

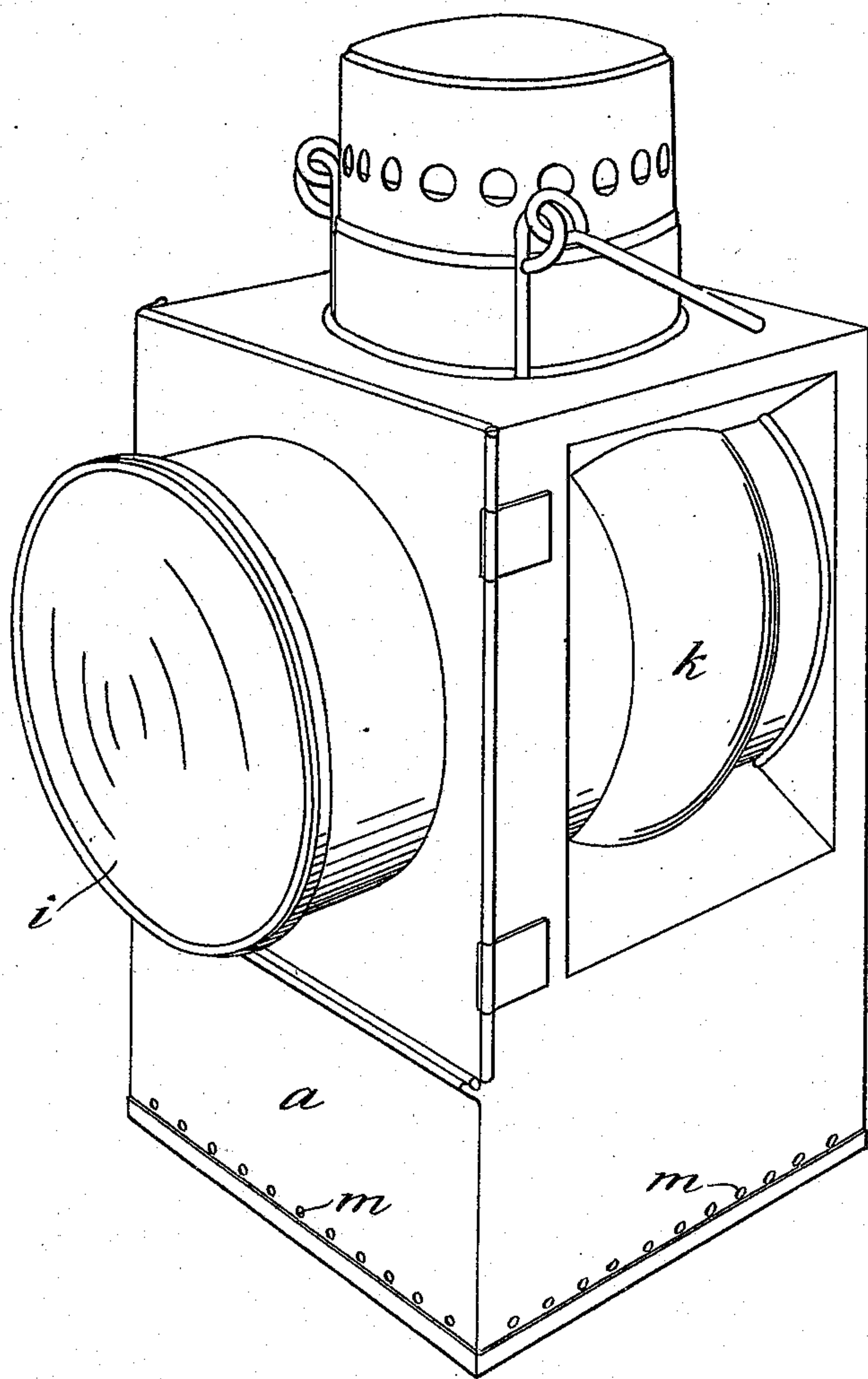
No. 840,674.

PATENTED JAN. 8, 1907.

