M. SMITH.

Inlaying Metallic Scroll Ornaments in Hard Rubber and Allied Gums.

No. 213,784. Patented April 1, 1879

Fig. 1.

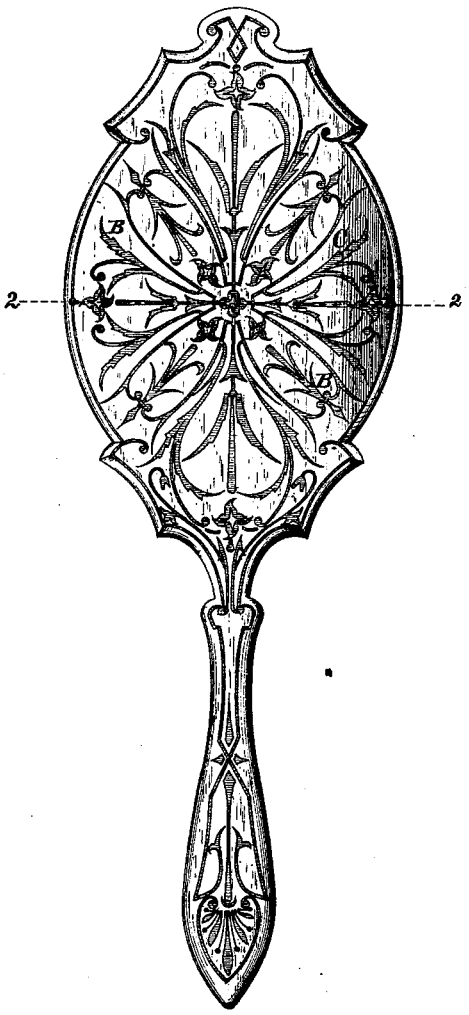
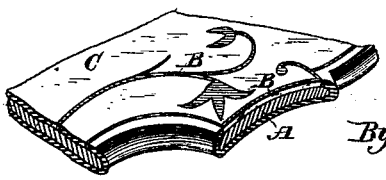


Fig. 2.

Fig 3.



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UNITED STATES PATENT OFFICE.

MICHAEL SMITH, OF SOMERVILLE, MASS., ASSIGNOR TO THE COLLEGE POINT RUBBER COMPANY, (LIMITED,) OF COLLEGE POINT, N. Y.

IMPROVEMENT IN INLAYING METALLIC SCROLL-ORNAMENTS IN HARD RUBBER AND ALLIED GUMS.

Specification forming part of Letters Patent No. **213,784**, dated April 1, 1879; application filed August 8, 1878.

To all whom it may concern:

Be it known that I, MICHAEL SMITH, of Somerville, in the county of Middlesex and State of Massachusetts, have invented a new and useful Mode or Process of Inlaying Metallic Scroll-Ornaments, of which the following is a specification:

The object of the invention is to inlay open scroll-ornaments or filigree-work in articles made of hard india-rubber, gutta-percha, or other allied gums, thereby avoiding the slow and expensive hand labor required to produce such work, and at the same time producing a more handsome, durable, and perfect article of that kind.

To this end my invention consists in a method of embedding a metallic open scroll-ornament in a sheet of rubber compound while in a plastic state, and combining the same during the process of vulcanizing under certain manipulations hereinafter set forth, and a subsequent after-finishing of the surface, thereby producing inlaid metal scroll-ornamentation of great perfection, no matter how delicate or intricate the design may be.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a view of a hair-brush back with scroll-ornaments applied. Fig. 2 is a section on the line 2 2, Fig. 1, illustrating one mode of applying the ornaments. Fig. 3 is a perspective view of a fragment of the work.

There are two general modes in which I carry out my invention. I will describe first the mode of inlaying metal scroll-ornaments in an article of considerable size. For example, I shall select a pedestal.

Before I proceed I have to state, as a matter of explanation, that Jacob Stepp, of Somerville, has invented a certain mode of covering wooden and other articles with a firmly-adhering shell of india-rubber, of any desired thickness, for which improvement he intends to obtain Letters Patent. This improvement, used in connection with my own, enables me to produce large articles of any kind with metal scroll-ornaments inlaid in the hard rubber covering.

The open scroll-ornaments intended to be inlaid in rubber on the above said pedestal I make by either cutting the ornaments out of sheet-brass of about one-sixteenth of an inch thick, or they may be produced from an original pattern by casting duplicates by any of the known methods adapted for that purpose.

