

(No Model.)

2 Sheets—Sheet 1.

A. HOWAT.
MINER'S SAFETY LAMP.

No. 382,161.

Patented May 1, 1888.

FIG. 1.

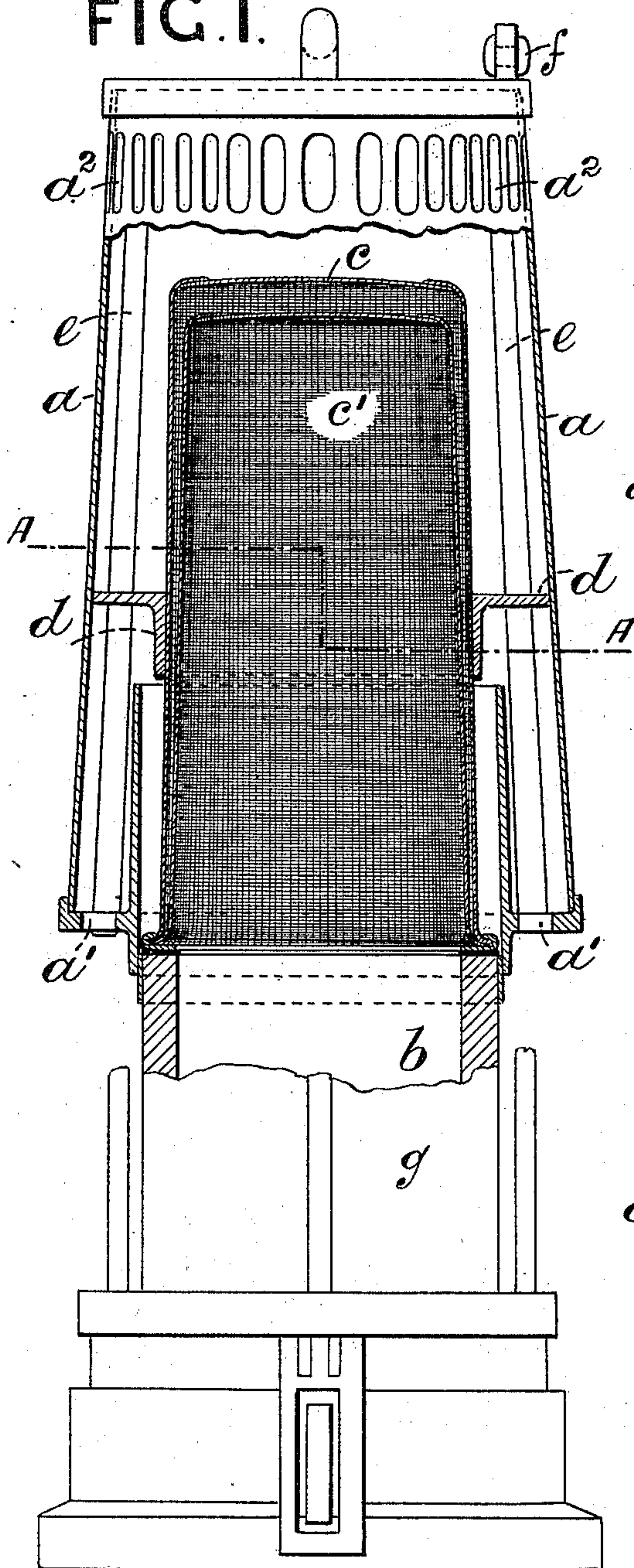


FIG. 2.

