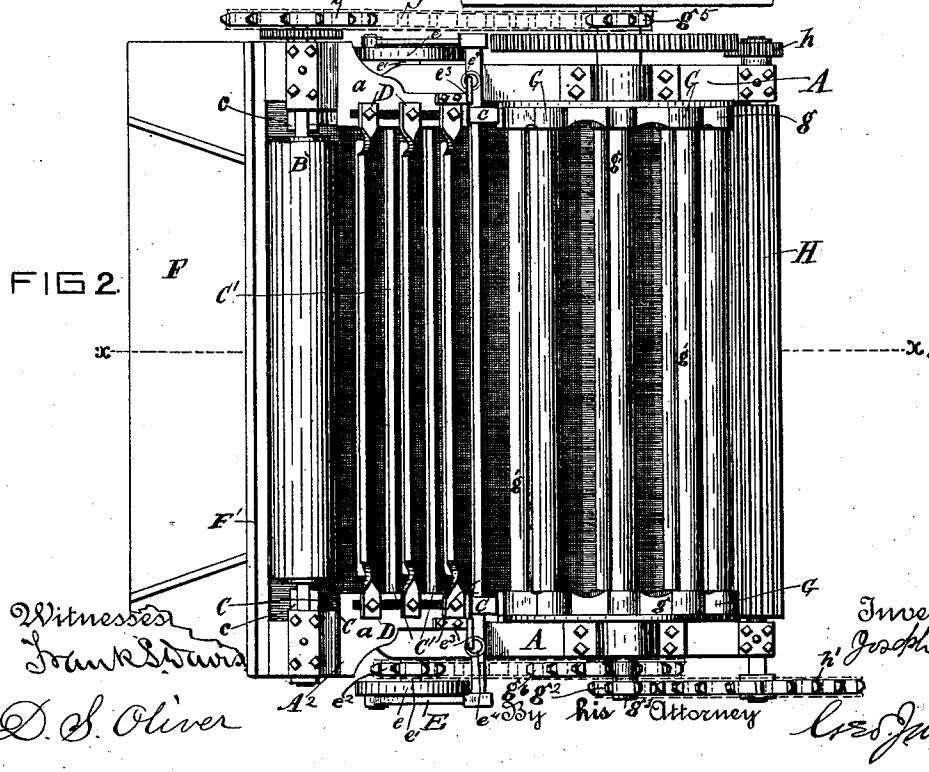
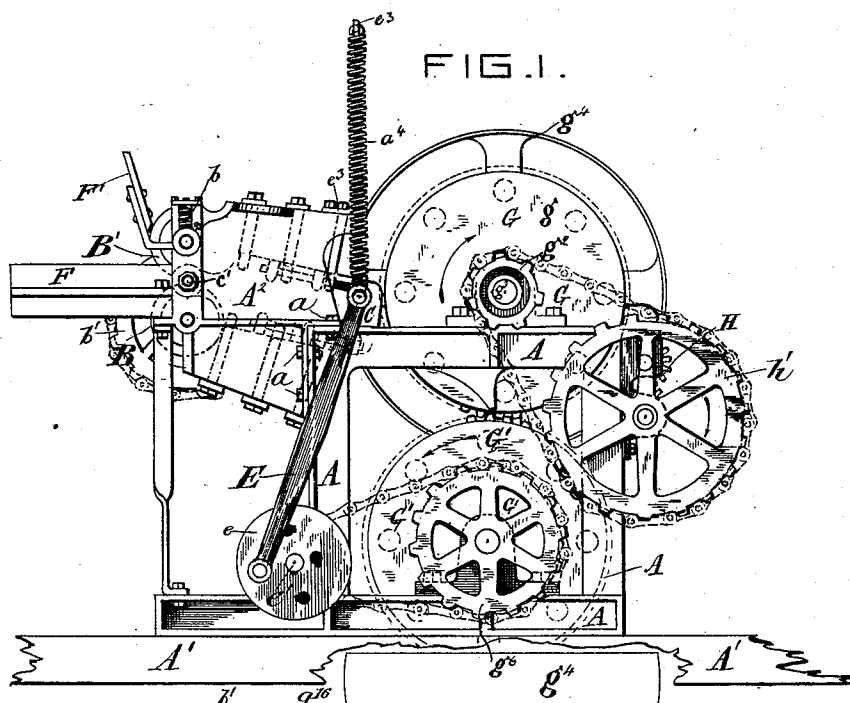


2 Sheets—Sheet 1.

MACHINE FOR BREAKING AND CLEANING HEMP.

