No. 646,954. Patented Apr. 10, 1900.

H. C. CHAUNCEY.

FEED MECHANISM FOR ROLLER COTTON GINS.

(Application filed Oct. 19, 1899.)

(No Model.) 3 Sheets—Sheet 1.

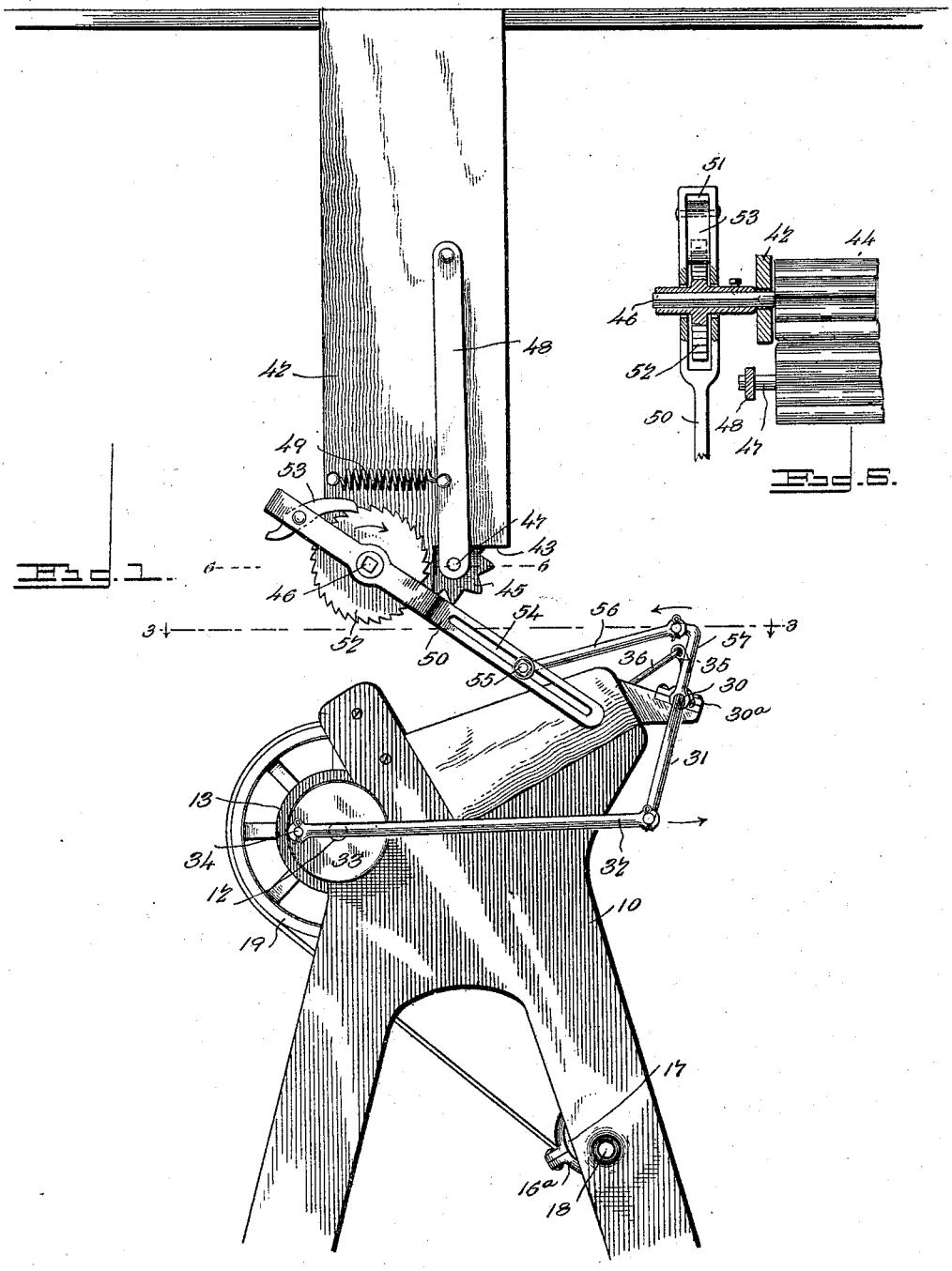

Fig. 5.

Fig. 1.

Witnesses
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(No Model.) 3 Sheets—Sheet 2.

