

UNITED STATES PATENT OFFICE.

EUGEN HACKH, OF STUTTGART, GERMANY.

MAGNESIUM-LIGHT COMPOSITION.

SPECIFICATION forming part of Letters Patent No. 476,264, dated June 7, 1892.

Application filed May 14, 1891. Serial No. 392,796. (No specimens.)

To all whom it may concern:

Be it known that I, EUGEN HACKH, a subject of the King of Württemberg, and a resident of Stuttgart, in the Kingdom of Württemberg, Germany, have invented certain new and useful Improvements in Magnesium Lights for Photographic and Signaling Purposes, of which the following is a full, clear, and exact description.

10 The present invention relates to the production of magnesium light for photographic and signaling purposes; and its object is to achieve a complete utilization of the entire illuminating power of magnesium powder by
15 preventing the particles of the same from remaining in close contact with each other—*i. e.*, loosening the same, so that the oxygen of the air may have access to each and every particle of the powder. By this means I attain the result that every particle of the magnesium powder is brought to a white glow, producing the effect of an intense perfectly-white flame. I effect the separation of the
20 particles of the magnesium powder by thoroughly mixing or combining the same with some fibrous material. Long carded unspun wool is preferably employed for this purpose, the fibers or threads of which said wool should cross each other to form a sort of net.

30 In order to attain a good adhesion of the particles to the wool, the latter should be soaked in a mixture of two parts vegetable oil, two parts benzine, and one part Venice turpentine. It should be then wrung or pressed out and
35 dried to such an extent that the wool retains a thin oily coating, not sufficient to be visible, but just enough to be slightly felt. The magnesium powder is then shaken over the wool or other suitable fibrous material thus prepared and kneaded or treated in other suitable
40 manner until the threads or fibers of wool are thickly covered with particles of the powder. The oxygen necessary for combustion will now have easy access to each and
45 every one of the particles of magnesium thus arranged or deposited on the fibers or threads. The fibers thus covered with powder can then be twisted together like a rope to concentrate the source of light and the twist coiled to a

spiral. The amount of light produced will vary with the diameter and length of the twisted fibers, while the duration and intensity of the light may be regulated by twisting the fibers or the coil more or less tightly. If, for instance, the coil is wound and twisted tightly, the light produced will last longer, but have less illuminating power. If loosely wound, the illuminating power will be greater, but the duration shorter.

The magnesium-coils should be preferably burned in an apparatus in which the light produced by the explosive combustion of the particles of magnesium can be concentrated to one point or in one direction. For this purpose the coil can be mounted on a coarse-meshed wire-netting, which is stretched over a concave metal plate and on which a funnel-shaped casing having both ends open is arranged. Such casing causes the glowing particles of magnesium to be thrown out in the form of a cone, so that in the open space, sufficient oxygen having access to the particles, a perfect combustion of the same at a white-glow heat takes place. By this means every particle in burning will give off its full illuminating power.

The apparatus above mentioned also enables the direction of the light to be altered in any desired manner, as the plate supporting the illuminating-coil, together with the funnel or other shaped casing, may be revolved and, if desired, easily so arranged that the illuminating-coil may be adjusted in the vertical plane.

A magnesium light of the kind described can be used for photographic purposes, as also for signaling purposes of every description at sea and for field purposes, as also for various other purposes where a very intense white and eventually enormously powerful light is of importance.

The illuminating-coils can be made in any variety of size and form, according to the purpose for which they are designed. Packed in suitable manner the same will last any length of time, they are easy to manipulate, and the fibrous matter burns entirely, leaving no residue whatever.

Having now particularly described and as-
certained the nature of my said invention and
the manner in which the same is to be per-
formed, I declare that what I claim, and de-
5 sire to secure by Letters Patent, is—

The magnesium-light composition consist-
ing of the fibrous material impregnated with
vegetable oil, two parts, benzine, two parts, and
Venice turpentine, one part, and sprinkled

with magnesium powder, substantially as de- 10
scribed.

In witness whereof I have hereunto signed
my name in the presence of two subscribing
witnesses.

EUGEN HACKH.

Witnesses:

ARTHUR BAERMANN,
W. H. EDWARDS.