No. 834,661. PATENTED OCT. 30, 1906.

C. W. CRAWFORD.

COTTON CLEANER AND FEEDER.

APPLICATION FILED APR. 2, 1906.

2 SHEETS—SHEET 1.

Fig. 1.

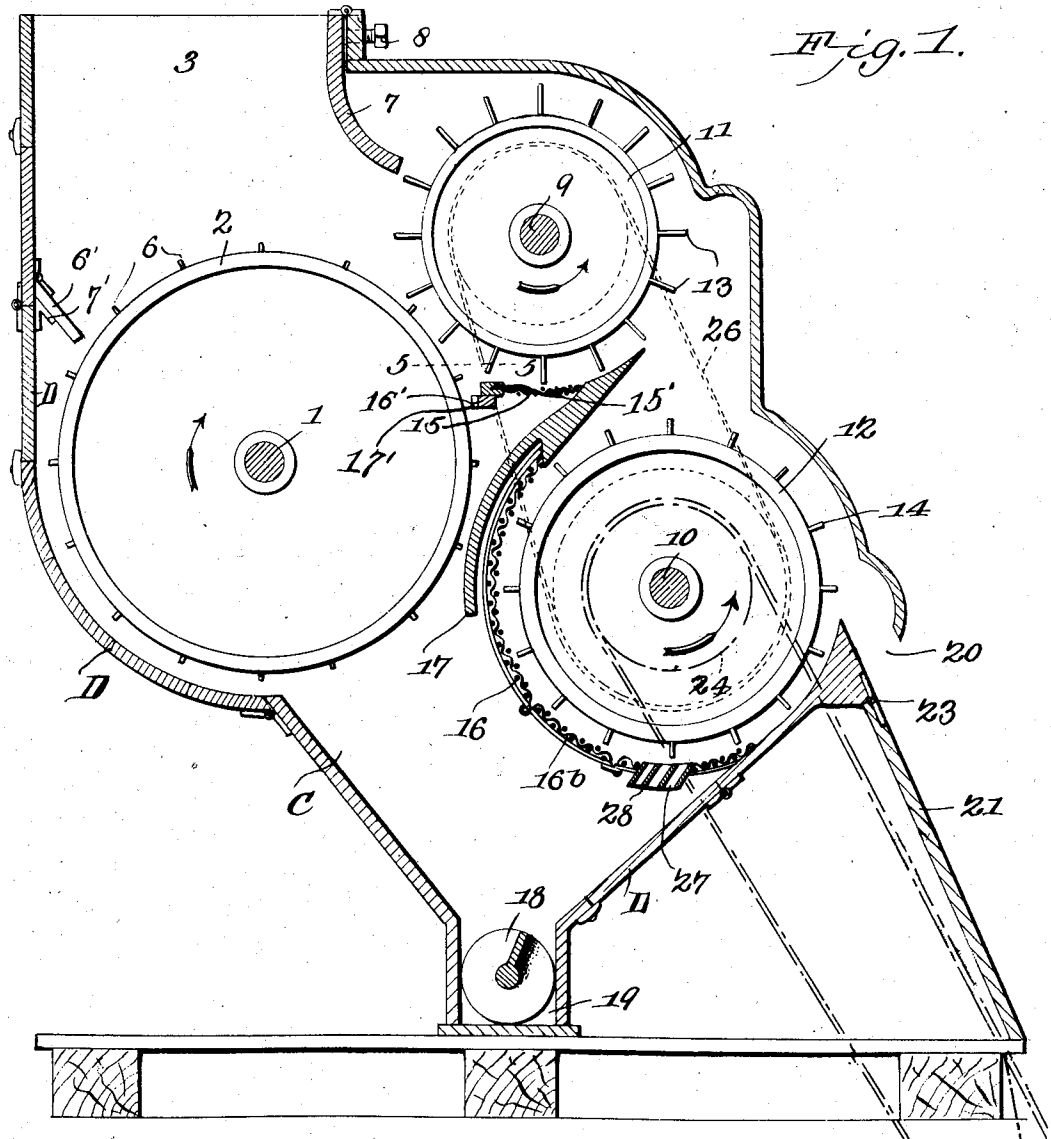
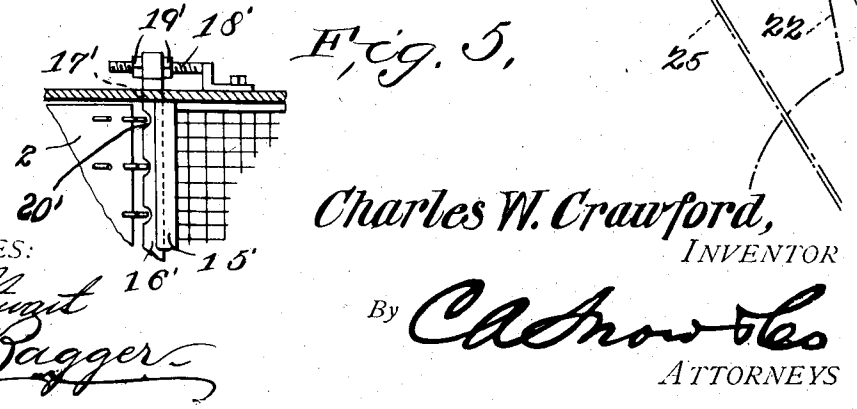


