

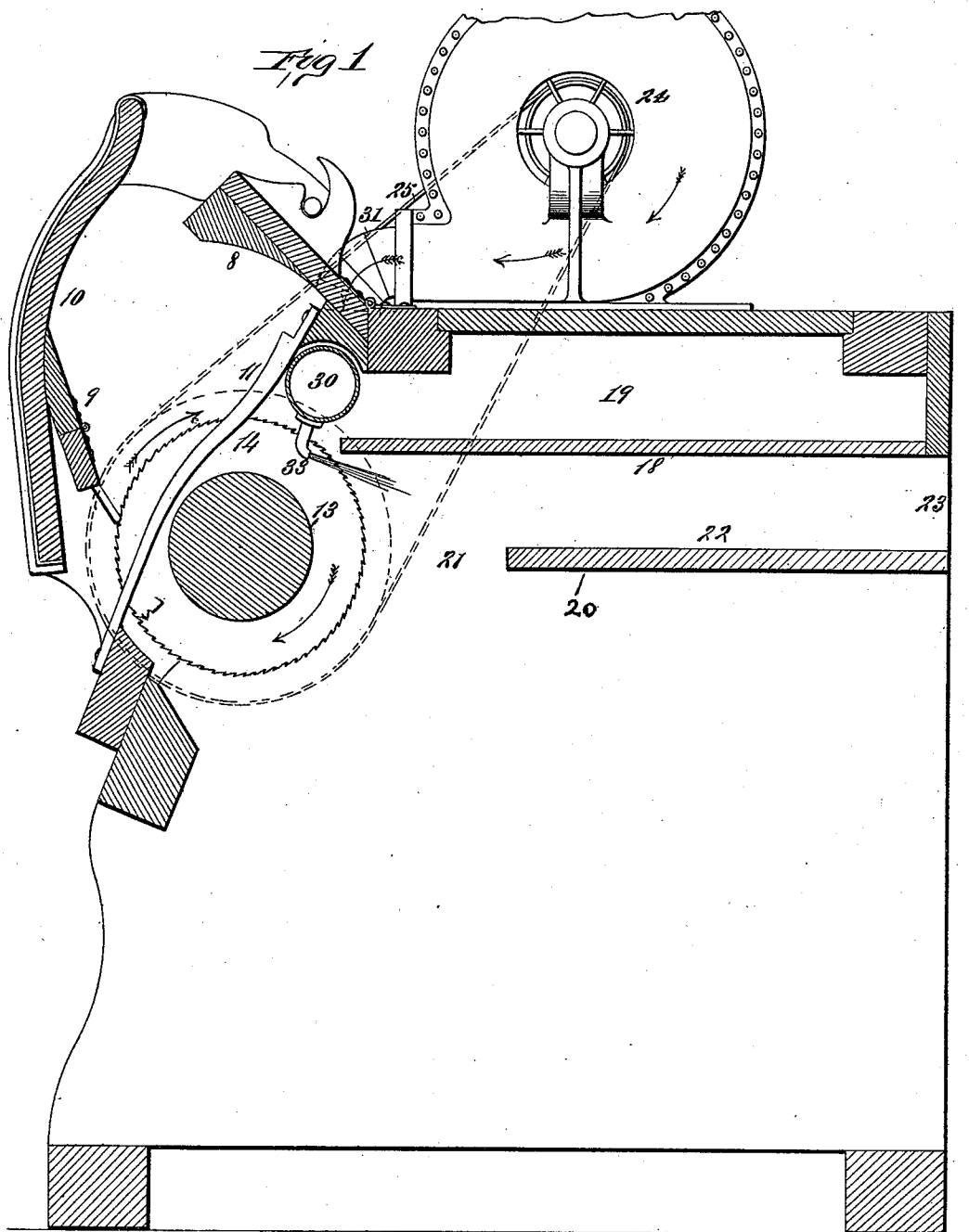
(No Model.)

2 Sheets—Sheet 1.

R. KING.
COTTON GINNING APPARATUS.

No. 510,269.

Patented Dec. 5, 1893.



Witnesses:

Walter D. Peler

M. H. Brown

Inventor:

Robert King

By Fowler & Fowler

Attest

(No Model.)

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Fig. 3. Fig. 4.

