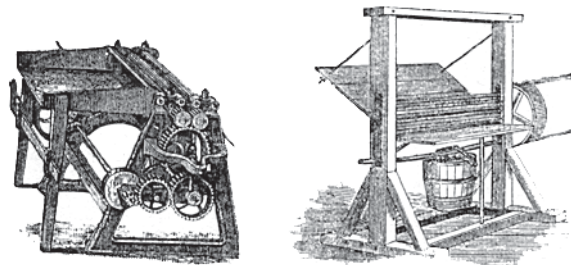


to the extent of \$15 an acre without cost to the farmers. The farmers deliver the flax stalks, as cut, with seed. The company first removes the seed by a semi-mechanical process. It then rets the straw in three large cement pits, being immersed in a liquid specially prepared by previously developing in it the bacteria that carry on the fermentation process. It is claimed that the retting is thus completed in three days and saves much of the labor as well as time necessary for the completion of the work by any other process. After retting, the straw is dried, some of it by grassing and some of it artificially in special drying rooms that are not affected by weather conditions. The straw is then passed through a breaking machine and scutched in the usual way.

The United States Linen Co., of Beloit, Wis., has also developed a chemical retting process and has built a combined thrashing and scutching plant at Le Roy, Minn., and a spinning and weaving plant at Beloit, Wis. The fibre produced is spun and woven by the company into fabrics that are afterwards bleached or dyed and sold in this country.

**Mill Operations.**

There are two general classes of linen yarns, the long line yarn and the short tow yarn. The processes

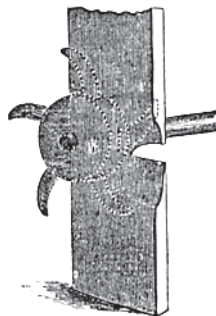


POWER-SCUTCHERS. Two Specimens.

in making line yarn are hackling, gill preparing, drawing, roving, and spinning.

For fine wet-spun yarns the hackling consists of hand hackling (usually called *roughing*), machine hackling, and hand sorting; for dry-spun yarns the roughing is optional and the hand sorting is omitted, machine hackling usually being sufficient.

In dry spinning the fibres in the roving are drawn past each other and spun into yarn of the required lea. Each of these original fibres is, however, really made up of many short fibres, 1½ to 2½ inches in length, that are bound together with a natural gum,



SCUTCHER Showing Five Knives.

and to make fine yarns it is necessary to loosen up this gummy coating so that these short fibres may slide past each other. This is done by passing the roving on the spinning frame through covered troughs of water heated by means of steam pipes, this system being called wet spinning.

**THE MANUFACTURE OF TURKISH TOWELING FABRICS.**

(Continued from November issue.)

**DESIGNING AND CARD STAMPING.**

Fig. 32 shows us a fabric sketch for a Turkish towel texture; the figure, shown in black, to be produced by means of terry pile on one side (calling it the face of the fabric) the ground, shown in white, to be produced by regular weaving on the same side. On the other side of the fabric structure (call it the back)



Fig. 32

the reverse effect is produced, and when consequently the ground will be produced by terry weaving, showing the figure depressed, *i. e.*, produced by regular weaving.

Fig. 33 shows a portion of the point paper design prepared in the regular way from sketch Fig. 32, it being the lower left hand corner of the latter. Fig. 33 readily shows us that the designing for these fabrics is a most simple affair; painting figures on white ground is all that has to be done.

Fig. 34 shows how ground warp and pile warp interlace, referring to a portion of (part of design) Fig. 33, its lower left hand corner, comprising 36 vertical rows of squares, and 14 horizontal rows of squares. At the left hand side of this analysis Fig. 34, the interlacing of the first 8 body warp-threads for 42 picks is shown by means of *dot* type. The remaining part of the analysis shows the interlacing of 36 pile warp-threads for 42 picks.

The arrangement of the two systems of warp in the fabric structure is:

- 1 end ground (*dot* and *empty*) to alternate with
- 1 end pile (*full*, *cross*, and *empty*).

