

No. 612,517.

Patented Oct. 18, 1898.

J. W. EARL & B. E. ROBERTS.
ACETYLENE GAS GENERATOR.

(Application filed Nov. 18, 1897.)

(No Model.)

2 Sheets—Sheet 1.

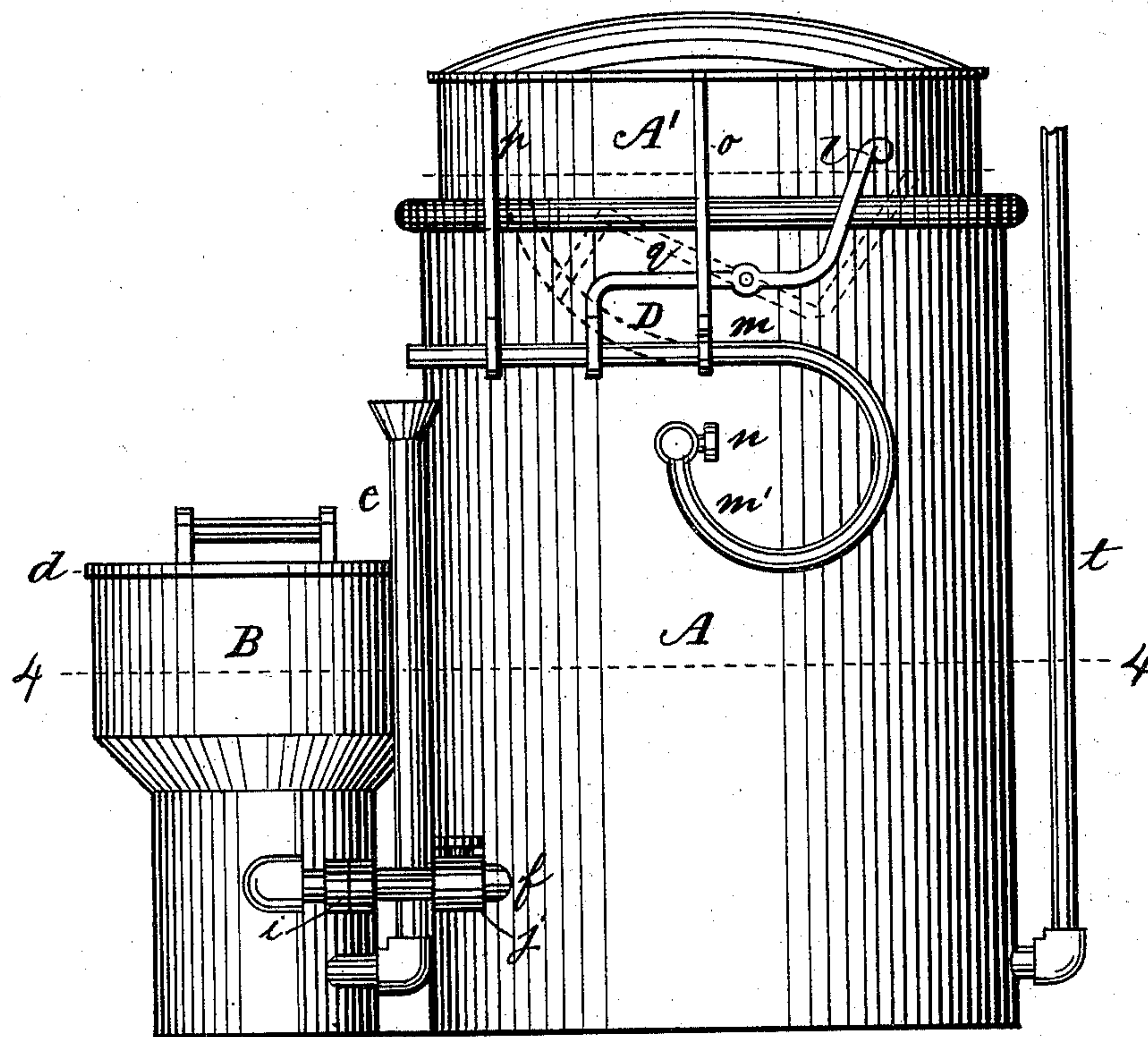


Fig. 1

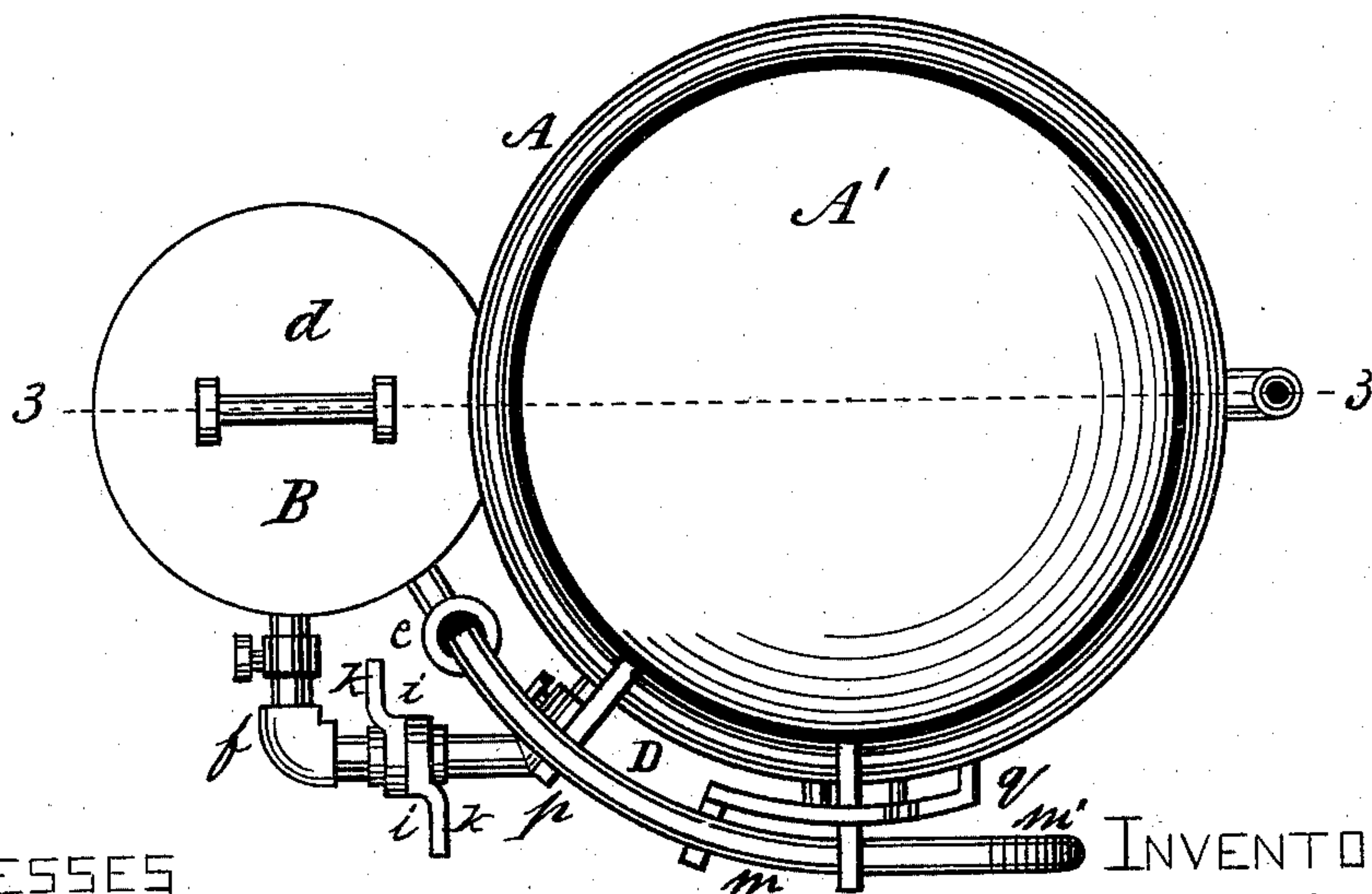


