

A. HITCHON.  
COTTON OPENER AND FEEDER.  
APPLICATION FILED APR. 21, 1910.

1,005,034.

Patented Oct. 3, 1911.

3 SHEETS—SHEET 1.

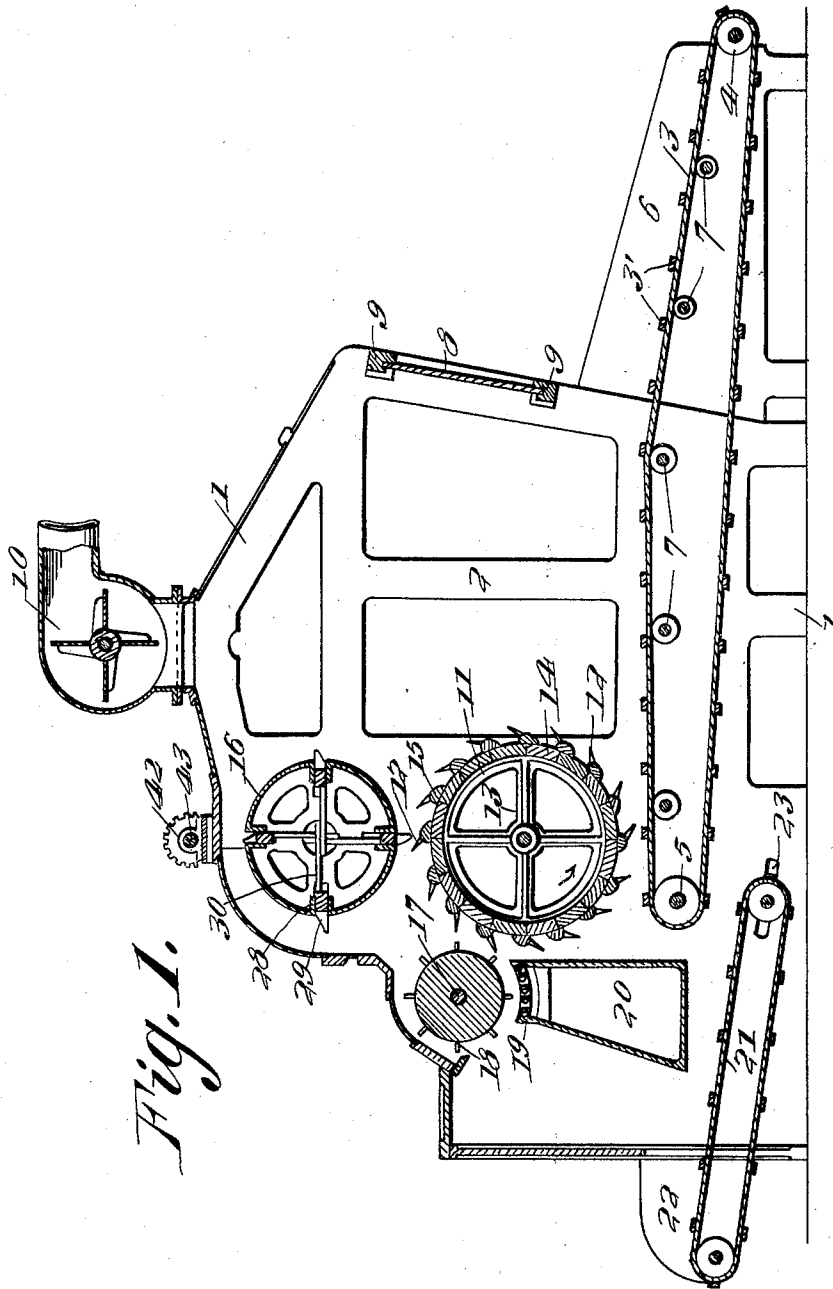


Fig. 1.

