

(No Model.)

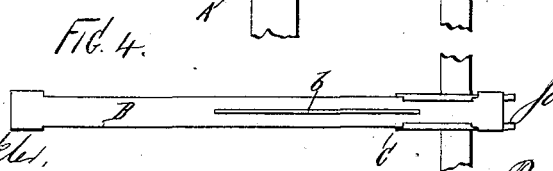
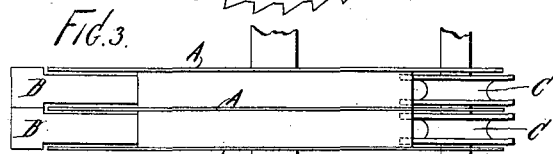
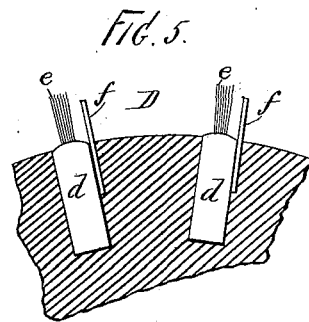
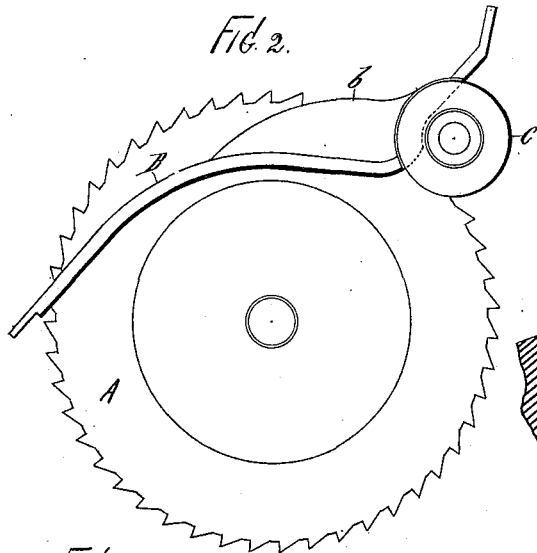
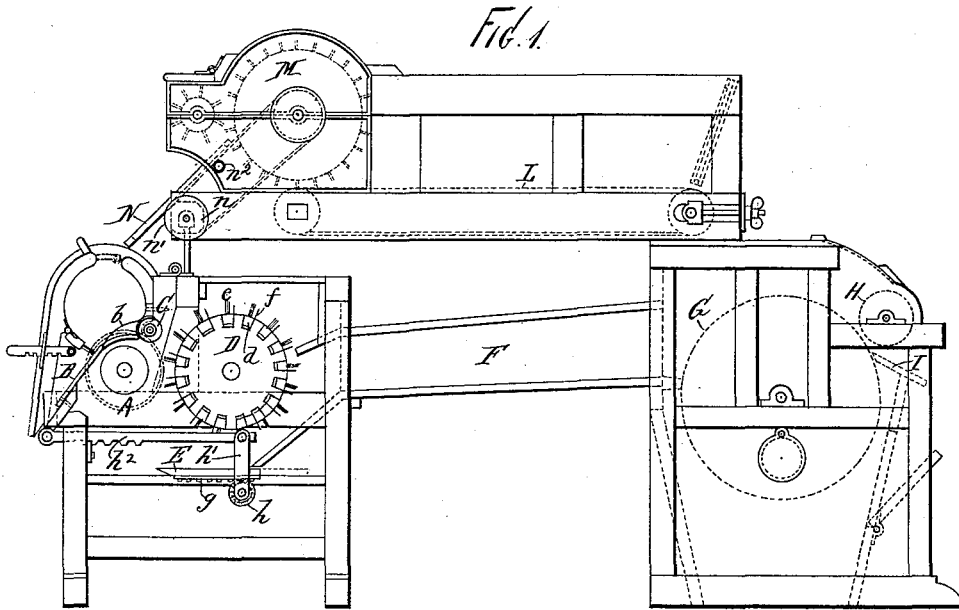
4 Sheets—Sheet 1.

J. RALSTON.

COTTON GIN.

No. 351,401.

Patented Oct. 26, 1886.