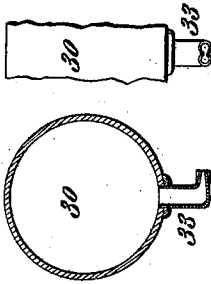
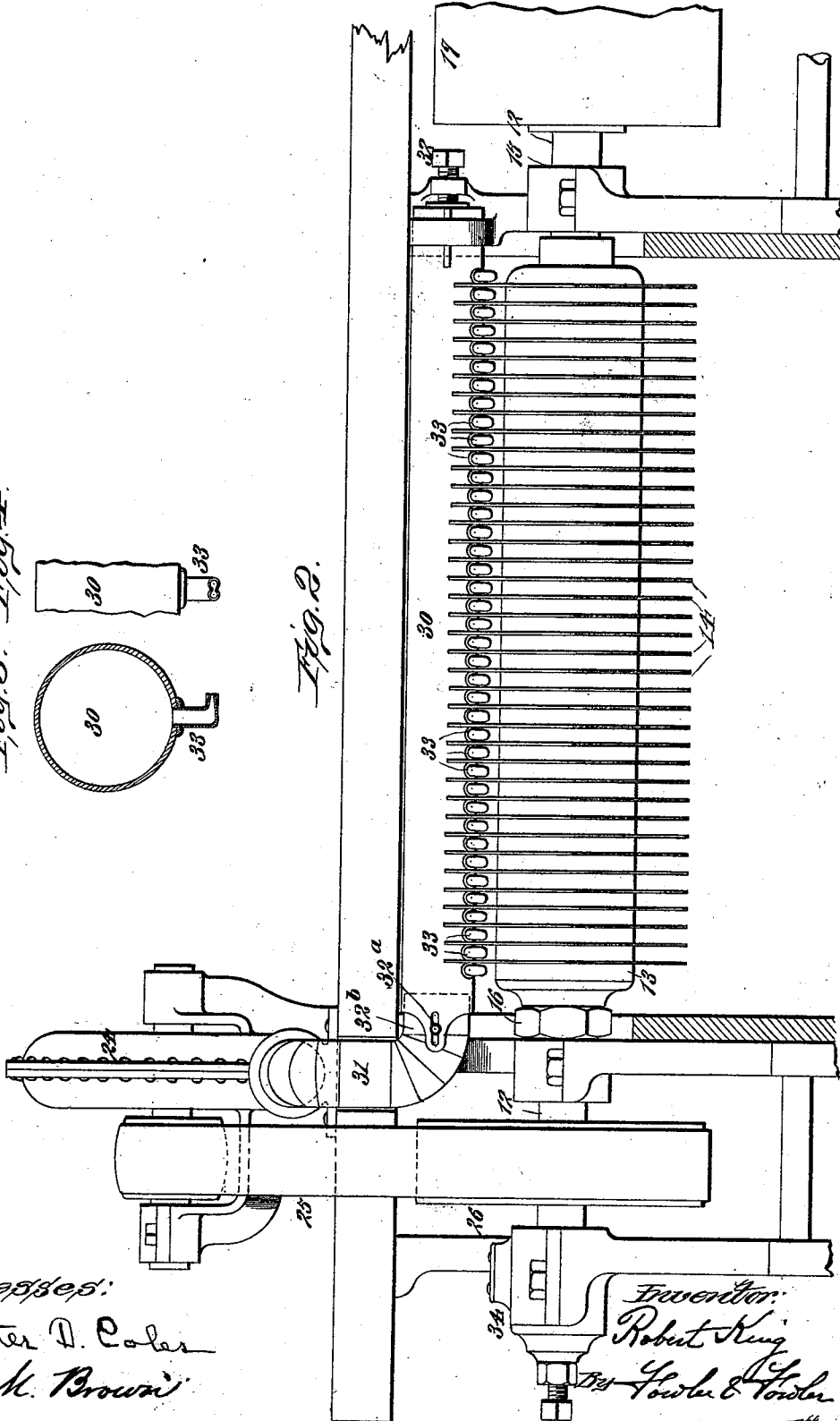


Fig. 2.



Witnesses:

Walter D. Coles
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Inventor:
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By J. Fowler & Fowler

UNITED STATES PATENT OFFICE.

ROBERT KING, OF MANSFIELD, LOUISIANA, ASSIGNOR TO THE KINGSLAND & DOUGLAS MANUFACTURING COMPANY, OF ST. LOUIS, MISSOURI.

COTTON-GINNING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 510,269, dated December 5, 1893.

Application filed April 14, 1893. Serial No. 470,380. (No model.)

