

T. LOWTHER, H. TOAL & R. HAY.
SAFETY LAMP.

No. 521,801.

Patented June 26, 1894.

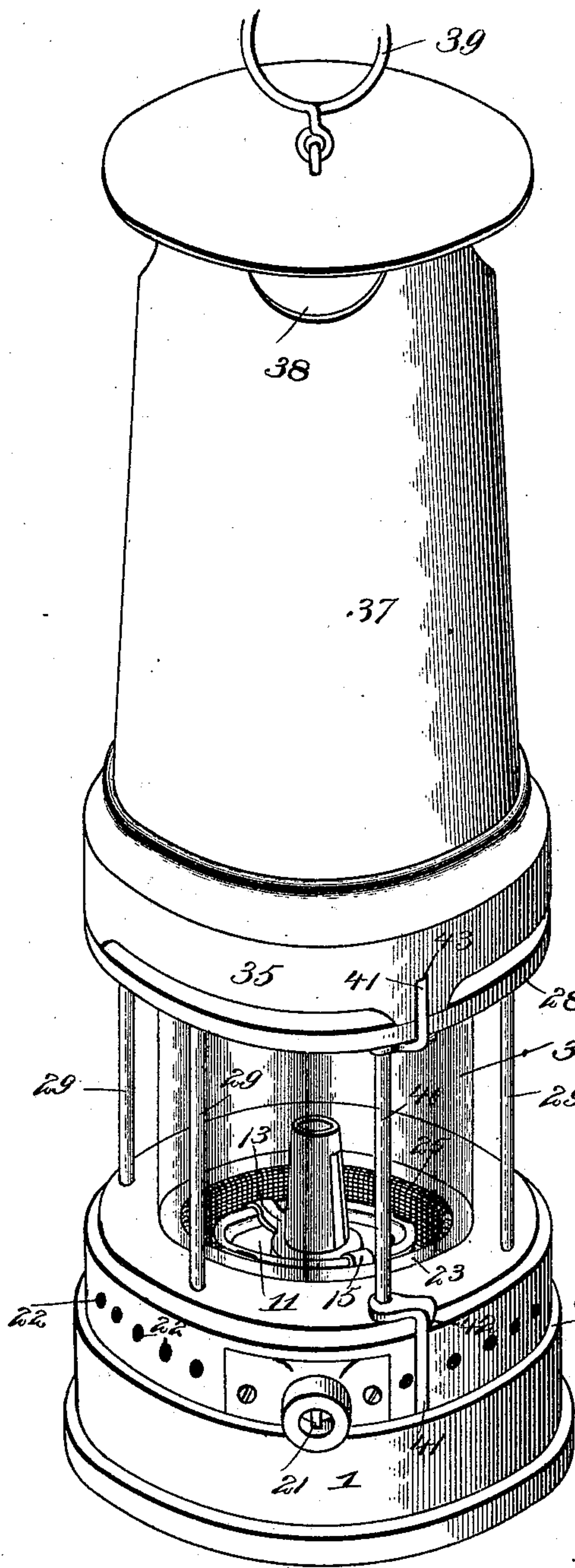


Fig. 1.

