

Fig. 37 illustrates a respective threading of the whip-thread to a right-hand doup. Both positions of doups to their respective standard-heddle are referred to as if considered by the weaver standing at work, in front of the breast beam of the loom.

Letters of reference are selected correspondingly: *R*, rear-harness; *G*, ground-harness; *d*, heddle for standard-thread; *e*, heddle for whip-thread; *t*, passing of the whip-thread below standard-thread; *D*, doup-harness; *f*, doup.

Whip-threads are shown in full black, standard-threads outlined.

Fig. 38 shows the corresponding crossing as produced in the fabric, by using the arrangement illustrated in diagram Fig. 36.

Fig. 39 shows the corresponding crossing as produced in the fabric, by using the arrangement illustrated in diagram Fig. 37.

Figs. 40 and 41 illustrate the ground plans of using two whip-threads for douping against two ground-threads. The following letters of reference are selected correspondingly: *R*, rear-harness; *G*, ground-harness; *D*, doup-harness; *t*, passing of the whip-threads below ground-threads; *f*, doup. Threads *a* and *b* in Fig. 40 are standard-threads, and threads *c* and *d* whip-threads. In diagram Fig. 41 the standard-threads are indicated by letters of references *c* and *d* and the whip-threads by letters of references *a* and *b*.

Figs. 42 and 43 show the corresponding crossings as produced in the fabric by threading whip and standard-threads, as illustrated in diagrams Figs. 40 and 41.

Fig. 40 illustrates the threading of the whip-threads to a left-hand doup, and Fig. 41 to that of a right-hand doup.

FABRIC ANALYSIS

ASCERTAINING RAW MATERIALS USED IN THE CONSTRUCTION OF FABRICS.

(Continued from page 61.)

Tests by Burning.

Vegetable fibres are composed of carbon, hydrogen and oxygen; silk, in addition, contains nitrogen, and wool, nitrogen and sulphur. This enables a simple test to be applied for distinguishing vegetable fibres, wool and silk, from each other.

Wool, when burnt, curls up and forms a bead of burnt matter, and, owing to the presence of sulphur, gives off a disagreeable odor of burnt horn.

Silk burns in the same manner as wool, but as there is no sulphur present in the fibres, no pronounced smell of horn is evolved.

Vegetable fibres burn with a flash, and give off little smell.

Weighting or adulteration of silk fibre is readily ascertained by burning the thread. If it is pure and properly dyed, it will take fire with difficulty, and the flame will go out as soon as the fire is withdrawn, in turn leaving a nearly jet black mass, the same as wool. Weighted silk takes fire readily, and once burning, will

smoulder, leaving a refuse, retaining the shape of the yarn or fabric tested, and is of a light yellowish red color.

Fig. 38 shows, at the left, the mass of bubbles or beads, composed of a hard, thin substance, which are formed as wool fibres burn. The right hand portion

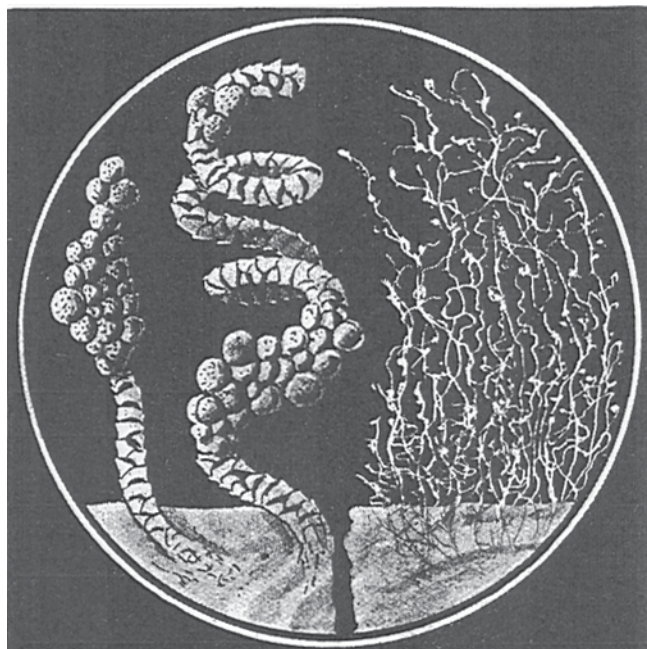


Fig. 38

of the illustration shows the ash of cotton fibres. Both illustrations refer to the testing of the nap of flannels, *i. e.*, whether they are wool or cotton.

Tests by Reagents.

If it is wished to try the action of some chemical reagents on the fibres, or to recognize the fibres, it can be easily done at a small expense. A few test tubes and one or two beakers, together with a bunsen and the necessary reagents, will enable one to perform most of the test mentioned. The reagents may be prepared or can be secured from a chemical supply house.

The zinc chloride solution, which detects silk in the presence of cotton or wool, or both, may be prepared, according to Elsner, by dissolving 1000 grams of dry zinc chloride in 850 c.c. of distilled water and adding 40 parts of zinc oxide.

