2 Sheets—Sheet 1.

W. L. CROWSON.

Combined Feeder and Cleaner for Cotton Gins.

No. 202,238. Patented April 9, 1878.

FIG. 1.

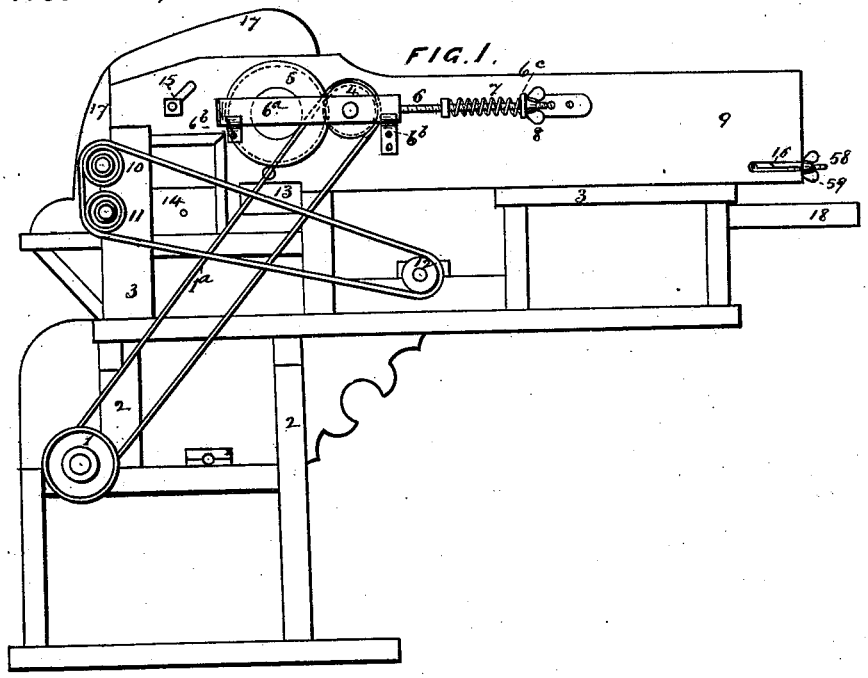
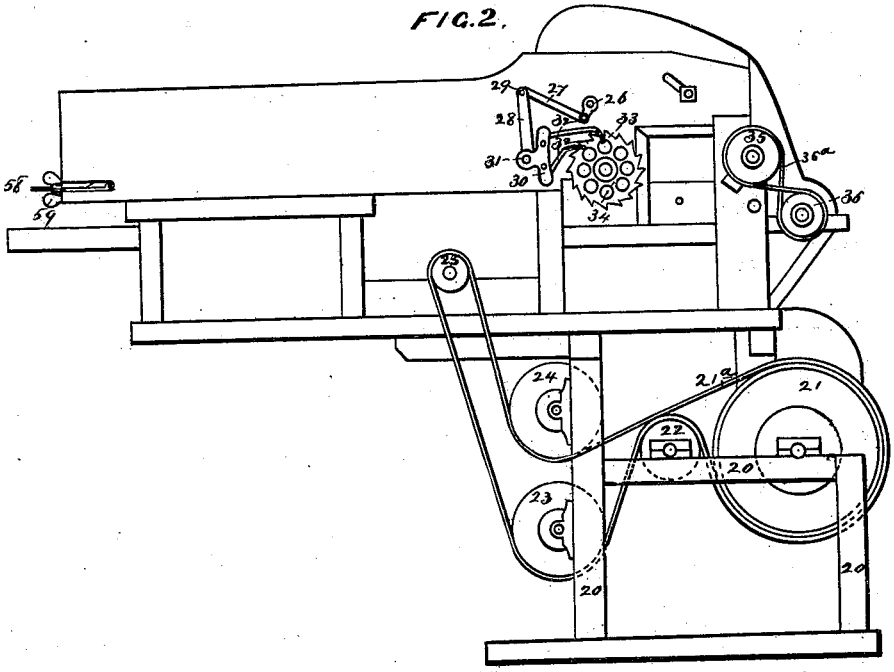


FIG. 2.



