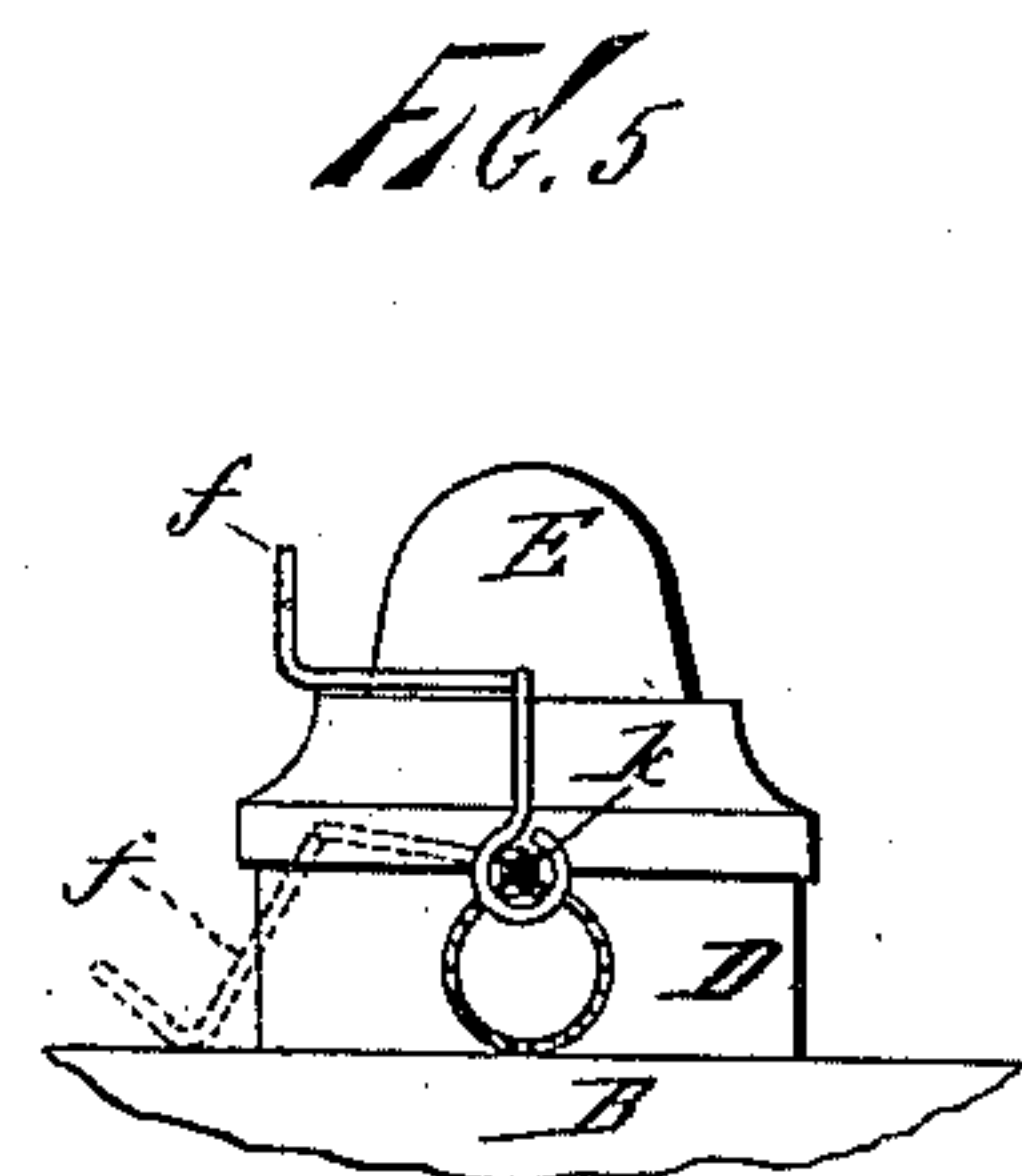
