July 10, 1923. 1,461,301

M. WISKOTT

PROCESS OF PRODUCING REFLECTORS

Filed Aug. 30 . 1921

FIG. 1.

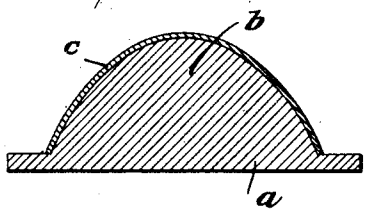


FIG. 2.

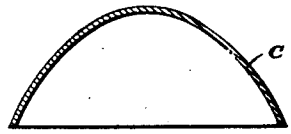


FIG. 3.

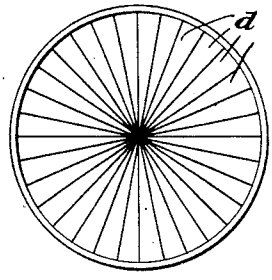
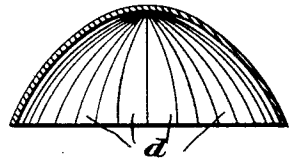


FIG. 4.



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UNITED STATES PATENT OFFICE.

MAX WISKOTT, OF BRESLAU, GERMANY.

PROCESS OF PRODUCING REFLECTORS.

Application filed August 30, 1921. Serial No. 497,042.

To all whom it may concern:

Be it known that I, MAX WISKOTT, a citizen of Germany, residing at 3 Flurstrasse, Breslau, Germany, have invented certain new and useful Improvements in Processes of Producing Reflectors, of which the following is a specification.

Concave mirrors or reflectors presenting an approximately exact geometrical configuration have been made of metal in most cases, since those produced from glass are liable to warp on becoming cool and in such event require to be ground down exactly to the shape to be desired. The larger the diameter and depth of such mirrors, the greater will be the difficulties connected with the manufacture thereof, so that the cost of concave mirrors even of a slight depth and about one meter in diameter, or that of deeper reflectors much smaller in diameter, is excessively high. Besides, for producing metallic reflectors, sufficiently rigid at their margin, by pressing or spinning in the lathe, stronger sheet metal is needed, especially in the case of very deep or high reflectors, than the central portion of a concave mirror would require, and this again adds to the difficulties of manufacture while increasing the weight of the device and rendering difficult to obtain the desired exact configuration thereof. The latter fact adds to the inaccuracies due to pressing or spinning the concave mirror in a lathe. If, however, a high accuracy is to be obtained by methods heretofore used, metallic reflectors as well as those made of glass require to be finished in a wearisome manner by turning, grinding, polishing and the like, exceedingly high costs resulting therefrom.

It has also been proposed to produce concave mirrors by precipitating metal on a negative or complementary form and reinforcing the precipitation, that constitutes a thin metal reflector, with plaster or the like in order that it can be removed from the mould and be used for practical purposes. The coat of plaster, however, will adhere to the electrolytic metal deposit under certain conditions only and will cause certain difficulties of manufacture.

In accordance with the present invention, any substances adapted to be given by modelling or casting the shape of a concave mirror, such as cement, plaster, casein, or preparations of these substances, or hard rubber, papier mâché, clay, substances held together by some agglutinant, or like materials, are shaped to form reflectors by means of a negative or complementary form in a manner well known in itself. The completely novel product thus obtained can be manufactured in any sizes that may be considered necessary for use, and can also be employed with its surface left unmirrored.

In producing these concave mirrors, forms of any bodies adapted for reflection, such as of parabolic, hyperbolic, elliptic, cylindrical, globular or other configuration, are made of any suitable size and material. Such forms can be given the highest possible accuracy for any size or curvature. On the negative form thus obtained any of the said substances, adapted for modelling or casting, is shaped in a manner well-known in itself to form the body constituting the concave mirror.

Such body may also be produced directly by templet moulding, as is usual in ceramics.

The hollow body thus obtained may be left as it is, if high capability of reflection are not required. If, however, an especially strong reflection is desired, the reflecting surface must be treated accordingly, such as by coating it with metal employed either in foils, or in a finely divided state, or in solutions, or the like, and brightened, if necessary, to a high degree by polishing.

The invention may be applied to convex as well as to concave mirrors presenting any suitable or desired curvatures. Reflectors produced according to the invention are susceptible of almost infinite variation as regards diameter and depth or height, without any essential increase in difficulties of manufacture or in the costs thereof, their theoretical accuracy of configuration being capable to be raised according to requirements to the highest possible limit.

In the accompanying drawing an embodiment of the invention is illustrated. Referring to the drawing:

Figure 1 shows in section a mold or form with a raised convex surface and a reflector formed thereon;

Figure 2 the resultant reflector casting also in section;

Figure 3 a plan view showing foil applied to the casting for increasing its reflecting properties; and

Figure 4 a cross section similar to Figure 2 with the foil covering in place.

The mold or form *a* Figure 1 is provided with a ball-shaped convex swelling *b* when the resultant concave mirror is to have such shape. Upon this mold the pliable or moldable material to form the reflector *c* is placed and left thereon until dry and hard. Thereupon the body *c*, Figure 2, formed in this manner is removed from the mold and is, in most cases, ready for use as a reflector as the mold has for this purpose been highly polished, thus providing a very fine smooth concave surface on the body *c*.

Should the natural smoothness not fulfill the requirements of a mirror, the concave surface of the body *c* may be coated or covered with metal foil *d*, the outline of which must correspond to that of the developed curved surface of the body *c* as shown by one example in Figure 3 which is a bottom plan view of Figure 2 with the segmental strips in place.

Again, Figure 4 is a similar view to Figure 2 showing the application of the foil strips *d* in the shape of segments. Instead of ball-shaped or spherical forms other curved shapes may be used as, for instance, circular rings, spirals, etc.

The method of operation in accordance with the present invention makes possible the production of concave mirrors, of cement for instance, with a diameter of about one meter across the opening and a wall thickness of about six-tenths of a millimeter. These hollow mirrors may be produced in this manner in all sizes from the smallest to the largest. They have as a matter of fact already been made with a diameter of 2.5 meters.

What I claim and desire to secure by Letters Patent is:

1. The process of producing a curved reflector of any desired shape which consists in using a form of complementary shape and molding the reflector thereon of plastic or moldable substance, then removing the reflector when it has sufficiently set or hardened and then coating the surface of the reflector with a metallic reflecting material.

2. The process of producing a reflector of any desired shape which consists in forming a reflector body of plastic material having a curved surface, and then coating said curved surface with reflecting material in the form of separate strips of metal foil having a reflecting surface on the side away from said body.

3. The process of producing a curved reflector of any desired shape which consists in using a form of complementary shape and molding the reflector thereon of plastic or moldable substance, then removing the reflector when it has sufficiently set or hardened and then coating the surface of the reflector with a reflecting material in the form of metal foil having a reflecting surface at the side away from the body.

4. A reflector comprising a body formed from plastic material and having a curved surface, and metallic foil applied to said curved surface in strips and having a reflecting surface on the side away from the body.

In testimony whereof I hereunto affix my signature.

MAX WISKOTT.