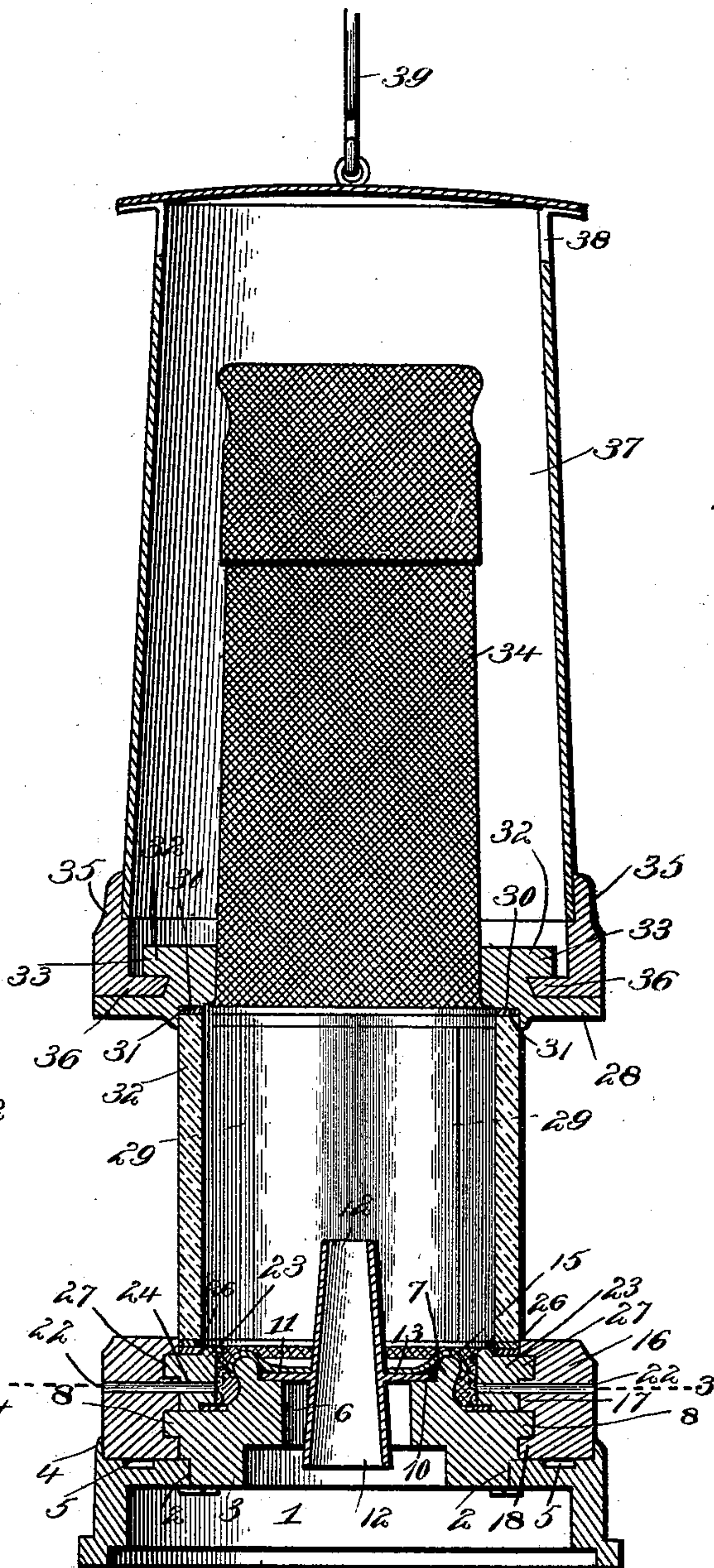


Fig. 2.

Inventors

Robert Hay,

Hugh Toal,

Thomas Lowther,

Charles H. Co.

Witnesses

John C. Shaw,
M. S. Duwall.

By their Attorneys.

(No Model.)

2 Sheets—Sheet 2.

T. LOWTHER, H. TOAL & R. HAY.
SAFETY LAMP.

No. 521,801.

Patented June 26, 1894.