Witnesses
Chas J. Gooch
W. R. Eddon.

Inventor
William L. Crowson
By Knight Bros
Attorneys

2 Sheets—Sheet 2.

W. L. CROWSON.

Combined Feeder and Cleaner for Cotton Gins.

No. 202,238. **Patented April 9, 1878.**

FIG. 3.

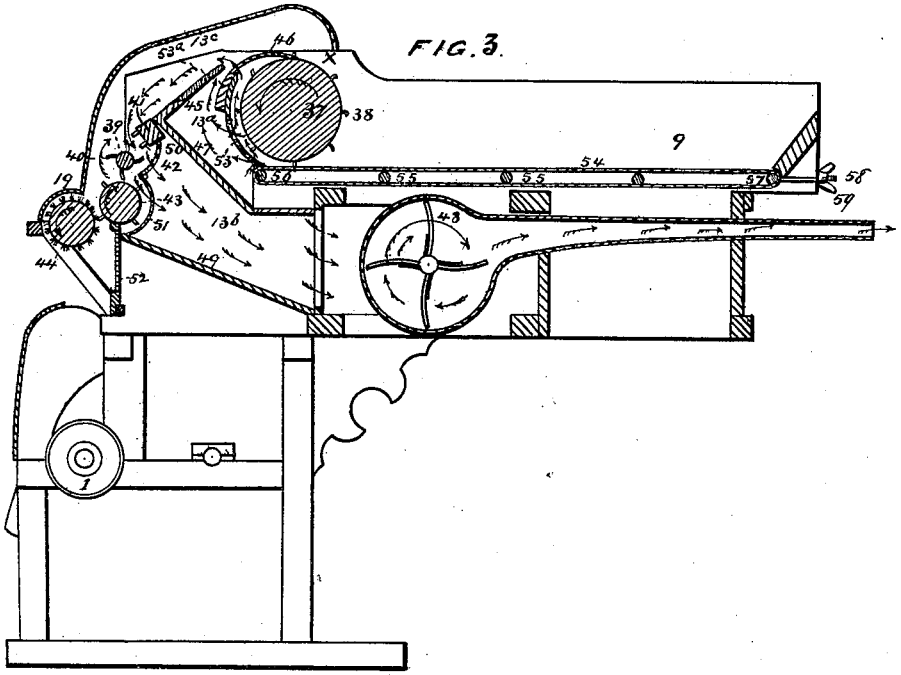
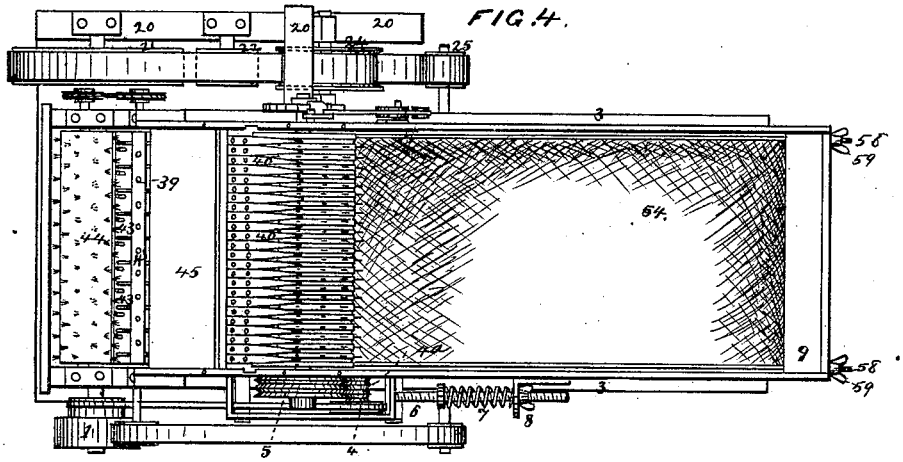


FIG. 4.