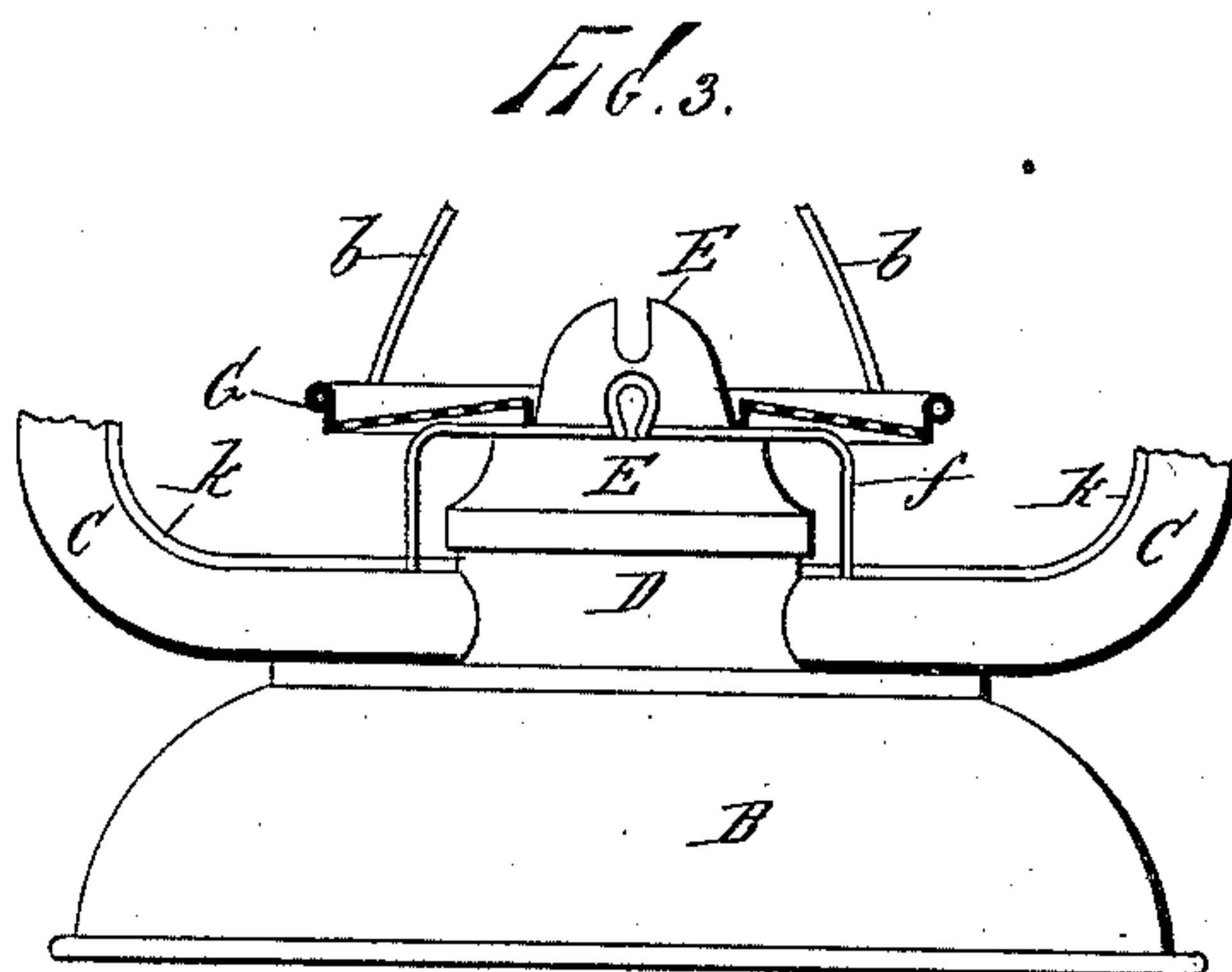
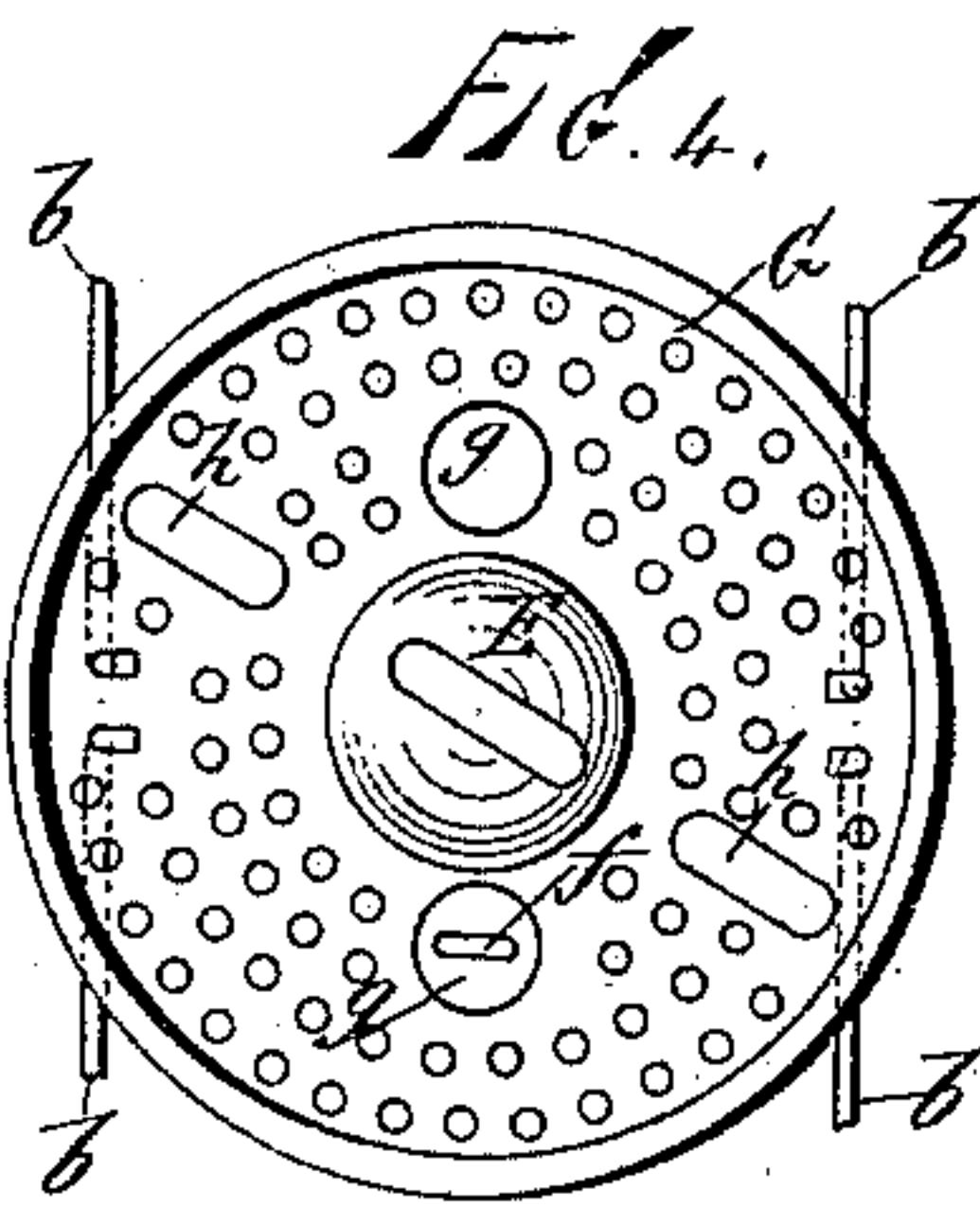