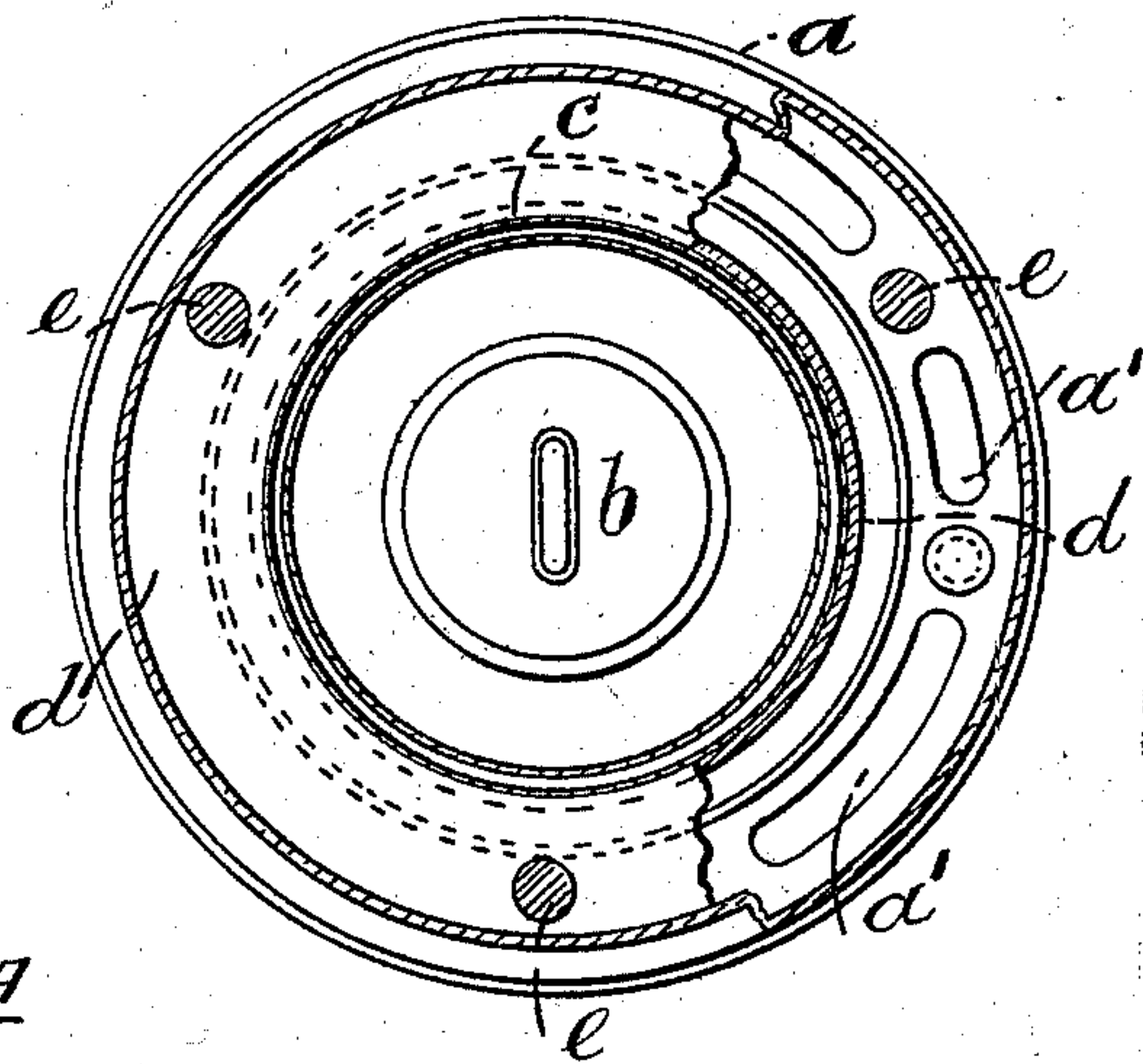
