

# Posselt's Textile Journal

*A Monthly Journal of the Textile Industries*



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By E. A. POSSELT

Entered as second-class matter February 10, 1908, at the post office at Philadelphia, Pa., under the Act of Congress of March 3, 1879.

**E. A. Posselt, Publisher, 2028 Berks St., Philadelphia, Pa.**  
**European Agents: Sampson Low, Marston & Co., Ltd., 100 Southwark Street, London, S. E.**

POSSELT'S  
TEXTILE JOURNAL

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A PRACTICAL AND  
EDUCATIONAL JOURNAL

DEVOTED TO  
THE TEXTILE INDUSTRIES.

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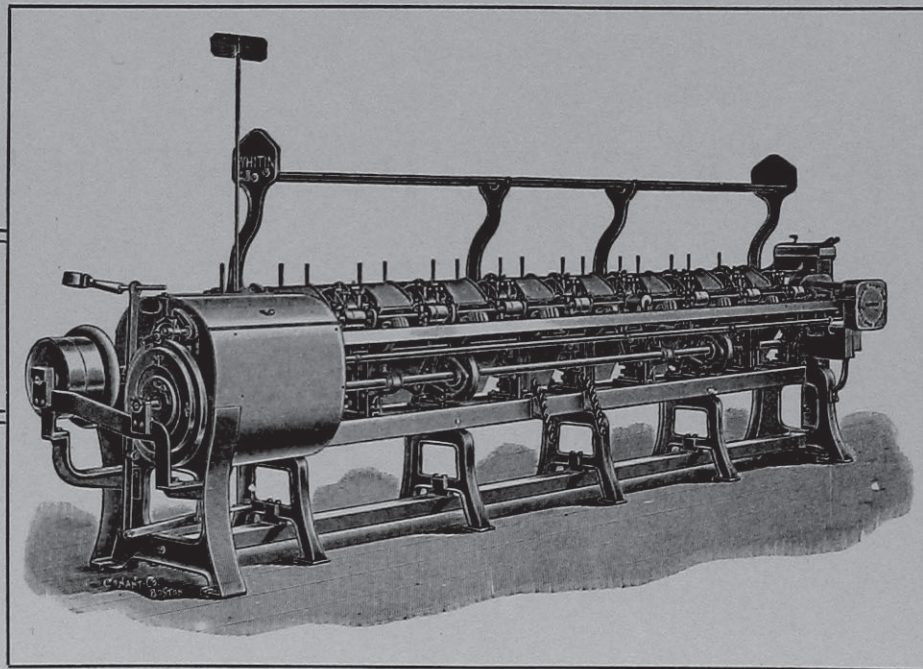


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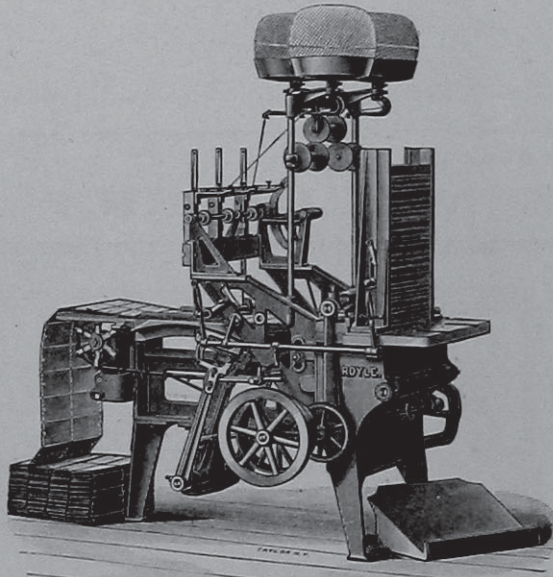
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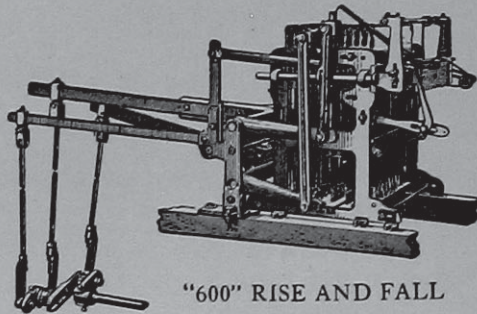
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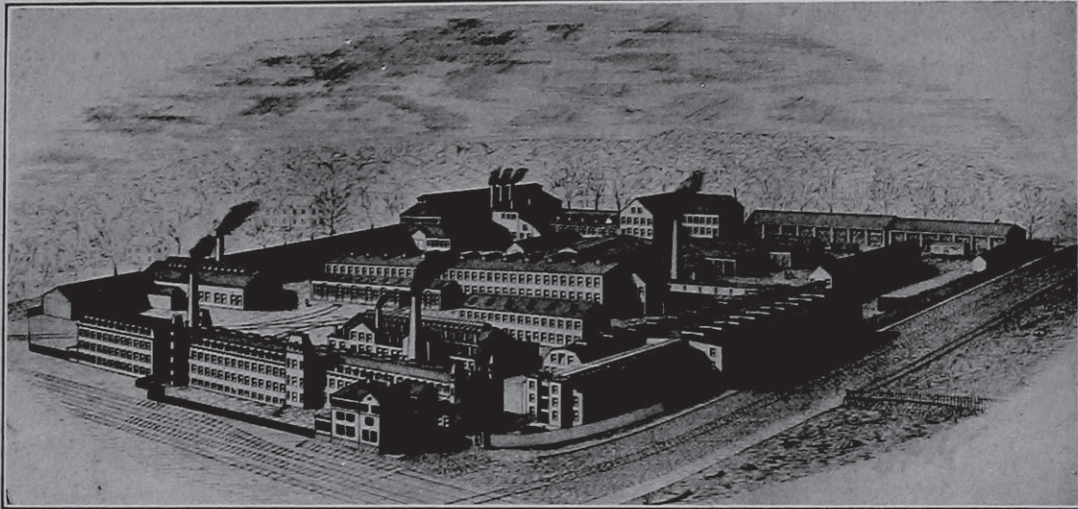
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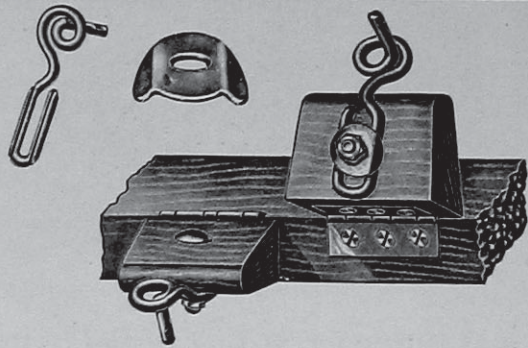
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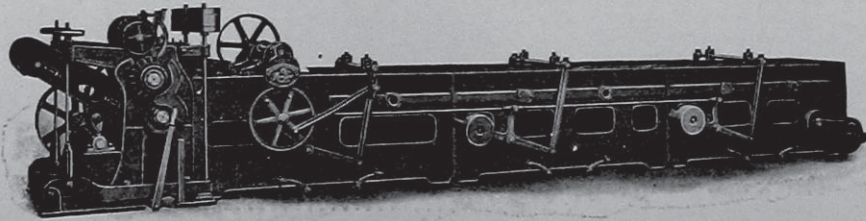
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# Posselt's Textile Journal

Vol. V.

July, 1909.

No. 1.

## COTTON FINISHING.

GIVING A DESCRIPTION OF THE VARIOUS PROCESSES.  
WITH DETAILS AS TO THE MOST APPROVED MACHINERY.

(Continued from page 162, Vol. IV, No. 6.)

Besides the use of the inspecting table, the burling iron and a pair of scissors, cotton fabrics are frequently burl'd and trimmed automatically by machinery, the removal of knots, shives, loose ends, etc., being then accomplished either by means of rubbing or by combing.

In machines of the first kind, the face and back of the cloth is brought into contact with rotating emery rollers, which in turn rub, *i. e.*, grind off the imperfections, previously referred to, from the face and back of the fabric structure.

In the machines of the other kind, the cleaning of both sides of the fabric is accomplished by means of two sets of two sawtoothed knife blades. Said machine is of French origin, Fig. 3 showing a working diagram of it.

