(No Model.)

G. SANFORD.

MACHINE FOR OBTAINING FIBERS.

No. 265,154. Patented Sept. 26, 1882.

Fig2.

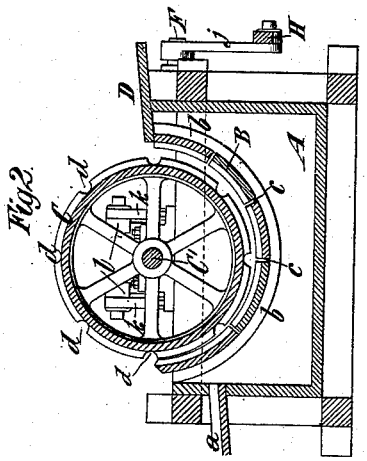


Fig1.

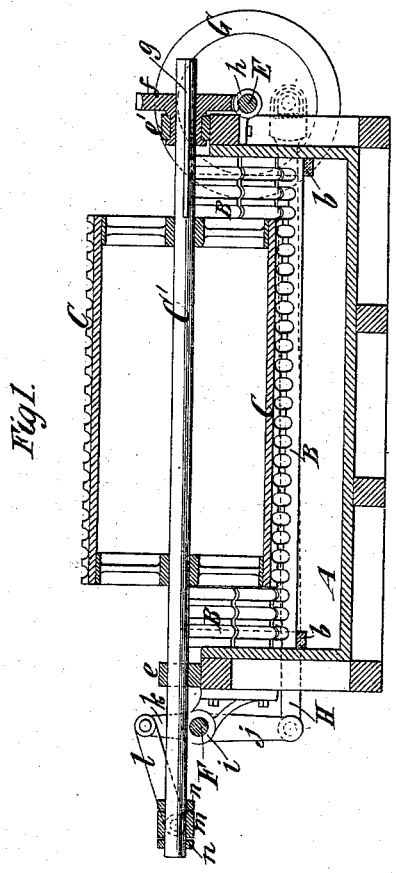
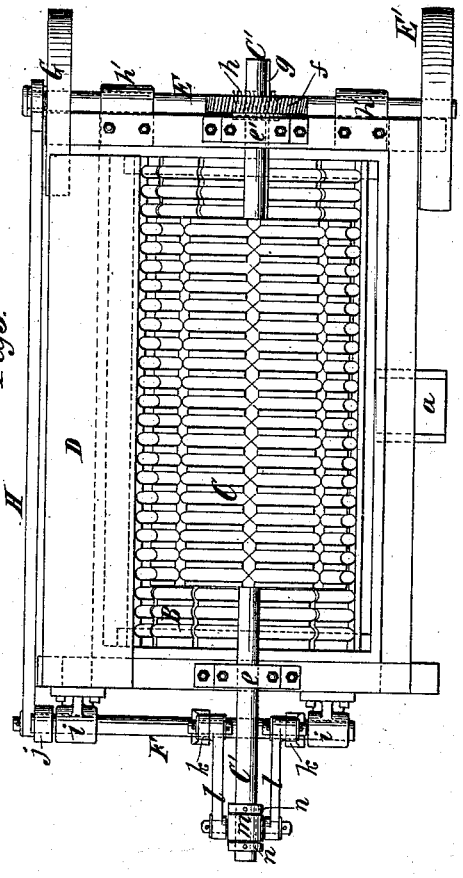


Fig3.



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UNITED STATES PATENT OFFICE.

GELSTON SANFORD, OF BROOKLYN, ASSIGNOR TO THE SANFORD UNIVERSAL FIBRE COMPANY, OF NEW YORK, N. Y.

MACHINE FOR OBTAINING FIBERS.

SPECIFICATION forming part of Letters Patent No. 265,154, dated September 26, 1882.

Application filed July 5, 1882. (No model.)

To all whom it may concern:

Be it known that I, GELSTON SANFORD, of the city of Brooklyn, in the county of Kings and State of New York, have invented a new and useful Improvement in Machines for Obtaining Fibers, of which the following is a specification.

My invention relates to machines for obtaining fibers from leaves, plants, or other fibrous or fiber-producing materials, and it is applicable both to machines for working or operating upon materials in a green state with water or in a dry state without water, also for the purpose of softening fibers which have been previously cleaned.

My invention consists essentially in the combination, with a stationary hollow bed or concave having a grooved, ribbed, or roughened surface, of a grooved or roughened cylinder arranged in said concave, and having both a slow rotary movement to draw the materials in between it and the concave and a more rapid longitudinal movement or end chase for producing a rubbing action on the materials between it and the concave. The cylinder may be roughened by means of circumferential grooves, and it may also be grooved longitudinally to better enable it to draw in materials and carry or feed them through the machine.

My invention likewise consists in a novel combination of devices for imparting the necessary rotary and longitudinal movements to the cylinder, hereinafter fully described.

