(No Model.)

A. ANGELL.

FLAX BRAKE.

No. 564,358. Patented July 21, 1896.

Fig. 1.

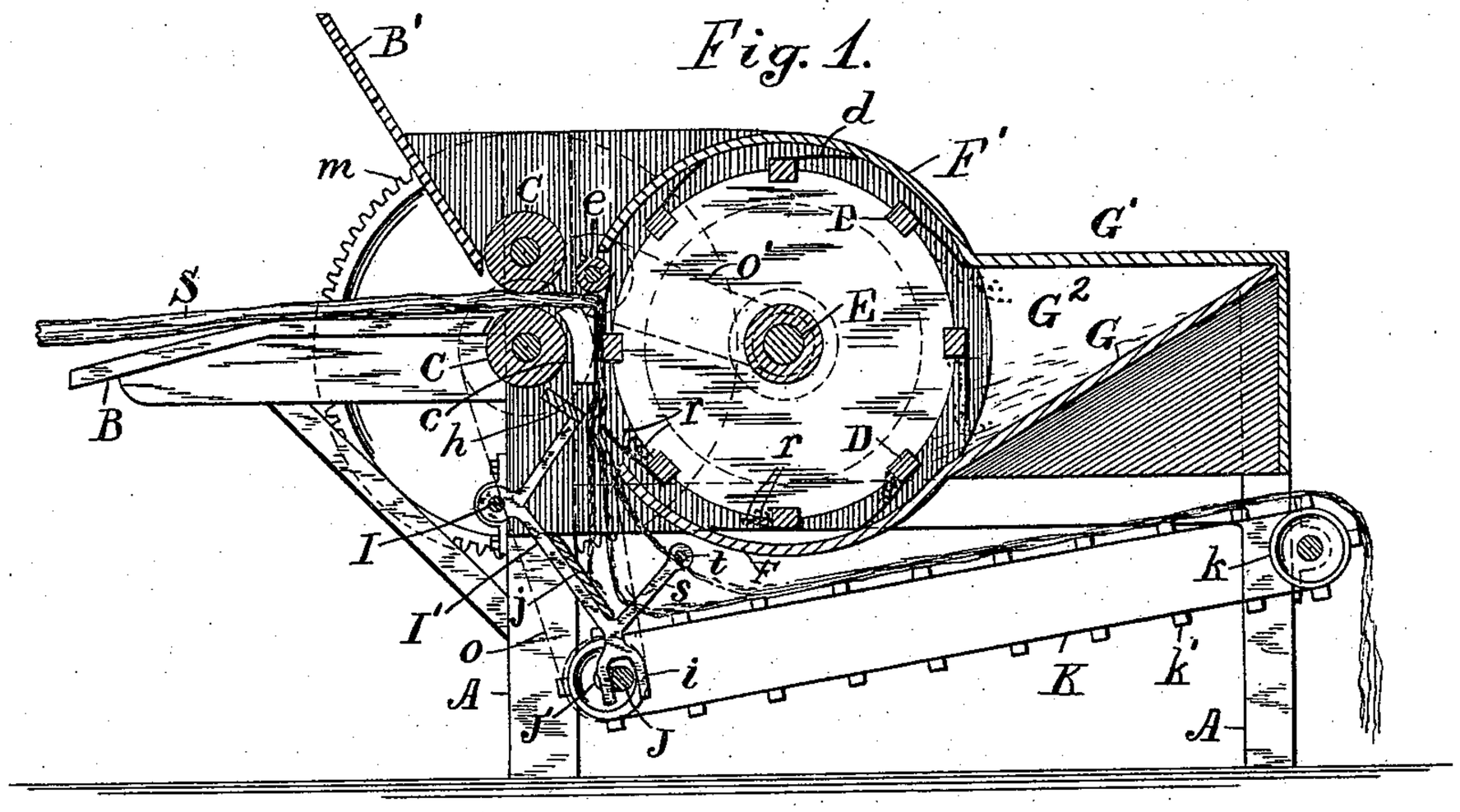


Fig. 2.