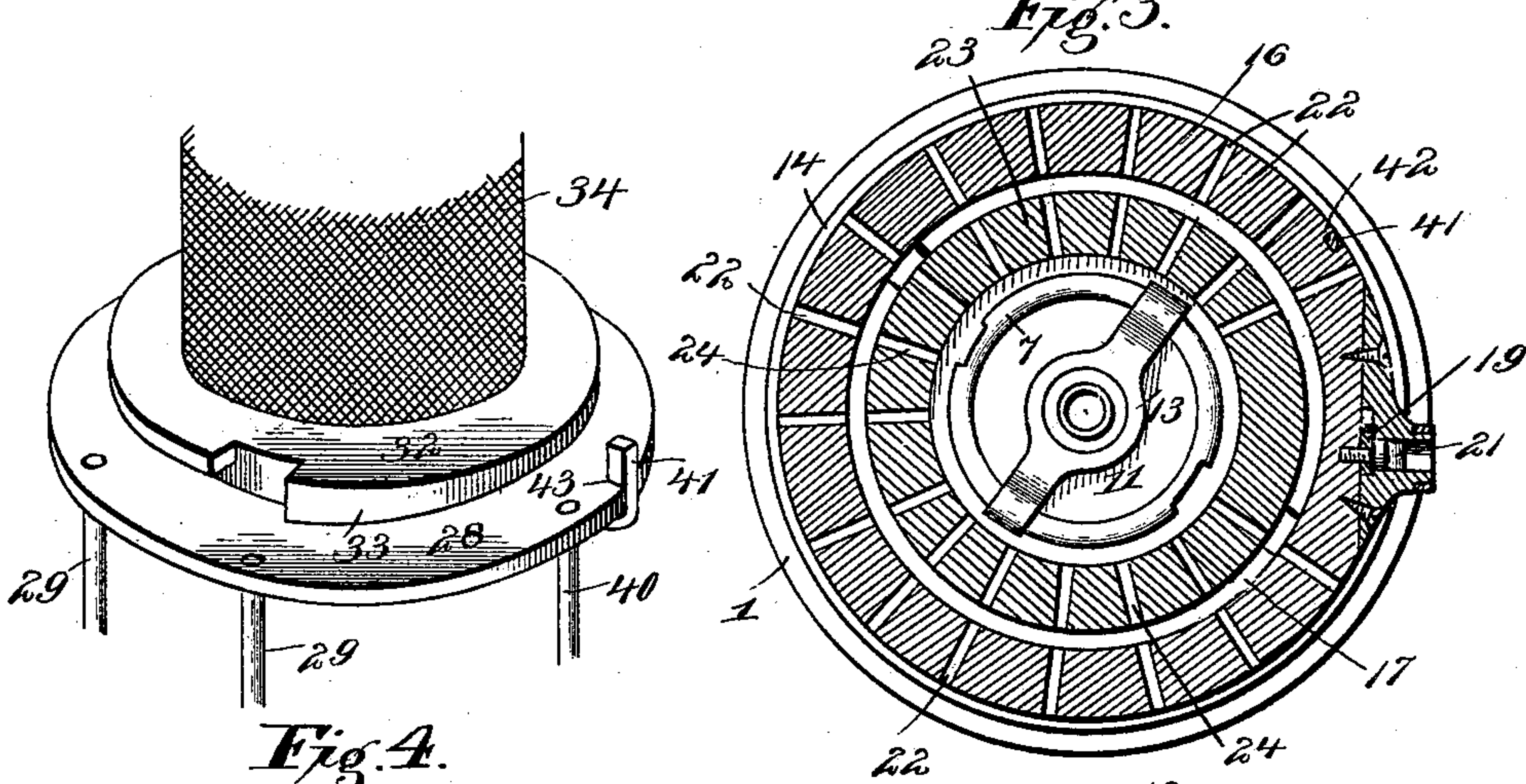


Fig. 4.

Fig. 5.