Witnesses  
Ada C. Baggett  
Elsa B. Hana

Alfred Hitchon, Inventor  
Joseph A. Miller, Attorney

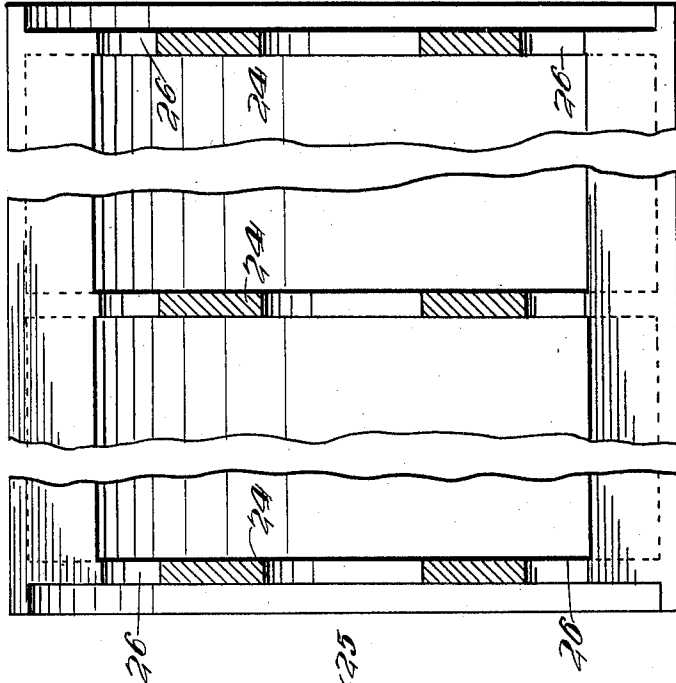
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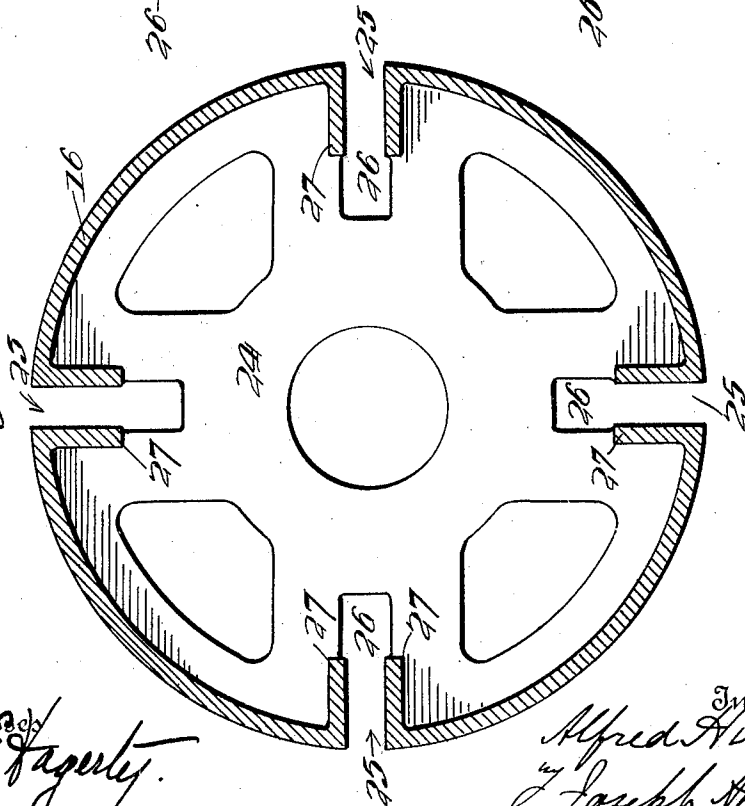
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3 SHEETS—SHEET 2.

