(No Model.)

J. H. LORIMER.

MACHINE FOR DECORTICATING FIBROUS PLANTS, &c.

No. 456,730. Patented July 28, 1891.

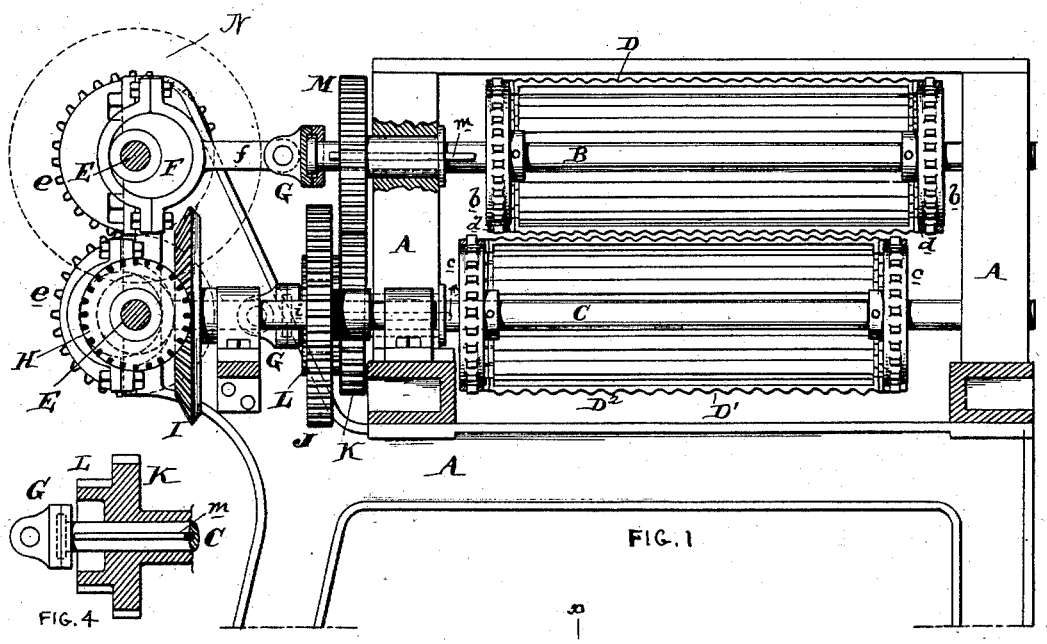

FIG. 1

FIG. 4

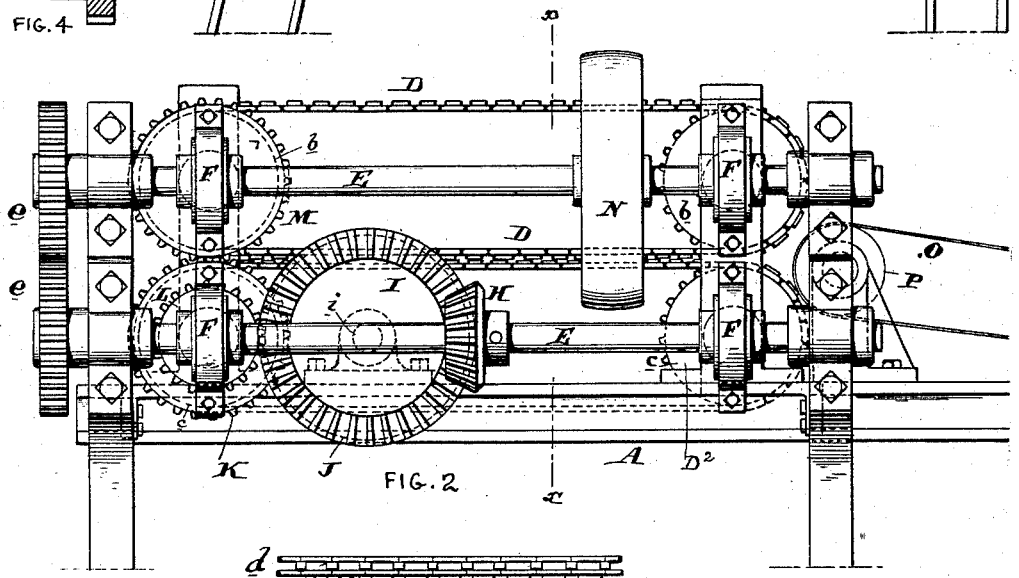

FIG. 2

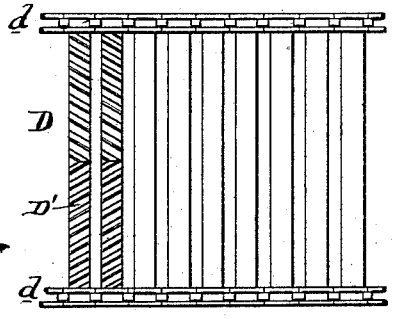

FIG. 3

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UNITED STATES PATENT OFFICE.

JOHN H. LORIMER, OF PHILADELPHIA, PENNSYLVANIA.

MACHINE FOR DECORTICATING FIBROUS PLANTS, &c.

SPECIFICATION forming part of Letters Patent No. 456,730, dated July 28, 1891.

Application filed May 26, 1890. Serial No. 353,126. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. LORIMER, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Machines for Decorticating Fibrous Plants, &c., of which the following is a specification.

My invention has reference to machines for decorticating, &c.; and it consists of certain improvements, which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

My invention has reference to mechanical devices which may be used for a variety of purposes—such, for instance, as fulling woolen clothes and disintegrating vegetable fibers, such as pine, straw, flax, jute, ramie, &c.

The machine is designed as a rubber of the material to be treated, and in case of woolen clothes or fabrics this rubbing action produces a felting or so-called "fulling" effect, while in the treatment of vegetable fibers a decorticating or disintegrating action is the result.

In carrying out my invention I employ two endless traveling aprons, which have a portion of their length arranged close to each other and caused to travel in the same direction, and while so traveling said aprons have imparted to them a lateral motion simultaneously in opposite directions. By this relative action between the aprons the materials are fed forward, and at the same time are subjected to a rubbing or disintegrating action. To facilitate the treatment the aprons are preferably formed of slats made with grooves or ribs, so as to present a series of surfaces which successively come in contact with the material being treated.

More specifically considered, my invention has reference to mechanism adapted for operating said endless aprons in the manner described.