In the framing (which is not shown) of the machine are secured guide rollers *a*, stretch rod *b*, adjusting guide rollers *c* and *d*, to and fro moving batens *e* and *f*, the latter being provided on their two upper (roof like shaped) extensions, with sawtoothed knife blades *k*. Diagram *A* shows a portion of these sawtoothed knife blades in their top view, said blades being of a length slightly wider than the width of the fabrics handled by the machine, the teeth being of a sufficient pitch, and must be kept in a sharp condition, to permit perfect work.

for direction of motion) in turn cleans face and back of the fabric from any knots, shives, protruding loose ends, etc., as adhering either to the face or the back of the fabric. *l* indicates the crank mechanism for imparting the to and fro motion to the two sets of

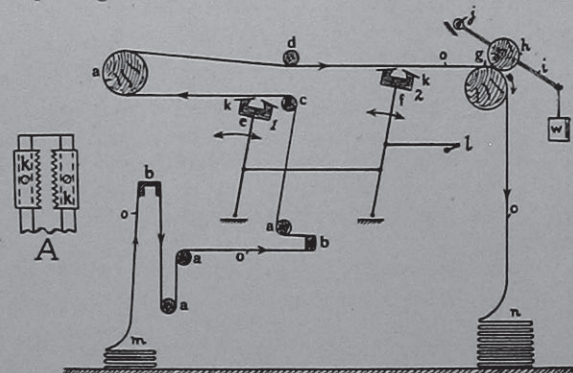


FIG. 3.

knife blades 1 and 2, *g* is the draft roller, *h* a pressure roller journaled in lever *i*, secured at *j* to the framing of the machine and carrying at its other end a weight *w* for holding pressure roller *h* in proper contact with draft roller *g*, *i. e.*, draw the cloth under operation securely out of the machine. *m* indicates the folded pile of cloth as fed to the machine, *n* the delivered,

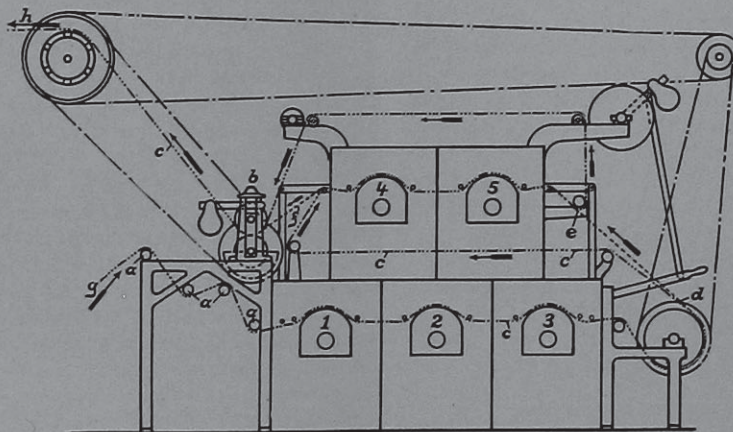


FIG. 4.

The fabric enters the machine under proper tension, in a fully opened condition, without any chance for folds formed or possible to form, and in turn is brought with its face first in contact with the two knife blades 1 and its back in turn with the two knife blades 2. The to and fro motion of these two sets of knife blades (see double pointing arrows below them,

burl'd, fabric and *o* the run of the fabric through the machine.

As will be readily understood, the greatest of care must be exercised so that the fabric passes through the machine in a perfectly smooth condition, thus preventing any chances for holes being cut by the two knife blades *k* into the fabric.



### Singeing.

In connection with most all Cotton Fabrics, more particularly Print Cloths, Percalles, Muslins, Organ-dies, Tulles, etc., singeing generally precedes all other Finishing Processes, it being a process which is becoming more and more practised in connection with the finishing of cotton goods.

Singeing a fabric after scouring, has the advantage that the process is accomplished in a more thorough manner, the face of the fabric in this instance being easier and more thoroughly cleared. The fabric, as coming from the loom, will always have an immense number of loose ends, fibres, etc., adhering to it, and which only after scouring, will become noticeable on the face, and for which reason, they are then more readily singed.

Two kinds of Singers are in use, *viz.*: The *Plate Singer*, and The *Gas Singer*.

Fabrics which have to be bleached, are preferably singed before that process, since more particularly in connection with *Plate Singeing*, fabrics will always take a somewhat yellowish tinge. For this reason, *White Goods* will not gain in clearness by the singeing process.

When singeing cloth in quantities, any number of individual pieces are sewed together, in one *string*, by means of a Mill Sewing Machine.

After singeing, an additional scouring of the fabric is practised.

Closely woven, flat goods are handled on the plate singer, whereas fancy and loosely textured goods, fabrics with raised designs and figures, are treated on the gas singer.

**The Plate Singer.** Fig. 4 shows us a diagram of this machine, as built by The Textile-Finishing Machinery Co., showing by means of dotted lines, the run of the cloth through the machine. This singer has an iron frame work which supports both the iron fire boxes, lined with fire brick, and the guide rollers necessary for conducting the cloth through the machine, so as to bring it in contact with the heated plates. The general construction of the machine is such that heat has hardly any effect upon it.

The plates are heated by a flame obtained from crude petroleum oil which in turn is atomized for combustion by either compressed air or steam.

The machine can be run to singe either both sides or one side only of the goods, in one run of the latter, through the machine.

These machines are built to contain from one up to five plates; either with the plates arranged in one or two rows, our illustration showing the latter arrangement, *viz.*: three plates on the bottom and two on the top row, the flame chambers of the upper row coming between those of the lower row, and vice versa.

In a single deck, *i. e.*, single row machine, and if dealing with a five plate singer, the two plates (4 and 5) as shown in our illustration in the upper deck, are then taken from there and put on the floor deck, either in front or back of the three bottom plates (1, 2 and

3), shown in the illustration, leaving the machine then open at its top.

Fig. 5 shows us the "Oil Flame-Singeing Machine" as built by the H. W. Butterworth and Sons Co., of Philadelphia, in its perspective view. Such a single deck, *i. e.*, one row machine, can be used to singe either both sides of the fabric or only one, whether built with two plates only, or with up to five plates. When required to singe only one side, the fabric is run from one plate to the other (over as many plates as there are in the machine) and in turn out of the machine; whereas in connection with singeing both sides of the fabric (the singer is divided into two sections, as clearly shown in our illustration) said fabric is run face downward over the plate or plates of section 1 then being guided overhead over the plate or plates of section 2 to the end of the machine, then down and in turn in the reverse direction, with its back towards the plates, over section 2; arriving at the innermost end of section 2, the fabric is then guided downward between the two sections, and in turn out of the machine. As will be readily understood, suitable guide rollers are provided wherever necessary for the fabric to make the required turns, as well as to bring it properly in contact with the plates. The H. W. Butterworth & Sons Co. also builds Singeing Machines having their plates arranged in double decks.

No matter whether the machine is constructed as a single deck or a double deck machine, the guide rollers for bringing the fabric within contact of the heated plates are adjustable so that the closeness of the singeing operation can be regulated to a nicety.

The machine is usually driven by an independent engine, so that the speed, at which the goods pass through the machine, can be easily regulated. As the goods come from the machine, they pass through a water nip, so that all sparks are extinguished before any damage possible is done.

With reference to illustration Fig. 4, numerals 1, 2, 3, 4 and 5 indicate the five copper singe plates; letters of reference *a* four tension rollers for entering the fabric into the machine. *b* indicates the water nip at the delivery of the goods from the singer.

Both ways of singeing the fabric in connection with a double deck machine are indicated in our illustration; the singeing of the cloth on one side only, being shown by means of . . . — . . . — . . . — line *c*, whereas if singeing the cloth on both sides is required, the same, after passing the lower deck of singe plates 1, 2 and 3, at point *d*, is then guided direct to the upper deck, see . . . . . line *d—e*. After passing the upper deck of singe plates 5 and 4 respectively, the fabric then goes, see . . . . . line *f*, direct to the water nip *b* and in turn out of the machine in the same way as when singeing one side of the cloth only. Arrow *g* indicates the entering, and arrow *h*, the leaving of the cloth, to and from the machine respectively.

