

(No Model.)

2 Sheets—Sheet 1.

L. HENKLE.

STREET LAMP.

No. 303,964.

Patented Aug. 19, 1884.

Fig. 1.

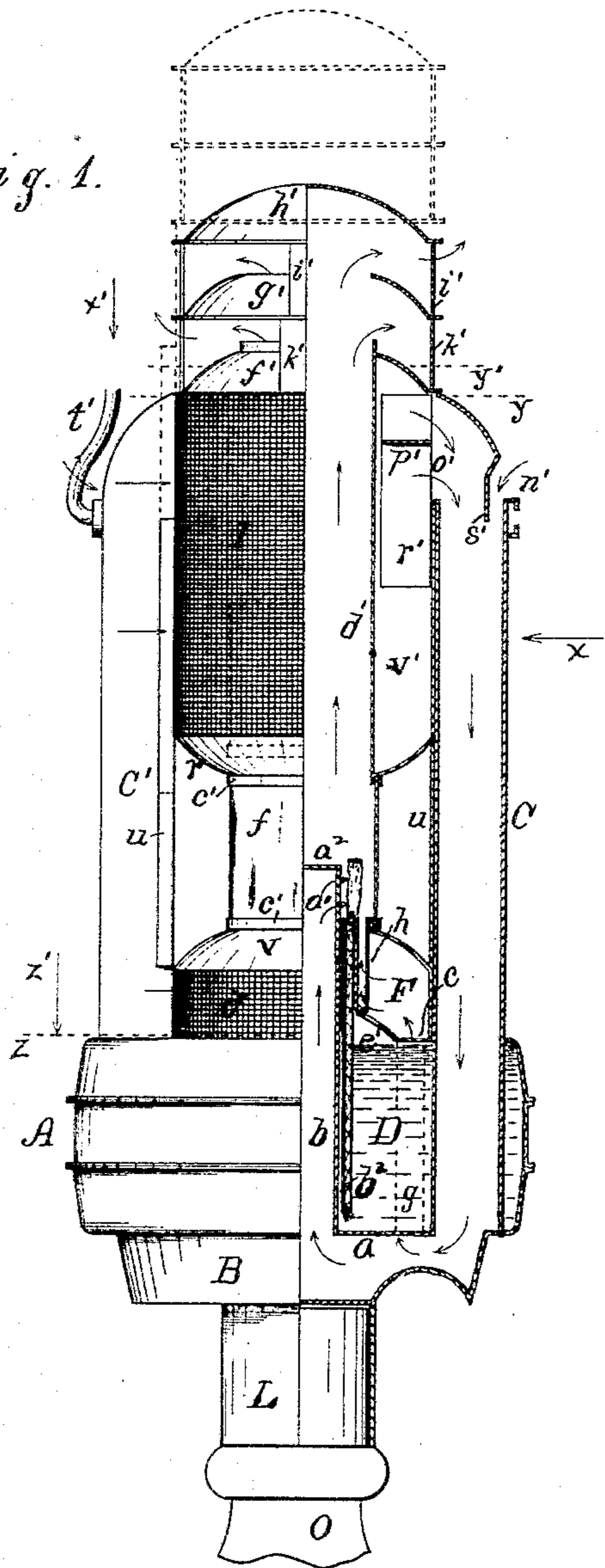


Fig. 3.



Fig. 2.

