

(No Model.)

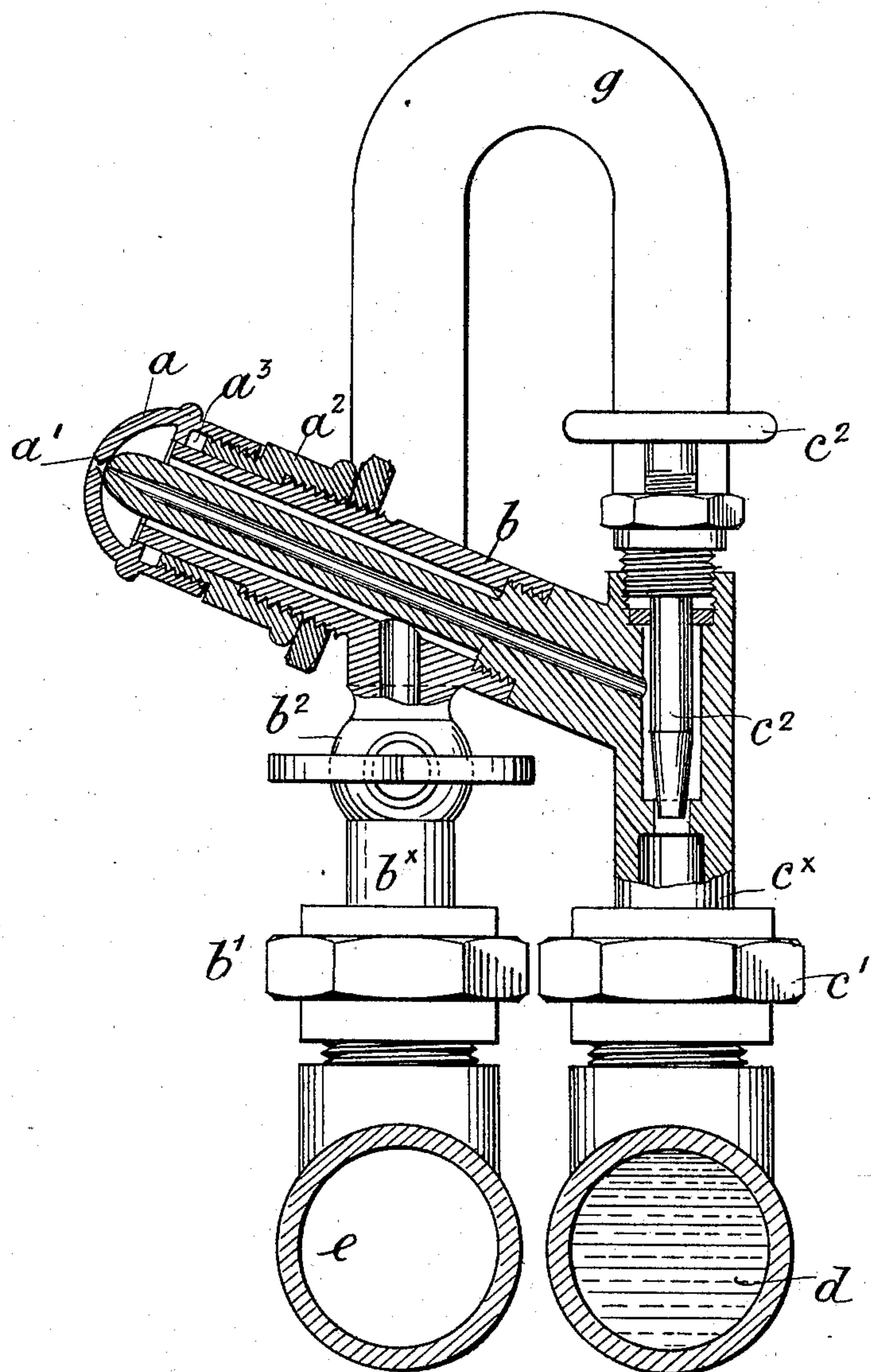
2 Sheets—Sheet 1.

A. G. BROWNING.
SPRAYING APPARATUS.

No. 590,128.

Patented Sept. 14, 1897.

FIG. 1.



WITNESSES

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FIG. 2.