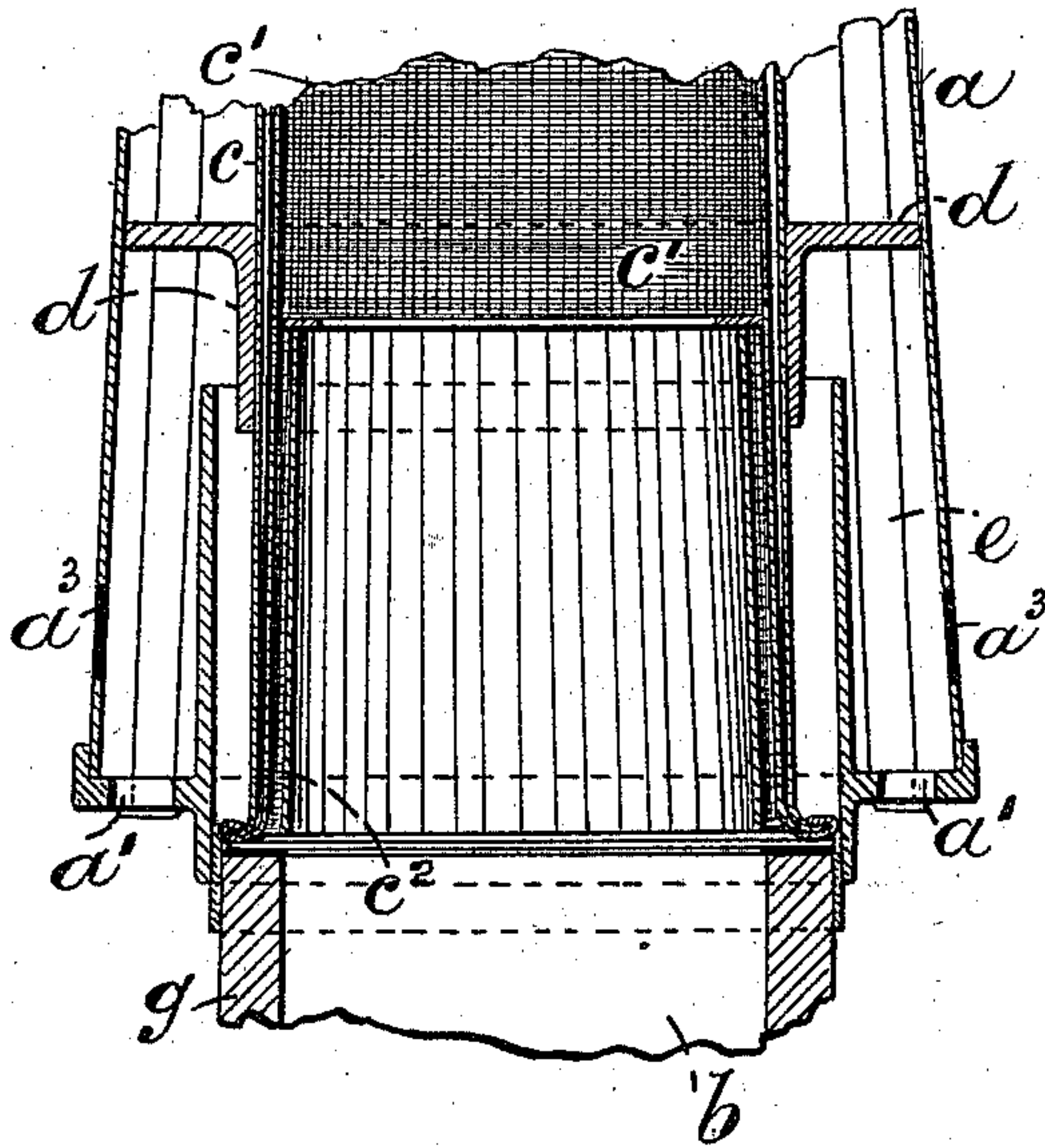