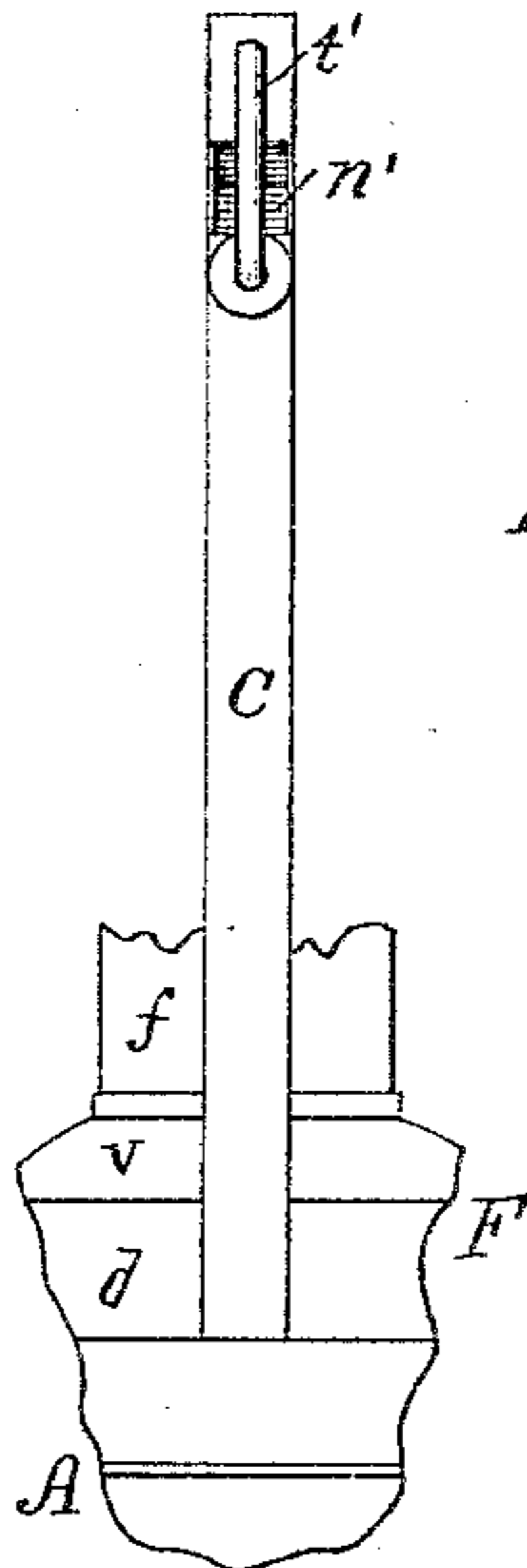
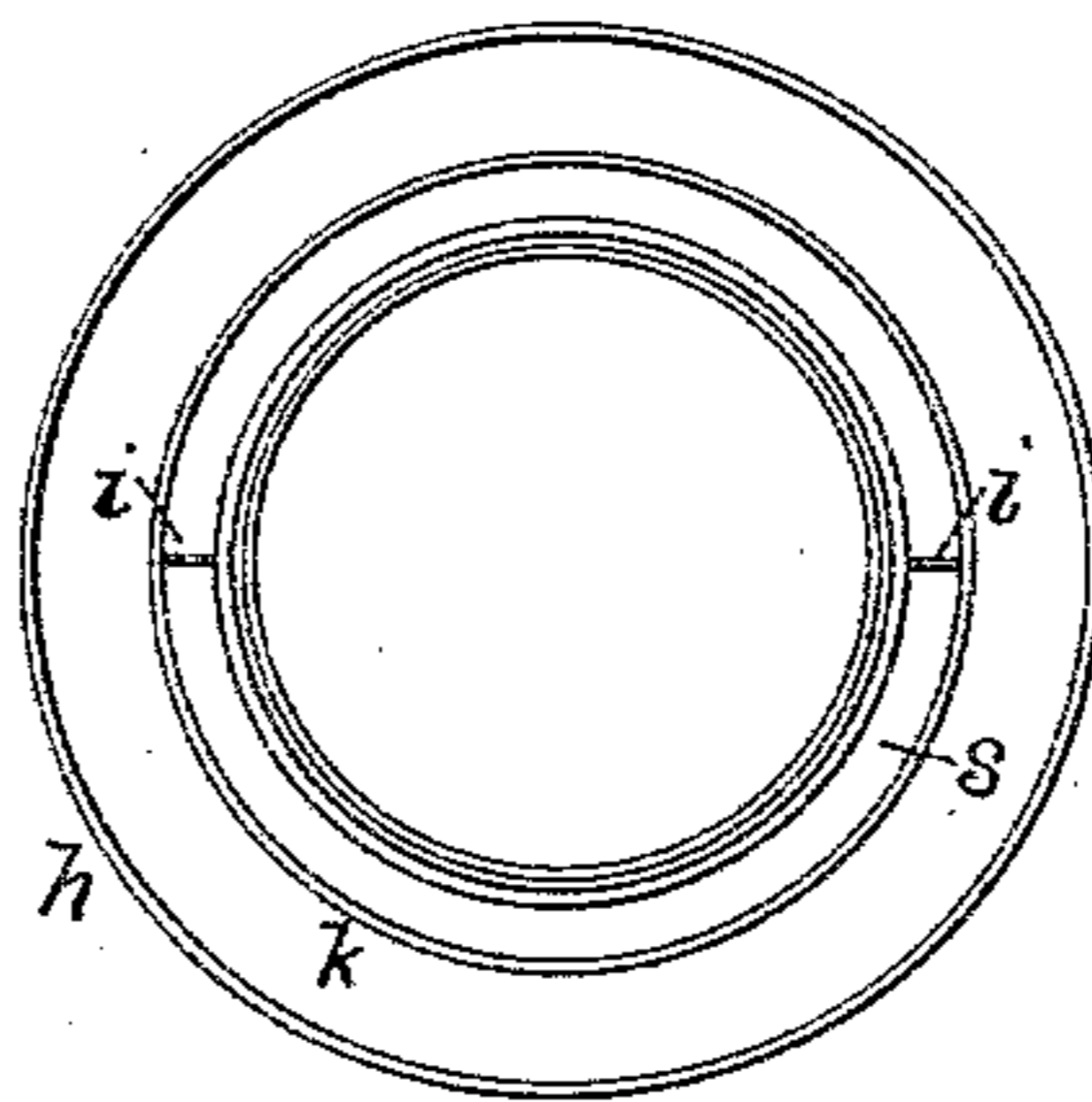


Fig. 3.