Witnesses:
 John Buckler,
 L. H. Osgood.

Joseph Ralston,
 Inventor:
 By North Osgood
 Attorney

(No Model.)

4 Sheets—Sheet 2.

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Fig. 6.

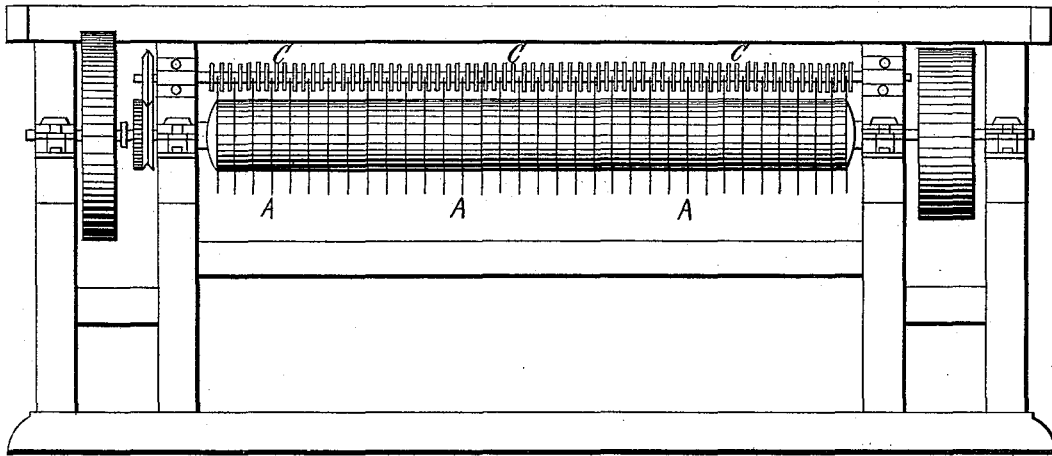


Fig. 7.

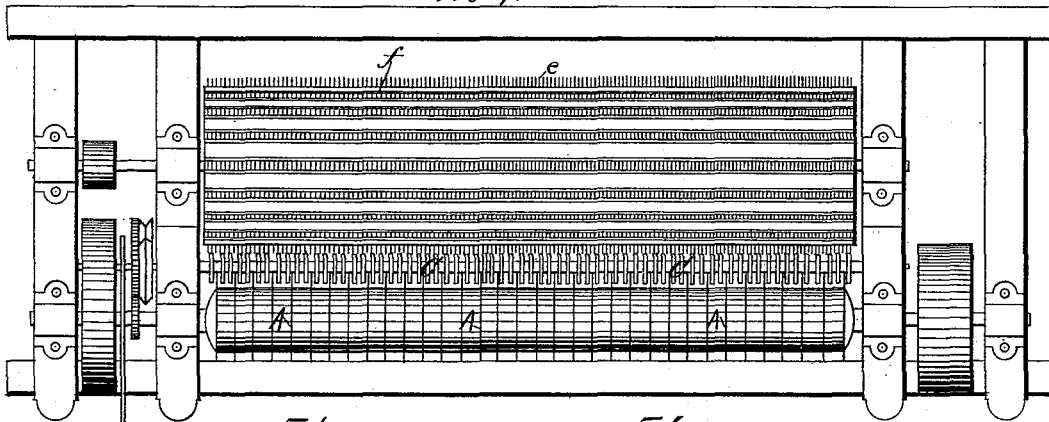


Fig. 8.

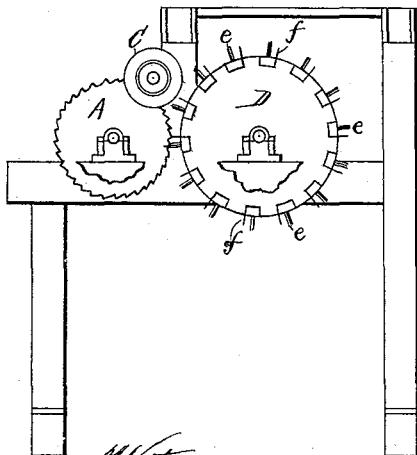
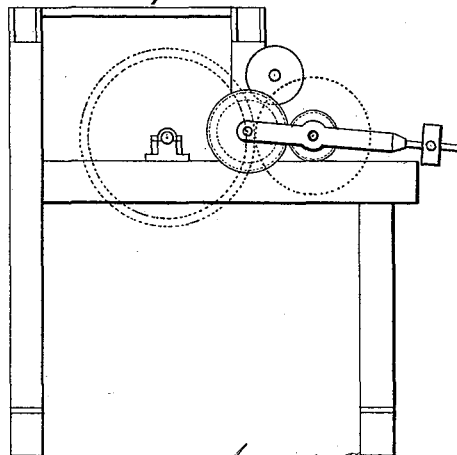