Sometimes, in place of using smooth copper plates, corrugated plates are used. Fig. 6 shows us a specimen of such a corrugated plate, the same being made



either of cast iron, or other metal, having formed on their cloth engaging surface a plurality of channels 2, which are connected by cross grooves or air ducts; it being claimed that said channels and grooves serve the double purpose of,

cloth due to charring of the nap. It is also claimed that the ribs 3 of the plate, which are outside of the path of the cloth, are prevented by the surrounding air from becoming so hot as to burn the selvage, in case the cloth has a slight traverse.

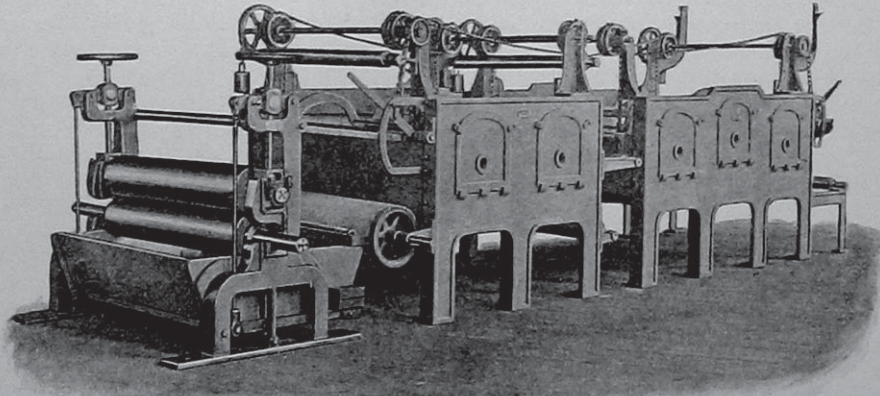


FIG. 5.

(1) Permitting complete combustion of the nap, and

(2) Maintaining the cloth in a smooth, unwrinkled condition while it passes over the singe plate, *i. e.*, acting as stretchers to the cloth under operation.

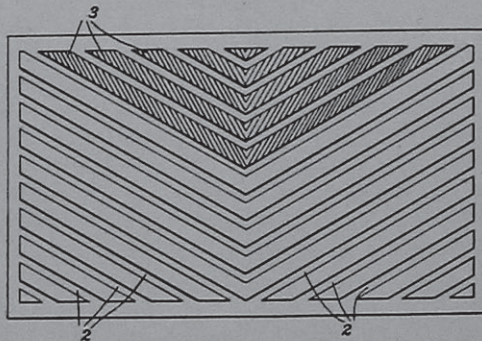


FIG. 6.

The portions of the surface of the plate between the channels are grooved, thus forming ribs 3, the grooves and ribs being inclined at an angle of about thirty degrees on the channels 2, the ribs on one side of the median line of the plate inclining in an opposite direction from those on the opposite side thereof. It is claimed that with this construction, the cloth has contact only with the ribs 3 or the portions of the plate between said grooves, the movement of the cloth over the singe plate drawing air into the channels 2 at the edge of the plate where the cloth first contacts therewith and also at the sides of the plate, and from said channels 2 the air traverses through the ducts to other channels and along the channels beyond the cloth, and that therefore there is a constant sheet of air passing in under the cloth at one side of the plate and traversing through the channels and grooves toward the other side thereof. This complete circulation of the air between the cloth and the singe plates, it is claimed, causes complete combustion, avoiding smutting of the

**The Gas Singer.** The purpose of this machine, similar to the singer previously explained, is to clear the face, or face and back of the cloth, as the case may require, from any fibres protruding from the structure by bringing the latter in this instance in contact with a gas flame; in turn giving the cloth a smooth appearance, clearly revealing the individual threads and their interlacings, *i. e.*, bringing out the grain or weave, a feature much required and sought for in many classes of fabrics; in other cloths however, Figured, more so if raised work, only a slight singeing may be all that is required, and when consequently less powerful singeing is necessary.

Fig. 7 shows a 2-burner singeing machine, as built by the Curtis & Marble Machine Co., in its perspective view; Fig. 8 being a sectional view of it, showing the passage of the cloth through the machine. In the machine illustrated, when singeing only one side, the goods have four contacts with the flames, whilst when singeing both sides they have two contacts on each side at each passage through the machine. The burners are made by a long narrow slit at the top of a flat, hollow, triangular shaped box or plate extending the

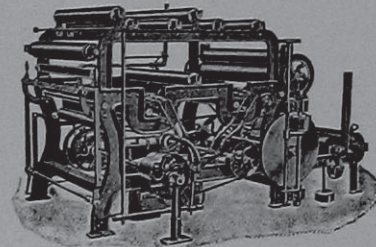


FIG. 7.

whole width of the machine, giving a solid and uniform sheet of flame from selvage to selvage; there being brass slides which go over the ends of the burners to shorten the flame when singeing narrow goods,



so that it may be no wider than the goods, thus avoiding all waste of gas at the ends of the burners.

The burners are so arranged that air under pressure is mixed with the gas just before combustion; and, by varying the quantity of air and gas admitted to the burners, various degrees of heat can be obtained, so that heavy, light, or very thin fabrics can be singed with equal facility. Each flame comes in contact with the goods at two points, so that the heat from both sides of the flame is utilized.

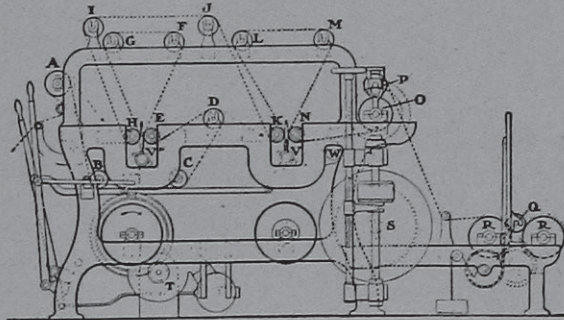


FIG. 8.

When both face and back of the goods are to be singed, the goods, on entering the machine, pass over tension and spreader bars in front, to straighten them out. They then pass over friction roller *A*, where they receive the desired amount of tension; thence in sequence around rollers *B*, *C* and *D*, to the burner roller *E*, where they are first acted upon by the flame *V''*; thence they pass upward around rollers *F* and *G*, and thence down to burner roller *H*, where they are acted upon the second time by flame *V''*; they then pass upward around rollers *I* and *J*; and down to burner roller *K*, where they are singed on the opposite side by the flame *V*; thence to rollers *L* and *M*, and down to burner roller *N*, where they receive a second singeing from flame *V*. They then pass over the steamer *W*, where a vapor of steam may be applied to put out any sparks; thence through the draft rollers *O* and *P*, which draw the goods through the machine; thence to the rolling-up attachment, where the goods are wound on roller *Q*, which rests on two winding drums *R*. The speed of the draft rollers *O* and *P* is regulated by means of the differential friction plate *S*.

A supply of air to mingle with the gas, to give complete combustion and as intense and hot a flame as possible, is supplied by the fan blower *T*.

The machine may be quickly stopped and the burners turned away from the goods by means of levers, to prevent damage to the goods while the machine is not running; these levers being so arranged that the burners must be turned before stopping the machine. Small lighter pipes are provided, by means of which the flames are re-lighted when the burners are thrown back into working position. The burner rollers around which the goods pass as the flame acts on them, may be kept cool by a continuous stream of water passing through them, thus presenting a cold surface against the back of the goods.

In place of the rolling attachment, as shown in the illustrations, if so desired, a high folding attachment, to lay the goods off in loose folds, is provided.

When only one side of the cloth is to be singed, the goods pass from the friction roller *A*, directly to the first burner roller *H*, where they are singed by the flame *V''*; thence over rollers *G* and *F* to the second burner roller *E*, where they are again singed by the flame *V''*; thence over roller *D* to burner roller *K*, and around rollers *L*, *M* and *N*, the same as referred to before; the rollers *B*, *C*, *I* and *J* not being used when only one side of the goods is being singed.

For goods where a very large amount of fibre is singed off, brushes may be added to the machine, if desired, to remove the burnt particles after singeing.