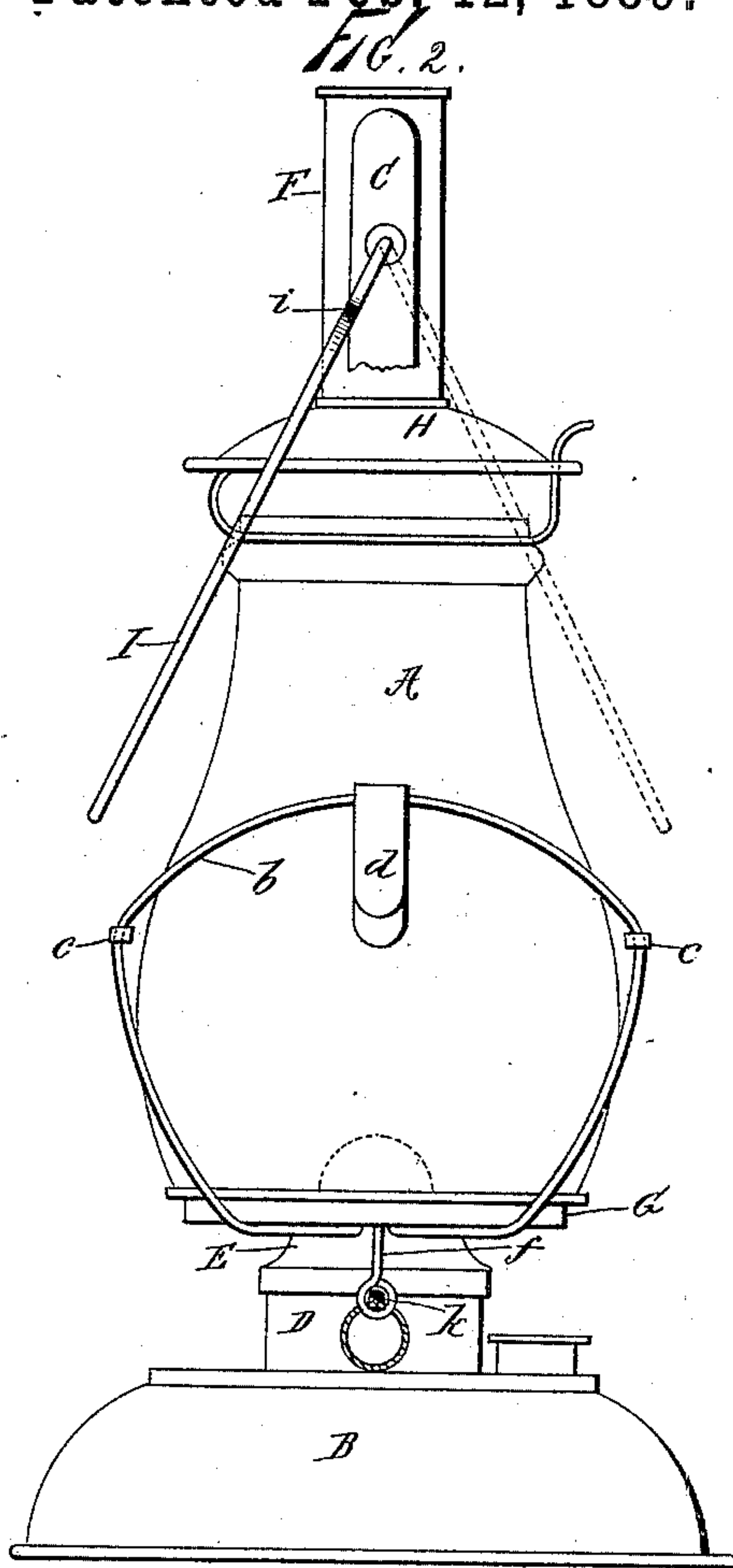