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Fig. 4.

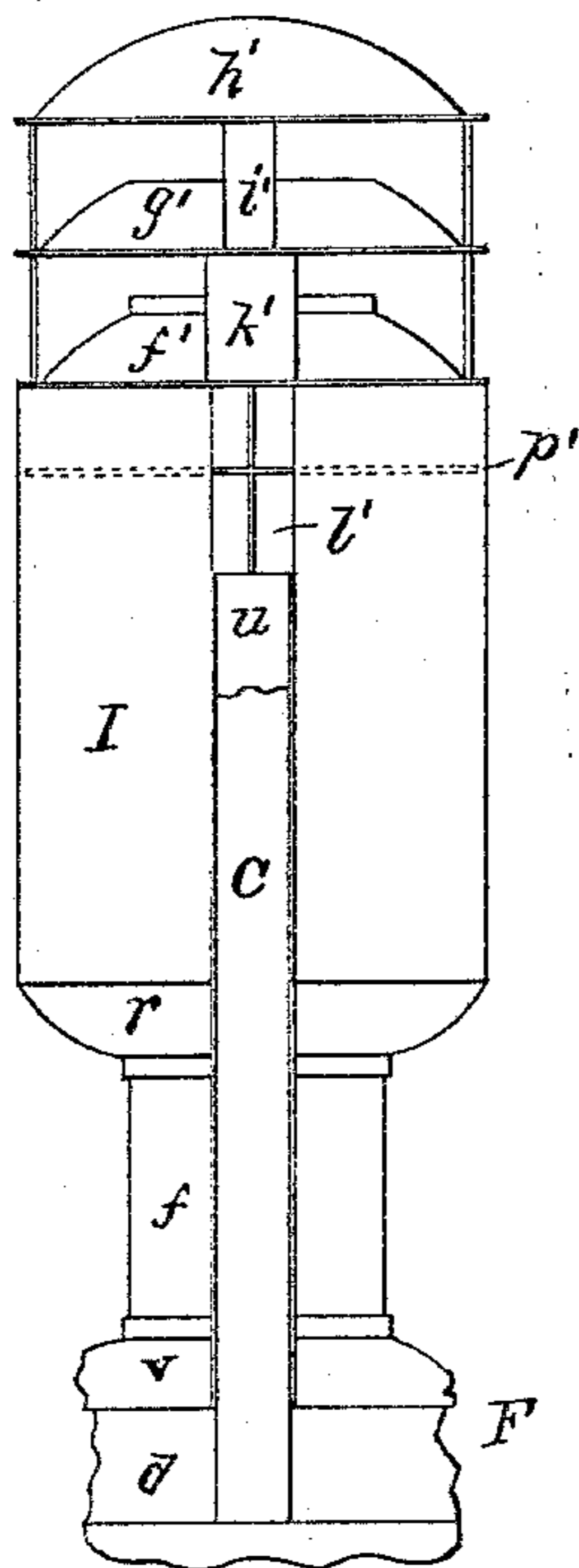


Fig. 5.