In the accompanying drawings, Figure 1 represents a longitudinal vertical section of my improved machine. Fig. 2 represents a transverse vertical section thereof, and Fig. 3 represents a plan.

Similar letters of reference designate corresponding parts in all the figures.

A designates a tank, which may be supplied with water by any suitable means, and is provided with an overflow, *a*.

B designates a stationary concave or hollow bed arranged in said tank. This bed is grooved or ribbed transversely to its length to give it a roughened surface, or it may be roughened in any other suitable way. In this example of my invention the bed or concave is formed by a number of longitudinally-arranged pieces or staves supported on bearers *b* in the ends of the tank A, and secured at a little distance apart, so as to form spaces *c* between the several pieces or staves, which afford provision for the entrance of water from the tank. Instead of being formed of staves, the bed or concave might have a continuous surface and be perforated to provide for the admission of water to it. The several staves or pieces of the bed or concave B may be bolted fast to the bearers *b*, or they may be supported upon springs, so as to yield slightly under considerable pressure.

C designates a cylinder arranged above and in the bed or concave upon a shaft, C'. This cylinder may have its covering or periphery composed of any suitable material, roughened in any suitable manner. In this example of my invention the roughening is produced by grooving or ribbing the cylinder circumferentially, and it may also have several longitudinal grooves, *d*, made at some distance apart in its periphery.

D designates a feed-board at one side of the machine, from which fiber-producing materials may be fed between the cylinder and bed or concave, and the cylinder should have a slow rotary motion to draw, feed, or carry the materials through the machine. The grooves *d* enable the cylinder to catch the materials more readily and draw them positively through the machine.

In addition to its rotary movement, the cylinder C has a rapid longitudinal movement or end chase imparted to it, and this endwise movement produces a rubbing action on the materials and tends to form them into rolls, which action is very effective in separating the fiber from the waste materials, and accomplishes the desired result with but little waste.

The machine may be used either for treating green materials or fibers in a dry state for softening them, and in the latter case no water would be used in the tank A.

If desirable, a pair of feed-rollers may be arranged on or adjacent to the feed-board D, to carry~~ing~~ the materials forward and present them to the cylinder.

It is obvious that various forms of mechanism may be employed for imparting the two movements to the cylinder. I have here repre-

sented but one form of mechanism, which is very desirable. The cylinder-shaft is mounted near one end in a bearing, *e*, wherein it may turn and slide longitudinally, and at the other end it has fitted upon it a worm-wheel, *f*, which is itself adapted to rotate in a bearing, *e'*, wherein it is held against longitudinal movement. The shaft C' is caused to turn with the wheel *f* by means of a feather or spline, *g*, on the shaft fitting a groove in the wheel; but the shaft may move freely endwise.

E designates a driving-shaft, which has upon it a screw or worm, *h*, engaging with the wheel *f*, and which is adapted to turn in bearings *h'* for imparting a rotary motion to the cylinder C. On one end of the shaft E is a pulley, E', over which a belt may be passed for driving the shaft. At the opposite end of the machine is a rock-shaft, F, mounted in bearings *i*. The shaft F is provided with a downwardly-extending arm, *j*, and two upwardly-extending arms, *k*, and the latter arms are connected by links or rods *l* with a loose collar, *m*, secured upon the shaft *c'* between two fixed collars, *n*. Upon the driving-shaft E is a crank or crank-wheel, G, which is connected by a rod, H, with the arm *j* of the rock-shaft F. By the above-described mechanism the cylinder C is caused to make two longitudinal movements while it is turned a very small fraction of a turn.

If desired, springs may be placed above the bearings for the cylinder-shaft, so as to hold it down and cause it to act on the materials with a yielding pressure.

This machine may be employed with advantage for treating asbestus for the purpose of producing fibers therefrom.

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

1. The combination, with a stationary hollow bed or concave having a grooved, ribbed, or roughened surface, of a grooved, ribbed, or roughened cylinder arranged in said bed or concave, and having both a rotary movement and a longitudinal movement or end chase, substantially as described.

2. The combination, with the stationary bed or concave and the cylinder, of a worm-wheel and worm or screw for rotating the cylinder, a crank upon the worm or screw shaft, and devices for imparting a reciprocating motion to the cylinder from said crank, substantially as described.

3. The combination, with the stationary bed or concave, grooved transversely, of the cylinder C, grooved circumferentially, and also provided with the longitudinal grooves *d*, and having both a rotary movement and a longitudinal movement or end chase, substantially as described.

4. The combination of the bed or concave B, the cylinder C and its shaft C', the worm-wheel *f*, the driving-shaft E, having the worm or screw *h* and the crank G, the rock-shaft F, provided with arms *j* and *k*, the links or rods *l*, and the connecting-rod H, substantially as described.

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