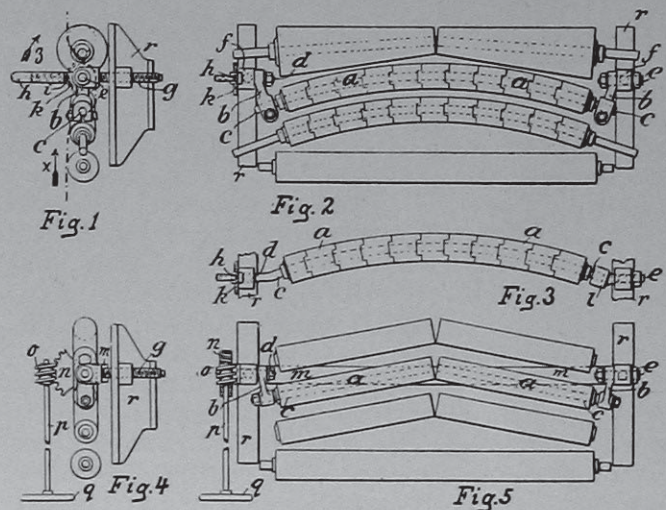
A smoke hood may be attached over the top of the machine, arranged to be connected by piping to an exhaust or ventilating fan for carrying off all gases and products of combustion.

(To be continued.)

### Improved Stretching Rollers.

It is difficult to run a fabric, especially when in a moist condition, any distance without it creasing and running in a zig zag manner. To overcome these difficulties in connection with any machine where such a smooth feeding of the cloth is required, is the object of these Stretching Rollers, also called Angular Rollers, and of which the accompanying plate of five illustrations shows a new arrangement of such stretching rollers.

The gist of the improvement consists in providing means whereby the tension roller of the series of stretching rollers can be so raised above a horizontal plane, as to cause its middle to lower and its ends to rise, or be so lowered below the same as to cause its middle to rise and its ends to lower, thereby simultaneously decreasing in the middle and increasing at the selvages, the tension of the fabric or vice versa respectively, for the purpose of straightening the filling, while the fabric is being stretched.



Figures 1 and 4 are end views, Figures 2 and 5 plans respectively, and Figure 3 a detached roller, given to illustrate details of construction.

Referring to Figs. 1 and 2, the improvement is shown as applied to a curved tension roller *a*, composed of revolving bobbins. The shaft *c* of the roller *a* is rigidly clamped to the arms *b* and the latter are



rigidly held by the rock shafts *d* and *e*. The latter are rotatably mounted in bearings *f*, having screw-threaded shanks *g* rotatably attached and held in screw-threaded bearings on the frame ends *r* to permit of vertical adjustment of the bearings *f*. Rock shaft *d*, has rigidly secured, a handle *h* carrying a spring bolt *i* and the respective bearing *f* has rigidly secured a notched segment *k*. Handle *h* serves to raise and lower the arms *b*, and thus also the roller *a*, spring bolt *i* being adapted to engage in one of the notches of the said segment, and thereby lock the said lever and the rock shafts *d* and *e* and arms *b* in the desired position of the roller *a*.

Dotted line and arrow *x* refer to the run of the fabric through the device.

Moving handle *h* in the direction of arrow *z*, the middle of the roller *a* is lowered and the ends simultaneously raised, thus taking tension off the middle and putting it on the selvages of the fabric. Moving the handle *h* in the opposite direction, will raise the middle of the roller *a*, and lower the ends thereof, that is to say, the tension is taken off the selvages and put on the middle of the fabric.

Fig. 3, shows the improvement applied to curved tension rollers composed of bobbins revolving on a shaft *c*. In this case the rock shaft *e* has a socket *l*, cranked to receive the respective end of the roller shaft *a* which is secured thereto, while the other end of the roller shaft *a* is correspondingly cranked to form the rock shaft *d*. The latter is provided with a handle *h* carrying a spring bolt and the respective bearing with a notched segment, such as shown in Figs. 1 and 2.

Figs. 4 and 5, show the improvement applied to tension rollers *a* made in two parts, set at an angle; a radial arm *b* is also secured to each outer end of the roller shafts *c* and secured upon rock shafts *d*, *e*, mounted in bearings *f*, as shown in Figs. 1 and 2. To permit of rocking the rock shafts *d*, *e* and arms *b* simultaneously, the latter are connected by a bar *m*. A toothed quadrant *n* is secured upon the rock shaft *d* in gear with a worm *o* on a shaft *p* suitably mounted, and having a hand wheel *q*.

#### The Standard of Moisture for Cotton.

By Eugene Sutro.

This standard is based upon what is known as a system of *regain*, whereby it is supposed that if 100 units of absolutely dry cotton, whether considered in fibre, yarn or fabric, dried at 221 deg. F., are exposed to the ordinary condition of the air, 8½% of moisture will be absorbed. For this reason (108½ : 8½ :: 100 : x = 7.834) 100 units of cotton, if considered under ordinary conditions, will contain 7.834% of moisture.

It must be here stated, that the actual amount of moisture absorbed by the cotton, by exposure to the air, depends upon:

- (a) the length of time exposed;
- (b) the bulk of the sample;

- (c) the temperature of the air;
- (d) the barometric pressure; and
- (e) the amount of moisture present in the air.

The standard of 8½, previously quoted, has for its basis an *average* condition of the air, but it would evidently be an impracticable method of testing, to expect uniform results from exposure of samples to an assumed average condition.

There is no commercially recognized standard for the moisture in cotton, whereas wool and silk have a recognized commercial standard, by which these fibres are bought and sold in the market. This absence of a commercially recognized standard for cotton, is not caused on account of its lower value.

Objection is sometimes made against the existing method of testing cotton, in that it involves drying the sample to be tested, at too high a temperature, *i. e.*, drying all the nature out of the yarn. It is true that the yarn, or fabric, after testing, is not as supple or elastic as before drying, but this case would apply with almost equal force at much lower temperatures, and we must remember that the regain is calculated as an addition to the weight of absolutely dry yarn, and so far as the result is concerned, it would not matter if the sample were absolutely ruined in color or strength, assuming, of course, that nothing but water had been driven off, in the process of drying.

It is interesting to note, that even if the sample is dried without the use of much heat, *i. e.*, at 130 deg. F. under vacuum, the result of the test remains substantially the same.

Many Spinners are quite convinced that yarn in their spinning rooms is absolutely dry; others, again, contend that the moisture under these conditions will be 5%, whereas, as a rule, the amount of moisture usually met with in a spinning room is far from constant, varying from 3½ to 7½%, clearly showing that no absolutely true standard can be based upon such widely varying figures, nor can it be assumed that 5% is present in any particular case.

However, the actual standard is of little consequence to Cotton Merchants and Manufacturers, so long as buyer and seller agree upon the same figure, remembering that cotton with an excessive amount of moisture is liable to mildew, more particularly if shipped to warm climates.

No standard is given for bleached cotton, but a lower figure than 8½ should be recommended, the latter being at present the recognized regain for cotton.

The Manchester (England) Testing-house dries the cotton at only 212 deg. F., in place of that adopted by the International Congress, and which, as before stated, is 9 deg. higher, and since this may seem to some persons a most vital part, it may be advisable to mention at once, that it is not known why said Testing-house came to adopt the lower temperature, those of the Continent adhering to 221 deg. F. This difference, however, is of little, if any importance, since the process of drying is an artificial one and has been adopted, not because it attempts to take out the moisture without altering other conditions, but because it is a ready means of reducing the weight to a



fairly constant condition. It must be taken into consideration, that cotton will lose water at all temperatures up to the point of charring, but there is a wide range of temperature above and below 212 deg., where the loss increases very slowly with the temperature, as will readily be seen from the fact that if cotton has once been heated for a few hours to about 160 deg., further heating to even 221 deg. will only cause a further loss of about  $\frac{1}{2}$ %.

We speak of cotton as *absolutely dry*, when dried at 212 or 221 deg., though in one sense it may be said that moisture is still contained therein, since it will lose moisture if heated still higher, absolutely dry, in a chemical sense, depending upon the meaning attached to *dryness*.

In connection with some makes of testing stoves, it has been noticed that the temperature shown by the thermometer is different to that existing at the bottom of the testing chamber; it having been found in some instances, that part of the material was burned or scorched by allowing the thermometer to rise to 212 deg., and when consequently the temperature desired for testing had to be reduced, *i. e.*, said oven cannot dry material at 212 deg. without scorching some of it. Any test of this kind where different parts of the sample are exposed to different temperatures, is, as will be readily understood, unreliable, and if used, should only be considered as a rough guide; for large samples, it is worthless.

