(No Model.)

C. WOLF & H. FRIEMANN.

MINER'S SAFETY LAMP.

No. 322,514. Patented July 21, 1885.

Fig. 1.

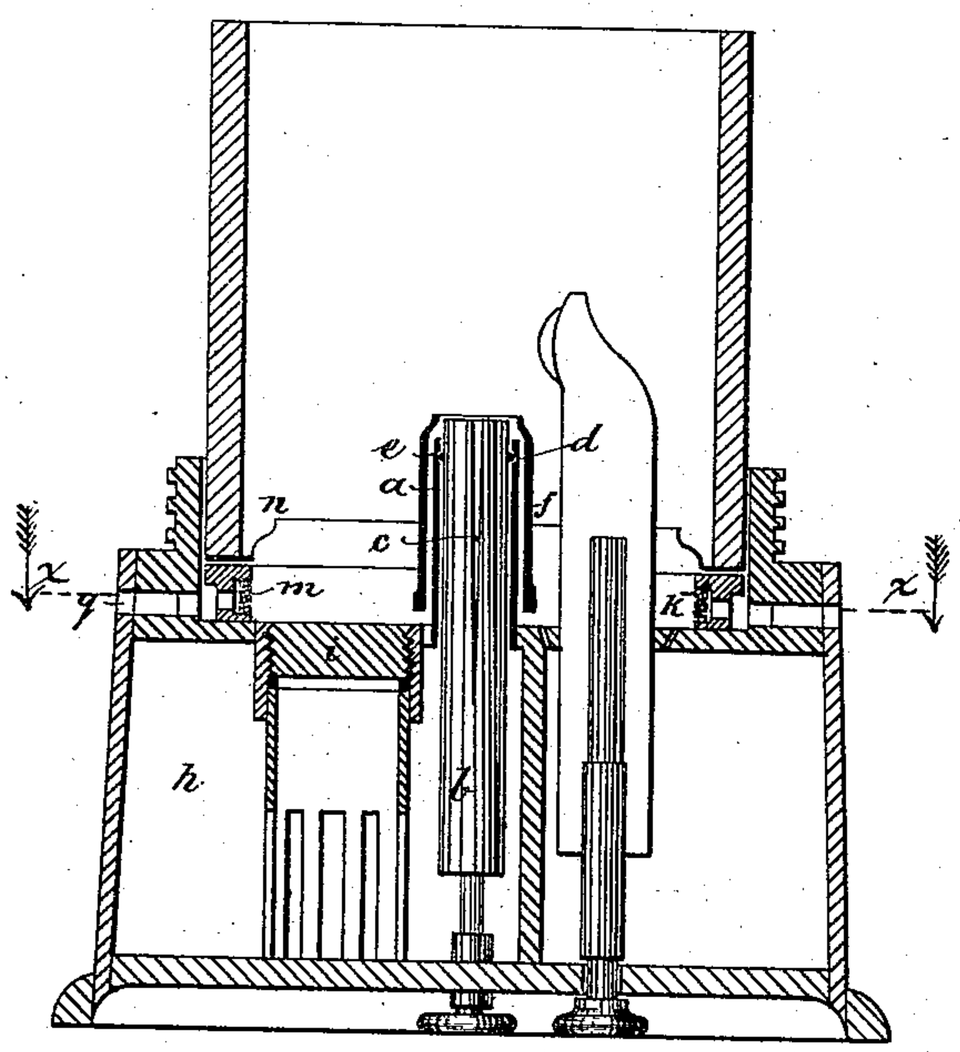


Fig. 2.