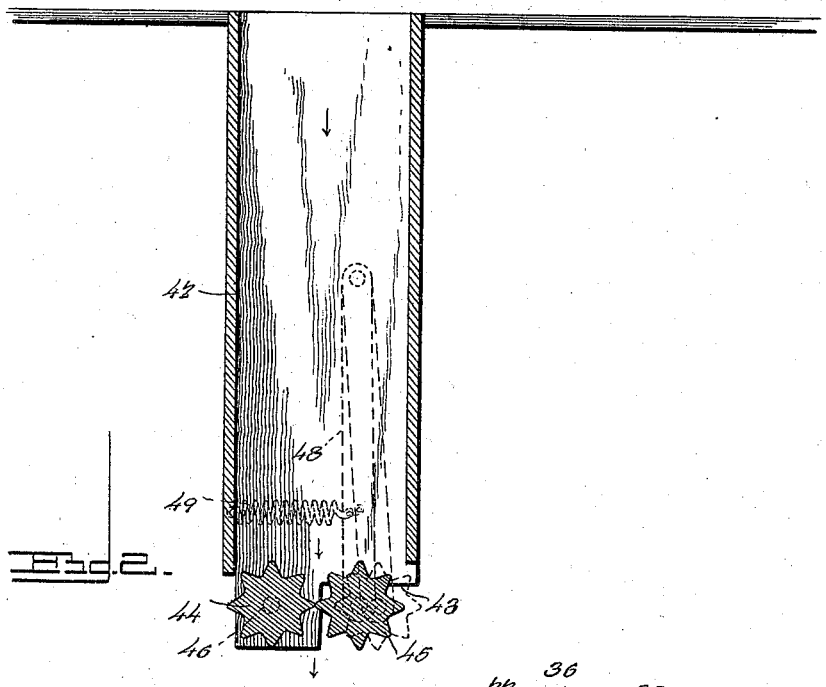
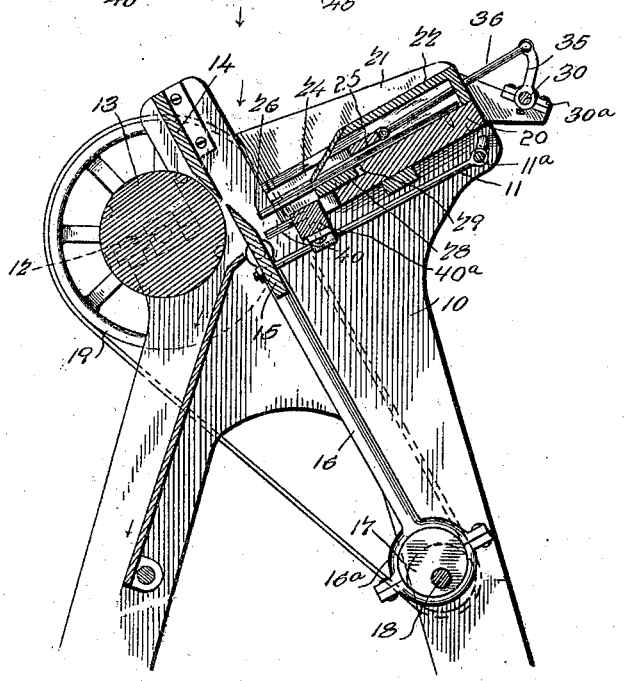


Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

Fig. 3.

