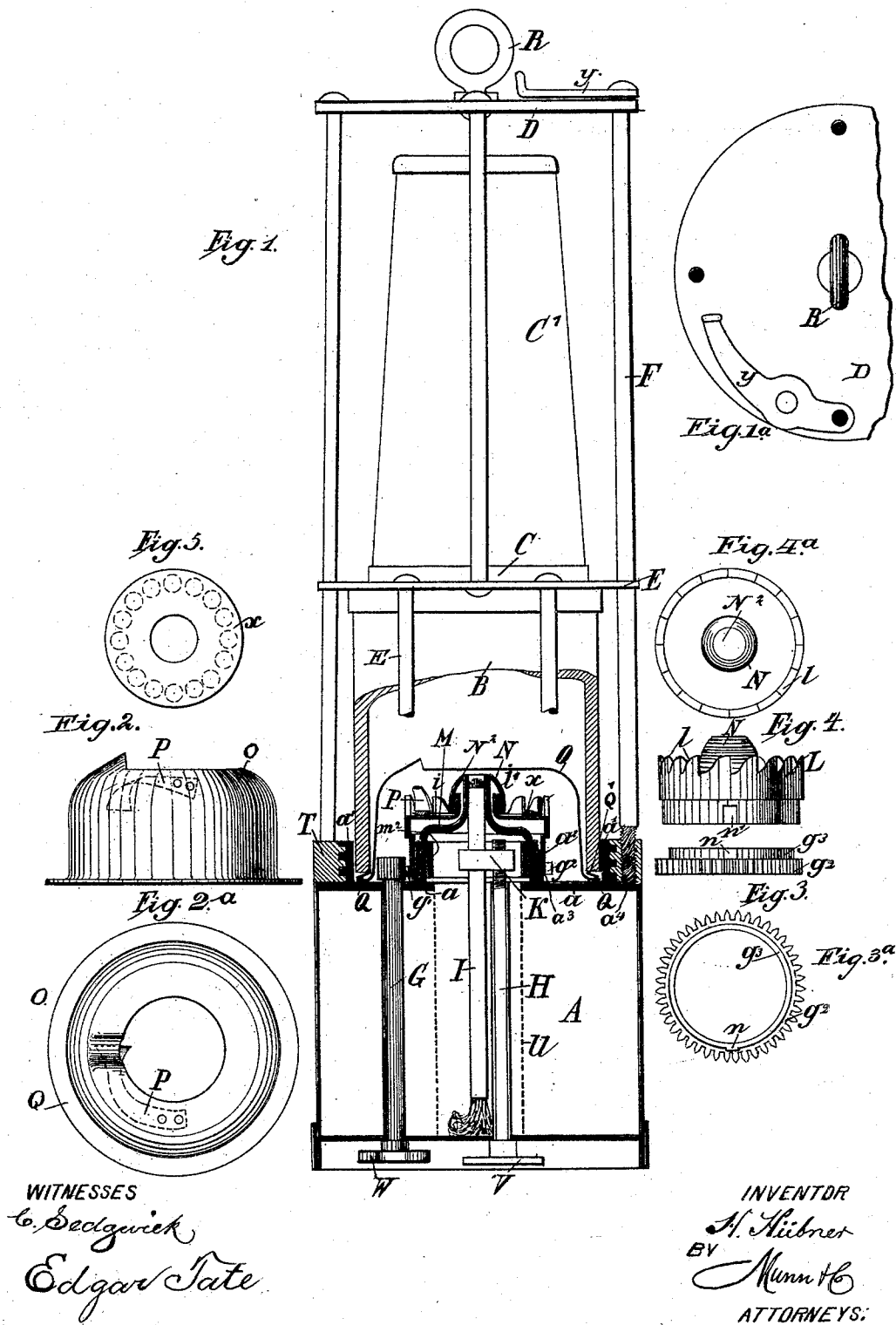


(No Model.)

H. HÜBNER.
MINER'S SAFETY LAMP.

No. 499,117.

Patented June 6, 1893.



UNITED STATES PATENT OFFICE.

HEINRICH HÜBNER, OF HERMSDORF, GERMANY.

MINER'S SAFETY-LAMP.

SPECIFICATION forming part of Letters Patent No. 499,117, dated June 6, 1893.

Application filed November 8, 1892. Serial No. 451,411. (No model.)

To all whom it may concern:

Be it known that I, HEINRICH HÜBNER, of Hermsdorf, Prussia, Germany, have invented new and useful Improvements in Miners' Safety-Lamps, of which the following is a full, clear, and exact description.

The invention relates to that form of miners' lamps in which ignition of the wick is accomplished by the explosion of a percussion cap or the like, and the object of the invention is to improve lamps of this character to the end that safety may be promoted, and further to provide a construction in which the chimney and the gauze cylinder may be connected and disconnected from the reservoir with convenience and dispatch, and in which the accidental disconnection of the parts shall be guarded against.

A further object is to improve the lamp in its various details.

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

Figure 1 is a side elevation of a miner's safety lamp embodying my improvements, the lower portion being in section. Fig. 1^a is a broken plan view. Fig. 2 is a side elevation of the dome or hood to which is secured the hammer for exploding the caps. Fig. 2^a is a plan view of such dome. Fig. 3 is a side elevation of the toothed ring that carries the cap-supporting sleeve. Fig. 3^a is a plan view of such ring. Fig. 4 is a side elevation of the cap-carrying sleeve. Fig. 4^a is a plan view of such sleeve; and Fig. 5 is a plan view of the disk containing the percussion caps.