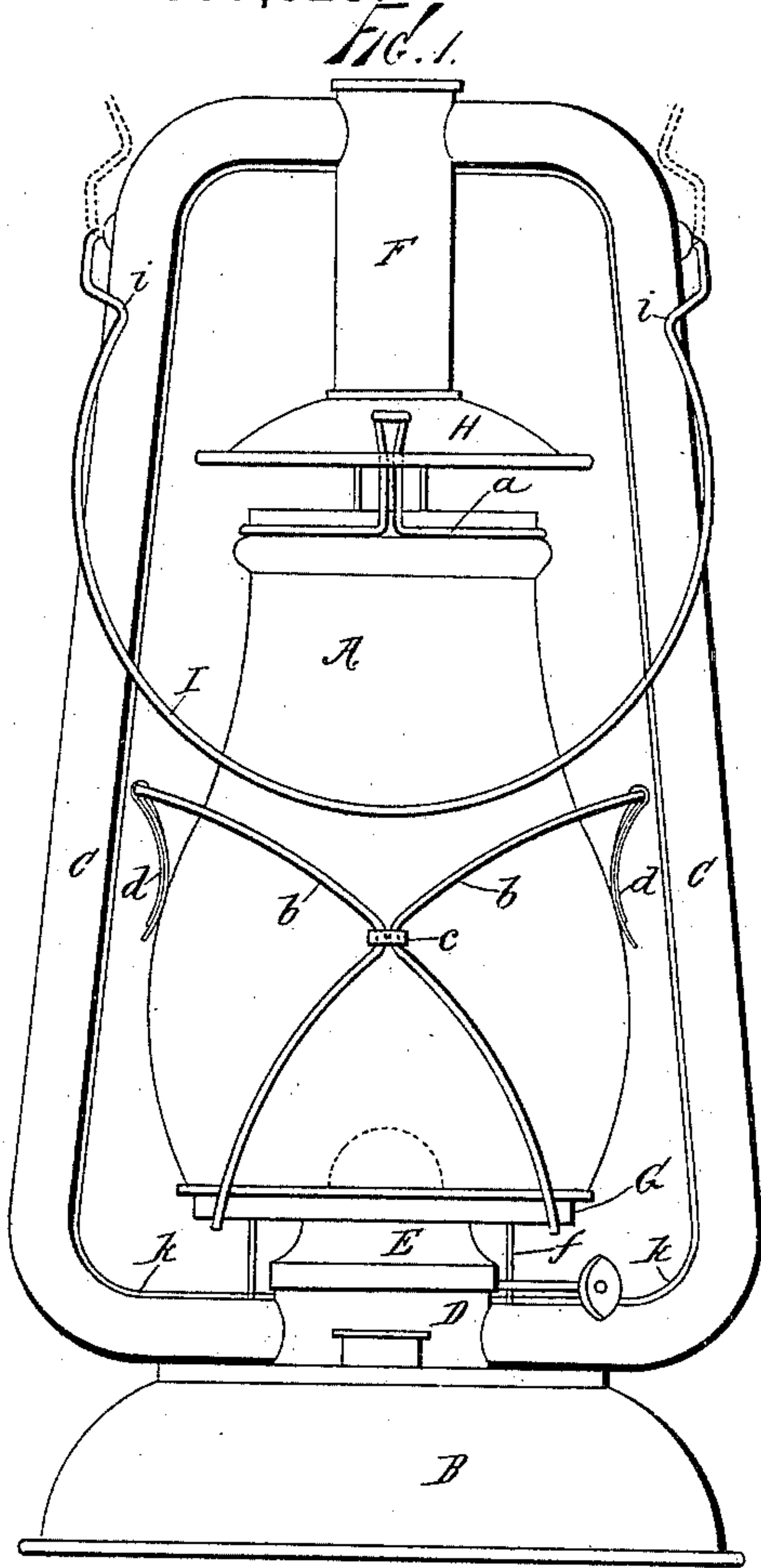


