

Preparing the Colours used in Calico Printing—Colour-Mixing.

All the printing compositions used by the printing machine are prepared in the works. Be it a dye-stuff or simply a mordant or discharge, etc., it requires to be properly thickened, to enable it to be printed; and most colours require a considerable amount of preliminary treatment before they are ready for the machine.

The composition ready for printing is always termed "the colour," whether it really contains any colouring matter, or only some substance such as a mordant or a "resist," which is in some way connected with the formation of the printed effect. This preparation of the "colour" or composition used in printing is called "colour-mixing," and the room set apart for its execution is called the "colour shop."

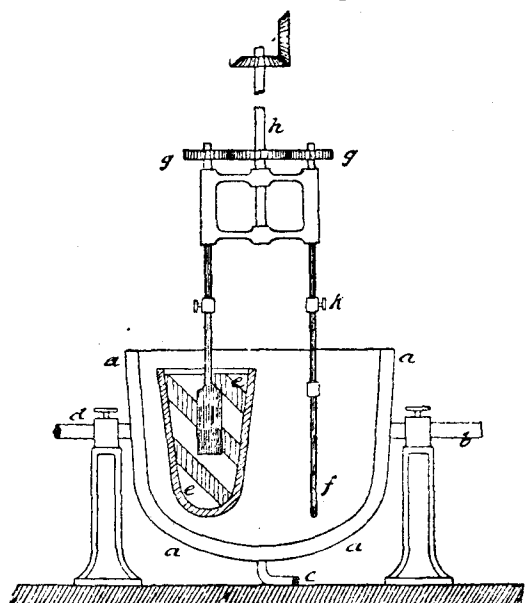


Fig. 7.

The Colour Shop and its Machinery.

The colour shop should be a large square or oblong room, with the floor well grated for the escape of the water, and with a portion of the roof raised and provided with efficient ventilators. When ventilation is deficient the room soon becomes filled with the constantly escaping steam, and the operatives being unable to see clearly, confusion and mistakes are the result. In the centre of the building, or along one side thereof, is the row of vessels for boiling, or range of colour pans, varying in size from 1 to about 100 gallons capacity. The colour-pan is heated by steam, which circulates through a jacket surrounding the vessel. It is formed of two sheets of copper, each beaten into the required shape, the one a little smaller than the other, so as to fit into it and leave a space between of about an inch. These are strongly riveted together, as shown in fig. 7, which is a

section of a colour pan. *a a a* is the copper pan, with double sides forming a steam jacket, the steam entering at *b* and escaping at the tap *c*; the pan swings on pivots, *b* and *d*; at the latter is a water-tap for circulating through the jacket cold water for cooling the pan. *e, f*, are the mechanical stirrers or agitators, which are worked by three toothed wheels at *g*, the centre one being attached to the vertical shaft *h*, which conveys the power; the other two wheels are attached one to each agitator, and so arranged as not to clash against each other. When the agitators are not required they are detached at *k*. When the pan is to be emptied of its contents the catch is unfastened and the pan is swung over. There are several forms of colour pans, but in principle they are the same as that we are describing; thus in England many colour shops have the colour pans stationary, with a hole at the bottom plugged up with a wooden bung when the pan is filled, and removed for cleaning out. It will readily be seen that the mechanical stirrers require occasional assistance of hand-stirring, as the colour adheres to the sides and bottom of the pan, beyond the reach of the agitators.

Some new agitators replace the laborious process of stirring by hand very successfully, being made to scrape away the colour from the sides and bottom of the pan.

In boiling the colour, the steam should be turned on gradually until the pressure is from 7 to 10 lb. When the colour is boiled sufficiently the steam is stopped, and the water turned on in its place, until the colour is cool enough for the addition of other ingredients, or for "straining." The operation of straining the colour is a very important one in colour-shop labour. If all lumps and gritty matters be not removed, the finely-engraved copper rollers may be scratched. The colour is strained by forcing it through a strong open cotton fabric called straining cloth; unless the colour is thin enough to run through the meshes of the fabric without forcing, the colour is poured into the cloth stretched over a tub, and the corners gathered up together, held firmly in the left hand, while the colour is, by means of wringing and pressing, forced through the cloth, leaving lumps and other impurities behind. Many attempts, successful and unsuccessful, have been made to construct straining machines, the principle of most of which is the creation of a vacuum beneath the straining-cloth or sieve, but they have been found to be advantageous only for such colours as are made in very large quantities.

Principles of Colour-Mixing.

Between the manual labourer of a large colour shop who actually "mixes" the colours, and the directing "colour-mixer" who understands their composition and properties, there is as wide a difference as between