I. D. HURLBUT.

RELIEF PRINT.

APPLICATION FILED OCT. 7, 1912.

1,083,100. Patented Dec. 30, 1913.

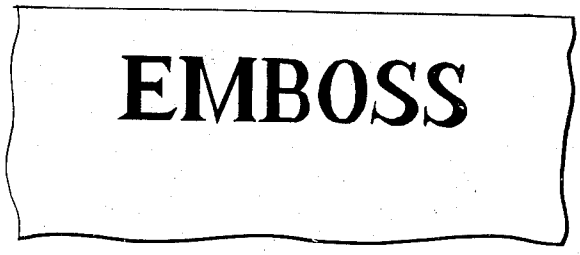


Fig. 1.

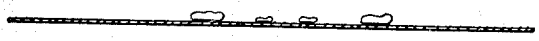


Fig. 2.

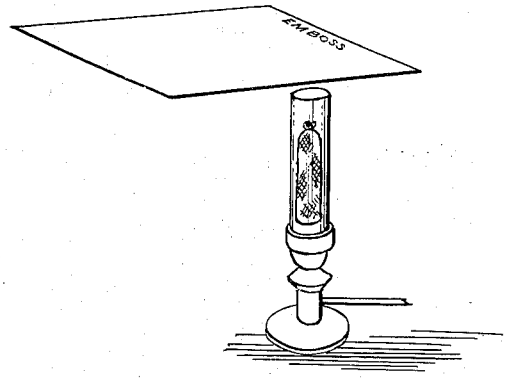


Fig. 3.

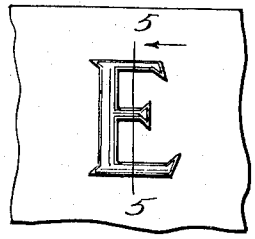


Fig. 4.



Fig. 5.

Witnesses

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RELIEF PRINT.

1,083,100. Specification of Letters Patent. Patented Dec. 30, 1913.

Application filed October 7, 1912. Serial No. 724,354.

To all whom it may concern:

Be it known that I, IRA D. HURLBUT, a citizen of the United States, residing at Prairie du Chien, in the county of Crawford and State of Wisconsin, have invented certain new and useful Improvements in Relief Prints, of which the following is a specification.

My invention relates to the art of printing and more particularly to relief printing on paper, cards, and the like, and has for its object the production of emboss effects without the use of dies or molds.

It is old to make varnished prints by sprinkling bronze, gold or other dust upon impressions of letters or designs formed by type, etc., and then fusing the dust adhering to the impression, as in the Patent No. 240,002 issued to Benson D. Baldwin April 12, 1881, and as in the Patent No. 644,282 issued to Samuel Crump February 27, 1900, but they are, as stated in the latter patent, merely "varnished prints" having a very flat surface of equal thickness throughout the area as shown in the drawing accompanying said patent to Crump and which he states in his specification is of greatly-exaggerated thickness. Such prints do not give the relief effects produced by steel dies which are cut in depths proportionate in thickness to the lines and fashioned to finish the relief with a rounded surface.

My invention is a relief print having a steel die effect with a rounded surface. This I accomplish by the use of the resins of gums of commerce, such as gum elemi, in granules of varying sizes according to the style and character of the letters or design.

The essential feature of my invention is the use of resinous gums in granular form, and I prefer to use the resin of gum elemi because of its especially high surface tension which produces in the finished product a converging center having the appearance and contour of emboss print by steel dies.

In producing my invention I associate the resin of the gum with saccharine matter and printer's ink from which the greater part of the oily content has been removed, as hereinafter fully set forth.

In the accompanying drawings illustrating the various steps in carrying out my invention: Figure 1 shows the design in ink, Fig. 2 the granular composition of gum and saccharine matter in place on the design, Fig. 3 subjecting the same to the action of heat, Fig. 4 a completed production, and Fig. 5 is a sectional view, on the line 5—5 of Fig. 4, showing the elevation and configuration of the emboss or imposed matter.

In carrying out my invention I impress or print the letters or design desired on the paper or other material, in any well known manner from type or relief plate, with ink carefully prepared by the removal of the oils until there is a minimum content of oil and a maximum content of drier consistent with proper distribution and color, and before the ink forming the impression has dried I apply thereto in granular form, the composition of gum and saccharine matter that forms the relief or emboss, and then complete the production by subjecting it to heat action sufficient to fuse the granules.

In preparing the composition of gum and saccharine matter I take the gum, preferably the gum elemi of commerce which is a soft, plastic aggregate consisting of resin combined with oil and sap, and remove by the application of heat, or in any suitable manner, the sap and greater portion of the oil, the resultant being a flexibly frangible substance principally resinous, with some of the characteristics of rubber. To this resultant I add saccharine matter, preferably in the form of candied honey, from 1 to 25 per cent. according to its character or crystallization. This mixture of resin and saccharine matter is ground into granules varying in size from the smallest which will not pass through No. 8 bolt cloth and the largest which will pass through No. 50 strainer cloth. Particles that will pass through a dust sieve will not produce a relief effect that would be apparent to the eye or touch, but simply a flat varnished surface, and are therefore useless for the purpose of my invention, but within the limits of practicability particles larger than the maximum stated may be employed for in practice the granules are adapted in size to the strength of the lines of the design or ink base; the smaller granules to the smaller lines and the larger granules to the larger or stronger lines.

The composition forming the relief having been applied to the impression or design while still wet by pouring it thereon in any desired manner and the excess not adhering to the design being removed by striking the printed matter on edge or otherwise, the printed matter is subjected to a heat

temperature sufficient to cause the granules to fuse or run together without injuring the production or causing a flow beyond the delimiting lines of the base or producing a false effect.

When the composition has become properly fused, it is allowed to cool, and thereupon becomes a finished product the surface of which is rounded and glossy and resembles steel die emboss work.

In the process of fusing the pigment of the ink and the drier contained therein become incorporated with the composition, the pigment serving to give the composition the color of the printed design, while the drier causes the composition to quickly set and harden, so that the finished product shown in Fig. 4, is available for immediate use. If a higher coloring than that produced by the pigment in the ink is desired the composition may be colored by a pigment while being prepared, and if an illuminated product is desired gold, copper, aluminum or other metallic powder may be applied to the granules in quantity sufficient to adhere thereto without allowing much free metallic powder in the aggregate. When the composition to which a metallic powder has been added, as above described, is used the metallic powder appears wholly on the surface of the finished product in a thin layer of metal, the effect being a very close imitation of an illuminated product of the die stamp and allied methods.

Having thus described my invention what I claim is:

1. The combination of a sheet of paper or other fabric having an ink imprint thereon, and a solid relief mass having a flat base and a convex surface; said base being superimposed on the ink imprint and co-extensive with the limits thereof.

2. A solid relief mass comprising an incrustation on an ink impression on a sheet of paper or other fabric; said incrustation being composed of fused granular material having a high surface tension, and having its base flat and co-extensive with said impression, and its upper surface rounded.

3. In combination with a sheet of paper or other fabric having an ink imprint thereon, a solid raised mass of fused material; said raised mass having a convex metallic surface and a flat base superimposed on said ink imprint and co-extensive with the limits thereof.

In testimony whereof I hereto affix my signature in the presence of two witnesses.

IRA D. HURLBUT.

Witnesses:

ANNA J. DOUGLAS,

H. B. DICKINSON.