W. SEYBOLD.

Miner's Lamp.

No. 35,264. Patented May 13, 1862.

Fig 2

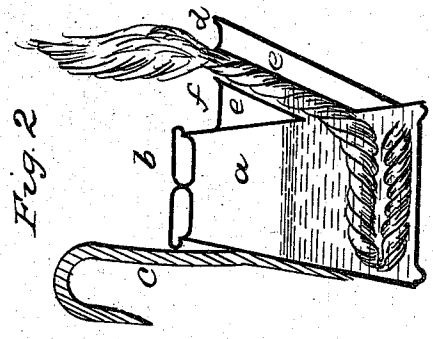
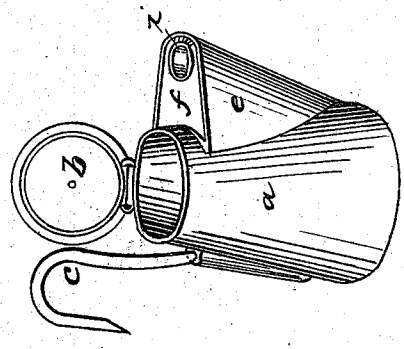


Fig. 1



Witnesses

M. H. Cushing

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UNITED STATES PATENT OFFICE.

WILLIAM SEYBOLD, OF McKEESPORT, PENNSYLVANIA.

IMPROVEMENT IN MINERS' LAMPS.

Specification forming part of Letters Patent No. **35,264**, dated May 13, 1862.

To all whom it may concern:

Be it known that I, WILLIAM SEYBOLD, of McKeesport, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Miners' Lamps; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the annexed drawings, forming part of this specification.

My invention consists in an improved construction of the small lamp used by miners to light them at their work underground, which they attach to their caps or hats, and is designed to adapt the lamp to the use of tallow or other non-fluid grease instead of oil.

The miners' lamps ordinarily used consist of a small vessel, usually made of tin, and of the shape of a coffee-pot, although much smaller in size. Through the spout is inserted the round cotton wick, the spout being surrounded by a concentric tube open at the upper end, which is designed to catch the drops of oil which weep from the wick and are not consumed. Lard-oil is burned in these lamps, being found to be the kind of oil best suited for the purpose.

The use of oil in miners' lamps is liable to several objections, the principal of which are that the oil is apt to spill out of the lamp or to weep out at the spout, that when the flame is large enough to give a sufficient light there is a great amount of smoke emitted, which is very offensive in the underground chambers of the mines, and that when the air in the mines is foul the flame emits very little light. The flame is also very easily extinguished. These objections would be obviated—some of them entirely and others very materially—by the use of tallow as a fuel for the flame; and my object is to overcome the difficulty of keeping the tallow sufficiently fluid around the wick to enable it to be used for this purpose.

The ordinary tin lamp with a tin wick-tube will not answer for burning tallow or hard grease, as the tin does not become sufficiently hot to keep the grease melted around the wick, and consequently it will not burn. As copper is a much better conductor of heat than tin, I have tried making the lamps of the former metal; but it does not answer, because the whole lamp soon becomes so highly heated that the tallow in the lamp is all rendered fluid, and is apt to spill out, as does the oil, and the lamps, being suspended to the hat or cap of the workman, are apt to touch his face and burn it severely, besides the copper-lamp is heavier, and therefore objectionable. I have succeeded, however, in accomplishing the desired object by making the lamp of tin with a copper-spout or wick-tube surrounded by an air-chamber of tin, forming a heater around the wick, by means of which the mass of tallow in the lamp is rendered semi-fluid, excepting near the wick, where it is melted sufficiently to be drawn up by the wick so as to burn readily. The tallow in the wick itself is also kept melted by the heater, without which the wick would become clogged and would not draw up the tallow.

To enable others skilled in the art to construct and use my improved miners' lamp, I will proceed to describe more fully and particularly its construction and operation, referring to the drawings accompanying this specification, in which—

Figure 1 is a perspective representation, and Fig. 2 is a vertical section of my improved miners' lamp.

In the drawings, *a* is the lamp, made of tin and having a hinged cap or cover, *b*, and the ordinary hook-handle, *c*, by which it is fastened to the miners' cap. The spout or wick-tube *d* is a cylinder of copper of suitable diameter—say, about three-tenths of an inch at the top and about half an inch below—which is inserted in the body of the lamp near the bottom and projects upward at an acute angle with the side of the lamp. The inside of this copper wick-tube may be tinned, so as not to discolor the wick and tallow with verdigris. Around this wick-tube *d* is a hot-air chamber, *e*, made of tin, attached to the body of the lamp and surrounding the wick-tube, so as to leave a space all around it. This hot-air chamber is closed at top by a cap-piece, *f*, of tin, through which the top of the wick-tube projects. The air-chamber thus formed is entirely closed, so that it may not become filled with grease or dirt.

My improved lamp, being thus constructed, operates as follows: The cotton wick, of the usual kind, previously saturated with grease, being inserted in the lamp through

the wick-tube, the lamp is filled with tallow through the hinged-cover. When the wick is first lighted, it may be held upside down for a minute or so in order that the flame may play on the heater, and it soon makes the copper tube so hot that the air in the air-chamber around the wick-tube becomes highly heated. This serves as a heater around the wick-tube, and by it the tallow in the bottom and at one side of the lamp around the wick becomes melted, while the other parts of the lamp do not become much heated, so that the lamp can be easily handled without burning the fingers, and the mass of tallow in the lamp, except around the wick, is softened, but not rendered fluid.

The flame given by this lamp is much clearer and whiter than that produced by the oil-lamp, the light is much more brilliant, and there is very little, if any, smoke emitted. It is not so liable to be extinguished by a draft of air and burns better when the air in the mine is somewhat foul than does the ordinary oil-lamp. Besides these advantages the lamp is much cleaner, and, as tallow is cheaper than lard-oil, there is a saving to the miner of about one-half of the cost of his light. Not only tallow but any kind of grease can be burned in my lamp, so that the workman may by having the grease saved in their kitchens which would otherwise be thrown away save the entire cost of the oil used in the ordinary lamp.

My improvement is applicable not only to miners' lamps, but also to lamps for domestic and other purposes, wherever it is desired to burn tallow or other fats. Tallow gives an excellent light, and is for many purposes preferable to any other illuminator, and by my invention it may be used where candles would be objectionable.

A lamp constructed in the manner I have described would be very useful in railroad-cars, in passenger-cars, for lanterns in hotels or in families, and in any cases where it is desired to burn tallow or fat.

Having thus described my improvement in miners' lamps, what I claim as my invention, and desire to secure by Letters Patent, is—

Constructing lamps for burning tallow or other non-fluid fatty substances with a wick-tube of copper or other sufficient conductor of heat surrounded by a hot-air chamber for the purpose of melting the tallow or fat around the wick in the lamp and keeping the tallow melted in the wick itself, substantially in the manner and for the purposes hereinbefore set forth.

In testimony whereof I, the said WILLIAM SEYBOLD, have hereunto set my hand in presence of two witnesses.

WILLIAM SEYBOLD.

Witnesses:
M. G. CUSHING,
M. MCBRIDE.