

(No Model.)

2 Sheets—Sheet 1.

A. O'BRIEN.
COWL.

No. 567,500.

Patented Sept. 8, 1896.

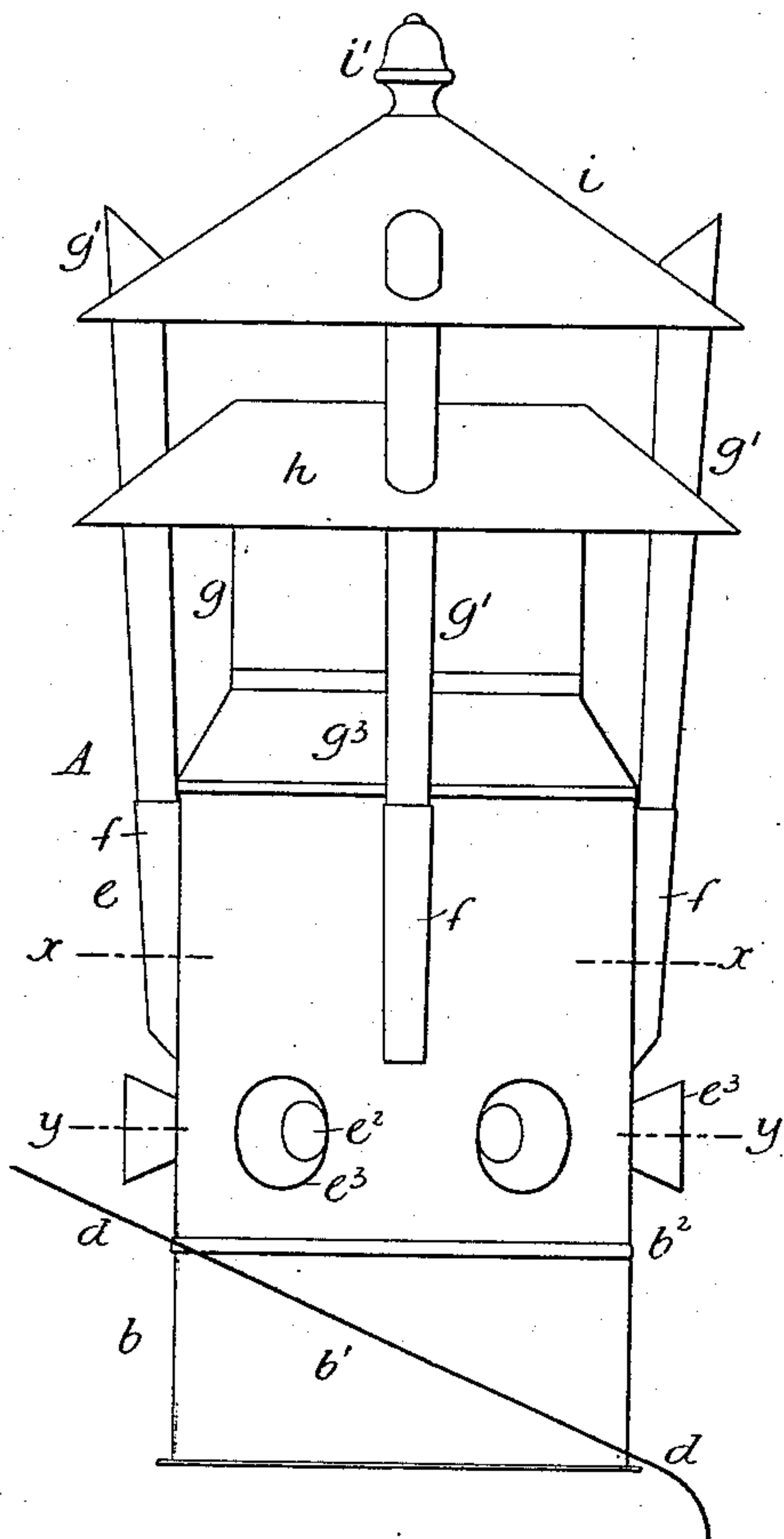


Fig. 1

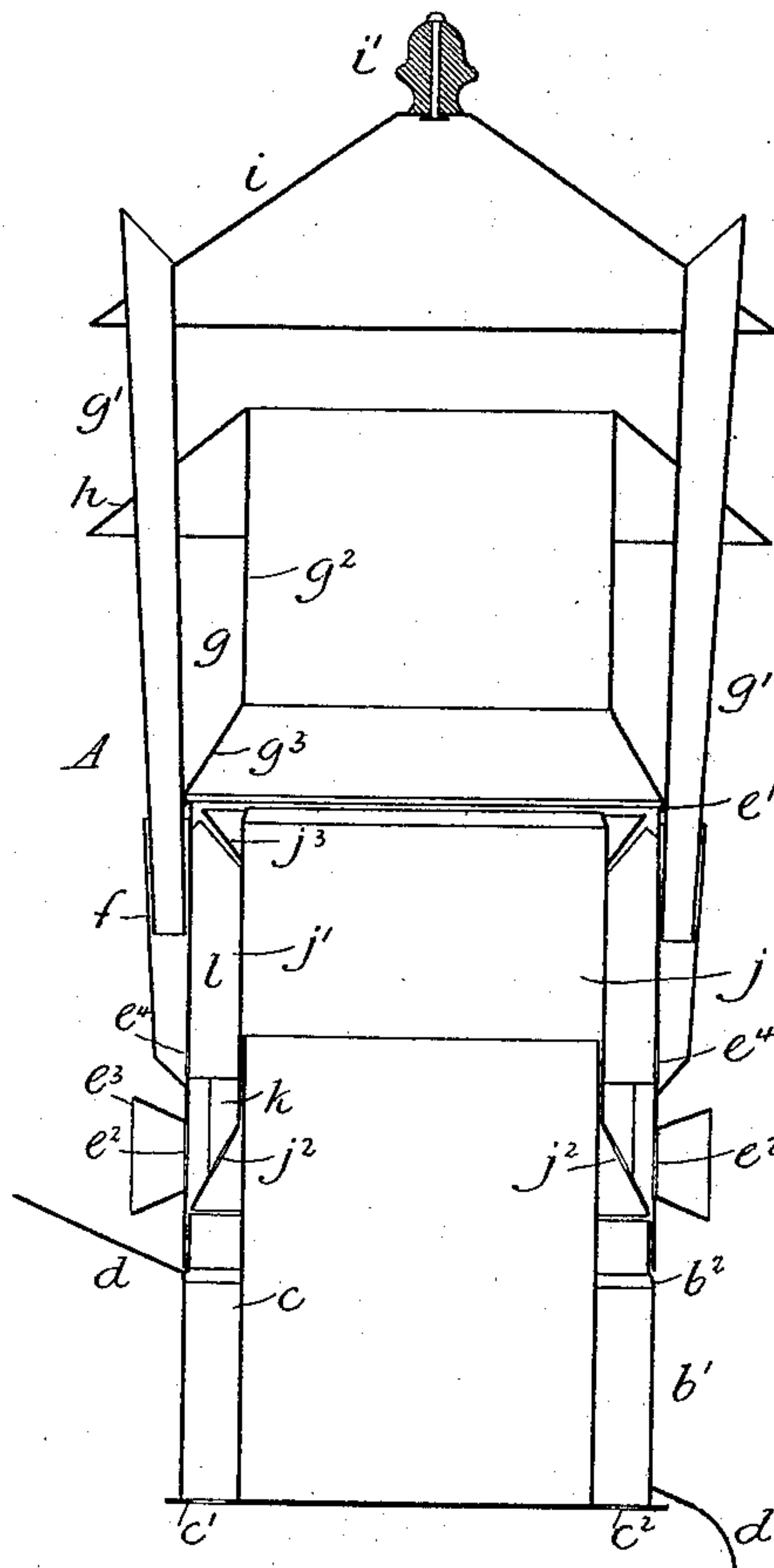


Fig. 2.

