MANUFACTURE OF NARROW WOVEN FABRICS.

(Continued from February issue.)

Lamp Wicks.

The same refer to another kind of narrow ware fabric, and may be divided into double cloth structures united by means of a special binder warp, and such as interlaced on the "hose" principle. Some wicks are also made on braiding machinery.

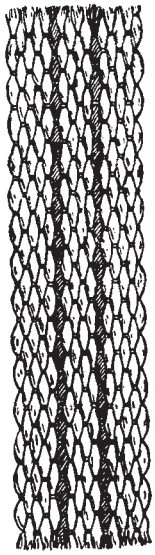


Fig. 210

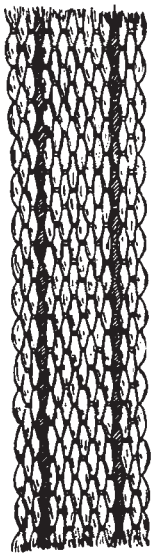


Fig. 213

Using a Binder Warp.

Lamp wicks thus made are designed for the use of flat flame burners and in their general appearance resemble a heavy, coarse, cotton ribbon, the principle observed in the manufacture of these wicks, as well as in the other kind (hose) being to use a more or less loose twisted warp, so as to give to the wick as much absorbent power as possible, in order to freely transfer the oil from its reservoir to the flame. This will also explain why by preference we are using a double cloth structure for these flat flame wicks, since by means of them the oil will rise more readily and besides a broader surface flame (2 fabric structures actually side by side) will be the result than if single cloth structure was used.

These flat wicks are made in various widths, from $\frac{3}{8}$ inch to 1 inch being average sizes most frequently used; however, wider sizes are met with, also in some instances narrower wicks.

Diagram Fig. 210 gives an illustration of a standard wick.

Fig. 211 shows the weave required for producing this structure, the same repeating on 38 warp-threads and 4 picks; the lowest number of harnesses necessary to weave this wick is five.

Examining the weave we find the same to be the regular double plain, stitched every fifth thread with a binder warp-thread interlacing with the common plain weave, and which stitches (unites) the two single cloth fabrics into one structure. Face and back warp can come from one beam or bobbin, whereas the binder warp-threads (on account of their closer interlacing) will take up more, hence must come from a different beam or bobbin.

To more clearly show the construction of the weave with reference to its fabric sketch, diagram Fig. 212 is given, showing the various warp-threads indicated thus:

Hatched type = light face warp,
Cross type = light back warp,
Dot type = binder warp,
Full type = dark face warp,
Diamond type = dark back warp.

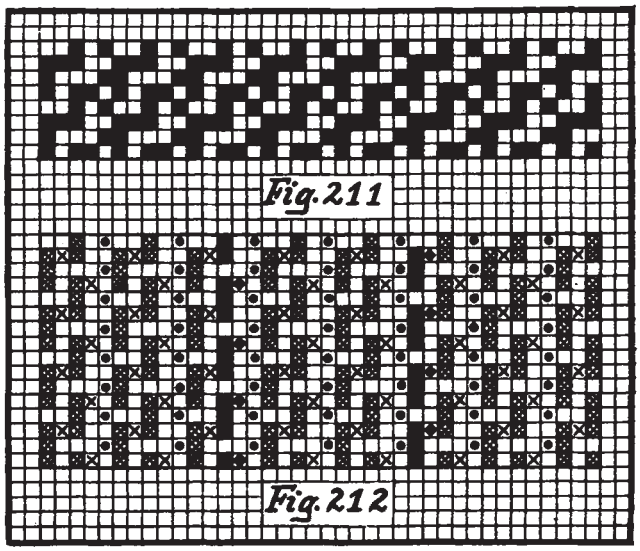
These wicks are made either all in the grey or with stripe effects as shown in fabric sketch Fig. 210. *Full* crochet type in diagram Fig. 212 shows these two line effects as shown on face of fabric sketch Fig. 210, whereas *diamond* type indicates its mate stripes on the back of the wick (not shown).

