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Lewis

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[54] **MOUNTING BASE MATERIAL FOR RUBBER PRINTING PLATES AND METHOD OF MANUFACTURING THE SAME**

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Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 793,008, Jan. 22, 1969, abandoned.

[52] **U.S. Cl.**.....**161/116,** 101/382, 101/DIG. 12, 161/117, 161/123, 161/165, 161/189, 161/214, 161/217, 161/220, 161/401

[51] **Int. Cl.**.....**B32b 3/30,** B41f 27/06, B41f 27/08

[58] **Field of Search**.....161/116, 165, 123, 214, 220, 161/117, 221, 232, 401, 189; 156/209, 219, 252, 293; 101/DIG. 12, 382

[56] **References Cited**

UNITED STATES PATENTS

3,119,330	1/1964	Kunetka	101/382 R
2,229,133	1/1941	Sands	101/383
2,760,273	8/1956	Bregman	156/252
2,294,879	9/1942	Affelder	101/382 R
2,785,630	3/1957	Le Gate	101/394
1,296,929	3/1919	Dalziel	101/382 R
2,609,749	9/1952	Kreglewski	101/382
2,283,587	5/1942	Steinbach	101/383

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[57] **ABSTRACT**

A non-internally delaminable mounting material having an outer surface which includes a visibly and tactually discernible alignment grid and a method of manufacturing the same are disclosed herein. The laminate material includes outer layers of polyethylene terephthalate or polyvinyl fluoride film and inner layers of a resilient cellulosic material and includes a layer of metal foil between the outer film layer and the cellulosic material.

4 Claims, 2 Drawing Figures

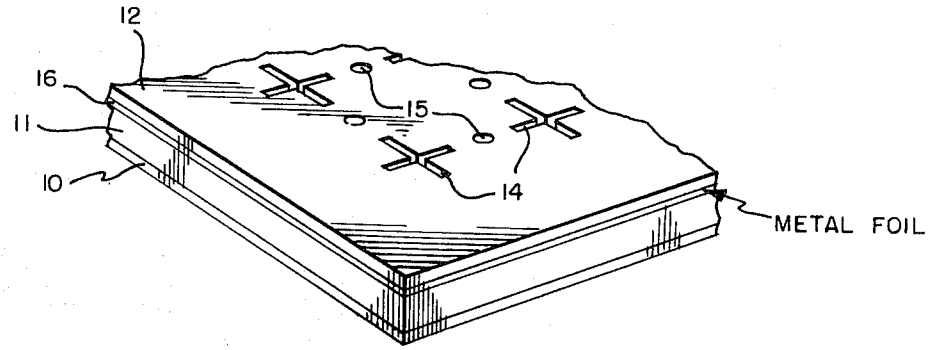


FIG. 1

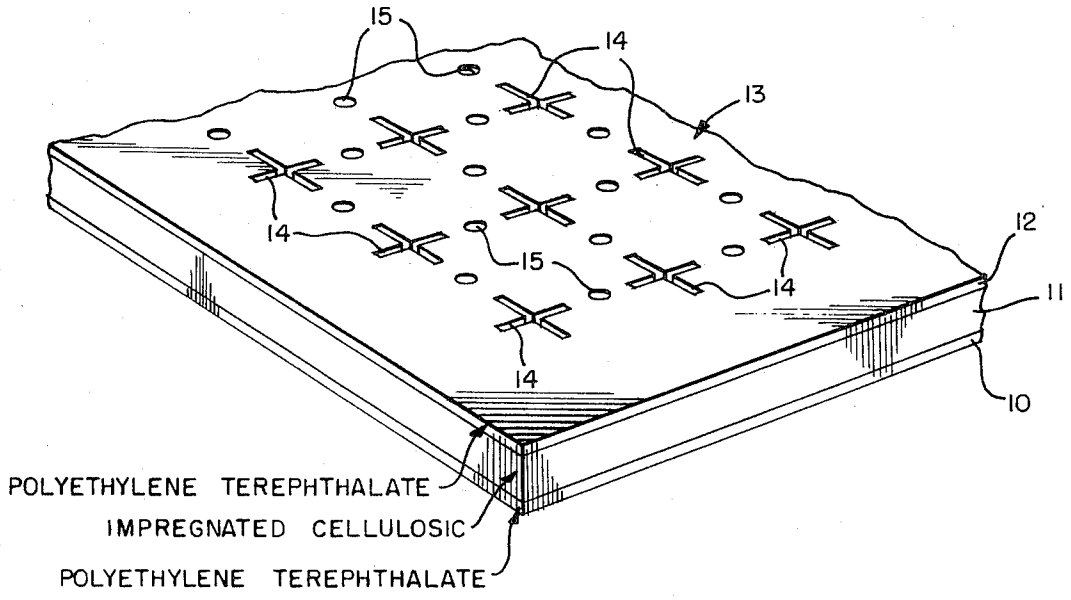
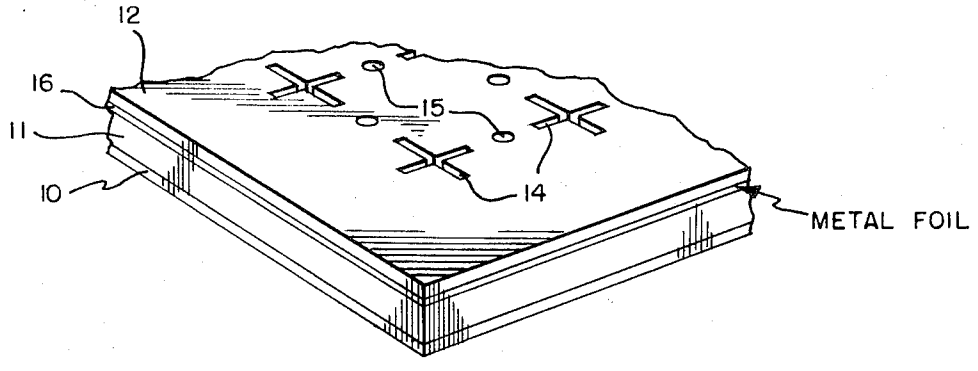