Fig. 9.



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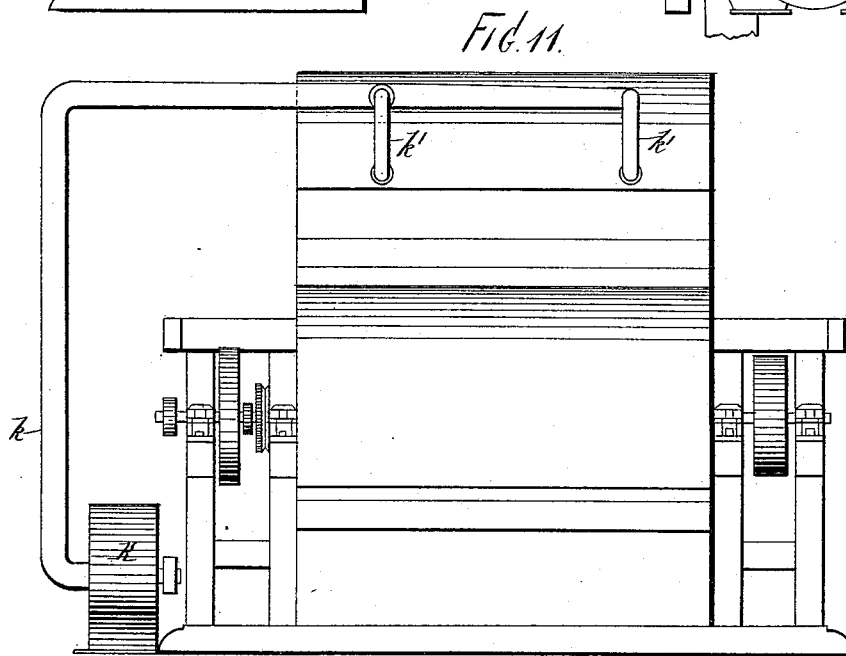
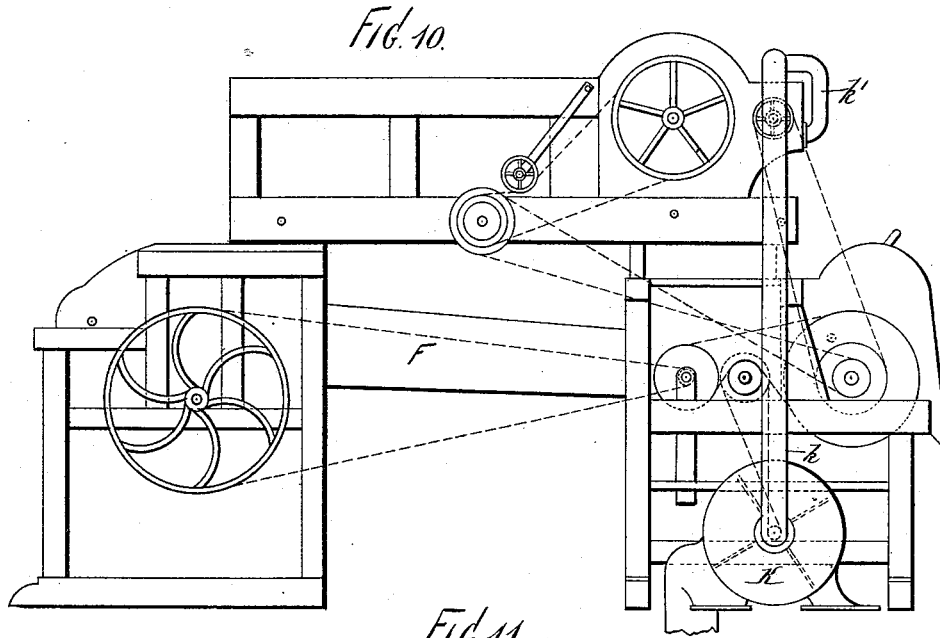
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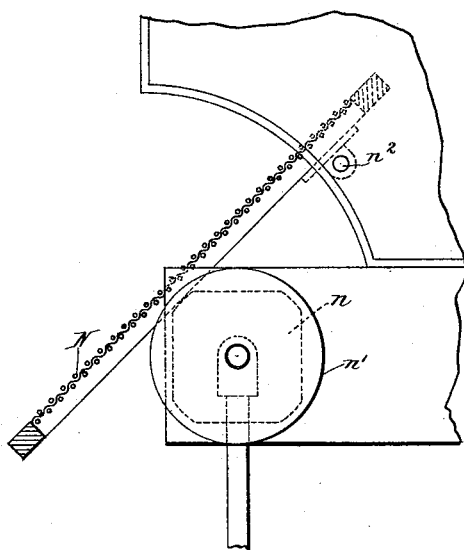
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FIG. 12.



