

V.—DESCRIPTION OF NEW MACHINE.

THE following is a DESCRIPTION of the MACHINE invented by C. J. POWNALL, Esq., and patented 23rd Sept., 1870, in Continuation of Abstracts of Patents given in Commissioners Reports, 1870. (See Part. Pap., D. 14, p. 50.)

In this machine the inventor purposes, in place of allowing the knives fixed upon the cylinder of a machine to come into contact with the leaf of the *Phormium tenax* in its transit through it upon a block or roller, as now used, to substitute a "yielding medium." For this purpose, a piece of tempered sheet steel, about three inches wide, and one thirty-second of an inch thick, one side of which is securely fastened down by screws or rivets upon the block or roller, and upon which the leaf is brought into contact with the knives upon the cylinder, taking care that thus fixed it is so adjusted that the reverse side of this spring shall set up or project from the block or roller about one-quarter of an inch. The knives upon the cylinder are then brought into direct contact with, and made to bear upon the surface of this raised spring, at about half an inch from its raised outer edge; and as they will then, in revolving, continue to press upon this remaining half inch of the projecting spring after the contact has been made, a double action ensues, viz., bruising, and afterwards scraping the leaf for that distance.

This spring will be found sufficiently strong to support the leaf during the blow of the knife upon it, as it may be adjusted to any required tension, and at the same time yielding enough to allow the thick butt of the leaf to be properly cleaned without injury or waste of the fibre, and equally effecting that object upon all parts of it.

A second part of the invention consists of a mechanical arrangement whereby, with one cylinder only, both sides of the leaf are alternately scraped and cleaned. The cylinder or drum is made of metal, wood, or other suitable material, about fifteen inches in diameter, and five inches wide. In the centre of the outer surface of this drum is a groove, three and a half inches deep by one and a half inches wide. Into, or upon the two outer sides of this groove, metal knives or scrapers are fastened at suitable intervals, projecting about half an inch into the inner portion of the groove. A piece of tempered sheet steel, about three and a half inches square, is then fixed into a bracket (similar to a carpenter's square), and is securely attached, with the addition of adjusting springs or screws, into or upon the suitable part of the frame in which the cylinder revolves, so that the spring when thus fixed will project perpendicularly into and between the knives fastened as before mentioned upon the outer rims of the circular groove, giving this spring, however, a sufficient angle to cause the knife upon one side only to come into close contact and bear upon it about one half an inch from the extreme end. Leaving a clear space of about one inch, another spring, exactly similar to the last, is fixed upon the frame, but giving it the angle in the opposite direction, so that the knives upon the other side of the groove are brought into contact, and bear upon it in the same manner. The split leaf being then inserted through small rollers, fluted or otherwise, and secured by levers or springs in the usual way, is first scraped on one side between the first adjusted spring and the knives fixed upon that side of the groove to which the angle inclines. These knives then continue in their rotation, and pass so close to the edge and side of the bracket holding the second spring that no room is left for the flax leaf to pass in that direction; but it is forced by them into the intervening space of about one inch, as before directed, to be left between the springs, and then being caught and carried between the second spring and the knives fixed upon the opposite side of the groove, is secondly scraped upon the other side, and in this manner the action continues alternately, until the leaf is fully cleaned on both sides.

Experience shows that upon this principle one knife upon a cylinder of the above-named dimensions, making 200 revolutions per minute, with the small holding three inch rollers making one-third that number, will scrape one side of the split leaf perfectly clean for a space of one half inch, being the distance left between the point of contact and departure of this knife in its rotation on the face of the spring, and which space may be extended if found desirable. The number of knives upon a cylinder must therefore depend upon the velocity with which it is driven. The cylinder may be made to take in more than one half leaf by increasing the number of small holding rollers. The processes of washing, rolling, drying under cover, and scutching, are then proceeded with.

The patentee claims the invention of the use of "raised springs" to machinery for cleaning, bruising, or stripping *Phormium*.