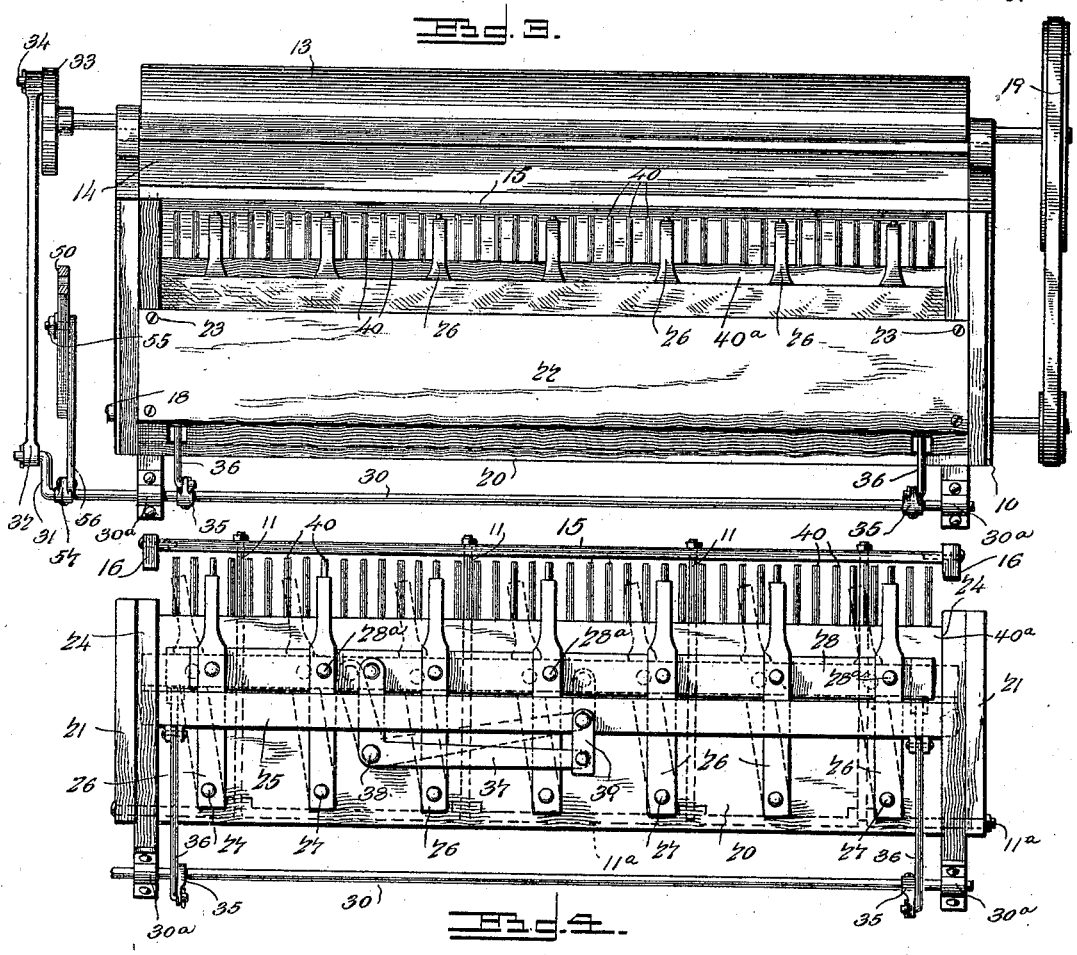

Fig. 4.

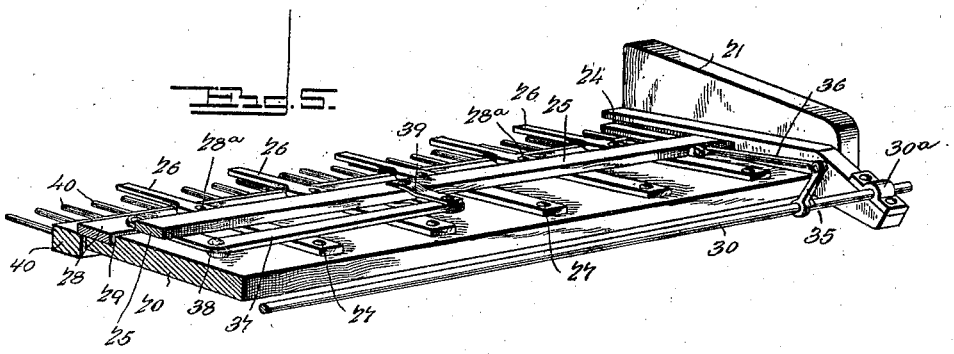

Fig. 5.

Witnesses,
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UNITED STATES PATENT OFFICE.

HANCIL C. CHAUNCEY, OF JASPER, FLORIDA.

FEED MECHANISM FOR ROLLER COTTON-GINS.

SPECIFICATION forming part of Letters Patent No. 646,954, dated April 10, 1900.

Application filed October 19, 1899. Serial No. 734,097. (No model.)

To all whom it may concern:

Be it known that I, HANCIL C. CHAUNCEY, a citizen of the United States, residing at Jasper, in the county of Hamilton and State of Florida, have invented a new and useful Feed Mechanism for Roller Cotton-Gins, of which the following is a specification.

My invention relates to improvements in roller cotton-gins of that class designed especially for ginning cotton of the character known as "sea-island" or "long-staple" cotton.

The improvements which I have invented are used in connection with a gin embracing a revoluble roll and a pair of cut-off plates, the latter arranged in parallel relation and one of said plates mounted for reciprocation relatively to the other plate to periodically open or provide a space intermediate between the plates, through which space the cotton is drawn by the action of the roll. This mechanism, broadly, is ordinary in the art, and no claim for such mechanism *per se* is made in this application.

The object of my invention is to provide an improved feed mechanism which is adapted to feed long-staple or sea-island cotton to the gin-roll.