The ammoniacal copper hydrate solution, and which distinguishes cotton from wool or silk, or both, according to Neubauer's method, is prepared as follows:—A solution of copper sulphate is precipitated by caustic soda in the presence of ammonium chloride (sal ammoniac). The precipitate is filtered and well washed. If this precipitate is required to be kept, it must be stored under water. The ammoniacal copper solution is prepared from this precipitate by adding an excess of ammonia until it is completely dissolved, a deep blue solution being thus obtained.

The sodium plumbite, which recognizes wool from cotton or silk, or both, is made by heating lead oxide (litharge) with a solution of caustic soda. In doing

so, care must be taken to shake the tube vigorously in order to prevent the settling of the heavy lead oxide resulting in the breaking of the tube. After boiling for a minute or two (longer is unnecessary) decant the clear liquor and with it test the fibre. If no blackening occurs cold, then heat, and if still no blackening, wool must be absent.

The alkaline solution of copper containing glycerine, and which detects silk from cotton or wool, or both, is prepared by dissolving 10 grams of copper sulphate in 100 grams of water, adding 5 grams of pure glycerine and then enough caustic potash solution to re-dissolve the precipitate first formed.

as a rule is gathered more frequently than the other, some people gather it once a day, some twice a day, others oftener, whereas in some cases this fly is gathered at every stripping time. The fly underneath the doffer and cylinder in some cases is gathered twice a week, and in other cases only once a week. If the fly is not gathered with sufficient frequency it is possible for it to be caught up again by the working parts of the card and passed forward with good cotton, giving in turn rise to a cloudy web. The amount of waste made at the card varies from 5 to 10 per cent according to class of cotton used as well as condition of laps.

Table for Testing by Reagents.

REAGENT	COTTON	WOOL	SILK
Caustic soda (dilute solution)	Unaffected	Dissolves in cold solution	Unaffected when solution is cold, dissolved when hot
Sulphuric Acid (dilute)	Disintegrates Cotton	No effect	No effect
Chloride of Zinc boiled with Zinc Oxide	Unaffected	Unaffected	Dissolves
Ammoniacal Copper Hydrate	Dissolves Cotton slowly when cold	No effect cold	No effect cold
Sodium Plumbite	No effect	Turns wool black owing to presence of sulphur	No effect
Copper in Alkaline Solution with Glycerine	No effect	No effect	Dissolves

(To be continued.)

COTTON CARDING.

(Continued from page 37.)

Setting Doffer, Comb and Cylinder Undercasings.

Set the doffer to the cylinder by a number 5 gauge, and the doffer comb at its closest contact with a number 7 or 8 gauge, although to a great extent the speed of the doffer and the counts of the sliver as taken from the doffer determine the setting of the comb, which however must be set at the same time sufficiently low, in addition to being close, to strip clear, a position best found by trial.

The cylinder undercasings are generally made in two parts and set by passing three long gauges between the cylinder wire and the top side of the casing, one gauge being in the centre of cylinder and one at each side. The brackets holding the casing are secured to the card frame by a stud, a screw being provided for adjusting the height of the undercasing.

The Waste Made on a Card.

The same may be roughly divided into two kinds, viz., strippings and fly. Strippings is the waste taken from the flats, cylinder and doffer, whereas fly is the waste thrown or falling off the lickerin, cylinder, doffer, etc., during work. The number of times that fly is gathered varies with different management and different classes of cotton or machinery. Lickerin fly

The Coiler.

In order to give an explanation of the method of

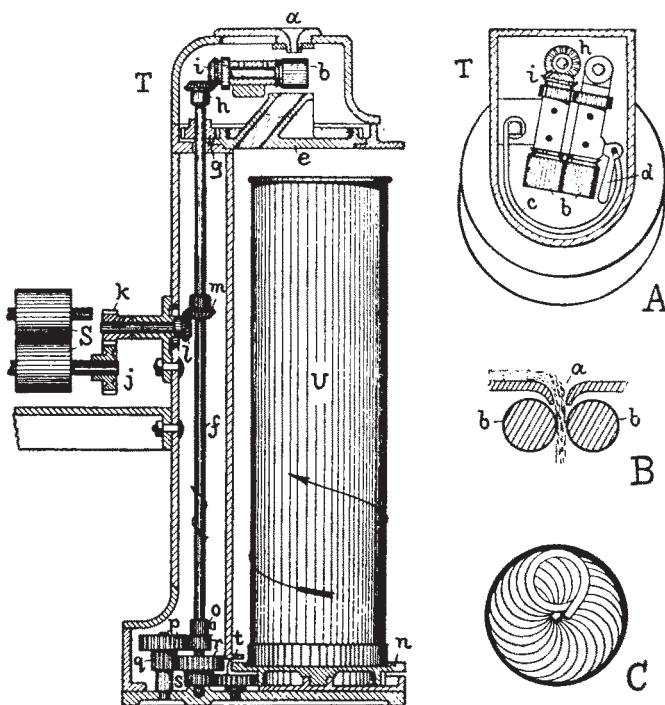


Fig. 5

coiling the sliver in its can, the illustration Fig. 5 is given, being a vertical section of the coiler mechanism,