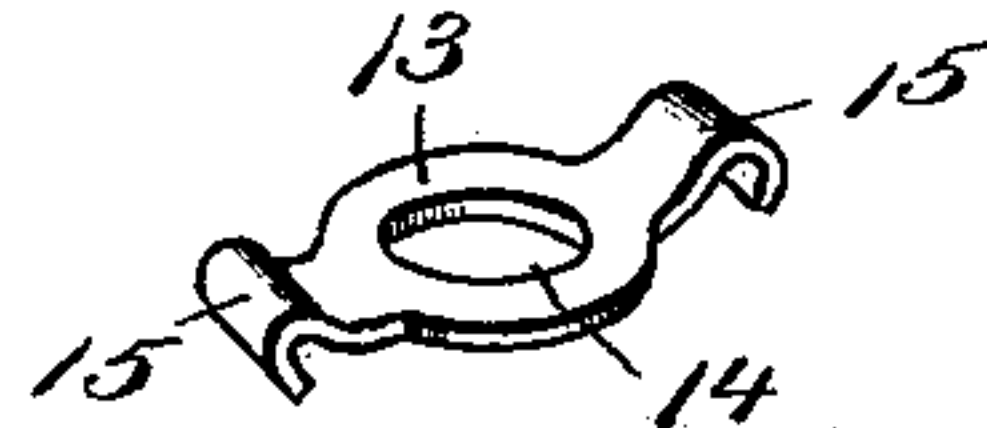
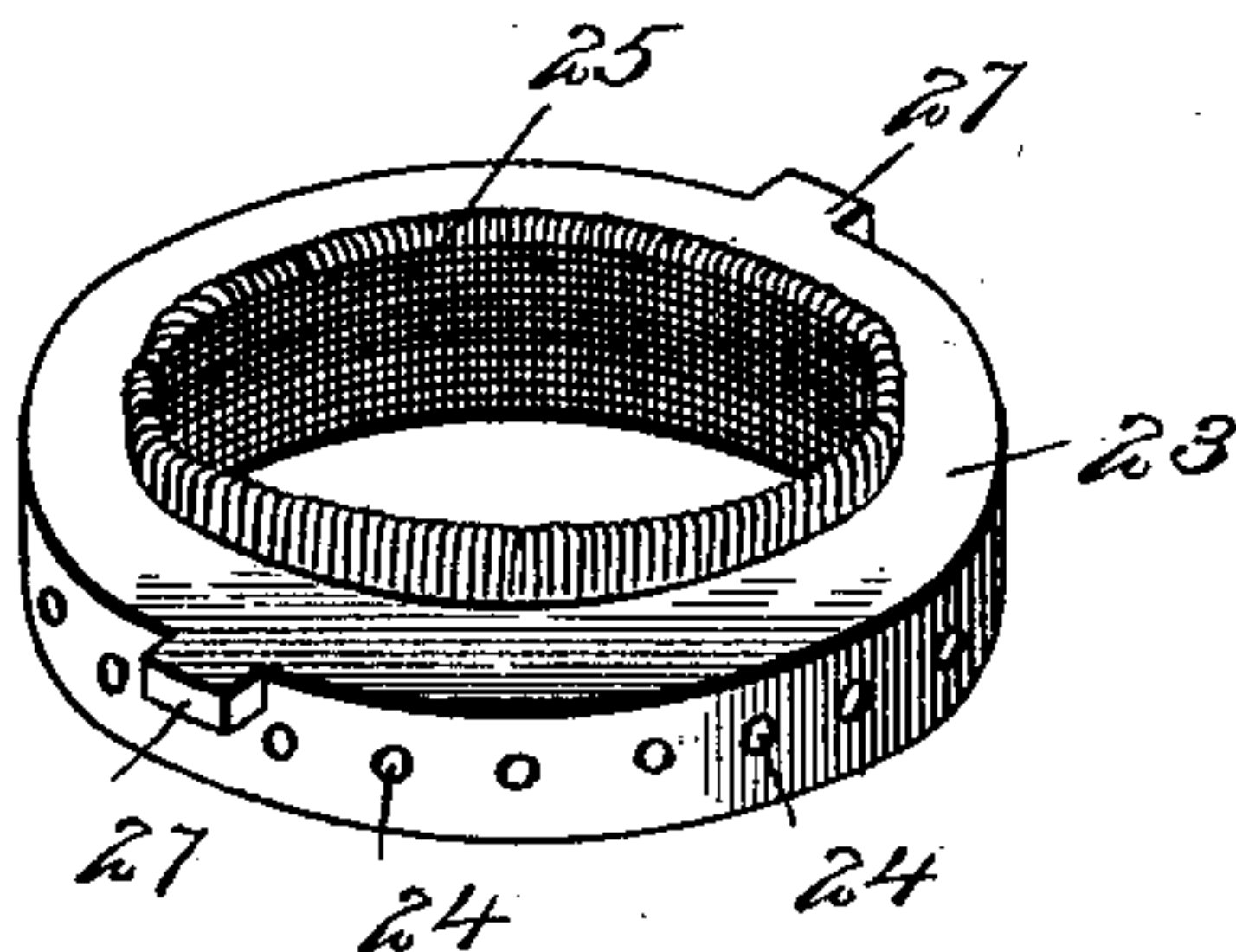