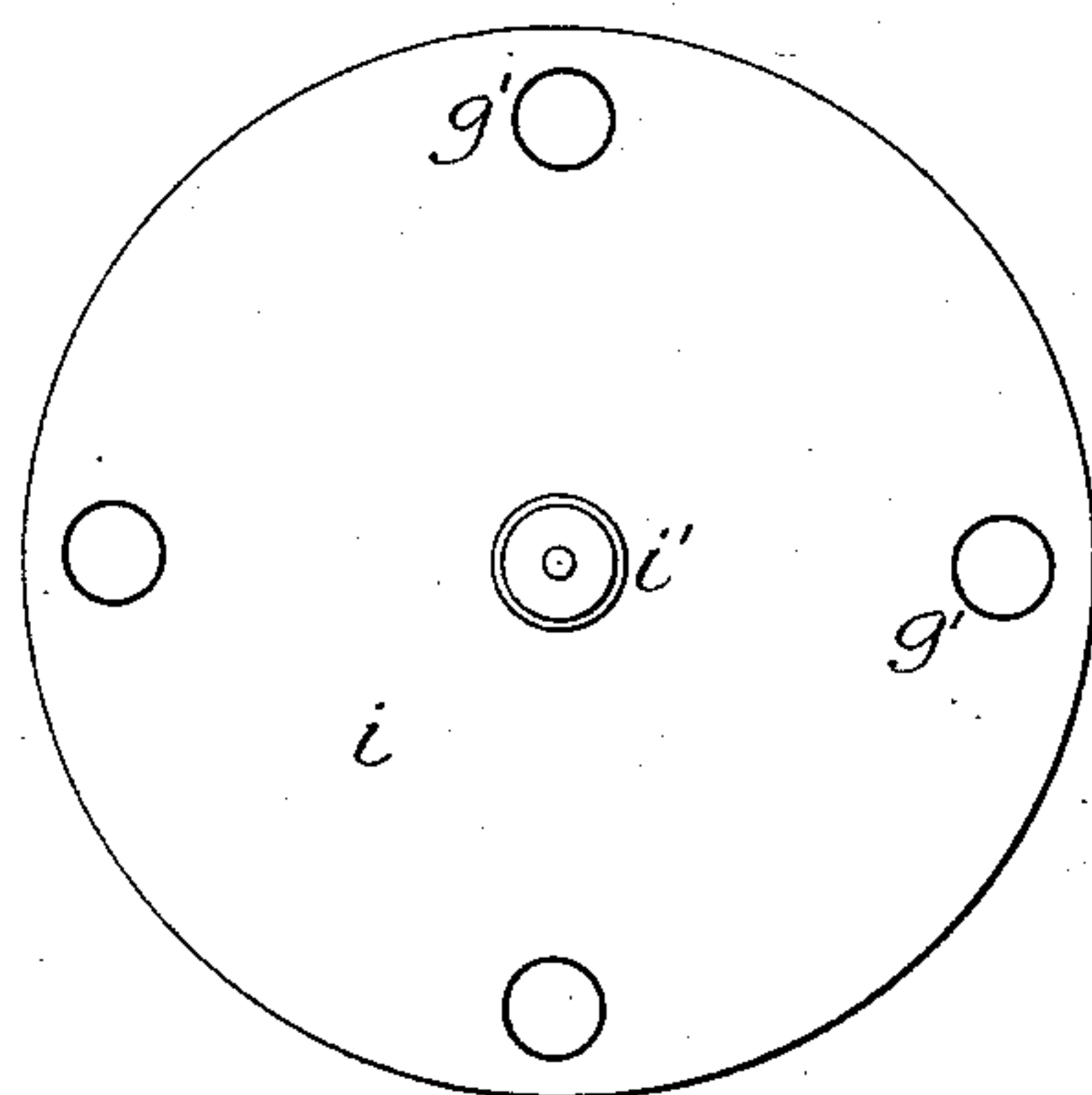


Fig. 3.

Witnesses

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Inventor

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By *W. W. DeLoe*
his Attorneys

(No Model.)

