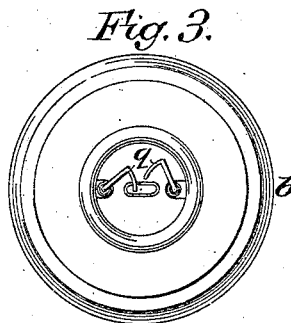
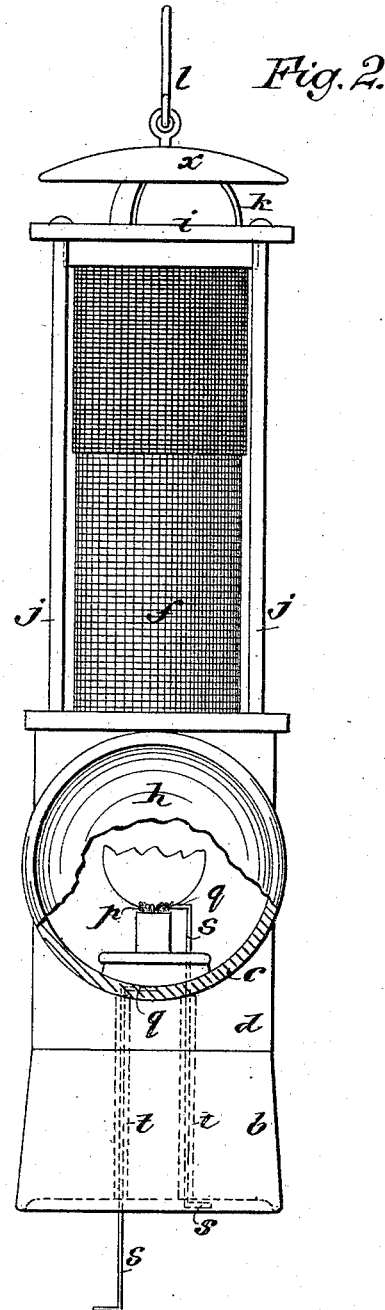
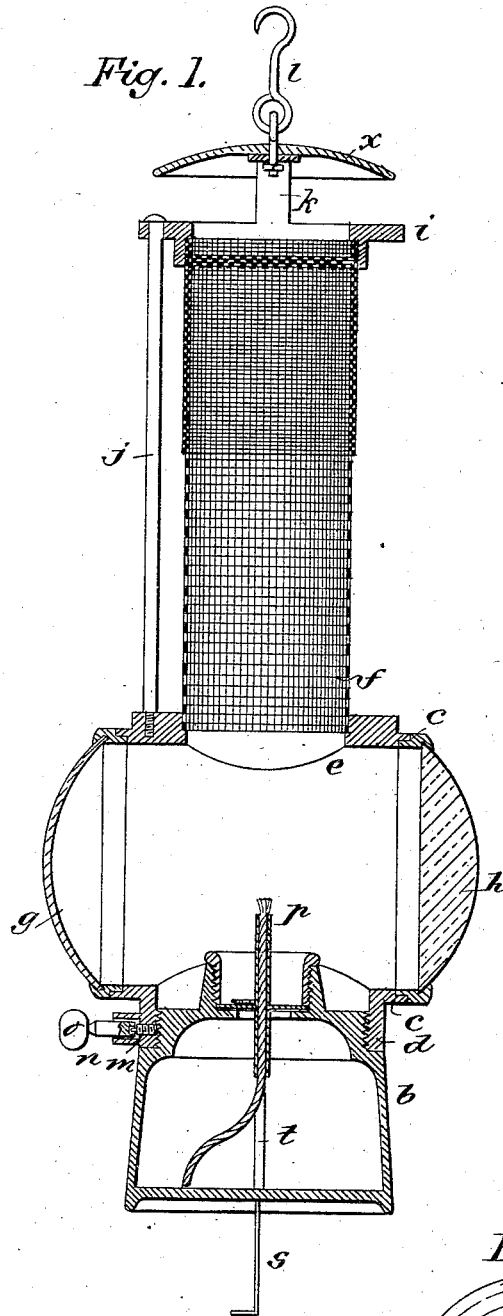


(No Model.)

R. MAUCLINE.
SAFETY LAMP.

No. 307,210.

Patented Oct. 28, 1884.



WITNESSES:

H. B. Beyer
C. Sedgwick

INVENTOR:

R. Mauchline
BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE

ROBERT MAUCLINE, OF SHENANDOAH, PENNSYLVANIA.

SAFETY-LAMP.

SPECIFICATION forming part of Letters Patent No. 307,210, dated October 28, 1884.

Application filed March 10, 1884. (No model.)

To all whom it may concern:

Be it known that I, ROBERT MAUCLINE, of Shenandoah, in the county of Schuylkill and State of Pennsylvania, have invented a new and Improved Safety-Lamp, of which the following is a full, clear, and exact description.