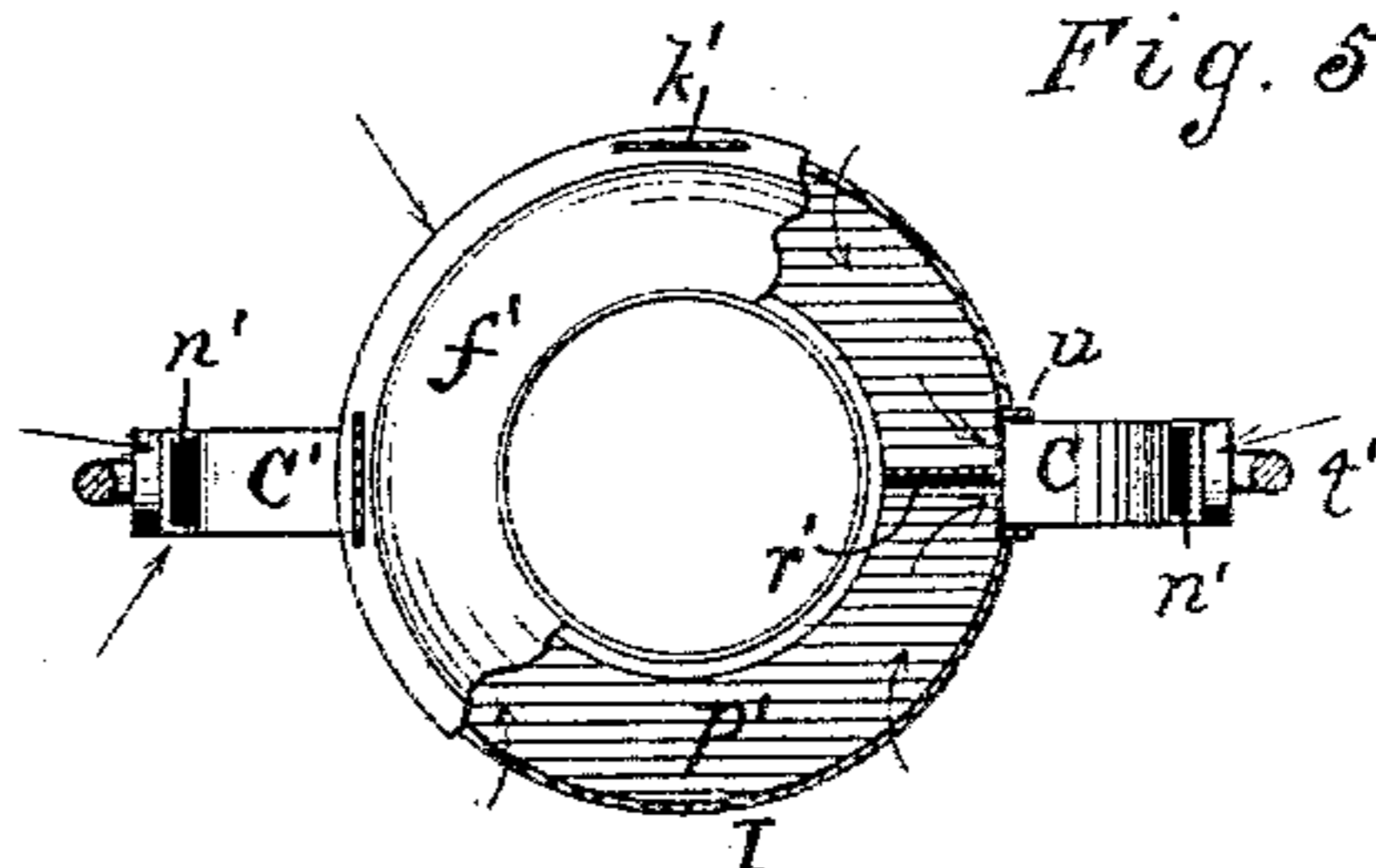


Fig. 6.