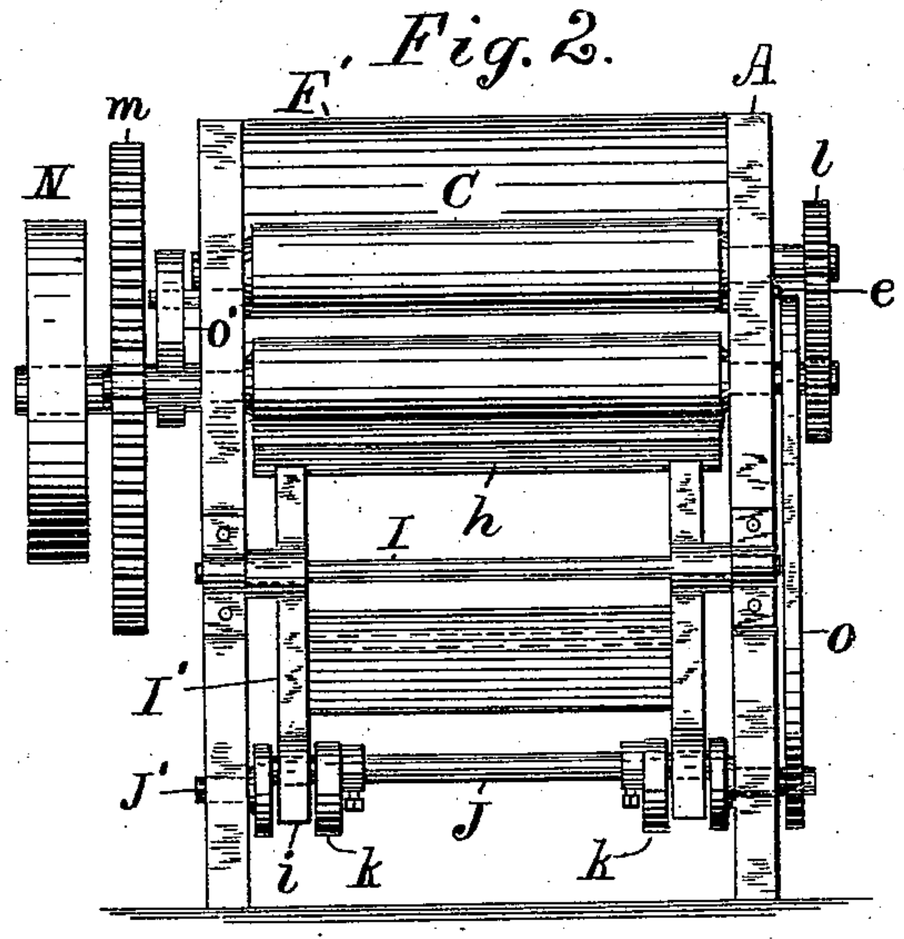


Fig. 3.