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UNITED STATES PATENT OFFICE.

JOSEPH RALSTON, OF BRENHAM, TEXAS.

COTTON-GIN.

SPECIFICATION forming part of Letters Patent No. 351,401, dated October 26, 1886.

Application filed August 3, 1885. Serial No. 173,342. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH RALSTON, of Brenham, county of Washington, and State of Texas, have invented certain new and useful
5 Improvements in Cotton-Gins, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

10 My invention has relation to that class of machines employed for separating lint cotton from the seeds and cleaning and dusting the cotton, which machines are ordinarily known as "cotton-gins" or "saw-gins," or "roller
15 saw-gins," and my improvements are principally applicable to the variety known as "roller saw-gins," though the subordinate features may be applied in connection with any variety.

20 The principle object of my invention is to produce a machine of the class named, wherein the lint or fiber may be thoroughly separated from the seeds without breaking or cutting, delivered from the machine without mat-
25 ting, and freed from dust, dirt, and other impurities, the machine running smoothly, requiring but little power, and being little liable to get out of order.

30 Subordinate objects are the provision of an improved form of rib between the saws and operating in connection with the roller. The provision of simple means for adjusting the mote-board, the convenient arrangement and application of a suction-fan and air and dust
35 conveying tubes, the provision of simple and efficient means for shaking the screen from which the cotton is delivered to the saws, and general arrangements of parts calculated to simplify and improve the machine.

40 To accomplish these objects my improvements involve certain new and useful peculiarities of construction, relative arrangements or combinations of parts, and principles of operation, all of which will be herein first fully
45 described, and then pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a view in elevation representing the general arrangements of the operating parts of the machine, the side
50 of the casing being supposed to be removed. Fig. 2 is an elevation upon a scale enlarged beyond Fig. 1, showing one of the saws, a roll-

er, and one of the ribs in connection therewith. Fig. 3 is a plan representing three
55 saws, two rollers, and two ribs applied in connection therewith, the view being taken as from beneath the saws and looking up. Fig. 4 is a top or plan view of one of the ribs. Fig. 5 is a sectional elevation showing a fragment of the brush and indicating its peculiar con-
60 struction. Fig. 6 is a front elevation of a part of the machine, indicating the arrangement of the saws and the rollers, omitting the ribs; and Fig. 7 is a plan view showing the saws, the rollers, and the brush, omitting the ribs.
65 Fig. 8 is a partial end view looking toward the left of Fig. 6, and Fig. 9 a partial end view looking toward the right of Fig. 6, and showing the mechanism by which the roller is operated. Fig. 10 is a side elevation show-
70 ing the exterior of the machine, and Fig. 11 is an end elevation, both showing the suction-fan and the duct and air pipes. Fig. 12 is a sectional elevation on a scale enlarged beyond other figures, showing the shaking-screen and
75 the manner of hinging it.