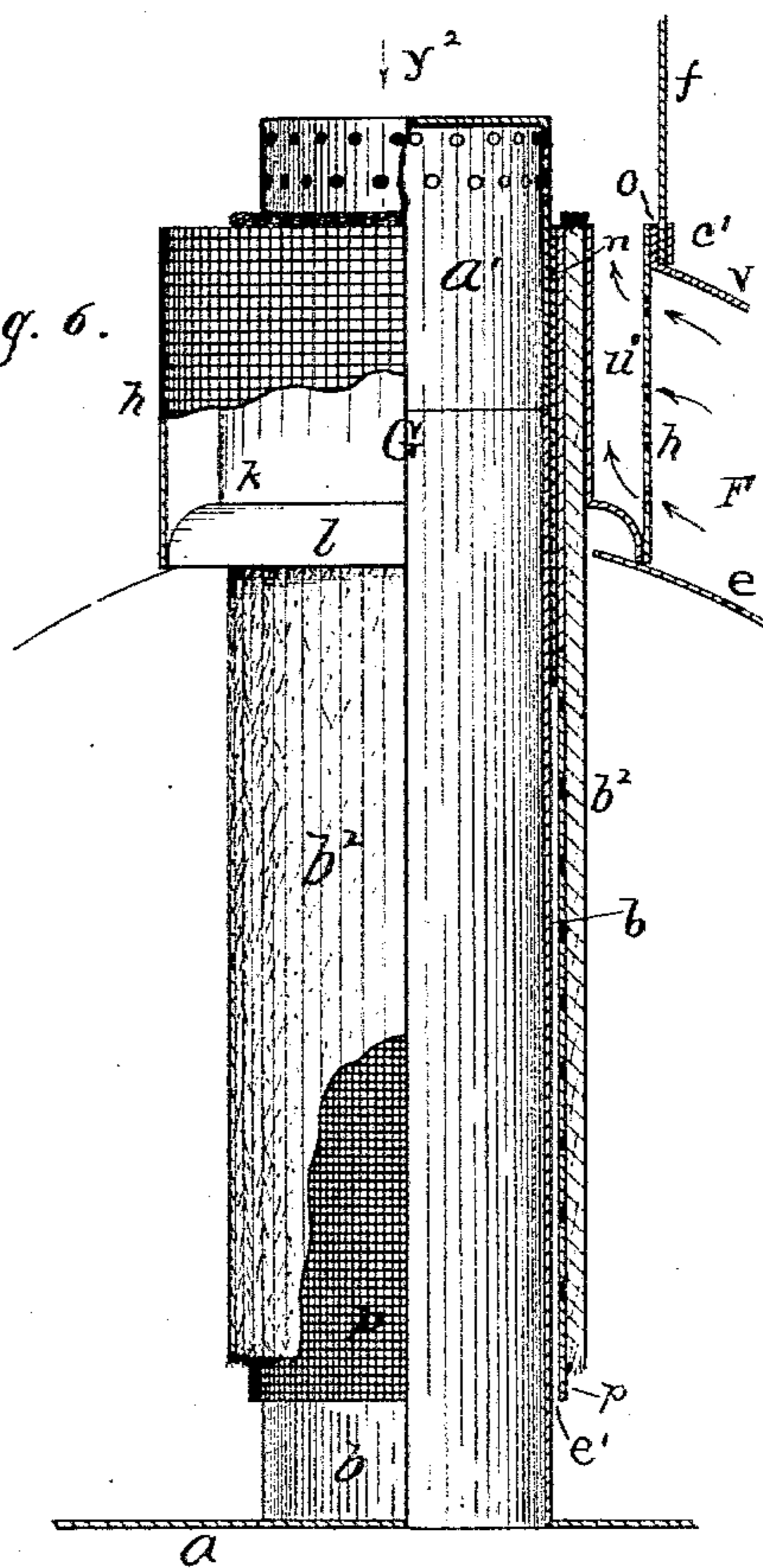
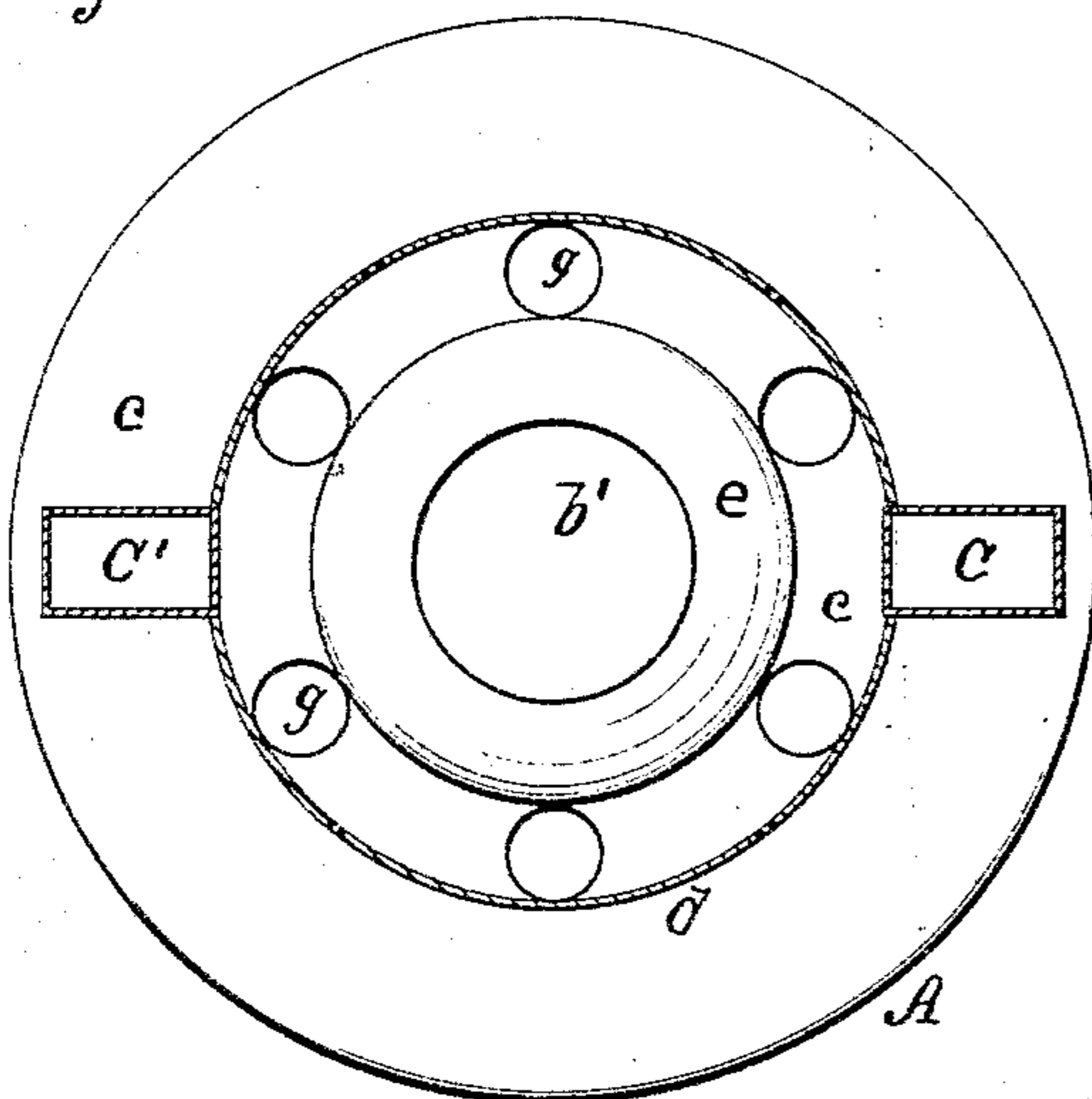