Fig. 5.



WITNESSES:

E. F. Stewart

Wm. Bagger

Charles W. Crawford,
INVENTOR

By C. A. Snow & Co.
ATTORNEYS

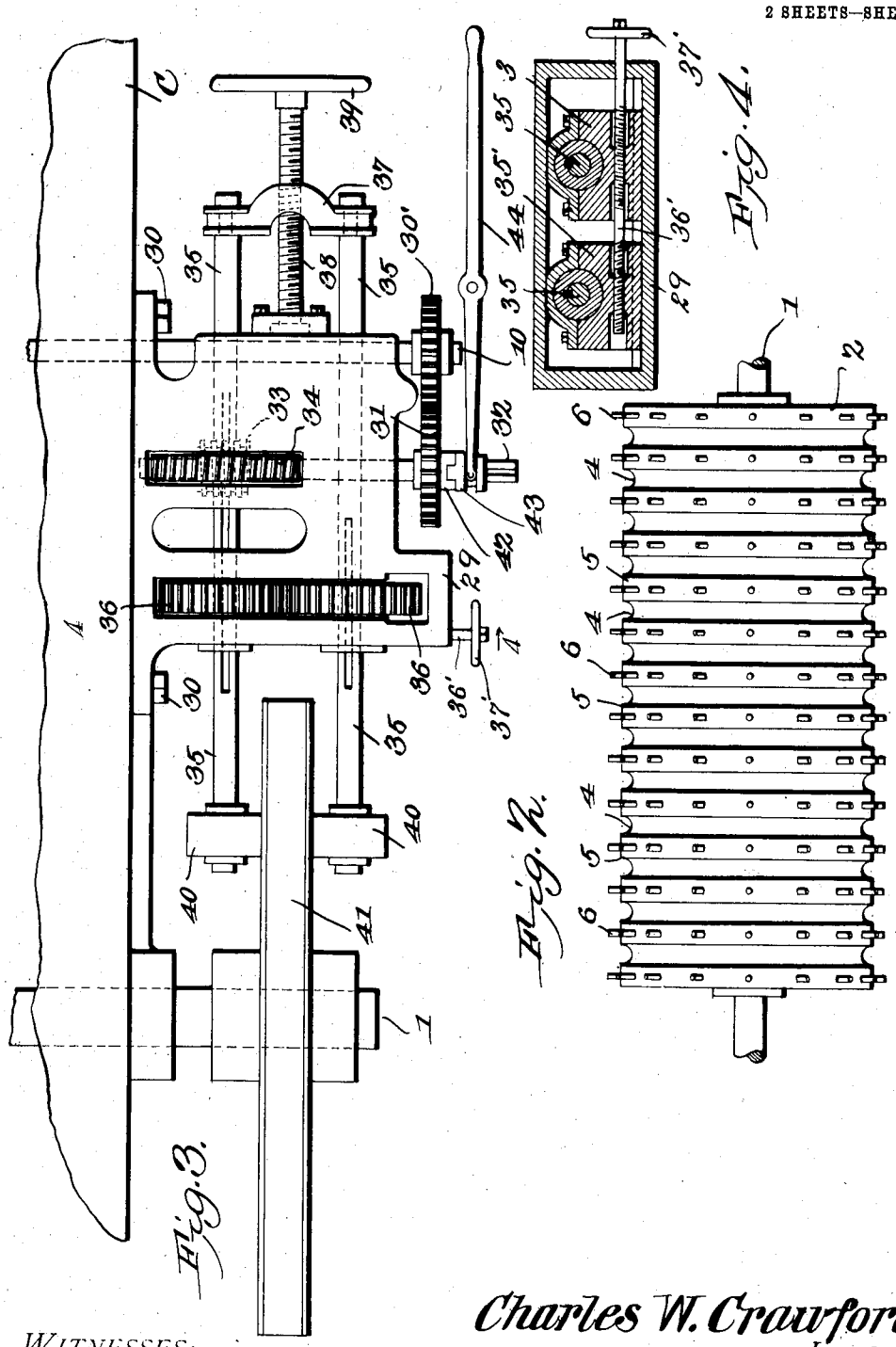
No. 834,661. PATENTED OCT. 30, 1906.