W. H. I. WELCH.
OIL LAMP FOR RAILWAY SIGNALS; &c.
APPLICATION FILED NOV. 4, 1904.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

R. A. Balderson
W. W. Swartz

INVENTOR

Wm. H. I. Welch
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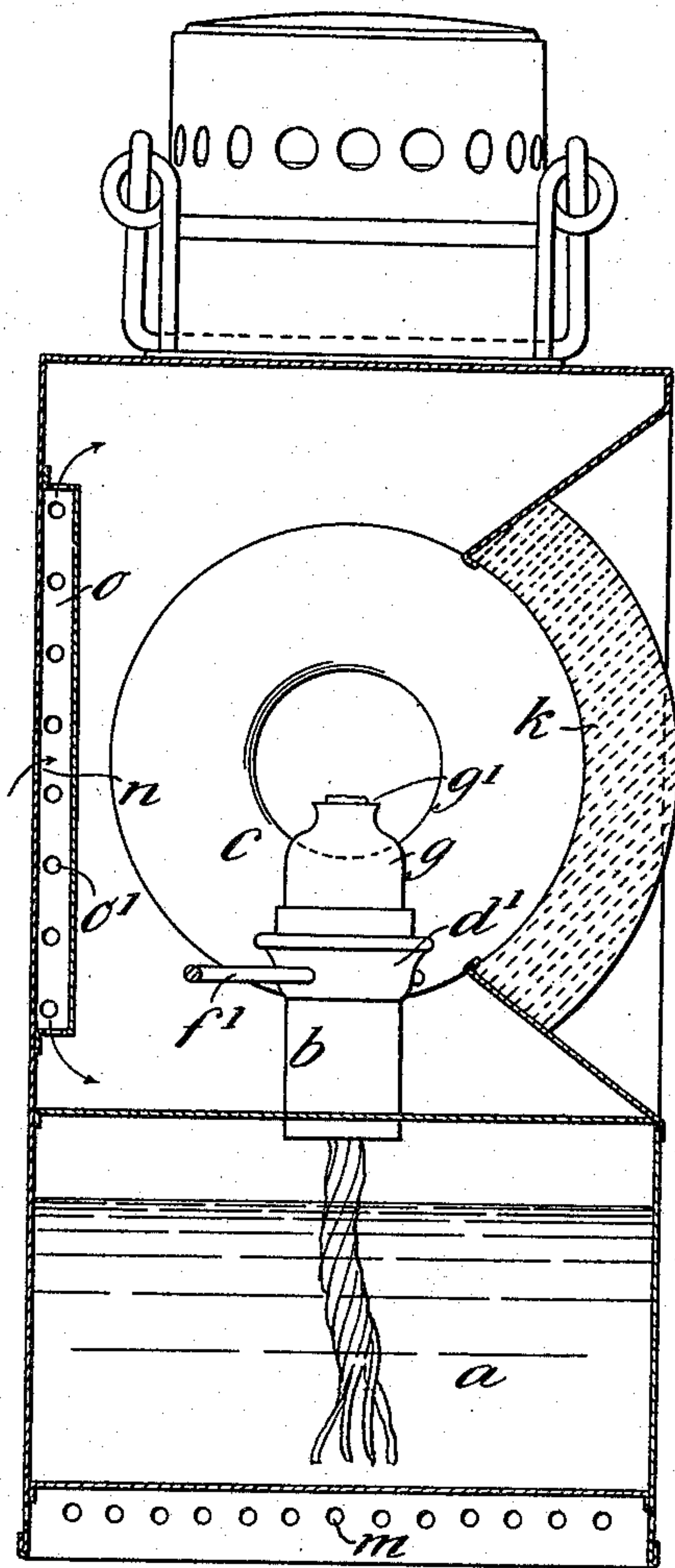
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Fig. 2.