Witnesses
W. R. Edelen.
Chas J. Gooch

Inventor.
William L. Crowson
By Knight Bros
Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM L. CROWSON, OF MEMPHIS, TENNESSEE.

IMPROVEMENT IN COMBINED FEEDER AND CLEANER FOR COTTON-GINS.

Specification forming part of Letters Patent No. **202,238**, dated April 9, 1878; application filed December 29, 1877.

To all whom it may concern:

Be it known that I, WILLIAM L. CROWSON, of Memphis, in the county of Shelby and State of Tennessee, have invented certain new and useful Improvements in Feeding and Cleaning Attachments for Cotton-Gins, of which the following is a specification:

My invention relates to a feeding, forwarding, and cleaning attachment for ordinary cotton-gins.

The object of this invention is to provide the cotton-gin in ordinary use with an automatic feeder, and while feeding, and before delivering the cotton to the gin, to free it from dust and dirt, sticks, or any foreign substance that may have gotten in with the cotton during gathering or otherwise, and to separate the motes and carry them away before entering the gin, thereby, after the cotton has been ginned, producing a cleaner, brighter, and straighter staple, a better grade for the market, and an article better fitted for the spinner.

In the accompanying drawings, Figure 1 is a side elevation of my improved cotton-gin with feeding and cleaning attachment. Fig. 2 is an elevation of the opposite side of the machine. Fig. 3 is a vertical longitudinal section. Fig. 4 is a top view.

In Fig. 1, 1 represents the driving-pulley of the gin, mounted on a frame, 2 2 2, forming the gin-stand and gin. 3 3 3 is the frame-work or case of the feeding and cleaning attachment, located above or over the gin. 4 is a friction-pulley, receiving motion from the driving-pulley 1 by means of a belt, 1^a. 5 is a friction-wheel on the shaft of a feed-drum, receiving motion from the pulley 4, which is brought in contact therewith by screw-adjustment 6, spiral spring 7, and adjusting-nut 8. 9 is a feed box or trough; 10 11, pulleys on shafts of beaters, connected by a belt to a fan-pulley, 12. 13 is an opening in the side of the frame, through which air passes to feed the fan. 14 is a sliding door opening into a trash-chamber. 15 is a nut and screw for adjusting a comb-apron. 16 are adjustable bearings for the revolving or endless apron of the feed-box. 17 17 are inclosing breasts or covers. 18 is the flue-outlet from fan. The lower breast 17 is provided with a wire screen, 19, allowing dust and leaf trash to pass off from cotton on brush-cylinder by centrifugal force.

In Fig. 2, 20 20 20 represent a frame secured to the side of the gin, for the purpose of carrying a system of pulleys to convey motion to an exhaust-fan, and, by means of the fan-shaft, to pulley on the opposite side of the machine, said pulley being connected to beaters and brush-cylinder by suitable bands. 21 is a large driving-pulley on the driving-shaft of the gin, the pulley 1, at opposite end of shaft, receiving motion from a steam or horse or hand power. 22, 23, and 24 are friction-pulleys, carrying driving-belt 21^a to driving-pulley 25 on shaft of exhaust-fan. 26 is a crank on shaft of feed-drum, giving motion, when rotated, to a toggle formed of two bars, 27 28, jointed at 29, and connected to a plate, 30, fulcrumed to the casing at 31. 32 32 are two pawls secured pivotally to the plate 30. These pawls engage with teeth 33 on the wheel 34, working alternately by the oscillation of the plate 30. The wheel 34 and its shaft are thus rotated and impart motion to the endless feed-apron. 35 is a pulley on the shaft of beater, connected to a pulley, 36, on the shaft of a brush-cylinder by means of a crossed belt, 35^a, so as to cause the brush-cylinder to revolve in a contrary direction.

