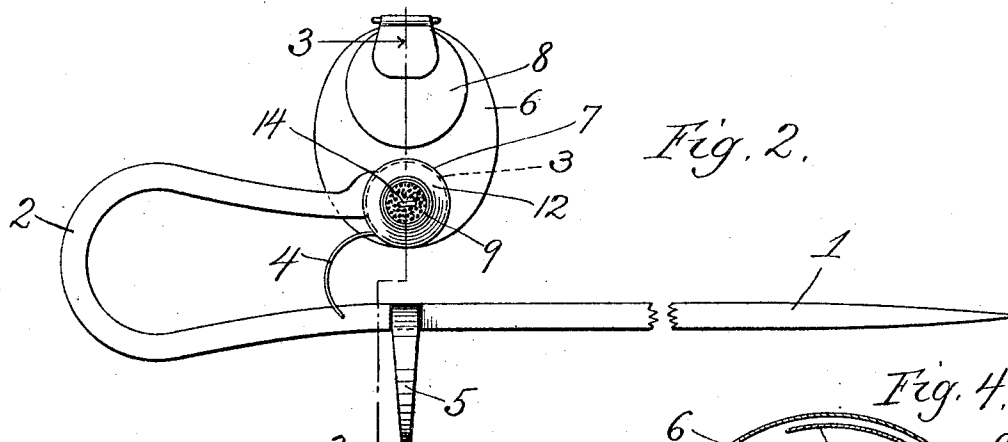
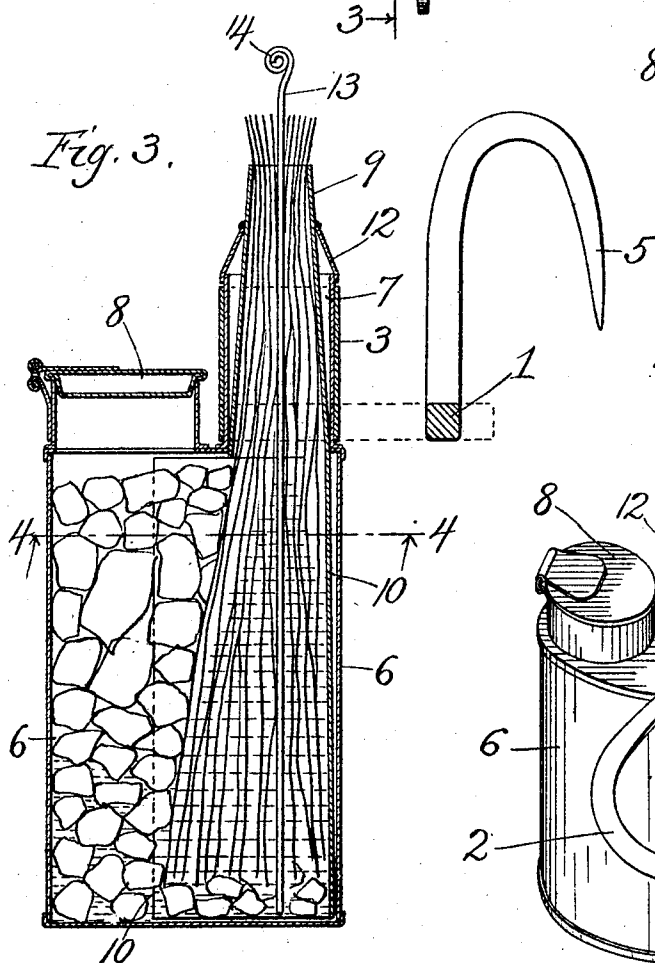


G. A. DUNCAN.  
MINER'S LAMP.

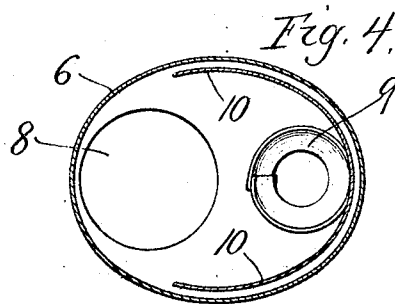
APPLICATION FILED APR. 17, 1905.