Fig. 213 shows another stripe effect, showing the two line effects placed farther apart from each other. Fig. 211 is the weave used. The only difference is in the placing of the four dark warp-threads, *i. e.*, in the color arrangement of the warp.

A different fabric structure of a lamp wick than those previously referred to is shown in connection with illustrations Figs. 214 to 218, the same referring to a more closely set warp texture compared to the former structures. In this instance it would be impossible to use the plain weave for binders, using in place of it the $\frac{2}{2}$ 4-harness twill for this purpose, *i. e.*, using only one half the number of interlacings of said binder warp in a given number of picks.

Fig. 214 shows such a lamp wick and Fig. 215 the weave for producing the former. Fig. 216 is the analysis for said weave, *viz:*

Full type = face warp,
Cross type = back warp, and
Dot type = binder warp.
Repeat of weave, 109 warp-threads and 4 picks.



A fancy color effect for such a wick is shown by means of fabric sketch Fig. 217 and its weave Fig. 218. The latter is shown in different crochet type to simplify color effect shown in fabric sample.

Repeat of weave, 102 warp-threads and 4 picks; width of fabric, 1 inch; *shaded* type indicates white, *i. e.*, grey warp in the fabric; *full* type indicates fancy face warp-threads 13 and 88, whereas *dot* type indicates fancy back warp-threads 14 and 89, not shown in illustration Fig. 217.

Double Cloth Structures Known as Hose.

This kind of lamp wicks are known as "wicks for round burners," and in their common construction are nothing more than fabrics interlaced with the common double plain weave, using either a 2, 3 or 4 fold 2-ply thread for each warp-thread of the weave in connection with a 2, 3 or 4-ply filling. Both the upper and lower cloth interlace with the plain weave, the filling alternately passing in the upper and then in the lower cloth structure.

It is well to mention that for these round wicks an uneven number of warp-threads must be used, for example, 55 warp-threads, and when 28 warp-threads are used for the upper structure and 27 for the lower structure; this arrangement prevents two warp ends (at the edge) from running together (interlacing with the filling alike) and in turn form an imperfect connection. The threading of the reed must also be taken into consideration. For example, in connection with a texture reeded 4 ends per dent use at either edge only 2 ends per dent and in the next dent draw 3 ends, previously to reeding all the way 4 ends per dent. Do the same also on the other side of the fabric. Using less ends per dent at both edges of the fabric is necessary to be done for the fact that at these places the filling

Fig. 214

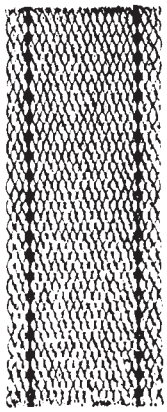


Fig. 217

during weaving is interlacing tighter (more tension) and that in turn the warp-threads there are pulled more closely together as compared to the remainder of the fabric.

Fig. 219 shows such a wick, calling for its execution at the loom for the following particulars: Warp-threads for upper structure 34, four fold 2-ply cotton. Warp-threads for the lower structure 33, four fold 2-ply cotton. 25 picks per inch in loom, using a 4-ply filling.

The width of these lamp wicks can be either increased or decreased, conforming to the size of the burner; 1¼ inch to 2½ inch wide structures (on the loom) being fair average sizes met with.

Fancy Structures in Round Lamp Wicks.

The first affair refers again (the same as explained in connection with flat lamp wicks) to fancy striping by means of fancy (mostly blue) warp-threads used, to suit a stripe effect required. Mostly it will be one fancy colored thread introduced in the centre of each structure, *i. e.*, one thread for the upper structure and the joining end in the weave of the lower structure; again the striping may be done only in connection with one of these structures. Whichever may be the case, explanations given in connection with the striping of flat wicks will readily explain the subject.

In connection with some round burner lamps, wicks are required which for a portion of their length (about for one half) are not hose.

