Dyeing, Bleaching and Finishing

THE PROCESS OF CARBONIZING.

BY A. GANSWINDT.

The Deru carbonizing machine shown at Figs. 14, 15 and 16 is based on an entirely different principle from that of the machines already described. This machine is the invention of Deru of Verviers, Belgium, where it was perfected in the inventor's wool scouring establishment before being offered to the trade. The Deru machine is specially suited for carbonizing fine wool which it leaves open, soft. elastic and white. It is also used for carbonizing noils. It consists of two series of horizontal racks, on which the wool rests. Each rack is 3′ 4″ wide and 13′ long, and swings

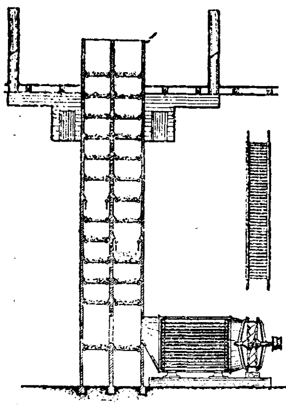

FIG. 14.

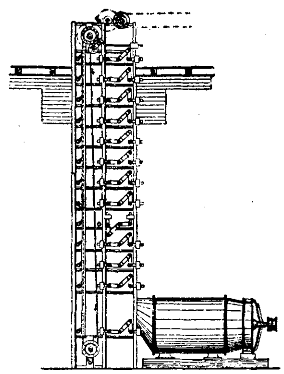

FIG. 15.

downward on hinges from each side, as shown in Fig. 14. A slowly moving, endless belt causes the racks to open successively and the wool to drop to the next rack below, after which the rack closes automatically. The wool is laid on the upper rack by an attendant and is delivered at the bottom of the machine in a dry and carbonized condition.

The duration of the drying process varies with the grade of wool and the temperature from 45 to 60 minutes; carbonizing, from 50 to 70 minutes. The heat is supplied by a steam heater. A fan forces the air through this heater and then upward through the wool in the direction opposite to that in which the wool is moving. After passing through the machine the used air escapes through the chimney. The wired screen at the end of the chimney pre-

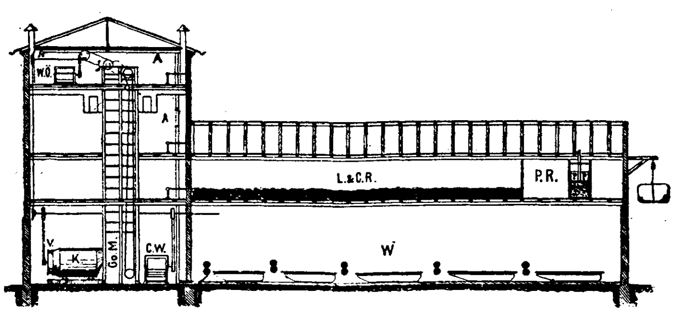

FIG. 16.

vents the escape of particles of wool that may be carried along with the air. The machine is built either single or double, and with a varying number of racks, ordinarily from twelve to fourteen.

As a result of the strong air draft a relatively low temperature and the constant agitation of the wool as it falls from rack to rack, the material is kept open, soft and elastic. The Deru machine requires a relatively small floor space, but is so high that a separate tower is needed for housing it. The wool is blown by an air blast from the scouring machine to the feed end of the dryer. Usually the carbonized wool is delivered at the ground floor, but can be delivered on the second floor and then passed through a spout to the neutralizing bath in the room below. The different floors of the drying tower can be used for wool sorting and storage. After the scoured wool is extracted either by squeeze rolls or a centrifugal machine it is a good plan to pass it through a small opener in order to deliver the wool in an open condition to the machine. If it is desired to remove all the carbonizing vegetable material, the wool as it leaves the carbonizing machine is passed through a duster provided with crush rolls at the feed end.

A plan of a wool carbonizing plant of this kind is shown at Fig. 16. The first floor W is used for wool scouring. The wool is blown by a fan through the pipe A to the top floor, where it is being passed through the opener W O, and then fed to the machine Co M. K is the air heater; B, the fan; C W, the wool duster. Above the wash room are the storage and conditioning room L and C R, the packing room P R, and the baling press P P.

The production of a double machine with twelve to fourteen shelves is 6,000 to 7,000 pounds of dry wool, or 3,500 to 4,500 pounds of carbonized wool per day. The advantages of the Deru machine have led to the building of a smaller size adapted for small mills and having a production of 1,000 to 1,200 pounds of wool per day. This machine has three or four racks.

OXYGEN IN SODIUM PEROXIDE.

Methods depending on the liberation of hydrogen peroxide by water, followed by titration with potassium permanganate, and on the treatment of sodium peroxide with potassium idodide and potassium bicarbonate and titration of the liberated iodine with sodium arsenite give low results, while measurement of the oxygen liberated by water in the presence of cobalt nitrate gives high results. The following processes yield accurate results:

(1) water (100cc.) is mixed with concentrated sulphuric acid (5cc.). and chemically pure boric acid (5 grms.); sodium peroxide (0.5 grm.) is added gradually to the mixture, which is kept briskly shaken, and the liberated hydrogen peroxide is titrated with potassium permanganate. The low results given by the older permanganate method are to be attributed to the catalytic decomposition of a portion of the hydrogen peroxide by the manganese sulphate formed during the titration. (2) Sodium peroxide is introduced gradually into a solution of potassium iodide (2 grms.) in dilute sulphuric acid (1 in 20; 200cc.); the iodine is titrated with standard sodium thio-sulphate.

