

Reeling Machine for Thread.

The same refers to that type of a machine by which all the threads may be simultaneously taken and fixed to a stave of the reel and, when the hanks are completed, simultaneously released. Fig. 10 is a section and Fig. 11 a perspective view of the apparatus, showing also the run of the threads from the bobbins to the reel. The threads from the bobbins *a* pass through the slits in the usual guide-bar *g*, Fig. 11, and over a toothed bar *b* which can be slid in holders *h* on a rail *r*; by sliding the bar, the threads are carried by the teeth into the holders and there clamped. The rail is then lowered, as shown in Fig. 10, and the threads brought into the teeth of a similar bar *b*¹ which is slid in similar holders on one of the staves of the reel to clamp the threads thereon, after which they are released from the holders on the rail, which is returned to its original position.

Paper Bobbin and Like Tubes.

Fig. 12 is given to illustrate subject. It refers to a perforated paper tube for the wet treatment of textile materials. For the circulation through them of the treating-liquor the same is provided on its surface with grooves *G*, formed by stamping, which intersect at the perforations *P*.

Mercerizing Apparatus.

The construction, operation and object of this apparatus will be readily understood from consulting Figs. 13 and 14.

In machines for washing and caustic recovery subsequent to mercerizing, in which the liquid pours from a trough on to the piece, gutters or deflectors 10 are arranged above each edge of the cloth 6 between it and the trough 4 in order that the stentering-clips 7 may be protected and the wash-liquor not wasted. The gutter 10 is carried on an adjustable bracket 8 carrying the clips 7 and projecting beyond them so that the device is placed automatically for any width of cloth. The gutter 10 has one end 12 closed and the other 11 open, so that liquid overflowing the lip 5 of the trough 4, and which would otherwise fall on the edge of the piece, is collected and deflected on to the cloth away from its edge. A steam-pipe 3 for heating the liquor in the trough is provided.

Fire-proofing Cotton Fabrics.

The same refers to a process lately patented abroad for rendering cotton fabrics noninflammable and consists in impregnating the fabric with a solution of one part boracic acid and two parts of borax, equal in weight to about 10 per cent of the weight of fabric.

The latter is then immersed in the solution at 120 deg. *F.*, and after steeping for some time, the solution is allowed to cool down to 60 deg. *F.*, when the fabric is then removed and dried.

It is next steeped in a fixing solution containing a small quantity of lead acetate, and finally dried by hot air.

Artificial Silk.

A late German patent calls for making artificial silk from alginic acid, which is spun through fine holes into a warm coagulating solution of a calcium salt, and then dried under tension. The alginic acid is used in the form of a ten per cent solution of its sodium salt.

DICTIONARY OF TECHNICAL TERMS RELATING TO THE TEXTILE INDUSTRY.

(Continued from page 128.)

SUITING:—Cloth for making a suit of clothes, especially in the plural, as fashionable suitings.

SULPHATE OF MAGNESIUM:—This substance ($MgSO_4$) is one of the most important of the bodies that a cotton finisher uses. It is found naturally in small quantities in certain natural springs, notably in those near Epsom, from which is derived its name of Epsom salts. It is also found in the large natural deposits of salts at Stassfurt, in Germany. Sulphate of magnesium is used by the finisher in two forms:

Epsom salts, a more or less pure quality, and kieserite, a crude and impure quality.

Magnesium sulphate, whether in the form of Epsom salts or kieserite, is used both as a stiffener and for giving weight to cloths.

It is a good weighting agent.

SULPHATE OF SODA:—(Na_2SO_4). A most useful substance for the cotton finisher.

SULPHATE OF ZINC:—This substance ($ZnSO_4$) is sold in the form of small, pearly, needle-shaped crystals, readily soluble in water. It contains 22.65 per cent. of zinc, 11.15 per cent. of sulphur, 22.30 per cent. of oxygen, and 43.90 per cent. of water. Although perhaps not quite equal to the chloride in this particular, it may be used in those stiff finishes for cotton goods, where the chloride, owing to its deliquescent properties, could not be employed.

SULPHUR COLORS:—A group of direct dyeing colors made by fusing various organic bodies with sulphur and alkalis. They include mostly blacks and browns, others being dark greens, blues and yellows. They are characterized by a high degree of fastness to light and washing and are of great importance. The sulphur colors are, as a rule, insoluble in water, and for this reason are dissolved with the aid of sodium sulphide; some sodium carbonate and Glauber's salt being also frequently used in the dye bath, which must be used warm, and the dyeing must take place below the surface of the liquor. Most sulphur colors require an after-treatment to develop the color. Sulphur colors are used mainly on cotton, when with the exception of aniline black, they are the chief dyes used to produce fast colors.

SULPHURATOR:—An apparatus, by means of which sulphuration is accomplished; usually the apparatus in which fabrics are bleached by exposure to the fumes of sulphur.

SULPHURIC ACID:—Oil of vitriol, oil of sulphur (H_2SO_4). Manufacturers have adopted as oil of vitriol an acid which holds 93.5 per cent.

SULPHURIZING:—Bleaching wools and silks by means of burning sulphur.