In Figs. 3 and 4, 37 is a feed-drum, having teeth 38 of preferably curved form, as shown. 39 is a beater, whose arms 40 pass between teeth 42 on a beam, 41. 43 is a revolving drum or shaft, provided with rows of teeth or pins acting between arms of the beater. 44 is the brush-cylinder; 45, apron or breast on which the cotton passes from comb 46, which receives the cotton from the feeding-cylinder. 47 is an inclined partition, forming inlet and outlet air-passages 13^a 13^b, leading to a fan, 48. 49 is an inclined floor-board, down which the current of air with dust passes to the fan 48. 50, 51, and 52 are wire screens. 53 is a wire screen in the concave 53^a beneath the feeding-cylinder, for admitting air beneath the comb. 54 is a revolving endless apron for carrying the cotton to the feeding-cylinder. This apron is mounted on rollers 55, 56, and 57, 56 being

the driving-roller and 57 an adjustable roller, having suitable attachments at each end for producing tension on apron.

A machine having been constructed of the several parts, as shown in the drawings, and set up on the cotton-gin, as shown, and the connection made by the belts and pulleys, the gin being set in motion and the motion being transmitted to the feeder, the feeding of the gin with dusted and freed cotton, and properly distributed, now becomes automatic, requiring only the labor of throwing in the cotton to the feed-box.

The operation of the machine is as follows: The attendant throws the cotton from time to time into the box 9, the bottom of which is the revolving endless apron 54. The cotton is carried forward on this apron, and comes in contact with the feeding-cylinder 37, and is picked up by the teeth 38 on same end, carried over comb 46, the combs lying close to the cylinder, with the points of the teeth lying in grooves in the cylinder, thereby preventing the fiber from getting under the teeth while passing over the comb. The cotton is then carried over the apron 45, passes the beam 41, the arms 40 of the beater 39 carrying it round and against the pins 42 of the beam 41, and against the wire screen 50 while passing down. The cylinder 43, with its pins, carries it farther downward and against the wire screen 51. It is next picked up by the brush-cylinder 44, and from thence falls into the feed-box of the gin below, guided in its descent by the screen 52. The wire screen 52 allows any dust it may contain to fall through before the cotton enters the feed-box of the gin.

During this operation of the feeding-cylinder, beaters, and brush-cylinder, the cotton, in its passage, is aided by the fan 48, and, in fact, without the aid of this fan it would not reach the gin. This fan has a twofold function, viz., first, to aid the passage of the cotton from the feed-box 9 to the gin below; second, to separate the dust or dirt from the cotton, and also to free the cotton from the motes, and also to aid the beaters to disentangle it and lay it straight on the brush-cylinder before it falls into the feed-box of the gin.

13 are openings on each side of the machine. At these points air enters to supply the fan. The passage of the air before reaching the fan is shown by the arrows. Passing up, it is drawn between the feeding-cylinder 37 and the openings between the teeth of the comb 46. This lifts the cotton off the teeth of the feed-cylinder, carrying it over the breast or apron 45. The air, in passing up between the edge of the breast and comb, prevents it falling down the opening. The air is next drawn down, and in passing to the fan has to pass through the wire screens 50 and 51, from thence into the fan, and out at 18; also, at a point, X, where the cover leaves an opening between it and the feeding-cylinder 37, air rushes in through a passage, 13^c. This assists the feed on the cylinder by lifting the cotton and carrying it over onto the comb 46. The action of this current of air to assist the passage of cotton to the gin also plays the important part of helping the beaters 39 and 43 to separate or disentangle it. The action of the beaters is to beat out the dust and dirt, and, together with the motes, this dust and dirt are carried with the air-current through the fan and out at 18.