In constructing a lamp in accordance with my invention, a suitable reservoir A is provided, having formed or secured to its top *a*, an annular ring *a'*, in which external threads are formed, and to said threaded ring *a'*, the base ring T, of the lamp frame F, is screwed.

On the top *a* of the reservoir A, there is also formed or secured a neck *a*², which receives the cylindrical lower end *m*² of the burner M, that is held to the neck *a*² by a screw connection. The burner M is gradually contracted at its upper end to form a tubular termination, into which the upper end of the wick tube J, fits. The wick tube J is provided with a lateral lug K, which is

tapped for the reception of the threaded upper end of the spindle H, and the latter extends downward through the bottom of the reservoir A, and is provided with a disk V, whereby it may be turned for raising or lowering the wick tube J. A gauze cylinder U, within the reservoir, incloses the wick tube J and spindle H.

On an exterior shoulder *a*³ on the neck *a*² of the reservoir, a ring *g*², is fitted to rotate, said ring being toothed on its exterior, its teeth meshing with a pinion *g'*, formed on the upper end of a spindle G, that extends through the reservoir and the bottom of the latter, the lower end of the spindle having a disk W, whereby it may be turned. On the ring *g*² an annular vertical flange *g*³ is formed, over which fits the sleeve L that carries the percussion caps, an engagement of the ring *g*² and sleeve L being effected by a lug or projection *n* on the ring fitting a corresponding opening *n'* in the said sleeve, whereby the sleeve will rotate in response to the rotation of the ring *g*². The sleeve L has a horizontal, internal flange *i*, which forms a seat for the disks *x* in which the caps are embedded, and said flange *i*, at its inner edge is upturned and exteriorly threaded as at *i'*, for the reception of a cap N, that is contracted at its upper end, said upper end having an orifice *n*², and fitting snugly around the contracted end of the burner M, slightly below the top of the latter.

Above the horizontal seat *i*, the sleeve L is formed with a circular series of ratchet teeth *l*, which in the rotation of the sleeve, in response to the turning of the spindle G, and sleeve L, will successively lift the spring hammer P, and cause it to explode one of the caps in the disk *x*. The hammer P, is secured to the inner surface of a dome O, said dome being exterior to the sleeve L, and having its lower edge turned outward as at Q.

The rods F, of the lamp frame rise from the base ring T, to the top plate D, the latter having a ring R, by which the lamp may be carried.

Intermediate of the base ring and top plate is a ring C, on which the gauze cone or gauze cylinder C' of the lamp is supported, the ring C being supported from the base ring T, by vertical rods E. The ring C, serves also to

clamp the glass chimney B in place, and the lower edge of the said chimney engages and clamps the outwardly turned edge Q of the dome O, a ring Q' being interposed between the said edge Q and the chimney, if desired. One of the rods F, as shown at the right of Fig. 1 is threaded in the base ring T, and at its upper end it is provided with an arm or handle y, for rotating it.

When the frame has been screwed bodily onto the vertical flange a', of the reservoir to clamp the chimney B and dome O in place against the top of the reservoir, the arm F that rotates is turned to cause its lower threaded end to project through the bottom of the ring T, and engage a recess or hole a⁴ in the top a of the reservoir, thus preventing accidental unscrewing of the frame.

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

1. In a miner's safety lamp, the combination with the oil reservoir provided with a burner, an externally threaded ring a' and a depression a⁴ in the top, outside of the ring a', and the chimney B, the lower end of which fits within the ring a', of the frame comprising the lower ring T screwing on the ring a', the middle ring C fitting the upper end of the chimney B and carrying the gauze C', the top ring D and the vertical rods F connecting all three of said rings one of the bars having a screw threaded end passing through a threaded aperture in ring T into the depression a⁴ and locking the frame to the reservoir and provided at its upper end with an operating arm or crank y, substantially as set forth.

2. In a miner's safety lamp, the combination, with the burner, of a sleeve outside the burner and means for rotating it, said sleeve having a horizontal seat for receiving percussion caps or the like, and formed on its upper edge with teeth, and a dome outside the said

sleeve provided with a hammer on the under side of its overhanging portion projecting into the path of the said teeth to be retracted and released thereby to strike and explode a cap, substantially as described.

3. In a miner's safety lamp, the combination with the burner, of a peripherally toothed ring outside of the burner, and means for actuating said ring, a sleeve detachably held to the upper side of the toothed ring, and itself provided on its upper edge with ratchet teeth and provided further with a horizontal internal seat for receiving percussion caps or the like, and a dome outside the said sleeve and having a spring hammer, adapted to be lifted by the ratchet teeth of the sleeve, substantially as described.

4. In a miner's safety lamp, the combination, with a reservoir, and a burner thereon having a contracted, tubular upper end, a wick tube in the reservoir, movable into said end a peripherally toothed ring outside the burner, a spindle extending through the bottom of the reservoir and provided at its upper end with a pinion meshing with said ring, a sleeve detachably held to the ring and provided on its upper edge with ratchet teeth and with a horizontal internal seat for receiving percussion caps or the like, and provided with a tubular threaded extension i', a cap N screwed on said extension and having a central aperture through which the contracted upper end of the burner projects and a dome having a spring hammer for exploding the caps, the said hammer being operated by the ratchet teeth above mentioned, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HEINRICH HÜBNER.

Witnesses:

A. RATHHALLER,
TH. EHRENBURGH.