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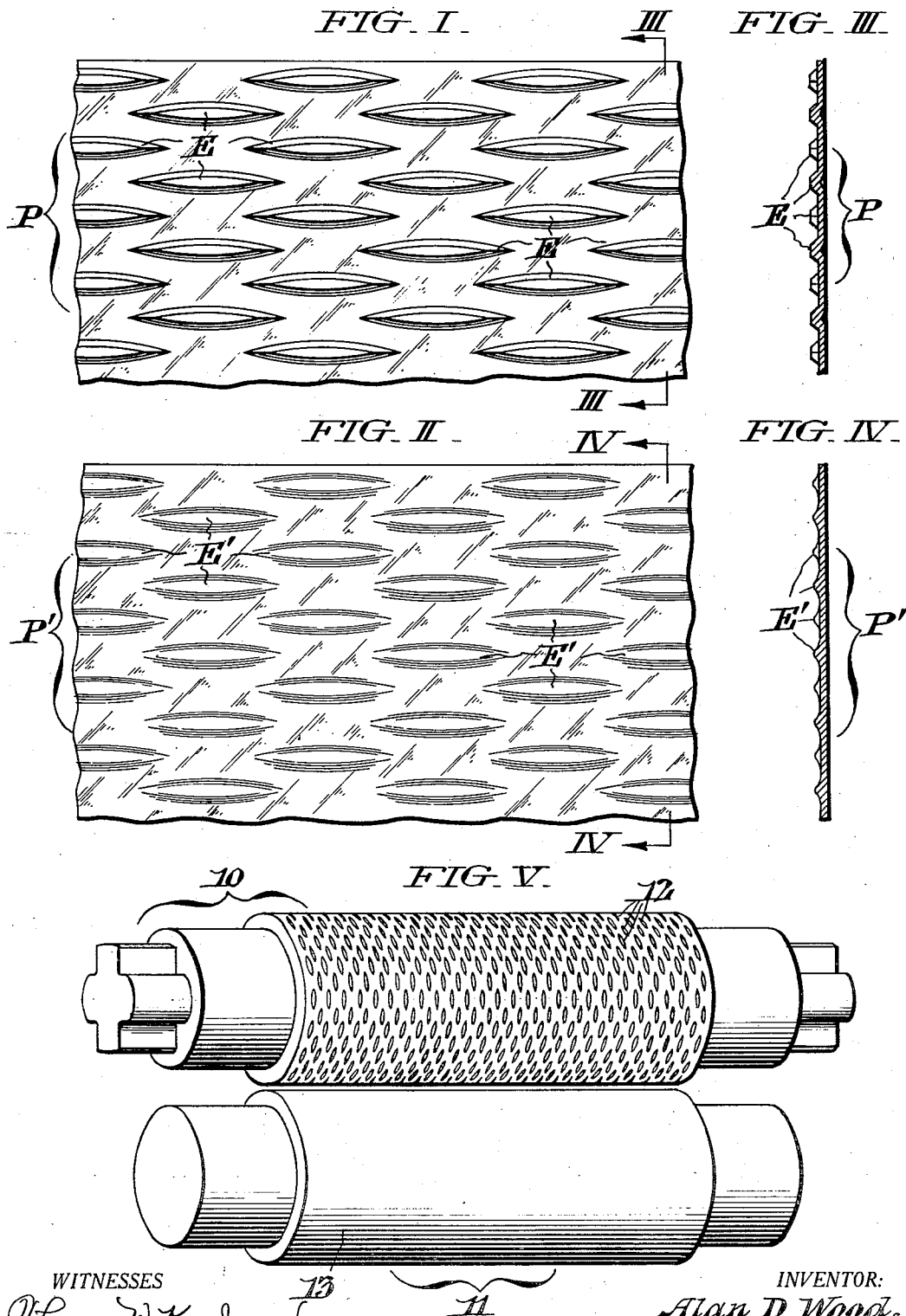
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1,807,141

EMBOSSING METALLIC PLATES

Filed Sept. 15, 1928

2 Sheets-Sheet 1



WITNESSES
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FIG. VI.