2 Sheets—Sheet 2.

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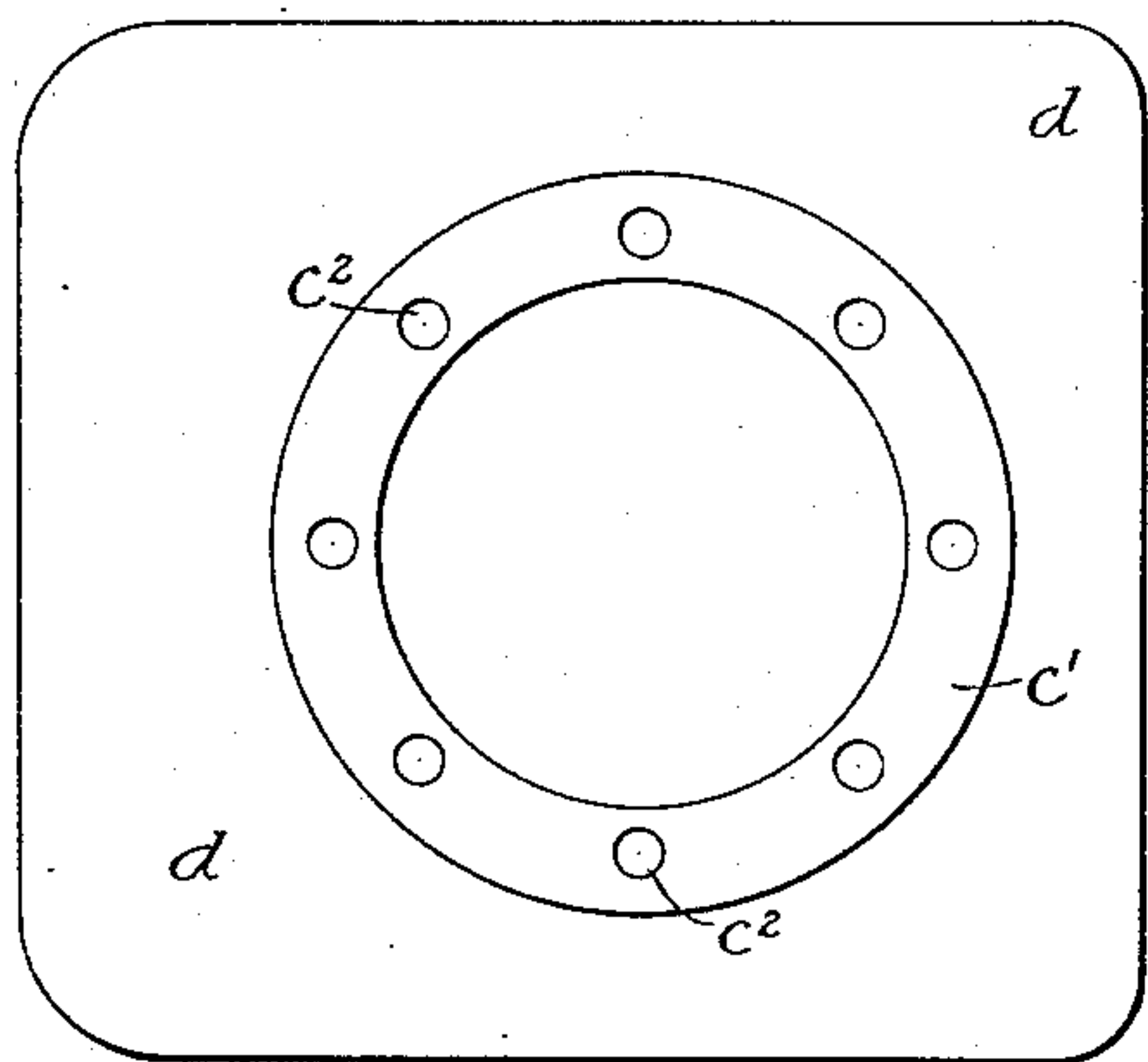


Fig. 4.