Patented June 28, 1892.



THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

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MACHINE FOR BREAKING AND CLEANING HEMP.

SPECIFICATION forming part of Letters Patent No. 477,794, dated June 28, 1892.

Application filed September 30, 1891. Serial No. 407,250. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH BRESLIN, a citizen of the United States, and a resident of Newport, in the county of Campbell and State of Kentucky, have invented certain new and useful Improvements in Machines for Breaking and Cleaning Hemp, of which the following is a specification.

My invention relates to an improved machine for breaking or cleaning hemp and similar fibrous stalks; and it consists in mechanism for feeding the stalks forward without crushing them, breaking the woody matter in short pieces, and removing the hurds from the fiber.

The invention will be first fully described in connection with the accompanying drawings, and then particularly referred to and pointed out in the claims.

Referring to the drawings, in which like parts are indicated by similar reference-letters wherever they occur throughout the various views, Figure 1 is an end elevation of a machine embodying my improvements. Fig. 2 is a top or plan view of the same. Fig. 3 is a vertical longitudinal section taken through line *xx*, Fig. 2. Fig. 4 is a detail view in front elevation of the feed-rolls and bearing for the break-arm.

The frame which supports the working parts consists of two cast-iron side pieces A, suitably braced the proper distance apart and securely bolted upon base-timbers A'.

In the drawings I have shown the forward part of the frame made separate from the main frame in the form of two brackets A², which are secured to the main frame, as shown in Fig. 1; but this is not material, as the side pieces and the frame may be molded in a single piece.

In the forward end of brackets A² are journaled the feed-rolls B B', the upper one of which B' is fitted to slide in a slotted bearing, so that it will bear on the material with yielding pressure, and is held in place by springs b, which are compressed between the sliding bearings of the roll and the caps on top.

C are break-arms having outwardly-projecting lugs c to receive stud-bolts c', by which

the break-arms are pivoted in the brackets A² between the feed-roll bearings on each side of the machine. These break-arms are longitudinally slotted near their upper and lower edges to receive the flattened ends of bars C', the extreme ends of these bars being screw-threaded to receive nuts, by which they may be adjusted nearer to or farther from each other and securely held in place. The arms C and break-bars C' when thus connected together form the vibrating breaker-frame.

D and D' are fixed bars, the ends of which are bent first at right angles to the bars and then at a right angle to the end bends to pass over flanges a, which project inward from the brackets A². These flanges are also slotted to receive bolts, which pass through these slots and the ends of the bars D D' to secure the bars in place and permit of their adjustment nearer to or farther from each other to suit the different kinds of material that may be treated by the machine. The break-bars C', which are secured in the vibrating arms C, vibrate between the upper and lower fixed bars D D', the break-arms being actuated by pitmen E, which are journaled upon the crank-pins which project from disks e, which are keyed upon a transverse shaft e'. Upon the same shaft outside of the frame-work is secured a sprocket-wheel e², by which the shaft is driven. e³ are brackets or standards, which project up from the flanges a, and e⁴ are coiled springs stretched between the upper ends of the said brackets e³ and the journal-pins, upon which the upper ends of the pitmen E are pivoted, the object of these springs being to cushion the vibrating break-arms and prevent jar when the machine is in operation.

The front of the frame is provided with a feed apron or board F, upon which the stalks are placed to be introduced to the feed-rolls D D', and F' is an inclined board, the lower edge of which is near the periphery of the feed-roll B' to prevent any of the stalks passing over the feed-roll.

In the rear of the breakers are arranged two beating-cylinders G G', which are alike in construction and size and geared together to re-

volve in opposite directions. The axis of the upper beating-cylinder is in a horizontal plane with the axis of the vibrating breaker. The beater-cylinders are composed of heads g and round connecting-bars g' , of which I have shown eight to each cylinder; but a greater or less number may be employed.

On the rear of the machine are journaled in suitable boxes a pair of corrugated rolls H , which are geared together by pinions h upon their extended ends, and upon the opposite end of the lower corrugated roll is secured a sprocket-wheel h' to receive a sprocket-chain, which passes over a wheel g^2 , secured upon the main shaft g^3 . Upon this shaft are also secured a belt-pulley g^4 , the beater-cylinder G , and the sprocket-wheel g^5 , which drives the feed-rolls by means of a chain g^{16} , which passes over the sprocket-wheel b' upon the shaft of the lower feed-roll B' . The vibrating beater is driven by a chain passing over sprocket-wheels g^6 e^2 , the wheel g^6 being secured upon the shaft of the lower beater-cylinder G' .