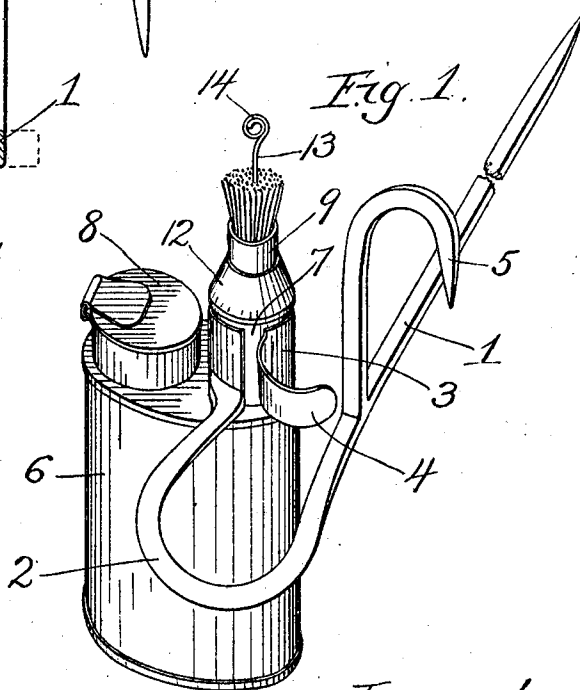
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



*Fig. 1.*

Witnesses.  
Edward T. Wray.  
M. Gertrude Ady.

Inventor.  
Gustav A. Duncan  
by Burton & Burton  
his Attys.

# UNITED STATES PATENT OFFICE.

GUSTAVUS A. DUNCAN, OF DEADWOOD, SOUTH DAKOTA.

## MINER'S LAMP.

No. 802,978.

Specification of Letters Patent.

Patented Oct. 31, 1905.

Application filed April 17, 1905. Serial No. 255,964.

*To all whom it may concern:*

Be it known that I, GUSTAVUS A. DUNCAN, a citizen of the United States, residing at Deadwood, in the county of Lawrence and State of South Dakota, have invented new and useful Improvements in Miners' Lamps, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide an improved miners' light of the nature of a lamp as distinguished from a candle, but adapted to be held in the familiar miners' candle-stock so as to be used in the customary manner of the miners' candlestick and candle.

It consists of the features of construction set out in the claims.

In the drawings, Figure 1 is a perspective view of my improved lamp in connection with the miners' candle-stock in which it is held. Fig. 2 is a plan view of the same. Fig. 3 is a section at the line 3 3 on Fig. 2. Fig. 4 is a section at the line 4 4 on Fig. 3.

The drawings show a familiar form of miners' candle-stock having a long tang 1 bent in a loop 2 and having at the extremity of the shorter arm a spring-clasp 3, adapted to hold a candle of ordinary size, such clasp terminating in a thumb-piece 4, which may be operated while holding the stock by the loop to spread the clasp for inserting or moving the candle. A hook 5 projects up from the long arm opposite the clasp on the short arm and is reflexed downward, as seen clearly in Fig. 1, the ends of the tang 1 and of the reflexed end of the hook being sharpened to facilitate inserting in soft earth or crevices of rock to support the device. This stock in and of itself, as above indicated, is in common use for holding miners' candles; but it is not adapted to hold any lamp of ordinary construction. In order to employ with it a lamp instead of a candle, I make a lamp having a body 6 of any convenient form, preferably oval in cross-section, as shown, from the upper end of which a cylindrical wick-tube 7 projects, such wick-tube being of the size of an ordinary candle and adapted to be held in the clasp 3 in the same manner as a candle would be held therein. The lamp is designed to use paraffin or other substance which remains solid at ordinary temperature, but is easily melted to form an illuminating-oil and the lamp-body 6 has an opening closed by a cap 8 at the upper end alongside the wick-tube for insertion of the paraffin or other like mate-