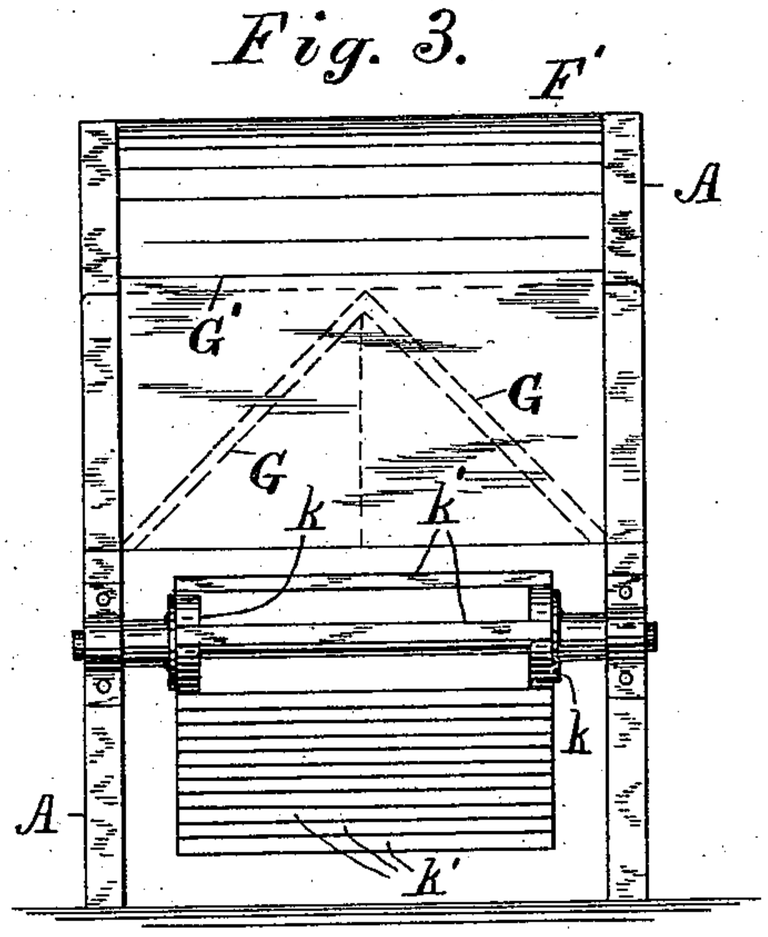
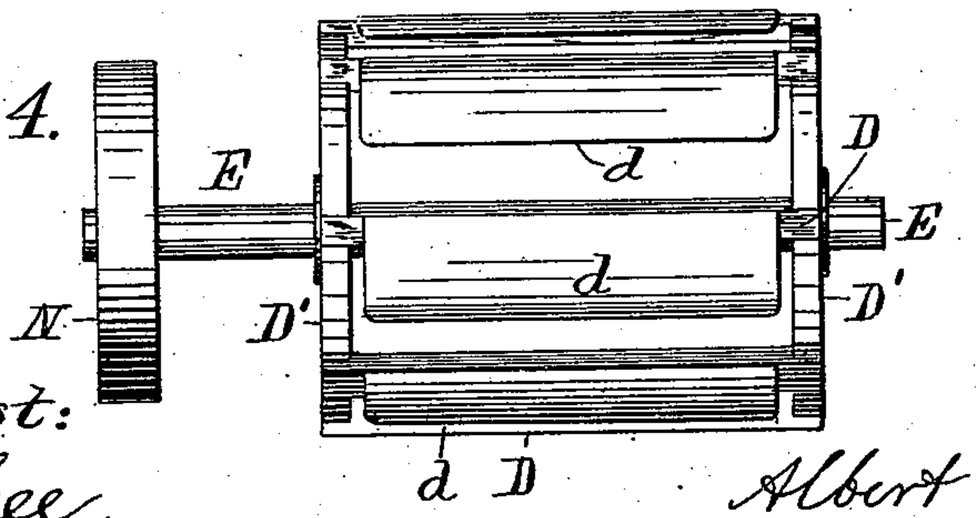


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALBERT ANGELL, OF WEST ORANGE, NEW JERSEY.

FLAX-BRAKE.

SPECIFICATION forming part of Letters Patent No. 564,358, dated July 21, 1896.

Application filed October 17, 1895. Serial No. 565,931. (No model.)

To all whom it may concern:

Be it known that I, ALBERT ANGELL, a citizen of the United States, residing at West Orange, Essex county, New Jersey, have invented certain new and useful Improvements in Flax-Brakes, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

The object of this invention is to furnish an improved means for separating the fiber from the stalks of flax, hemp, and analogous vegetables.

In the present invention a stationary brake-bar is used, with a rotary beater having bars provided with backwardly-projecting flaps, which operate in a peculiar manner, as hereinafter described. A shield is placed under and over the revolving beater, with an opening adjacent to the brake-bar through which the beater-bars operate upon the stalks and an opening at the opposite side through which is discharged the pith and dirt which fall within the beater. Laterally-inclined guides are arranged adjacent to such discharge-opening to throw the dirt laterally, so that it may not fall upon the fiber when delivered. A shaker is arranged below the brake-bar to strike the fiber and stalks as they are moved downward from such bar and dislodge the pith and bark therefrom. The shaker is provided with a vibrating guide which directs the fiber upon a delivery-apron.

In the annexed drawings, Figure 1 is a longitudinal section of an apparatus embodying my improvements, with some of the gearing represented diagrammatically by dotted lines. Fig. 2 is a front elevation with the feed-table and guard above the feed-rolls removed. Fig. 3 is a rear elevation, and Fig. 4 a plan, of the beater detached from the frame.

In Fig. 1 the eccentric-bar J is shown at one side of its shaft, but is shown above the shaft in Fig. 2.

In Fig. 2 the belts K and cross-bars k', which form the apron, are omitted, so as to exhibit the eccentric-bar J more clearly.