L. F. BETTS.  
TUBULAR LANTERN.

No. 397,625.

Patented Feb. 12, 1889.



Witnesses:  
John Buckler,  
L. H. Osgood,

Inventor:  
Lewis F. Betts,  
By North Osgood,  
Attorney.

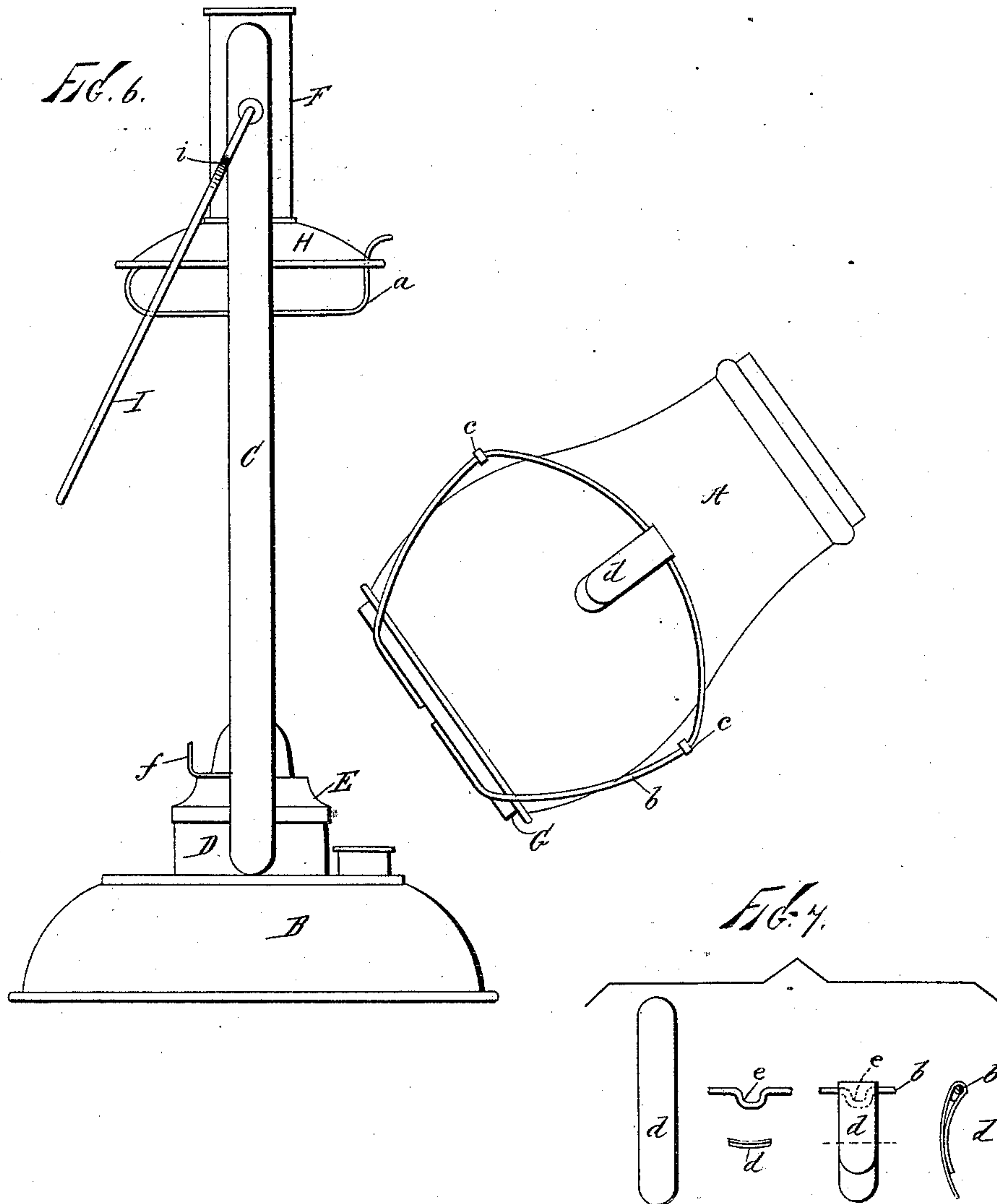
(No Model.)

