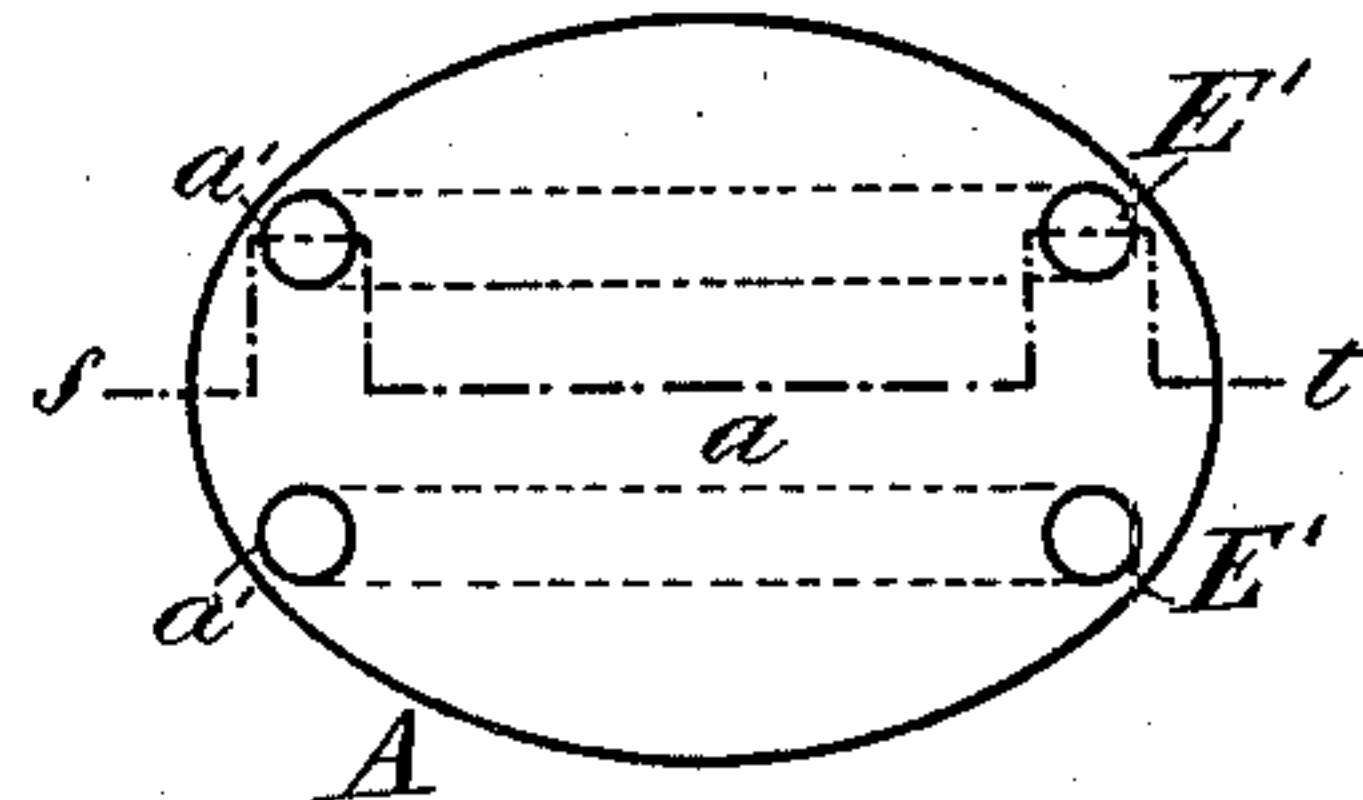


Fig. 9



Witnesses

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UNITED STATES PATENT OFFICE.

ARTHUR CHARLES NUNN, OF LOWESTOFT, ENGLAND, ASSIGNOR TO
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KETTLE.

SPECIFICATION forming part of Letters Patent No. 432,067, dated July 15, 1890.

Application filed September 9, 1889. Serial No. 323,355. (No model.) Patented in England June 3, 1889, No. 9,224.