A represents the side bars of the machine, provided with feed-table B, feed-rolls C, and roll-guard B′. The brake-bar *c* is arranged adjacent to the lower feed-roll, and a clamp-roll *e* is placed immediately over the brake-bar to make the stalks S break off short when struck by the beaters D. The beaters are formed of square bars attached at their opposite ends to head D′ upon a transverse shaft E. A shield F is arranged below the revolving beater and curved eccentric with the shaft E, and inclined guide-boards G are sloped upwardly in the direction of their length and downwardly in the direction of their width from the forward end of such shield. The guide-boards thus form a ridge upon the center line of the machine, as shown in dotted lines in Fig. 3, and slope downwardly from such ridge, so that the pith and dirt discharged from the drum may readily slide from their surface.

The upward inclination of the guide-boards serves to arrest the forward motion of the dirt and to divert it laterally and downwardly. A transverse opening is formed at the lower edge of the brake-bar *c*, through which the fiber passes to the exterior of the shield F, as is clearly shown in Fig. 1, the discharge of the fiber through such opening being effected by the flexible flaps *d*, which press the fiber outwardly as soon as the ends are bent over the brake-bar.

A shield F′ is extended from the feed-roll *e* over the top of the beater, and is provided with a cover G′, extending over the guides G. Adjacent to the opening between the lower side of the brake-bar *c* and the shield F a shaker-bar *h* is arranged to knock the fiber as it passes outwardly through such opening. The shaker is attached by arms to a rock-shaft I, and arms I′ are projected downward from the rock-shaft and provided with forks *i* upon their lower ends to receive a bar J, which is extended between the frames A, and provided with eccentric shaft bearings or journals J′, supported in the frames A. The bar J is thus eccentric to its bearings and serves to vibrate the arms I′ and the parts attached thereto. The part J is provided between the arms I′ with wheels *k*, carrying belts K with cross-bars k', adapted to form an apron which delivers the fiber at the rear end of the machine. The belts and cross-bars are omitted in Fig. 2 to show the wheels *k*.

The eccentric bar J is attached at its oppo-

site ends to the journals J′ by crank-plates in a manner common in such constructions, and the wheels *k*, which carry the belts K, are applied eccentrically to such bar so that their true centers are in line with the centers of the journals J′, which causes the wheels to revolve concentric with such journals and thus carry the belts at a uniform speed.

A deflector *j* is attached to the shaker-arms I′ and inclined to the downward path of the fiber, as shown in Fig. 1, to direct the same upon the apron. Arms *s* are attached to the shaker-arms I′, adjacent to the deflector *j*, and support a transverse bar *t*, against which the fibers are drawn as they move forward with the apron, and as such bar oscillates with the shaker it beats the fibers upon the upper side and thus serves to dislodge the remaining pith and bark.

The beater-bars D are provided with backwardly-projecting flaps *d*, made of leather or stiff india-rubber cloth, and such flaps perform four functions. First, they press outwardly under centrifugal force against the fiber which is bent downward over the brake-bar, and thus rub and loosen the bark and pith most effectively. Second, they serve to throw the fiber forcibly against the shaker-bar, as is plainly shown in Fig. 1. Third, as they project backwardly from the beater-bars, each of them serves to form a pocket in which a greater part of the pith and bark is caught, which is beaten from the stalk by the succeeding beater-bar D, as is clearly shown in the beaters adjacent to the brake-bar *c* in Fig. 1. The dirt which is caught in such pocket is temporarily held therein by the contact of the flaps with the curved shield F, but the dirt is thrown from such flaps as soon as they pass beyond the restraint of the shield F. Fourth, they serve to produce a strong blast adjacent to the guides G, which, owing to their inclination, discharge the dirt laterally, and thus prevent it from falling upon the fiber which is delivered at the rear end of the machine.

The feed-rolls C are, in practice, mounted about five-eighths of an inch apart, and the clamp-roll *e* is also mounted about the same distance above the brake-bar *c*. The rolls C are connected by cog-wheels *l* and driven by gears *m* from the beater-shaft E, which is rotated by pulley N. The shaker-shaft is driven by wheels and belt or chain *o* from the lower feed-roll, and the clamp-roll *e* is driven by wheels and a belt or chain *o′* from the shaft E.

The shaft J′, which rotates the brake-bar J and the wheels *k*, is geared so as to vibrate the shaker rapidly, and the wheels *k* may be proportioned to drive the apron at sufficient speed to rub the fiber and clean the bark therefrom.

