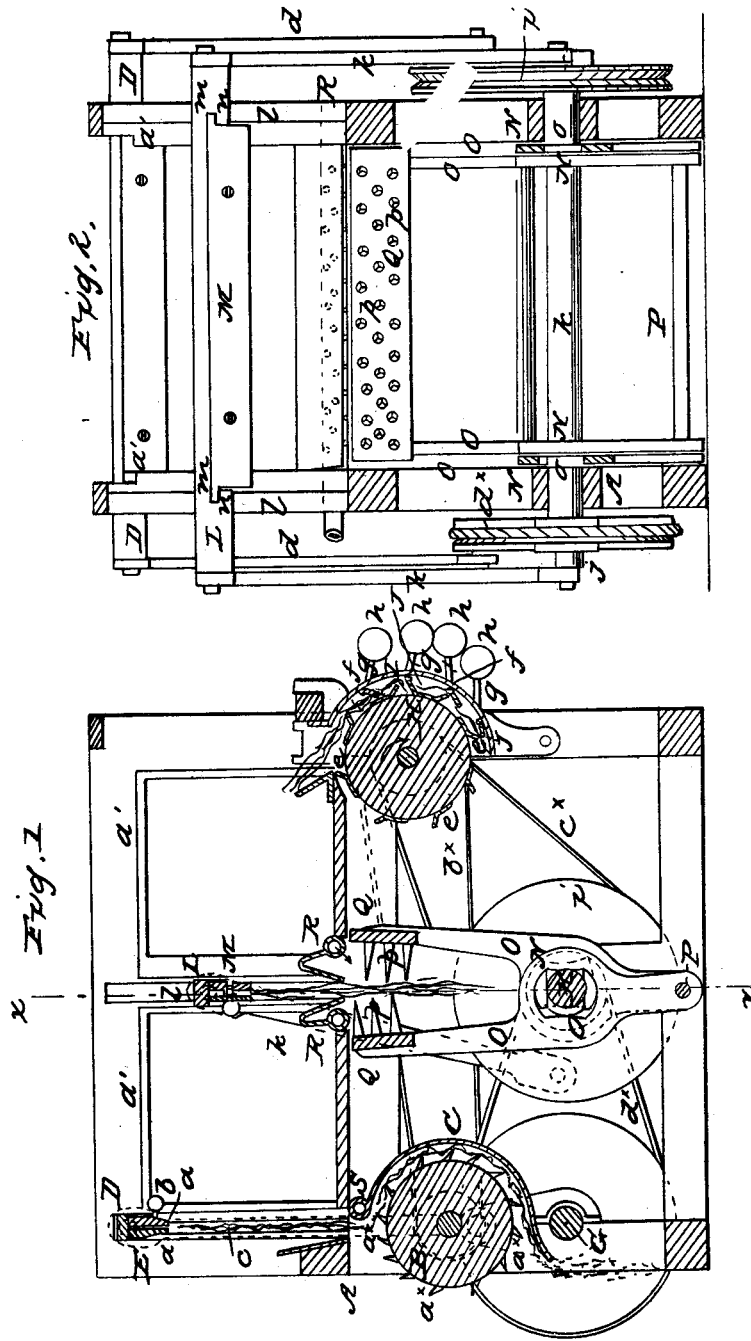


S. S. MILLS.

Machine for Preparing Flax Leaves for Manufacturing Purposes.

No. 21,771.

Patented Oct. 12, 1858.



UNITED STATES PATENT OFFICE.

S. S. MILLS, OF CHARLESTON, SOUTH CAROLINA.

IMPROVEMENT IN MACHINES FOR SEPARATING THE FIBER FROM THE PULP IN HEMP-LEAVES.

Specification forming part of Letters Patent No. 21,771, dated October 12, 1858.

To all whom it may concern:

Be it known that I, S. S. MILLS, of Charleston, in the district of Charleston and State of South Carolina, have invented a new and useful Machine for Separating the Fiber of Hemp-Leaves from the Pulp and Producing the Same in a Proper State for Manufacturing Purposes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a longitudinal central section of my invention. Fig. 2 is a transverse vertical section of the same, taken in the line *x x*, Fig. 1.

Similar letters of reference indicate corresponding parts in the two figures.

This invention consists in the employment or use of a shredding-cylinder, hackling device, and skutching-cylinder, in connection with reciprocating clamps or holders, arranged as hereinafter fully shown and described, whereby the desired work—to wit, the separation of the fibrous portion of the leaves of hemp from the soft pulpy portion—is readily effected and in a perfect manner.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a rectangular framing, which may be constructed in any proper way to support working parts, and B is a cylinder which is placed transversely in the framing at one end, said cylinder being provided with teeth *a a*, placed in nearly a tangential position, as shown clearly in Fig. 1. The cylinder B, at its inner side, is encompassed by a concave, C, and directly over the cylinder a reciprocating traverse-bar, D, is placed, to which a clamp, E, formed of two bars, *a a*, is connected by set-screws *b*, the bars *a a* extending the whole width of the frame, and the bar D having its ends passing through vertical guide-slots *c* in the framing. The bar D is operated by connecting-rods *d d* from a crank-shaft, G, placed in the framing directly below the cylinder B. The clamp E or the bars *a a* are provided at their ends with tenons, which fit in recesses at the under side of the bar D when the clamp is attached to said bar.

