Oct. 18, 1938. J. MAZER 2,133,357

ORNAMENTED METAL FOIL

Filed Feb. 7, 1936

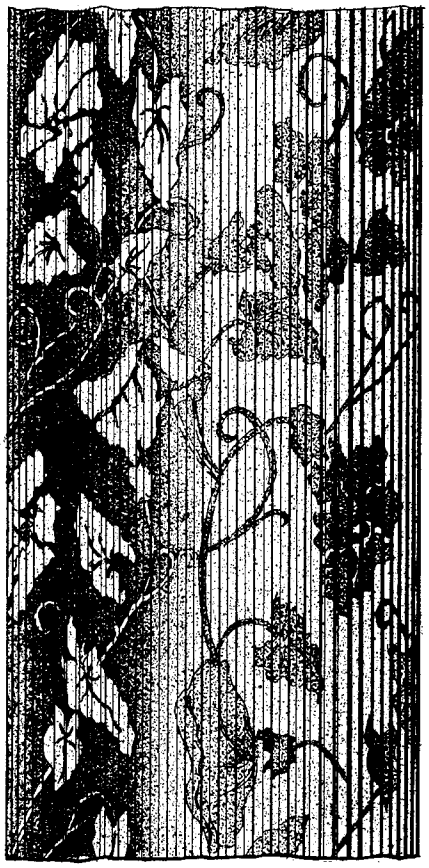


Fig. 1.

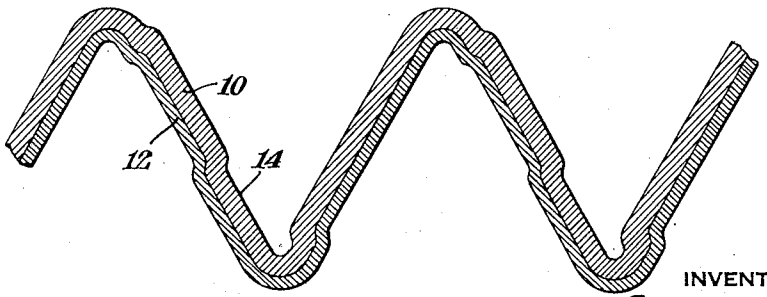
Fig. 2.



Fig. 4.



Fig. 3.



INVENTOR
Jacob Mazer
BY
Trimble, Brumbaugh
ATTORNEYS

Patented Oct. 18, 1938 2,133,357

UNITED STATES PATENT OFFICE

2,133,357

ORNAMENTED METAL FOIL

Jacob Maser, Elkins Park, Pa.

Application February 7, 1936, Serial No. 62,740

1 Claim. (Cl. 41—24)

Many attempts have been made to market wall finishes made on a commercial scale for metal principally in the form of very thin sheets or foil. These have met with some success but have been subject to criticism due to the fact that such finishes have a machine-made appearance and have lacked the depth of finish or textural qualities so much desired for architectural effects. I have discovered that new and unexpected effects of great beauty can be obtained by subjecting very thin sheets of metal or foil to a double treatment in which the metal is first run through an apparatus which modifies the surface of the metal by an actual displacement or distortion resulting in stretching of the metal, after which it is passed through a second apparatus which changes its shape by folding or bending operations.

By having the initial treatment one which changes the surface through the stretching and displacement, the surface can be broken up into a great number of tiny planes which will stay in the sheet throughout almost any treatment the sheet is given short of actual rolling and burnishing so that they will not be materially changed or modified by the subsequent folding operations. As a result the tiny planes of the first treatment will cooperate with the relatively large planes of the folding treatment to give most interesting effects.

It is the combination of these two distinct types of treatment which is the essence of my invention and which gives the new result. It may be noted that if one tried to give the metal a series of the small bends or folds and then subsequently applied larger bends crossing the small ones, the small bends would be broken up and crumpled by the second operation and the desired appearance would be lost. In like manner, if the metal were subjected to successive operations of the stretching type the second operation would tend to obliterate the first. By combining the two types of treatment in the order stated, the effect of each is maintained so that the two results interact to give products of great commercial value.