The machine operates as follows: The stalks of hemp or flax are fed between the rolls C and under the roll *e*, and are thrown downwardly upon the edge of the bar *c* by the beaters D. As it moves downwardly the fiber is struck upon the under side by the shaker-bar *h*, and is also beaten upon the upper side by the revolving flaps *d*. As it moves downwardly to the deflector *j* it is again beaten upon the under side, after which it is drawn by the apron in contact with the bar *t* and beaten again upon the upper side. It thus receives a thorough knocking and shaking until the entire length of the fiber passes out. While one bar of the beater is breaking the hemp the flap upon the bar below it catches what is broken by the upper bar. The space below the brake-bar, where the beater-flaps operate upon the fiber, is closed alternately by the successive flaps, and the woody pieces which are beaten from the stalk are thus prevented from falling down upon the apron with the fiber. Those pieces that adhere to the fiber are knocked and beaten off by the shaker, and are permitted to fall upon the ground by the open-slatted construction of the apron, and are removed from time to time. The pith and dirt dislodged by the beaters is indicated by the letter *r* in Fig. 1, and is thrown with a blast of air upon the guides G, by which it is discharged in a lateral direction from the openings G^2 in the side of the casing, thus enabling the operator to stand at the rear end of the machine to receive the fiber, which is delivered clean from the apron.

The clamp-roll *e* can be brought much nearer to the beaters than the upper feed-roll, as the lower feed-roll is necessarily behind the brake-bar, and the clamp-roll thus prevents the stalks from bending upwardly when pressed by the beater-bars, and secures the breaking of the stalks much shorter than would otherwise be effected.

It has been common heretofore to hinge radial beater-bars upon a drum, and to sustain a shield concentric with the drum, against which such hinged beater-bars could rub the fibers to clean the same. I find that such rubbing of the material operates to shorten the fiber, and I therefore discharge the fiber immediately below the brake-bar *c* from contact with the flaps *d* by passing it through the opening at the forward end of the shield F. The fiber is not therefore supported by the shield in any manner, but the shield prevents the escape of the dirt from the pockets within the flaps *d* until they reach the outer side of the drum, where the dirt is permitted to discharge from such pockets upon the guide-boards G. My shield F thus differs radically from those constructions which support the fiber during the beating or cleaning operation. The flexible flaps, combined with the rigid beater-bars D, perform a very different function from the hinged beater-bars heretofore used, as my rigid bars serve to positively break the stalks upon the bar *c*, while the flaps serve to form pockets in which the dirt is carried to the op-

posite side of the drum. Neither of these functions is performed by the hinged beater-bars heretofore used.

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

1. A flax or hemp brake having a brake-bar with feed-rolls adjacent thereto, a revolving beater with transverse beater-bars D, and flexible flaps *d* attached to such beater-bars and extended backwardly, the transverse bars serving to positively break the stalks over the brake-bar, substantially as herein set forth.

2. A flax or hemp brake having a brake-bar with feed-rolls adjacent thereto, a revolving beater with transverse beater-bars D, a shield F below the beater with opening between the lower side of the brake-bar and the forward edge of such shield, and the flexible flaps *d* projected backwardly upon the beater-bars for driving the fibers outwardly through such opening, substantially as herein set forth.

3. A flax or hemp brake having a brake-bar with feed-rolls adjacent thereto, a revolving beater with transverse beater-bars D, a shield F below the revolving beaters with opening between the lower side of the brake-bar and the forward edge of such shield, the flexible flaps *d* upon the brake-bars for driving the fibers outwardly through such opening, and a vibrating shaker arranged beneath the brake-bar to beat the fibers upon the outer side, substantially as herein set forth.

4. A flax or hemp brake having a brake-bar with a rotary beater adjacent thereto, feed-rolls to propel the stalks across the brake-bar, the shield F arranged below the beater with opening adjacent to the lower side of the brake-bar, the shaft I having a shaker hinged upon the same and provided above the shaft with the shaker-bar *h* and below the shaft with the deflector *j* and the shaker-bar *t*, and an apron for conveying the fibers from the deflector, substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

ALBERT ANGELL.

Witnesses:
THOMAS S. CRANE,
EDWARD F. KINSEY.