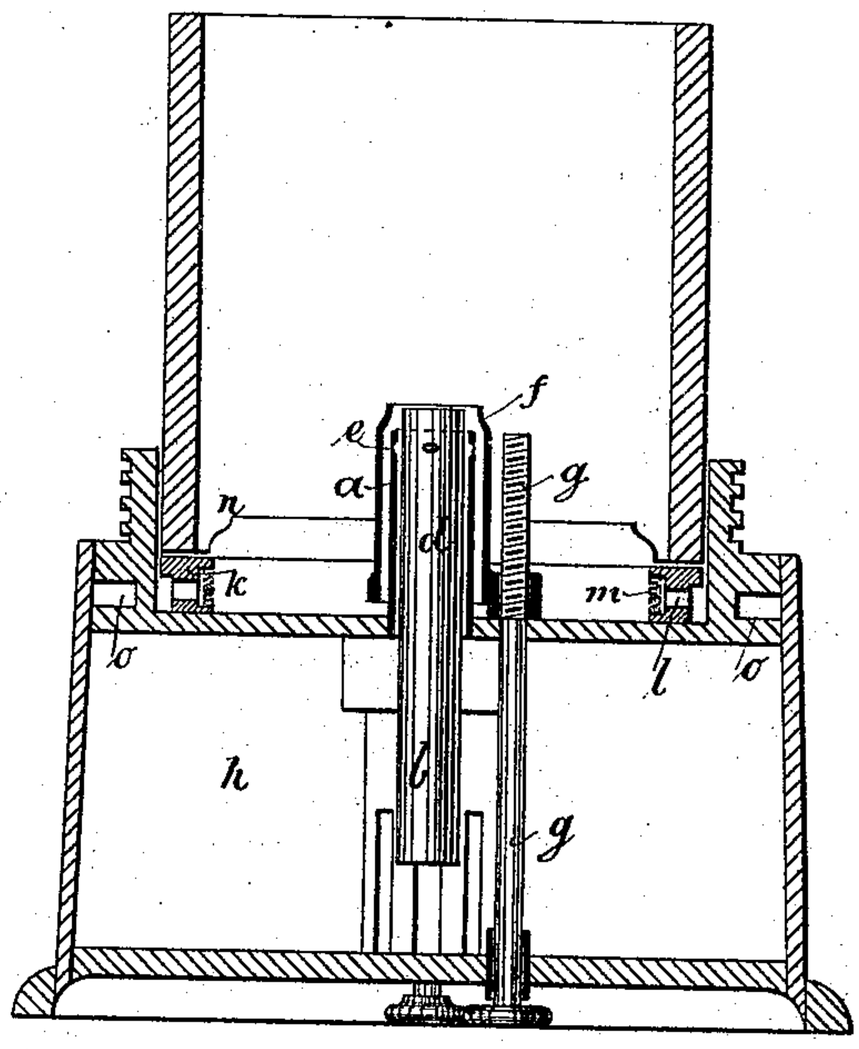


Fig. 5.

Fig. 3.