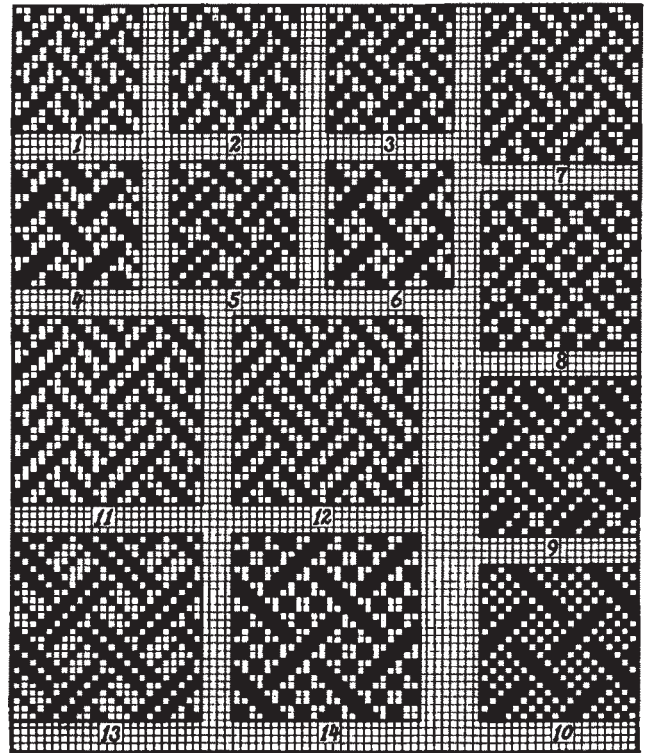
SULPHUROUS ACID:—A product of the combustion of sulphur ($H.SO_3$). Cold water dissolves over 30 times its volume of sulphurous oxide; the solution contains hydrogen sulphite, or sulphurous acid, and may be kept unchanged so long as air is excluded. Excess of oxygen alters sulphurous into sulphuric acid.

- SULTANABAD:**—A standard make of a Persian rug made partly of wool and partly of cotton.
- SULTANE:**—Twilled cloth of silk and wool; finished in the rough, not singed or sheared.
- SULTANI:**—One of the best varieties of Egyptian cotton, grown in lower Egypt. It is of a very long and silky variety and has some of the characteristics of the Sea Island cotton. The plant requires much attention and is easily affected by climatic conditions. Very little of this variety is grown, and it is probable that its production will remain small.
- SUMAC, SUMACH OR SHUMAC:**—Leaves and smaller branches of a shrub. That which comes from Sicily is the most esteemed, and brings the highest price, but several other countries produce a usable article. Has a smell reminding of tea, or sometimes of new hay. The chief consumption of sumac is probably in cotton-dyeing, where it is the preliminary treatment for the fancy shades to steep the cotton for some hours in decoction of sumac. The astringent matter of the sumac is thus firmly combined with the cotton, which can now be easily mordanted with either tin or alumina, which forms the basis of the colors. Sumac liquors have a strong tendency to become acid, which must be guarded against in those cases where an iron-alumina mordant is concerned, since the acidity is sometimes strong enough to dissolve out weak iron mordants.
- SUNN HEMP, INDIA OR JUBBULPORE HEMP:**—The plant is a native of India, the Malay Islands and Australia, and belongs to the Natural Order Leguminosæ. It is a cordage fibre plant.
- SUN-WHEEL:**—The gear of the differential motion in fly-frames, which according to the direction of its rotation imparts to other gears of the same motion, either an increased or decreased speed. See differential motion.
- SUPER:**—The fourth grade made in sorting a fleece for woolen spinning; next to choice.
A two-ply ingrain carpet, constructed with 960 warp-threads (36 inch. wide fabric) exclusive of selvage.
- SUPER COMBING:**—The finest quality wool of the clip.
- SUPER QUALITY:**—A quality of any quality number, but of a type superior to that quality number. Super qualities of tops will yield a yarn much nearer in count to the quality count than will the unqualified quality number.
- SURAH:**—A soft, twilled silk fabric, usually of plain color and without pattern; used for women's garments.
- SURAH-DE-LAINE:**—A fine woolen and silk fabric for ladies' summer wear.
- SURAH ECOSSAIS QUADRILLÉ:**—A surah in design and coloring of Scotch squares, or shepherd checks.
- SURAH SILK:**—A variety of silk, woven with a fine, flat twill; similar to serge in woolen goods.
- SURTOUT:**—An upper coat; an overcoat; a riding coat; a great coat.
- SWANS-DOWN:**—The down of a swan, often used for a dress-trimming, as on opera-cloaks.
A thick cotton cloth with a soft pile or nap on one side, more often called Canton or cotton flannel.

The simplest form of a regular twill.

ENTWINING TWILLS.

The same refer to a system of weaves finding extensive use in the manufacture of dress goods, in connection with cotton, wool, worsted and silk fabrics. The smaller effects are used with worsted men's wear, either by itself, or in combination with other weaves. They are also used for interlacing the ground in connection with Jacquard work, and considered all around, form one of the most interesting system of weaves for the designer.



Entwining twills are obtainable from any one of our regular twills by using one or more pieces of the twill selected, running in one direction, against one or more pieces of the same twill running in the opposite direction, the one twill-set meeting its mate twill-set balanced, in turn imparting the characteristic entwining effect to the weave and thus to the face of the fabric. This, in connection with some of the weaves, will result in open spaces, which then have to be interlaced either with broken twills, baskets, or other fancy weave effects, whereas in some instances, more particularly when using two or more twill-lines running against each other, none of these open spaces will appear in the final weave.

Entwining twills are always designed with an even number of harness for their repeat, the smallest repeat practically to use being 8, after which they can be made for any higher number of harnesses, 10, 12, 16, etc. No reduction of harnesses by means of a fancy drawing-in draft is permissible with entwining twills, on account of the double direction of the foundation twill-lines, forming the basis of the weave.

Rule for Constructing these Weaves.

Indicate the repeat of the weave wanted on your point paper, after which run one, or as many twill-lines as desired of your foundation weave for a certain number of threads from left to right on your point paper, after which paint three joining repeats of these twill-lines (one to the right, one above, and