In all these figures like letters of reference, wherever they occur, indicate corresponding parts.

A A are the saws, which are usually driven
80 at a high rate of speed and intended to separate the cotton fiber from the seeds. These saws are mounted upon an arbor and separated from each other, as indicated in Figs. 6 and 7, and may be of any desired number, accord-
85 ing to the size and capacity of the machine.

The saw-shaft is driven by belt-connections with any suitable power, a friction-clutch being preferably employed for coupling the machine with the power, so that the operator
90 may start and stop the machine easily and without unnecessary shock or jar.

The cotton to be ginned is delivered to the saws from above. To prevent the cotton from lodging between the saws and clogging them,
95 I employ ribs B, made of metal and located between the saws, and of a width very nearly equal to the distance between the saws, as indicated in Figs. 2 and 3. These ribs are placed
100 over the arbor and may protect more or less of the upper parts of the saws, according to the size of the latter and the work required to be done. C C are parts of the roller between which the saws move, the roller being driven

by connection with the saw-shaft in the same direction as the saws. This roller can be made from a solid round bar, say, two and one-half inches in diameter, with grooves turned out for the saws, say, three thirty-seconds of an inch wide and five-eighths deep, leaving the shaft in the center one and one-quarter inch diameter; then, allowing the flanges next the saws to be one-eighth of an inch wide and five-eighths deep to receive the curve of the rib, the roller can revolve without unnecessary friction, neither it nor the ribs being allowed to touch the saws.

The roller might be made of suitable blocks separately turned and mounted and secured upon a central shaft. The saws load with the seed-cotton before they reach the roller, which cotton is fed in at the breast of the machine. As the saws revolve forward, they pass through the grooves in the roller carrying the lint forward to the brush, which latter takes the lint off the saws, the roller holding the seeds back and compelling them to pass around in the roll which forms on top of the roller until the lint is removed from them. Then the seeds pass down on the ribs under the seed-cotton in the roll and fall on the floor. The roller, running in the same direction as the saws, has a tendency to keep the roll in perfect shape, so as not to become clogged, and so that it will not be cut through by the saws which would then cut and destroy the fiber. The rib B is shown as provided with a projecting inclined piece, *b*, extending upwardly, as shown in Fig. 2, being inclined on top and extending over to the position of the roller. The purpose of this inclined piece is to separate and direct the cotton fibers so that two saws cannot have hold of the same fiber at the same time. The incline *b* is not always used, however. I employ it when ginning long-staple cotton, but it may be omitted when short-staple cotton is being operated upon. In connection with the roller the rib with the incline can be fitted to any of the saw-gins as now ordinarily constructed. When the saws enter the rollers, the ribs do not come in contact with the saws. The roller takes the place of the old style of ribs. The ribs which I use are for the purpose of keeping the seed-cotton from falling between the saws and to direct the cotton so that it will take the form of a roll above the roller and the saws.

D represents the brush, which I employ to keep the saws clean and for producing draft. This brush is made up of a series of strips, *d*, having horse-hair or other brush material mounted therein, as indicated at *e*. A strip of sheet-iron, *f*, or other thin material, extends the length of each strip *d*, and nearly up to the ends of the bristles *e*, being mounted upon the side of the bristles from which the brush is traveling. I make no claim herein to the brush.

E is the mote-board, placed under the brush. This board is made movable, so that it may be

adjusted to the brush as circumstances may require. To provide for its easy adjustment, I attach a rack, as *g*, on each end of the board and supply pinions, as *h*, to work in these racks, the pinions being mounted upon a shaft located below the mote-board. The pinions are turned by an arm, as *h'* and lever *h''*, the latter being notched, as shown, and extending out through the front of the machine. The notches are for the purposes of locking the lever at any point to which adjusted. The board can, by this arrangement, be adjusted to any desired point and without danger to the operator or necessity of stopping the machine. The cotton from the brush of the gin is carried to the duster by a flue, F, and deposited on a wire screen-drum, G, about two feet in diameter. At the rear of drum G is a second drum, H, of smaller size, (about eight inches in diameter,) the two drums being separated by about one-half inch.