Fig. 6.

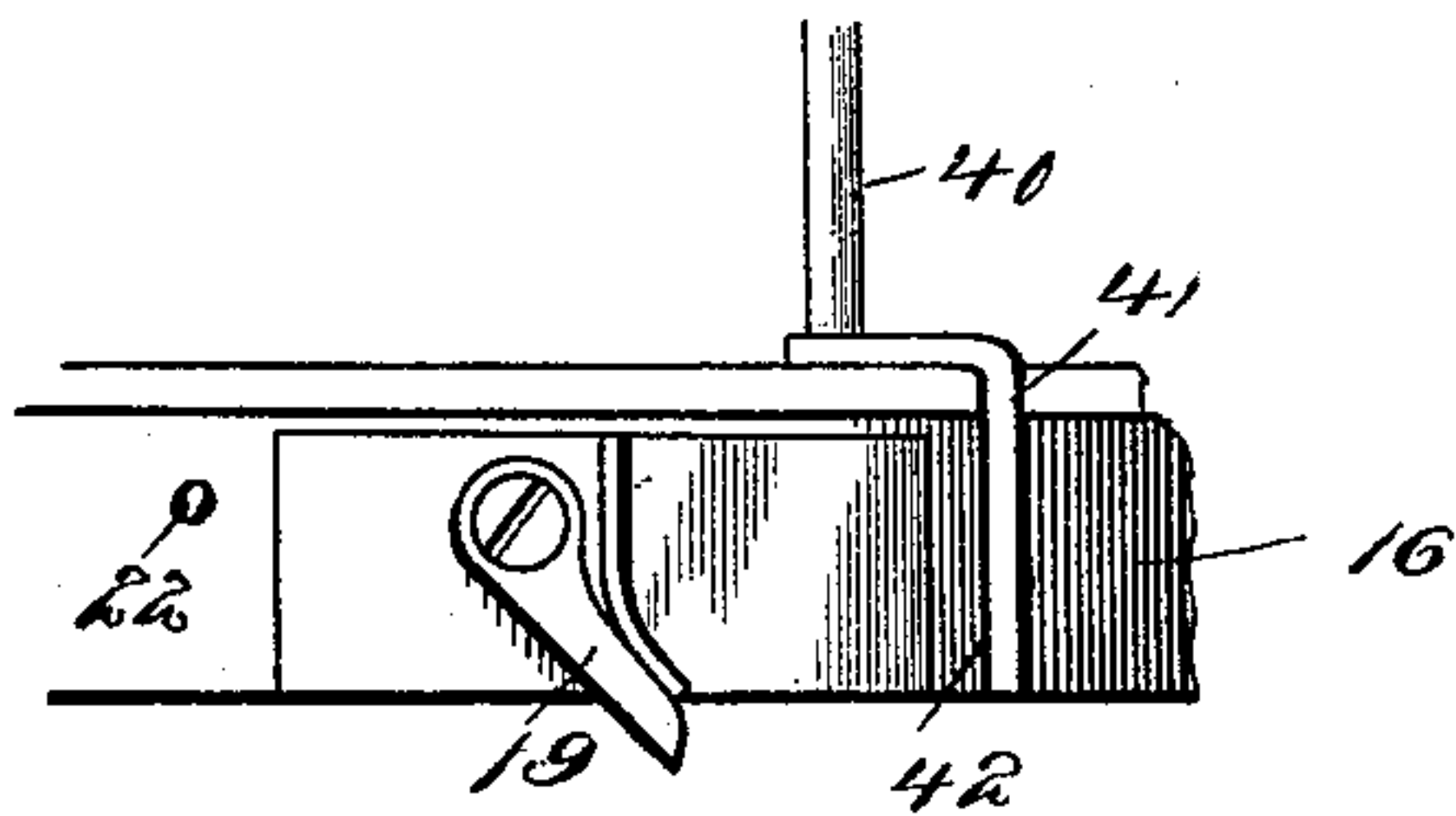
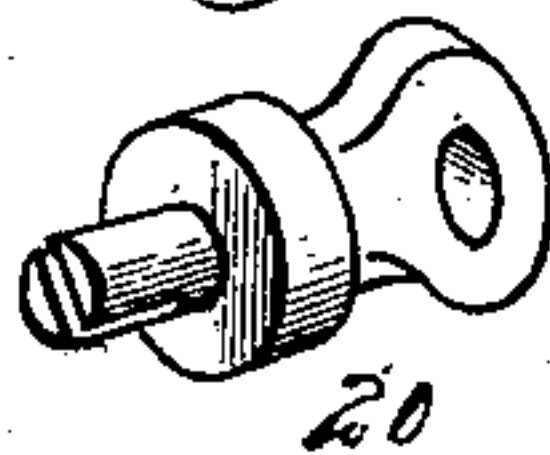