In the end of the framing A, opposite to that where the cylinder B is placed, there is a cylinder, H, which has flanges or plates *e* at-

tached, said flanges having a tangential or approximate position, as shown clearly in Fig. 1, and extending the whole length of said cylinder. At the outer side of the cylinder H there is placed a curved plate or concave, I, concentric with the cylinder, and having a series of flaps or plates, J, placed within it, said flaps or plates being about equal in width to the flanges or plates *e*, and they are allowed to swing loosely at the inner side of the concave I. Each flap or plate J is attached at its inner edge to a rod, *f*, and to one end of each rod *f* an arm, *g*, is attached, said arms having weights *h* at their ends, one to each. The arms *g* have such a position relatively with their rods *f* that the weights *h* will have a tendency by their own gravity to keep the flaps or plates J in a radial position relatively with the cylinder H.

In the lower part of the framing A, at about its center, a shaft, K, is placed. This shaft has a crank-pulley, *i*, at one end and a crank, *j*, at the opposite end. To the crank-pulley and crank connecting-rods *k* are attached, and the upper ends of the connecting-rods are attached to a bar, L, the ends of which pass through vertical guides *l l*. The bar L has a clamp, M, attached to it, said clamp being constructed precisely similar to the clamp E. In Fig. 2 the way in which these clamps are fitted to their bars is clearly shown, *m* representing the tenons of the clamp M and *n* the recesses of bar L, in which recesses the tenons fit.

On each end of shaft K two eccentrics, *o o*, are placed in reverse positions, and these eccentrics are fitted or work in yokes N in arms Q, the lower ends of which are fitted on a shaft, P, and the upper ends are attached to plates Q Q, the inner surfaces of which have teeth *p*, projecting from them at right angles.

Motion is communicated to the cylinder B from the shaft of cylinder H by a belt, *b b*, and motion is also communicated to shaft K from shaft of cylinder H by a belt, *c c*. The shaft G is rotated by a belt, *d d*, from shaft K.

R R are steam-pipes which are fitted in the framing A, just above the plates Q Q, and S is a steam-pipe attached to the upper part of the concave C.

The operation is as follows: The hemp-leaves are properly soaked and steamed preparatory to being operated upon by the within-described

invention. Vats may be constructed adjacent to the machine, and steam-pipes from a boiler of the engine which drives the machine may communicate with the vats. The clamp E is first filled with the butts of leaves, (shown in red,) and, power being applied to the shaft of cylinder H, the cylinder B is rotated in the direction indicated by the red arrow, and a reciprocating up-and-down movement is given the bar D. The leaves, by this movement of the cylinder and clamp, are completely shredded or slit longitudinally, the clamp E, as it descends, allowing the leaves to pass between the concave C and cylinder B, the teeth *a* acting efficiently on the leaves as the latter are drawn upward. During this operation the teeth *a* are prevented from becoming choked or clogged by jets of steam or water, which may be ejected from the pipe S, said pipe being perforated. When the leaves are sufficiently acted upon in this manner, the clamp E is slipped out from underneath the bar D, without stopping the machine, and is shoved along on guide-ledges *a'* to the bar L and secured to it, the clamp M with its leaves being removed to the cylinder H for further operation, to be followed by its successor E. The bar L has the same up-and-down motion as bar D, and feeds the leaves between the toothed plates Q Q, which are closed by the movement of the eccentrics *o o* as the bar L rises, and the leaves will be perfectly hackled, the teeth *p*, as the plates Q Q close, fitting one set or row between those of the other. The teeth *p* are kept clear by steam or water issuing from the perforated pipes R R. When the hackling operation is completed, the clamp is removed from bar L and the leaves are passed between the cylinder H and concave I and there subjected to a skutching operation, the plates *e* J serving to completely strip the pulp from the fiber, and, owing to the flaps or plates J being loaded with

weights *h* and hung as shown and described, said plates are allowed to yield or give, so as to prevent the fiber being injured and still act efficiently upon it. This will be clearly understood by referring to Fig. 1. Several clamps may be used, so that the machine may be kept in continual operation, a filled clamp being attached to bar D as soon as one is removed therefrom.

I do not claim preparing the hemp-leaves by boiling or steaming the same in vats, for this has been previously done in preparing ordinary hemp-stalks; but,

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The toothed cylinder H, concave C, provided with the steam or water pipe S, and reciprocating bar D, provided with the clamp E, arranged, substantially as shown, for shredding the hemp, as set forth.

2. The vibrating toothed plates Q Q, in combination with the reciprocating clamp-bar L, and steam or water pipes R R, for the purpose of hackling the hemp, as described.

3. The cylinder H, provided with the longitudinal plates *e*, and the concave I, provided with the loaded plates or flaps J, combined and arranged, substantially as shown, for the purpose of skutching the hemp or separating the pulp from the fiber.

4. The combination of the toothed cylinder B, concave C, toothed plates Q Q, clamp-bars D L, cylinder H, and concave I, provided, respectively, with the plates *e* J, when the whole are arranged for joint operation, substantially as and for the purpose specified.

S. S. MILLS.

Witnesses:

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