Under the small drum or roller H is a board, I, the edge of which is beveled to fit the large drum rather closely, and this board is for the purpose of receiving the cotton and carrying it forward from under the drum or roller H and out of the machine. The arrangement is such as to enable the cotton to receive the full force of the blast from the brush and to deliver it free and clean and without matting or napping.

In opening up the lint-cotton, and at the same time freeing the cotton from all dust, motes, and leaf-trash, I find that the faster I run the drum G, and the thinner I cause the cotton to be spread on this drum, the better results are obtained. At K is a small suction-fan, from the casing of which a pipe, *k*, about three inches in diameter extends up over the gin-roll, (the curved portion of the casing of the machine,) with suitable branches, as *k'*, communicating with the interior of the casing around drum M. The fan is driven from the end of the brush-shaft and operates to carry off all dust and fine particles of lint and other fine material that arise from the cotton as the latter is moved upon the feeding drum and apron. The rapid movement of the fan within its casing causes a strong draft through the dust-pipe and its branches, (the latter being in communication with the interior of the casing of the machine,) and this draft carries the dust, lint, &c., out of the machine.

The cotton is brought forward by the endless apron to the drum, taken from the drum by the breaking-roller shown in connection therewith, and thrown upon the shaking-screen, which conveys the seed-cotton into the "breast" of the gin, freed from sand and leaf-trash by the movement of the screen, the sand being collected in any suitable box or tray, which may be placed convenient for its reception and ready removal. The separation of the sand from the cotton before it goes to the saws prevents friction and often fire, and greatly improves the grade of cotton.

The fan arrangement enables me to keep the gin-house clear of dust, which is not only disagreeable but frequently dangerous, as when the cotton has previously been treated with

5 poisonous matters to destroy animal life.

L is the apron upon which the cotton is received; M, the feeding-drum, and N the shaking-sieve, from which the cotton is delivered to the saws. This sieve is operated, or the shaking

10 movement communicated thereto, by an irregular or eccentric wheel, *n*, mounted upon a shaft, upon which is a grooved pulley, *n'*, which is driven by belt-connection with the axle of the feeding-drum, as shown in Fig. 1.

15 The sieve is hinged at or near the top, as at *n*², and, as will be readily understood, the eccentric strikes the frame of the sieve and moves the same to correspond with the velocity of the feeding-drum. The movement is comparatively noiseless, and little power is required to accomplish it.

When constructed and arranged substantially in accordance with the foregoing explanations, the improved machine is found in

25 practice to admirably answer the purposes or objects of the invention as previously set forth.

Having now fully described my invention, what I claim as new, and desire to secure by

Letters Patent, is—

30 1. In a cotton-gin, the combination of the gin-saws, the recessed roller moving in the same direction as the saws, and the ribs placed between the saws and above the arbor or shaft thereof, the ribs having the inclined flanges

35 mounted upon their upper surfaces, projecting above the saws and extending up to the roller, the ribs and roller operating upon the cotton at the point where the lint is separated from the seed, substantially as shown and described.

2. In a cotton-gin, the saws, the rollers, and the ribs provided with the inclined projections, combined and arranged for operation substantially as shown and described.

3. In a cotton-gin, the combination of the saws, revolving brush, adjustable mote-board arranged below the revolving brush and rack, pinion, and operating lever projecting through to the front of the machine, all arranged substantially as set forth.

4. In a cotton-gin, the combination, with the operating parts of the machine, of the suction-pan, the air and dust pipe communicating with the casing of said fan and the branches leading from said pipe and connecting with the interior of the machine, the fan being driven by belt-connection with the brush-shaft of the machine, substantially in the manner and for the purposes set forth.

5. A cotton-gin comprising the gin-saws, the roller, the feeding-drum, the endless apron, the breaking-roller, the shaking-screen hinged below the feeding-drum, the eccentric or irregular wheel for operating said screen, and the belt connecting the shaft of the feeding-drum and that of the eccentric or irregular wheel, all the parts being connected and arranged for simultaneous operation, substantially as shown, and for the purposes set forth.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of two witnesses.

JOSEPH RALSTON.

Witnesses:

J. W. WATKINS,
J. O. BRUCKNER.