Fig. 2

WITNESSES

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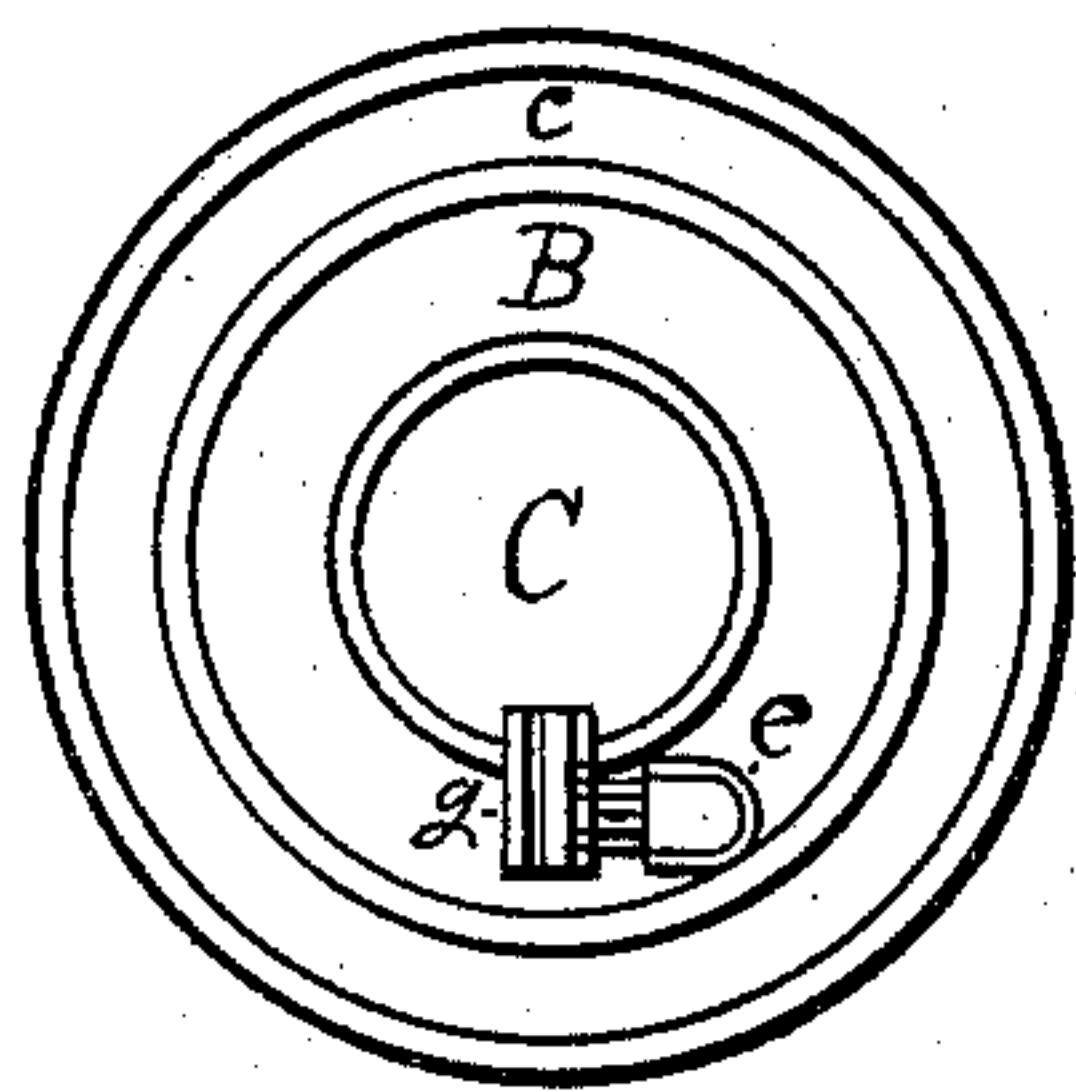