FIG. 2



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MOUNTING BASE MATERIAL FOR RUBBER PRINTING PLATES AND METHOD OF MANUFACTURING THE SAME

RELATED APPLICATIONS

This application is a continuation-in-part of application, Ser. No. 793,003, filed Jan. 22, 1969, now abandoned.

BACKGROUND OF THE INVENTION

Backing sheets, blankets, or supports for printing plates are well known to the graphic arts and a wide variety of constructions have been developed over the years. Representative of the well developed state of the art is U.S. Pat. No. 2,294,879, the teachings of which clearly establish that laminar backing materials are at least 25 years old.

SUMMARY OF THE INVENTION

The present invention is directed to specific improvements in laminated backing materials of the type having alignment grids associated therewith. More specifically, the new material has an external, non-printed index grid engraved on its top layer. Thus, the grid may be perceived by either or both of the visual and tactile senses of the user in the layout of printing plates. Moreover, the inking or staining of the outer surfaces of the new material will not interfere with the efficacy of the engraved grid as would otherwise be the case were the grid printed and sandwiched internally of the laminated structure. As a further specific aspect of the new and improved mounting material, the grid pattern itself is established by discontinuous embossed lines; by other embossed markings such as a combination of crosses and dots or other symbols; or by linear embossments of non-uniform depth. In each case, the type and pattern of embossments is chosen to prevent cracking or other failures of the engraved material when it is fitted into a curved position in conformity with a printing roll (i.e., its intended industrial environment).

In accordance with the present invention, a layer of metal foil is included immediately beneath the outer top layer as an integral part of the laminate. The layer of metal foil enhances and renders permanent the embossed grid lines, increases the chemical resistance of the mounting material, and prevents cracking or other failures of the embossed material when it is fitted into a curved position in conformity with a printing press cylinder or when it is otherwise flexed.

DESCRIPTION OF THE DRAWING

FIGS. 1 and 2 are fragmentary perspective views of new mounting materials embodying the principles of the invention.

DESCRIPTION OF A PREFERRED EMBODIMENT OF THE INVENTION

As shown in FIG. 1 of the drawing, one embodiment of the new material comprises a comparatively thin plastic base layer **10**, a thicker immediate resilient layer **11** of latex impregnated paper, and a thin plastic top layer **12**, the surface of which is engraved to a depth of approximately .001 to .007 in. with a grid pattern **13** comprised of a series of crosses **14** (advantageously on one inch centers) and a series of dots **15** (also on one inch centers) centrally located between each of the crosses. The diameter of the dots and the thickness of the grid delineations may be within the range of less than one mil to several mils. In accordance with the principles of the invention, the formation of the indexing matrix or grid **13** by a plurality of discrete engravings or indentations prevents the backing material from cracking, fracturing, "piping," (i.e., internally delaminating), or otherwise failing when it is bent around the radius of a printing roller. The engraved grid **13** will, of course, enable a printer, using his senses of sight and touch, to align or to arrange rubber plates thereover and then to affix the plates thereto by any of several established techniques.

More specifically, the base layer **10** is fabricated from polyethylene terephthalate (advantageously "-Type A Mylar") of approximately .0005 to .0020 in. in thickness; the intermediate layer **11** is a cellulosic sheet impregnated with nitrile butadiene rubber, advantageously "Lexide NB-502," of approximately .0200 to .0500 in. in thickness; and the top layer **12** is a polyethylene terephthalate film commercially available as "Mylar," or "Celanar" and "Melinex" or a polyvinyl fluoride film commercially available as "Tedlar," of approximately .0005 to .0020 in. in thickness. When found desirable or necessary, brand identification or the like may be incorporated into the product by reverse printing a logo, etc., inside of the top layer **12** before it is laminated to the layer **11**.