C. W. CRAWFORD.

COTTON CLEANER AND FEEDER.

APPLICATION FILED APR. 2, 1906.

2 SHEETS—SHEET 2.



WITNESSES:

E. F. Stewart

Wm. Bagger

Charles W. Crawford,
INVENTOR.

By Cushman & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

CHARLES WILLIAM CRAWFORD, OF HEIDENHEIMER, TEXAS.

COTTON CLEANER AND FEEDER.

No. 834,661. Specification of Letters Patent. Patented Oct. 30, 1906.

Application filed April 2, 1906. Serial No. 309,421.

To all whom it may concern:

Be it known that I, CHARLES WILLIAM CRAWFORD, a citizen of the United States, residing at Heidenheimer, in the county of Bell and State of Texas, have invented a new and useful Cotton Cleaner and Feeder, of which the following is a specification.

This invention relates to cotton-cleaning and gin-feeding devices; and the objects of the invention are to simplify and improve the construction and operation of this class of devices and to provide improved mechanism whereby the feed-roller of the device will be operated frictionally at a low rate of speed.

With these and other ends in view, which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations, and modifications within the scope of the invention may be made when desired.

In the drawings, Figure 1 is a vertical sectional view of a cotton-cleaner and gin-feeder constructed in accordance with the principles of the invention. Fig. 2 is a detail view in elevation of the feed-roller detached from the casing. Fig. 3 is a top plan view, enlarged, of the operating mechanism. Fig. 4 is a sectional detail view taken on the plane indicated by the line 4 4 in Fig. 3. Fig. 5 is a sectional detail view taken on the plane indicated by the line 5 5 in Fig. 1 and showing a slight modification in the construction of the feed-roller.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

A suitably-constructed casing C is provided, said casing having suitably-disposed hinged doors, as D, through which access may be had to the interior. The casing is provided with bearings for a shaft 1, carrying a feed-roller 2, which is disposed directly beneath a hopper or inlet 3, through which the cotton which is to be operated upon is supplied to the machine. The feed-roller 2 is provided throughout its length with annular grooves or corrugations 4 4, which have been shown of approximately semicircular cross-section, the said grooves being spaced apart by ribs 5 5, which have been shown to be of a width about equal to the diameter of the grooves. The ribs 5 5 are provided with radially-extending pins 6, which in a full-sized machine will be about one-half of an inch in length. The back of the casing is curved concentrically with the axis of the shaft 1, carrying the feed-roller, in front of which one of the doors D is located. Above said door is a hinged deflecting board or plate 6′, supported in operative position by angle brackets or rests 7′ and serving to lessen the weight of cotton on the feed-roller 2 and to avoid clogging of cotton in the space between said roller and the adjacent wall of the casing. By hinging the deflecting-board, as shown, access may be had to the interior of the cotton-chute 3 through the proximate door D.

Hingedly supported at the rear wall of the chute 3 is a rearwardly-curved shield or deflector 11, which is supported adjustably in operative position, as by means of a set-screw 8, whereby said deflector may be readily adjusted to various positions, as shown by full and by dotted lines in Fig. 1. By this device the area of the feed-aperture may be varied in order to regulate the feed.

Suitably supported for rotation in the casing C in advance of the shaft 1, carrying the feed-roller, are shafts 9 and 10, carrying picker-rollers 11 and 12, the former of which is disposed above the latter. The rollers 11 and 12 are provided with radially-extending picker teeth or pins 13 and 14, adapted to carry the cotton over and in contact with the screen-surfaces 15 and 16, which are supported within the casing adjacent to the rollers 11 and 12, respectively, said screens being supported in part by means of a brace 17 within the casing. The screen 16 has a hinged portion 16^b, which may be moved to an open position when desired to afford access to the surface of the picker-roll 12 for the purpose of removing such obstructions as may lodge between the roll and the screen and which would not otherwise be conveniently accessible.