FIG. 3.



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Attorney.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 4.

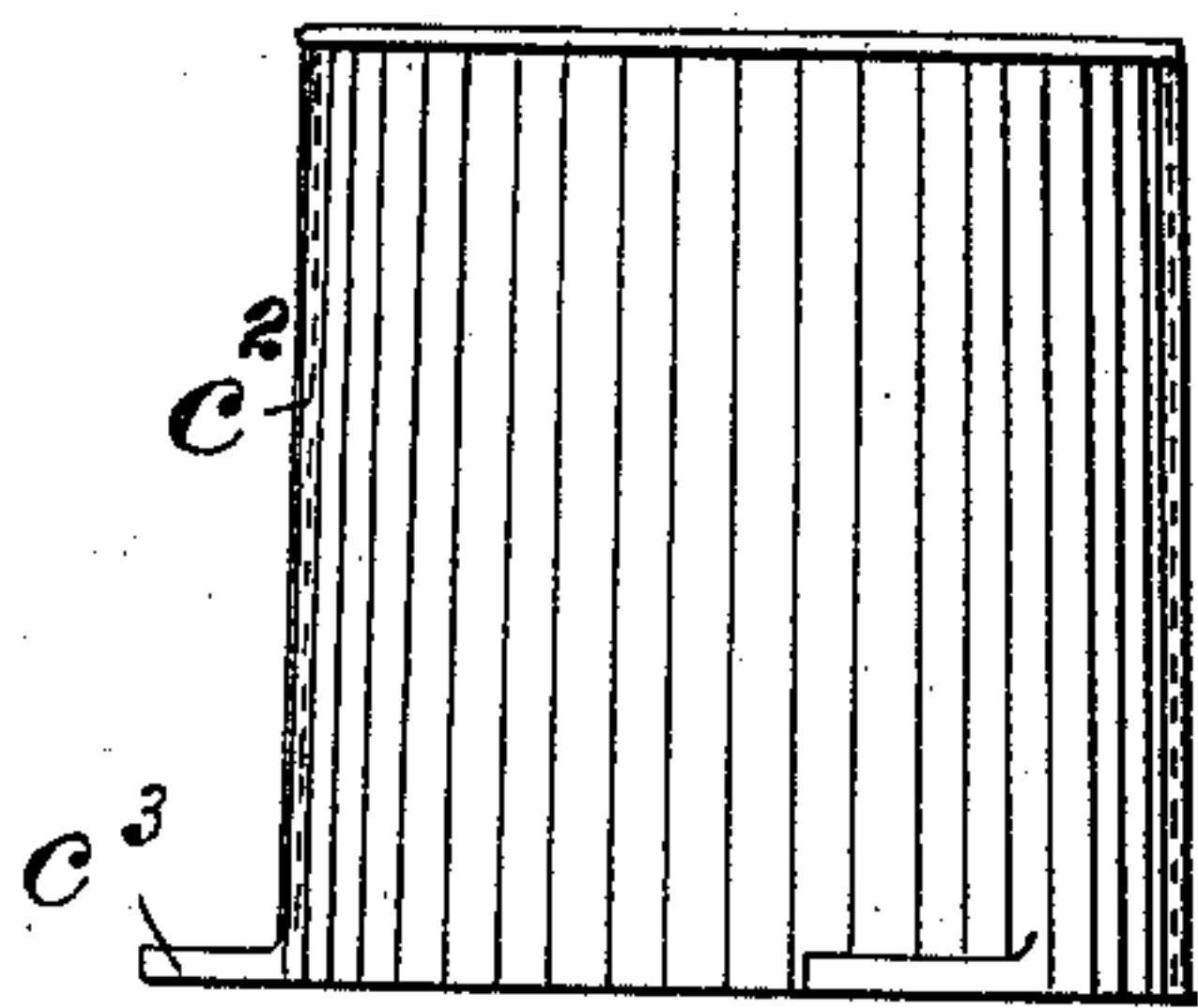


FIG. 6.