Sticks, nails, or any heavy foreign substances, and loose hulls, after being taken up by the feeding-roller 37 and carried over the comb 46, pass by their weight between the comb 46 and apron 45, their specific gravity overcoming the upward passage of the air-current, thus relieving the cotton of these substances at this point. Hulls and cotton are carried, as I have already described, downward to the feed-box of the gin. The beaters 39 and 43 loosen the hulls from the cotton, and hence, by the aid of this machine, the cotton enters the feed-box of the gin in a loose condition for ginning.

The regulation of the feeding-roller 37 is accomplished by the device, as shown on one side of the machine at Fig. 2. 26 is a crank, which is operated by the rotating feeding-cylinder 37, and gives motion to an arm, 27, and an arm, 28, jointed at 29, and through these arms to the plate 30 fulcrumed at 31. By simply altering the position of the pawls 32 32 on the plate 30, so as to alter their thrust, making it long or short, their engagement on the teeth of the wheel 34 will be correspondingly long or short, thus turning wheel 34 slower or faster, and in turn giving slow or faster motion to apron, as may be desired.

The device which I show in Fig. 1 for the purpose of stopping or starting the feeding-roller 37 consists of a grooved pulley, 5, secured to the shaft of the feed-roller 37, and a metal frame, 6^a, in which is a pulley, 4, driven from the driving-pulley of the gin. Attached to this pulley 4 is a smaller one, 4^a, with grooves working into and corresponding with the grooves in pulley 5. This frame rests on brackets 6^b, and so held in place that only a horizontal movement is obtained, the frame carrying the smaller grooved pulley. A horizontal movement one way engages the smaller pulley 4^a with the larger grooved pulley, or a movement in the opposite direction throws it out of contact. This movement is obtained by the long screw attached to one end of the movable frame, and at the other end passing through a standard, 6^c. Outside of this standard, and at the end of the screw, is a thumb-nut, 8. By turning this nut so as to gain on the screw, the frame is drawn forward, thus disengaging the small pulley from the larger one, and throwing the two out of contact with each other, and stopping the feeding-cylinder 37. The reverse operation throws the wheels into contact, thereby starting the feeding-cylin-

der, forward movement being obtained by a spiral spring, 7, acting on the adjusting-screw. The proper tension of the apron is obtained by screws 58 at end of feed-box 9 by turning the thumb-nuts 59.

The endless apron can be either of cloth or of slats—cloth for small machines, while for large ones wooden slats are preferable.

The teeth 38 on feeding-cylinder 37 are bent or curved downward or backward, so as to allow the cotton, after being picked up, to be combed off. The curve of the tooth easily permits this disengagement.

The pulleys all turn in the direction indicated by the arrows thereon.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. The combination of feeding-cylinder 37, perforated concave 53^a 53, comb 46, apron 45, and means, substantially as described, for creating air-currents through concave and over apron.

2. The combination of toothed cylinder 37 38, comb 46, apron 45, receiving cotton from comb, arranged with space intervening to allow upward passage of air, and means, substantially as described, for producing air-currents.

3. The combination, with the feeding-cylinder 37 and beaters 39 41, of the partitions 47 49, forming inlet air-passage 13^a and outlet air-passage 13^b, and the cover 17, forming connecting-passage 13^c, as set forth.

4. The combination, with a feeding-cylinder and comb, of the concave 53^a, having a screen, 53, as and for the purpose set forth.

5. The adjustable apron 45 for regulating the passage of air between the feeding-cylinder and beaters, as and for the purpose set forth.

6. The combination, with beaters 39 and 43 and perforated concaves, of covers 17 17 above the feeding devices, forming a passage, 13^c, connecting the inlet and outlet passages, so as to cause air to pass with and through the cotton, as set forth.

7. The feeder herein described, consisting of a trough, 9, carrying-apron 54, feeding-cylinder 37, comb 46, apron 45, beaters 39 and 43, and brush 44, as set forth.

WILLIAM L. CROWSON.

Witnesses:
JAMES B. COOK,
JOHN W. WADDELL.