

(No Model.)

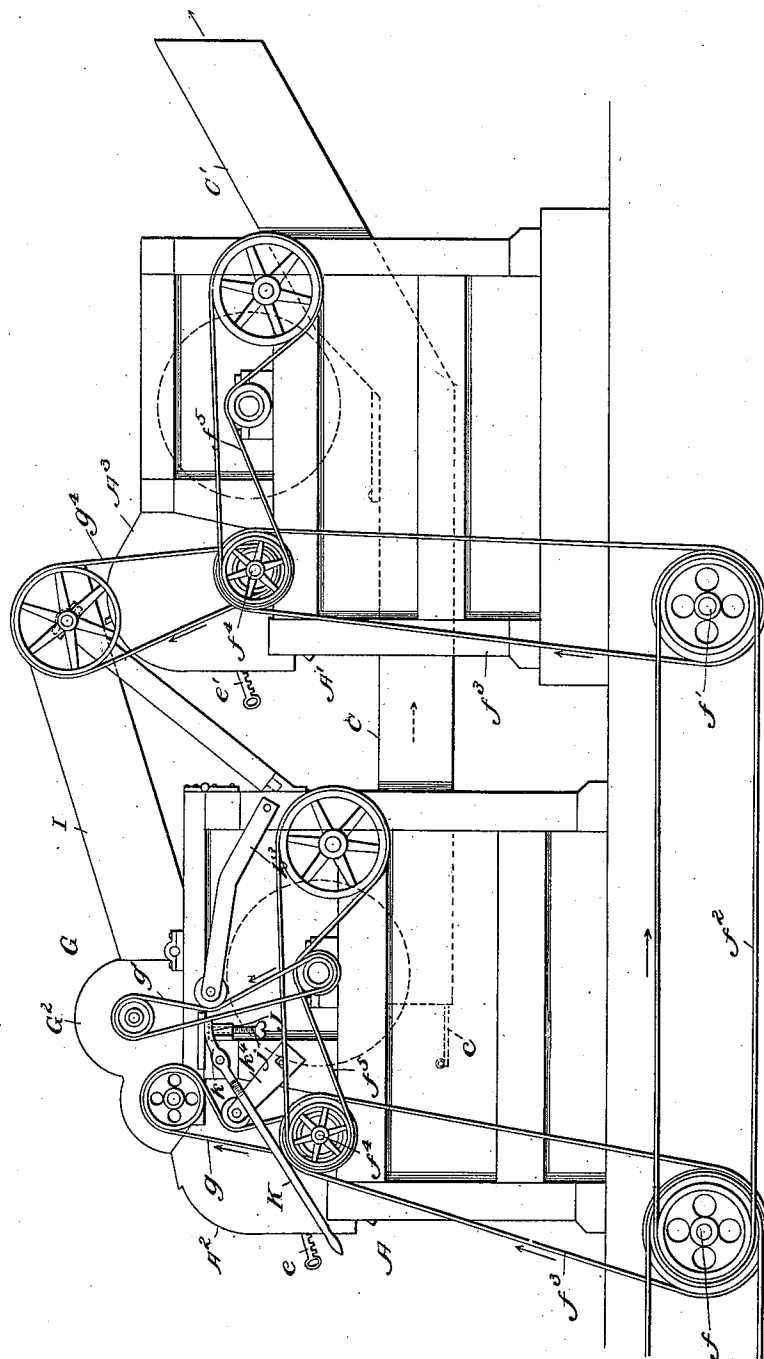
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J. RICE.
SAW COTTON GIN.

No. 553,597.

Patented Jan. 28, 1896.

Fig. 1.



Witnesses.
Edw. S. Duwall, Jr.
Wm. P. Duwall.

Inventor.
John Rice
By Buttermore & Duwall
his Attys

(No Model.)