The results agree with those obtained by the permanganate method. (3) Sodium peroxide (0.2 to 0.3 grm.) is mixed with about 10cc. of copper sulphate solution (0.05 per cent.) in a small flask connected to a nitrometer; the flask is shaken, and decomposition is completed within a minute, when the liberated oxygen is measured. The gas evolved contains about 0.32 per cent. of carbon dioxide and 0.08 per cent. of hydrogen.

With cobalt nitrate as catalyst, the results are invariably high; the author considers that this may indicate the presence of an oxide higher than the peroxide. The action of the atmosphere on sodium peroxide has also been investigated; moisture appears to be more active than carbon dioxide in causing decomposition.—(The Analyst.)

DYEING VARIEGATED YARN.

The machine shown in the illustrations, for which a patent has recently been granted, is designed to dye parti-colored yarn, such as is used in the manufacture of certain styles of knit goods, giving a variegated appearance to the fabric. Fig. 1 is a side elevation showing the essential parts of the machine; Fig. 2, a perspective view, with parts broken away, of the dye holder and wicks.

The yarn or other material passes over a pin and through a guide eye fastened to a block or nut, which is threaded on a spindle, the yarn being guided up and down the length of the cone.

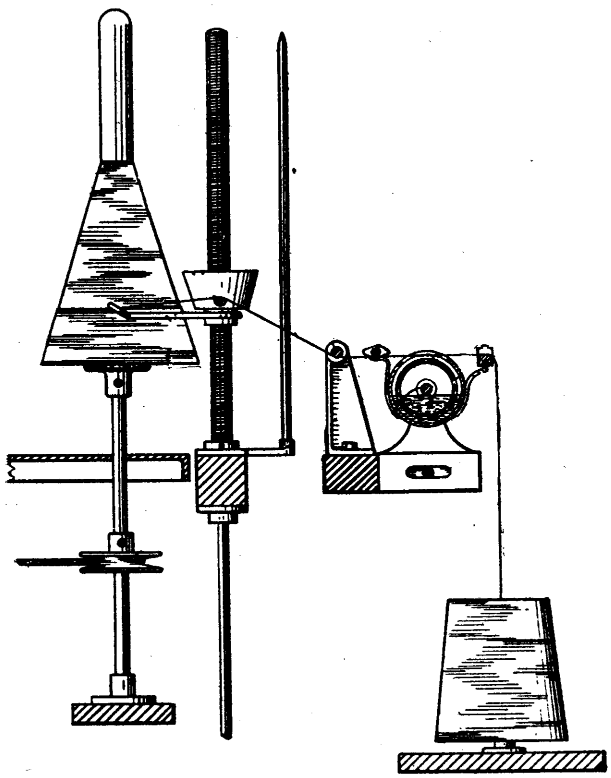

FIG. 1.

A tank is mounted horizontally above a suitable support at a point between the cones, and contains a quantity of liquid dye. A shaft extends lengthwise within the container, on which, at spaced intervals, disks are fixed, around which cylindrical rings or wicks of absorbent material are secured.

The container is slotted at a plurality of spaced apart intervals in its upper side, the wick formed by ring coming

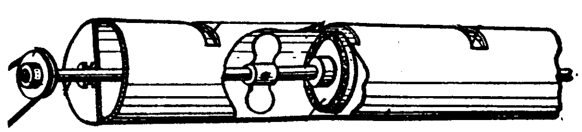

FIG. 2.

at its upper portion above the ends of its associated slot. For each of the wicks a thread of the material wound on the cone passes to a cone. The shaft is continuously operated.

The yarn is carried through any suitable tension device at one side of a slot, and thence directly across the container, through the slot and under a pin which may be mounted on a bracket, thence leading over the pin previously described. Normally the yarn is carried so as to be clear of the wick.

Supports are secured at each end of the container to carry a shaft which parallels the container and under which the yarn passes. At spaced intervals in the length of the shaft cams are fixed, one in alignment with each slot 17, the same being elongated and of the shape shown in Figs. 3, 4 and 5. with opposed edges, which on rotation of the shaft bear against the yarn and press it into contact engagement with its associated wick. With every revolution of the shaft the material is pressed twice into contact engagement with a wick twice into contact engagement with a wick receiving coloring matter during such contacts and being free of the wick during the momentary period when the cam is in a horizontal position.

STANDARDS FOR DYESTUFFS FOR CHINA.

Practical dye men and Hongkong importers of dyes report that the chief factor in the future of the sale of American dyes in China is the standardization of color shades. One of the chief elements of the success of German dyes in this field was that certain shades popular among the Chinese could be relied upon. The matter of color is very important among the Chinese aside from the comparative beauty. Many of the colors have special significance of a ceremonial sort as well as being regarded more or less lucky or unlucky. There are large interests in China, especially in Amoy. Swatow, Chuchow, and various South China coast cities, where imported shirtings and sheetings are dyed for sale to the Chinese. The basis of this entire business is the quality of color in the cloths thus handled, which depends on the uniformity of color and the quality of the dyes.

It is essential in getting in touch with this trade, which is handled almost entirely through Hongkong, that the exact shades required for the business be ascertained and adhered to in every case. This is an important factor in the general dye trade in China. The Chinese are not hunting new colors or novel shades. They usually prefer high quality standard colors and shades, particularly indigo blue, dark brown, and black, which are the most common colors to be noted in any Chinese assembly.

The introduction of American dyes into the South China field has been much more extensive than has been generally realized, and on the whole their success has been quite marked and generally satisfactory. Some of the colors offered have not been uniform in lasting quality or in shade. The only safe method to follow in the Chinese trade is to secure samples of what is wanted and manufacture to the sample. Dyes made to their specifications as to shade and uniform in quality and at a fair price will find an almost unlimited market. The volume of trade in this field is such as to justify every effort to secure a permanent foothold in it.—(Consular Report.)