Fig. 7.



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UNITED STATES PATENT OFFICE.

LEONARD HENKLE, OF ROCHESTER, NEW YORK.

STREET-LAMP.

SPECIFICATION forming part of Letters Patent No. 303,964, dated August 19, 1884.

Application filed February 18, 1884. (No model.)

To all whom it may concern:

Be it known that I, LEONARD HENKLE, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Street-Lamps, which improvement is fully set forth in the following specification and accompanying drawings.

My invention relates to a street-lamp having an Argand burner, in which kerosene-oil or other liquid is used to produce a flame; and it consists in the combination of certain improved parts and devices by means of which a much better lamp in many respects is produced than those used heretofore, the construction and operation of which lamp are fully specified hereinbelow, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1, Sheet 1, is a side elevation of my improved street-lamp, the parts at the right of the center vertical line being vertically and centrally sectioned to show the interior parts of the structure, parts being shown in dotted position; Fig. 2, a side elevation of one of the air-supply tubes or side pipes, viewed as indicated by arrow *x* in Fig. 1, more clearly showing the outside draft-opening near the top thereof; Fig. 3, a side elevation of the upper part of one of the side pipes, viewed in the opposite direction from that in which Fig. 2 is seen, showing more fully the inside draft-opening at the top thereof; Fig. 4, Sheet 2, an elevation in outline of some of the upper parts of the lamp, viewed from the same direction from which Fig. 2 is seen, or as indicated by arrow *x* in Fig. 1, showing some of the draft-openings through the perforated screen, near the upper end of the lamp, and the plates serving to check and control the draft-currents; Fig. 5, a plan of some of the upper parts of the lamp, viewed as indicated by arrow *x'* in Fig. 1, the standards supporting the middle and upper domes being horizontally-sectioned on the dotted line *y'* in Fig. 1, and the screen sectioned on the dotted line *y* in said figure, parts of the head of the screen being broken away to uncover the draft-regulating plates within the screen; Fig. 6, a side sectional elevation of the various parts of the removable burner, being shown in elevation left of the vertical line at the middle, and cen-

trally vertically sectioned on the right of said line, with parts broken away; Fig. 7, a plan of the upper plate of the oil-fount, with parts sectioned on the dotted line *z* in Fig. 1, viewed as indicated by the arrow *z'*, and showing the ends of the vertical draft-tubes and other parts, and Fig. 8, Sheet 1, an outline figure showing the upper end of the burner and other parts, viewed as indicated by arrow *y''* in Fig. 6, the last three figures being drawn to scales larger than that to which the other figures are drawn.

Referring to the parts, A is an oil-fount, substantially of common construction.

B is an air-chamber beneath the floor *a* of the oil-chamber D.

C C' are side pipes, for supplying the flame with air, which pass vertically down through the oil-chamber and plate *a*, opening into the air-chamber B. A central vertical tube, *b*, reaches from said air-chamber up to a point near the flame, to supply air to the inner surface thereof. The upper plate, *c*, of the oil-chamber I prefer to construct with a central annular raised part, *e*, as shown, a circular opening, *b'*, being made at the center thereof, which receives the burner, the raised part *e* serving to prevent the oil from splashing out at said opening *b'* during handling.