*Fig. 3.*



*Fig. 2.*



Witnesses  
*Ada C. Fagerty.*  
*Elsa B. Dana*

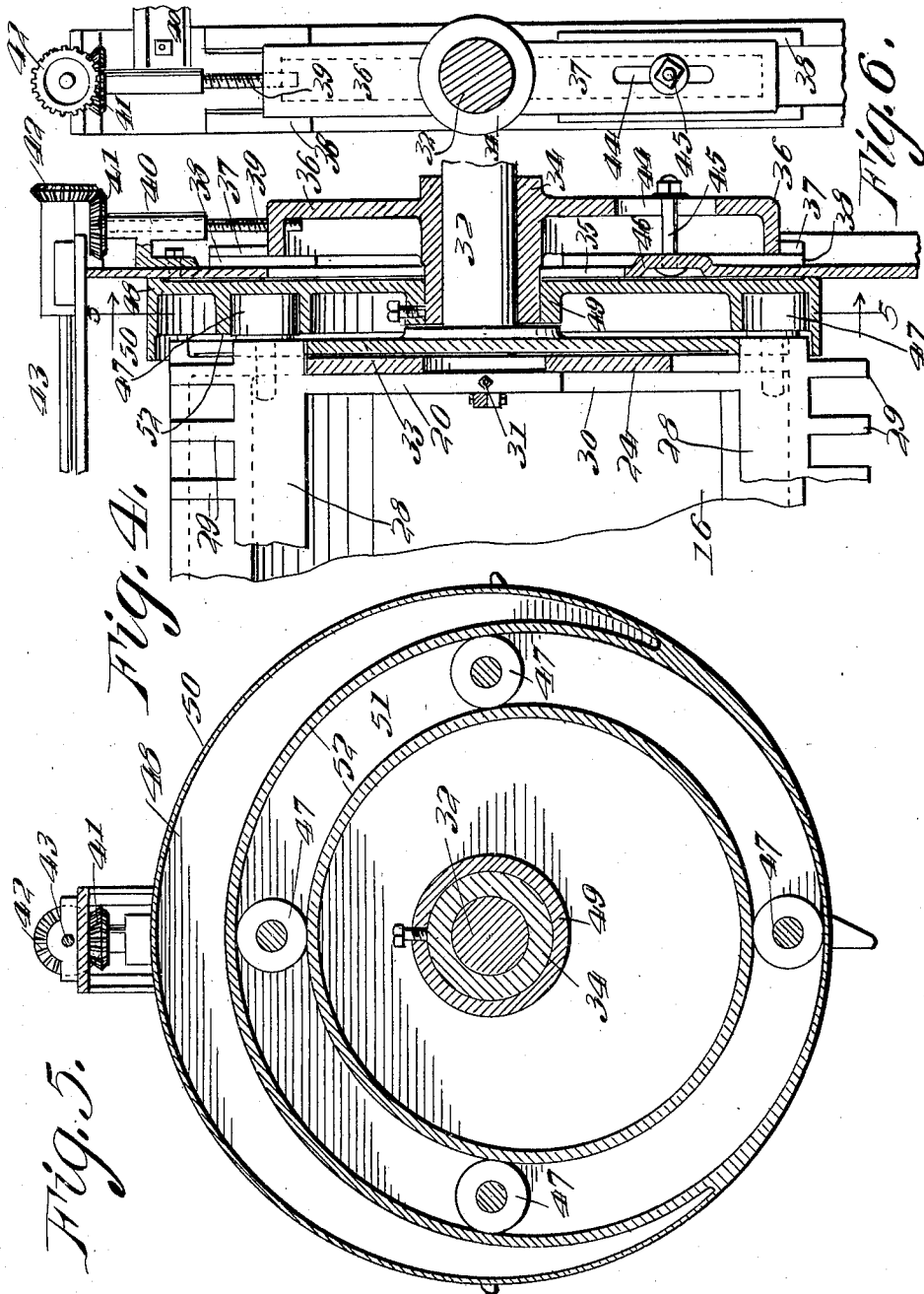
Inventor  
*Alfred Hitchon*  
by *Joseph A. Miller*  
Attorney

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3 SHEETS—SHEET 3.



Witnesses  
 Ada B. Fagerty.  
 Elsa B. Dana.

Inventor  
 Alfred Hitchon  
 by Joseph A. Miller  
 Attorney

# UNITED STATES PATENT OFFICE.

ALFRED HITCHON, OF CLAYTON-LE-DALE, ENGLAND, ASSIGNOR TO HOWARD & BULLOUGH AMERICAN MACHINE COMPANY, LIMITED, OF PAWTUCKET, RHODE ISLAND.

COTTON OPENER AND FEEDER.

1,005,034.

Specification of Letters Patent.

Patented Oct. 3, 1911.

Application filed April 21, 1910. Serial No. 556,824.

*To all whom it may concern:*

Be it known that I, ALFRED HITCHON, a subject of the King of Great Britain, residing at Clayton-le-Dale, county of Lancaster, England, have invented a new and useful Improvement in Cotton Openers and Feeders, of which the following is a specification.

