On Substituting Plates of Fusible Metal, for Wood-Blocks, in Calico Printing, &c. By M. G. ENGELMANN.*

THE engraving of wood blocks for calico printing is very expensive, and these blocks being also formed of an hygrometric substance, are continually subject to change, from swelling and shrinking by the effects of moisture and dryness, and thus occasion a considerable loss of time, and give false impressions, from the trouble of replacing them, and the consequent inequality in their adjustments. I have therefore endeavoured to substitute for them, a substance which is not liable to swell by the action of humidity, can be moulded with great accuracy, and at the same time is capable of resisting the effects of the blows of the mallet, and of the acids contained in certain of the colours used in calico printing. The fusible alloy appears to me to offer these advantages, and I employ the *en cliché* process, in its application.

I operate in the following manner;—having made an engraving in wood, on a piece of plank, and given a sufficient breadth to the bottom of the lines, to enable the cast to part from the mould, I interpose between the metal and the wood a substance, which shall facilitate their separation; to effect this I brush over the engraving a mixture of ground *sanguine* (red-chalk,) and water. I then finally affix the engraved block to the bottom of the upright slide or stem of the stamp, and let it fall suddenly upon the melted fusible alloy, at the moment when it is just upon the point of becoming solid, or has acquired a *pasty* consistence; I thus obtain a counter proof of the engraving. This counter proof serves as the matrix or mould for the engraved plates of fusible metal which I intend to make. For this purpose, I affix it upon a piece of wood, and surround it with a border of metal, intended to determine the thickness of the metal plates struck in it; and which border is also formed in such a manner, as that whether placed on one side or the other, it shall exactly fit; I then firmly affix this matrix, thus surrounded with its frame, upon the bottom of the stem of the stamp, and strike another counter proof *en cliché*; and so proceed, until I have thus produced enough of them to compose and to cover a calico printing block.

These second counter proofs, thus obtained, I place, with their engraved faces undermost, the one by the side of the other, upon a flat surface; and also shape and dispose them with the necessary regularity, to ensure precision in the impressions from them. I then pass a heated iron along the joints, in order to solder one piece to another; and then fix the whole upon a wooden plank, by means of copper nails; but I previously varnish the plank, to prevent moisture from penetrating it. These blocks, if I may judge from the two experiments which I have made with them, offer no other inconvenience than being a little heavier than those made entirely with wood:

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they differ however but little from those blocks in which the raised parts are made with brass or copper; a difference, trifling, in comparison with the great advantages they possess, in not being liable to change from the action of moisture.

It is easy to see, that a calico printing block, thus constructed, must cost much less than one engraved upon wood; and especially, as we need only to engrave a segment, or one of the parts, which are usually repeated a great number of times; and to multiply them by the *clichage*, an operation which will produce in less than an hour, more casts than are sufficient to fill a block, thickly covered with them. The value of the metal employed, and which need not be more than a line in thickness, is a mere trifle; and, after the block has done its work, may be remelted. We can preserve the small matrices, which occupy but little room, and when we require to make another block, it can be done quickly. It is also equally easy, in changing a moulded pattern, to vary the position of these small casts; since we can either bring them near together, or remove them to a distance apart; place them in a line, or mingle one piece with another; and thus either form them into borders, or employ them in the interior parts of the prints.

If we compare the price of these blocks, with those whose raised parts are formed of brass or copper, it is greatly in their favour; and we have no doubt that in the hands of skilful persons, the art of forming them by means of *clichage*, will obtain as great perfection as those blocks possess.

On Improvements in the Manufacture of Horn and Tortoise shell Combs. By THOMAS GILL, Esq.

THE author has long known, that *two large toothed* tortoise shell combs could be made out of one piece of tortoise shell; the interstices in the one, furnishing the material to form the teeth in the other, and *vice versa*; but he had no idea of the possibility of cutting two combs with fine teeth out of one piece; this is, however, now effected in the following manner:—The thin plate of tortoise shell being softened by heat, a fine and properly shaped chisel is passed through it, in such a manner, as to divide it into the teeth, and the spaces between them, but without removing or cutting away any of the substance of the tortoise shell; and thus the two combs can be formed, with great economy, out of this very expensive material.

Another great saving, in the same costly material, has likewise been effected by a German comb maker, settled in this country; who forms the solid broad part of the large toothed combs, now so generally worn by the ladies, out of tortoise shell; but their teeth are made in a plate of horn, *soldered* by means of heat to the tortoise shell; and that in so dexterous a manner, that although the place of the joining was pointed out to the editor, yet he was unable to distinguish any difference there, between that and the other parts of the comb. The veined or clouded appearance of tortoise shell was given