In the drawings, Figure 1 is a cross-section of my improved machine on line $x\ x$ of Fig. 2. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of a portion of the endless apron, and Fig. 4 is a detail sectional view through one of the gears.

A is the frame of the machine, and may be made in any suitable manner. Arranged at each end of the frame A are two shafts B and C, arranged one above the other, the former carrying sprocket-wheels b and the latter sprocket-wheels c. About these sprocket-wheels b is arranged an endless traveling apron D, and about the sprocket-wheels c is arranged a similar apron D^2. These shafts B and C at one end of the machine are connected so as to rotate in opposite directions by means of spur-wheels M and K, which are journaled in the frame A and connected to the said shafts B and C by means of splines or feathers m, so that while the shafts B and C are caused to positively rotate at the same speeds they may be simultaneously reciprocated longitudinally in opposite directions.

The endless aprons D and D^2 consist of endless sprocket-chains d, between which are arranged slats of metal or other suitable material D′, preferably formed with transverse or oblique grooves, so that when said aprons are reciprocated laterally with respect to each other by the reciprocation of the shafts B and C said grooves or projections formed thereby in the two aprons which face each other shall pass in close contact, so as to produce a fulling or rubbing effect upon the material. By forming the slats D′ of metal the weight thereof adds materially to the rubbing effect in the treatment of some materials. As shown in Fig. 3, at the left-hand portion of the figure, it is preferable to form these grooves slightly oblique, and the obliquity from the center toward each of the chains is preferably different to avoid any tendency to propel the material at a different speed from that of the endless aprons. The two aprons D and D^2 are caused to travel in close juxtaposition in the space between the two right-hand and two left-hand shafts B C, as shown in Fig. 2.

