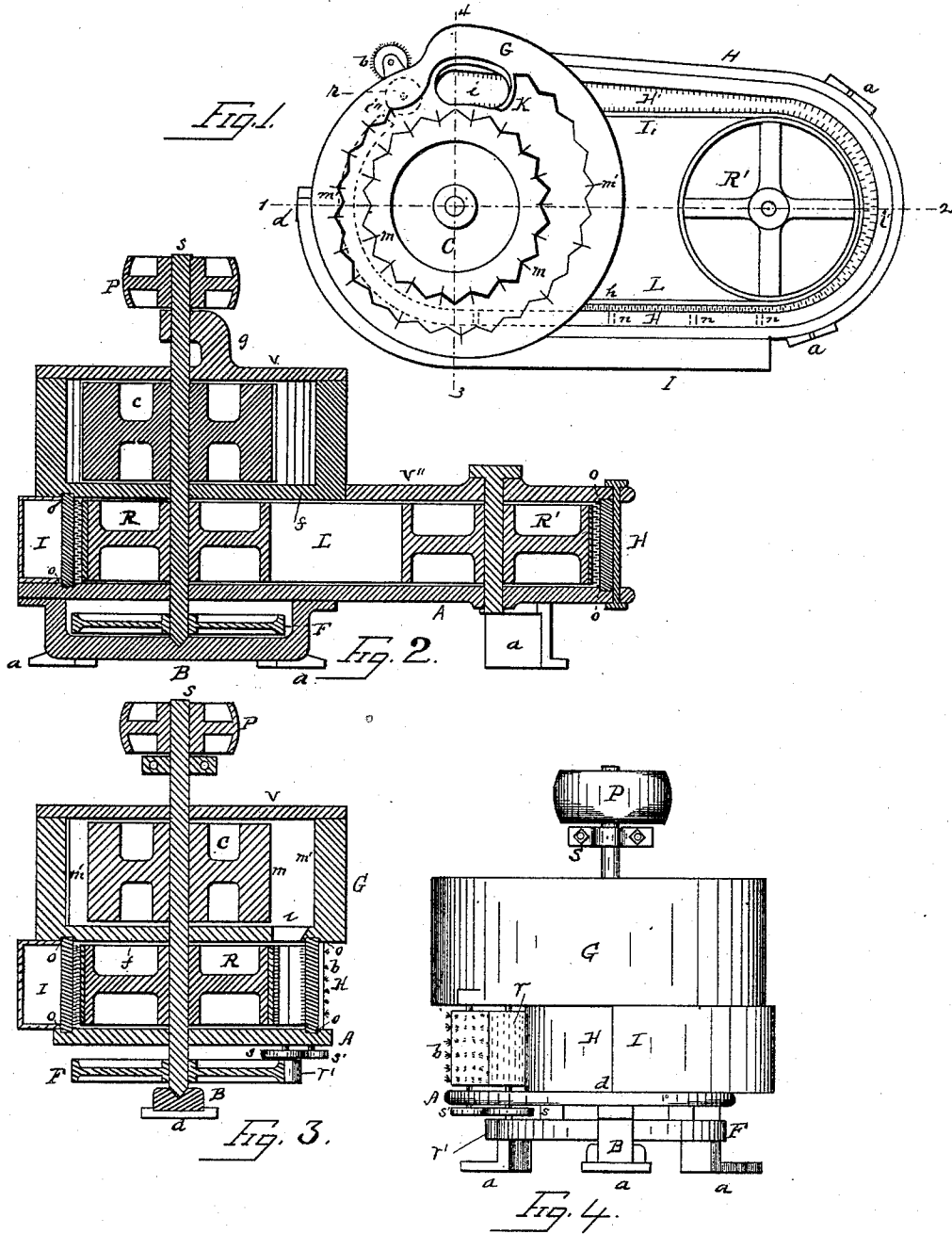


(No Model.)

W. L. BROWN.
MACHINE FOR CLEANING FIBER.

No. 419,632.

Patented Jan. 21, 1890.



WITNESSES
Jno. H. Stone.
Alv. Bulman

INVENTOR
W. L. Brown
By H. M. Kalb
Atty. Attorney

UNITED STATES PATENT OFFICE.

WILFRED L. BROWN, OF SAN FRANCISCO, CALIFORNIA.

MACHINE FOR CLEANING FIBER.

SPECIFICATION forming part of Letters Patent No. 419,632, dated January 21, 1890.

Application filed February 20, 1889. Serial No. 300,615. (No model.)

To all whom it may concern:

Be it known that I, WILFRED L. BROWN, a citizen of the United States of America, residing in the city and county of San Francisco, in the State of California, have made a new and useful invention—to wit, a Machine for Cleaning Fiber—of which the following is a specification.