This invention relates to improvements in the feeding and stripping mechanism of bale openers and feeding machines for cotton, and pertains particularly to the opener drum and the co-related stripper.

The principal object of the invention is to improve generally the feeding and stripping mechanism, with relation to the most advantageous disposition of the juxtaposed elements.

A further object is to provide a means whereby the path of recedence of the stripping comb can be determined to any required distance, duration and position in its circular travel thus giving full facility of obtaining any desired stripping conditions.

With these, and further objects which will hereinafter appear, in view, my invention will now be fully described reference being had to the accompanying drawings, in which like numerals indicate like parts throughout.

Figure 1 is a longitudinal sectional elevation showing the interior of the machine. Fig. 2 is a transverse section of the casting forming the body of the stripping cylinder. Fig. 3 is a longitudinal section of said casting, Fig. 4 is a detail sectional elevation of the supporting and driving mechanism of the stripping cylinder. Fig. 5 is a view taken on line 5 5 of Fig. 4. Fig. 6 is a detail elevation, partly in section, of the mechanism shown in Fig. 4.

Referring more particularly to said drawings, 1 indicates the frame or casing of the machine whereof the portion 2 is the hopper into which the cotton is delivered, preferably through the medium of the endless carrier 3. Said endless carrier 3 is supported from rollers 4 and 5, the former of which is mounted in bearings carried by rearwardly extending sides or wings 6, while the latter roller is journaled in suitable bearings provided within the casing at convenient points to deliver the cotton to the mechanism hereinafter described. The carrier 3 is formed of a flexible body having the cross strips 3' and the intermediate points of the upper run of the carrier 3 are supported

upon idlers 7 which are or may be of suitably disposed to regulate the tension and direction of the said run. The rear side of the casing 1 above the opening provided for the carrier 3 is closed by a lattice work 8 or grille consisting of vertical bars secured or inserted at intervals in upper and lower grooved cross bars 9. The usual blower 10 is mounted at the top of the machine to effectively direct a current of air to the mechanism.

Disposed adjacent and above the forward end of the carrier 3, and suitably journaled in the sides of the frame 1 is the revoluble drum 11, which carries in longitudinal rows along its periphery the teeth 12. Said drum 11 consists of spaced spiders 13 carrying the longitudinal peripheral laths or slats 14, and said teeth 12 comprise headed prongs or spikes driven or otherwise entered with a common inclination into longitudinal rods or bars 15 secured upon the outside of the drum 11. The common inclination above referred to directs all of the teeth 12 in the direction of rotation of the drum as best shown by the arrow in Fig. 1.

Located in vertical alinement above the drum 11 is the stripper or stripping cylinder 16, in such suitable juxtaposition to the drum 11, and adapted to revolve in the direction opposite to the latter, that the teeth thereof coast with the teeth of the drum 11 to strip the cotton from the latter. Directly in front of the drum 11, and located to co-act therewith at its upper front portion is the beater 17, said beater consisting of a cylinder journaled in the sides of the casing 1 and having a plurality of radial teeth or fingers 18 adapted to act on the cotton as the latter is brought over by the drum 11, to clean said cotton and the drum. The dust and dirt thus freed are projected onto the grids 19 of the dust box 20, and the cotton beaten out falls upon the conveyer 21 together with the cotton delivered from the front end of the carrier 3, by reason of its escape from the drum 11. Said conveyer 21 is supported at its front end outside of the casing 1 in wings 22, while its rear end is adjustably journaled in the slots 23 provided in the sides of the casing. Said conveyer 21 therefore acts to provide communication between the interior of the casing 1 and the outside at its front end. Said stripping cylinder 16 is mounted within the casing to be adjustable with relation to the latter and the drum 11. Reference to Figs.