To all whom it may concern:

Be it known that I, ROBERT KING, a citizen of the United States, residing at Mansfield, county of De Soto, and State of Louisiana, have invented certain new and useful Improvements in Cotton-Ginning Apparatus, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

One object of my invention is to provide a cotton ginning apparatus having means for subjecting the lint from which theseeds have been removed to a draft of air, so as to effect a separation of the lint from the motes, dirt and other impurities which may be present therein.

Another object of my invention is to provide a cotton ginning apparatus having simple and efficient means for removing the lint from the gin-saws or other appliances which may be employed to separate from the seed the lint.

I also have, as further objects of my invention, to increase the capacity of the gin, simplify the construction and decrease the cost of the same, effect a saving of motive power, prevent the formation of naps, and by keeping the gin-saws cool and free from gumming, thereby avoid injury to the saws and also obviate the danger of igniting the cotton by heat.

These several objects I accomplish by dispensing with the ordinary brushes which have been heretofore used for the purpose of removing the lint from the saws, and substituting therefor a draft of air, which draft of air is brought in contact with the lint cotton in such a way as to remove the same from the gin-saws, and also effect a separation of the lint from the motes and other impurities which may be present therein.

In conjunction with the draft of air employed as aforesaid, I may provide a chamber so situated relatively to the gin-saws as to form a receptacle for the dust, dirt, and other impurities which may be present in the lint, the said impurities being separated from the lint and thrown into said chamber by the

centrifugal force of the revolving gin-saws. I provide also a cotton-flue into which the lint is carried by the draft of air, the inner end of the flue being separated from the gin-saws or equivalent appliances, sufficiently to permit the motes and heavier impurities present in the lint to fall from the lint through said space, while the lint itself, being lighter than the motes or other impurities, will, when subjected to a draft of air, be carried across said space and into the said cotton-flue.

My invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 is a section of a cotton-gin provided with my improvements. Fig. 2 is a front view of the cotton-gin, the breast being removed, showing the gin-saws and draft devices, the lower part of the gin being cut away. Fig. 3 is a transverse section of the air-blast pipe with one of the nozzles connected therewith. Fig. 4 is a side view of a section of the air-blast pipe having one of the nozzles attached.

Referring to the drawings, in which the same marks of reference indicate the same parts throughout the several views: 10 is the breast of a cotton-gin, and may be of any ordinary construction. Within the breast is the ordinary seed-board 9, and the ordinary upper circle 8.

11 is one of the ribs situated between the saws of the gin. The gin rests upon suitable frame-work, which is surrounded by the usual casing. I may have the bottom of the gin open, as shown in Fig. 1.

13 is a gin-cylinder of any ordinary construction, provided with the gin-saws 14. The gin-cylinder is mounted upon a shaft 12, which rests in bearings 15 and 16 placed at the sides of the gin. The shaft 12 is provided at one end with a driving-pulley 17, and has upon the other end a pulley 26 adapted to drive the fan or blower 24, as hereinafter explained. The fan or blower 24 is preferably mounted upon the top of the gin, and may be of any ordinary construction. Said fan or blower I prefer to propel by a belt 25 passing over the pulley 26 secured to the shaft 12 of the gin-cylinder, said shaft being extended

beyond the bearing 16, and being journaled at its outer end in the bearing 34.

I wish distinctly to state that I do not limit myself to placing the fan or draft-creating device upon the gin itself as herein described, it being obvious that said fan or draft-creating device may be entirely separated from the gin if such an arrangement be found desirable.

Running transversely across the gin, near the gin-saws, is the hollow blast-pipe 30, which may be made of wood, metal or any suitable material. The blast-pipe 30 is connected with the blower by means of any proper pipe 31 (Fig. 2), said pipe being provided with such elbows and joints as the situation of the fan or blower may require. The blast-pipe 30 is firmly held in place by means of an adjusting-screw 32 (Fig. 2) connected with the blast-pipe 30. The other end of the blast-pipe 30 is secured to the pipe 31 by means of the screw or bolt 32^a, which passes through a suitable slot in the blast-pipe 30. The pipe 31 is provided with a telescoping joint 32^b. The blast-pipe is therefore capable of adjustment, so that the nozzles hereinafter described may be brought to exactly the desired point between the gin-saws. The blast-pipe 30 may be moved longitudinally by causing the adjusting screw 32 to move in or out against the end thereof, or said blast-pipe may be rotated, the telescoping joint 32^b being adapted to permit the latter movement.