My invention is adapted, primarily, to the separating and cleaning of cocoanut fiber, but may be used for other kinds, if desired; and it relates to improvements in that class of machines in which a preparatory breaker operates in conjunction with a separating and cleaning device.

The invention consists, first, of a preparatory breaker having a gradually-narrowing corrugated channel or chamber provided with radiating metallic plates, into and through which channel or chamber the crude fiber is fed and passed; second, of a separating and cleaning chamber having a stationary toothed shell and an endless toothed belt operating therein, with a gradually-narrowing space between them; third, of an endless toothed belt in the separating and cleaning device; fourth, of a rotary toothed cylinder and revolving brush in conjunction with said belt; fifth, of an inclosed passage for the reception of dust and extraneous matter adhering to the crude fiber, in communication with the separating and cleaning chamber, and, sixth, of certain details of construction hereinafter shown.

The nature of the invention will be understood by reference to the accompanying drawings, in which—

Figure 1 is a top view of the machine with the covers $v v'$, Fig. 2, removed; Fig. 2, a vertical longitudinal section on the line 1 2, Fig. 1; Fig. 3, a vertical transverse section on the line 3 4, Fig. 1; and Fig. 4, a front or end elevation looking toward the rear pulley R'. Similar letters refer to similar parts throughout the several views.

The bottom plate A, its feet $a a$, and the support or bearing B, secured to the under side of the bottom plate, constitute the foundation of the machine. Upon the bearing B turns the vertical shaft S, operated by the pulley P. To the shaft S are attached the

rotating corrugated or serrated breaker C, the rotating pulley R, and the friction-wheel F. The breaker C, preferably cast solid of metal, into which are inserted thin metallic plates $m m$, rotates in the gradually-narrowing and corrugated chamber or space formed outside of it by the inclosing circular and corrugated metallic rim G, provided with similar metallic plates $m' m'$, irregularly spaced, but placed closer together at the narrowing part of the chamber. The plate f , cast with the rim G, forms its bottom and also the cover to a portion of the separating and cleaning chamber H' below, and has an opening i leading thereto. A thin vertical partition k projects from the rim G, its outer extremity just clearing the edges of the metallic plates m of the rotating breaker C.

The bottom plate f of the rim G and the plate v'' together form the cover to the cleaning-chamber H', in which rotate the horizontal pulleys R R', carrying the cleaning-belt L. The pulley R is operated through the motion given by the pulley P to the shaft S. The belt L is furnished with metallic teeth h , as shown in the drawings, the said teeth being arranged in straight rows both longitudinally and transversely thereon.

The shell H forms a chamber in which the belt L is placed, so as to form a space or chamber H', gradually narrowing from the opening i to the point i' , while from the point i' to the point i'' , where the cleaned fiber is discharged, the shell H and belt L lie parallel.

The rim H is formed of segmental pieces of wood, their ends being let into grooves O O, cast in the plates A v'' , and in the bottom plate f of the rim G, the teeth h of the rim H being driven into the wood. Narrow vertical slots or openings $n n$ are left on one side of the rim H, leading to a channel I, formed of thin sheet metal and having an outlet at d , in connection with which an exhauster is placed at any suitable point.

A vertical toothed roller r , furnished with teeth, operates tangentially at the periphery of the toothed belt L as the latter is carried along by the pulley R, the teeth of the roller r passing between those of the belt. The said roller r is operated by means of the friction-wheel F, acting upon a small wheel r' , at-

attached to the shaft of the said roller. Outside of the toothed roller *r*, and rotating tangentially upon it, is a brush-roller *b*, carried frictionally or otherwise by the wheel *s*, attached to the shaft of the roller *r*, which operates upon the small wheel *s'* upon the shaft of the brush-roller.

The cover *v* of the breaker-rim *G* sustains the standard *g*, which supports the shaft *S*, the cover being bolted to the rim. This cover has an opening in the rear of the vertical partition *k* in the wide part of the breaker-chamber, through which opening the crude fiber to be passed through the machine is fed.