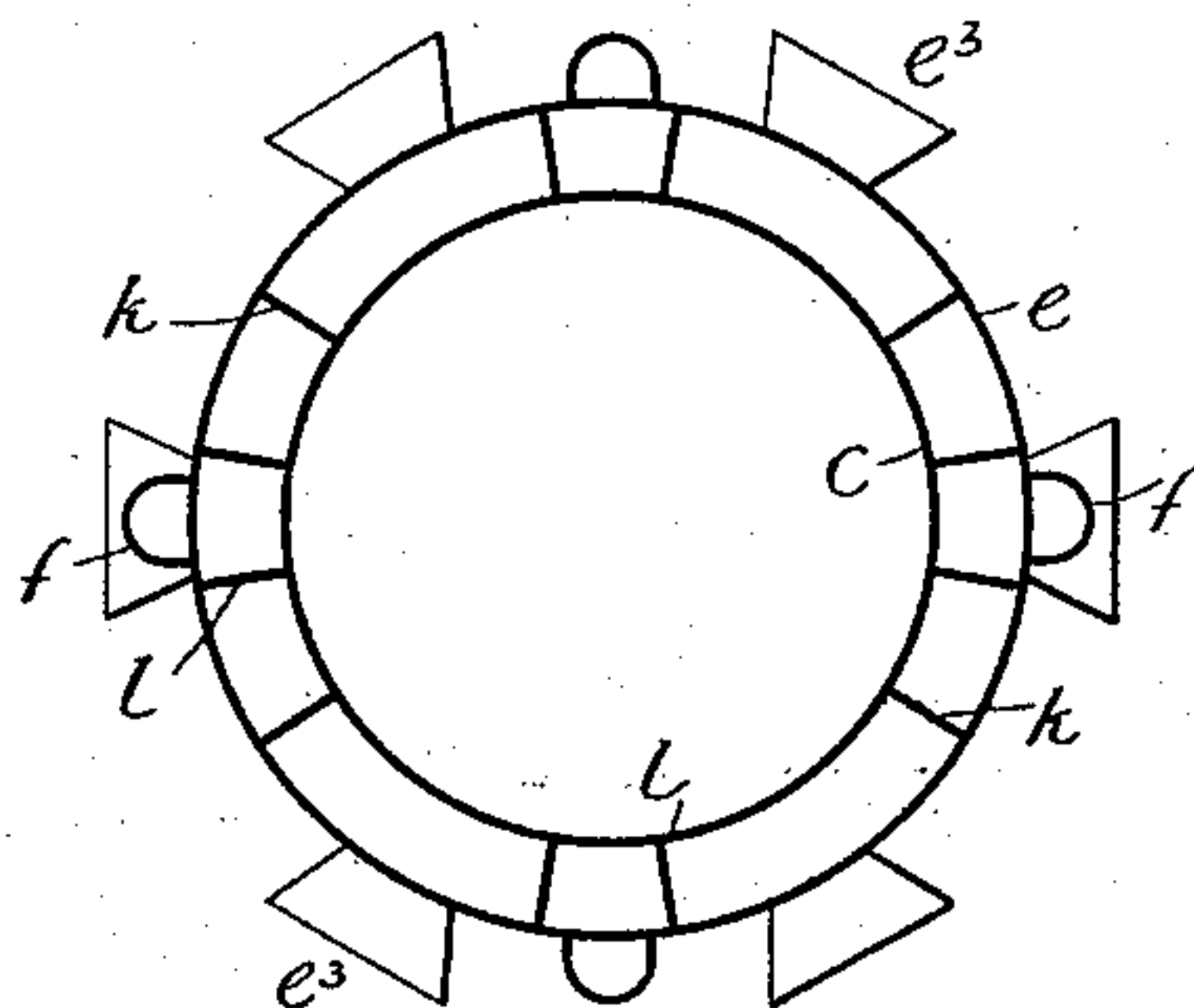


Fig. 5.