rial. It is necessary to provide special means for melting the paraffin, not as a whole, but at its contact with the wick, so that while the great bulk of the paraffin which may be packed into the lamp-body may remain solid, and so not liable to spill or require special care, it may be melted at its contact with the wick. For this purpose I provide a wick-sheath 9, made of copper, which is folded to inclose the wick at the portion which extends through the wick-tube 7, but below that tube—that is, within the body of the lamp—is left unclosed, being merely folded, so as to stand within the lamp, extending around one side thereof and open toward the other side, this lower portion 10 being for the purpose of conducting the heat, so as to affect the paraffin over a sufficiently large area to melt it in sufficient quantity to keep the wick supplied. The wick extends within the wick-sheath 9 and becomes spread at its lower part, so that the several threads or filaments are distributed through the mass of softened and partly-melted paraffin lying within the partly-encompassing portion 10 of the sheath. In practice the upper portion of the sheath 9, which is folded to encompass the wick, forms a tapering tube, narrowest at the top, this being the most convenient form in which the metal can be folded for fitting closely at the bottom of the wick-tube, while having a suitably-reduced diameter at the top to hold the wick tightly enough to prevent it from slipping down, and the increasing diameter from above downward permits the wick to spread, so as to be loose enough to conduct the oil by capillary attraction readily and freely to the top, where it is necessarily grasped more tightly to prevent slipping. A frusto-conical collar 12 at the top of the wick-tube fits at its smaller upper base about the wick-sheath, and such collar being soldered to the wick-tube and to the sheath serves to secure the latter fixedly in position, and the joint is rendered secure against breaking on account of its taper and the fact that the sheath, though small at the top, fits snugly within the wick-tube at the bottom, as stated. This construction also affords an air-space between the sheath 9 and the tube 7, so that the latter protects the former against excessive loss of heat by radiation and increases its efficiency as a means of conducting heat to the paraffin for melting the latter.

For further assisting the melting of the oil and partly to keep it in condition to be drawn

properly by capillary attraction through the whole length of the wick a copper wire 13 is inserted through the center of the wick and at the upper end coiled at 14 to expose a larger  
 5 area in the flame, so that sufficient heat may be derived thereby to be conducted through the wire to assist in softening the wax in the wick throughout its whole length.

I claim—

10 1. A miner's lamp comprising a chambered body for holding illuminant; a tubular cylindrical extension superimposed upon such body of suitable diameter and length to be held in the clasp of a miner's candle-stock  
 15 and to protrude above the clasp, such cylindrical extension being of greatly less diameter than the body, and a wick-sheath extending through said cylindrical extension and protruding thereabove with an interven-  
 20 ing air-space between said sheath and tubular extension and means substantially closing said air-space at both ends.

2. A miner's lamp comprising a chambered body for the illuminant, and a super-  
 25 imposed cylindrical extension of greatly less diameter than the body and of suitable diameter to be engaged in the candle-clasp of a miner's candle-stock, the body having a filling-aperture at the top of greater area than  
 30 the cross-section of said cylindrical extension.

3. The combination with a miner's candle-stock which has a candle-clasp of a lamp  
 35 consisting of a chambered body for holding illuminant, and a cylindrical extension superimposed upon such body of greatly less diameter than the body and of suitable diameter and length with respect to the diameter and  
 40 length of the clasp to be held in the latter and protrude thereabove, and a wick-sheath

extending vertically through the tubular extension and protruding above it, and means spacing it from the tubular extension to form an air-cavity between said extension  
 45 and sheath.

4. The combination with a miner's candle-stock which has a spring candle-clasp of a lamp consisting of a chambered body and a  
 50 superimposed tubular cylindrical extension having its cavity continuous with that of the body, adapted to serve as a wick-tube, of greatly less cross-sectional area than the  
 55 body, of suitable diameter to be held in the spring-clasp, the body having a filling-aperture at the upper end located within the excess of cross-sectional area of such body over  
 that of the wick-tube and materially greater than the cross-sectional area of the latter.

5. The combination with a miner's candle-stock, of a lamp having a cylindrical wick-  
 60 tube projecting from its upper end adapted to be engaged in the clasp of the candle-stock; a wick-sheath of highly-conducting metal extending through the wick-tube hav-  
 65 ing reduced diameter at the upper end for grasping the wick, and expanding thence downward, and having below the wick-tube within the body of the lamp the partly-folded  
 70 portion, 10, standing in proximity to one side of the body of the lamp and open toward the opposite side.

In testimony whereof I have hereunto set my hand, in the presence of two witnesses, at Denver, Colorado, this 12th day of April, 1905.

GUSTAVUS A. DUNCAN.

In presence of—

JOHN A. NELSON,  
 M. D. STACKPOLE.