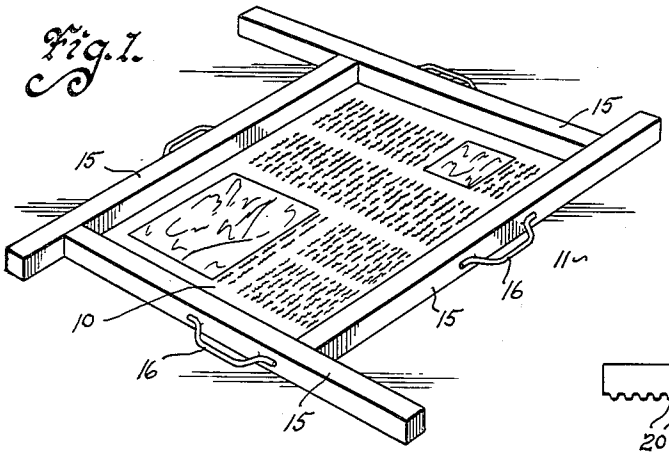
May 22, 1956 R. R. MYERS, JR 2,746,106

METHOD FOR PRODUCING FLAT PRINTING PLATES

Filed March 15, 1951

Fig. 1.



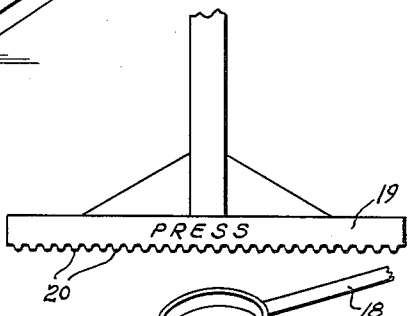


Fig. 2.

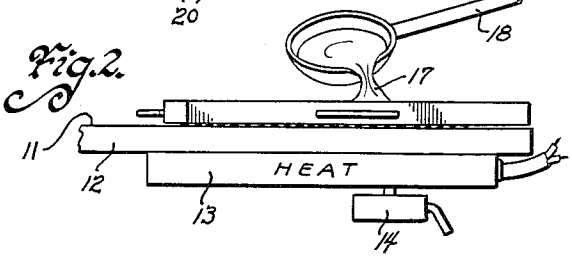


Fig. 3.

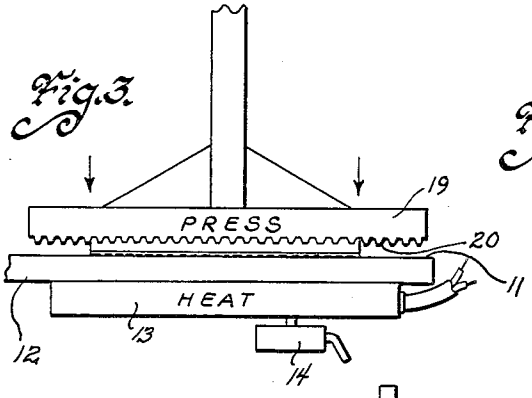
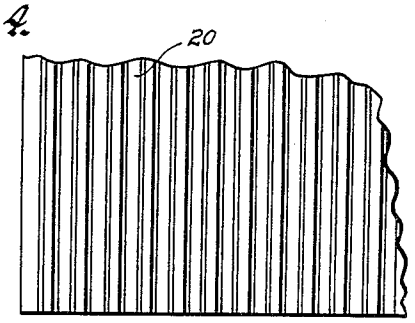


Fig. 4.



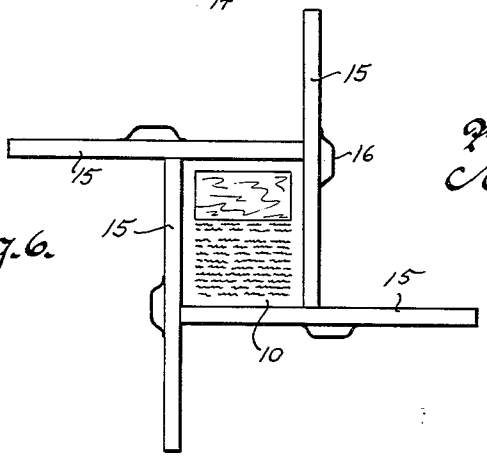
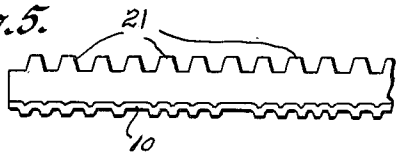


Fig. 6.