My invention consists in the combination, with a gin-roll, of a transversely-reciprocatory feed board or plate movable toward and from said gin-roll and a series of rake-fingers projecting beyond the feed-board toward the roll, said rake-fingers being adapted to be reciprocated laterally, and means for automatically actuating said feed-plate and said rake-fingers.

My invention further consists in the peculiar construction and combination of devices hereinafter fully set forth, and pointed out in the claims.

To enable others to understand the invention, I have illustrated a preferred embodiment thereof in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is an elevation looking at one end of an ordinary roller-gin with my improved feed mechanism in operative relation thereto. Fig. 2 is a vertical sectional elevation taken transversely through the structure shown by Fig. 1. Fig. 3 is a sectional plan view, the plane of the section being indicated by the dotted line 3 3 of Fig. 1. Fig. 4 is a detail plan view of a part of the improved feed mechanism with the cover-plate removed to illustrate the reciprocatory feed-board, the rake mechanism, and the fingers. Fig. 5 is a perspective view, partly in section, of the devices represented by Fig. 4. Fig. 6 is a horizontal sectional view on the plane indicated by the dotted line 6 6 of Fig. 1.

The same numerals of reference are used to indicate like and corresponding parts in each of the several figures of the drawings.

In order that others skilled in the art may understand the application of my improvements to a roller-gin of the class adapted for ginning long-staple cotton, I have illustrated so much of an ordinary roller-gin of this class by Figs. 1 and 2 of the drawings as is necessary. In these figures the side frames of a gin are indicated by the numeral 10. In the side frames is journaled the shaft 12, which carries the grooved gin-roll 13. The cut-off plates 14 15 are arranged parallel one to the other and inclined as shown by Fig. 2, the plate 14 being secured firmly in place between the side frames by appropriate means; but the other plate 15 is carried by swinging arms 11, which are made fast with a rock-shaft 11^a, the latter being journaled in the side frames, whereby the movable plate is limited to traveling play with relation to the fixed plate, so as to form at regular intervals the opening between the contiguous edges of the two plates, through which opening the cotton is supplied to the roller-gin by the improved feed mechanism which constitutes the subject-matter of the present invention. To the movable cut-off plate 15 are loosely connected the upper ends of the pitmen 16, said pitmen being loosely connected with the cranks or the eccentrics 17 on a horizontal eccentric-shaft 18, the latter mounted in suitable bearings on the side frame. The gin-roll shaft 12 is driven at slow speed from the eccentric-shaft through the medium of intermediate belt-gearing 19. (Indicated by Figs. 1 and 2.) It will be understood that in its broad aspect the gin mechanism is similar to roller-gins well known in the art; but I have

modified the construction somewhat to enable a part of my invention to be used in connection therewith.

In connection with the roller-gin and with a vertical cotton-feed chute 42 I have devised an improved construction of feed mechanism by which long-staple cotton may be supplied in regulated volumes intermittently to the roller-gin, and this feed mechanism has certain of its elements arranged for adjustment in a manner to vary the quantity of cotton which may be supplied by said feed mechanism to the gin. I will now proceed to describe my improved feed mechanism, which is operatively arranged between the cotton-feed chute and the gin.

An inclined plate or board 20 forms a part of a frame 21, which is secured between and to the side frames 10, said inclined frame 21 arranged contiguous to the cut-off plates and on the opposite side thereof to the roll 13. The operating devices which are supported by the inclined frame are housed or contained between the cap-plate 22 and the plate or board 20, said cap-plate being secured firmly in place by means of suitable screws 23. At or near the ends of the inclined frame and above the bottom plate or board thereof are the inclined parallel guideways 24, and in these guideways are fitted the end portions of a reciprocatory feed board or plate 25, the latter being movable edgewise across the inclined frame in order to pursue a rectilinear path above the rake-fingers 26. These rake-fingers are spaced one from the other at suitable intervals along the bottom plate or board 20, so as to lie directly beneath and in contact with the reciprocating feed plate or board, each rake-finger being pivoted at or near its heel, as at 27, to the bottom of the inclined frame. The rake-fingers are held in their parallel relation and are operated simultaneously through the medium of a finger-connecting bar 28, the latter being disposed below the fingers and within a recess 29, provided in the inner front edge of the bottom plate or board 20, said connecting-bar being connected with each of the series of rake-fingers by means of the pivots 28^a. It will therefore be seen that I employ a series of rake-fingers which are pivoted individually to the inclined frame and which are connected pivotally to a common bar, said bar being actuated for movement in a path substantially at right angles to the feed plate or board 25, so as to make the rake-fingers traverse the under side of the feed plate or board for the purpose of clearing any cotton which may have a tendency to adhere to the front edge of said feed board or plate.