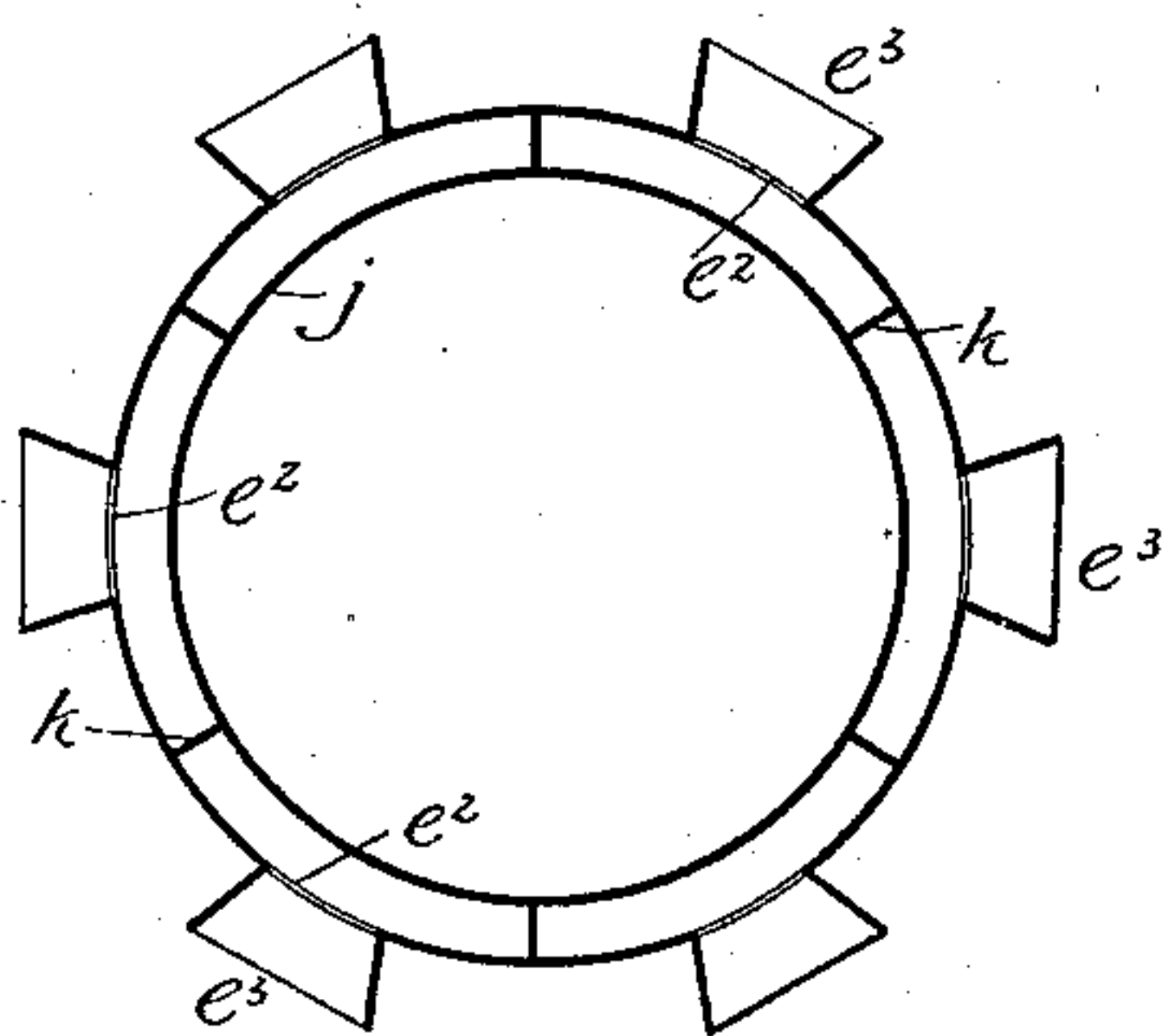


Fig. 6.

Witnesses

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UNITED STATES PATENT OFFICE.

ARTHUR O'BRIEN, OF HELENA, MONTANA, ASSIGNOR OF ONE-HALF TO
HELEN E. MILLER, OF SAME PLACE.

COWL.

SPECIFICATION forming part of Letters Patent No. 567,500, dated September 8, 1896.