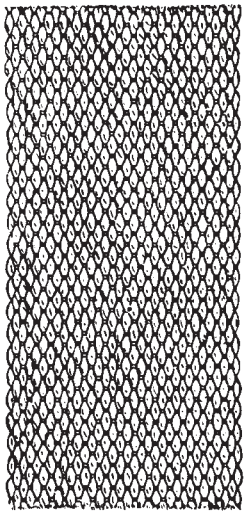
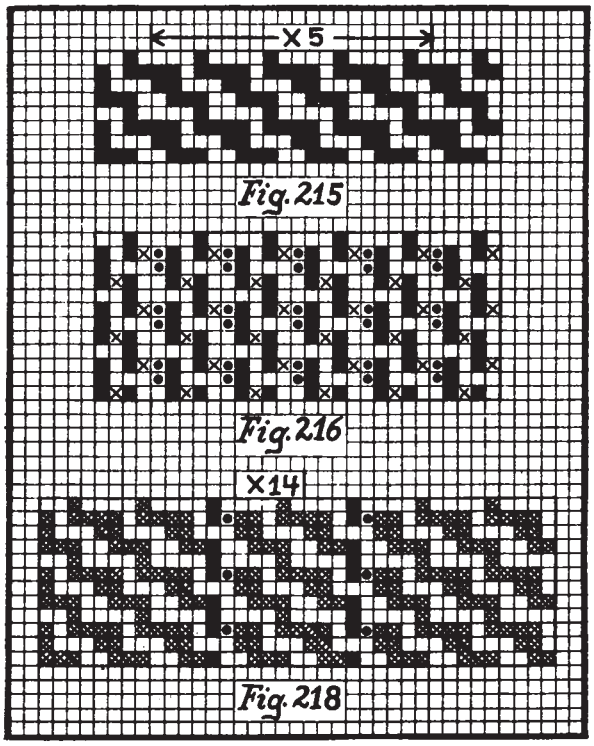


Fig. 219

Fig. 220 shows such a lamp wick, the same being from *a* to *b* true hose, from *b* to *c* open on one side.

It then follows that in the portion of the fabric from *a* to *b* double plain 1:1 in the filling is used, whereas in the portion *b* to *c* double plain 2:2 must be used; in other words in the portion *a* to *b* of the fabric the shuttle travels alternately first through one structure and in turn through the other structure, whereas in the portion *b* to *c* of the fabric, the shuttle



travels to and fro, first both ways in one structure and next in the other structure, in this manner only uniting the structure at that edge where the shuttle changes from one structure to the other, the other edge of the structure being left open on account of the shuttle re-

turning in the same (upper or lower as the case may be) structure of the fabric. In order to better explain the subject weave Fig. 221 is given. In the same the portion of the weave shown by *full* type (see *a* to *b*) shows the formation of *full hose* weaving; portion of weave shown by *cross* type (see *b* to *c*) shows the formation of *split hose* weaving, as we may call it.

It will be readily understood that the 16 picks of each style of weaving (full or split hose) as shown

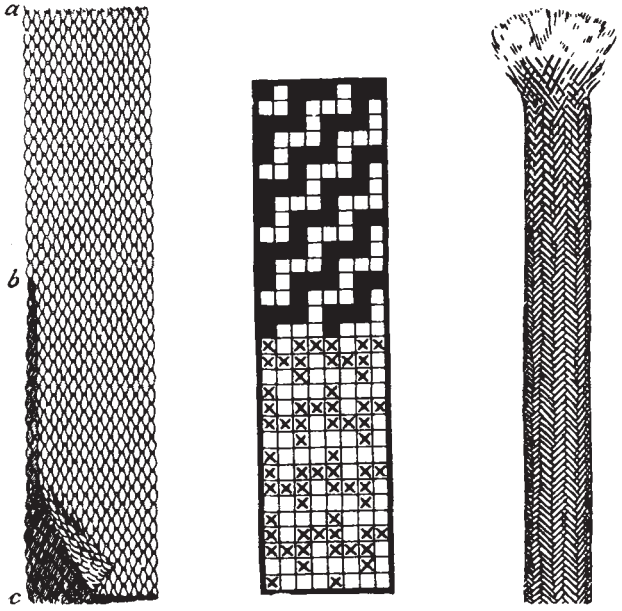


Fig. 220 *Fig. 221* *Fig. 222*

in connection with weave Fig. 221, are any number of times duplicated, previously to changing to the mate system of weaving; the affair in connection with fabric structure Fig. 220 referring to: length of wick 6 inches; full hose 3 inches, split hose 3 inches; picks per one inch = 30, thus 30 × 3 = 90 picks full hose (as shown by means of *full* type in weave Fig. 221), and 90 picks split hose (as shown by means of *cross* type in weave Fig. 221) are required for one length of wick, as shown in Fig. 220 on a reduced scale.