The screen 15 is also supported by a cross-bar 15′, adjacent to which is arranged a longitudinally-adjustable cross-bar 16′, which latter may extend through slots, as 17′, in the end walls of the casing, which may be

provided with supporting-screws, as 18′, engaging nuts 19′, swiveled in the ends of the cross-bar 16′, which may thus be nicely adjusted. Said cross-bar is provided with notches 20′ for the passage of the teeth 6 of the feed-roll, with relation to which the cross-bar 15′ may be spaced sufficiently to enable a portion of such coarse impurities as may be contained in the cotton to be separated at this stage.

In Fig. 5 a modified form of the feed-roller has been shown, which consists in making said roller in the form of a true cylinder without the annular grooves shown at 4 in Figs. 1 and 2.

The brace 17 extends adjacent to the screen 16, so as to guide material passing through the screen 15 into the lower part of the casing C, where a screw conveyer 18 is arranged for the purpose of carrying the screenings and the impurities escaping between the feed-roller and the cross-bar 15′ to a place of deposit. The screenings passing through the screen 16 drop directly into the lower part of the casing, which is hopper-shaped, so that the screenings will be guided to the trough 19, in which the screw conveyer is supported. The screen 16 is provided in the lower portion thereof with a slot 27, in which are disposed a plurality of inclined slats or deflectors 28, between which coarse impurities—such as gravel, nails, bolts, and other bits of metal and the like—that are not capable of passing through the meshes of the screen may escape.

The casing has an exit-opening 20, through which the clean cotton passes over a slide or apron 21 to the hopper of the gin, which is represented in dotted lines at 22 in Fig. 1 of the drawings. The casing C is suitably supported for operation upon the gin-stand, and the slide or apron 21 is preferably supported hingedly or otherwise movably, as at 23, in order to afford access to the gin-brush.

The shaft 10 is driven, as by means of a pulley 24 and a band 25, from the source of power, which may be the saw-shaft of the gin in connection with which the feeder is employed. Motion may be transmitted from the shaft 10 to the shaft 9, as by means of a belt 26, said shafts being rotated in the same direction. The shaft 10 extends through a bracket 29, which is secured upon the casing C, as by means of bolts 30, and said shaft 10 carries a pinion 30′, meshing with a pinion 31 upon a shaft 32, which is journaled in said bracket 29. The shaft 32 carries a worm 33, meshing with a worm-gear 34 upon one of a pair of approximately parallel shafts 35, which are supported for rotation lengthwise in the bracket 29, said shafts 35 being longitudinally slidable in their bearings. The shafts 35 are provided with intermeshing pinions 36, said pinions, as well as the worm-gear 34, being splined upon the shafts so as to rotate with the latter, The forward ends of the shafts 35 35 are connected by means of a yoke 37, through which operates a screw 38, having a hand-wheel 39, said screw being swiveled in the bracket 29. The shafts 35 are provided with friction-wheels 40, frictionally engaging a friction-disk 41 upon the shaft 1, carrying the feed-roller 2, which latter may be thereby slowly rotated. To regulate the speed of rotation, the shafts 35, which are disposed at right angles and radially to the shaft 1, may be moved by the adjusting-screw 38 to regulate the distance of the friction-rollers 40 from the axis of the shaft 1.

In order to enable wear upon the friction-wheels 40 to be compensated for, it is preferred to support the shafts 35 partially in boxes 35′, transversely slidable in suitable ways in the supporting-brackets 29 and having threaded apertures engaged by a right and left screw-threaded rod 36′, operable by a handle 37′, whereby the boxes may be moved toward each other to cause the wheels 40 to grip the disk 41. The movement necessary to effect this result is so slight that the ordinary looseness of the shafts 35 in their respective bearings will permit said shafts to be displaced to the needed extent from their normal parallel relation.

The pinion 31 is mounted loosely upon the shaft 32, and the hub of said pinion has a clutch member 42, adapted to be engaged by a clutch member 43, which is slidable upon and rotatable with the shaft 32, said clutch member 33 being operable by a shipping-lever 44, whereby it may be placed into or out of engagement with the clutch member 42. When the clutch members are out of engagement, the pinion 31 will rotate idly upon the shaft 32 and the movement of the feed-roller may thus be interrupted when desired.

From the foregoing description, taken in connection with the drawings hereto annexed, the operation and advantages of this invention will be readily understood by those skilled in the art to which it appertains.