Fig. 5.



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METHOD FOR PRODUCING FLAT PRINTING PLATES

Robert R. Myers, Jr., Des Moines, Iowa

Application March 15, 1951, Serial No. 215,741

1 Claim. (Cl. 22—203)

This invention relates to the art of casting backing material on flat printing plates. Specifically I have invented a molten backing material confining and chilling means that makes possible a method of producing printing plates that greatly speeds up the production of said plates.

The principal object of my invention is to provide a method of and means for producing flat printing plates that permits one set of special equipment to be used with printing shells of widely varying sizes.

It is a further object of my invention to provide a method of and means for producing flat printing plates that permits one set of special equipment to be used with numerous different printing shells in relatively rapid succession.

It is a still further object of my invention to provide a method of and means for producing flat printing plates without appreciable distortion, thereby making for printing fidelity and accurate color registry in multi-color printing.

It is a still further object of my invention to provide a method of and means for making flat printing plates that eliminates the placement of the shell in a holding pan prior to the pouring of the molten metallic backing.

It is a still further object of my invention to provide a method of and means for making flat printing plates that presses the molten backing material onto the shell, thereby not only properly filling out the shell and eliminating air bubbles, but producing a pressure cast plate.

It is a still further object of my invention to provide a method of and means for producing flat printing plates economically, quickly, and easily.

It is a still further object of my invention to provide a method of and means for producing flat printing plates that will eliminate any possibility of the molten backing material running under the printing shell during the backing phase.

It is a still further object of my invention to provide a method of and means for producing flat printing plates that will eliminate much hand work, reduce the time element, and produce printing plates of uniform thickness.

These and other objects will be apparent to those skilled in the art.

My invention consists in the method and means, whereby the objects contemplated are attained as hereinafter more fully set forth, pointed out in my claim, and illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view of a printing shell with my means for restraining the molten backing material on the shell until it partially solidifies,

Fig. 2 is a diagrammatical view of the heating of the shell, the pouring of molten backing material onto the shell, and the mechanical agitation of the same,

Fig. 3 is a diagrammatical view showing the compressing of the backing material onto the printing shell by the use of a press or like,

Fig. 4 is a bottom view of the face of the press,

Fig. 5 is a longitudinal sectional view of the finished printing plate after it has been trimmed, and

Fig. 6 is a reduced plan view of the dams on a printing shell.

Referring to the drawings, I have used the numeral **10** to designate a flat electroplate shell of a conventional type and with which anyone in the art would be familiar. This shell is placed on a flat surface **11** such as provided by a platen designated **12** in Figs. 2 and 3. Although not absolutely essential, some pre-heating of the platen may be desirable. I have illustratively shown an electric heating element mounted on the low side of the platen and designated by the reference numeral **13**. The amount of heat applied to the platen and, by conduction and radiation, transmitted to the electroplate shell, may range through a considerable variety of temperatures from one slightly above room temperature up to a point closely approaching the melting temperature of the backing material that will later be poured onto the shell. Persons skilled in the art will have no difficulty in determining the temperature to which the platen should be heated for the best results with the particular materials they are using. I have also disclosed the mechanical means for agitating the platen while the casting is being done in the form of an air vibrator designated **14**. Up to this point, any preparation for casting of the backing on the electroplate shell is substantially standard and well recognized procedure.