With reference to picks, every horizontal row of

*a*, *b*, and *c*, thus they are (15 × 8 × 3 =) 360 cards indicated in the portion of the point paper design illustrated by Fig. 33.



Fig. 33

squares in point paper design Fig. 33 stands for 3 picks in the analysis Fig. 34, *i. e.*, in the loom, *vis:*

- 1 pick figure up
- 1 " ground "
- 1 " figure "

3 picks to the round.

Analysis Fig. 34 is more particularly given to illustrate explanations as to card stamping direct from the point paper design (See Fig. 33).

**Cutting Cards for a Two-section Tie-up.**

**FIRST SECTION.**

*Ground Warp.*

- Card 1<sup>a</sup> Cut: 1, 3, 5, 7, etc.
- " 1<sup>b</sup> Cut: 1, 3, 5, 7, "
- " 1<sup>c</sup> Cut: 2, 4, 6, 8, "

**SECOND SECTION.**

*Pile Warp.*

- Cut: Figure (see *black*) in Fig. 33.
- Cut: Ground (see *empty* in Fig. 33, see *cross* type in Fig. 34) in Fig. 33.
- Cut: Figure (see *black*) in Fig. 33.

Explanations given show how to cut three cards from one horizontal row of the point paper design, the cards for this purpose being respectively marked

**Cutting Cards for One-section Tie-up.**

Cut on a *Royle Repeater* your ground weave for rows of needles 1, 3, 5 and 7; using for

- cards *a* and *b* "cut rows 1 and 5"
- card *c* "cut rows 3 and 7"

Next take out the punches 1, 3, 5 and 7 of your Piano card stamper and cut your weave for the pile warp-threads on rows of needles (punches) 2, 4, 6 and 8.

Rule off your point paper design for this purpose in *fours*, if referring to an 8-row, *i. e.*, 400 machine.

- On cards marked *a* cut Figure
- " " " *b* " Ground
- " " " *c* " Figure.

If referring to a 600 machine (12 rows) rule off your design in *sixes* and use:

- Punches 1, 3, 5, 7, 9, 11 for ground, and
- " 2, 4, 6, 8, 10 and 12 for figure,

or vice versa, according to where you locate ground and figure respectively in the Jacquard machine, either one or the other taken first.

**Cutting Cards for One-section Tie-up Having Front-harness Attached.**

The latter carry the ground warp and interlace, provided four harnesses are used, thus:

- Front Harnesses 1 and 3: 2 up 1 down
- " " 2 " 4: 2 down 1 up.

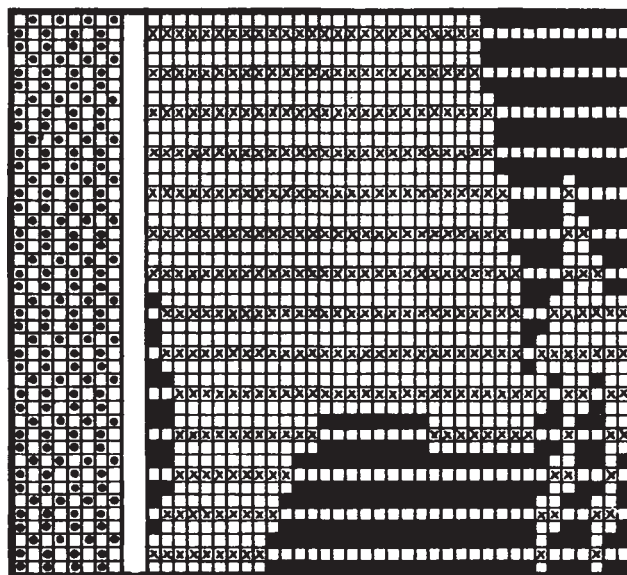


Fig. 34

The Jacquard Harness is then completely used for the pile warp, and the cards stamped thus:

- On cards marked *a* cut Figure
- " " " *b* " Ground
- " " " *c* " Figure.

The point paper design is in this case ruled off to correspond to the number of rows of needles in the machine, *vis:*

- a 400 machine in eights,
  - " 600 " " twelfths.
- (To be continued.)