screws at *b*. Examining illustration Fig. 21, we find below the screw *a*, another endless screw, indicated *d*. As soon as each gill has finished the thread of the screws *a*, they fall down and are taken up by the lower screws *d*, which in turn guide each faller back. Arriving at the end of screws *d*, the same is taken hold of and lifted by means of an arrangement of levers (as clearly visible at *c*, in Fig. 22) in the threads of the screws *a*, to commence work over again. Fig. 23 shows an individual faller as well as the sections of the screws *a*, also clearly indicates the manner in which the ends of the fallers rest on the threads of the screws. The thread of the lower situated screws is such as to produce a quicker movement of the fallers compared to the motion of the fallers produced by the upper or working screws. This permits the use of a less number of fallers than if both sets of screws were to have the same thread.

As previously mentioned, the bunches of flax, spread on the feeding table of the spread-board, are stretched or drawn out by means of the two pairs of rollers called feed rollers and delivery rollers, and are mixed in a solid continuous sliver by means of the gills of the fallers. Out of each one of the six bunches of hackled flax fed into the spread-board, we find only a single (and proportionately thin) sliver leaving. This sliver is caught by two conductor rollers situated in front of the machine, which deliver it into cylindrical cans (sliver cans) placed in front to receive it. Each yard of sliver so delivered is measured previously to its delivery in the sliver can, and registered by a simple arrangement. *B* in illustration Fig. 19 shows the bell which rings when a certain fixed length of sliver has been delivered into the can, and which after being filled, must be replaced by an empty one, to be filled in its turn. The intervals at which the bell rings can be altered, by change of wheel, to suit any required length of sliver (from 300 to 2,000

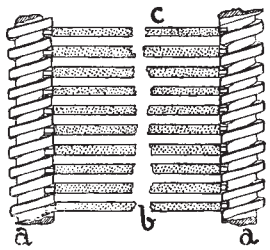

Fig. 20

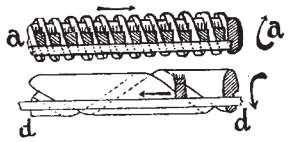

Fig. 21

yards) to be delivered in the can. The measuring of the sliver as it leaves the spread-board is necessary, since it is essential for future operations to be able to produce the sliver of a given weight for a certain number of yards in length.

A certain number of the measured cans are weighed, the net total being given as the weight of the set. Since all cans in a set must be doubled into one sliver, there are actually only so many yards to this weight of set as there are yards in the bell, hence it is only a question of calculation to ascertain the yards per pound or ounce. The length of the sliver will be increased during future operations, *i. e.*, drafting and doubling. Rule.—The shorter the drafts and the greater the doublings, the lighter will be the set required to produce a given number of yards; and the longer the drafts and the less the doubling, the

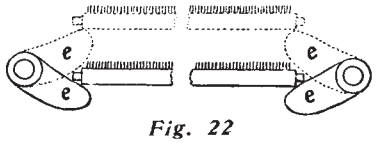

Fig. 22

heavier must it be to produce the same number of yards. For fine and special preparation, light sets must be produced.

The spread-board is capable of spreading, drawing, stretching or extending the bunches of flax to from 25 to 40 times their original length, as when fed in the

Fig. 23

machine. As previously mentioned, every division of flax bunches is fed to its own set of feed rollers, as well as corresponding drawing rollers; hence in most machines six sets of these rollers (corresponding to the divisions on the spreading table) are used, though some machines are built to contain only four departments each in place of six. The feed rollers are made of iron and extend across the machine, whereas there is a special drawing roller for each sliver. The latter are made of hard wood and are firmly pressed to the bottom roller (by means of hand screws), from the contact of which they derive their motion. This prevents any possibility of the material slipping while passing between the same, and keeps the draft perfectly uniform at every point.

(To be continued.)

Dictionary of Technical Terms Relating to the Textile Industry.

O.

OAKUM:—Hemp-fibre re-manufactured from old tarred hemp rope; the coarsest part separated from flax or hemp during hackling.

OBI:—A broad sash of silk, worn by the Japanese women.

OCHRE:—A natural pigment; an earthly base colored yellow by the combination of hydrated ferric oxide with it; used in cotton finishing for tinting purposes.

OIL CLOTH:—A coarse cloth of plain weave structure, being coated with white lead ground in oil, and ornamented with printed patterns; used as a floor, table or shelf covering.

OILED SILK:—Silk waterproofed with boiled oil.

OIL SKIN:—Cloth made waterproof with drying oil. A garment of such cloth used by sailors.

OLEAGINOUS:—Of the nature of oil.

OLEINE:—(Soluble Oil, Alizarine Oil, or Turkey Red Oil). Oleine is made by treating castor oil with sulphuric acid, and after washing away the acid and neutralizing the oil with caustic soda or am-

monia, an oleaginous liquid of a pale yellow color, which mixes easily with water, is obtained. It is therefore also known as sulphated castor oil. This is a most valuable compound, especially in dyeing and printing alizarine reds. Perfectly neutral or even slightly acid oleine may be used for finishing all kinds of white or dyed or printed cotton cloths, either alone or mixed with other finishing materials, without fear of affecting the most delicate tint. It softens the harshness and stiffness due to starch, flour or Glauber's salts, besides giving a fuller feel to the cloth. It cannot be used with magnesium, calcium or zinc compounds as it acts on these similarly to soap, although not to the same extent, in the forming of insoluble curds. When used by itself (as is frequently done, especially for colored goods) it imparts a full, yet mellow feel and bright appearance to the cloth, without greasiness, the cloth retaining the finish a long time, even when handled. It prevents mildew, but acquires an unpleasant odor when standing for some time.