Arranged at short intervals across the entire width of the interior of the gin, is a series of nozzles 33, one of said nozzles being placed between each two adjacent gin-saws 14. Said nozzles extend from the blast-pipe 30 to a point between the gin-saws, and have their ends bent at substantially a right-angle with their upper part. The outer ends of the nozzles are preferably flattened or crimped, as shown in Fig. 4, so as to form an outlet somewhat in the form of the number "8," thus operating to better distribute the draft of air emitted therethrough. The ends of the nozzles 33 are turned toward the rear part of the gin, and point in the direction of the flue 22, as shown in Fig. 1.

Although I preferably place the draft-pipe 30 near the upper part of the gin-saws as shown in Fig. 2, I do not wish to be understood as limiting myself to placing it in that position, as the draft-pipe may be placed in any convenient situation, providing the nozzles leading therefrom are given such a direction as will conduct the draft of air to the desired point between the gin-saws, as hereinbefore set out.

Within the gin, near the top of the gin-casing, is the transverse partition 18, which partition extends from the rear wall of the gin to a point adjacent to the upper part of the gin-saws. Between the said partition 18 and the top casing of the gin, is a sand or dirt-chamber 19, said chamber extending across the entire breadth of the gin, and is provided

with proper means of access thereto through the top thereof. Below the partition 18, and extending across the entire breadth of the gin, is a second partition 20, the said partition 20 being sufficiently separated from the partition 18 to form between said partitions a flue 22, of proper capacity for discharging the lint-cotton. Said partition 20 does not extend entirely across the whole width of the gin, but it extends from the rear wall of the gin to a point somewhat removed from the gin-saws at the front of the gin, as shown in Fig. 1, leaving a space 21 between the gin-saws and the front edge of the partition 20. The object of said space 21 is to utilize the draft of air for the purpose of effecting a separation of the lint from the motes and other impurities which may be intermixed therewith. The said draft of air readily carries the lint across said space 21 and along said flue 22, while the motes and other impurities, being heavier than the lint, will not be carried across said space 21 by the draft of air, but will fall therethrough and be deposited beneath the gin. The rear wall of the gin is cut away at 23, forming an outlet for the flue 22, so that the cotton may pass along said flue and through said outlet to a condenser, conveyer or other receptacle, which I preferably place in immediate juxtaposition to the gin. Where the lint is removed from the saws by a draft of air, as hereinbefore described, the fiber of the lint is kept free from the naps which are likely to be formed between the brushes and the saw-teeth, when brushes are employed. The draft of air also performs the useful purpose of drying the lint.

The mode of operation of my improved gin is as follows: The seed-cotton being placed in the breast, the lint is carried around on the saws until it reaches a point adjacent to the sand-chamber 19. The centrifugal force caused by the rapid rotation of the saws will cause the sand and heavier particles intermixed with the lint, to fly off at substantially a tangent, and be deposited in the sand-chamber 19 in the upper part of the gin. When the gin-saws bearing the lint have rotated past the opening into the sand-chamber 19, and come to a point opposite the nozzles 33, the lint is subjected to the draft of air emitted from the ends of said nozzles, and is blown by said draft of air off the saws and across the space 21 into the cotton-flue 22, which leads to a condenser or any proper receptacle. The motes, dirt and dust present in the lint, being heavier than the lint, will fall through the space 21 and be deposited underneath the gin, while the lint itself is so light as to be carried across the intervening space by the draft of air, and caused to move along the flue 22 to any reasonable distance that it may be desired to convey it.

The substitution of the draft of air employed by me, for the brushes heretofore used in cotton-gins, not only enables me to deprive

the cotton more entirely of its motes and other impurities, but also serves to keep the gin-saws cool, and thus prevent the possibility of the cotton taking fire, and preserve the gin-saws for a longer period than is possible when they are used in conjunction with brushes, in which latter case they are soon rendered defective by the heat generated by the friction between the saws and the rapidly-revolving brushes. By dispensing with the brushes I also obviate the necessity of repeatedly filing the saws to keep their teeth in proper condition, which operation is rendered necessary by the friction of the brushes against the saws.

My invention also enables me to effect a great saving in motive-power, it requiring the expenditure of three or four times as much motive power to propel the brushes with the requisite rapidity, as is required to supply the draft of air employed by me in lieu of the brushes.

The devices by which the draft of air is supplied are stationary and of a simple and inexpensive character, by reason of which fact I obviate not only the expense, but also the liability to get out of repair, which is inevitable in the more complicated gins provided with brushes.