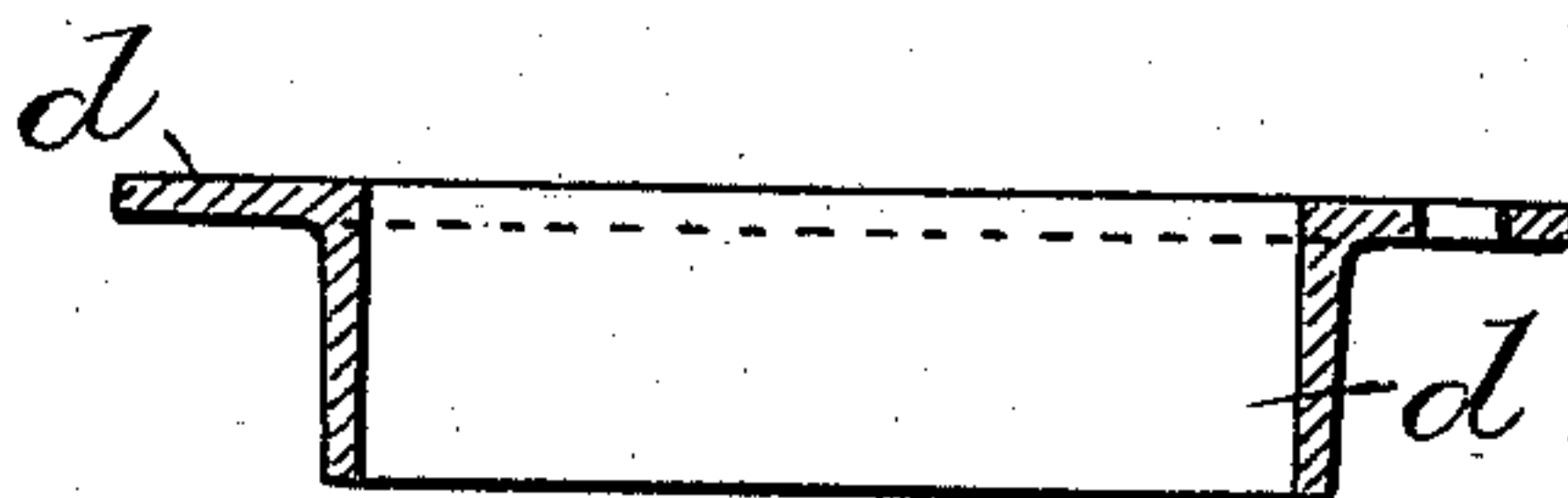


FIG. 7.