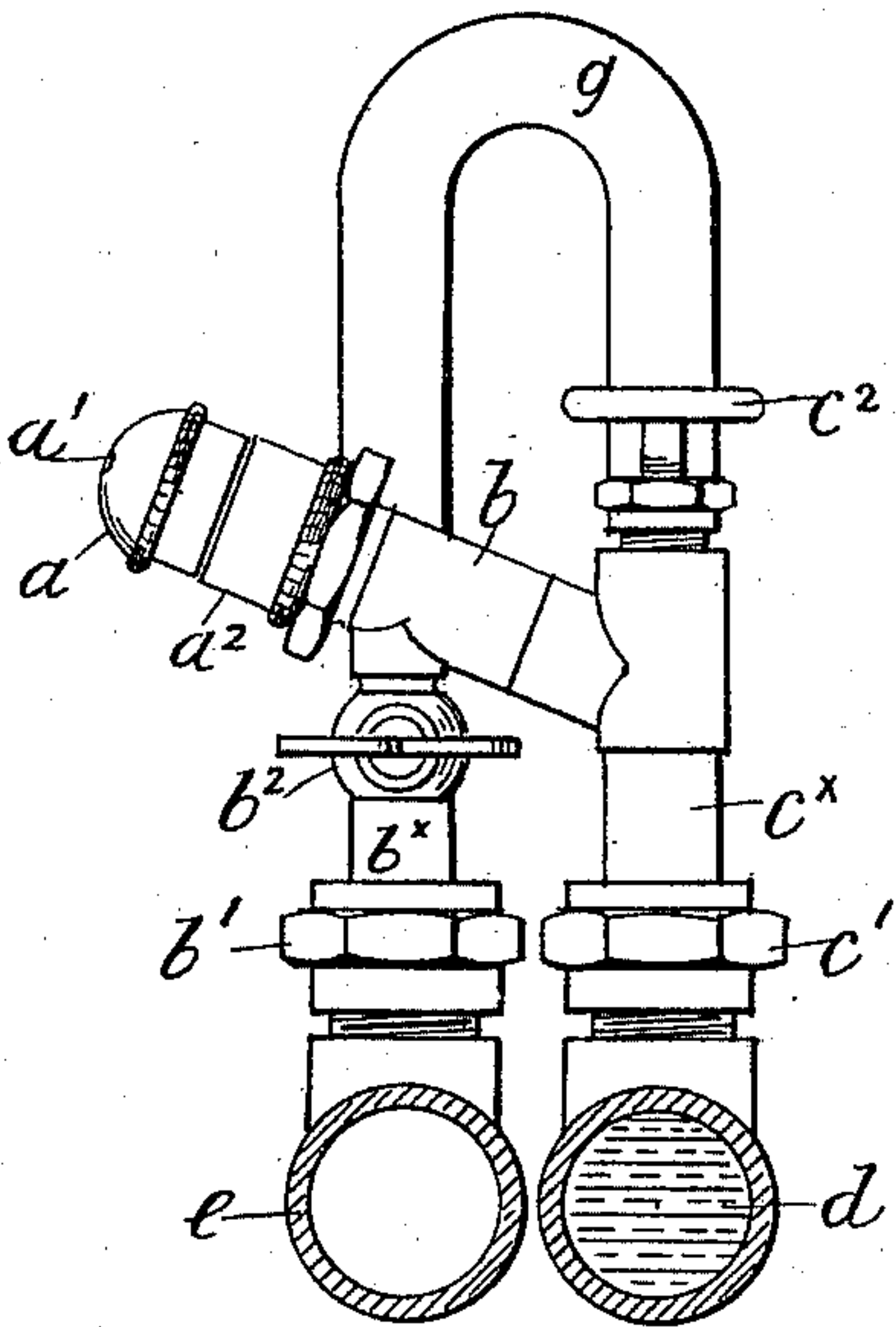


FIG. 4.