The operation of the machine is as follows: The fiber in its crude and more or less solid condition is fed through the opening in the cover *v*, behind the partition *k*, into the wide part of the breaking-chamber, and is carried around therein by the rotary motion of the breaker *C*, being gradually crushed and partially torn asunder by the corrugations and the metallic plates *m m'* until it issues from the narrowest part of the chamber, whence it falls through the opening *i* into the cleaning-chamber *H'* below, where it is caught and carried along by the teeth of the belt *L* being operated upon and the fibers separated by the action of the teeth of the belt and those of the inclosing-rim *H*, which also disengage from the fiber the extraneous substances adhering thereto until the cleaned fiber is brought along to the point where the toothed roller *r* detaches it from the belt *L* and discharges it from the machine at the opening at *i''*. As some of the cleaned fiber may adhere to the roller *r*, the brush-roller *b* is employed to remove the same. In this operation of completely removing the cleaned fiber from the stationary teeth in the rim *H*, those of the belt *L*, and the roller *r*, and discharging the same from the machine, it is essential that increased motion should successively be given to the moving parts carrying the teeth—that is to say, the movement of the toothed belt *L*, in carrying away the fiber from the stationary teeth of the rim *H*, has a tendency to wind some of it around itself; but the greater surface speed of the roller *r*, acting upon the fiber thus disposed, takes it away from the belt, and in turn winds some of it upon its own surface, which is finally taken off by the action of the brush-roller *b* acting at a still higher velocity. The extraneous matter adhering to the fiber, being removed as aforesaid, is by the action of an exhauster drawn away from the cleaning-chamber through the openings *n n* into the channel *I* and discharged.

It is obvious that the dressing of fiber may be accomplished by the action of a single rotary wheel provided with teeth or points upon the face similar to the belt *L*, above described, acting in a gradually-narrowing toothed inclosing-chamber; but in order for the passage of the fiber through a sufficiently-extended cleaning-chamber for the complete

separation of the fibers and their clearance from extraneous substances a single wheel thus employed would have to be of very great circumference. I therefore obtain such extended cleaning-chamber by the use of the belt *L*, passing around and carried along by the two pulleys *R R'*, of a moderate size and separated at the proper distance, thus lengthening the toothed belt and the space through which the fiber is made to pass, and thus exposing it longer to the cleaning action of the combined teeth of the chamber. It is also obvious that instead of the friction-wheels above named for giving motion to the toothed roller *r* and brush *b* gears may be substituted.

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

1. In a fiber-machine, a preparatory breaker consisting of a wheel having a corrugated periphery, in combination with an eccentric rim forming a gradually-narrowing inclosing-chamber, said rim having a corrugated inner surface, and a driving mechanism for rotating said wheel in said chamber, substantially as and for the purposes described.

2. In a fiber-machine, a preparatory breaker consisting of a stationary shell having its inner surface corrugated and provided with inserted metallic plates, in combination with a wheel having its periphery corrugated and provided with inserted metallic plates and eccentrically placed within the shell, and a driving mechanism for rotating said wheel in said shell, substantially as described.

3. In a fiber-machine, a cleaning and separating device consisting of a stationary shell having inserted teeth projecting from its interior surface, in combination with a traveling endless belt within said shell, provided with inserted teeth projecting from its outer surface, and arranged, as described, to form an extended passage-way between the belt and stationary shell of gradually-narrowing horizontal width, together with a driving mechanism for operating said belt within said shell, substantially as described.

4. In a fiber-machine, a cleaning and separating device consisting of a stationary shell having a bottom and top cover and teeth inserted in its interior sides and projecting therefrom, in combination with an endless traveling belt running around pulleys within said shell and having inserted teeth projecting from its outer surface, all arranged as described, to form an extended passage-way between the belt and the shell, which gradually decreases in horizontal width from the point of inlet to a point within said passage-way between the point of inlet and the point of outlet, and is of the same horizontal width throughout from the said intermediate point to the point of outlet, substantially as described.

5. The combination of the shell *H*, having a bottom and top cover and teeth projecting from its inner sides, with the endless toothed

belt L, pulleys R and R', and a driving mechanism for operating the same, substantially as and for the purposes specified.

5 6. In a fiber-machine, the combination of a preparatory breaker consisting of a shell having corrugated side walls and a corrugated rotary breaking-wheel mounted therein, with a cleaning and separating device consisting of a shell having a toothed inner surface and
10 a toothed traveling belt operated in said shell, as set forth.

15 7. A fiber-machine consisting of the stationary shell G, having interior corrugated sides and inserted metallic plates $m' m'$, the rotary wheel C, having a corrugated periphery and

inserted metallic plates $m m$, and the driving-shaft S, all in combination with the stationary shell H, having inserted teeth in its inner sides, the endless traveling toothed belt L and pulleys R R', the toothed roller r , and rotary
20 brush b , with a suitable driving mechanism, substantially as and for the purposes described.

In witness whereof I have hereunto set my hand and seal this 19th day of January, A.
25 D. 1889.

WILFRED L. BROWN. [L. S.]

Witnesses:

J. H. MILLER,
F. W. EASTMAN.