2 Sheets—Sheet 2.

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Attorney.



# UNITED STATES PATENT OFFICE.

LEWIS F. BETTS, OF NEW YORK, N. Y., ASSIGNOR OF TWO-THIRDS TO THE  
R. E. DIETZ COMPANY, OF SAME PLACE, AND THE STEAM GAUGE AND  
LANTERN COMPANY, OF ROCHESTER, NEW YORK.

## TUBULAR LANTERN.

SPECIFICATION forming part of Letters Patent No. 397,625, dated February 12, 1889.

Application filed February 21, 1888. Serial No. 264,826. (No model.)

*To all whom it may concern:*

Be it known that I, LEWIS F. BETTS, of New York city, county and State of New York, have invented certain new and useful  
5 Improvements in Tubular Lanterns, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 My invention has relation to lanterns or lamps of that class now commonly known as "tubular" lanterns or "tubular" lamps, and wherein air for the support of combustion is carried from a point over the flame down to  
15 the under side of the burner-cone through suitable tubes provided for the purpose.

Among the principal objects of my invention are the provision of a simple and efficient guard for the globe or flame-protector,  
20 which is made removable from the lantern structure with the globe and its perforated base-piece, and which will permit the globe to be separated from the base-piece when desired; to provide a simple and efficient lock  
25 or catch for securing the burner-cone in proper place upon the air-chamber; to provide a simple means for insuring the proper, easy, and accurate location of the base-piece and connected guard-wires with respect to the air-  
30 tube; to provide a cheap and durable means for holding the globe on its perforated base-piece, and to secure other advantages in the matter of construction and operation, as will be hereinafter explained.

35 To accomplish all of this my improvements involve certain new and useful relative arrangements or combinations of parts and peculiarities of construction, all of which will be herein first fully described, and then  
40 pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a front elevation showing my improved lantern or illuminating apparatus complete, the parts  
45 being assembled as when in position for use. Fig. 2 is a side elevation of the lantern shown in Fig. 1, the greater portion of the side tubes being broken out to show the construction and arrangement of the parts. Fig. 3 is a

side view of the lower portion, showing the  
50 lock or catch for the cone in engagement with the cone, the perforated base-plate being represented in section. Fig. 4 is a plan view of the perforated base-plate in place upon the  
burner-cone. Fig. 5 is a side view, partly in  
55 section, showing the location and arrangement of the lock or catch for the cone and (by dotted lines) the position which it assumes when turned so as to free the cone. Fig. 6 is a view in side elevation, showing the  
60 globe with its connected base-plate and guard-wires detached together from the lantern-frame. Fig. 7 represents in one group the blank from which the globe-holders or bearing-pieces are made and the manner of unit-  
65 ing them with the guard-wires, so as to afford the requisite strength and rigidity.