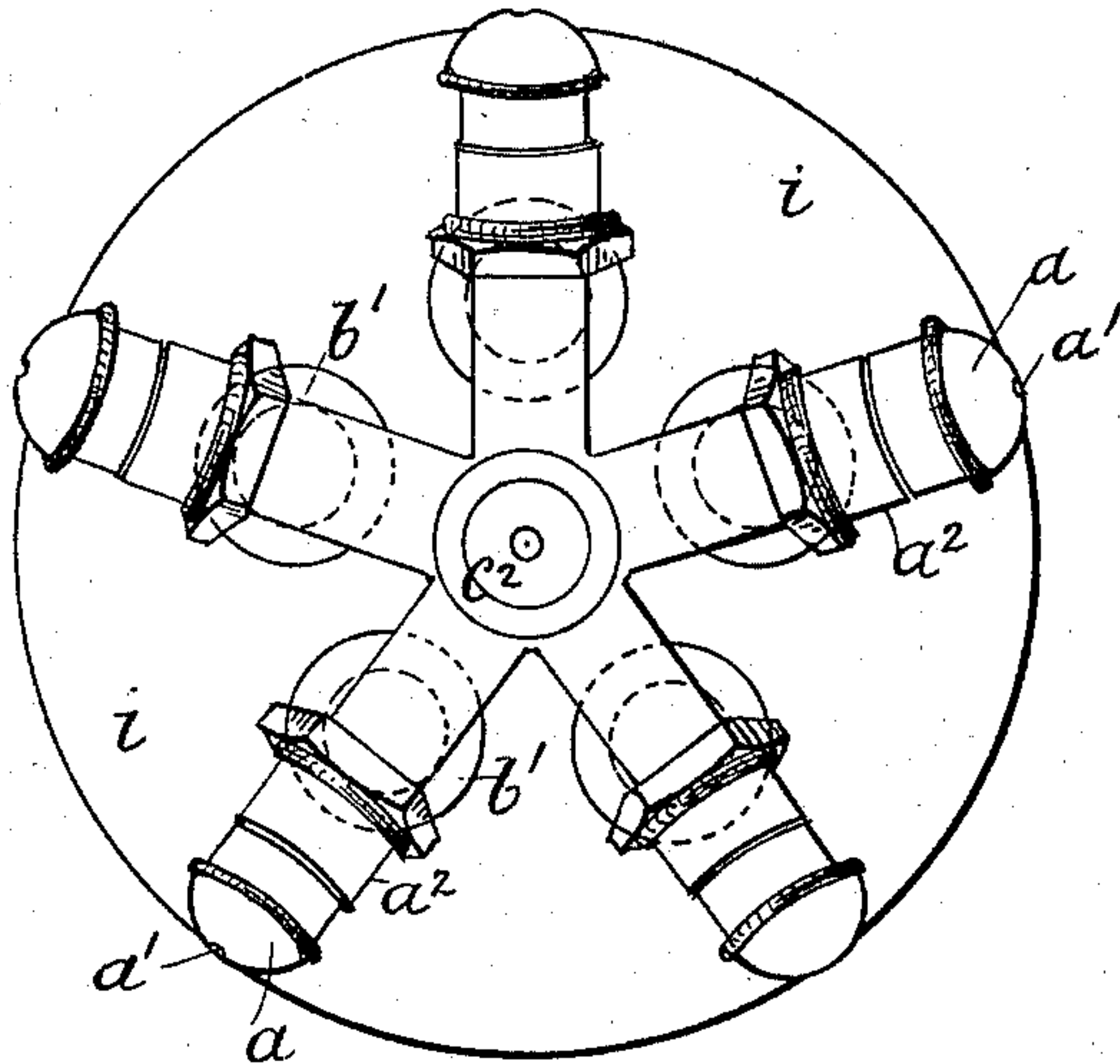


FIG. 3.