WITNESSES

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W. W. Swartz

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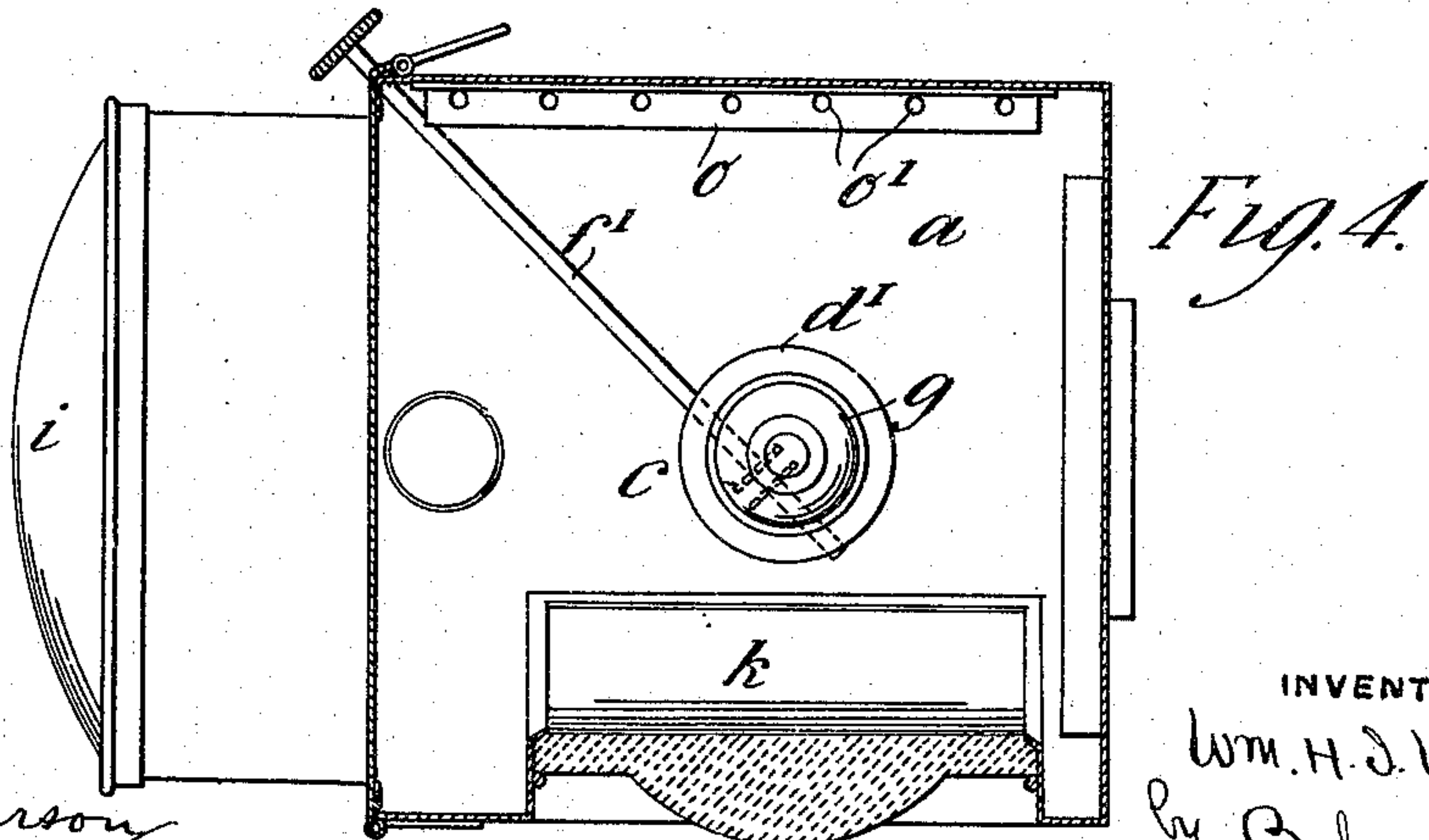
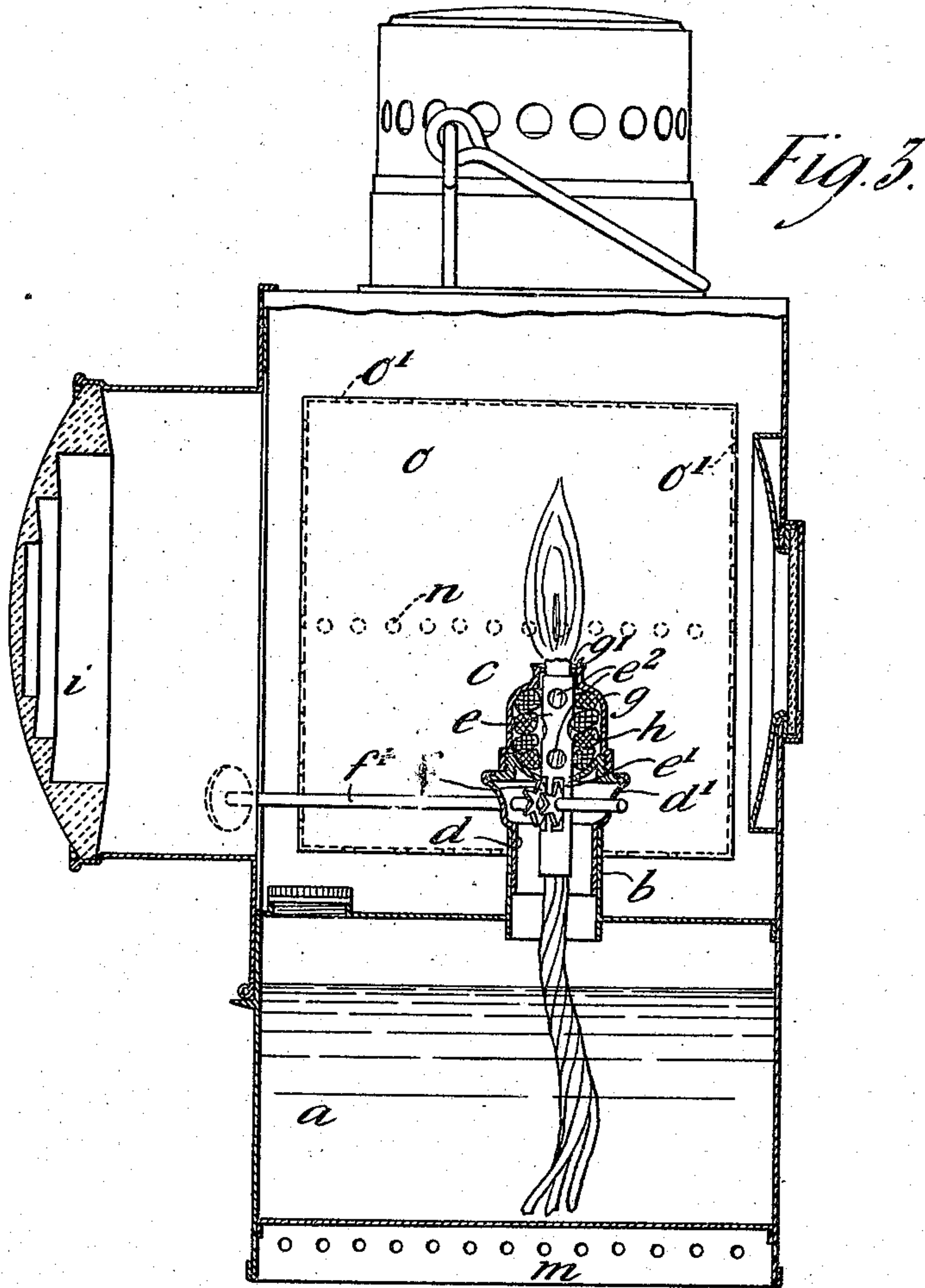
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4 SHEETS—SHEET 3.



