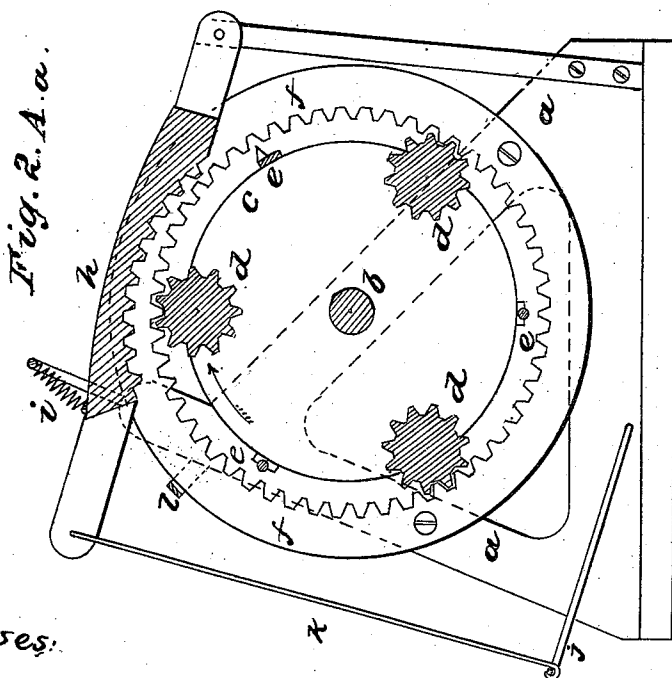
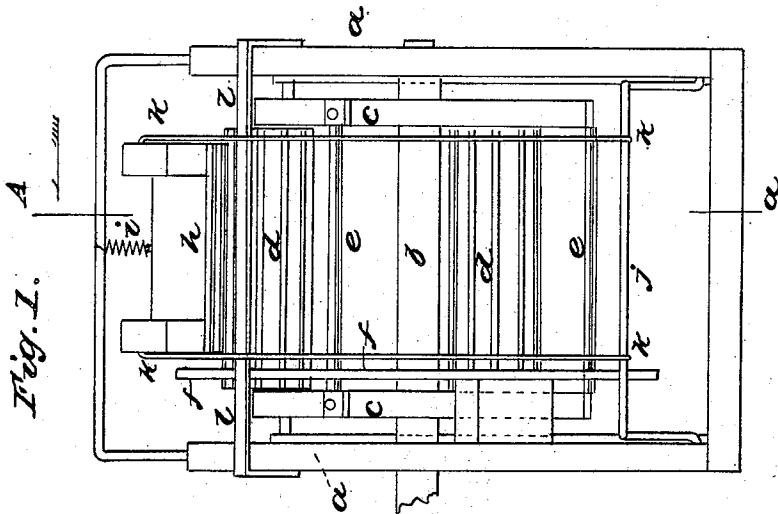


G. SANFORD.
Flax and Hemp Brake.

No. 34,697.

Patented March 18, 1862.



Witnesses:
J. De laoy
J. E. Mallory

Inventor:
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UNITED STATES PATENT OFFICE.

GELSTON SANFORD, OF NEW YORK, N. Y.

IMPROVEMENT IN MACHINERY FOR BREAKING AND DRESSING FLAX OR HEMP.

Specification forming part of Letters Patent No. 34,697, dated March 18, 1862.

To all whom it may concern:

Be it known that I, GELSTON SANFORD, of the city, county, and State of New York, have invented certain new and useful Improvements in Machines for Breaking, Cleaning, and Dressing Flax, Hemp, and other like Fiber-Yielding Plants; and I 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, and Fig. 2 a vertical section taken at the line A *a* of Fig. 1, and looking in the direction of the arrow.

The same letters indicate like parts in both the figures.

My said invention relates to machinery for breaking and scutching flax, hemp, and other like fiber-yielding plants; and it consists in effecting the breaking operation by means of a fluted roller or rollers having a positive planet motion and operating in connection with a yielding fluted concave, and also in combining therewith a hatchel or hatchels, to perform the combined operations of breaking and scutching.