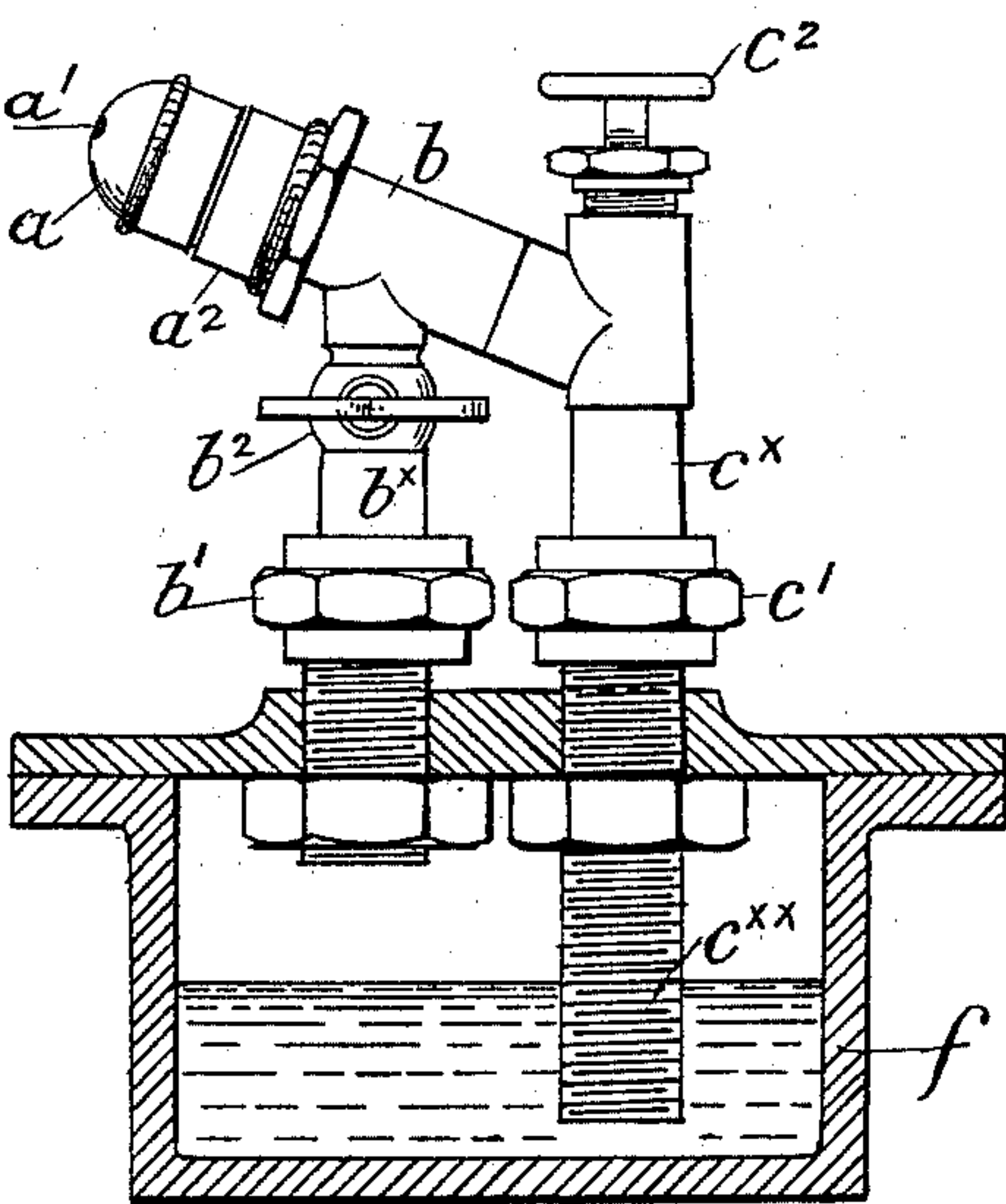
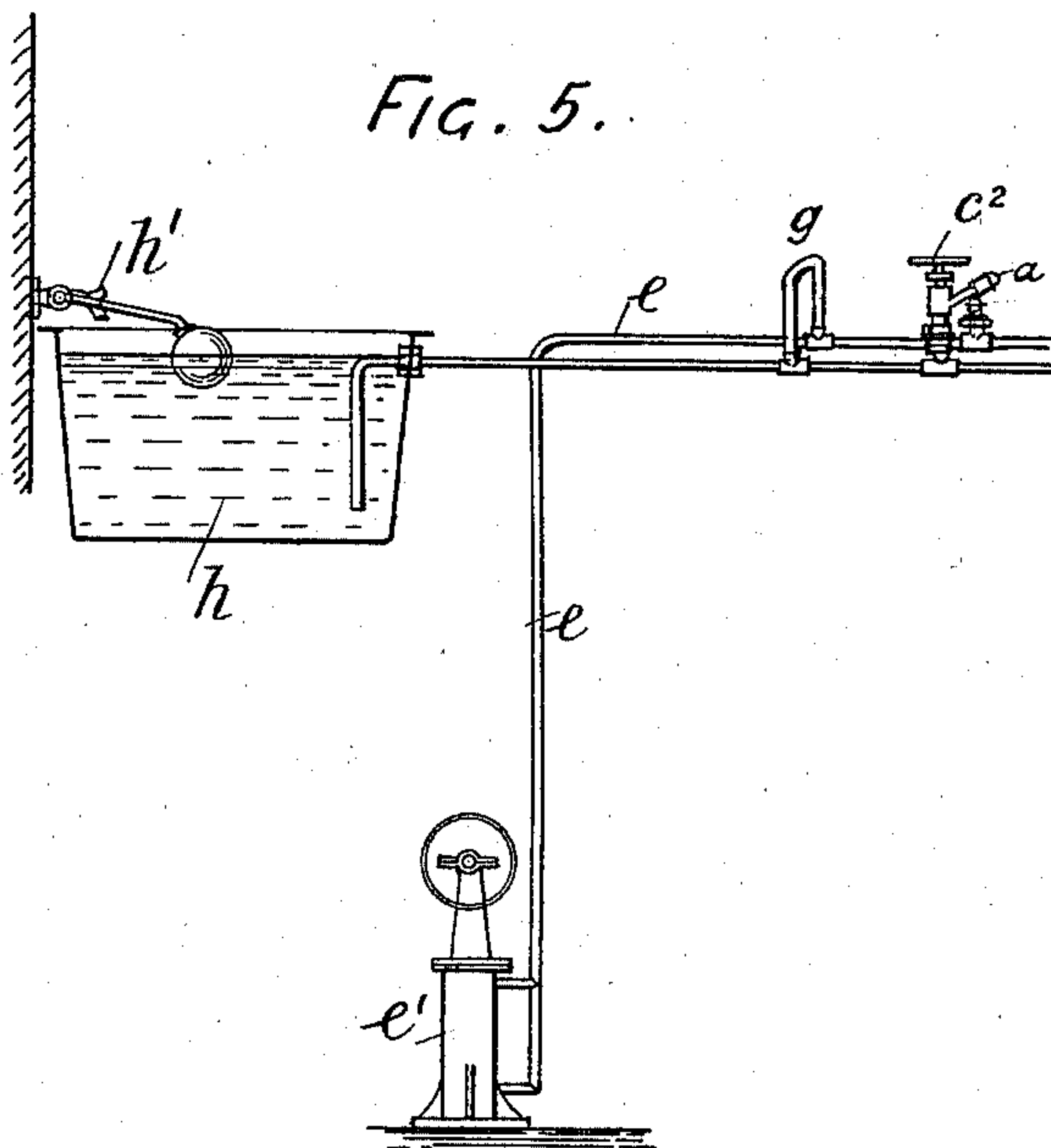