4, 5 and 6 will show the adjustable mounting of said cylinder 16, and Figs. 2 and 3 will indicate the cylinder construction. Said cylinder is substantially a tubular drum  
 5 having closing or supporting webs 24 at each end and at suitable intervals at intermediate points. While the cylinder may be constructed in any suitable manner, it is preferably a single casting. The periphery  
 10 of the cylinder is divided into quarters by slots 25 extending longitudinally thereof, and also extending radially into the webs 24 as at 26. Each side of the radial extensions of said slot is inclosed by a depending  
 15 flange 27 extending inwardly from the periphery of the cylinder so that a substantial channel is formed throughout the length of the drum or cylinder 16 and extending radially therein at each quarter thereof. Said  
 20 channels form a snug or close fitting housing for the rods or comb bars 28, which are adapted to reciprocate radially therein, and carry on their outer edge the teeth 29. The diametrically opposite comb bars 28 are  
 25 yoked to one another by means of inwardly extending arms 30 whose inner ends overlap and are secured by bolts 31. Thus, as the bars are radially reciprocated through the actuation of the mechanism hereafter  
 30 described, their operation will be in diametrically opposed pairs. Said cylinder 16 is mounted upon and revolved by the shafts 32, which are virtually stub shafts having preferably integral end plates 33 which are  
 35 adapted to be fastened, one at each end of the cylinder 16 and form a part of its structure. The shafts 32 are journaled in bearings 34 which are vertically hung in each end of the casing 1, and one of said stub  
 40 shafts 32 is provided with suitable driving pulleys (not shown).

As above mentioned, the bearings 34 are hung in the casing 1, and constitute substantially long tubular sleeves whose inner  
 45 ends project through vertical slots 35 formed in the casing 1. The upper and lower sides of the bearings 34 are provided with arms or supports 36. Said supports 36 comprise substantially three sided hoods having their  
 50 free ends overturned or closed. Each of the supports 36 is provided on its outer sides with guide ridges which operate in the guide grooves 37 formed in vertically disposed and outwardly projecting guide plates  
 55 38 provided on the sides of the casing 1. Thus the supports 36, and consequently the bearings 34 are prevented from arcual movement. The upper arm 36 is vertically threaded through the top thereof to receive  
 60 an adjusting screw 39 which is supported in a bearing bracket 40 secured on the side of the casing 1 and has its upper end provided with a bevel gear 41. Said bevel gear 41 meshes with a similar gear 42 secured to the end of a cross shaft 43 which

extends across the top of the machine to the opposite side, where it carries a similar gear on its opposite end which meshes with mechanism identical with the adjusting devices just described. Thus, by means of  
 70 suitable actuating mechanism (not shown), the shaft 43 may be revolved to raise or lower the bearings 34 simultaneously, and thus secure a ready and accurate vertical adjustment of the cylinder 16 with relation  
 75 to its juxtaposed members. The lower arm 36 is provided in its front vertical face with a slot 44 through which extends a tightening bolt 45 whose head is loosely retained behind a yoke 46 formed in the casing 1  
 80 through which said bolt 45 projects.

Referring again to the comb bars 28, it will be seen that their ends project beyond the yoke arms 30, and through the end webs and end plates of the cylinder 16. Said  
 85 projecting ends are provided with studs upon which are revolvably carried the cam rollers 47, (Figs. 4 and 5). Said rollers 47 engage the cam grooves provided in a cam plate 48. Said cam plate 48 is, by preference,  
 90 a circular casting having an annular inwardly projecting flange 50 and having a central bearing 49 which snugly fits upon the inner end of the bearing 34 and is adjustably set thereon, as by means of a set  
 95 screw. Said cam plate 48 thus rests against the side of the casing 1, and is provided with the overhanging flange 50 in order to prevent dust, lint and cotton from entering between the cylinder and the plate 48 to  
 100 obstruct the channel of the cam groove above mentioned. Said cam groove, designated by 51, consists of upstanding flanges 52 concentrically arranged with respect to  
 105 one another, but eccentrically disposed with relation to the bearing center of the cam plate 48. This is best disclosed in Fig. 5.

From the above description, it will be evident that as the cylinder 16 revolves through the medium of the shafts 32, the comb bars,  
 110 and consequently the teeth 29 thereof, will be reciprocated by reason of the fact that the cam rollers secured to the ends of the comb bars are in engagement with the eccentric cam groove 51.  
 115

In practice, it is frequently desired to regulate the amount of projection, or the interval of projection of the teeth 29, as the cylinder 16 revolves, with relation to the  
 120 teeth 12 of the drum 11. This is readily and practicably possible by reason of the fact that the cam plate 48 is revolvably adjustable upon the bearing 34, thus permitting the variation of the eccentricity of the cam groove 51 with relation to the cylinder  
 125 der 16.