An inclosure, F, having a spherical upper plate, *v*, and perforated cylindrical wall *d*, the latter resting concentrically upon and secured rigidly to the plate *c*, between the pipes C C', forms an upper air-chamber near the flame. The plate *v* is provided with a circular opening at its center, sufficiently large, through which to receive the burner, said opening being surrounded by a short vertical neck, *o*, more plainly shown in Fig. 6. This plate forms a rest for the lower end of the transmitter *f* for the light, which transmitter is a short thimble or cylinder of thin mica, having its ends supported by bands *c'*, and slipped over the neck *o* of said plate. The pipes C C' pierce the annular plate *c* on opposite sides of the center thereof, and pass down through the oil-chamber, as stated. Vertical tubes *g* concentrically surrounding the wick-tube, communicate between the air-chambers B and F, passing through the oil-chamber D, and conduct the main supply of air to the outside

of the flame that said flame there receives. These tubes are parallel with the center tube, *b*, that conducts air to the interior of the flame, and take the air they convey from the same source the tube *b* takes air from—that is to say, from the air-chamber D, (both drawing air from the same level,) which is important in the operation of the lamp.

h is a perforated band outside of the wick-tube and concentric therewith, forming an inner wall for the air-chamber F, through which the air sifts in passing up the tubes *g* to the exterior of the flame, which it does by passing through the space *u'* between said band and the tube *h*, as indicated. The perforations through the side *d* of the air-chamber F are intended to be limited to admit only a moderate supply of air through them, which air, passing into the air-chamber F and through the band *h*, reaches the exterior of the flame. The perforated plate *d* allows a limited quantity of air to flow to the flame during calm weather, or when the lamp is used in an inclosed place out of the wind, under which circumstance the air in the space *v* is liable to become so warm as to incline to move upward, from its rarity, instead of downward through the pipes.

G, Figs. 6 and 8, is the burner for the lamp, which is made up of a short outer tube, *k*, for the wick, having a flange, *l*, skirting its base and resting upon the raised part *e* of the plate *c*, and a longer perforated inner tube, *p*, for the wick, reaching nearly to the bottom of the oil-chamber. These two tubes are secured rigidly together, and held concentrically apart by means of longitudinal tie-pieces *i i*, extending from the top to the base of the outer tube, *k*, leaving a wick-space, *s*, between them. A short and thin inner band, *n*, fits closely at its exterior surface against the inner surface of the tube *p* at the top thereof, the inner surface of which band *n* is fitted to telescope snugly upon the exterior surface of the air-supply tube *b*. This band serves the double purpose of securing the burner in place in the lamp, and of holding the perforated tube *p* slightly away from the exterior surface of the tube *b*, so that oil shall be carried up along the space *c'* between said tubes by capillary attraction, and, passing through the perforations of the tube *p*, supplies the contiguous fibrous wick *b'* with oil along its inner surface. By this means oil is supplied plentifully to the fibrous part of the wick as long as the perforated tube touches the oil at its lower end, even though the fibrous wick is wholly out of and above the body of oil in the chamber. By this means the length of time and the number of hours the flame will burn may be regulated by gaging the quantity of oil placed in the oil-chamber, and thus cause the flame of the lamp to expire at the desired time without having to be extinguished by hand, as is usually done.

A perforated thimble, *a'*, rests within the

upper open end of the band *n* within the flame upon the upper end of the tube *b*, and forms an integral part or upward continuation of the passage for the air formed by said tube *b*. The upper end of this thimble is closed by an imperforate plate, *a'*, which causes the upward-moving air within to be turned in a horizontal direction through the perforations at the side of the thimble out against the inner surface of the flame. When the passage *b* for the air within the flame is open at its upper end, as in the usual manner, a large amount of the air at the middle of the ascending column passes by or past the flame without contact, and adds nothing to the brilliancy of the same or to aid combustion. By using this thimble the ascending air within is divided opposite the flame into numerous small jets by the perforations of the thimble, and turned against the inner surface of the flame at all points, so that all the air moving upward in the tube *b* is carried into the flame and caused to aid combustion.

I is a cylindrical screen or curved perforated sheet, placed vertically between the side pipes, C C', at their upper ends. The lower end of this screen is covered by a spherical head, *r*, similar to and opposing the plate *v* of the air-chamber F, between which head and plate the transmitter *f* is securely held, as shown. This head *r* has a central opening and neck, like those parts above described as belonging to the plate *v*, and the transmitter is fitted to slip over the neck in the same manner, as described. The upper end of the screen is also partly closed by an annular curved head, *f'*, similar to the lower head, *r*, having a circular opening at the middle thereof. A vertical pipe, *d'*, having a diameter about equal to that of the openings in the respective heads of the screen, is placed concentrically within the latter, joining said openings of the heads, and forms, with the transmitter *f*, a chimney for the flame. An annular space, *v'*, is inclosed between the screen I and pipe *d'*, the air in which is modified in temperature or kept slightly warmer than the external air by the heat from the pipe *d'* during very cold weather. The annular head *f'* covers at its upper end the space *v'* between the chimney and screen, said space at the lower end being closed by the head *v*. A curved annular or open plate, *g'*, similar to the head *f'*, is placed over said head *f'* and parallel therewith, and an imperforate canopy, *h'*, is placed above the plate *g'*, as shown. I find it advantageous to employ the additional open plate *g'* between the upper end of the chimney and the canopy *h'*, for it enables me to place the latter farther away from the chimney, and thus give a greater opening for the escape of the smoke or outflow from the chimney than I could otherwise do. A part of this outflow into the open air is below the plate *g'*, and a part passes through the opening in the plate, and thence out under the

canopy, as indicated by arrows. The plates g' and canopy h' are supported by standards k' and i' .