FIG. 5.



-WITNESSES-

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UNITED STATES PATENT OFFICE.

ALFRED G. BROWNING, OF FLIXTON, ENGLAND, ASSIGNOR OF ONE-HALF
TO WILLIAM WILD CHURCHILL, OF MANCHESTER, ENGLAND.

SPRAYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 590,128, dated September 14, 1897.

Application filed February 6, 1897. Serial No. 622,349. (No model.)

To all whom it may concern:

Be it known that I, ALFRED GEORGE BROWNING, engineer, a subject of the Queen of Great Britain, residing at Flixton, near Manchester, in the county of Lancaster, England, have invented new and useful Improvements in Spraying Apparatus, of which the following is a specification.

This invention relates to apparatus for supplying a very fine spray of air and water or other fluid to humidify or disinfect the air of a room or for other spraying purposes, and especially to apparatus wherein fluid and air under pressure are ejected together from a nozzle or jet in the form of two concentric tubes leading to the orifice or orifices of the jet.

My invention will be readily understood from the following description on reference to the accompanying drawings.

Figure 1 is a sectional elevation through the nozzle which I have invented. Fig. 2 shows, drawn to a smaller scale, the same in elevation applied to separate pipes supplying air under pressure and water. Fig. 3 shows the same in elevation applied to a chamber connected to a single pipe supplying both air under pressure and water. Fig. 4 is a plan view of a compound nozzle forming five jets. Fig. 5 is a diagram illustrating an installation having one jet only, but of course more than one jet can be fixed to the supply-pipes.