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R. A. Balderson
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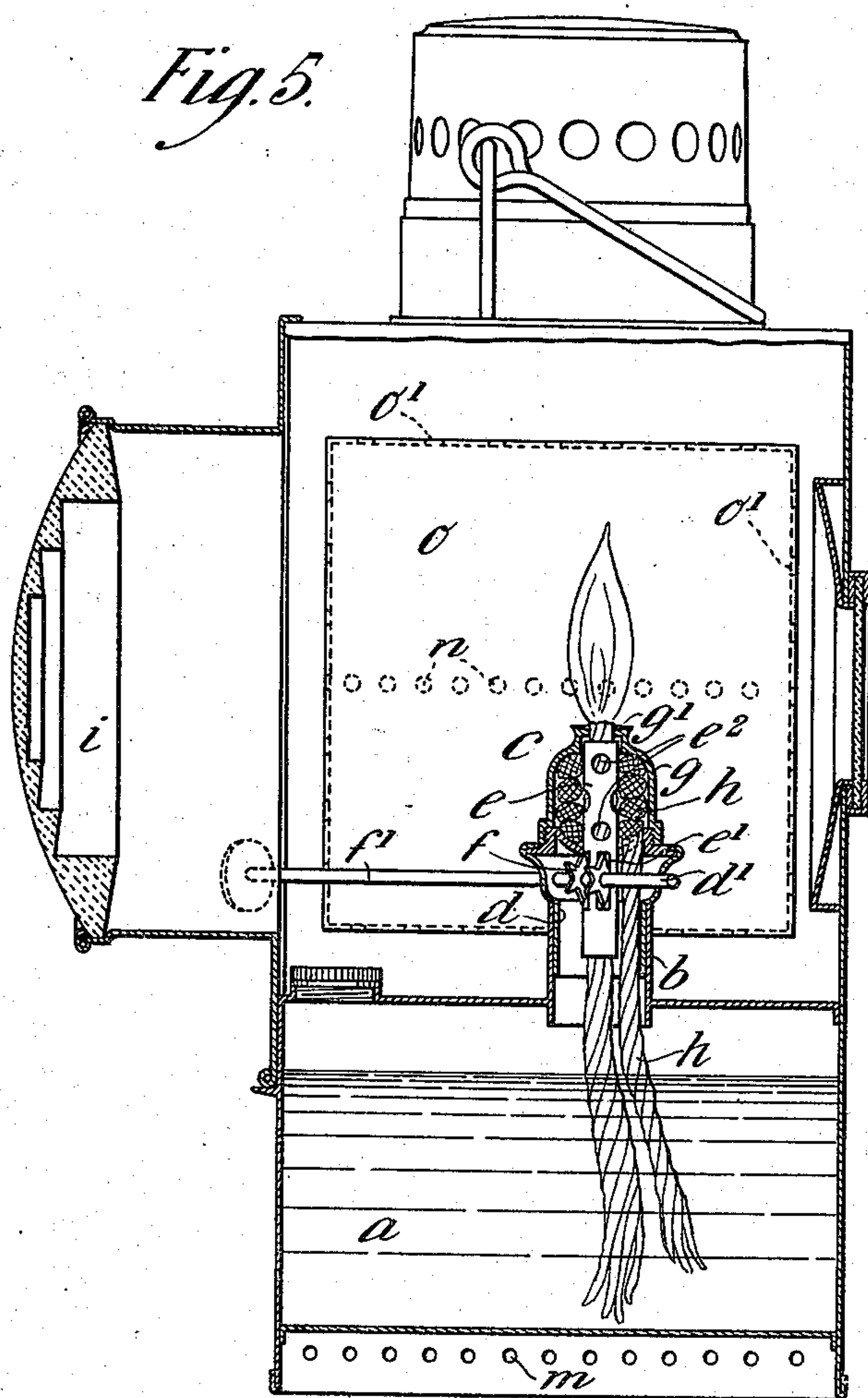
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