Fig. 7.

Fig. 8.



Witnesses

John C. Shaw
M. S. Duwall

By their Attorneys.

Robert Hay,
Hugh Toal,

Thomas Lowther

C. A. Snow & Co.

UNITED STATES PATENT OFFICE.

THOMAS LOWTHER, HUGH TOAL, AND ROBERT HAY, OF MOUNT PLEASANT,
PENNSYLVANIA.

SAFETY-LAMP.

SPECIFICATION forming part of Letters Patent No. 521,801, dated June 26, 1894.

Application filed November 28, 1893. Serial No. 492,300. (No model.)

To all whom it may concern:

Be it known that we, THOMAS LOWTHER, HUGH TOAL, and ROBERT HAY, citizens of the United States, residing at Mount Pleasant, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Safety-Lamp, of which the following is a specification.

Our invention relates to improvements in lamps, and to that particular class thereof known as safety-lamps and employed by miners and others who frequent chambers and other places where explosive gases are present.

The objects of our invention are to produce a lamp that may be safely employed in such places, and which is of cheap, simple, and durable construction, and whose parts may be readily constructed, assembled, and replaced, and which is capable of being locked securely before entering the dangerous places, whereby an accident from an intentional careless disconnection or accidental disconnection of the parts may be avoided.

Other objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the claims.

Referring to the drawings:—Figure 1 is a perspective view of a lamp embodying our invention. Fig. 2 is a vertical longitudinal sectional view of the same. Fig. 3 is a horizontal sectional view through the base-ring. Fig. 4 is a perspective view of the upper chimney-ring and its guard. Fig. 5 is a detail view of the ventilating-ring. Fig. 6 is a detail in perspective of the reservoir-cap, burner-ring, the burner, and its fastener, the parts being separated.

Like numerals of reference indicate like parts in all the figures of the drawings.