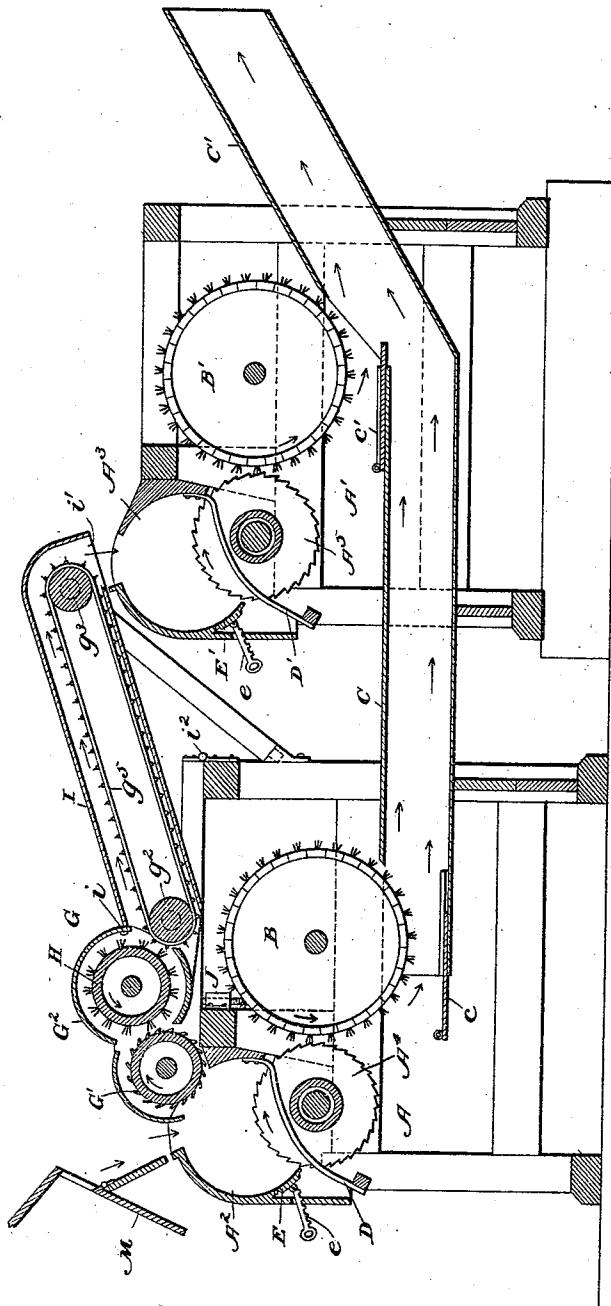
2 Sheets—Sheet 2.

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Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN RICE, OF FISH HEAD, ALABAMA.

SAW COTTON-GIN.

SPECIFICATION forming part of Letters Patent No. 553,597, dated January 28, 1896.

Application filed October 11, 1895. Serial No. 565,401. (No model.)

To all whom it may concern:

Be it known that I, JOHN RICE, a citizen of the United States, residing at Fish Head, in the county of Clay and State of Alabama, have invented certain new and useful Improvements in Saw Cotton-Gins; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to cotton-gins, but more particularly to those recognized in the art as saw-gins.

Heretofore it has been proposed to construct a cotton-gin or a combination of two or more gins having one or more sets of saws and brushes intended to accomplish a great amount of work in a comparatively short period of time; but in such gins the cotton, owing to its weight and its tendency to hold together, will become packed and hard, particularly when the cotton is fed in sufficient quantities to supply two or more gins, thus causing the cotton, which assumes the form of a roll, to press hard upon the saws and pack more or less lint between their teeth, so that the lint will be greatly injured while removing the same, or the saws will slip and tear or cut the lint, thereby materially affecting its quality. Another disadvantage in such gins is that it is impossible to feed partially-ginned cotton to the second gin without a greater quantity of the raw cotton being also fed therewith, for the reason that as the raw cotton is fed from the feeder to the roll-box it falls upon the roll of cotton therein and forms an interposed layer or shield between said roll-box and the roll of cotton, which extends from the top of the roll-box to the point where the saws take hold of the roll to separate the lint from the seed, thereby causing the bottom of the roll-box to be entirely covered by the shield of raw material, while the partially-ginned cotton is carried to the top and opposite side of said box.

The primary object of my invention is to overcome these objectionable features by providing means whereby the roll of cotton in the roll-box may be prevented from becoming packed or hard, and at the same time permitting the partially-ginned cotton to be fed to a second roll-box without a mixture of the raw

material, so that the lint may be more readily separated from the seed, and the liability of injuring the lint by tearing or cutting the same reduced to a minimum.

Another object is to provide an attachment for feeding the partially-ginned cotton from one roll-box to another, which may be readily applied to various designs of gins.

A further object of the invention is to provide a double or triple gin which shall be simple in construction, inexpensive in manufacture, and efficient and reliable in use, and which, while possessing all the advantages of a rapid gin, shall not be subject to many of the objections incident to gins heretofore proposed.

With these and other objects in view the invention consists in the construction and combination of the several parts, substantially as hereinafter described, and more particularly pointed out in the claims at the end of the description.

Referring to the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation of a machine embodying my invention, and Fig. 2 is a vertical longitudinal sectional view of the same.

A A' may designate gins arranged in any suitable framework or casing and preferably located one in front of the other; A² A³, the roll-boxes of the gins; A⁴ A⁵, the gin-saws, and B B' the brushes which revolve in an opposite direction to said saws, all of which may be of the usual or any preferred construction. At c c' are flues located beneath the brushes, which may communicate with each other, as shown, and discharge into a condenser in the ordinary manner, or, if desired, the said flues may discharge into separate condensers so as to assort the lint into different grades, the lint being forced through the flues to the condenser by a draft of air caused by the rotation of the brushes. These flues may be provided with the mote boards or slides c c', which are adapted to be adjusted either forward or back, so as to vary the quantity of air necessary for the brushes B B', and to let all large motes fall from the brush B.