In the accompanying drawings, *a* represents a suitable frame, and *b* the main shaft, to be driven by any suitable motor. On the main shaft are secured two heads, *c c*, which receive, near their periphery, the journals of a series of fluted rollers, *d*. Three such rollers are represented in the drawings; but one or more may be used, at the discretion of the constructor. In the spaces between the rollers are hatchel-bars *e*, firmly secured to the heads, and, if preferred, some or all of these bars may be provided with hatchel-teeth, as represented at *e'*. Surrounding the series of fluted rollers *d*, and firmly secured to the frame, is a ring, *f*, with cogs on its inner periphery, into which the flutes of the rollers mesh like cogs; or, instead of this, the rollers may have cogged pinions on their shafts, to engage the cogs of the rim *f*. The object of this is to give to the fluted rollers a positive planet motion—that is, a rotary motion—on their axis while they revolve about the axis of the main shaft, that their fluted peripheries may properly act in connection with the fluted surface of a sector-concave, *h*, placed above. This fluted concave is hinged at its rear end to the frame, and its front end is suspended by a spring, *i*, the tension of which lifts it clear

of the track of the fluted roller when not drawn down by a treadle, *j*, connected with its front end by rods *k k*. Just below the front end of the concave there is a bar, *l*, on which the operator can rest the flax or other material to be treated while it is being operated upon.

The mode of operation of this machine on the material is peculiar. As it is introduced between the rollers and the concave above, it tends, by gravity, to fall from the inner surface of the concave, and hence onto the fluted rollers and hatchels and in the spaces between them, and as the rollers traveling in the direction of the arrow come in contact with it they carry it up against the face of the concave and there roll under it, and, as the concave is borne down by pressing on the treadle, the material is bent into the flutes of the concave and of the roller, and is thereby gradually broken. The yielding of the concave prevents that violent breaking action which would be unavoidable if the concave were not yielding, and which would be very injurious to the fibers. As the woody parts of the plant gradually yield, the concave is depressed, that the flutes of the rollers and concave may more completely mesh into each other with the material interposed, the gradual meshing in of the flutes having, in addition to the breaking action on the woody part of the plant by bending, a rubbing action, which effectually loosens the woody part from the fibers. The moment one roller has passed the material falls by gravity from the surface, and is immediately struck by one of the hatchels, to beat out the broken and loosened fragments. In this way the rollers and hatchels in succession act on the material until all the woody and other foreign matter is separated from the fibers. The operator then draws it out and subjects the other end to the like action.

It will be obvious from the foregoing that if it be desired simply to break and loosen the woody part of the plant the hatchels may be dispensed with. I prefer to place the concave in the position represented; but it will be obvious that this position may be changed without materially affecting the action of the machine so long as one end of the concave is above the horizontal plane of the axis of the main shaft; but if placed below this plane, although it will answer for the purpose of

breaking, it will not be efficient for scutching; and, although I prefer to use a spring or its equivalent for drawing the concave from the rollers, and a treadle by which the operator can force it toward the rollers, his foot acting as a counter-spring and ready to yield to any violent action or to the varying thickness of the material acted upon, I nevertheless contemplate reversing this order by having the spring to press the concave toward the rollers and the treadle or some equivalent for drawing it away when it is desired to reduce the pressure.

I am aware that in machines for breaking flax and hemp, consisting of three fluted rollers, each having a continuous rotary motion, the flutes of the upper roller meshing into the flutes of the two lower or bed rollers, the said upper roller has been provided with springs, to render it self-adapting to the varying thickness of the bunch of flax and hemp; and I do not therefore claim, broadly, making the active surfaces of a flax-and-hemp breaking-machine self adapting by springs; and I am also aware that a patent has been granted for a machine for this purpose, consisting of fluted rollers having a planet motion such as herein described, and combined with a segment of cogs arranged in a segment of a circle about the path of the fluted rollers, and that the cogs constituting such segment are adjustable at the will of the operator; but the concave so formed

is materially different from the one employed in my said invention, for the reason that the said concave is composed of slats or cogs with open spaces between them, so that the flutes of the rollers merely bend the flax in the open spaces between the said slats, and cannot therefore crush and rub the broken particles of the woody part of the plant, as they will against the bottom of the flutes of the concave in my said machine; and the slats or cogs, although adjustable, are not yielding or self-adapting, as in my said machine, by the elasticity of the spring or the foot of the attendant, and these differences are essential to the mode of operation. I do not therefore claim, broadly, the combination of fluted rollers having a planet motion with a concave of breaking-edges.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The fluted roller or rollers having a positive planet motion, substantially as described, in combination with a yielding fluted concave, substantially as and for the purpose described.
2. The hatchel, in combination with the fluted roller or rollers having a positive planet motion and the yielding fluted concave, substantially as and for the purpose specified.

GELSTON SANFORD.

Witnesses:

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