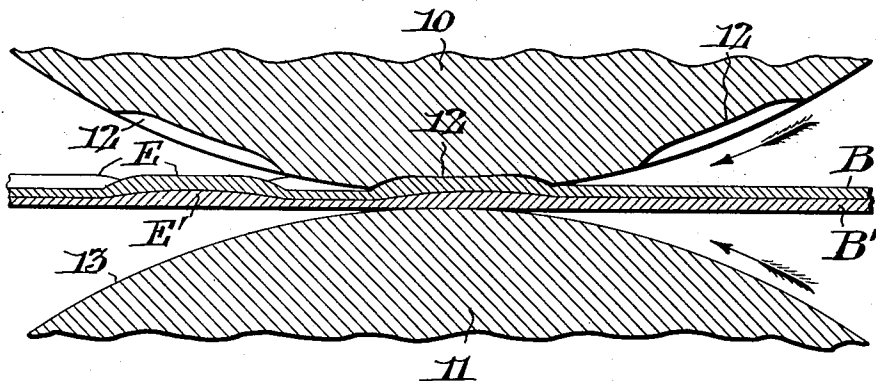
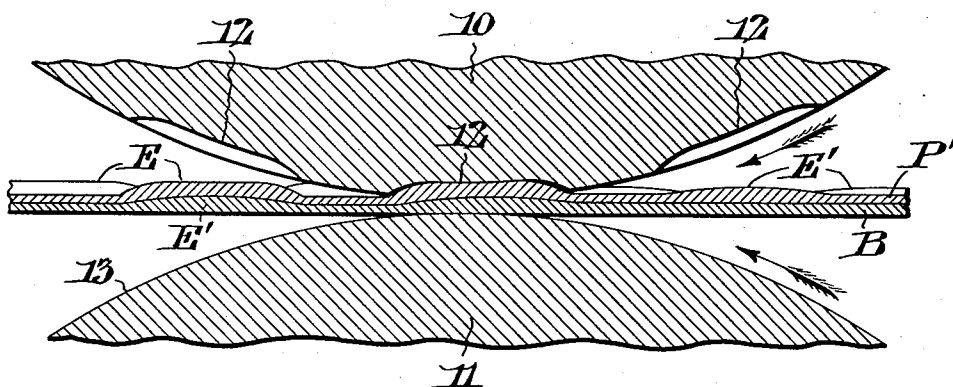


FIG. VII.



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UNITED STATES PATENT OFFICE

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EMBOSSING METALLIC PLATES

Application filed September 15, 1928. Serial No. 306,108.

This invention relates to the production of embossed metallic plate, particularly of a kind useful as flooring or wainscoting, as a surface protection for flooring or walls, as material for running boards of automobiles, etc.

The manufacture of such embossed plate from stout sheet stock has been a comparatively easy matter heretofore; but, under prevalent methods, sheets of light gages would invariably buckle or puncture due to reluctance of the metal to flow readily and in view of the small amount of metal available for displacement.

The purpose of my invention is to overcome the recited drawbacks through provision of a simple method whereby perfect and uniformly embossed plates of light gage may be readily and economically produced in quantity.

How the foregoing as well as other important advantages may be readily attained in practice will be manifest from the detailed description which follows in connection with the drawings, wherein Figs. I and II are plan views of embossed plates concurrently produced incidental to a step in the method of my invention.

Figs. III and IV are sectional views taken respectively as indicated by the arrows III—III and IV—IV, in Figs. I and II, showing edge profiles of the plates.

Fig. V is a perspective view showing a pair of cooperating rotative elements convenient to the practice of my method.

Figs. VI and VII are fragmentary sectional views on a larger scale showing successive steps in the operation of the rotative elements.

In carrying out my invention, I employ a pair of cooperating rotative elements, having, as shown in Fig. V, the form of rollers 10, 11 capable of being mounted in any standard type of rolling press such as ordinarily used in this art. The upper roller 10 of the

two, which I will for convenience term the impression roller, has surface indentations 12—in this instance of elongated oval shape staggeringly arranged as between longitudinal rows. The opposing roller 11, on the other hand, has a plain surface 13.

In practicing my invention I superimpose two blank sheets B, B' (Fig. VI) preferably pre-heated, and in this relation pass them between the rollers 10, 11 with concurrent production of the plates P, P' of Figs. I and II. As a consequence of having passed in direct contact with the impression roller 10, the embossments E of the sheet P are sharply defined; while the embossments E' of the plate P are less distinct. In this operation, the sheet B' acts as a cushioning beneath the sheet B in contact with the impression roller 10, the upward compensative displacement of its metal at the region of the recesses 12 in said roller serving to facilitate even flow of the metal of the upper sheet B to the avoidance of buckling or puncture.

In proceeding with my method, I reheat the plate P' and then repass it together with a new preheated blank sheet B (Fig. VII), between the rollers 10, 11 with said plate P' running, this time, in contact with the impression roller 10. The plate P' thus receives sharp embossments exactly as described in connection with the plate P of Fig. I. The last described step is repeated in succeeding operations so that, by successive rollings, the sheets are all given the sharp impress of the roller 10.