D D' are the grates or gin-ribs, which may be of any preferred form and arranged between the saws in the usual way; and E E' the regulating plates or seed-boards of ordi-

nary construction fitting in the respective roll-boxes $A^2 A^3$, and adapted to be adjusted and secured in the desired position by means of the toothed bars or racks ee , respectively, in the usual manner.

For operating the brushes and gin-saws, I prefer to provide a main driving-shaft f , arranged beneath the gin A , and a counter-shaft f' , located beneath the gin A' , the latter shaft being connected and operated by a belt f^2 , which passes around pulleys secured to said shafts. These shafts have pulleys secured thereon around which are the belts $f^3 f^3$, which pass around pulleys secured to the saw-shafts $f^4 f^4$, the latter operating the brush-shafts by means of the belts $f^5 f^5$, so as to rotate in an opposite direction to the gin-saws. The counter-shaft f' , however, may in many instances be dispensed with and the saw-shaft of the gin A' connected directly to the driving-shaft or other driven portion of the gin A .

To prevent the cotton from being packed in the roll-box of the gin A , and to feed partially-ginned cotton to the roll-box A^3 , I provide a feeding attachment G which may be arranged on the framework already in use by removing a portion of the roll-box A^2 , or by making the roll-box in the manner shown in the first instance. This feeding attachment may be arranged upon the framework above the gin-saws A^4 , and preferably comprises a feed-roll or other suitable device, G' , provided with teeth or other engaging devices adapted to pull some of the cotton from the roll in the roll-box, and to assist the gin-saws in rotating said roll. This feed-roll is journaled in a suitable casing or frame G^2 , and is operated from the saw-shaft by a belt g , so that said feed-roll will rotate in the same direction as the gin-saws. At H is a brush or detaching-roller journaled in the frame G^2 and provided with spikes or other means for disengaging the cotton from the feed-roll or device G , said brush being rotated somewhat faster than the feed-roll A and in an opposite direction thereto by means of the belt g' which passes around pulleys located, respectively, on the brush-shaft and the shaft of the detaching-roller H . To the rear of the brush H are the rollers $g^2 g^3$, journaled in the casing I , which latter may be pivoted, as at i , to the frame G^2 , and preferably inclines slightly upward, so that the opening i' will be directly over the opening in the roll-box A^3 of the gin A' , the roller g^3 having motion imparted thereto by a belt g^4 which passes around pulleys secured, respectively, to the shaft of said roller and the saw-shaft of the gin A' . The rollers $g^2 g^3$ have a traveling belt g^5 passing around the same, provided with cross-slats having pins or projections thereon, so as to more readily catch the cotton when it is detached from the feed-roll G by the brush H , and convey and deposit the same into the roll-box A^3 . By this construction the roll of cotton is prevented from becoming packed or hard while rapidly revolving

in the roll-box, and prevents injury either to the gin-saws or to the lint by the saws slipping and tearing or cutting the same. At the same time the feed-roll G' acts only upon partially-ginned cotton which is conveyed by the traveling belt g^5 to the roll-box A^3 of the gin A' , thereby materially improving the quality of the material.

The frame G^2 is preferably hinged, as at i^2 , to the framework above the gin A , so that the forward end of the frame may be lowered or raised to regulate the feed of the partially-ginned cotton to the gin A' . To raise or lower the frame, a bracket or nut J may be arranged on the framework through which passes a threaded bolt or thumb-screw, adapted to engage a portion of the frame G^2 , or, for this purpose, a lever K may be pivoted to the side of the framework, having a cam-shaped end k adapted to engage the frame when tilted on its pivot, as shown in Fig. 1. The casing I may have its rear end supported by a brace or braces L in such manner that by raising or lowering said braces, the casing may be also raised or lowered, so as to have the opening i' in its outer end the proper distance from the opening in the roll-box A^3 , and to adapt said casing to be thrown forward to permit inspection of the parts beneath the casing.

The operation of the invention will be readily understood from the foregoing description, taken in connection with the accompanying drawings.