The feed-roller will be rotated at a low rate of speed, which is, however, capable of being governed by simply adjusting the shafts 35 by means of the screw 38. The cotton, which may be placed in the hopper 3 by any desired means, will be conveyed by the feed-roller through the aperture 7 and will then be laid hold of by the picker-roller 11, whereby it is carried over the screen-surface 15, which is of relatively fine mesh and through which dust and small impurities may escape. When the cotton leaves the roller 11, it is laid hold of by the picker-roller 12 and is thereby carried over the screen-surface 16, which is of coarser mesh and through which coarser impurities may escape—nails, bits of iron, and the like—passing over the deflectors 28 in the slot 27. From the roller 12 the cotton,

which has now been cleaned and purified, will pass through the exit-slot 20 and over the slide 21 to the gin.

This improved cleaning and feeding device is simple in construction, easily installed and regulated, and thoroughly efficient for the purposes for which it is provided.

Having thus described the invention, what is claimed is—

1. In a cotton cleaner and feeder, a casing having a feed-opening, a feed-roller supported in the casing below the feed-opening, picker-rollers supported in the casing in advance of the feed-roller and one above another, screen-surfaces adjacent to the picker-rollers, a brace within the casing constituting attaching means for the screen-surfaces and constituting also deflecting or guiding means for material passing through the upper screen, and a conveyer within the casing to carry the screenings to a place of discharge.

2. In a cotton cleaner and feeder, a casing having a feed-chute, a feed-roller and picker-rollers supported for rotation in said casing, a curved deflector in the feed-chute for regulating the passage of material from the feed-roller to the proximate picker-roller, adjusting and supporting means for said deflector, screens supported adjacent to the picker-rollers, and conveyer means within the casing for disposing of the screens.

3. In a cotton cleaner and feeder, an annularly-grooved feed-roller mounted for rotation and a serrated bar coöperating with the same, said grooves occurring opposite the spaces between the serrations of the bar.

4. A cotton cleaner and feeder, a feed-roller mounted for rotation and provided throughout its length with annular grooves, and having pins extending from the ribs spacing said grooves and a serrated bar coöperating with the same.

5. In a cotton cleaner and feeder, a feed-roller mounted for rotation and provided with alternately-disposed annular ribs and grooves and having pins extending radially from the ribs and a serrated bar coöperating with the same.

6. In a cotton cleaner and feeder, a feed-roller having annular series of radially-extending pins, in combination with a cross-bar adjustably supported adjacent to said feed-roller and having notches for the passage of the pins.

7. In a cotton cleaner and feeder, a casing, a feed-roller supported for rotation in the casing and having annular series of radially-extending pins, a screen-supporting cross-bar in the casing adjacent to the feed-roller, and an adjustable cross-bar adjacent to the screen-supporting cross-bar and having notches for the passage of the teeth of the feed-roller.

8. In a cotton cleaner and feeder, a casing, a feed-roller supported for rotation in the casing and having annular series of radially-extending pins, a cross-bar disposed adjacent to the feed-roller and extending through slots in the end walls of the casing, nuts swiveled in the ends of the cross-bar, and supporting-screws engaging the nuts; said cross-bar being provided with notches for the passage of the pins of the feed-roller.

9. In a cotton feeder and cleaner, a casing, a feed-roller within said casing having an extended shaft, a friction-disk upon the latter, a picker-roller supported in the casing and having an extended driven shaft, a pair of slidably-supported shafts having friction-wheels engaging opposite sides of the friction-disk upon the shaft of the feed-roller, intermeshing pinions upon said shafts, a worm-gear upon one of said shafts, a counter-shaft having a worm meshing with said worm-gear, and means including a clutch for transmitting motion from the driven shaft of the picker-roller to the worm-carrying shaft.

10. A casing, a feed-roller within the casing and having a shaft extending through the latter, a friction-disk upon said shaft, a picker-roller within the casing and having a driven shaft extending through the latter, a counter-shaft having a worm, a pair of longitudinally-movable shafts having friction-wheels engaging opposite sides of the friction-disk, intermeshing pinions upon said shafts, a worm-engaging gear slidably engaging one of the longitudinal shafts, a yoke connecting the longitudinal shafts, a swiveled adjusting-screw extending through said yoke, and means including a clutch for transmitting motion from the driven picker-roller-carrying shaft to the worm-carrying counter-shaft.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CHARLES WILLIAM CRAWFORD.

Witnesses:
W. M. HOPE,
B. JOHNSON.