My invention consists in the construction and arrangement of parts, as will be hereinafter fully described, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of my improved lamp. Fig. 2 is a front elevation, with a part in section; and Fig. 3 is a plan of the oil-cup and burner, the top of the lamp being removed.

I provide a top section for screwing onto the top of the oil-cup *b*, consisting of a short horizontal tube, *c*, having a screw-collar, *d*, on one side for screwing onto said oil-cup, and opposite thereto having an opening, *e*, in which the wire-gauze safety-tube *f* is fitted.

In one end of the tube *c*, I fit a concave reflector, *g*, and in the other end I fit a plano-convex lens, with a focal distance of one and a quarter inches and curvature to illuminate an arc of about fifty degrees. The wire-gauze tube is fastened between the top of tube *c* and a cap, *i*, by suitable connecting-rods, *j*. The cap *i* has an arched bar, *k*, to which the suspending-hook *l* and a deflector, *x*, for the hot gases escaping from the lamp are connected. The collar *d* is provided with a lock-up device, consisting of the set-screw *m*, fitted in a socket, *n*, to screw against the top of the oil-cup, and where it cannot be worked except by a key, *o*. I prefer to employ a flat wick, *p*, for spreading the light and to facilitate the supply of the oxygen to the flame; and I provide a horizontal swinging picker, *q*, with the opposite sides of the wick, to enable the wick to be picked and trimmed separately on the opposite sides, so that the flame will not be accidentally extinguished, as it is sometimes when a picker is used that reaches the whole breadth of the wick and acts all along the end at once. The pickers are formed on the ends of rods *s*, extending up from the bottom of the

oil-cup through tubes *t*, extending through the oil-space. The air for the support of combustion is to be supplied through the lower portion of the gauze tube and the opening *e* in the top of the tube *c*, inclosing the flame. The light is so concentrated in passing through the converging lens and projected that work can be done thirty feet from the lamp, and the magnifying-power of the lens renders the lamp more efficient as a detector of gas by immediately making visible the elongation of the flame that takes place when the lamp is raised into contact with the explosive mixture of gas.

My lamp placed in gas along with a Davy lamp, and at the same level, will show the "cap" or "halo" so as to appear double the size that it does with the Davy lamp, and consequently it will indicate gas when the percentage is smaller than will be detected by the Davy and similar lamps, and, like the Stephenson lamp it will be at once extinguished when raised into gas such as will fill the Davy lamp with flame and endanger the bursting of it. My lamp, therefore, combines the sensitive detecting quality of the Davy lamp with the self-extinguishing quality of the Stephenson lamp. The flame, being inclosed below the gauze tube, cannot injure the wire, which will therefore be more lasting. It also prevents the miners from obtaining light for their pipes, either by sucking the flame through the gauze or by heating wires in the flame; and it also prevents the lamp from being blown out by currents of air. The lens, being a solid disk and not a cylinder, is not liable to crack from exposure or contraction, like the chimneys sometimes used, and the lens is so thick and solid that it cannot be broken with reasonable usage. The construction is simple and very substantial and durable, the tube *c* being made of cast metal. The illuminating-power in distance is such that two hung on opposite sides of the largest working place found in mines will fill the whole space with light, enabling the miner to see without being inconvenienced with the close proximity of the lamp, and so that the lamps are sufficiently distant to be out of danger from the tools of the miners, enabling the miners to work safer and without breathing so much of the smoke.

In making examinations of the top, and in examining across the large chambers when the angle of dip is forty-five degrees to eighty degrees, objects can be detected with my lamp that cannot be seen with an open light, and much less with a safety-lamp.

Where it is of more importance to spread the light than to project it a great distance—as for standing on the floor to give light for under-cutting—this can be done by a little less convexity of the lens.

I am aware that a lamp has heretofore been provided with a concave reflector and a lens on opposite sides of the burner; also, that wire-gauze tubes are not broadly new in lamps, and I do not desire to claim such, broadly, as of my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a safety-lamp, the oil vessel *b*, having screw-threads on its upper end, in combination with tube *c*, provided on its under side with a screw-collar, *d*, opening *e* on its upper

side, and reflector *g* and lens *h* in its opposite ends, substantially as set forth.

2. The combination, with the oil-vessel *b*, screw-threaded, as shown, of the tube *c*, screw-threaded collar *d*, socket *n* on said collar, and a key-operated set-screw, *m*, within said socket, substantially as set forth.

3. A safety-lamp consisting, essentially, of the vessel *b*, tube *c*, screwing thereon, reflector *g*, lens *h*, opening *e* in the top of the tube, cap *i*, deflector *x*, rods *j*, connecting the cap *i* with the tube, and a wire-gauze tube extending from the opening *e* to cap *i*, all constructed and arranged substantially as set forth.

4. The combination, with the wick-tube of a safety-lamp, of a picker, *s g*, located on the opposite sides of the tube, and adapted to pick the respective sides of the wick separately, substantially as described.

ROBERT MAUCLINE.

Witnesses:

MAX REESE,
J. H. POMEROY.