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STEREOTYPE MAT

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This invention relates to an improvement in sterotype mats and especially the so-called "dry mats" of commerce.

Stereotype mats and especially dry mats consist of a heavy fibrous sheet, usually comprising chemical wood pulp, and containing suitable fillers. Such a mat and the method of making is described in United States Patent No. 1,524,155. These sheets usually vary from 0.028 inch to 0.036 inch in thickness. Their physical characteristics may vary from soft to hard depending upon the requirements of the user. A facing material or coating may be applied to the surface of the mat that comes in contact with the type and stereotype metal to improve the release of the hot metal and improve the quality of the printing.

A stereotype mat for newspaper work is used in the following manner. As soon as a form containing the type has been set up, a stereotype mat is superimposed, then covered with blankets or felts and passed through a rolling machine, whereby the mat acquires a reverse impression of the type. The mat after drying is placed in a casting machine where it is held in the form of a cylinder. Molten stereotype metal is then poured into the machine whereby a stereotype plate in the form of a metal cylinder is obtained containing on its surface an exact duplicate of the type in the original flat form.

The stereotype plate is then placed in a cylinder press whereby papers can be printed at high speed. Several casts can be made easily and rapidly from the same mat so that a number of presses can be placed in operation almost simultaneously.

A dry mat is not used in the dry state. It is first placed in a humidor where it takes up from 10 to 30 per cent moisture. It is then rolled on a form, removed, placed in a cylindrical "scorcher" where most of the moisture is removed in one or two minutes. When the hot stereotype metal strikes the impressed "scorched" surface practically all of the balance of the moisture is driven out of the mat. As a result of such strenuous treatments various troubles are encountered. It is the object of my invention to overcome or minimize these troubles.

I have found that if the back of a stereotype mat is punctured almost through to the front face with a sharp pointed instrument, such as a phonograph needle, many of the troubles, heretofore encountered in its use, disappear. These punctures should not cut the fibers but merely push them aside during the piercing operation; hence the strength of the mat is not affected materially. I have found that a mat punctured to within 0.006″ of the face of the mat gives excellent results. It is preferable to have the holes spaced apart not more than $\frac{3}{16}$″ in each direction. This spacing can be advantageously much less, $\frac{1}{8}$″ giving excellent results. The exact spacing and depth of puncture will vary with the type of mat and service to which it is to be put. Puncturing the mat in this manner results in several advantages over mats heretofore used. These advantages are:

1. The mat can be "scorched" (dried) more quickly;
2. The formation of steam pockets by blistering is prevented;
3. Relief of stresses in the mat, and consequent reduction, if not elimination, of buckling is obtained;
4. Increased flexibility is obtained;
5. Chilling in the sterotyped plates is reduced.

The above mentioned advantages will be fully appreciated in view of the following remarks:

1. The denser the mat is the more difficult it is to remove the moisture quickly during the drying operation. If the drying of a mat of conventional form is hurried, buckling, due to uneven escape of the moisture, will result. Rapid drying is important since it is essential in newspaper work to get the plates to the press as quickly as possible. In a dense mat there is great mechanical resistance to the escape of the steam, and this may result in splitting the mat or producing blisters. Steam can escape in the longitudinal direction of the mat, that is in the fiber direction, more easily than it can perpendicularly. As a result of the perforations $\frac{1}{8}$ inch apart, it is not necessary for the steam

to travel more than $\frac{1}{16}$ inch before it has an entirely free path.

Porous light weight mats permit the moisture to escape more readily than denser mats but they do not produce as clean, sharp impressions on molding as do the denser mats. Furthermore, the denser mat offers much greater resistance to the mechanical action of repeated casting. By means of my invention denser mats may be used, and the mats dried in substantially the same time as porous mats.

2. Blistering occurs most frequently on cuts representing objects. A large continuous area of the mat represented by the cut is compressed greatly, frequently to one-half the original thickness of the mat. The moisture leaves this area much more slowly during scorching than other parts of the mat. If the cuts retain some moisture due to incomplete drying, blisters will be formed when the hot stereotype metal is poured against them. The perforations help eliminate this difficulty to a very great extent.

3. Buckling may be largely eliminated through release or avoidance of stresses in the mat. All mats, particularly the dense type, have certain stresses produced in the course of manufacture. The more frequent cause of stresses and buckling, is uneven drying. If a portion of the mat dries readily it will become "set" as soon as all the moisture has escaped. As a result the parts drying subsequently cause high tension and result in buckling.

4. Perforation of the mats produces a certain flexibility that permits better molding.

5. Perforation of the mat prevents "chilling" by permitting air and steam to escape through the back of the mat. The face of a chilled plate has ripple marks as though caused by the rush of air or steam through the molten metal. Any mat retaining moisture may chill the casting, but trouble is seldom encountered except on cuts where the mat is very dense. When the molten metal is poured into the box, air and steam must escape to a certain extent through the mat, though most is forced out at the top. The minute points in cuts may entrap both air and steam and cause blowing unless they do escape through the mat.

I claim:

1. A stereotype mat having a multiplicity of punctures extending from the back thereof toward the surface of the mat.

2. A stereotype mat having a multiplicity of punctures in the back thereof, most of said punctures extending to within at least 0.006 inch of the opposite face of said mat.

3. A stereotype mat having a multiplicity of punctures in the back thereof but not extending through said mat, said punctures being spaced not more than $\frac{3}{16}''$ apart.

4. A faced stereotype mat having a multiplicity of punctures in the back thereof, most of said punctures extending to within at least 0.006 inch of the facing and said punctures being spaced not more than $\frac{3}{16}''$ apart.

5. The step in the method of venting steam from the back of stereotype mats during the casting operation which comprises piercing the backs of said mats with a multiplicity of punctures deep enough to approach the casting face of said mat.

In testimony whereof I affix my signature.

ARLIE W. SCHORGER.