What I believe to be particularly new are my dams or barriers for temporarily retaining the molten backing material over the portion of the printing shell that carries the relief printing indicia. My invention derives particularly from these temporary barriers or dams and the process or method that results from their use. The barriers which I have designated by the numeral **15** may be made from any suitable substance which has the properties of relatively great mass and heat conductivity. Once the shell is heated and ready for the pouring process, the barriers are arranged along the borders of the printing indicia on the shell and resting on the shell itself. By permitting the ends of the barriers to jut past each other as shown in Fig. 1 and Fig. 6, a single set of barriers will serve with a wide variety of electroplate shells. This position of the barriers on the shell serves two functions. The first of these is to weigh down the shell and hold it relatively flat on the platen. Secondly, the barriers serve to surround the area in which the molten backing material is to be confined. It is advisable, obviously, to have at least one end of the barrier members to be relatively flat as should be at least one side member of the barriers. The better the contact between the side and end of any two barriers where they come together, the less opportunity there would be for any molten backing material to escape between the barriers at a point where they contact each other. It is not absolutely essential, however, for the barriers to be flat on one end and on one side, as any backing material that tended to run through or seep out small gaps between the barriers would become chilled rapidly and solidify to seal up the openings. Nevertheless, wastage of backing material will be reduced if the barriers fit snugly, and hence it is considered very desirable. For ease of handling, the barriers may be provided with the handle members **16** which are ragidly secured to the barriers by any suitable means as by welding or the like. While I have indicated that the specific material for the barriers is not critical, a class of materials that has been found to work very well is the iron group. As soon

as the barriers are arranged on the shell, the molten backing material **17** will be poured on to it by any suitable equipment such as the ladle **18** or the like, with the barriers holding the material directly over the shell. The vibrator **14** is operated at this time to aid in filling the shell completely and evenly with backing material. When sufficient quantity of the molten backing material has been poured on to the shell, the unheated temporary barriers will chill the material adjacent to them relatively rapidly. As soon as the border material has chilled to any considerable extent, it becomes solid and will serve as a retainer for the balance of the molten backing material. The barriers may then be removed and used on the next shell. With the barriers removed and the chilled border backing material serving as the retaining medium, there is nothing to inhibit the lowering of the press head **19** onto the cooling backing material. The press head may be provided with a corrugated surface designated **20** as shown in Figs. 2, 3 and 4 and will therefore contact a relatively large amount of backing material. The corrugations will serve to increase the surface contact of the press head with the backing material. Since the press head is relatively cool, the upper portion of the central backing material will be chilled just as the bordering material was chilled earlier and will tend to confine the molten portion of the backing material that remains thus permitting considerable pressure to be exerted on it by the press. For this reason, the resulting plate is what is known as a pressure cast plate. The result of this process is a flat printing plate which has considerable strength, uniformity of thickness, is relatively flat, and can be produced in a relatively short time period. The finished plate may be left with its corrugated upper surface as shown in Fig. 5, the ribs designated **21** serving to make the plate considerably more rigid than would be the case if the plate were entirely flat on top.

In describing my invention, I have not dealt with steps or techniques that are familiar to the art such as supporting large blank spaces on the printing shell with clay or the like in order to avoid bending them downwardly,

since such techniques have no relation to the explanation and understanding of my invention. Obviously, however, there is nothing about my particular method of and means for producing flat printing plates which would prevent the use of any such standard techniques.

Some changes may be made in the construction and arrangement of my method of and means for producing flat printing plates without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claim, any modified forms of structure or use of mechanical equivalents which may be reasonably included within its scope.

I claim:

A method of producing flat printing plates comprising, taking a sheet member having relief indicia thereon, a flat supporting surface and a plurality of elongated bars that conduct heat rapidly and have great mass; then arranging the sheet member on the flat supporting surface, then placing the elongated bars on the sheet as to surround the relief indicia on said sheet member and resting on the top of said sheet member, then pouring a molten chillable solidifiable material into the area surrounded by said elongated bars, then removing said elongated bars as soon as the molten chillable solidifiable material adjacent them has solidified, and then applying pressure to said molten chillable solidifiable material and said sheet member until they are compressed to a predetermined thickness.

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