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SHRINKAGE CONTROL OF FLEXIBLE PRINTING PLATES AND THE LIKE

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FIG. 1

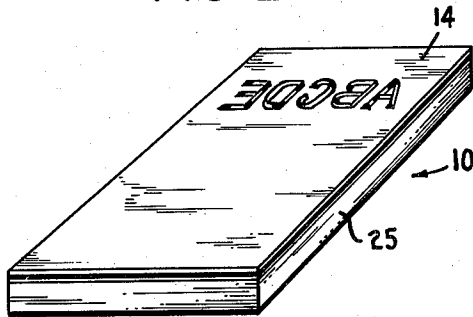


FIG. 2

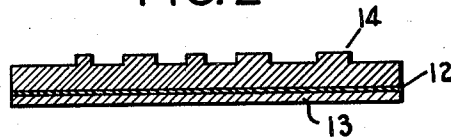
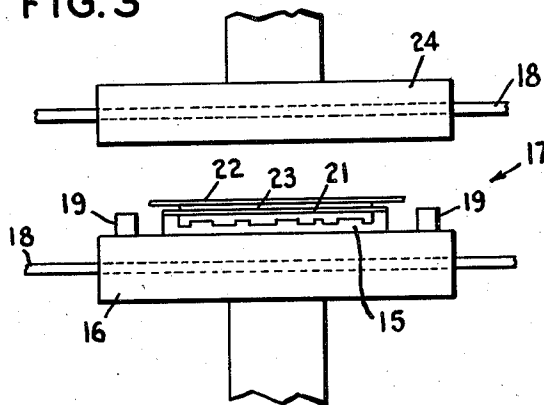


FIG. 3



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SHRINKAGE CONTROL OF FLEXIBLE PRINTING PLATES AND THE LIKE

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3 Claims. (Cl. 101—379)

This invention relates to moulded printing plates, and particularly flexible rubber printing plates which are flexible in the sense of being pliable, which when bent or flexed will not kink or bend permanently the printing surface or the backing element.

The objects of the invention are to prevent the shrinkage of rubber printing plates which occurs during or just subsequent to moulding and cure; to permit the removal of the moulded plate from the matrix without kinking or bending permanently the material with which the plate is backed; to secure the register of plates for multi-color printing; to allow the easy application of such plates to wood mounting blocks—to allow the application of such plates to a heavy metal plate, and to accomplish the above at an extremely low cost.

Still other objects and advantages of my invention will be apparent from the specification.

The features of novelty which I believe to be characteristic of my invention are set forth with particularity in the appended claims. My invention itself, however, both as to its fundamental principles and as to its particular embodiments will best be understood by reference to the specification and accompanying drawing, in which—

Fig. 1 illustrates my improved plate in perspective,

Fig. 2 shows a cross section through the plate which, for clarity, is drawn on an exaggerated scale, and

Fig. 3 illustrates the method of manufacture and shows the parts positioned on a diagrammatically indicated press.

The printing plate may be made in a number of ways.

According to one method rubber plates are moulded in a resinous matrix which is provided with a depressed area forming the mould cavity. It has been my practice previously to interpose between the gum rubber and the top platen of the press, a thin sheet of spring brass to which the rubber strongly adheres after cure and which forms the back of the printing plate. This, I have found, is a very effective way of controlling shrinkage and securing register. But whereas such plates may easily be applied to cylinder presses and pulled up taut by a reel (as is the common practice of applying plates to an offset press) it will be found extremely difficult to mount such plates on wood blocks or to attach them to any base material suitable for flat bed press work.

One reason is that the rolled metal is naturally curved, but more important, it is impossible to

separate the plate and the matrix without, to some extent at least, lifting and bending the metal-backed rubber printing plate. Thereafter, the metal causes the plate to hump up. Such plates may, of course, be nailed on wooden base blocks, but frequently demand nails in the center of the plate which is often impossible.

I have discovered that resin impregnated paper may be substituted for the metal with a saving in expense and with improved results. The particular paper is a heavy manila stock thoroughly impregnated with a phenolic resin. In certain instances the degree of adhesion secured between such a paper and the rubber is sufficient, but if the paper be coated with a resin "gluing compound" particularly those phenolic resin base materials known as "waterproof curing cements" or "glues" a very strong permanent adhesion is secured.

In the Figures 1 and 2 the printing plate generally indicated by 10 is composed of a rubber or rubber-like surface bearing the type or design as shown at 14, 14. The layer of cement is indicated by the line 12 and the paper back is shown at 13. The method of manufacture is indicated diagrammatically in Fig. 3. A matrix 15 rests upon the lower platen 16 of a press 17. Through the conduits 18—18, the press platens are adapted to be heated and cooled. Bearers the height of which checks the closure of the press and hence adjusts the thickness of the finishing plate are shown at 19, 19. A sheet of gum rubber 21, is laid over the matrix 15, and over this is placed a sheet of resin-impregnated paper 22 bearing a surface coat of cement 23.

When the rubber is sufficiently plastic, the press is closed bringing the paper in contact with the upper platen 24. The heat and pressure is continued until the cure of both rubber and resin is complete.

Those resins which when fully cured possess a certain flexibility may be used as the paper impregnating substance. Such resins may contain an excess of phenol, the catalyst may be withdrawn before the primary reaction is complete, plasticizers may be added, all of which themselves form no part of this invention, and, since suitable impregnated papers are obtainable from several sources in the trade, no more than this statement is believed necessary.

When the cure is complete and plate and matrix have cooled, the plate is separated from the matrix.

It will be found that this reinforcement checks the shrinkage of the plate and permits color

register work. Also there is no spring or set in the reinforcing back. If the rear resin surface is sanded slightly, and given a thin coat of a cement, (I prefer pyroxylin) the plate will stick permanently and all over to a wooden base block 25 (Fig. 1) and in the same manner it may be attached to a metal base. Cement is, however, a matter of choice.

Such plates are flat enough and remain flat enough to be nailed around their margins to their support. Although I have illustrated, and described by way of example, the preferred embodiment of my invention, it will be recognized that it is clearly within the scope of invention to apply it generally wherever it may be necessary to hold rubber sheets to given dimensions or to permit their easy attachment to flat or curved surfaces.

What I claim, therefore, is:

1. A pliable printing plate having substantially zero lateral stretch, comprising a printing surface of pliable cured rubber, and an integrally associated reinforcing element, comprising a pliable layer of resin-filled fibrous material.

2. A pliable printing plate having substantially zero lateral stretch, comprising a working surface of pliable cured rubber and a pliable reinforcing element of cured resin-impregnated paper integrally united thereto.

3. A pliable printing plate having substantially zero lateral stretch, comprising a pliable printing face of cured rubber, and a pliable backing element comprising a sheet of pliable cured resin-impregnated, felted cellulosic substance, serving to prevent lateral deformation of the printing face while freely permitting bending thereof.

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