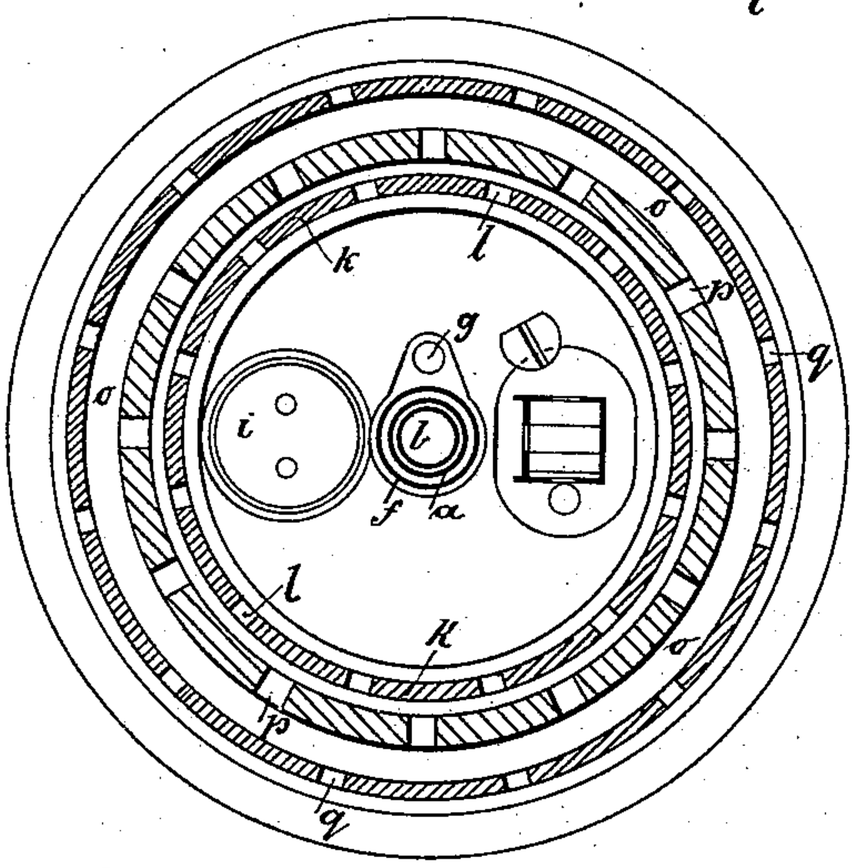
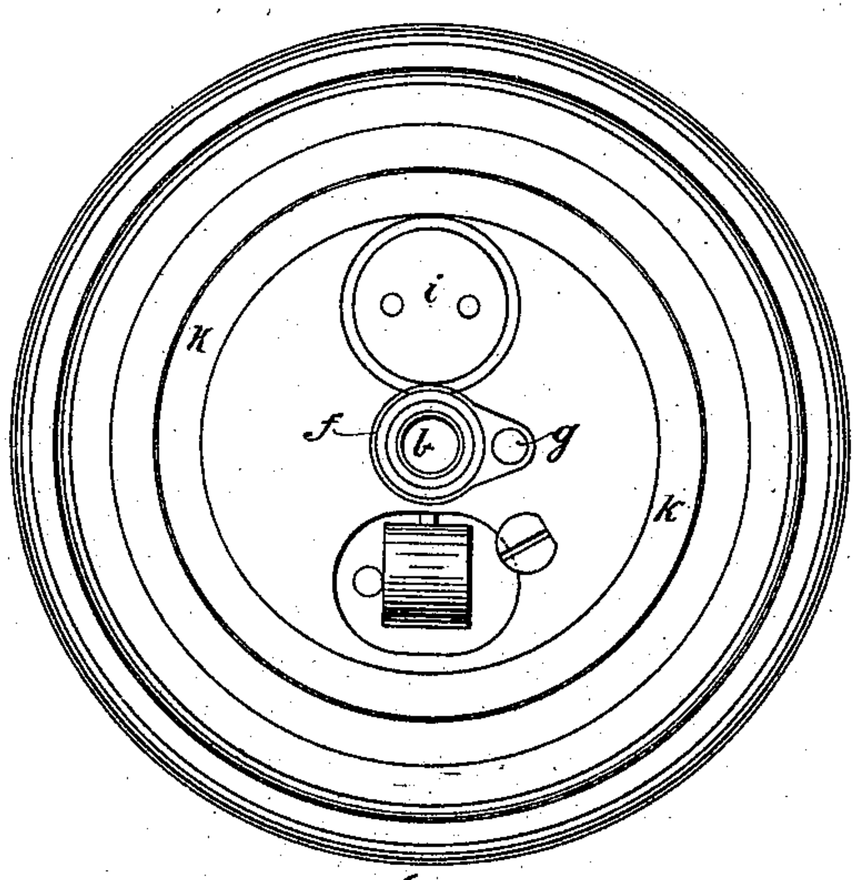


Fig. 4.



Witnesses,
Arthur S. Brown.
J. S. Brown.

Inventors.
Carl Wolf and
Heinrich Friemann,
By Burke, Draper and Connett
their attorneys.

UNITED STATES PATENT OFFICE.

CARL WOLF, OF ZWICKAU, AND HEINRICH FRIEMANN, OF EISLEBEN, GERMANY.

MINER'S SAFETY-LAMP.

SPECIFICATION forming part of Letters Patent No. 322,514, dated July 21, 1885.

Application filed April 3, 1885. (No model.)

To all whom it may concern:

Be it known that we, CARL WOLF, of Zwickau, Saxony, and HEINRICH FRIEMANN, of Eisleben, Prussia, Germany, have invented certain new and useful Improvements in Miners' Safety-Lamps, (for which a patent was applied for in Germany on February 14, 1885,) of which the following is a specification.

This invention relates to the arrangement of the air-feed for the flame in hydrocarbon safety-lamps with percussion igniting apparatus for relighting the lamp when the same has been extinguished, and without having to open the said safety-lamp, and to the arrangement of the burner and filling-stopper.