Three hours is frequently the length of time necessary to dry samples for such rough methods of testing as those under consideration, but with any properly-constructed oven, considerably less time should be sufficient, so long as the sample does not exceed one or two pounds. There are serious objections to extending the time for drying; for instance, the increase of weight known to follow protracted heating of fibres. Weighing of the sample after leaving the oven is anything but reliable, making exact results a matter of chance. If sample be tested immediately after removal from the oven, it causes an upward current of air from that side of the scales, thus giving the weight too light, and if left to cool before weighing, it will absorb moisture from the air and become too heavy. No guess can be made at the correct result, and the proper alternative is, of course, the use of such ovens where the weighing is conducted in the hot atmosphere of said ovens.

In conclusion let us mention that drying at 160 deg., is a process requiring at least two hours' exposure under the best possible conditions, and when the sample does not exceed 2 lbs. the difference between drying at 160 deg. and 221 deg. seems to be that the latter process shows from 0.5 to 0.7% more moisture, or rather, apparent moisture. If samples are dried at 221 deg., from the commencement, not more than forty minutes should be required to give a constant weight.

Drying in a properly-constructed oven up to 230 deg., should exert no scorching effect on the fibre, yarn or fabric under testing.

## COTTON SPINNING.

### The Ring Frame.

(Continued from page 169, Vol. IV, No. 6.)

#### HOW TRAVELERS ARE MADE.

The steel used in the manufacture of ring travelers is imported generally from Sweden, where the same is made into rods for exportation. Care must be used to only select rods of uniform quality and freedom from impurities, since an imperfect stock used will make its presence known in the finished traveler, by lack of smoothness, finish or temper. Although as a rule great care is taken by the manufacturers of travelers in testing this stock before it is drawn into wire, it may be the case that a piece of this stock, which has passed inspection, and which to all appearances is right in every particular, will work its way through all the processes of manufacture undetected until nearly the very last process, that of tempering, and when it will turn out poor and thereby cause an entire lot, consisting of several hundred thousand travelers nearly finished, to be consigned to the waste heap.

The stock when it is received in this country is in the form of round rods, about  $\frac{1}{4}$  inch in diameter, and after being inspected it is annealed to make it sufficiently soft for the first drawing, which reduces the rod somewhat in size; and this operation of annealing and drawing is repeated many times until the desired size of finished wire is obtained. The last few drawings must be performed very accurately, in order to arrive at precisely the correct size of the wire, and to determine this, a very delicate micrometer gauge is used, which accurately records a variation of one ten-thousandth of an inch between the sizes of the wire. The wire is then rolled or flattened, according to the size, style and weight of traveler to be produced, by running the wire through a pair of hardened steel rolls, ground very smooth and accurate. These rolls will show signs of wear in a short time, and when they must be replaced by new ones.

After the wire has been rolled once, it is taken off the reel and annealed, after which, when cool, it is again sent through the rolls, this operation of rolling and annealing being repeated several times until the specified width, thickness and strength of wire are obtained, and when this is finished, the wire is again bound into small coils and sent to be annealed for the last time before cutting and bending them on automatic machines to the various sizes and styles of travelers in use.

Every one of these small pieces of wire must be cut off by the machine precisely alike, as any variation, even if but a trifle, not noticeable to the naked eye, but discernible under a magnifying glass, will alter the weight of the travelers. The workman must keep continually weighing and examining them as fast as they are made, so as to avoid any trouble of a change in their weight, and which would spoil the lot.

The hardening process is the most important as well as one of the most difficult operations, which, combined with the tempering that follows, converts the delicate particles into steel of the finest grade,



having a watch-spring temper. The travelers to be hardened are very carefully packed in layers with carbon, in small iron pots, distributed so that each traveler will be covered with carbon on all sides. When this is finished, the pots are securely covered and sealed absolutely air-tight and placed in the hardening furnace, where they are submitted to an intense heat for one whole day, after which they are taken out red hot and dumped in a solution to cool.

After the travelers are thus tempered, they are rough and black, and must be scoured for several days to smoothen their edges, and as the travelers are now very hard, this operation is an extremely slow one. When this process is finished, they are taken from the scourer to the polisher, where they remain for several days more, going through a similar process as in scouring, and when the polish is sufficiently bright, they are taken out and sent to the packing room to be again carefully weighed and temper-tested, and when they are then ready for packing in boxes for shipment to the mills.

There are many kinds of travelers, but only two principal varieties, one of them having round points, and the other having square points. Travelers also differ in the width of the wire used, giving either a broad or a narrow back. They are also different in the arch of the circle, some having a round back, and others being somewhat flattened. Then there will be found a slight difference in the flange or the turned up portion of the traveler.

Travelers should possess the right flange, to suit the ring used, and with as small a circle as will go on the ring without unnecessary breakage. Narrow flange rings will result in a stronger and stouter traveler, without increasing its weight.

#### WEIGHT OF TRAVELERS.

The tension of the traveler depends upon the counts of the yarn spun. High counts of yarn cannot pull around as heavy a traveler as the lower counts of yarn can, and which is the reason that with every change in the count of the yarn spun, there must be a corresponding change made in the weight of the traveler to be used.

The heavier the traveler, the more strain on the yarn to carry it round, and consequently the lighter the traveler the more easily it is pulled around.

If in spinning a certain count of yarn the tension of pulling round the traveler, is found to break the ends, a lighter traveler must be substituted.

The limit for lightness of traveler is the limit to which ballooning can be allowed, whereas the limit for heaviness of traveler to be used is the limit to which strain on the yarn may be allowed; and since it is desirable to strain yarn as little as possible, the ideal condition is to work the lightest traveler that will not damage yarn by beating it in its ballooning, too hard against the separator blades.

It is difficult if not impossible, to give a fixed rule for ascertaining the weight of traveler needed for a certain count of yarn, as this varies not only in different mills, but in the same mill at different times, and on different machines, and consequently it is a point

where good judgment on the part of the spinner must be used, experience being the best rule. Much depends upon the result of experience, and everything upon the conditions existing at the time. The traveler, is merely a very light piece of steel, pulled around a ring by the tension of yarn, consequently many factors will influence its speed.

For instance: a larger ring, other conditions being alike, requires a lighter traveler. More r. p. m. of spindle, other conditions being alike, requires a heavier traveler. Changing onto a lower count of yarn, other conditions being alike, requires a heavier traveler. Increasing turns of twist per inch, other conditions being alike, may require a heavier traveler. Substituting a better cotton, for example, Sea Island, Egyptian or Bender, in place of Texas or Upland, requires a heavier traveler. New frames compared to old frames, other conditions being alike, will be usually started on lighter travelers than will be used after frames are running for some time. During moist, sticky weather travelers run hard and fly off, and when, provided the yarn will stand it, a heavier traveler should be used under these conditions. Short and weak staple, or yarns requiring excessive drafting, will call for a lighter traveler than the same numbers spun from better cottons or with less draft. Other conditions are the temperature of room, condition of spinning rings, strength of the yarn, the amount of fly collecting on the travelers, etc.

All of these items quoted have an influence on the weight of the traveler needed, which however, must be heavy enough to lag behind sufficiently to wind the yarn. Too light a traveler performs imperfect winding, and consequently soft bobbins. Too heavy a traveler will stretch the yarn unduly, or even break down the ends. These are the two bad results.

When double roving is fed to the drafting rolls, be sure to use a traveler heavy enough to break down the thread in case one end of roving fails, for one reason or the other, to get incorporated into the thread. If one of the two ends of the roving fed, breaks or runs out, the resulting yarn, as spun from the single strand of roving, is only one-half the size of the count of yarn to be spun, weak, *i. e.*, has only half the strength of the normal yarn, and what means an imperfect thread, *i. e.*, waste, as long as single should continue to be delivered. If the traveler is then of proper weight, it will break down this single as soon as it appears, and consequently prevent it from being wound on the bobbin with the good yarn, until the trouble will have been noticed by the operator of the machine.

