

of the screw moves the bearer of the lower roller one-hundredth part of an inch. A simpler mode of differential adjustment can be effected by working a rod having a $\frac{3}{4}$ in. screw at the end in a plate nut, as in the previous mode, and on the other end a $\frac{5}{8}$ in. screw working in a nut at the end of a projecting tongue, which operates on the bearing of the roller direct. By this mode the adjustment is not so delicate—one turn of the screw moves the bearer one-sixtieth of an inch, which, I think, is sufficiently delicate for all practical purposes, especially as half a turn of the screw can be given if necessary.

I also propose to widen the drum, so that the dressing surface shall not be less than $6\frac{1}{2}$ in., as I have found that narrower machines will not dress large leaves. The cover of the machine I have modified so as to make it stronger and simpler in fixing, and make provisions for the admission of water while the machine is dressing—the whole to be of wrought iron. The feed motion of my machine differs from others; it is driven by a belt running from a pulley on the main shaft on to a pulley whose shaft carries on its end a 4 in. pinion. This pinion gears into a pinion of a similar size, which is keyed on the spindle of the upper roller; both pinions are on the same level. The first pinion also drives a double carrier pinion below it, which, in its turn, reverses the motion and drives the lower roller in the proper angular direction, and at the same surface speed as the upper roller. The upper and lower rollers are, therefore, in a manner, independent of each other, as they are not directly geared together, and a freedom of movement is given to the upper roller without practically changing the depth of gear of the engaging pinions. To facilitate the replacing of a sound for a broken pinion, I propose that the ends of the shafts on which the pinions are fixed should be provided with a fixed key or feather, on to which the pinions would slide, and secured by a nut and leather washer.

Material of Moving Parts.

I think it is desirable that the journals of all the shafts should be of hardened steel. This especially applies to the lower roller and the stripping drum.

The collar of the lower roller should be of chilled iron, ground truly concentric to the journals, as it is impossible to dress well if the face of the lower roller is even slightly excentric to the journals.

The beating bars of the drum require to be made of homogenous metal, rather tough than hard. Soft steel or charcoal-hammered iron will probably be found to answer best.

The cast iron beater bars now in use are very unsatisfactory, as different degrees of hardness and brittleness are often found in the same bar. I propose to use soft steel bars secured to bars cast on the face of the drum, as shown in the model.

Speed of Driving Parts.

I propose to drive the surface of the feed rollers at from 120 to 125 feet per minute. This is about the rate at which a good feeder can deliver leaves of the ordinary length for the half day, and if carried on for eight working hours will pass through the machine from 35 to 40 cwt. of green flax. I propose to give from ten to twelve blows to the inch; less than ten is not sufficient, and more than twelve is unnecessary.

The surface velocity of the stripping drum I propose to increase from fifty feet per second, at which Price's small machines are driven, to 70 feet per second. The effect of this will be to necessitate the placing of the beater bars further apart on the face of the drum, and to secure the proper dressing of the fibre without the beating bars having to revolve too close to the face of the roller. I have observed that when the surface velocity of Price's drums were reduced below forty feet per second that it necessitated the surfaces of the roller and the beating bars to be set so close as to cut the fibre, as a lesser evil than to have a large portion of the leaf unoperated upon.

II.—CORRESPONDENCE AND REPORTS OF HOME AGENTS.

(No. 177.)—Dr. HECTOR to Mr. MORRISON.—28th October, 1871.

I have the honor to request that you will kindly use your best endeavours to get the name of "New Zealand flax" altered to "*Phormium*," or "*Phormium* hemp," in the market reports, in the same way that the term Manilla or Manilla hemp is used.

As you are aware, much confusion has arisen from our fibre being called "flax," and it has unfairly had to compete with the real flax in consequence. This will, I hope, be avoided for the future by the proposed change in the market name of the fibre, which will then stand on a proper footing with other fibres as far as regards its having a distinct name that does not imply any comparison with Irish flax.

It has been directed that the name shall be changed in the official returns of the Colony, and if you could arrange that the same change should be made in the trade returns at home you will be conferring a great benefit on the Colony.

(241.)—The AGENT-GENERAL to Dr. HECTOR.—11th January, 1872.

With reference to your letter, No. 178, of the 28th October last, addressed to Mr. Morrison, respecting the desirability of having the designation of the *Phormium tenax* altered in the market reports by the disuse of the term "flax," I beg to inform you that the brokers have anticipated any action in the matter by placing the fibre in their reports under the term "hemp."