To all whom it may concern:

Be it known that I, ARTHUR CHARLES NUNN, a subject of the Queen of England, residing at Lowestoft, England, have invented certain new and useful Improvements in Kettles, (for which I have applied for Letters Patent in Great Britain, No. 9,224, dated June 3, 1889,) of which the following is a specification.

My invention consists of an improved rapid heating and safety tea-kettle which possesses the advantage of heating very rapidly without danger of the water issuing from either the spout or lid when the kettle boils, thus insuring greater safety combined with rapidity. For this purpose I use a small "boiler" or "coil" of any kind, with one, two, or more pipes attached thereto, or anything serving as a boiler for causing a circulation of water through a tea-kettle, for the purpose above described. This boiler or coil can be fixed under the bottom or around the sides either inside or outside the said kettle.

In Figure 1 of the accompanying drawings I have represented in side elevation one of my improved kettles in which the boiler is in the form of a cylindrical annular vessel, and of which Fig. 2 shows a vertical section, Figs. 3 and 4 being horizontal sections of the same, taken, respectively, on the lines $y z$ of Fig. 1 and $w x$ of Fig. 2. Fig. 5 is a vertical section of a kettle with the boiler formed within the shell thereof. Fig. 6 is a vertical section, and Fig. 7 a horizontal section, on the line $u v$ of Fig. 6, of a "kettle" in which the boiler is in the form of a spiral coil. Fig. 8 is a vertical section on the crooked line $s t$ of Fig. 9, which is a horizontal section on the line $q r$ of Fig. 8 of a kettle in which the boiler is in the form of two parallel curved tubes.

Like letters indicate like parts throughout the drawings.

Referring to the drawings in general, A is the kettle-body; B, the spout; C, the handle, all of which parts are of ordinary construction.

D is the boiler, which in Figs. 1 to 4 is constructed of inner and outer cylindrical casings $d d'$, united at their upper edges by an annular plate d^2 and at their lower edges by a similar plate d^3 . The external diameter of the boiler D is such as will admit of its being

introduced through a pot-hole in a hot plate directly into the fire beneath, after the manner of ordinary well-kettles; but in this arrangement the flames can play around almost the entire surface of the part within the fire as well as upon the bottom of the kettle proper, as indicated by the arrows k in Fig. 2, whereas in the ordinary well-kettles only a comparatively small extent of surface can be directly acted upon by the fire.

The bottom a of the kettle is pierced in two places a' and a^2 , to the former of which is soldered or otherwise connected a pipe E, which passes through and is soldered or otherwise suitably connected to the plate d^2 , and extends downward and terminates near the plate d^3 and serves as the "return-pipe" of the boiler. Through the other aperture a^2 passes the pipe E', the "flow" of the boiler, which is suitably secured in such aperture to prevent the escape of water at that part. The lower end of the pipe E' is soldered or otherwise suitably fastened to the plate d^2 , through which an opening is formed, so that the said pipe may form a free communication between the boiler D and the kettle proper, to the upper part of which the pipe E' extends.

d^4 are two legs or distance pieces suitably secured between the plates a and d^2 to maintain them at the proper distance apart at the places where they are provided. These legs are conveniently of pipe-section, but have no connection with the interior of either the kettle A or boiler D.

F is a screen or guard-plate secured around the back part of the opening into which fits the lid G. This lid is formed, preferably, of two parts g and g' , the part g of which fits tightly into the kettle-opening, as does an ordinary kettle-lid, but is also formed with an opening g^2 over and at a suitable distance from which the part g' is supported by legs g^3 , Fig. 1, or the like, in such manner that a clear space is left between the two parts for the free escape of steam.

The plate a may be provided with feet h , as in Fig. 5, if desired. They are not shown in Figs. 1 and 2, because this kettle is intended to sit flat on the hot plate.