Fig-5-

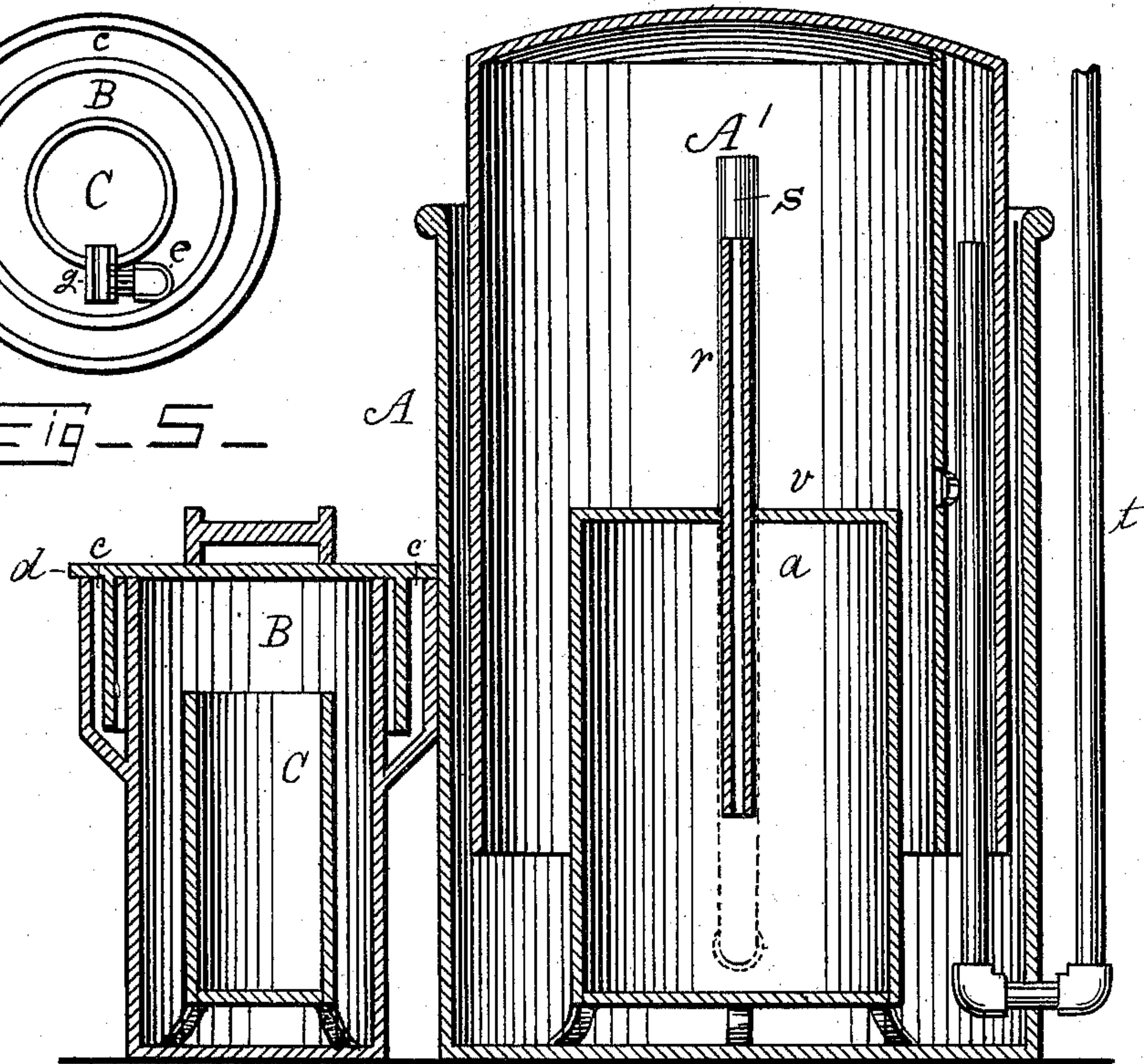


Fig-3-

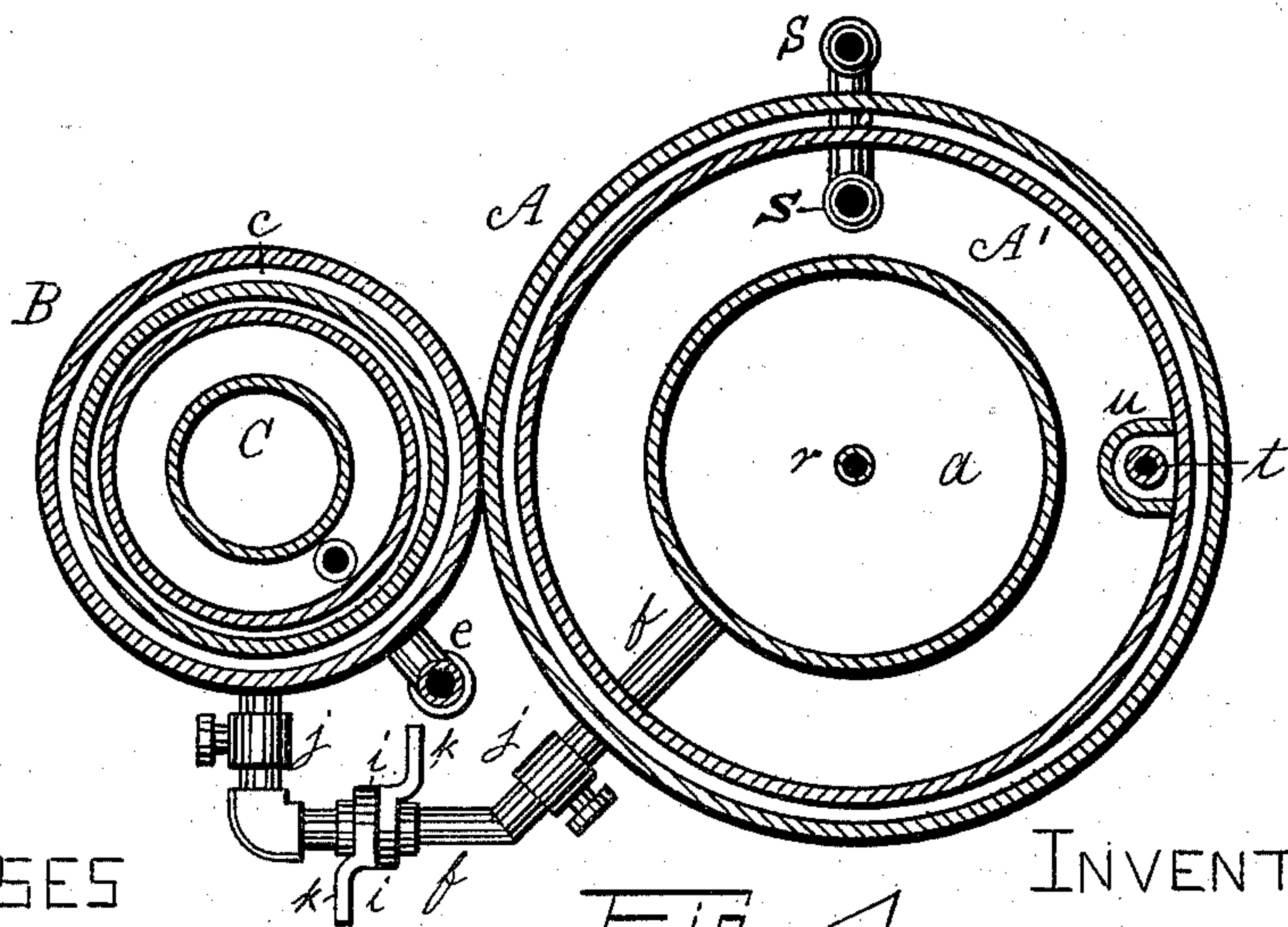


Fig-4-

WITNESSES

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UNITED STATES PATENT OFFICE.

JASPER W. EARL AND BENJAMIN E. ROBERTS, OF MINNEAPOLIS,
MINNESOTA.

ACETYLENE-GAS GENERATOR.

SPECIFICATION forming part of Letters Patent No. 612,517, dated October 13, 1898.

Application filed November 18, 1897. Serial No. 658,917. (No model.)

To all whom it may concern:

Be it known that we, JASPER W. EARL and BENJAMIN E. ROBERTS, citizens of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented new and useful Improvements in Gas-Generators, of which the following is a full, clear, and exact description, such as will enable those skilled in the art to which our invention belongs to properly construct the same, reference being had to the accompanying drawings, which form a part of this specification.

Our invention relates to the production of acetylene gas and belongs to a class of generators adapted to the production of gas by the union of a solid and a liquid; and our purposes are, first, the production of a generator simple in construction and therefore easily understood; second, the production of a generator automatic in its operation, therefore not requiring constant attention; third, the production of a generator self-relieving, therefore not liable to explode from overcharging or neglect, and, fourth, the production of a generator wherein the generating-chamber is removable from the gasometer.