Wicks Produced by Braiding Machinery.

Fig. 222 illustrates such a wick, the same referring to a round structure of about ¼ inch diameter, composed of ten strands of slightly twisted two-fold roving, encased in a covering of braiding; the average length of the wick in question being about 7 inches, used in miners' and similar lamps.

Scotland's Linen Industry.

Linen fabrics have been the chief exports from Fifeshire, Scotland, to the United States for more than a half century. During the past year, however, the exports to the United States decreased in value by $745,976 compared with 1914. The decrease has been even greater than the figures indicate, since the present prices are considerably higher than those of a year ago. Yarns have advanced from 142 per cent to 161 per cent from July last, and if compared with a few years previous, or normal times, the advance is from 290 to 308 per cent. Since the outbreak of the war, cotton has been more largely used in the Dunfermline district than in previous years. Mercerized cotton damask has been in demand both in Great Britain and in the United States.

MODIFYING STARCH FOR SIZING PURPOSES.

(Continued from January issue.)

Farina.

This starch comes next in importance to wheaten flour for sizing purposes. Farina is obtained from the tuber of the potato plant. It is used principally in the sizing of goods of light reed and pick. For this class of work it gives a smoothness and pliability to the yarn which is not excelled by any other starch. The color of the cloth is also whiter and brighter than that which is obtained by the use of flour or sago.

Farina has a tendency to become "soft" after it has been on the weaver's beam for a little time, and this tendency is more marked in the lower qualities. It is, therefore, important to select the highest qualities only for sizing purposes if the best weaving results are desired. Lower qualities of farina may be employed in finishing where the question of strength is not of the same importance as in sizing.

I suggested the use of caustic soda many years ago for the purpose of preventing farina size becoming "soft" on the weaver's beam, and since that time this substance has come into fairly general use.

Farina size will not stand prolonged boiling without losing considerably in strength, and on this account it is necessary to use up the whole of the size on the day it is prepared, otherwise "soft" beams may result.

Sago.

This starch is mainly used in pure sizing, and particularly for heavily picked goods, where the chief consideration is strength. Sago has the power of strengthening the yarn to a greater extent than any other starch used in sizing, and, unlike farina, it will stand prolonged boiling without losing strength. Advantage is taken of this in the case of heavily picked goods—where it is necessary to add a large proportion of size in order to withstand the friction of the harnesses and reed in weaving—to reduce the harshness of the sized yarn to a minimum. For this class of work it is customary to keep the sago size on the boil the whole of the day, taking care to make the mixing sufficiently strong, in the first place, to compensate for the dilution which takes place through the water condensed from the steam used in boiling.

Sago is also used for "light picked" goods. In this case it is not necessary to boil for so long a period as in the case of heavily picked goods. But in any case sago size should be boiled for at least two hours before being used in the tape frame.

Sago is used for sizing the colored yarn in dhootie bordered goods. For this purpose it is eminently suitable, especially in the case of narrow borders, because it will stand prolonged boiling to which all size must, of necessity, be subjected in the colored box, on account of the slowness with which the size is picked up. The reason for this slowness is the small number of "ends" which pass through the size in this box. If farina size were employed in the colored box it would lose its strength long before it was used up, and the yarn would be "soft" and unfit for weaving.

It has been found that sago can be made suitable for use with less boiling if a small quantity of caustic potash or soda be used in the mixing. The complete gelatinization of the starch is brought about with less treatment, and the mixing is stronger and more adhesive. Consequently, a less amount of size may be used to give the necessary strength to the yarn. Caus-