In the practice of our invention we provide the reservoir, not shown, with a metal cap 1, the same being preferably soldered permanently upon the reservoir and having at its center a reduced opening 2 in which is seated and secured the burner-ring 3. The cap 1 is provided upon its upper side with a surrounding bead or flange 4, and within the same with inclined teeth 5, a plurality of which are located at intervals. The burner-ring 3 is

provided with a central opening 6, which is surrounded by a circular flange 7. Half threads 8 are formed at opposite sides of the periphery of the burner-ring 3, and similar half threads 9 are formed at the upper edge of the circular flange 7. Within the flange 7 is formed a horizontal annular flange 10. A burner-disk 11 is seated removably on the flange 10 and fits within the annular flange 7, and carried by and projecting above and below the plane of said disk is a burner-tube 12. A spring-yoke 13 has a central opening 14, which fits over the tube, and the ends of the yoke are turned down to form engaging fingers 15. These engaging fingers 15 are designed to pass through the notches formed between the half-threads 9, and by giving the yoke a turn the aforesaid fingers will engage under the notches and bind against the threads, thus locking the disk and tube upon the flange 7.

Removably seated within the annular bead 4 of the reservoir cap 1 is a base-ring 16, and said base-ring is provided upon its interior with opposite half-threads 17 and below the same with diametrically opposite lugs 18, the latter being designed to removably interlock with and bind against the under side of the half-threads 8 of the burner-ring 3. At one side of the base-ring we locate a spring-latch 19, the same being seated in a recess formed in the base-ring and having its operating end normally depressed and designed to engage with the inclined teeth 5 formed in the upper side of the reservoir-cap 1, so that by screwing the base-ring upon the reservoir cap and the latch engaging with the teeth any attempt to remove said ring and the parts carried thereby and hereinafter described will be successfully resisted, and it will be necessary in order to effect a removal to operate the latch or elevate the same into its recess and out of engagement with the aforesaid teeth. Such elevation we accomplish in the present instance by means of a key 20, which is bifurcated at its inner end so as to engage over a web 21 with which the pintle of the latch is provided. It will be understood that any other form of lock may be employed, such being a mere detail to which we do not limit our invention. The base-ring is further pro-

vided entirely around the same with a series of transverse air-inlets or ventilating openings 22, and within the ring we locate a ventilating-ring 23, which is also provided with a series of transverse perforations 24 that register with an annular groove or chamber formed on the inner side of said ring 23. This chamber or recess is covered by a reticulated or gauze-wire covering 25, and the ring is surmounted preferably by an asbestos packing 26 cut in the form of washers. At diametrically opposite sides of the ring 23 we form lugs 27, and the same are designed to engage and interlock with and bind upon the upper sides of the opposite half-threads 17 formed on the interior of the base-ring 16. This ventilating-ring, it will be understood, encircles the flanged opening 7 of the burner-cap 3 and admits air to the burner, whereby the brilliancy of the light is increased in a manner obvious.

Arranged above the base-ring a suitable distance is the cap-ring 28, the same being supported upon the base-ring and connected thereto by means of a series of intermediate posts or tie-rods 29. This ring 28 has formed upon its under side an annular flange 30, which is vertically opposite the ventilating-ring and corresponds therewith in diameter, and seated within this flange 30 is an upper asbestos washer 31. Between these two asbestos washers is located the cylindrical glass chimney 32, the upper end of which bears against the upper washer, and the lower end of which bears against the lower washer, said chimney being located in the space surrounded by the tie-rods 29. The ring 28 has formed upon its upper side an annular flange 32 which is provided at opposite sides with half-threads 33, and rising from this flange and engaging the under side of the ring is the reticulated ventilating chimney 34. A crown-ring 35 encircles the chimney and is provided upon its inner side with lugs 36 arranged diametrically opposite each other and designed to engage and bind against the under side of the half-threads 33. The crown-ring is provided with an annular seat and secured therein is the ventilating-cap 37 having the ventilating openings 38 at its upper end and the suspension ring 39.

Substituted for one of the tie-rods 29 between the base and cap-rings of the chimney is a swiveled locking-post 40, the same having extending therefrom adjacent to its ends L-shaped locking-arms 41. The locking-arm 41 at the lower end of the post is designed, when the post is oscillated in one direction, to engage with a vertical groove 42 formed in the exterior of the base-ring and so as to lie flush therewith, and the upper arm is designed to engage in grooves 43 formed in the edge of the ring 28 and the crown-ring 35, so that as will be obvious the crown-ring is locked upon the upper ring 28, and the lower end of the lower locking-arm being engaged by the bead or flange 4 of the cap of the res-

ervoir, the said post is prevented from oscillating and permitting of any movements of these parts as will allow of a separation.