WILLIAM H. I. WELCH, OF LONDON, ENGLAND, ASSIGNOR TO THE LAMP
MANUFACTURING COMPANY LIMITED, OF CITY ROAD, ENGLAND.

OIL-LAMP FOR RAILWAY-SIGNALS, &c.

No. 840,674.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed November 4, 1904. Serial No. 231,396.

To all whom it may concern:

Be it known that I, WILLIAM HENRY ISAAC WELCH, a subject of the King of Great Britain and Ireland, residing at 33 Lichfield Road, Bow, London, England, have invented certain new and useful Improvements in Oil-Lamps for Railway-Signals and other Purposes, of which the following is a specification.

10 This invention relates to improvements in oil-lamps which are adapted for use with railway semaphore-signals and other lanterns, and has for its objects the simplification of the construction of such lamps, the obtaining of a stronger light in the direction or directions in which it may be required with a smaller flame than has hitherto been possible, the improvement of the supply of oil to the burning end of the wick, by which the charring of the wick is prevented or reduced, and the time during which the lamp will remain alight without attention extended. To effect these objects, the burner is designed to give a small flame, and the light therefrom is directed by specially shaped and disposed lenses in the required direction or directions, the air for combustion being led into the interior of the lamp in such manner that it is distributed therein without directly impinging on the flame, thereby enabling a small flame to be used. An auxiliary wick, which may lead to the oil-reservoir or may derive oil from the burner-wick, is coiled around the upper perforated part of the burner-tube and serves to keep the wick cool and prevent or retard charring and, also acting as a storage-chamber, continues to provide oil for combustion when the burner-wick is unable on account of charring to supply the oil required to maintain the light.