The invention so far as regards the construction of the jet or nozzle consists, in the first place, in forming the orifice a' or orifices or outlet or outlets of the jet in a cap a , which can slide upon the open end of the external tube b by screwing it into a stuffing-box or upon a gland a^2 , capable of adjustment by screwing or otherwise upon the said external tube b , and thus the orifice a' of the jet a can be adjusted with the greatest accuracy nearer to or farther from the mouth or outlet of the internal tube c without interfering with the packing a^3 .

The internal tube c is screwed or otherwise secured to the rear end of the external tube b (see Fig. 1) and bent or cranked (say downward) at c^x to a coupling c' with the supply-pipe d , and is provided with a suitable regulating-valve c^2 in this outer or rear part c^x .

The external tube b is also provided with a branch b^x leading, (say downward) to its coupling b' with the supply-pipe e , and this branch b^x is provided also with a regulating-valve b^2 .

The two supply-pipes are connected together by a suitable pipe g or pipes or tubes curved or carried above the level of the outlet a' , (see Fig. 2,) and so by regulating the issue of the air to the nozzle and its egress from the nozzle more or less pressure can be put by the air through the pipe g or pipes upon the water to force the latter through the nozzle, and the air will act upon it as it issues from the orifice or orifices in greater or less degree to regulate the fineness of the spray produced, or even to allow water alone to issue (or air alone) according to requirements by merely altering the position of the adjustable cap.

The downward or other bend c^x of the internal tube c may be open to the same pipe as the downward or other bend b^x of the external tube b , as seen at Fig. 3, which shows the parts c^x and b^x connected to a pipe or chamber f , supplied with both air under pressure and water; but in this case one of these bends, say c^x , must be formed or fitted with an extension c^{xx} , reaching below the level of the water in the said pipe or chamber f . In any case the level of water in the water-supply pipe is normally maintained at such a height that the air under pressure, either in the same pipe or a second supply-pipe, will at the same time freely pass into the air-tube (say) b of the nozzle, and will also force the water to rise in the water-tube (say) c of the nozzle, and, as before described, will automatically deliver the requisite supply of water to be ejected with the air at the outlet of the nozzle and in the desired state of spray or otherwise. This level may be maintained (see Fig. 5) by dipping the open end of the water-supply pipe (say d) in a cistern or tank h , containing water or other fluid, of which the level is maintained by a ball-cock h' or by other suitable means. The air-pipe e is connected to a suitable air-pump e' or other suitable device for supplying air under the required pressure.

In some cases the several internal tubes of a group of nozzles a may lead to the same

downward bend c^x and regulating-valve c^2 ,
(see plan view Fig. 4,) and in such case the
external tubes may lead at b^x to a single con-
nection or branch from a separate air-supply
5 pipe, or to a space or chamber i , as shown,
connected to the interal tube. If preferred,
the air-supply inlet-tap of the nozzle may be
dispensed with, especially in the compound
nozzle last described. By this improved ar-
10 rangement as the level of the fluid to be
sprayed and the pressure of the air are con-
stant any desired fineness of spray can be
produced and maintained when once the de-
livery of the nozzle has been adjusted and no
15 dripping or dropping of fluid from the nozzle
will take place.

I do not claim, broadly, the forcing of fluid
to a nozzle by the air which makes the spray;
but

20 What I do claim is—

1. The combination of a spraying-nozzle or
series of nozzles with means for supplying
air under pressure from a suitable source and

means for maintaining the fluid to be sprayed
at a certain level in the supply-pipes, so that 25
when once the delivery of the nozzle has been
adjusted the spray will be perfectly main-
tained without dripping of the fluid as the
level of the fluid and the pressure of the air
are kept constant. 30

2. The nozzle consisting of the combination
of internal and external tubes, the regulating
tap or taps in connection therewith, and the
adjustable nozzle packed and sliding on the
external tube so that the spray can be kept 35
at a desired state of fineness, although the
amount of fluid ejected from the nozzle may
be varied.

In testimony whereof I have signed my
name to this specification in the presence of 40
two subscribing witnesses.

A. G. BROWNING.

Witnesses:

GEORGE DAVIES,
JNO. HUGHES.