*(To be continued.)*

#### Thread Board Cleaner.

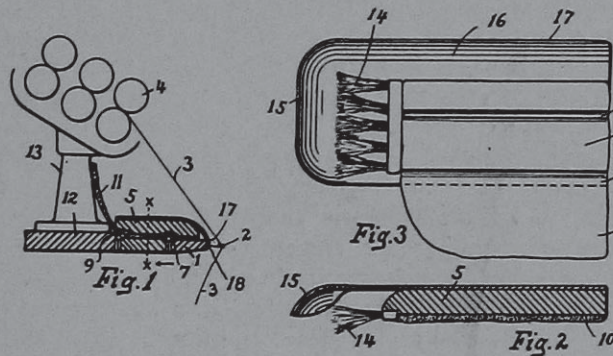
The ordinary thread board cleaner for Drawing frames, Fly frames and Ring frames, in being passed beneath the rapidly running slivers, slubbings, rovings or yarns, has no means of guiding it straight, the bristles reaching out and frequently breaking the ends; again collected waste and flyings roll up, work off to



one side, engage the rapidly running yarns and are carried off by them, thus defeating the object of the cleaner.

To overcome this trouble is the object of the new cleaner, the same being adapted to clean and wipe the whole width of the thread board and also to reach out and wipe that portion of the frame between the standards.

The construction of the new device is best explained by means of the accompanying three illustrations, of which Figure 1 is an end view, showing the



rolls and the thread board of a ring frame, showing also the improved cleaner in position thereon. Fig. 2 is a sectional side elevation on line x-x of Fig. 1, looking in the direction of the arrow. Fig. 3 is a plan view looking at the underneath side of the cleaner.

Letters of references in the illustrations indicate thus: 1 is the thread board of a ring frame, 2 the thread guide through which the yarns 3 from the drafting rollers 4 are passed. The new cleaner is designed to set on this thread board, and consists of a wooden body portion 5, the lower face of which is grooved, as at 6 and 8, throughout its length, to fit over the hinge portions 7 and 9 of the thread board. The face of the wooden block 5 is provided with a piece of felt 10, which extends beyond the back edge of the block, forming a flap 11, which is adapted to reach over and wipe the roller beam 12 and also to readily rise into the position illustrated in Fig. 1 when passing the standards 13. A row of bristles 14 extends forward from the front edge of block 5 for collecting the waste.

A shield 15 is secured to the block and extends over and around the bristles 14, to prevent said bristles from reaching out to engage and break down ends. This shield extends over along the side of the device, as at 16, its lower edge 17 extending down below the bottom of the block over the edge 18 of the thread board to form a guide to control the path of movement of said cleaner so that the same may be passed rapidly under the yarns without the danger of moving out of its regular path and breaking down any of the ends.

#### WHITIN MACHINERY FOR THE SOUTH.

The Green River Manufacturing Company, of Lakewood, N. C., E. N. Poore Supt., are adding 2,280 Whitin spindles and four Whitin cards to make 70s and 80s from combed peeler cotton.

#### AIR CONDITIONING FOR TEXTILE MILLS,

GIVING ALSO A DESCRIPTION OF THE CONSTRUCTION AND OPERATION OF THE MOST IMPORTANT SYSTEMS OF HUMIDIFIERS IN USE.

By H. P. Page.

There is no doubt but that a warm and at the same time humid (moist) atmosphere is the one best adapted for the purposes of spinning cotton yarn, both conditions, heat and moisture, going hand in hand, and playing a most important part in the production of smooth and strong yarn; for the fact that the cotton fibres are of a hygroscopic character, *i. e.*, have the property of absorbing moisture, and in this way becoming, for the time being, less brittle, more pliable, and capable of being more thoroughly incorporated among themselves in the formation of a perfect thread.

Electricity in the mill, as produced by the friction of belts and other moving parts of machinery, is a disturbing agency among loose fibres and causes fuzziness, *i. e.*, ooziness in the yarn, especially in dry weather.

The presence of moisture in the air neutralizes this effect considerably. It is also for this purpose that a reasonable degree of humidity is desirable, *i. e.*, it is absolutely necessary for successful cotton spinning, to produce atmospheric conditions of the right degrees of heat and humidity to do away with this electricity and at the same time sufficiently melt the fibrous envelope of the cotton fibre, so that the moisture can permeate into the inner cells until it reaches the inner tube, containing the true fibre.

With reference to proper heat, this has long been easily enough attained by arrangements of steam pipes, made of wrought iron, through which high pressure steam is forced. The higher temperature of the steam enables a much larger radiation to take place than is possible with low pressures, and the pipes used are correspondingly smaller.

Although there are differences of opinion as to the proper temperature for cotton spinning, from 70 deg. to 90 deg. F. is the usual temperature, and while some spinners on coarse yarns are satisfied with 70 deg. to 75 deg. F., some spinners of fine counts may stop at nothing short of 95 deg. F., but which may be considered quite unnecessary if proper attention is paid to humidification.

At various congresses and meetings in Lille, Ghent and Mulhausen, the question of temperature and its effects on the textile fibres, has been a question of some discussion, and in each instance it has been advised that the temperature should not be less than 72 deg. and not more than 86 deg. F. to get the best results.

Considering humidity, at first it may seem to us as hurtful to the life of the mill operatives, possibly more so since colds, in all their varieties, are more readily contracted during excessive rainy seasons, when fogs prevail for some time, etc. For a fact, if air is saturated to excess, evaporation in the body diminishes, with the result of injury to the health, as well as disagreeable condition of the rooms to the operatives.



Sir Benjamin Dobson (England's well known builder of Cotton Machinery), who while alive was an authority on the subject of humidity in Textile Mills, having written extensively on this subject, took observations which led him to the conclusion that the rate of mortality in textile centres where humidity is practised is less than in centres where this is not done.

For a fact, saturating the air to excess, like anything else—overdone—is harmful to the health, whereas properly applied humidified air, such as is required in a cotton mill, to permit successful manipulation of the Fibres, Yarns and Fabrics, will act just the opposite, *i. e.*, it will always be found healthier, than a dry, hot air, holding dust, flyings, as well as gaseous impurities.

Most any Mill Superintendent will know the most disastrous effect of fly, dust, etc., in the mill on the respiratory organs of the operatives, more so on excessively hot, dry days.

Introducing in turn the proper amount of humidity in the air, has the effect of diminishing, in a large measure, the presence of this fly and dust; it purifies the air of the work rooms, moreso if care is taken to see that some sort of ventilation takes place, and when the evil as well as the carbonic dioxide and other gaseous impurities held expanded in the air, are reduced to a minimum.

Regarding the proper amount of humidity to have present in a cotton spinning mill, about 60% of relative humidity is generally considered to be the most advantageous condition, that is considering fibre, machinery as well as operatives.

With reference to the proper atmospheric conditions in the various departments of a cotton mill, Mr. G. B. Wilson in his work on Air Conditioning quotes for:

Carding .....	55%	Humidity	72° F.
Combing .....	60%	"	72° "
Fly Frames (Speeders) .....	65%	"	75° "
Mule spinning up to 60's.....	56%	"	75° "
" " from 60's up to 150's.....	53%	"	77° "
" " above 150's .....	50%	"	80° "
Ring spinning up to 10's.....	60%	"	75° "
" " above 10's .....	55%	"	78° "
Weaving; light textured goods requir-			
ing little sizing .....	60%	"	72° "
" heavily sized goods.....	85%	"	80° "

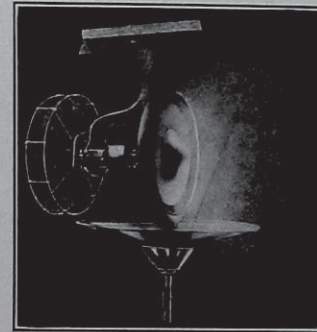
These figures Mr. Wilson has based on what are considered ideal conditions on the Continent, being aware that England prefers higher temperatures, hence his conclusion that if the right degree of humidity is maintained, the lower temperatures will be found the most advisable. If, however, through circumstances, the temperatures of the rooms cannot be governed within narrow limits, the proportions of moisture and temperature must be taken into consideration, as it is well known that yarns deteriorate if worked in too hot, at the same time too damp, conditions, and a sliding scale must therefore be determined. For example, yarn may spin well say at 75° F., but if now the temperature should be raised, say 20° F., everything else remaining the same, there will at once occur a vast difference in the humidity of the room, although the actual amount of moisture in the room remains, show-

ing that the relative humidity in the room changes with the increase in temperature.

The term, relative humidity, means the relation in percentage of the amount of moisture in the air at that time weighed in grains per cu. ft. as compared with the amount of moisture that the air would contain if it were perfectly saturated, and when any more moisture would be put in that space, it would be condensed or precipitated.