Application filed November 22, 1894. Renewed February 27, 1896. Serial No. 581,083. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR O'BRIEN, a citizen of the United States, residing at Helena, in the county of Lewis and Clarke and State of Montana, have invented certain new and useful Improvements in Cowls; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention is directed to devices for promoting draft and ventilation, and has for its objects, first, the production of an improved cowl adapted for application to chimneys, sewer and other vent pipes, and the like, and by which is maintained a constant and steady draft from the point of generation to the point of exit of the smoke and other products of combustion or gas-laden air, as the case may be, despite the direction of the currents of the outside air, and by which also is prevented the entrance into the chimney or pipe of air, rain, snow, and hail through the channels by which said products of combustion or gas-laden air find an outlet, and, second, the production of means, forming a part of the cowl, by which a complete ventilation of any inclosure is maintained at all times regardless of the condition of the outside air or weather.

The nature of my invention will become apparent from a reading of the subjoined description when taken in connection with the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is an elevation of my improved cowl. Fig. 2 is a vertical central sectional view. Fig. 3 is a top plan view. Fig. 4 is a bottom plan view. Fig. 5 is a horizontal section taken on line $x x$, Fig. 1; and Fig. 6 is a horizontal section taken on line $y y$ of same figure.

Referring to the said drawings by letter, A denotes my improved cowl and ventilator, which is preferably made in four sections circular in cross-section and fitting together in the manner and arrangement best shown in Figs. 1 and 2. The lower section or base b , which is secured to the chimney, pipe, or

roof, is composed of the outer pipe b' , which has an annular bead or shoulder b^2 near its top, and the inner pipe c of smaller diameter, arranged concentrically within the outer pipe and secured thereto by a ring-plate c' , having a series of perforations $c^2 c^2$, opening into the annular space between said pipes, as shown.

d is a roof-flange, preferably rectangular in shape and secured to the outer pipe.

Above the base b is a section e of the same diameter as the pipe b' , which fits the upper end of said pipe and rests against the shoulder b^2 thereon. The upper end of this section e is formed with a flange e' , and near the lower end is a series of perforations $e^2 e^2$, provided with funnels $e^3 e^3$. Above these perforations are other perforations $e^4 e^4$, preferably four in number, and on the outside of the section are secured tubes $f f$, the lower ends of which open into the interior of the section through the perforations e^4 . These tubes also form sockets which receive the lower ends of tubes $g' g'$, secured to the top section g , said tubes g' being open at both ends, and thereby affording an unobstructed passage from the interior of the section e through the perforations and tubes to the outer air. The top section g comprises a pipe g^2 , which corresponds in diameter with the pipe c , and its lower end g^3 is flared outwardly and flanged for engagement with the flanged upper end of section e , as shown.

At the top of the pipe g^2 is an inclined annular deflector h , through which pass the tubes g' . Above the top section and separated therefrom is a cap i , having a straight under side, which operates with the deflector h in a manner to be presently described. The upper side of the cap is cone-shaped and is preferably surmounted by an ornament, as i' . The cap is supported by the tubes g' , which pass entirely through the upper and under sides, but which tubes are, as before stated, open to the outer air.

The inner section j comprises a pipe j' , whose diameter is the same as that of the pipes g^2 and c , and is interposed between the latter pipes and furnishes with same a straight and unobstructed passage for the products of combustion or gas-laden air from the chimney or vent-pipe to the cap, which

latter then deflects said products, as will be presently explained. The inner section is inclosed by sections *e*, but is of smaller diameter than the latter, thereby forming an annular space between the pipes *e* and *j'*. The pipe *j'* is flared at its lower end to contact with the lower end of pipe *e*, and thereby closes said space at the bottom, but perforations $j^2 j^2$ are made in said flared end to open communication between said space and the space between the pipes *b'* and *c*. Near the upper end of the pipe *j'* is secured an upwardly-inclined annular flange j^3 , which terminates at a point coincident with the top of said pipe. The space is divided into compartments by partitions *k k*, and said compartments are further divided into channels by U-shaped partitions *l l*, said partitions being arranged opposite to the perforations e^4 , whereby the said compartments are in communication with the tubes *f* through said perforations. The partitions, instead of being secured to the exterior of pipe *j*, may be secured to the inner side of section *e*, the operation in either event being the same.