In the kettle represented in Fig. 5 the boiler D is immediately below the plate a , which is

perforated in two places for the connection of the two pipes E (return) and E', (flow,) which, as in the preceding example, extend one to near the bottom d^3 of the boiler D and the other to the upper part of the kettle proper, and are connected to the plate a in a manner similar to that before explained with reference to the said preceding example. The kettle shown at Fig. 5 is provided with feet h , and is not constructed as a well-kettle; but it is obvious that the lower or boiler part may be made of diameter smaller than that of the upper part, so that the said boiler may be passed through an opening in the hot plate and into the fire beneath, as previously explained.

The boiler D applied to the kettle shown in Fig. 6 is in the form of a spirally-coiled pipe, as shown more distinctly in Fig. 7. The end E (the return) of this coil is connected to the aperture a' , and the end E' (the flow) extends up to near the top of the kettle, as in the preceding examples.

The kettles hereinbefore described are represented in Figs. 1 to 7 as of circular form, while that now to be described and shown in Fig. 8 is preferably of oval or elliptical form; but it will readily be understood that the said kettles may be constructed of any other convenient shape.

In the kettle shown in Fig. 8 the boiler D is in the form of two parallel curved or bent tubes, the ends E E' of each of which are connected to and one extends upward into the kettle proper in a manner similar to that hereinbefore described in reference to the corresponding ends E E' of the other examples. Instead of two bent tubes, there may be used one or more than two such tubes.

The boilers D of the forms shown in Figs. 6 and 8 are both adapted to be passed through an opening in a hot plate into the fire beneath; but of course these, as also all the other examples, may be readily heated on an open fire or gas-stove.

To use one of the before-described kettles, water is poured in in the ordinary manner and the water will flow down through the pipe E into the boiler D, which will thereby become charged. When heat is applied to the boiler D, a circulation is established, the hotter water flowing up through the flow-pipe E' and the cooler water down through the return-pipe E, in the manner indicated by the arrows i . The pipe E', it will be noted, terminates at a point to one side of the lid-opening and prevents the accidental escape of any hot water or steam passing up the pipe, the guard F acting also as a further safeguard against such accidents. The water will thus become heated very quickly, and when it boils it will have no tendency to overflow, the steam having free egress through the lid, as before explained and as indicated by the arrows j , and the rush of the boiling water

which enters the kettle only by the pipe E' being diverted by the shield F. The water in the spout would thus only reach the general level of that in the kettle, and any possible overflow by the spout would be further checked by the flow of the water down the return-tube to the boiler and away from the spout. The return-tube E is shown of smaller diameter than the flow-tube E'. This arrangement tends to prevent a flow of heated water in the wrong direction—viz., up tube E—and allows for the free escape of boiling water and steam up the flow-pipe. I do not, however, bind myself to make these two pipes of different sizes.

By causing the water to circulate through the kettle in the manner before described incrustation will almost entirely be avoided.

The kettles shown on the drawings are only given as examples, for it will readily be understood that both the parts A and D, but particularly the latter, are capable of being constructed in a great many different forms or shapes.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In a tea-kettle or the like, the combination, with the kettle-body having the opening in the top and the boiler below, of a pipe extending from the bottom of the kettle-body to a point near the bottom of the boiler, and a pipe extending from the top of the boiler to a point near the top of the kettle-body at one side of the opening therein, substantially as described.

2. In a tea-kettle or the like, the combination, with the kettle-body and the boiler below the same, of a pipe connecting the bottom of the kettle with the boiler, and a pipe extending from said boiler to a point near the top of the kettle-body and at one side of the opening therein, whereby the discharge is at or above the water-level, substantially as described.

3. In a tea-kettle or the like, the combination, with the kettle-body and the boiler below the same, of a pipe connecting said boiler and the bottom of the kettle-body, a pipe leading from said boiler to the top of the kettle-body at one side of the lid-opening, and a guard extending downwardly between said pipe and the lid-opening, substantially as described.

In testimony whereof I have hereto set my hand in the presence of the two subscribing witnesses.

ARTHUR CHARLES NUNN.

Witnesses:

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