In the accompanying drawings, Figure 1 represents a vertical section of the improved lamp. Fig. 2 is a vertical section at a right angle to Fig. 1. Fig. 3 is a horizontal section to Fig. 1 on the line *x x*. Fig. 4 is a top view of Fig. 3, and Fig. 5 a part sectional view of the protective ring.

The outer burner-tube, *a*, is only of sufficient diameter to receive the inner slotted tube, *b*, containing the wick, and said inner tube, *b*, is held in the outer burner-tube, *a*, in the following manner: The inner or wick tube, *b*, is slotted at opposite sides in about half its length, so that the upper end forms a strong double spring. This wick-tube *b* is provided near its upper end, laterally to the slots *c*, with two small projections, *d*, which fit in two small cavities or recesses, *e*, in the burner-tube *a*, so that the slotted wick-tube is held immovably fast in the burner-tube even when the lamp should receive a shock or blow. If it is desired to remove the wick and wick-tube *b*, it is only necessary to press the ends of the slotted tube *b* together, so that the small projections *d* are removed from the recesses or cavities *e*, when the wick and wick-tube can be readily withdrawn.

The cap *f*, arranged around the burner-tube, is connected to a screw-spindle, *g*, which runs through the vase or benzine-receptacle, so that by operating the said screw the cap *f* can be raised or lowered in order to regulate the flame or extinguish the same. An opening, which is closed by a screw-stopper, *i*, is arranged laterally to the burner, by means of which said opening the lamp can be filled without having to remove the burner. This said opening we prefer to arrange diametrically opposite to the igniting device, although it is evident that the same can be arranged in other position without departing from the tenor of our invention. As an igniting device we employ the construction as shown and described in the British Patent of H. Friemann, No. 3,132, dated June 23, 1883.

As aforementioned, the compact arrangement of the parts enables us to insert a ring, *k*, in the lamp, which said ring *k* is provided with a number of borings, *l*, Fig. 5, and on the inner side with a groove, which serves to receive the wire-gauze or fabric *m*.

The annular foot *n* for the cylinder is placed on this ring, and the cylinder placed on the said foot *n*. A groove, *o*, is formed in the inner periphery of the lamp-case, which acts as an air-canal, and is in connection with the consumption-space or interior of the lamp by means of the borings *p*, and with the outer air by means of the borings *q* in the casing of the lamp, so that the air entering the lamp is compelled under all circumstances to pass through the wire-gauze *m*. In order to prevent the gauze being injured by passing sharp instruments through the borings *q* of the casings, these borings *q* do not communicate direct with the borings *p*, but are arranged alternately between said borings *p*. This arrangement of the borings has the further advantage that the air entering the lamp cannot pass direct to the flame, but must flow equably to the same, so that a perfectly quiet flame is attained.

The brass or other ring *k* is provided with recesses or cavities, in order to insure the free circulation of the air between the casing and the ring *k*, and to prevent the borings *l* becoming stopped up by any coal-dust entering the same.

The air-feed, by means of the brass or other ring, avoids all the disadvantages heretofore experienced, as the penetration of the flame downward through the spaces around the openings for the mechanism is rendered impossible, and the failing of the protective ring

must be detected by the workman, as the lamp cannot otherwise be put together, and the glass cylinder and the gauze cylinders would not fit the lamp.

Having now described our said invention, what we claim is—

1. A burner-tube, *a*, provided with an annular inner recess, *e*, in combination with a wick-tube, *b*, provided with longitudinal slits *c* and with projections *d*, which engage said recess *e*, substantially as set forth.

2. A lamp-casing provided with an air-canal, *o*, which communicates with the open air by means of apertures *q*, and with the interior of the lamp by means of apertures *p*, said apertures *p* and *q* being in the same horizontal plane, but not in line with each other, in combination with an annular ring, *k*, arranged within the lamp-casing and surrounding the burner, which ring is interposed between the apertures *p* and the interior of the lamp, and is provided with apertures *l* and wire-gauze *m*, through which apertures and gauze the air must pass to reach the burner, substantially as set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

CARL WOLF.
HEINRICH FRIEMANN.

Witnesses:
F. KÖRNER,
ALFRED DÜRINGER.