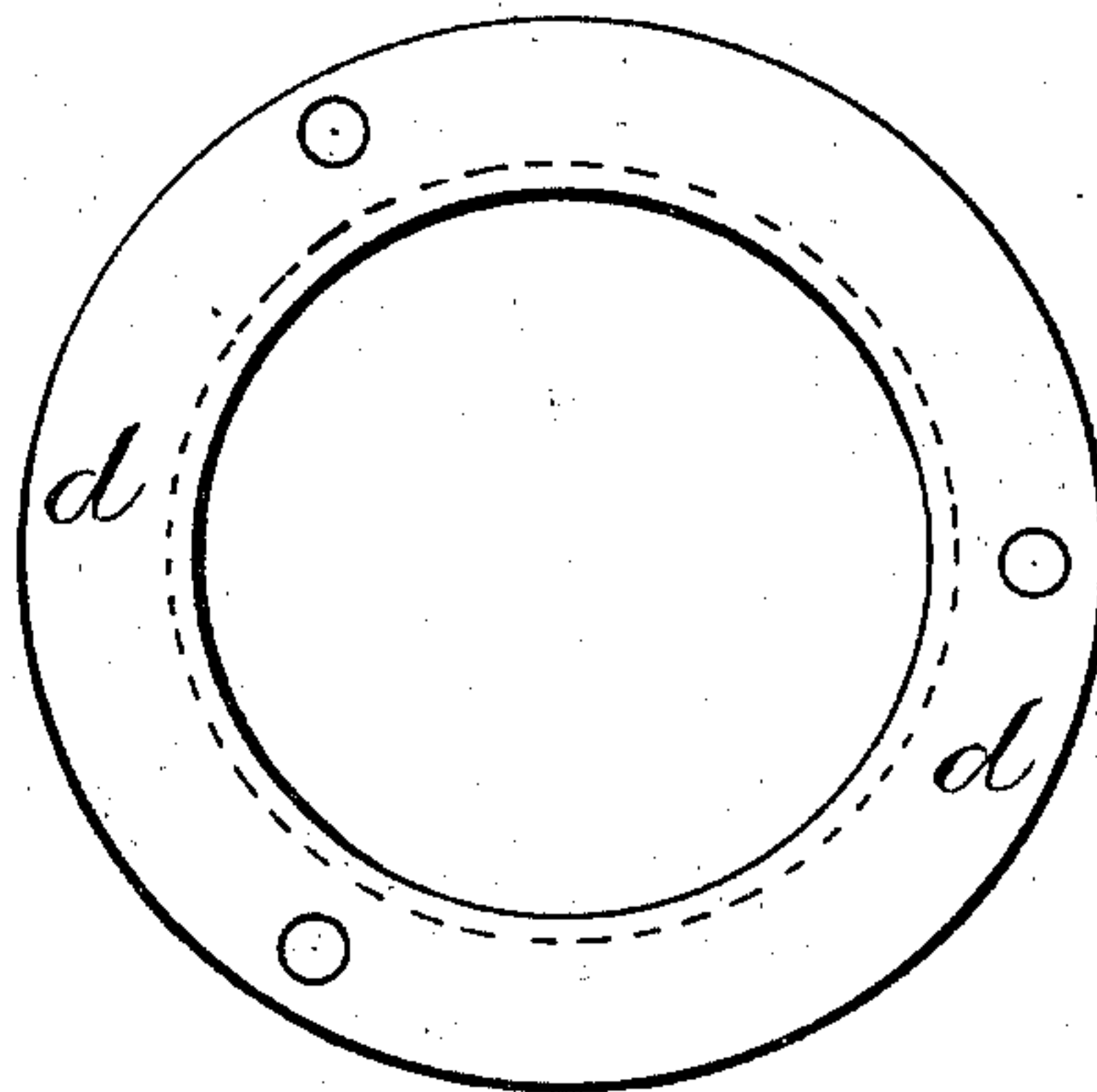
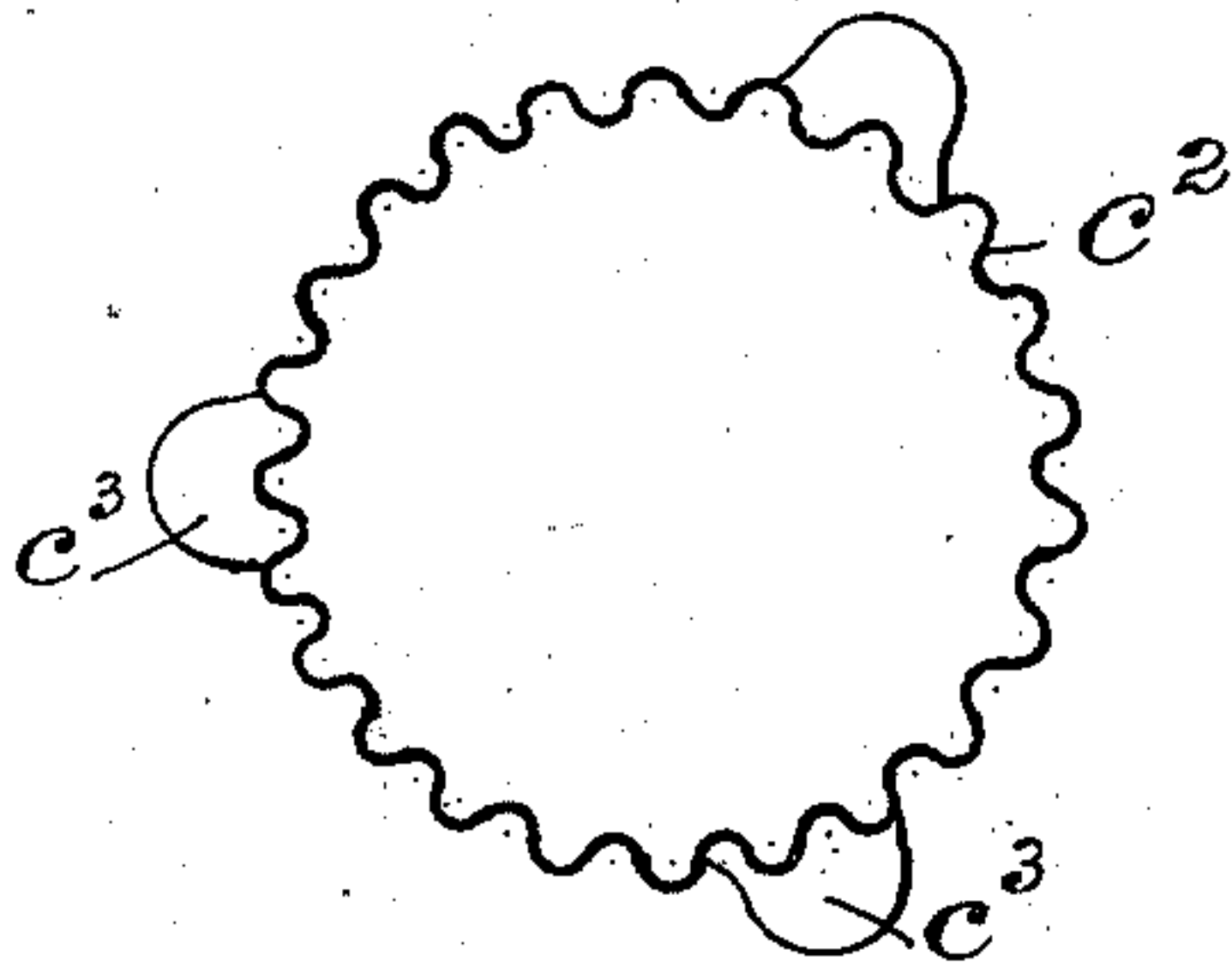