In all the figures like letters of reference  
70 wherever they occur indicate corresponding parts.

A is the globe or flame-protector; B, the oil-  
75 pot; C C, the air-conducting tubes leading down to the air-chamber D; E, the burner-cone mounted on air-chamber D, and F a central air-pipe communicating with tubes C C.

G is perforated base-plate for the globe,  
80 which plate rests upon the cone E, and which may be removed entirely therefrom, not being hinged or otherwise attached to the lantern structure. The globe and base-plate are held  
in position by a spring, *a*, connected with dome  
H and arranged to bear upon the upper end  
of the globe. When this spring is elevated,  
the globe may be removed entirely from the  
lantern for lighting, trimming, cleaning, &c.  
85

To provide a guard for the globe, I secure  
two guard-wires, *b b*, to the base-plate G. These  
are bent toward each other on both sides, as  
shown, and instead of being crossed are se-  
cured by simple clips, as *c c*, of flat metal or  
90 wire, which may be soldered in place, if desired. To hold the globe to its seat on the base-plate, I provide the guard-wires with  
metal projections *d d*, which bear upon the  
globe just above its largest part or greatest  
95 swell. These pieces *d d* are stamped or cut out of any small scraps of tin for economy and are bent over the guard-wires. To make



the union with the guard-wires strong and effective, I bend or crimp the guard-wires at the proper points, as best shown at *e*, Fig. 7, and lap the strips *d* over these bends, afterward securing the parts by solder, which may be conveniently applied by dipping. The strips are slightly concaved, so as to conform to the curvature of the globe and hold the same to better advantage. The globe is seated by forcing it down between the bearing-pieces *d d*, the guard-wires yielding sufficiently for the purpose when the globe and base-plate are connected, so that they may be removed and replaced together. These two parts may be afterward sprung apart, if desired; but that will seldom be found necessary.

The guard and the tubes effectually protect the globe against damage. The points where the guard-wires approach each other should be located between the tubes, and to facilitate this location I utilize the cone lock or catch *f* as a gage or guide, the projecting end or finger-piece of this catch being arranged to enter one or the other of two perforations, *g g*, provided in the base-plate. The catch being in the position shown in Fig. 5, if the base-plate is turned so that one of the perforations *g* receives the end of the catch, the base-plate and the guard secured thereto will be properly located with respect to the tubes *C C*.

The perforations shown at *h h* are for the purpose of admitting a match for lighting; but these may be omitted.

*I* is the bail or handle, hinged in some convenient manner upon the tubes *C* and arranged to turn toward either side. To prevent it from coming in contact with the globe, I bend the bail or handle at points near the hinges, as at *i i*, and these bent portions are arranged to bear against the tubes *C C*.

It is desirable to hold the cone in place in such manner that while it may be detached when required it will not be accidentally disturbed, and I therefore provide the hinged lock or catch *f*. This is made of wire and is hinged below the cone or to the lower branches

of the air-tubes, each of which is provided with a beading, *k*. By suitably perforating the blanks for the tubes before they are beaded up the wire *f* may be inserted as indicated at Fig. 5, when the beading will form a strong and durable hinge-axis. The catch, when in place, bears upon a ledge on the cone and holds it to its seat. When desired to detach the cone, the catch *f* has only to be turned down to the position indicated by dotted lines, Fig. 5.

When the parts are constructed and arranged substantially in accordance with the foregoing explanations, they will be found to answer the purposes or objects of the invention, as previously set forth.

I make no claim herein to guard-wires which are crossed and secured to a base-plate hinged upon the lantern structure, such a construction being shown by me in a previous application for patent, Serial No. 256,225, filed November 26, 1887, and not admitting of the removal of the globe and base-plate from the lantern, as required by my present invention; but,

Having now fully described my invention, what I do claim as new herein, and desire to secure by Letters Patent, is—

1. In a lantern, the combination, with the guard-wires, of the metal bearing pieces or projections bent upon and secured to the wires and arranged to bear against the globe, substantially as and for the purposes set forth.

2. In a lantern, the combination, with the globe and removable base-plate connected therewith and bearing the guard-wires, of the bent-wire catch provided with the gage passing through an aperture in the base-plate, substantially as shown, and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

LEWIS F. BETTS.

Witnesses:

W. J. MORGAN,  
WORTH OSGOOD.