(To be continued)

So fully have the benefits arising from a humid atmosphere been recognized by Textile Manufacturers, that within a short time any number of methods for moistening the atmosphere, have come in the market. In some instances we meet most complicated Machinery installed for this purpose, requiring the attention of expensive mechanics, whereas in the next in-



stance similar results are accomplished by most simple devices, placed direct in the rooms of the mill where additional humidity is required.

Such devices, being simple in construction, are impossible to get out of order, are easily understood and taken care of by most any operative in the room.

A most prominent Humidifier of this latter type, is the "Hygrosso," and of which a description of its construction, operation, merits, etc., will be given when describing The Most Important Systems of Humidifiers in Use, in our Article "Air Conditioning in Textile Mills."

A feature, which in connection with any machine or device speaks volumes for itself, is repeat orders, and such is the case with The Hygrosso; the prominent Fall River Iron Works Co., and which is the manufacturing plant of the American Print Works, M. C. D. Borden President, having sent the fourth (4th) repeat order for complete installations, since January, 1909, to John W. Fries, 45 Lafayette St., New York City, the builder of this Humidifier.

The Hygrosso System of Humidifiers has just been installed with success in the new Silk Mill of the Leader Weaving Co., of Central Falls, R. I., clearly showing that "The Hygrosso" is as much a favorite in Silk Mills, as in Cotton Mills.

A \$1,000,000 cotton mill was chartered June 30th by the L. Banks Holt Manufacturing Company at Graham.

Holt's father built and operated the first cotton mill in North Carolina.



# Posselt's Textile Journal

*A Monthly Journal of the Textile Industries*

PUBLISHED MONTHLY BY  
E. A. POSSELT, 2028 BERKS STREET,  
PHILADELPHIA, PA.

#### SUBSCRIPTION RATES:

United States and Mexico, \$2.00 per year.

Canada, \$2.50 per year.

Other countries in the Postal Union, \$3.00 per year.

Single Copies, 25 cents.

This Journal is published on the tenth of each month.

Postage prepaid by the Publisher.

Subscriptions begin with the number following the date on which the subscription is received at this office.

In writing about subscriptions, always give your full name and address.

When writing for changes in address, always give the old address as well as the new address to which copies are to be sent.

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COPY FOR ADVERTISEMENTS must reach this office not later than the 25th of month preceding date of issue, to insure proper attention.

ALL COMMUNICATIONS WILL BE CONSIDERED AS CONFIDENTIAL.

Letters to receive attention must be accompanied by the signature of the sender, but this will not be published unless so requested.

We will always be glad to receive articles of a practical nature relating to the textile industries, and will publish such as are available.

EUROPEAN AGENTS: Sampson Low Marston & Co., Ltd., 100 Southwark Street, London, S E., England.

It has been determined by the citizens of Galveston, acting through the Business League, to give during the first week in August of 1909 the First Annual Cotton Carnival of Galveston, the event to embrace entertainment and education by exhibits, addresses, etc.

Galveston is the largest cotton port in the United States. About one-third of the cotton grown in the United States now comes to Galveston for marketing and distribution.

Exhibitions will be given of raw cotton from every cotton growing section of the world; of all kinds of manufactured cotton fabrics; of cotton factory machinery; of cotton gin machinery; of cotton oil mill machinery; of the by-products of cotton and cottonseed; of implements for cotton culture, picking and harvesting.

The report of the National Ginners' Association gives the average condition of cotton up to June 24 as 75.6. There has been an abandonment of acreage of 7 per cent., according to the report, making the total acreage 9.8 less than last year.

#### THE SILK INDUSTRY IN TURKEY.

The same reached a low mark between 1878 and 1881, but since that time progress has been slow but steady, until 1908, when the total value of the cocoon crop was over \$4,250,000.

A government station is maintained at Broussa for the microscopic examination of imported eggs and the instruction of silk-worm raisers. Eggs produced by the Broussa Institute are distributed to the most reliable silk-worm raisers. The Government has nursery gardens at Salonica, Broussa, Konia and Diarbekir for the free distribution of seed and young trees to farmers, especially in cases where diseased trees are destroyed.

The production and sale of eggs may be undertaken only by silk-worm raisers who hold diplomas from Broussa Institute, or some other reputable institution, testifying to their knowledge on the subject.

Silk-worm culture competitions are held each year in the different centers of the Empire, and prizes, consisting of microscopes and money, are given for the best kept silk-worm nurseries. There are also competitions for the purely industrial part of the industry, for the best cocoons, spun silk, etc. Prizes and diplomas are awarded at these competitions.

The cocoons produced have to be sold in the official auction rooms. In localities where there are no auction rooms the cocoons are taxed on the current price. Silk-worm raisers who wish to work their cocoons must first pay the tithe, after which they are given a *permit to transport*, enabling them to remove their cocoons from one locality to another. The peasant is exempt from this tax for 450 pounds of fresh cocoons per acre of ground freshly planted with mulberry trees, for a period of three years.

All silk-worm eggs and cocoons exported from Turkey, pay a duty of 1 per cent. The export of silk-worm eggs goes almost wholly to Russia and Persia. The average price is 26 cents per pound.

The increase in last year's crop is due both to the abundance of the cocoons and to high prices. The climatic conditions were favorable, there was little disease, and the eggs hatched out were of excellent quality. On the other hand, from March to September, 1907, the price of cocoons at Lyons and Milan was about \$1.23 per pound, a figure not attained for many years past. The prospects of this year are not so favorable. There is a decrease in the production of cocoons of about 10 per cent.; the weight is a little below the average, but this has not affected the quantity of silk from the cocoons.

Heretofore most of the Turkish silk has been exported to France, whence much of it is afterwards sent to the United States. It would be more advantageous for American manufacturers to purchase directly from Turkey, especially for the fact that the standard American silk skein is now furnished.

Captain David Clark, Charlotte, N. C., and who is well posted on Southern mill situation, estimates that new mills projected and additions to present plants amount to \$10,000,000 during the first six months of 1909.



## SILK FINISHING.

(Continued from page 167, Vol. IV, No. 6)

Lustering; Silk Thread Finishing; Cleaning and Rubbing; Sizing, Drying and Tentering; Breaking the Finish, The Button Breaker, The Knife Breaker; Calendering; Craping, Watering or Moiréing; Moiré Française, Moiré Antique, Moiré Velours; Gaufréing; Cylindering or Ironing; Singeing; Shearing; Sanding; Brushing; Pressing.

Points on Finishing Special Fabrics: Umbrella Silks, Foulards, Silk Gauze, Bolting Cloth, Black Silk Taffetas and Satins, Fancy Colored Satins, Figured Silks, Swivel Silks, Silk Velvets and Plushes, Long Poil, Cotton Back Satins.

**SILK THREAD FINISHING.** In connection with some classes of silk fabrics, more particularly that of taffetas, the subject of finishing the thread previously to weaving, is a most important question, since by means of it the thread is put not only in better condition for weaving, but the resulting face of the fabric is at the same time greatly improved.

Two makes of machines for doing this work are met with in the market, viz.: *The Keyworth*, and *The Pohl Machines*. A description of the first was given on page 158 of the November issue of the Journal.

With reference to the *Pohl Machine*, the same is brought in the market in two styles, the Vertical and the Horizontal type of Machines. The object of the process of silk thread finishing is to lay the fibre, and at the same time to reduce the chance of the yarn cockling in the fabric, to a minimum, resulting in the production of a smoother, more lustrous face of the fabric. The treatment, as will readily be understood, increases the strength of the thread.

**PURE SILK FABRICS**, *i. e.*, goods with plenty of silk in them, require no complicated finishing process; cleaning and rubbing, hot pressing, mangling, or light calendering, with or without friction, may be all that is required. Such fabrics are not sized unless a special stiff finish should be called for, or the weave be of such a far apart interlacing, that threads are apt to slip, and when sizing may partly prevent this.

Cheaper and lighter textured silks as well as Half Silks, however, are mostly sized, in order to make them appear thicker and stiffer, hence more acceptable for use, where otherwise they would not find sale.

**Cleaning and Rubbing.**

This is the process with which the silk fabric, as received from the weave room, first comes in contact with, its object being to remove any loose ends and knots, with the help of the burling iron and the scissors, or in connection with half-silks, *i. e.*, silk mixtures, also remove any greasy, shiny spots, by means of rubbing them with sponges, soaked in benzine. Such places appear frequently in these fabrics after drying, more particularly in connection with goods which after the degumming process have not been sufficiently rinsed.

