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S. BACH ET AL

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GOLD LEAF SUBSTITUTE

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Fig. 1.

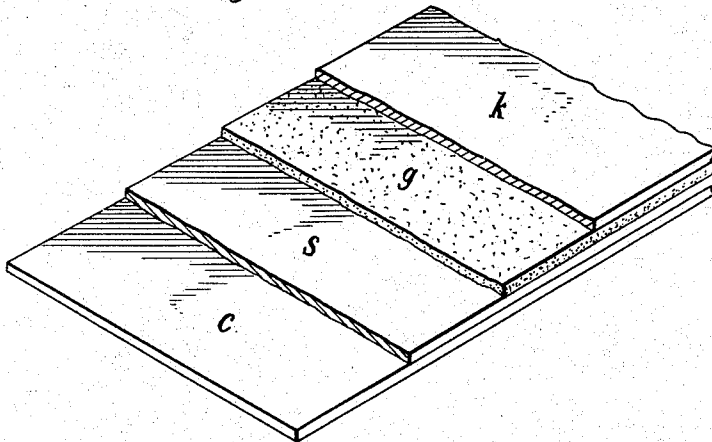
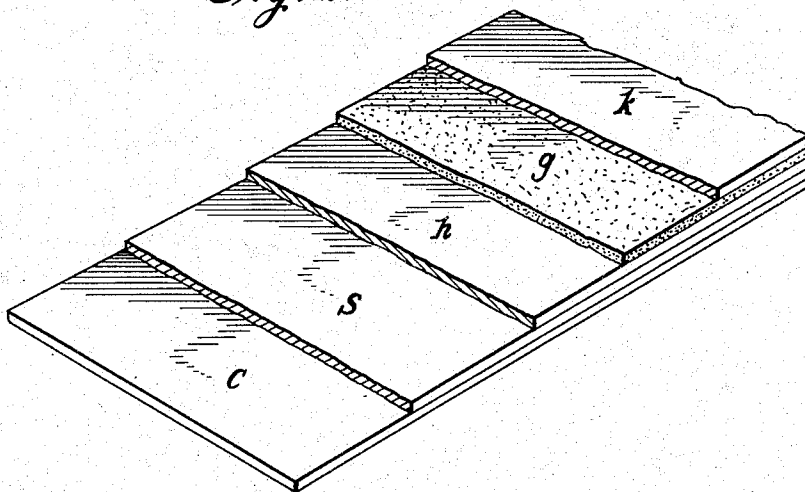


Fig. 2.



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Stefan Bach, Nuremberg, and Konrad Kurz,
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5 Claims. (Cl. 41—37)

This invention relates to metal embossing foils and particularly to embossing foils of real gold, and to methods of producing the same.

Heretofore beaten gold leaf has largely been employed for the manufacture of real gold embossing foils. The employment of such leaves, however, causes considerable difficulty and can only be carried out satisfactorily by carefully trained workers with extensive experience, owing to the fact that the beaten gold leaves are extremely difficult to handle. They tear very easily while being applied to the backing consisting of pergamin paper coated with a layer of fusible material, which melts under the heat of the dye. After the embossing, the backing can be stripped off leaving the gold leaves adhering to the article in the parts heated by the dye.

These known foils are, however, also open to several other objections. Only nearly pure gold can be employed for producing the leaves, because alloys containing too little pure gold cannot be beaten to the thinness necessary for producing sharp-edged embossings. Pure gold is, however, extremely expensive both to purchase and to beat, as the beating can only be carried out by skilled labor. Even the thinnest beaten gold is too thick to conform exactly to the contours of the dye and give a very sharp impression.

The objections are overcome according to the invention by employing cathodically deposited gold instead of beaten gold leaves for the manufacture of gold embossing foils. This presents the advantage that the gold layers can be made very much cheaper, because thinner and more uniform in thickness than those of beaten gold leaves. The gold alloy employed may contain a much lower proportion of pure gold, which further reduces the cost of the gold layer. The application of the gold by the known cathode atomization process does not need to be carried out by highly trained workers. Better embossings are obtained with the cathodically deposited gold embossing foils, owing to the extreme and uniform thinness of the gold layer, which conforms more accurately to the contours of the dye.