The regulating-plate or seed-boards in the roll-boxes being adjusted to prevent the passage of the cotton through the bottoms thereof, and the machine put in motion, the raw cotton at the same time being fed into the roll-box A^2 by a feeder (a portion of which is illustrated at M , Fig. 2,) in the usual manner, the saws in the gin A will remove some of the lint from the seeds. The lint is delivered from the brush B into the flue C and conveyed there-through to a condenser, while some of the seed, from which the lint has been removed, falls onto the gin-ribs D and is conveyed thereby out of the machine. At the same time partially-ginned cotton passes around with the roll to the upper portion of the roll-box, where the teeth of the feed-roll G engage the roll and extract a sufficient quantity of the cotton to prevent the roll from becoming hard, and also assists the gin-saws to revolve the roll and prevent the same from packing the lint in the throat of the teeth of said gin-saws. The brush H , which revolves much faster than the feed-roll G , detaches the cotton from said feed-roll and deposits the same onto the traveling belt g^5 , by which it is conveyed to the roll-box A^3 , where the gin-saws A^5 remove the remainder of the lint from the seed, said lint being delivered from the brush B' into the flue C' to combine with the lint from the gin A , or the chutes may lead to separate condensers, if desired. The motes, dirt, and other foreign matter falling from the brushes may be conveyed out of the machine in any

preferred manner. It will thus be seen that while the gin works as rapidly as other gins, it also produces a finer quality of cotton by separating the objectionable matter and preventing the cutting or tearing of the lint.

Where belts are used for imparting motion to the several parts, devices, as at $k^3 k^4$, may be used for taking up slack, or gearing may be used, in some instances, for communicating motion to some or all of the parts, and the traveling belt g^5 may have motion imparted thereto by means located on the framework of the gin A, instead of by a belt connected to the saw-shaft of the gin A'.

It is obvious that the framework and the construction and arrangement of the gins may be changed so long as the cotton may be fed from the upper portion of one roll-box to another; and that a second gin may be located beneath either or both of the gins A A', adapted to remove any lint that may adhere to the seed or motes which pass through the roll-box.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with a suitable frame-work or casing provided with a roll-box, of a feeding attachment comprising a feed-roll extending into the upper portion of said roll-box and adapted to remove some of the cotton contained therein, a brush for detaching the cotton from the feed-roll, a second roll-box, and means for conveying the detached cotton to said second roll-box, together with means for revolving said feed-roll and the brush, substantially as described.

2. The combination with two or more gins provided with roll-boxes, of a feeding attachment adapted to remove a portion of the partially ginned cotton from the upper portion of one of the roll-boxes and convey the same to the roll-box of another gin, substantially as and for the purpose described.

3. In a cotton gin, the combination of two or more roll-boxes, a flue for each roll-box, gin-ribs or grates and saws for each box, a brush for each set of saws, means for revolving the saws and brushes, a revolving feed-roll which extends into the upper portion of one of the roll-boxes adapted to remove some of the cotton contained therein, together with means for conveying the cotton from the feed-roll to a second roll-box, substantially as described.

4. A cotton gin comprising a suitable frame-work having two or more roll-boxes arranged thereon, grates for each box, revolving saws projecting through said grates, the oppositely revolving brushes for the saws, a feed-roll extending into the upper portion of the roll-box above the saws adapted to remove some of the partially ginned cotton contained therein, a brush for detaching the cotton from the feed-roll, means for revolving said feed-roll and

brush, together with a traveling belt for conveying the detached cotton to a second roll-box, substantially as described.

5. The combination with a suitable frame-work or casing provided with a roll-box, of a frame or casing secured thereto so as to be raised or lowered, means for raising and lowering said frame, a revolving feed-roll journaled in the frame and extending into the upper portion of the roll-box so as to remove some of the partially ginned cotton contained therein, means for detaching the cotton from the feed-roll, a second roll-box, together with means adapted to convey the detached cotton to said second roll-box, substantially as described.

6. In a cotton gin, the combination with a suitable frame-work provided with two or more roll-boxes, grates and saws for each roll-box, a brush for each set of saws, means for revolving said saws and brushes, a frame secured to the frame-work so as to be raised or lowered thereon, means for raising or lowering said frame, a feed-roll journaled in the frame and extending into the upper portion of the roll-box to remove some of the partially ginned cotton contained therein, a brush for detaching the cotton from the feed-roll, a traveling belt for conveying the detached cotton to a second roll-box, means for raising or lowering said belt, together with means for imparting motion to said feed-roll and brush, substantially as described.

7. In a cotton gin, a feeding attachment comprising a frame, a feed-roll provided with teeth journaled in said frame, a brush journaled in the frame to the rear of said feed-roll, and a traveling belt carried by the frame and arranged adjacent to said feed-roll and adapted to remove the material from the brush, substantially as described.

8. The combination with a frame-work or casing provided with a roll-box, a frame hinged thereto so as to be raised or lowered thereon, means for raising or lowering said frame, a feed-roll journaled in the frame and extending into the upper portion of said roll-box to remove some of the partially ginned cotton contained therein, a brush for detaching the cotton from the feed-roll, a casing pivoted to the frame, and provided with an opening near its outer end, rollers journaled in said casing, a traveling belt passing around the rollers and adapted to convey the cotton from the brush to the opening in the casing, means for raising or lowering said casing, and means for imparting motion to the feed-roll, brush, and traveling belt, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN RICE.

Witnesses:

W. M. STRIPLIN,
J. S. KELLY.