OMBRÉ:—A shaded color effect, produced by the warp being dressed in tones shading from light to dark, using for this purpose anywhere from twelve to thirty tones.

A cheap grade of silk prints in imitation of the above.

OOZE:—The projecting fibres from the surface of yarn.

OPAQUE COLORS:—Pigment colors which are so thick that paper or canvas cannot be seen through them.

OPEN-BAND YARN:—Yarn spun filling way, that is, twisted over to the right.

OPEN DRAWING:—One of the three different systems of worsted spinning, *viz:* open, cone and French drawing.

OPENER:—The first preparatory machine in cotton carding, for tearing open the tufts of cotton as they come from the compressed bale, shaking out any foreign matters, loosening the fibres, and preparing the cotton for the scutcher; also known as cotton picker.

OPEN SHED LOOM:—The loom, which by means of its harness motion changes the position of each harness only when so required by the weave, such change being always the full motion of the harness to either the top or the bottom of the shed. Its name indicates the distinctive feature of the loom, *i. e.*, that the shed is open when the filling is beaten up by the lay. (See Closed Shed Loom).

OPERA HOSE:—A name given to women's stockings of extra length, ordinarily measuring 34 inches. (See Hose).

ORALE:—A silk veil having a white ground, ornamented with colored stripes, worn by the Pope at certain ceremonials.

ORCEIN:—($C_7H_7NO_3$). The coloring matter of orchil. It is produced from orcin by the simultaneous action of ammonia and oxygen according to the following equation: $C_7H_8O_2+NH_3+3\ O=C_7H_7NO_3+2\ H_2O$. It is a purple body and with metallic bases, it forms color-lakes of the same color as the dye itself.

ORCHIL:—The purple dye derived from certain species of lichens, the coloring matter being produced by the action of ammonia and oxygen upon the crushed, torn or ground weeds, these being heated with the ammonia and water in order to start fermentation; the mass being frequently stirred and then allowed to stand for a few days, after which oxygen is introduced. Over-fermentation must be guarded against, since that destroys the coloring matter. It comes on the market in both paste and powder form, the latter being known as cudbear. It may be dyed with or without a mordant, in neutral, acid, or alkaline solution, or by a vat process. It easily dyes level shades even when added to the boiling dyebath, hence it is of great service in matching-off. It possesses great body (giving even tone to fabrics, portions of which were faded) and brilliancy properties. It is fast to rubbing, fairly fast to scouring and fulling. Its greatest defect is its fugitiveness to light. It is used in dyeing carpet yarns. It is usually applied to wool, simply by boiling the wool in a neutral or slightly acid solution of the coloring matter, the color produced ranging from crimson-red to purple, depending upon the character of the orchil, and the degree of acidity of the dyebath.

ORCIN:—$C_7H_8O_2$, crystalline, readily soluble in water, alcohol and ether. The coloring principle of orchil derived by decomposition from its color yielding substance which may be erythrin, lecanoric acid, usnic acid, evernic, or cladonic acid, depending upon the species of lichen from which it was produced. It can be prepared from the coal-tar hydrocarbon, toluene, as well as by fusing extract of aloes with caustic alkali.

ORGANDY:—A fine gauzy cotton fabric, coarser, however, than muslin, used for dress goods. It must be very stiff and close when dressed, or, in other words, all the interstices must be completely filled with the size, giving it a glossy appearance. It loses its peculiar finish upon washing. The fabric is made in different qualities and widths, ranging from 18 to 60 inches. It is made in plain white, light tints and figured. The latter are bleached, and then printed with small floral designs, in from two to four delicate shades, conforming with the texture. It is sometimes woven in checks or striped patterns.

ORGANZINE:—Nett or thrown silk prepared from the choicest cocoons. It is the union of two or more single threads separately thrown or twisted in one direction, and then doubled and re-twisted in the reverse direction. It is used for the warp. The two processes of twisting are imparted for the purpose of obtaining the degree of firmness and compactness necessary to withstand the action of weaving, as well as producing a clean thread. Every twist beyond what is necessary is detrimental to the peculiar and exceptional beauty of the resulting yarn or fabric.

ORIENTAL LACE:—An embroidery produced on the Schiffli machine, the pattern being then either cut out, or the foundation eaten out by acid.

ORLEANS:—Dress goods and linings, plain and figured (with plain weave as the ground) or cotton warp and bright wool or worsted filling, made first in Orleans, France, in 1837. These fabrics are mostly cross-dyed; many of the so-called alpacas and mohairs are Orleans.

ORPHREY:—Gold embroidery or other rich material, put on certain ecclesiastical vestments.

ORRIS:—Gimp, galloons and lace used in upholstering.

(*Continued on page xx.*)