The teeth of the comb bar 28 are preferably made with their front or striking faces in line with the front or striking face of the comb bar, and the latter is formed to

snugly fit or operate against the edges of the slots 25, so that as the comb bar is reciprocated said edges of the slots will act as scrapers to remove fibers, lint, and particles of cotton from the said striking faces.

The operation of this machine is evident, the cotton being delivered over the carrier 3 to the drum 11, whose teeth carry it from the mass of the supply and deliver it to the stripping cylinder and to the action of the beater 17. The advantages of the machine, by reason of my improved structure, will also be apparent. The defects of the spiked lattice or conveyer formerly used, arising from its two point suspension and necessarily flexible construction, are avoided in the substantially solid or rigid structure of the drum 11, with its projecting teeth 12. The revoluble cylinder with the reciprocable comb bars obviates the serious defect brought about by the clogging of the openings in cylinders formerly used where the separate teeth were projected through openings in the peripheries of the cylinders. Furthermore, by my improved structure, it is possible not only to regulate the amount of projection and recedence of the teeth of the comb bars, but it is also possible to accurately determine and regulate the period at which the comb bars shall project from the surface of the cylinder any predetermined length. Also, by regulating the eccentricity of the cam groove 51 with reference to said cylinder, it is possible to regulate periods during which there shall be no projection or retraction of the teeth, but that there shall be a constant position therefor.

Having thus described my invention, I claim as new and desire to secure by Letters Patent;—

1. In a cotton opener and feeder, the combination of a rotatable stripper, vertically adjustable bearings supporting the ends of said stripper and comprising each a sleeve and upper and lower arms formed thereon, a drive shaft arranged above said bearings and connected at its ends with the upper arms thereof, for bodily raising or lowering both bearings simultaneously to adjust the same, means for guiding said arms, and means engaged with the lower arm for retaining said bearings in adjusted position.

2. In a cotton opener and feeder, the combination of a rotatable stripper, vertically adjustable bearings supporting the ends of said stripper and comprising each a sleeve and upper and lower arms formed thereon, a drive shaft arranged above said bearings and connected at its ends with the upper arms thereof, for bodily raising or lower-

ing both bearings simultaneously to adjust the same, a casing formed at opposite sides with vertical slots wherein said sleeves are slidably mounted, the lower arm of each bearing having a vertical slot formed therein, a yoke formed upon each side of said casing directly opposite the slot in the lower arm of the adjacent bearing, and a clamping bolt engaged with each of said yokes and projecting through the adjacent last named slot, for retaining said bearings in adjusted position.

3. In a cotton opener and feeder, the combination of a rotatable stripper, vertically adjustable bearings supporting the ends of said stripper and comprising each a sleeve and upper and lower arms formed thereon, the free end of each upper arm being turned inward toward the stripper and provided with a threaded perforation, a pair of vertically disposed adjusting screws having their lower ends engaged in said perforations and their upper ends provided with bevel gears, brackets supporting said screws, a drive shaft arranged above said bearings and provided at its ends with bevel gears meshing with the adjacent first-named gears, to rotate both screws simultaneously for bodily raising or lowering said bearings, and means engaged with the lower arms of said bearings for retaining the same in adjusted position.

4. In a cotton opener and feeder, the combination of a rotatable stripper, vertically adjustable bearings supporting the ends of said stripper and comprising each a sleeve and upper and lower arms formed thereon, the free end of each upper arm being turned inward toward the stripper and provided with a threaded perforation, a pair of vertically disposed adjusting screws having their lower ends engaged in said perforations and their upper ends provided with bevel gears, brackets supporting said screws, a drive shaft arranged above said bearings and provided at its ends with bevel gears meshing with the adjacent first-named gears, to rotate both screws simultaneously for bodily raising or lowering said bearings, the lower arms of said bearings being formed with vertical slots, and clamping bolts engaged in said slots for retaining said bearings in adjusted position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALFRED HITCHON.

Witnesses:

JOHN WILLIAM THOMAS,  
MALCOLM SMITHURST.