In practicing my invention the device is applied in any suitable manner to a chimney, vent or other pipe, or other outlet from which products of combustion or gas-laden or impure air are to be drawn, my invention being susceptible of utilization for the ventilation of railway-cars, schools, jails, public and other buildings, factories, malt-houses, and the like, or of rooms therein, as well as for the carrying off of products of combustion and gases from chimneys, sewers, water-closets, or any other place where a draft may be required.

In operation the construction of the cowl is such as to provide a clear unobstructed passage for the products of combustion or gases, as the case may be, which enter the pipe *c* and pass in a straight line from thence through pipes *j'* and g^2 until the under side of the cap is reached. This cap being separated from the pipe *g'*, air-currents have a free passage between same in any direction, and these currents, if lateral, are deflected upward by the deflector *h*, and, striking the under side of the cap, pass then outward at the opposite side, thereby creating a draft which carries the products of combustion or gases freely and steadily from the cowl. The funnel-mouthed openings receive lateral currents of air, which, striking against the flared lower end of the inner section, cause same to rise through the compartments, the partitions being so arranged as to provide a separate passage from each funnel-mouthed opening, and, leaving said compartments, the air mingles with the products of combustion or gases and thereby adds to the strength of the draft. When applied to a chimney, the heat of the products raises the temperature of the air between the inner and outer pipes and causes same to rise and create a partial vacuum, and, mingling with the products, adds to the buoyancy of

the latter. The ventilation is accomplished by the impure air being carried off in a rapid and steady manner, regardless of the condition of the outside air or weather. The impure air enters the perforations in the lower section or base, and, rising between the pipes of said section, enters the space between pipes *j'* and g^2 and from thence is drawn out of the cowl through the central passage. The downward drafts or currents of outside air enter the tubes *g'* and pass from thence into the tubes *f* through the perforations and then through the channels into the central passage-way, thereby adding to the draft of the cowl instead of obstructing same.

The cowl is compact and neat in appearance and will operate despite the direction of the air-currents. By its construction also no rain, snow, or hail can enter the cowl, and the outside air is also excluded, except such as enters the tubes and is disposed of in the manner just described.

I claim as my invention—

1. A chimney-cowl comprising an outer section having a straight unobstructed passage, and at its top a deflector, a cap above said deflector, an inner section a series of funnel-mouthed openings in the side of the outer section communicating with the space between the sections, and vertical tubes open to the outer air and leading through the outer section into said space.

2. A chimney-cowl comprising an outer section having a straight unobstructed passage, a deflector at its top, a cap having a straight under side located above said deflector, an inner section providing an annular space communicating with the main passage, funnel-mouthed openings leading to said space, and downdraft-tubes having a return-bend opening into said space.

3. A chimney-cowl comprising an outer section having a straight unobstructed passage, and a series of funnel-mouthed openings, an inner section providing an annular space communicating with said openings and flared at its lower end, and partitions dividing said space into compartments, one for each opening.

4. In combination with the top section having a deflector and a flared lower end and a cap, the vertical tubes connecting said lower end, flange and cap, and open at both ends, and the section having the socket-tubes for the lower end of the tubes on the top section, and openings from said socket-tubes to the interior of the cowl.

5. In combination with the base-section comprising two pipes providing an annular space between them, the section *e* having the funnel-mouthed openings, and the inner section *j* forming therewith an annular space and having its lower end flared and provided with a series of openings forming a communication between the two spaces.

6. In combination with the base-section comprising two pipes providing an annular

space, said pipes being connected at their lower end by a perforated ring-plate, the section *e* having a series of funnel-mouthed openings, and the inner section *j* providing an annular space and having a flared and perforated lower end, the perforations forming a communication between the spaces.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR O'BRIEN.

Witnesses:

H. F. C. KLEINSCHMIDT,
JOHN L. HENRY.