FIG. 5.



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UNITED STATES PATENT OFFICE.

ANDREW HOWAT, OF MANCHESTER, COUNTY OF LANCASTER, ENGLAND.

MINER'S SAFETY-LAMP.

SPECIFICATION forming part of Letters Patent No. 382,161, dated May 1, 1888.

Application filed January 25, 1888. Serial No. 261,918. (No model.) Patented in England February 5, 1886, No. 1,709; in France March 22, 1886, No. 174,930, and in Belgium March 26, 1886, No. 72,511.

To all whom it may concern:

Be it known that I, ANDREW HOWAT, a subject of the Queen of Great Britain, residing at Manchester, in the county of Lancaster, England, have invented a certain new and useful Improvement in Miners' Safety-Lamps, (for which I have obtained Letters Patent in Great Britain, No. 1,709, dated February 5, 1886; in France, No. 174,930, dated March 22, 1886, and in Belgium, No. 72,511, dated March 26, 1886,) of which the following is a specification.

My invention relates to improvements in those miners' safety-lamps in which the wire-gauze cylinder or cylinders is covered by an outer casing or shield of metal, the air for combustion being admitted to the lamp above the glass; and the chief object of my improvements is to insure more perfect combustion, and therefore a better light, by guiding into the burner portion of the lamp the whole of the air admitted for combustion, instead of allowing a large portion of the fresh air to escape with the products of combustion directly through the outlet near the top of the lamp, as is the case in lamps of the present construction. I accomplish this object by means of a suitable deflector—such as a ring of metal or other material—made, preferably, with a flange or collar and placed between the metal shield and gauze cylinder at any convenient distance above the air-inlet. This ring is secured in position by the ordinary metal rods of the lamp-frame or otherwise; and as the ring fits closely against the metal shield, as well as against the gauze cylinder, the air for combustion, which enters under or near the bottom of the shield, is deflected downward by the ring and flange, and so passes through the gauze into the burner portion, and thus more perfect combustion is insured than in lamps of the ordinary construction.