Slides u , Figs. 1, 4, and 5, are attached on opposite sides of the screen, and fitted to clasp the pipes C C' , and slide up or down along the inner opposing faces of the same. By this means the screen I and other upper parts of the lamp attached thereto may be drawn out from between the pipes C C' or slightly raised, as indicated in dotted lines, for the purpose of lighting the wick.

Small ingress draft-openings n' are formed through the outer surfaces of the pipes C C' , near the upper ends thereof, and larger or main openings o' are made through the opposite or inner sides of the pipes. The former openings open into the outer air, while the latter, through which the main supply of air for the flame passes, open into the annular space V' , inclosed within the screen I , as shown, corresponding opposing holes l' , Fig. 4, being made through the sides of the screen for the purpose. A horizontal annular plate, p' , Fig. 5, is secured to the inner surface of the screen I , within the space v' , in such a position as to equally divide horizontally the openings l' in the screen, and two vertical plates, r' , are placed to cross the plate p' , and equally divide the said openings vertically. The lower edges of the holes n' and o' in the pipes are on a level, and curtains s' are placed between said respective openings within the pipes, reaching below the lower edges of the openings, to prevent currents of air from passing directly across from one to the other and extinguishing the flame from eduction through the pipes. The small openings n' through the outside of the respective side pipes are made for the purpose of receiving into said pipes a moderate amount of air, and prevent eduction from the pipes when the wind is blowing directly against the outer face of one of the pipes, as in the direction indicated by the arrow x in Fig. 1. The force of the wind striking the lamp will be effectually broken by the screen I before any of it is poured down the side pipes; and the plates p' and r' , crossing over the major openings o' of the side pipes, further break up air-currents coming from any direction that tend to pass across said openings and educt the air from said pipes. The air within the screen is kept always slightly warmer than that without from the warmth of the chimney d' . This causes a moderate amount of warmth to be carried to the oil by the side pipes, which in zero-weather is desirable, for it prevents the oil from becoming sluggish from cold.

This lamp I have constructed so as to withstand fierce gales and storms, and the mica transmitter, being small, (about two and one-quarter inches in length and diameter,) is not likely to be hit by hail-stones, and will not be broken from contraction if struck by rain-drops while heated.

A socket, L , under the oil-fount admits of the lamp being readily secured to the top of a post, O , or removed therefrom.

A bail, t' , is attached, as shown, so the lamp may be carried as a hand-lantern.

What I claim as my invention is—

1. A lamp having side pipes, C C' , through which air flows to supply the flame, said pipes opening at their respective upper or outer ends into a space covered or inclosed by a screen or perforated sheet, I , substantially as shown and described.

2. A street-lamp having side pipes, C C' , through which air flows to supply the flame, said pipes opening at their respective upper or outer ends into a space inclosed between the chimney of the lamp and an outer perforated sheet or screen, I , substantially as and for the purpose set forth.

3. A street-lamp having side pipes, C C' , each having two openings, n' o' , at their respective upper or outer ends, one of said openings opening into a space covered or inclosed by a screen or perforated plate, I , and the other opening into the outer air, substantially as shown and described.

4. The combination, in a street-lamp, with side pipes, C C' , of the screen I , horizontal plate p' , and vertical plates r' , crossing the openings or communications between the interiors of said side pipes and screen, substantially as described and shown.

5. The combination of the screen I and chimney d' of a lamp inclosing an air-space, v' , and an oil-chamber, D , with air-supply pipes C C' leading from said space v' through the oil-chamber, substantially as and for the purpose set forth.

6. In a street-lamp, a continuous rigid air-tube, b , passing from the air-chamber B , under the oil-chamber, vertically up through said oil-chamber to the burner, in combination with an outer perforated tube, p , separated concentrically from the tube b by a band, n , inserted between said tubes, so that oil may be carried upward along the annular space e' between them by capillary attraction, and a fibrous wick, b^2 , for the burner, drawn over the perforated tube p , to receive or absorb the oil through the perforations of said tube that flows upward between the tubes, b and p , as stated, substantially as shown and described, and for the purpose set forth.

7. The combination, in a lamp, of the chimney d' and screen or plate I , inclosing the same, with an annular head, f' , to cover the annular space between said chimney and screen, annular plate g' , and canopy h' , said head f' , and plate g' , and canopy h' arranged one above the other, and above the top of the chimney, substantially as shown and described.

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Witnesses:

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