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C. E. HENSLEY

2,211,601

MATRIX BLANK

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FIG. 1

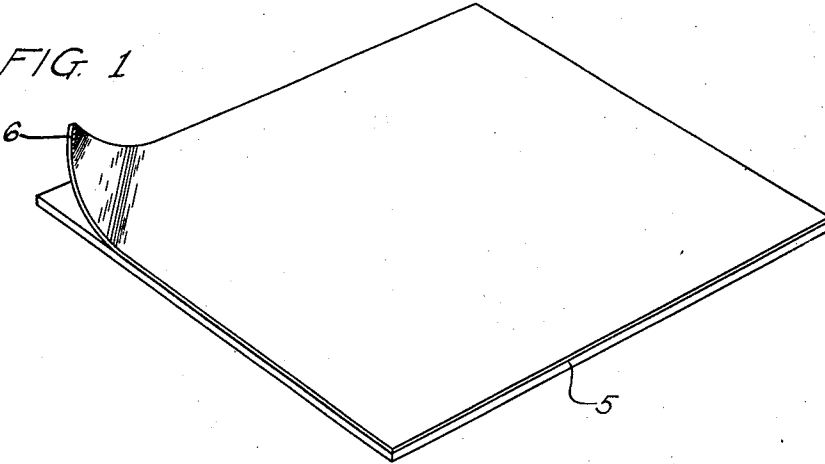


FIG. 2

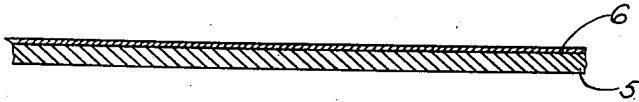
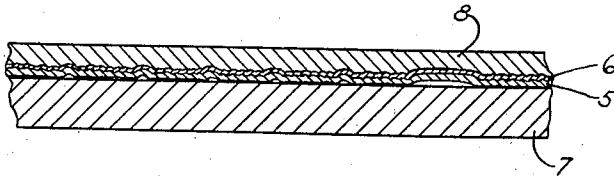


FIG. 3



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2,211,601

MATRIX BLANK

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3 Claims. (Cl. 154—46.5)

This invention pertains to matrices and more particularly to flongs or mats used in the preparation of matrices. A flong is a backing sheet used in forming a matrix, and the later molding of a stereotyping plate. The type of flong in present use is simply a paper mat made of substantially homogeneous moisture absorptive material, and it is prepared with one comparatively smooth surface for receiving the impression, and one rougher surface. The unimpressed sheets are usually kept in a humidor, the air in which is kept relatively humid. The sheets absorb a considerable amount of moisture from the air in the humidor and they are shaped while in this relatively damp condition. Technically these flongs are known as "dry mats" but they are shaped while in a relatively moist condition in order to eliminate the breaking of the surface of the mat, as well as to reduce the amount of pressure necessary to secure a clear cut impression of the various kinds of type which are pressed against the sheet.

After the impression has been made the sheets are placed in a drying oven in an attempt to entirely remove the moisture from them. Due to the inherent absorptive quality of the material from which they are made, however, it is almost impossible to remove all the moisture and dampness from them. As a result, when the flong is placed in the casting box, and molten metal (at a temperature of 600° F. or higher) is poured against the impressed flong or matrix, the moisture still remaining in the sheet forms vapor which forces its way into the molten metal, and causes what is known in the trade as "pin holes." These pin holes render the printing plate thus formed imperfect and it is sometimes necessary to make as many as five or six casts from a single matrix before all the moisture in the matrix has been driven out so that a clear plate can be obtained on the next casting.

My invention has three chief objects. First, to reduce the actual moisture content necessary to maintain the flong in a sufficiently pliable form; second, to make it easier to remove the moisture from the sheet after it has been impressed; and third, to positively prevent the small amount of moisture remaining in the sheet after the drying process from forming vapor and causing pin holes in the molten type metal when it is poured against the matrix.

The details in the construction of a preferred form of my invention, together with other objects attending its production will be better understood from the following description when

read in connection with the accompanying drawing which is chosen for illustrative purposes only, and in which

Figure 1 is a perspective view of a flong formed according to my invention;

Figure 2 is a fragmentary sectional view of the flong shown in Figure 1; and,

Figure 3 is a transverse fragmentary section showing the relative positions of the casting box, flong, and the molten metal during the casting of the printing plate.