Cleaning pure silk fabrics, as mentioned before, means nothing more than the removal of any knots or ends protruding from the fabric, and which have not been removed by the Weaver. It will be advisable here to mention that the warp threads (organzine) are cleaned before and at the warping process, also the filling (tram) at the throwing, previously to quilling.

A beautiful, lustrous appearance of a silk fabric depends considerably upon the uniformly, smooth position of warp and filling threads in the fabric.

The purpose of rubbing silk fabrics, is to produce a more uniform distribution of warp and filling threads, and by means of which the fabric gains not only in lustre and smoothness, but at the same time also in its touch to the hand.



FIG. 3.

For accomplishing this distribution of the threads in the fabric, we find used highly polished, thin scratchers, made of spring steel or horn, using either one of them by hand, or a series of them, if using a machine, for this purpose. For hand work, these scratchers are of a bent shape, see Fig. 3, whereas such as used in connection with machinery, are straight.

In connection with rubbing by hand, the fabric is wound upon a roller and the latter placed in a frame. An empty roller, having secured to it an apron, is located on the opposite side of the frame, the end of the cloth being secured to the apron of the empty roller. Both rollers are provided with suitable devices to permit unrolling and winding on, as the case may require, at the same time also providing means to

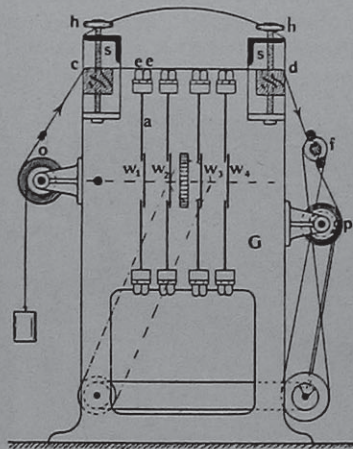


FIG. 4.

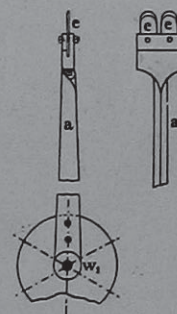


FIG. 5.

secure either roller in a locked position. It will thus be seen that the fabric, when so required, is held in a locked position between both rollers, presenting in turn a smooth, tight surface, which is first carefully cleaned, and afterwards rubbed with one of the scratchers (see Fig. 3) previously referred to. The latter procedure will distribute warp and filling threads, and consequently remove any reed marks, etc., in the fabric. After one length of the fabric has been thus treated, the roller containing the fabric to be rubbed, is loosened in its connection to the framing, the rubbed portion of the cloth wound up on the other beam, both rollers locked, and when the next section of the fabric is rubbed, the process being continued



intermittently until the complete fabric has thus been treated.

With reference to rubbing by machinery, the same are operated either continuous or intermittent, and are arranged either for rubbing crossways or lengthways or for rubbing the fabric under operation cross and lengthways.

A machine of the first construction is given in its working section in Fig. 4, the same being a favorite Swiss make.

Fig. 5 are two detail views showing the knives (scratchers) in their front and side views, showing also the disk for operating the knives.

Examining our illustrations, we find situated in the centre of the machine four disks,  $w^1$ ,  $w^2$ ,  $w^3$  and  $w^4$ , they being placed equally distanced apart from each other on a suitable shaft extending throughout the machine. Each disk carries six arms  $a$ , the same being provided at their ends with scratchers  $e$ . A chain drive is used.

The fabric is placed, wound on roller  $o$ , in suitable brackets at the feed end of the machine. From there, the fabric passes over adjustable rails  $c$ ,  $d$ , over stretch roll  $f$ , to roller  $p$ , and upon which the rubbed fabric is then wound.  $p$  is a draft roller,  $o$ , a tension roller.

In its travel from rail  $c$  to rail  $d$ , the fabric is subjected to the action of the knives or scratchers  $e$ , which rotate at about 600 r. p. m. The two rails  $c$  and  $d$  can be lowered or raised, by means of screws  $s$  operated by hand wheels  $h$ , in turn bringing the fabric, with more or less pressure, against the knives or scratchers  $e$ . The operation of the machine, as will be readily understood, is an uninterrupted one.

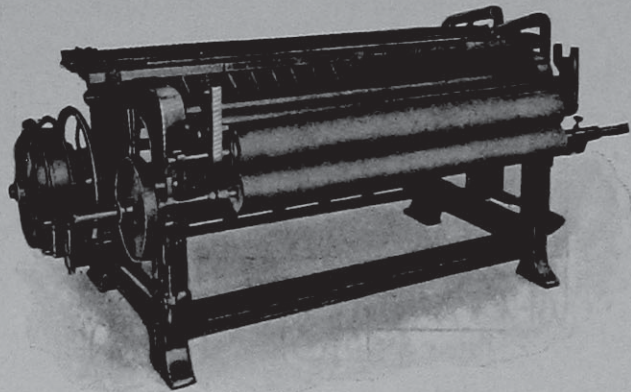


FIG. 6.

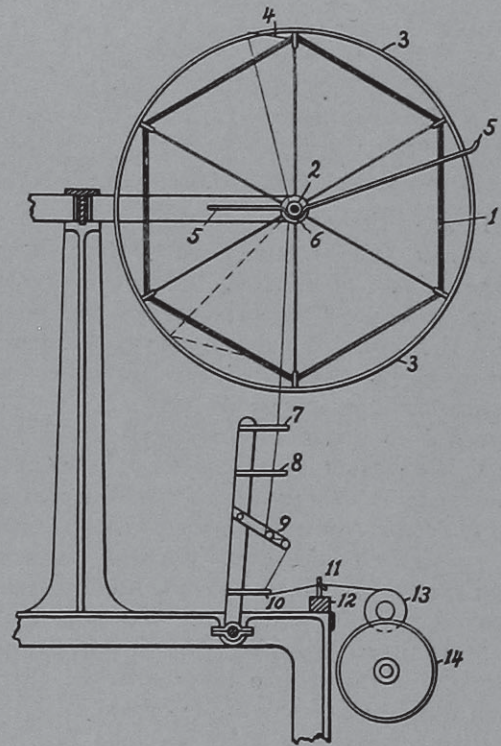
Fig. 6 shows another cross rubbing machine, in which the fabric is rubbed both ways, *i. e.*, toward and away from the selvage. This machine finds extensive use for the rubbing of umbrella silks. The machine works with an air cushion for the fabric to rest upon, the air pressure in the cushion regulating the amount of pressure given to the fabric against the knives, *i. e.*, regulate the amount of rubbing imparted to the fabric. The run of the fabric through the machine is intermittent.

(To be continued.)

#### New Silk Throwing Machine.

The same is an Italian invention, by E. Dubini, a Silk Manufacturer of Milan, which has for its object

to unite in one operation the winding and cleaning processes, the inventor claiming to cause to the manufacturer a saving in labor and waste material.



According to the construction of the new device, the silk carrying swifts 1 can be placed either below or above the frame.

The characteristic feature connected with the new device consists in that the swifts remain immovable upon the pivot 2, they being provided with a metal hoop 3, disposed laterally and with a greater diameter than that one of the swift. The latter, however, is susceptible of being turned by hand by the operator, so that she may be able to correct, if necessary, the disposition of the skein, or find its end on the outer side thereof.

The thread, which is unwound from the skein at 4, rests on the border of the hoop 3 and is led to a thread guide 5, placed on the outside, consisting in a fast or movable, smooth, metal, china, etc., support, or it can, as shown in our illustration, be shaped as a shank disposed in the way indicated and which serves for taking up the thread and leading the same automatically to the point (6) desired. On leaving the said guide, the thread is passed to a cloth cleaner 7 which also acts as a guiding and stretching device; then the thread passes to a steel plate cleaner 8, and from there to a controllable tightening device 9, whence it proceeds to the guide 10, and in turn to an eyelet 11, as is secured to a traversing rod 12, by the motion of which the thread is traversed to and fro, the width of the bobbin 13, which is revolved by means of pulley 14.

#### THE MANUFACTURE OF ARTIFICIAL SILK.

The same is fast becoming a most important industry, hence the greatest of interest is taken in any improvement in machinery and processes relating to this industry, the home of which is France and Germany.