To these ends our invention consists of the construction, combination, and arrangements of the parts herein shown and hereinafter described.

In the accompanying drawings, Figure 1 is a side elevation of our improved generator. Fig. 2 is a top view; Fig. 3, a section of Fig. 2, taken on the line 3 3. Fig. 4 is a section of Fig. 1, taken on the line 4 4; and Fig. 5 is a top view of the generator with its cover removed.

Similar letters refer to similar parts throughout the several views.

A is a telescope gasometer. B is a generator connected therewith.

C is a pail or receptacle for holding calcium carbide or other gas-making material, and D is an automatic device for supplying water to the generator B for gas-making purposes.

The telescope gasometer A is not unlike those commonly used, save that it incases a cooling-chamber *a*, which is perfectly supported off the bottom of the outer case to the end

that the water may entirely surround it the better to rob the gas of its heat.

The generator B consists of a case, (perfectly cylindrical in form,) its upper portion being fashioned with double walls, thus providing an annular chamber *c*, adapted to hold water for the purpose of sealing its cover *d*. It is provided with the water-supply pipe *e* and the gas-conduit *f*. The annular chamber *c* may be provided with a supply-pipe for filling it and with a drip-cock for draining it; but we do not deem it necessary to show them herein. The water-supply pipe *e* is designed to supply water to the generator B for gas-making purposes. It is fashioned in the form of an elongated letter U, one portion being outside of the generator B and the other portion inside the same. The outer portion extends above the cover *d* and is provided with a funnel-shaped top. The inner portion extends above the top of the pail C and is provided with an elbow and nipple or with an inverted U for the purpose of conducting the water into the pail C. The tilting spout *g* serves to guide the water from the supply-pipe *e* into the calcium-carbide pail C. It consists of a spout or pipe pivotally affixed to the inner portion of the water-supply pipe *e*, adapted to swing upward and downward, to the end that the calcium-carbide pail C can not be removed without raising it to a vertical position, thereby preventing the dripping of water while the pail is removed; nor can the cover *d* be replaced until after it has been lowered to a horizontal position, thereby insuring the conducting of the water to the calcium carbide.

The gas-conduit *f* connects the generator B with the telescope gasometer A. It is provided with the union *i* and with the stop-cocks *j*. This union is "connected" and "broken" by means of levers *k*, thus making the generator B detachable.

The pail or calcium-carbide receptacle C consists of a simple cylindrical vessel made of sheet metal with a bail for convenience in handling it. We prefer to have it provided with feet to keep it off the floor of the generator B; but this is not an essential feature.

The automatic device D for supplying water to the generator B is an important feature of our invention, for thereon depends the success of our device. It consists of a tube *m*, adjust-
 5 ably connected with the gasometer A, its free or discharge end being adapted to move upward or downward, as will hereinafter be described. The tube herein shown is of flexible material, (rubber;) but we do not confine our-
 10 selves to such. It is rigidly connected to the gasometer A below the water-level thereof. After forming this tube *m* into a loop *m'* we suspend its free end in the hangers *o* and *p*, depending from the dome A' of the gasometer
 15 A. It is secured to the hanger *o*, but rests in a loop formed in the lower end of the hanger *p*.

The gas-conduit *f* extends from the generator B to the cooling-chamber *a* of the gasometer A and serves to convey the gas thereto.
 20 The pipe *r* extends from the cooling-chamber *a* to the upper portion of the gasometer A and serves to convey the gas from one chamber to the other. The pipe *s* extends from the upper portion of the gasometer A to the burners
 25 and serves to supply them with gas, and the safety-pipe *t* extends from the upper portion of the gasometer A to the outside of the building in which the generator is located and serves as a safety-pipe or as an escape for an
 30 overcharge of gas, as will hereinafter appear.