As it is necessary in cotton gins provided with brushes that the brushes should revolve very much faster than the gin-saws, it is found impracticable to have the saws move at a greater speed than about three hundred and fifty revolutions per minute, because if the number of revolutions of the saws is materially increased beyond that limit, it requires a rapidity of movement of the brushes that cannot be safely attained. Where my improvements are employed, however, no such limitation as to the speed of the gin-saws is required, and it will be entirely practicable to have the gin-saws revolve at the rate of five hundred revolutions per minute, or even more if desired, thereby greatly increasing the capacity of the gin, and serving to throw more of the sand and heavier impurities into the sand-chamber 19, by virtue of the augmentation of the centrifugal force due to the greater rapidity of revolution of the gin-saws.

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

1. In a cotton gin, the combination with the gin-saws, of means for subjecting the lint-cotton upon the saws to a draft of air, whereby the lint-cotton will be removed from the gin-saws independently of brushes.

2. In a cotton-gin, the combination with the gin-saws, of draft-generating means for producing a draft of air, the said draft of air moving outwardly from between the gin saws against the lint-cotton thereon, whereby the lint cotton will be removed from the gin saws independently of brushes.

3. In a cotton-gin, the combination with the

gin-saws, of draft-creating appliances for producing a blast of air, means for conducting the blast of air to points between the gin-saws, and devices for discharging the same outwardly against the lint.

4. The combination with a cotton-gin provided with gin-saws, of a fan or blower, a pipe conducting the air from said fan or blower, and nozzles connected with said pipe and conducting to points between the gin-saws.

5. The combination with a cotton-gin provided with gin-saws, of a fan or blower, a pipe conducting the air from said fan or blower, and nozzles connected with said pipe and conducting to points between the gin-saws, the said nozzles having their ends bent at an angle to their upper portions.

6. The combination with a cotton-gin provided with gin-saws, of a fan or blower, a pipe conducting the air from said fan or blower, and nozzles connected with said pipe and conducting to points between the gin-saws, the said nozzles having their end portions bent at an angle with their upper portions, and being flattened or crimped at their ends.

7. In a cotton-gin, the combination with the gin-saws, of draft-generating means for creating a draft of air, and a cotton-flue adjacent to the gin-saws, whereby the lint upon the gin-saws will be removed therefrom by said draft of air and carried into and along said cotton-flue.

8. In a cotton-gin, the combination with the gin-saws, of draft-creating appliances for producing a blast of air, means for conducting the blast of air to points between the gin-saws, devices for discharging the same outwardly against the lint, and a cotton-flue into and along which the lint is carried by said draft of air.

9. In a cotton-gin, the combination with the gin-saws, of draft-creating appliances for producing a blast of air, means for conducting the blast of air to points between the gin-saws, devices for discharging the same outwardly against the lint, and a cotton-flue into and along which the lint is carried by said draft of air, the said cotton-flue being separated from the gin-saws by an appreciable intervening space.

10. In a cotton-gin provided with gin-saws, the combination of a sand chamber having an opening adjacent to the upper part of the gin-saws, draft-creating and conducting devices adapted to subject the lint-cotton on the gin-saws to a draft of air moving outwardly against said lint-cotton, and a cotton-flue into and along which the lint-cotton will be carried by said draft of air.

11. In a cotton-gin provided with gin-saws, the combination of a sand chamber having an opening adjacent to the upper part of the gin-saws, draft-creating and conducting devices adapted to subject the lint-cotton on the gin-saws to a draft of air moving outwardly against said lint-cotton, and a cotton-flue into and along which the lint-cotton will be car-

ried by said draft of air, the inner end of said cotton-flue being separated from the gin-saws by an appreciable space.

12. In a cotton-gin provided with gin-saws, the combination of a draft-creating appliance, a blast-pipe conducting from said draft-creating appliance to the interior of the gin, nozzles extending from said blast-pipe to points between the gin-saws, a sand-chamber having an opening adjacent to the upper part of the gin-saws, and a cotton-flue for conducting the lint-cotton out of the gin, the inner end of said cotton-flue being separated by an appreciable space from the gin-saws.

13. In a cotton-ginning apparatus provided with means for separating the lint from the

seeds, the combination of draft-creating devices for producing a draft of air, a conducting pipe for conveying said draft of air to points between the gin-saws, and adjusting devices for regulating the position of said pipe relatively to the gin-saws.

In testimony whereof I have hereunto set my hand and affixed my seal, this 31st day of March, 1893, in the presence of the two subscribing witnesses.

ROBERT ^{his} × KING. [L. S.]
mark

Witnesses:

J. D. KINGSLAND,
WALTER D. COLES.