

Flax and Hemp Brake.

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN MACHINERY FOR BREAKING FLAX AND HEMP.

Specification forming part of Letters Patent No. 34,779, dated March 25, 1862.

To all whom it may concern:

Be it known that we, GELSTON SANFORD and JAMES E. MALLORY, both of the city, county, and State of New York, have invented a certain new and useful Machine for Breaking and Dressing Flax, Hemp, and other like Fiber-Yielding Plants; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a front elevation; Fig. 2, a back elevation; Fig. 3, an elevation of the left-hand side, and Figs. 4 and 5 vertical sections taken at the lines A *a* and B *b* of Fig. 1.

The same letters indicate like parts in all the figures.

Machines have heretofore been made in which the flax and hemp could be fed in and carried through continuously and in a longitudinal direction—as by the use of geared fluted rollers; but these were merely for breaking, and we are not aware that in any instance such machines have been or could be used for dressing—that is, for cleaning out and separating from the fibers the broken woody and other fragments. In all machines of which we have any knowledge for performing the joint operations of breaking and dressing—generally termed “scutching”—a portion of the length of the flax or hemp is required to be introduced and fed in and drawn back, and then reversed to feed in the other end. This is laborious and wasteful of time and fibers, because with such mode of feeding in the ends of the bunch are unavoidably acted upon to a greater extent than the middle portion, and this results in injury to the fibers and in the production of a large amount of tow.

In the machine which we have invented the flax or other like fiber-yielding plant is fed in continuously and at right angles to the length of the stalks or leaves, and as it is carried through it is subjected to the breaking and cleaning operation and delivered thoroughly broken and scutched or cleaned.

In the accompanying drawings, *a* represents a suitable frame, and *b* a horizontal cylinder, the shaft *c* of which is mounted in the frame. The periphery of this cylinder is formed with two series of grooves in the direction of the circumference, the one series, *d*, being small to receive a series of cords, to be presently de-

scribed, and the other series, *e*, are larger, and alternate the small ones. The series of endless cords *f* pass from a grooved roller, *g*, placed above the cylinder *b*, around the back and bottom of the cylinder, and in the series of grooves *d*, then around another grooved roller, *h*, in front, and from this they pass around two guide-rollers, *i i*, to clear the cylinder, and thence back to and around the roller *g*. In this way the series of cords traveling in the direction of the arrow (see Fig. 5) are in contact with a considerable portion of the circumference of the cylinder *b*.

A little back of the vertical plane of the axis of the cylinder *b* are mounted two rock-shafts, *j j'*, each carrying a series of beaters, *l l'*, which are of about the curvature of the periphery of the cylinder *b*, the series *l* striking into one half of the series of large grooves *e*, and the other series, *l'*, striking into the other half of the said series of grooves, the two sets of beaters alternating. Each of the said rock-shafts is provided with an arm, *m m'*, near one end, and these arms are alternately acted upon by tappets *n* on the face of a wheel, *o*, that turns on the shaft of the cylinder, for the purpose of alternately lifting the beaters *l* and *l'*, and so soon as the tappets pass the arms the beaters are made to strike against the cylinder and into the grooves *e* by the tension of springs *p p'*, that project from the rock-shaft and bear on a stud, *q*. The cylinder is rotated in the direction of the arrow by a belt, *r*, from a pulley on the main shaft *s*, and the tappet-wheel is rotated in the same direction, but at a greater velocity, by another belt, *t*, from another pulley, *u*, on the same shaft, *s*, which shaft is to be driven by any suitable motor.

The machine being put in motion, the flax or other plant to be dressed is laid longitudinally on the periphery of the cylinder, and hence across the series of grooves, and it is carried by the rotation of the cylinder under the grooved cylinder *g* and held against the periphery of the cylinder by the series of cords *f*, the tension of which tends to bend the stalks into the series of small grooves *d*. It is thus continuously fed in and carried around by the cylinder and cords, and as it travels it is violently beaten by the two series of beaters *l l'*, which alternately strike it opposite to the large grooves *e*. This soon breaks the woody and other frangible parts of the plant,

and as the fibers yield to the force of the blows and bend into the grooves, and the two series of beaters alternate in position and in their blows, it follows that the fibers are drawn alternately in opposite directions over the series of edges that bound the grooves, which aids in separating the woody and other broken parts from the fibers, while the vibrations due to the blows of the beaters knock all the foreign stuff out, so that the fibers, after being thus cleaned, are delivered in front of the grooved roller *h*.

Although we prefer the construction and arrangement above described, we do not wish to be understood as limiting ourselves thereto, as other and equivalent arrangements involving the same principle or mode of operation will readily suggest themselves to the skillful mechanic—as, for instance: The cylinder, instead of being solid, may be formed of bars or rings, leaving open spaces between them, that the beaters may strike the flax opposite to them; but we prefer the solid cylinder, because the beaters will strike the flax or other material against the bottom of these grooves, which will more effectually knock out the fragments

of foreign matter. Again, instead of a cylinder, a flat bed, grooved or formed of bars, may be substituted, with straight beaters and cords to carry the flax or other material along the surface of the ridges by a continuous motion; but under such a modification the material should be carried under the grooved bed or bars to facilitate the discharge of the broken fragments from the fibers; and although we prefer to use two series of beaters, as above described, a good result will be produced by over the edges of the grooves or bars will not one series only, although the scutching action be so efficient.

What we claim as our invention, and desire to secure by Letters Patent, is—

The combination of the series of feeding-cords or the equivalent thereof, a grooved surface or the equivalent thereof, and beaters, substantially as and for the purpose described.

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Witnesses:

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