If the sizing layer is not transparent and consists of a light-reflecting covering color or lacquer, a substantially smaller weight of gold will give the desired effect.

Several embodiments of the new precious metal embossing foils and new methods of manufacturing certain of these foils are illustrated in the drawing, in which

Fig. 1 is a diagrammatic perspective view of an

embossing foil in accordance with the invention showing the successive layers cut back for clearness of illustration.

Fig. 2 is a similar view of a modified form of the invention.

In the embossing foil shown in Fig. 1 a support *c* capable of being embossed, such as glassine paper or regenerated cellulose, is coated with a releasable layer *s*, for instance a fusible or dissolvable substance, and upon this layer the gold layer *g* is cathodically deposited. The gold layer is coated with a sizing *k*. The fusible layer does not melt during the atomizing process because it has recently become possible to reduce the temperature about the atomizing cathodes to 23° C.

Fig. 2 shows an embossing foil comprising a hard smooth layer next to the gold layer. In this figure the embossing foil consists of the support *c* of glassine paper, for instance, a fusible layer *s* of wax or the like, a harder and smoother varnish layer *h*, a layer *g* of gold or gold alloy atomized by the cathode and of a sizing layer *k*. Experiments have shown that the embossings produced with this foil adhere much longer under stresses caused by friction than embossings of rolled gold foils with beaten gold leaf. The latter consist of glassine paper, a fusible layer, the gold leaf and the sizing substance. Consequently, the varnish layer directly on the gold leaf is lacking. After embossing the fusible layer is therefore the only coating remaining on the outer side of the gold. If the embossing is for example on a pencil, this remainder of the fusible layer will be first very quickly rubbed out of the embossed recesses and then the beaten gold leaf, when the pencil is used. It has been found that the gold script thus embossed is already illegible and defaced before the pencil is worn out.

If the script is, however, embossed with the new foil atomized by cathode shown in Fig. 2, it remains without fading or being defaced until the pencil is entirely used up. Experiments have shown that the embossing lasts five times as long as with the known gold leaf, although the gold layer embossed thereon is considerably thinner than beaten gold. This durability, which even exceeds the practical requirements, is due to the fact that the embossed gold is protected against being rubbed off by the hard and smooth varnish layer. Instead of an ordinary varnish layer a layer may be employed produced from liquid cellulose substance, such as acetyl cellulose or nitro-cellulose. An extremely thin protecting film produced by applying zapon varnish offers a very great resistance to rubbing off. However,

the protecting film might consist of some other substance applied in liquid state, for example liquid celluloid, without departing from the invention.

- 5 When embossing pencils or other small articles produced in large quantities, it is important that the embossing foils illustrated in Fig. 2 and described can be supplied wound on rolls.

- 10 The term "gold layer" includes also a layer of gold alloys or of any other metal or metal alloys capable of being cathodically atomized.

- 15 In stamping with the embossing foils described, the die hits the supporting layer *c* and the sizing layer *k* sticks the foil *g* to the material which is to be covered.

Metal may be saved by using a covering colour or sizing layer which is not transparent; preferably white or yellow covering colours of shiny brilliance are to be used.

- 20 We claim:—

1. A metallic embossing strip or sheet, comprising a cathodically deposited dense metallic foil of uniform thickness, a support, a releasable layer between said foil and said support, and a sizing layer on the side of said foil opposite said support.

2. A metallic embossing strip or sheet, comprising a cathodically deposited dense metallic foil of uniform thickness, a support, a releasable layer between said foil and said support, a hard, smooth, transparent layer next to said metallic foil composed of material selected from the group consisting of varnishes and lacquers and a sizing layer on the side of said foil opposite said support.

3. A metallic embossing strip or sheet, comprising a support, a releasable layer thereon, a hard, smooth, transparent layer on said releasable layer composed of material selected from the group consisting of varnishes and lacquers, a dense metallic foil of uniform thickness cathodically deposited on said transparent layer, and a sizing layer coated upon said metallic foil.

4. A metallic embossing strip or sheet as described in claim 1, wherein said sizing layer is opaque.

5. A metallic embossing strip or sheet as described in claim 1, wherein said sizing layer is a bright opaque substance.

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