In order that my invention may be fully understood and readily carried into effect, I will describe the accompanying two sheets of drawings, reference being had to the figures and letters marked thereon.

Figure 1 is an elevation, partly in section, of a miner's safety-lamp to which a deflector is applied according to my invention. Fig. 2

is a sectional plan taken on the plane of the line A A, Fig. 1. Fig. 3 is a sectional elevation of part of the lamp, to which is applied a ring or cylinder to assist the deflector in guiding the air for combustion admitted to the lamp. Figs. 4 and 5 are detail views of said ring or cylinder, and Figs. 6 and 7 are detail views of the deflector.

Similar letters refer to similar parts throughout the several views.

a designates the outer casing or metal shield, which may either be permanently fixed and form part of the frame of the lamp or may be movable and be secured in position by means of the eye and lead rivet f , or by any suitable locking device.

a' is the inlet for air, and a'' the outlet for the products of combustion.

b is the burner portion of the lamp.

c is the outer and c' the inner wire-gauze cylinder.

c'' is a corrugated or fluted metal ring or cylinder, (see detail views, Figs. 4 and 5,) which may be placed inside the gauze cylinder c' , as shown in Fig. 3, and secured by lugs c''' to the lamp-frame above the glass g , in order to assist in guiding the air to the burner b .

The deflector d which I employ according to my invention may be of any suitable shape and form; but I prefer to employ a deflector of the kind shown in the drawings. This deflector d consists of a ring of metal or other suitable material, made with a flange or collar, d' , and placed between the shield a and the gauze-cylinder c at any convenient distance above the air-inlet a' . The deflector d is secured in position by rods e of the lamp-frame, as shown; or it may be otherwise secured—as, for example, when a fixed metal shield is employed, the deflector may be affixed thereto. The outer flange of the deflector fits closely against the interior of the shield a , and the interior of the deflector fits closely against the gauze cylinder c . Consequently the air for combustion, which in this case enters at a' , is deflected downward by the deflector, and so passes through the gauze cylinders cc' to the burner b , and thus better combustion and a brilliant light are insured.

Although I have shown a lamp provided

with two gauze cylinders and with the inlet a' for air situated under the shield a , it is obvious that the deflector may be applied to other constructions of lamps. For example, 5 there may be only one gauze cylinder, the corrugated ring c^2 may not be employed, as in Fig. 1, or may be employed, as in Fig. 3, or the ring c^2 may be plain instead of being corrugated, or the air-inlet may be through the 10 metal shield near the bottom—say at a^3 , Fig. 1—in place of at a' , between the shield a and the frame, as shown.

What I claim as my invention, and desire to secure by Letters Patent of the United States, 15 is—

1. In a miner's safety-lamp, the combination, with a wire-gauze cylinder or cylinders, and a metal shield or outer casing, of a deflector, such as the ring d , inserted between 20 the shield and gauze cylinder, and closing the intervening space, in order that all the air admitted to the lamp may be directed through

said gauze cylinder, substantially as herein set forth, for the purpose specified.

2. In a miner's safety-lamp, the combination, with a wire-gauze cylinder or cylinders, 25 a metal shield or outer casing, and a deflector closing the space between said wire-gauze cylinder and said shield, so as to direct the air through said wire-gauze cylinder, substantially 30 as described, of a ring or cylinder, such as the ring c^2 , located within the wire-gauze cylinder, substantially as and for the purposes herein set forth.

In testimony that I claim the foregoing as 35 my invention I have signed my name, in presence of two witnesses, this 13th day of January, 1888.

ANDREW HOWAT.

Witnesses:

H. B. BARLOW,

S. W. GILLET,

Both of 17 St. Ann's Square, Manchester.