Secured upon the frame of the machine A are two shafts E E, arranged at right angles to the shafts B C, and these are coupled together by gearing e, so that they revolve at the same speeds. One of these shafts E is provided with a power or band wheel N, by which all the mechanism of the machine may be driven. Secured to the lower shaft E is a bevel-pinion H, which meshes with a bevel-gear I, secured to a shaft i, carrying a spur-

wheel J, which in turn meshes with a pinion L, secured to or formed integral with the spur-wheel K, before described. By this means the rotation of the band-wheel N will impart motion to the endless chains D. Secured upon the shafts E E are four eccentrics or cams F, respectively connected with the four shafts B C B C by means of links *f* and universal heads G. As the shafts E rotate, the eccentrics F cause the shafts B C to be reciprocated longitudinally simultaneously in opposite directions, and at the same time that they are reciprocated, carrying with them the endless aprons, a rotary motion is imparted to said shafts B C, and a consequent traveling of the aprons results. With this traveling of the aprons the lateral reciprocation takes place, and hence any material which is fed to the aprons is fed forward by them and at the same time treated to a lateral rubbing effect.

O is an apron for feeding material to the aprons D, and may be guided over a roller P, carried in the main frame.

I do not limit myself to the mere details of construction which are here shown, as they may be modified in many ways without departing from the spirit of my invention.

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

1. The combination of an endless apron formed of a series of grooved bars carried by endless chains, a second apron arranged adjacent thereto, guide-wheels for said aprons, power mechanism to rotate said guide-wheels to cause said aprons to travel with their adjacent surfaces in the same direction, and means to impart to said aprons a lateral reciprocation in relatively opposite directions.

2. The combination of an endless apron formed of a series of bars carried by endless chains and provided with oblique grooves, a second apron arranged adjacent thereto, guide-wheels for said aprons, power mechanism to rotate said guide-wheels to cause said aprons to travel with their adjacent surfaces in the same direction, and means to impart to said aprons a lateral reciprocation in relatively opposite directions.

3. The combination of two endless aprons of considerable length, formed of heavy metal slats provided with grooves, suitable guide-wheels and shafts therefor, whereby said aprons travel in close juxtaposition with considerable pressure between them, due to the weight of said metal slats, power mechanism for rotating said shafts, and means for imparting to said endless aprons a lateral reciprocation in opposite directions.

4. The combination of an endless apron formed of a series of bars carried by endless chains and provided with oblique grooves, the grooves of said bars having opposite obliquity upon each side of the middle of the bar, a second apron arranged adjacent to said apron, guide-wheels for said aprons, power mechanism to rotate said guide-wheels to cause said aprons to travel with their adjacent surfaces in the same direction, and means to impart to said aprons a lateral reciprocation in relatively opposite directions.

5. The combination of two endless aprons, each formed of two endless chains with intermediate metallic slats formed with grooves, in which the grooves are arranged substantially in the length of the aprons, guide-wheels therefor, whereby a portion of the length of each apron is caused to run in close juxtaposition with a similar portion of the other apron, power mechanism for moving the adjacent portions of said aprons in the same direction, and cam or eccentric mechanism, substantially as described, acting upon substantially the extreme ends of each of the aprons for imparting a lateral reciprocation to said aprons simultaneously in opposite directions without interfering with the forward motion of said aprons.

6. The combination of two endless aprons D with sprocket-wheels and shafts B and C, substantially as set forth, connecting-gearing M and K between the shafts B and C at one end of the machine, shafts E E, connecting-gearing *e*, eccentrics or cams F F, secured upon said shafts E E, connecting-links *f*, universal heads G between said eccentrics or cams and the shafts B C, and operative connections for rotating shafts B C.

7. The combination of two endless aprons D with sprocket-wheels and shafts B and C, substantially as set forth, connecting-gearing M and K between the shafts B and C at one end of the machine, shafts E E, connecting-gearing *e*, eccentrics or cams F F, secured upon said shafts E E, connecting-links *f*, and universal heads G between said eccentrics or cams and the shafts B C, and connecting-gearing between the shafts E and shafts B C.

8. The combination of an endless apron formed of a series of bars having transversely-grooved surfaces carried by endless chains, guides for said apron, means to impart to said apron a lateral reciprocation, a second apron arranged adjacent to the first apron, guides for said second apron, and mechanism to rotate the guides of said aprons to cause them to travel with a portion of their faces in juxtaposition.

In testimony of which invention I have hereunto set my hand.

JOHN H. LORIMER.

Witnesses:
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ERNEST HOWARD HUNTER.