The operation of the machine is as follows: The material to be treated is placed upon the apron F , pressed into the bite of the feed-rolls $B B'$, by which it is carried between the beater-bars c of the vibrating beater, which carries it up and down in contact with the stationary bars, breaking the stalks and freeing the fiber of much of the hurds. As it passes forward, the leading end is caught and acted upon by the beater-bars in the upper cylinder G , over which it is carried. The leading end is then caught and passed between the corrugated rolls H , and as soon as the opposite end has become free from the feeding-rolls it is caught by the beaters in the upper cylinder, carried around rapidly, and switched between the beater-bars of the upper and lower cylinders $G G'$, thus cleaning the tail, as well as the leading end, of the fiber. In practice the apron is supplied with a sufficient amount of material, and this amount is allowed to pass the feeding-rolls before a fresh supply is introduced between them. It will be noticed that the inner bars of the vibrating breaker-frame are in close proximity to the revolving beaters and that the stock passing over the bars of the upper beater-frame will be switched back and forth by these inner bars of the breaker until the tail end is released from the feed-rolls and breaker.

None of the machines heretofore constructed and used for breaking and cleaning hemp has, so far as I am aware, produced a clean fiber equal in market value to the fiber obtained from cleaning by the common hand-brake. It is also a fact that in all previous machines there is a great amount of waste of poor stock produce in the form of tow. The reason of this is that none of the machines treat the material in the same or substantially the

same manner as it is treated on the common hand-brake.

My machine treats the stock precisely as it is treated when broken and cleaned by the old hand-cleaning process, with the single exception that the beaters switch out the hurd by rapidly revolving against the broken stalks in my machine, while in the hand-cleaning process the stock is switched against stationary cleaner bars or rods.

In order to adapt the machine to treat different kinds of fibrous stalks, the stationary and movable breaker-bars are made adjustable, so as to enlarge or diminish a space between them, and provision is also made to vary the stroke of the vibrating breaker-frame. The means by which the latter result is accomplished is by piercing the disk with a series of holes, varying radially from the axes of the shaft, as clearly shown in Fig. 1.

I have shown and described what I believe to be the simplest form of machine embodying my invention; but I would have it understood that I do not limit myself to the precise details of construction shown, as these may be varied by any one skilled in the art to which my invention relates, after an examination of my drawings and specification, without departing from the spirit or scope of my invention.

What I claim is—

1. In a machine for breaking and cleaning hemp, the combination of the feed-rolls, two series of fixed break-bars arranged one above the other back of said feed-rolls, a vibrating frame carrying an upper and lower series of break-bars arranged to alternately pass the upper and lower fixed bars, revolving beater-bars in the rear of the vibrating brake to free the stalk from hurds, and corrugated delivery-rolls to hold the leading end of the stalk while the tail end is acted on by the beaters and deliver the clean stalk from the machine, substantially as shown and described.

2. The combination, substantially as specified, of the frame, the feed-rolls $B B'$, mounted in the front thereof, the fixed brake-bars $D D'$ back of said rolls, the beating-cylinders $G G'$, armed with beater-bars g' , geared together and mounted in the frame back of the brake, the corrugated rolls $H H$, mounted in the frame back of the revolving beaters, and gearing connecting the operative parts to cause them to move together, for the purpose specified.

3. The combination of the frame, the feed-roll B , mounted in fixed bearings, and separable feed-roll B' , the adjustable breakers $D D'$, the vibrating breaker-arm C , the adjustable breakers C' , secured therein, pitmen E , disks e , and wrist-pins connecting breaker-arms and disks, the beater-cylinders $G G'$, armed with beater-bars g' , geared to revolve together, the corrugated rolls H , the sprocket-wheels, and driving chains and pulley for imparting mo-

tion to the parts, substantially as shown and described.

4. The combination, in a machine for breaking and cleaning hemp, of the apron, separable feed-rolls, fixed and vibrating breakers
5 back of the feed-rolls, two revolving beater-cylinders arranged one above the other and geared together to revolve in opposite direc-

tions, the said cylinder composed of heads *g*, connected together by rods *g'*, and delivery- 10 rolls in rear of said beater-cylinders, substantially as shown and described.

JOSEPH BRESLIN.

Witnesses:

GEO. J. MURRAY,
FRANK S. DAVIS.