40 The improved lamp is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view. Figs. 2 and 3 are vertical sections taken at right angles to each other. Fig. 4 is a sectional plan; and Fig. 5 is a view similar to Fig. 3, but showing a slightly-modified construction.

50 The lamp is constructed in any suitable shape and comprises at its lower part an oil-tank *a*, from which projects a socket *b* for the reception of the burner part *c*. This part comprises an outer burner-tube *d*, which fits the socket *b*, and an inner wick-tube *e*, which is slotted longitudinally through a part of its

length at *e'* to enable the wick to be adjusted and fed in the usual way by means of the toothed wheels *f* and actuating-spindle *f'*.

The upper part of the burner-tube *d* terminates in a cup *d'*, through which projects the upper part of the wick-tube, which latter is formed with a number of perforations *e²*. A cap *g*, the upper end of which terminates in a suitably-shaped burner-piece *g'*, is screwed or otherwise secured on the cup *d'*, and in the space between the cap and the wick-tube is coiled or otherwise disposed a length of cotton wick or other suitable absorbent material *h*. This material may be extended downwardly to the oil-tank *a* through a hole in the cup *d'*, as shown in Fig. 5, in which case the oil-supply to the reservoir constituted by the coiled wick *h* is independent of the burner-wick. By means of the auxiliary reservoir of absorbent material oil is drawn either from the main oil-tank or from a low level of the burner-wick to a higher level of the burner-wick at or near the point of combustion.

When the wick *h* does not itself extend downward to the oil-tank, it is saturated with oil drawn therefrom by the burner-wick, which is in capillary communication with the storage-wick *h* through the holes *e²* in the burner-tube.

A concentrating lens or condenser *i*, preferably of the form shown in the drawings, is arranged in front of the lantern with its axis in line with the flame, and similar lenses may be provided in the back or sides of the lantern.

When the lamp is intended also to illuminate a lateral signal, such as a semaphore-arm, or the distinctive signal of a distant signal-lantern, such as described in the specification to United States Patent No. 631,686, it is provided at one side with a lens adapted to concentrate and direct the light in a vertical plane and form a sector-beam which illuminates the semaphore or the distinctive signal of the lantern.

100 The preferred form of lens is shown in the drawings and consists, essentially, of a segment of a cylindrical shell *k*, the axis of which is horizontal and the curvatures of which give the required focusing effect. In the arrangement shown the inner face of the lens is cylindrical and the outer face has a transverse circular curvature of suitable radius. The lens is shown symmetrically placed with

respect to the lamp-flame, so as to throw the illumination as much above as below the horizontal plane; but this disposition may be departed from as may be required.

5 The walls of the tank *a* are constructed to project somewhat beyond the bottom of the tank, and these projections are formed with holes *m*, which allow the air which enters in the usual way through a hole in the bottom
10 of the casing in which the lamp may be placed to pass outward and upward outside the oil-tank *a*. The air required for combustion passes thence through holes *n* in one of the side walls into a chamber, such as *o*, in-
15 side the lamp, whence it is allowed to issue through and is distributed around the flame by means of holes *o'* in the edges or sides of the chamber, thereby preventing any draft or direct impingement of the air on the flame,
20 and thus enabling a smaller flame to be employed.

I claim—

1. In oil-lamps, an auxiliary oil-reservoir close to the flame, consisting of absorbent
25 material disposed around the upper end of the wick-tube and in capillary communica-

tion with the wick and the main oil-reservoir and forming a parallel path with the main wick for the flow of oil to the burner; substantially as described.

2. In an oil-lamp, a burner-tube perforated at its upper portion, and an auxiliary suction-wick disposed around the said upper portion of the burner-tube and arranged to draw oil from the main oil-tank and deliver
35 it to the burner-wick; substantially as described.

3. In oil-lamps, a burner comprising a burner-tube and inclosed cup, a wick-tube perforated at its upper end and projecting
40 upward through the said cup, and an absorbent material inclosed in the said cup and in capillary communication with the burner-wick at different levels thereof, substantially
45 as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

W. H. I. WELCH.

Witnesses:

OLIVER IMRAY,
C. S. HOPKINS.