Thus it will be seen that our lamp may be entirely disconnected, the parts cleaned and replaced without the use of any tools. When the lamp has been lighted and provided with oil it is automatically locked by the latch, and can only be opened by the insertion of the key with which in mines only an authorized person is provided, so that the careless opening of the lamp, whether intentional or otherwise, by a person in a dangerous chamber or other place, cannot take place and hence explosions are avoided. Any gas that does enter the lamp must pass through the ventilating openings which surround the burner, and hence is consumed as fast as it enters, so that no dangerous explosions can occur.

Our lamp operates upon the same principle as the well known safety-lamp, and hence requires no specific description thereof.

We do not limit our invention to the precise details of construction herein shown and described, but hold that we may vary the same to any degree and extent within the knowledge of the skilled mechanic.

Having described our invention, what we claim is—

1. In a safety-lamp, the combination with a reservoir-cap, a burner carried thereby, a base-ring removably secured to the reservoir-cap a cap-ring spaced from and connected to the base-ring, a chimney interposed between the planes of the base-ring and the cap-ring, a crown ring supporting a ventilator, and a half-thread and lug connection between the crown-ring and the cap-ring, of a swiveled latch carried by the base-ring and cap-ring and provided at its upper end with an arm to engage registering notches in the cap-ring and crown-ring and provided at its lower end with an arm adapted to fit in an exterior groove in the base-ring, and a flange or rim carried by the reservoir-cap and engaging the extremity of the lower arm of the swiveled latch to hold the latter in its locking position when the reservoir-cap and base-ring are connected, substantially as specified.

2. In a safety lamp, the combination with a reservoir-cap, and a burner-ring supported thereby, of a base-ring seated upon the upper side of the reservoir-cap around the burner-ring and provided with lugs engaging half-threads upon the burner-ring, a cap-ring spaced from and connected to the base-ring and provided in its under side with a seat, ventilating devices supported upon the cap-ring, a ventilating-ring fitted removably within the base-ring and provided at its upper side with a seat, said base-ring and the removable ventilating-ring being provided with registering horizontal perforations, and a chimney interposed between and fitted at its extremity in the seats of the cap-ring and ventilating-ring, substantially as specified.

3. In a safety-lamp, the combination with

suitable supporting, inclosing, and ventilating devices, of a burner-ring provided with a flange surrounding an annular seat, the burner tube provided with a disk fitting in said seat, and a spring yoke provided with hooked terminals engaging half threads on the outer surface of said flange of the burner-ring, substantially as specified.

4. In a safety-lamp, the combination with a reservoir-cap, a burner-ring, a base-ring surrounding and secured to the burner-ring, a pawl and ratchet connection between the base-ring and the reservoir-cap, a cap-ring spaced from and connected to the base-ring, and a chimney arranged between and held in place by the base-ring and cap-ring, of a ventilating guard secured at its lower end to the cap-ring, a crown-ring removably secured to the cap-ring and supporting a ventilator, and locking devices for said crown-ring which are controlled by the connection of the reservoir-cap and base ring, substantially as specified.

5. In a safety-lamp, the combination with a reservoir-cap supporting a burner-ring, of a base-ring removably secured to the reservoir-cap and provided with a series of ventilating perforations, said base-ring having an inner annular removable member or ventilating-ring 23 provided with perforations corresponding with those of the main body of the base-ring, a reticulated guard covering said perforations, a chimney surmounting the removable member or ventilating-ring, and ventilating devices arranged above the upper end of the chimney, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

THOMAS LOWTHER.

HUGH TOAL.

ROBERT HAY.

Witnesses:

JOHN DULLINGER,
JAMES HAWKIN.