A preferred form of the laminated material of the invention is shown in FIG. **2**. This material includes outer plastic film layers **10** and **12** and a latex impregnated cellulosic inner layer **11**. Importantly and in accordance with the invention, a thin metal foil layer **16**, is incorporated between the outer plastic film **12** and the resilient cellulosic layer **11**. Although aluminum foil is preferred as the metal foil layer **16**, other foil materials such as copper and steel may be used. In this form of the invention, which is, of course, more resistant to cracking than the form shown in FIG. **1**, the grid may be embossed, if desired, with continuous lines having non-uniform depths throughout their lengths. Thus by rating the lines from heavy to light (in terms of depth of embossing) a "half tone" appearance may be achieved.

In accordance with the principles of the invention, the new backing material may be manufactured as follows: The plastic layers **10**, **12** are laminated respectively to the cellulosic layer **11** and the metal foil layer **16** by coating the plastic films **10**, **12** with a solvent solution of thermoplastic adhesive resin; then driving off the solvent; and finally directing each of the respective two layer structures **10**, **11** and **12**, **16**, through a pair of heated nip rollers where the adhesive resin will be softened while in intimate contact with the layers **10**, **11** and **12**, **16**. The pair of two ply laminates are joined by applying a solvent coating of thermoplastic adhesive to either or both of the cellulosic or metal foil layers, driving off the solvent and directing the sublaminates through a pair of heated nip rolls where final lamination occurs through intimate contact between the webs. The combination of the four plies may, of course, be effected in other sequences as dictated by the laminating equipment available to the fabricator.

After the plies **10-12** and **16** have been combined, the top layer **12** is exposed to a radiant heater to elevate its temperature to approximately 150°–180° F. It is then passed through a nip compressed of s steel roll carrying embossments of the desired grid pattern (i.e., a relief pattern of the grid) and a rubber back-up roll of 60 to 90 durometer. The height of the embossments will be approximately .001 to .007 in. Alternatively, when found necessary or desirable the grid pattern may be formed without preheating of the layer **12**, i.e. the grid may be cold formed.

When the metal foil layer **16** is not incorporated into the laminate structure, either of the plastic films **10** or **12** may be initially joined to the resilient cellulosic layer **11**. The sub-laminate may then be joined to the remaining plastic layer in the usual manner. As will be understood, the curing and embossment steps are identical for both embodiments of the invention.

It will be appreciated that the new material provides a durable and especially useful backing for the mounting of printing plates. Moreover, the combined strata of the new laminate offer excellent resistance to the solvents employed in printing processes, a characteristic which is important in the prevention of differential swelling of the laminate through its thickness and which thereby insures the maintenance of uniform print quality of the mounted plate. Furthermore, the excellent solvent resistance contributes to the durability and extended useful life of the new material. The incorporation of the metal foil layer in the laminate structure contributes substantially to the strength and embossment retention of the new mounting material.

It is to be understood that the specific embodiments herein described are intended to be representative only, as certain changes may be made therein without departing from the clear teachings of the disclosure. Accordingly, reference should be made to the following appended claims in determining the full scope of the invention.

I claim:

1. A laminate backing material for mounting rubber printing plates and the like comprising,

a. top and bottom outer layers of plastic film chosen from the group consisting of polyethylene terephthalate and polyvinyl fluoride,

b. a first intermediate layer of metal foil chosen from the group consisting of aluminum foil, copper foil and steel foil,

c. a second intermediate layer of cellulosic material, impregnated with nitrile butadiene rubber,

d. said first intermediate layer being adhesively bonded to said top outer layer and said second intermediate layer,

e. said second intermediate layer being adhesively bonded to said bottom outer layer,

f. a plurality of discontinuous indentations formed on the outer surface of said top layer and arranged to define a predetermined pattern,

g. said pattern being of sufficient depth to be visually and tactilly discernible for alignment of printing plates therewith.

2. The laminate material of claim **1**, in which

a. said top and bottom outer layers are approximately .0005 to .0020 in. in thickness,

b. said second intermediate layer is approximately .0200 to .0500 in. in thickness,

c. said first intermediate layer is approximately .00025 to .002 in. in thickness,

d. said indentations are approximately .001 to .007 in. in depth.

3. The material of claim **1**, in which

a. said indentations are arranged to define a grid of one inch squares.

4. The material of claim **1**, in which

a. said indentations are in the form of crosses and dots,

b. the diameters of said dots being substantially equal to the thickness of the legs of said crosses.

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