

fibrous material to be operated upon is fed into the machine between the drum and the roller or rollers upon its circumference; and after moving a certain distance forward, the movement of the drum or cylinder is reversed by the action of the driving gear, so as to cause the fibrous materials to travel backwards part of the distance it had previously been fed forward. The drum or cylinder is then again caused to move the fibrous material forwards the same distance as before, by which a portion of the fibrous material after being operated upon by the rollers in opposite directions, is fed forward a given distance; and it is thus delivered from between the drum and rollers on to a frame of bars, or a perforated surface, where it is subjected to the action of a revolving brush or beaters, in order to brush or beat out the refuse or woody particles separated from the fibres during their passage between the drum and rollers. The fibrous materials may, if desired, be passed first through a machine of this character, in which the surfaces of the drum and rollers are serrated, fluted, or corrugated, and afterwards through a similar machine having a drum and rollers with plain or smooth surfaces. The revolving beaters may be made of vulcanized india-rubber, or other elastic surfaces, or they may be composed partly of beaters, and partly of brush surfaces. Suitable feed-rollers or apparatus may be arranged to work in combination with the machinery previously described. The movement forward of the fibrous materials may, if desired, be arrested for a time whilst the brush or beaters are allowed to act for a time upon the stationary fibrous material previously fed forward to be so acted upon.

When operating upon fleshy fibres, such as the aloe or fibres combined with a considerable quantity of refuse matters, streams or jets of water may be discharged upon the same as it passes over the surface of the drum or cylinder, or the rollers may be arranged to work on the under side of the drum or cylinder in a vessel containing water, an endless band being arranged upon the rollers to conduct the fibrous material below the surface of the water, whilst under operation, in its passage to and fro between the drum and rollers. The fibrous material may thus be subjected to a washing and discharging process if desired.

The second part of the invention consists in arranging machinery similar to that previously described, the drum and rollers in this arrangement having plain polished surfaces suitable for glazing or calendering the woven fabrics passed between them. The drum and rollers are caused to rotate alternately in opposite directions as previously, the forward movement being in excess of the backward movement thereof. The woven fabrics to be glazed or calendered are fed into the machine and operated upon alternately in opposite directions between the polished surfaces of the drum and rollers so as to glaze or calender the same, and the drum and rollers may be heated by steam or otherwise in order to dry the fabrics as they pass between them, the position of the rollers being capable of adjustment in relation to the surface of the drum or cylinder, by which arrangement the fabrics may be caused to travel over a larger or smaller surface of the heated drum or cylinder as may be found necessary for drying the same. The brush and beaters in this arrangement of machinery are dispensed with.

After the fibre has been produced by the ordinary machines at present in use, this machine appears to be calculated to effect a considerable improvement in softening the fibre.

IMPROVED RETTING PROCESS.

BURTON AND PYE'S Modification of Hot Water Steep for Cleaning Flax, near Belfast.

THE flax-straw is first passed through a machine composed of plain and crimped rollers. The fibre is then placed in a vat (of brick, stone, or wood), holding about a ton, which is subsequently filled with cold water. This vat has a perforated false bottom, under which steam, with a pressure of 50 lbs. to an inch, is introduced and disseminated by perforated tubes. Another tube conveys into the vat a cold mixture of Fuller's earth in water. The introduction of the mixture and the steam is continued until the liquid in the vat reaches 80°. The flax remains in it at this temperature for thirty hours, when the surface of the liquid is covered with a saponaceous froth; then an apparatus of cross-bars of wood, closely fitting into the interior of the vat, and pressed by two powerful screws, expresses the impurities from the fibre. The supply of the Fuller's earth is now stopped, and cold water is alone supplied with the steam, so regulated that the temperature is raised by degrees to 150°, the pressure being continued till the water appears free from impurities; the water is then withdrawn from the vat through a valve in the bottom, and a pressure equal to 200 tons is applied to the flax: it remains under this pressure four hours, when it is half dry.

After drying it is easily scutched, and is of a fine and soft appearance, and free from stain.

Mons. Termangae (near Lisle, France,) employs a similar process, but with hot water at 60°, and employs chalk and charcoal placed in the cold water supply instead of Fuller's earth.

M. SCRIVE'S Modification of Warm Water Process of Retting Flax, near Lisle, in France.

IN tanks of wood or stone, each made to contain two and a half tons of flax-straw, placed vertically on a perforated false bottom, slightly pressed together, but allowing free circulation of water and free exit for gases germinated by fermentation. The tank being filled with water, the whole is secured at the tops of the sheaves by narrow strips of wood 4 inches thick catching the tips or the whole length of each row of bundles; these strips of wood are kept firm by cross iron holders, secured by iron bars fastened to pieces of wood worked into the sides of the walls of the tank, leaving a surface of 4 inches deep of water over the top of the flax.

When the tank has been filled with cold water through the wooden shoot, the whole is rapidly heated to 78° Fahr. by means of steam pipes coiled under the false bottom. A second open shoot carries heated water at 90° Fahr. to discharge on the surface, besides two closed pipes, one of which brings hot water of same temperature and the other cold water. When fermentation sets in, which is ordinarily in eight hours, the pipe, as well as the shoot of water at 90°, is set at play: the first, to create a continual current of fresh water through the mass of flax, clearing off the products of decomposition and bringing them to the surface; the second, to drive this foul water to the