In the very simple manner described I am obviously able to produce, in a rapid and continuous manner, embossed plates from light gage stock without danger of buckling of the metal or fracture. It is of course to be understood that the character of the embossments E, E' may be greatly varied, the configuration herein shown having been arbitrarily chosen for the purposes of exemplification. It is to be further understood that,

with extremely thin gages, more than two plates B, B' can be passed between the roller elements 10, 11 at one time, a new blank sheet being interposed beneath the pile after each pass through said rollers to take the place of the finished plate in a manner identical to the disclosure above. With my improved method it is also possible to operate on some of the more ductile metals without necessity for preheating.

Having thus described my invention, I claim:

1. The method of embossing metallic plate by successively subjecting several blanks at a time in superimposed relation to opposing impression and plain-surfaced coactive elements with production at each operation, of a finished plate having sharply defined embossments, and adding a new blank below the group adjacent to the impression-surfaced element, for each one finished, in preparation for each succeeding operation.

2. The method of embossing metallic plate by successively subjecting several preheated blanks at a time in superimposed relation to opposing impression and plain-surfaced coactive elements with production at each operation, of a finished plate having sharply defined embossments, and adding a new preheated blank below the group adjacent to the impression-surfaced element, for each one finished, in preparation for each succeeding operation.

3. The method of embossing metallic plate by successively passing several blanks at a time in superimposed relation between opposing impression and plain-surfaced coactive rollers with production at each pass, of a finished plate having sharply defined embossments, and adding a new blank below the group adjacent to the impression-surfaced element, for each one finished, in preparation for each succeeding pass.

4. The method of embossing metallic plate by concurrently subjecting several blank sheets in superimposition to the action of a pair of opposing rotary elements—one of such elements having a plain surface and the other an impression surface—with production of one plate characterized by sharply defined embossments through direct contact with the impression element and others with embossments less distinct; and in the next operation subjecting the latter plates, together with a new blank sheet, to the action of the aforesaid elements in such relation that one of said latter plates in turn receives a sharply defined impression through direct contact with the impression element; and repeating the last procedure in each succeeding operation.

5. The method of embossing metallic plate by concurrently subjecting several preheated blank sheets in superimposition to the action of a pair of opposing rollers—one of such

rollers having a plain surface and the other an impression surface—with production of a plate characterized by sharply defined embossments through direct contact with the impression rollers and others with embossments less distinct; and in the next operation subjecting the latter plates together with a new preheated blank sheet, to the action of the aforesaid rollers in such relation that one of said latter plates in turn receives a sharply defined impression through direct contact with the impression roller; and repeating the last procedure in each succeeding operation.

6. The method of embossing metallic plate by concurrently passing several blank sheets in superimposition between a pair of opposing rollers—one of said rollers having a plain surface and the other an impression surface—with production of one plate characterized by sharply defined embossments through direct contact with the impression roller, and others with embossments less distinct; and in the next operation passing the latter plates together with a new blank sheet, between the rollers in such relation that one of said latter plates in turn runs in contact with the impression roller; and repeating the last procedure in each succeeding operation.

7. The method of embossing metallic plate by concurrently passing several preheated blank sheets in superimposition between a pair of opposing rollers—one of said rollers having a plain surface and the other an impression surface—with production of a plate characterized by sharply defined embossments through direct contact with the impression roller and others with embossments less distinct; and in the next operation passing the latter plates, together with a new preheated blank sheet, between the aforesaid rollers in such relation that one of said latter plates runs in contact with the impression roller; and repeating the last procedure in each succeeding operation.

8. The method of embossing metallic plate by successively subjecting several preheated blanks at a time in superimposed relation to opposing impression and plain-surfaced elements with production at each operation of a finished plate having sharply defined embossments, then removing the finished one, reheating the others and adding a new preheated blank below the group adjacent to the impression-surfaced element in preparation for each succeeding embossing operation.

9. The method of embossing metallic plate by concurrently subjecting several preheated blank sheets in superimposed relation to the action of a pair of opposing elements—one of such elements having a plain surface and the other an impression surface—with production of a plate characterized by sharply defined embossments through contact with the impression element and others with embossments less distinct; removing the finished

plate; and in the next operation reheating the remaining plates and subjecting them together with a new preheated blank sheet, to the action of the aforesaid elements in such
5 relation that one of said plates in turn receives a sharply defined impression through direct contact with the impression element; and repeating the last procedure in each succeeding embossing operation.

10 In testimony whereof, I have hereunto signed my name at Philadelphia, Penna., this 13th day of September, 1928.

ALAN D. WOOD.

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