To accomplish the objects enumerated above I prefer to form the flong or backing sheet of from 80% to 90% paper pulp and 10% to 20% finely powdered aluminum, copper, or other comparatively soft exceptionally good heat conducting metals. The pulp and the powdered metal are thoroughly mixed before the mixture is rolled into sheets. A sheet formed from such a mixture contains a smaller quantity of absorbent material than sheets of the same size which are being used at present. Therefore, a sheet of the same size actually contains a smaller quantity of moisture after it has been treated in the humidor than a sheet made of 100% paper pulp. The metal particles in the sheet are highly conductive of heat and, therefore, when the composition sheet is placed in the drying oven, a much greater percentage of the moisture is actually removed than would be removed from the sheet made of pure paper pulp.

In addition, during the impressing or shaping of the sheet, the metal particles actually aid in maintaining the sheet in its impressed form. These particles are inherently very sensitive to pressure and thus also aid in making a very clear and exact impression in the surface of the sheet.

Sheets made of 100% paper pulp shrink both in length and in width during the impressing of the type on the surface of the sheet, as well as during the drying process. An advertisement which is to be 10" x 10" when the newspaper is actually printed, must be set up to cover approximately 10 $\frac{1}{8}$ " x 10 $\frac{1}{8}$ " when the imprint is formed in the sheet. The shrinkage varies and it is, therefore, almost impossible to secure an exact desired size in the finished plate. Under test I have proven that the shrinkage of the metal content sheet is approximately 50% to 60% less than the shrinkage of the 100% paper pulp sheet. I have also established the fact that the shrinkage is much more uniform than in the pure paper pulp sheets.

In addition to eliminating a deal of the moisture content trouble by making a metal content

sheet, my invention contemplates the surfacing of the imprint receiving side of the sheet with a thin layer of aluminum foil. Although other metals having a high melting point may be used, I prefer to use aluminum because it is impervious to water vapor, it forms a clear impression in the surface of the sheet, it aids greatly in standardizing the shrinkage, and what is more important, its melting point is sufficiently high that it is unaffected by the temperature of the molten metal which is poured on the sheet to form the printing plate. The foil may be attached to one surface of the sheet by means of any suitable paste. I prefer to use a paste similar to that described in Patent No. 978,824 issued December 13, 1910 to M. A. Droitcour.

It will readily be seen that if even a 100% pure paper pulp sheet is provided with a surface of aluminum foil, the moisture in the sheet which remains after the sheet has been removed from the baking oven would be positively prevented from forming vapor and passing into or against the surface of the molten metal. The vapor formed would first create a pressure between the inner surface of the aluminum sheet and the adjacent surface of the casting box, which pressure would aid in forcing the aluminum sheet snugly into every single depression and crevice around the type which is being formed in the molten metal. The vapor is prevented from actually coming in contact with the molten metal and the plate formed from such a sheet would, therefore, be unaffected and the pin holes in the plate would be completely eliminated. It is contemplated that the exposed surface of the aluminum foil will be highly polished so that a plate formed from a matrix constructed according to my invention would have much smoother type face than plates formed from 100% paper pulp matrices.

From the above explanation it will be seen that I have produced a flong or matrix sheet which will remain in a sufficiently pliable and

moldable condition with less moisture content than is necessary with flongs presently in use; that the moisture remaining in the flong can be more easily removed due to the fact that the metal particles conduct the heat and distribute it more evenly throughout the body of the material of which the flong is made; and that I have provided a flong, dry mat, or matrix blank which completely eliminates pin holes in the printing plates due to water vapor.

In the figures, numeral 5 represents the backing sheet and numeral 6 represents a sheet of metal foil. Numeral 7 indicates the casting box and numeral 8 represents the molten metal which is poured against the matrix to form the plate.

With respect to the scope of my invention I do not wish to be limited except by the prior art and by the appended claims.

I claim:

1. A flong or matrix blank comprising a thin backing sheet, composed of a mixture of from 80% to 90% paper pulp and from 10% to 20% powdered aluminum; and a thin facing sheet of aluminum cemented on said backing sheet for receiving the impression.

2. A flong or matrix blank comprising a backing sheet composed of a mixture of from 80% to 90% paper pulp and from 10% to 20% powdered copper; and a thin facing sheet of copper cemented on said backing sheet for receiving the impression.

3. A flong or matrix blank comprising a backing sheet composed of from 80% to 90% paper pulp and from 10% to 20% finely powdered metal having a definite melting point above 700° F. and having a coefficient of thermal conductivity of at least .50 measured in calories per second per centimeter per degree centigrade; and a thin facing sheet of the same metal cemented on said backing sheet for receiving the impression.

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