There is nothing new in the mechanism necessary for carrying out my process. The stretching and displacing operation will ordinarily be conducted in the usual manner by what are known as embossing rolls and the folding and bending operations can be conducted on pleating or folding machines of a type which are known, though their use with metal is, I believe, new. The type of treatment applied by each of these machines may be varied in many particulars. Thus the treatment in the embossing rolls may apply an overall finish to the sheet or it may serve to apply a special design by a displacement in the nature of stippling or small lines. Also the subsequent folding or bending may be regular with even spaces, or it may be irregular by having various combinations of bends and flat planes.

While it is exceedingly difficult to portray the effect of my invention in a drawing, an approximation may be had from the drawing accompanying this case. Fig. 1 represents material embodying my invention subsequently arranged in the form of a cylinder; Fig. 2 is a section of the material arranged in flat form; Fig. 3 is an enlarged view of the material of Fig. 2, and Fig. 4 shows an alternative arrangement of material and corresponds generally to Fig. 2.

Referring to Fig. 1, the material is here shown in the form of a cylinder because this gives an optical effect in a small space corresponding quite closely to that had of a large space by a person standing opposite a wall and seeing the material in front of him and to the right and to the left. The material of Fig. 1 has first been passed through a set of embossing rolls impressing and stretching into the metal a grape-vine design. The material here used is a thin foil such as aluminum foil adhesively attached to a paper backing employed to give the material strength. The paper and foil are embossed simultaneously; subsequent to the embossing, the material is run through a pleating or folding machine or other desired type of apparatus, giving it the general shape shown in Fig. 2, and subsequently it is loosely arranged in the form of a cylinder as would be the case if it were employed for covering a column. Fig. 3 shows the approximate arrangement of the material, though it must be understood that this figure is more or less diagrammatic, for it does not accurately show the small bends and creases which necessarily would be found in the metal as a result of the distortion given to its by the two treatments. For the purposes of identification, the numeral 10 in Fig. 3 indicates the metal surface and the numeral 12 indicates the backing material. In this instance the metal is shown as thicker than the backing material although in fact the metal usually will be somewhat thinner. The depressions such as would be caused by the embossing or stretching operation is indicated at 14 and the folds resulting from the pleating give the material its general shape or appearance.

If now we look at Fig. 1, we can get an idea of one type of optical effect resulting from our invention, for it will be noted here that on the

left hand side of the drawing the design or figure appears lighter than the background whereas on the right hand side the design appears darker. In the middle the two tend somewhat to blur together and various lines of different light intensity appear. This irregularity and broken-up surface gives the material a highly beneficial textural quality. Of course, if no formal design is employed, the difference between the light and the dark appearances will not be so obvious but an unusual shimmer or life will characterize the appearance of the material quite distinct from that obtained either by the embossing or the pleating, so that as one's eye travels over a surface covered with this it will not appear to be uniform but will have a variation somewhat suggesting that of iridescence.

Fig. 4 simply suggests a modification of the shape given the material by the pleating operation and is a form which might advantageously be used for example with an over-all embossed pattern. The detail is too small to indicate such a pattern in this figure.

While the primary novelty of the material of my invention is its appearance, I find that it also has certain valuable acoustical properties. Thus if the embossed and creased foil is attached in ordinary course to a flat backing, there will be portions which are sprung away from the backing material and these will have a cushioning action to sound waves, thus tending to dampen or deaden such waves and improve the acoustical properties of the room in which the material is used. A particular use for the material of this invention is in connection with the acoustical product described in my co-pending application, Ser. No. 62,739, filed Feb. 7, 1936.

In such case the creased and embossed foil is employed as a surfacing sheet for a cushioned facing material.

If desired, the metal may be embossed and folded as described above and then the folds may be pulled out somewhat before applying the material to the approximately flat sheet which is to carry it. This pulling out does not restore the material to its original form, for the folded creases will remain in place and the various planes will have sufficient divergence so that the desired optical effects remain, of the same general nature as when the planes are sharply angled as suggested, for example, in Figs. 2 and 4.

It is understood that the examples given are intended only by way of illustration and that the same may be modified in many particulars without departing from the spirit of my invention.

What I claim is:

The process of treating a thin sheet of metal to give its surface an ornamental texture which comprises first embossing the sheet to distort the sheet by localized stretching and then pleating and creasing the sheet along approximately parallel lines.

JACOB MAZER.