We operate our generator as follows: We first charge the pail C with calcium carbide and place it in position within the generator B. In so doing we tip the tilting spout *h*,
 35 (displaced by lifting the pail out,) thereby insuring the water's course to the calcium carbide. We then put the cover *d* in place upon the generator B and seal it by pouring water in or admitting water to the annular
 40 chamber *c*. We now open the stop-cock *n*, thereby letting water flow from the gasometer A into and filling the water-supply pipe *e* until its overflow through the tilting spout *g* shall contact with and saturate a portion of
 45 the calcium carbide in the pail C, when acetylene gas will be evolved, which will flow through the conduit *f* into the cooling-chamber *a* of the gasometer A, and thence through the pipe *r* from the cooling-chamber *a* to the
 50 upper portion of the gasometer A, when by its pressure it will raise the bell A', which in turn will (through the operation of the depending rods *o* and *p*) lift the free end of the tube *m* above the water-level in the gasome-
 55 ter A, thereby checking the flow of water therefrom. Now when the gas thus generated shall have been consumed at the burners, thereby decreasing the pressure in the gasometer A, the bell A' will fall by gravity,
 60 thereby carrying the tube *m* below the water-level in the gasometer A and more water will flow therefrom into the water-supply pipe *e* and through that onto the calcium carbide in the pail C to generate more gas. Thus our
 65 generator works automatically, letting on and shutting off the water through the operation

of the rising-and-falling bell A', only generating gas as it is consumed.

It will be seen that our generator has no connection with the gasometer save by the
 70 conduit *f*, but simply placed beside it, and that it may be removed therefrom by "breaking" the union *i* and taken from the room or building for cleansing or recharging it. Before removing it the stop-cocks *j* should be
 75 closed to prevent the escape of gas from the gasometer or the generator.

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

1. In a gas-generator, the combination of a telescope gasometer; a submerged cooling-chamber inclosed thereby; supported off the floor; an ingress-pipe to admit the gas thereto, and an exit-pipe to transfer it to the gasom-
 85 eter-bell; a generator communicating with said gasometer, a water-sealed cover thereon, and a calcium-carbide pail incased thereby; a pipe to supply the pail with water; a spout pivotally attached thereto adapted to be
 90 raised to a vertical position by removing the said pail, and to being depressed to a horizontal position by putting the said cover into place; a flexible tube rigidly affixed to the circumferential side of the said gasometer-
 95 tank below its normal water-level, said tube being affixed to a depending hanger and resting in a looped hanger carried by the bell of the said gasometer, whereby through its flexi-
 100 bility the outer end of the said tube is raised above, or sunk below the water-level in the said gasometer-tank, thus intermittently discharging water into the said water-supply pipe, substantially as shown and for the purposes specified.

2. In a gas-generator, the combination of the telescope gasometer, a submerged cooling-chamber incased thereby, said chamber being supported above the floor of the said generator; a generator, a water-sealed cover
 110 thereon, a gas-conduit, extending from said generator to said cooling-chamber, and a pipe leading from said cooling-chamber to the bell of the said gasometer; a calcium-carbide pail incased in the said generator; a pipe to supply the said pail with water; a spout pivotally attached thereto, said pipe being raised
 115 to a vertical position by removing the said pail and lowered to a horizontal position by replacing the said cover; a flexible tube rigidly affixed to the circumferential side of the said gasometer-tank below its water-level; said tube being affixed to one hanger and resting in another hanger carried by the ris-
 120 ing-and-falling bell of the said telescope gasometer, whereby the outer or discharge end of the said tube is raised above or sunk below the water-level to intermittently discharge water into the said supply-pipe and thereby to the calcium-carbide pail, substan-
 125 tially as shown and for the purposes specified.

3. In a gas-generator, the combination of

the water-tank A, a bell A' floating therein,
and a cooling-chamber *a* incased thereby; a
generator B, a water-sealed cover *d* thereon,
and a water-supply pipe *e* leading thereto; a
5 calcium-carbid pail C; incased by the said
generator B; a tilting spout *g* pivoted to the
said supply-pipe and operated by the said
pail, a gas-conduit *f* connecting the said cool-
ing-chamber *a*, and the said generator; a
10 transfer-pipe *r*, extending from said cooling-
chamber *a*, to the said bell A', a service-pipe
s extending from the bell A' to the burners;
a safety-pipe *t*, extending from the bell A' to

the outer portion of the building, and the in-
termediate mechanism for conveying water 15
from the tank A to the supply-pipe *e*, which
mechanism consists of the flexible tube *m*,
and the hangers *o* and *p*, all arranged sub-
stantially as shown and for the purposes speci-
fied.

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Witnesses:

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