

Miners' Cap Lamp

The electric lighting outfit for miners is intended to take the place of the present oil lamp, which burns with open flame and is carried in the hand or is fastened to the cap, or of the present safety oil lamp the wick of which is enclosed in a tube of wire gauze.

The electric outfit consists of the reflector, inside of which a small tungsten lamp is placed, and of the battery, which is connected to the tungsten lamp by means of an insulated double wire. The wire is protected at both ends by steel flexible springs so as to prevent its breaking.

The cap lamp is to be fastened to the miner's cap just like an ordinary oil lamp, no change of the cap for this purpose being necessary. The battery is carried on the back of the miner on a belt. Care is taken that the miner is not able to open the reflector, unscrew the tungsten lamp and cause a spark, nor to lift the cover from the battery, in which case he would again be in a position to produce sparks by short-circuiting the poles of the battery. For this purpose, the reflector is provided with a flange through which eight holes are drilled, the counter-flange of the ring which holds the lens in place showing one



Electric Cap Lamp for Miners' Use

hole which meets one after the other the eight holes of the flange of the reflector. A steel wire with a lead seal, drawn through the holes, prevents the ring from turning unless the seal is broken. On the other hand the plug, which fits in the cover of the battery container, is mechanically locked inside the cover by a moveable steel rod which is automatically

pushed through a protruding steel tongue of the plug. The latter can be pushed into the cover but cannot be taken out unless the cover is unlocked and lifted. As the miner gets the container in a locked condition, he cannot reach the battery unless he breaks or opens the lock by force.

The Edison Battery is intended to feed the tungsten lamp for ten hours after a normal charge, but will give, in case of emergency, current for as long as fifteen hours.

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| Normal discharge rate Amperes | | 0.45 |
| Total weight of battery in case—ounces | | 42.5 |
| No. of cells per lamp | | 2. |
| Capacity Ampere hour | | 4.5 |
| Normal charging rate Amperes | | 1. |
| Length of charge, hour | | 8. |
| Weight of cells—ounces | | 15. |
| Rated candle power of bulb | | 7/10 |
| Reflected candle-power | | 3. |
| No. of hours lamp will burn on one charge | | 15. |

Constructing Motor Road Surfaces

The New Plymouth Borough Council and their Engineer, Mr. S. Skitrop, have for the past fifteen months been experimenting on the construction of a road surface that shall be suitable for motor traffic and at the same time be not too expensive. Success has crowned their efforts, judging from the appearance of the northern portion of Currie Street, which has been treated in a special manner with two coats of soltar and shingle. The street is nicely shaped with an even camber, the surface is even and smooth, and somewhat resembles rubber; is waterproof, resilient, practically dustproof, and silent. It has been laid down 8 months, and carries the heaviest traffic of any street in New Plymouth, leading directly from the railway station to the centre of the town, and does not yet show the slightest sign of wear. The first application of soltar was sprayed into the metal before the blinding was applied, coarse shingle was then spread over the surface and rolled thoroughly hard; the second coat of soltar was then sprayed on the surface and covered with coarse sand and again rolled. The road was open for traffic practically the whole time it was being treated. The thickness of the treated portion is about 2½ inches, and is a soltar macadam with a smooth non-slippery surface. The cost of the two coats, including material and labour, was 1s 1½d. per square yard. This is a cost that is within the reach of County Councils and small Boroughs, and would be cheaper and would give far better results than the present method of repairing and maintaining roads with broken metal or other stone, which is continually being washed away by rains and blown away by winds.

There is no doubt local bodies will have to face the problem of improved road surfaces to prevent excessive wear and tear partly caused by motor traffic.

There are several other portions of street surfaces treated with the same preparation, but not applied in the same manner, and not, in the Engineer's opinion, so successful as the portion referred to, which is certainly a fine piece of street at a reasonable cost.