When the ornaments are produced they are readily bent to accommodate and fit to the surface of the pedestal, which is roughly made out of seasoned wood. The metal scroll-ornaments are then arranged on and fastened temporarily to the pedestal by means of a limited number of small pins. This being done I apply a thin coating of a rubber solution to give an adhesive surface to the whole. After this I apply a sheet of plastic rubber compound over the whole pedestal, covering also the ornaments. The sheet of rubber enveloping the whole must be somewhat thicker than the metal ornaments.

In applying the sheet of rubber, which is done by manipulations of the hand, care must be taken to avoid confining too much air in the cavities.

By the pressure that can be applied by the hand the rubber is made to adhere to the pedestal, and the metal scrolls are partly embedded in the rubber.

The vulcanizing and hardening of the rubber can only be accomplished successfully by the application of the method and principles laid down in the specification of Letters Patent No. 178,432, granted to Charles Grasser 6th June, 1876. The essential and beneficial principle of said patent, as far as applicable to my invention, consists in the application of pressure through the medium of water by means of which a uniform pressure is applied, which follows to perfection all the shapes and cavities of the article and of the scroll-ornaments, so that they become perfectly embedded in and united with the rubber, and are kept so until the rubber is hardened.

After the article is vulcanized in the manner stated, it is ready for the finishing process.

The metal ornaments are covered on the face with a thin layer of rubber as the result of surplus rubber; but all the intervening spaces are filled with hard rubber.

The surplus rubber over the face is re-

moved by filing, grinding, or in any other convenient manner which lays bare the face of the ornament.

Subsequent polishing and finishing of the surface brings out the inlaid ornaments with a perfection unattainable by any of the present methods.

The same mode of carrying out my invention is illustrated in the drawings as applied to the manufacture of a brush-handle.

A represents the wooden core or interior body; B B, the metallic scroll-ornaments applied thereto, and C the rubber covering, which having been applied in a plastic state and pressed closely between and about the the scroll ornaments before and during the process of vulcanization, as already described, the ornaments will be securely embedded, and when the article is finished the rubber will appear in absolutely close contact with the metal at all points. To represent this a part of the work is shown in perspective in Fig. 3.

My second method is more suitable for inlaying metal ornaments in small articles which are to be made in large numbers. In this case a metal mold is employed for the article, and the filling or embedding of the metal scrolls is effected by applying the rubber from the back side of the ornament.

As illustration, I shall select a brush-handle, the back of which is to be inlaid with a metal scroll-ornament, as represented, for example, in the accompanying drawings. A divided mold is required to form a brush-handle. The metal scroll-ornament to be inlaid is of the shape of the brush-back, and made in the manner before stated. It is placed in the proper half-mold, the face of the ornament meeting the face of the mold, and when properly adjusted it is fastened by means of a coating of dissolved rubber, which imparts at the same time an adhesive surface to the mold. Then a sheet of plastic rubber compound is laid over the mold and ornament. By careful manipulation and pressure of the hand the rubber is made to conform to the shape of the mold, the air being gradually forced out, which may be greatly assisted by a suction-tube attached to an opening at one end of the mold. This procedure embeds the metal ornament in the rubber from the surface of the handle or other object, the process being in this respect the opposite of that first described. The other half-mold is then overlaid with rubber in like manner, after which both halves are pressed together and are ready for the vulcanizing process. The vulcanizing is done by the application of the principles and methods specified in Letters Patent No. 178,432, granted to Charles Grasser 6th June, 1876.

By the application of pressure through the medium of water, which is introduced through an aperture in the mold to the interior of the rubber within the mold, the rubber is forced against the molds, producing a perfect impression of the mold, and consequently a perfect embedding of the metal scroll-ornament.

When the articles have been vulcanized and removed from the mold, the face of the inlaid metal ornament is readily laid entirely bare by the finishing and polishing of the surface.

Sheets of rubber can be readily inlaid with such ornaments by following either of the two methods with but slight modifications suitable to the desired results. If concave or convex surfaces are to be inlaid, the ornaments must be bent previously to conform to the curvature.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The mode of inlaying scroll, filigree, or analogous ornaments by embedding the same in plastic rubber or other vulcanizable gum composition, and subsequently vulcanizing the gum, substantially as set forth.

2. The mode of inlaying scroll or other analogous ornaments by attaching the same to the core or body of the article to be ornamented, covering the whole with an envelope of plastic rubber or other vulcanizable gum, embedding the ornaments in said envelope by pressure, and subsequently vulcanizing the gum, substantially as above set forth.

3. The mode of producing articles of hard rubber with inlaid ornaments by applying the ornaments within the mold in which the article is formed and vulcanized, substantially as herein described.

MICHAEL SMITH

Witnesses:
J. J. C. SMITH,
ALEX. WOOD.