30 designates a rock-shaft arranged in a horizontal position on one side of the frames 10, said shaft being journaled in suitable bearings 30^a, which may be fixed either to the inclined frame 21 or to the side frame. This rock-shaft is actuated automatically from the gin-roll shaft by suitable operative connections, which connections consist, preferably, of an arm 31, a pitman 32, and a crank-disk 33. This crank-disk is secured firmly to an end portion of the gin-roll shaft, which is extended or prolonged beyond one of the shaft-bearings on the side frames, said crank-disk being provided with a wrist-pin 34, to which is loosely connected one end of the pitman 32. The arm 31 is made fast with the rock-shaft at one end thereof and is arranged to be connected pivotally with the other end of the pitman 32, whereby the crank-disk is adapted to rotate with the gin-roll shaft and to positively vibrate or rock the shaft 30 in its bearings. This rock-shaft serves through operative connections to actuate the feed board or plate 25, said connections being preferably in the form of bent arms 35, which are fast with the rock-shaft, and the links 36, which are pivotally connected to the arms 35 and the rear edge of the feed-plate 25. The reciprocating play of the feed board or plate, which is actuated by the rock-shaft through the described connections, is communicated to the finger-connecting bar by a bell-crank lever 37, the same being arranged on the bottom of the inclined frame to have its short arm extend beneath the feed-board 25 and overlap the connecting-bar 28, said short arm of the bell-crank lever being pivoted to said connecting-bar. The lever 37 is fulcrumed at 38 on the bottom 20, and to the long arm of said lever is pivoted a clip 39, said clip having its other end pivoted to the feed-board at or about the middle thereof. (See Figs. 4 and 5.) It is evident that the reciprocation of the feed-board by the link connections of the rock-shaft will actuate the bell-crank lever 37 to move the finger-connecting bar transversely across the path pursued by the feed board or plate, and hence the rake-fingers will be actuated to sweep across the lower face of the feed board or plate, said fingers assuming positions at right angles to the feed-board when the latter is drawn backwardly by the rock-shaft, as indicated by full lines in Fig. 4; but on the forward movement of the feed-board the bell-crank lever and connecting-bar shift the rake-fingers to the inclined positions shown by dotted lines in Fig. 4.

The inclined frame which sustains the feed-board, the rake-fingers, and their operating devices has the bottom board terminating somewhat in rear of the fixed plate 14, and to prevent the cotton from falling through the gap or space thereby formed I employ the series of fingers 40, which are fixed to a finger-bar 40^a, said bar being fastened or clamped by any suitable means to the swinging arms 11, which carry the movable plate 15. These fingers extend toward the movable plate 15 and catch and retain cotton as it is pushed by the feed-board toward the cut-off, and said fingers are traversed by the free ends of the shiftable rake-fingers.

The cotton-chute 42 is erected in a vertical

position over the feed mechanism on the side frames, said chute being supported by the ceiling of the apartment in which the gin is housed and adapted to be supplied with cotton from a suitable conveyer or by any preferred means. The lower end of this chute is open, and in said lower open end is a recess 43. Across the open discharge-mouth of the chute is a pair of parallel condensing-rolls 44 45, each arranged in a horizontal position and having corrugated or roughened working surfaces. The roll 44 has its shaft 46 journaled in fixed bearings on the cotton-chute, within the open mouth thereof and to one side of the recess 43, one end of said roll-shaft being prolonged beyond the cotton-chute to receive a feed ratchet and lever, as shown by Fig. 6. The other condensing-roll 45 has its shaft 47 journaled in bearings provided on a pair of swinging links 48, the latter being arranged against the ends of the chute and attached pivotally thereto, as shown by Fig. 1. The roll 45 is in alinement with the recess 43 in the chute in order that the end portions of its shafts may travel in said recesses, and this roll is sustained movably by the links in parallel relation to the companion feed-roll. The links and the movable feed-roll carried thereby are normally drawn toward the non-traveling roll 44 by springs 49, attached to the chute and the links; but it is evident that an equivalent retractor may be substituted for the spring.

Between the rock-shaft and the non-slidable roll of the set of feed-rolls I employ a ratchet-operating mechanism that is actuated by the rock-shaft and which serves to rotate the feed-rolls with a step-by-step motion. A feed-lever 50 is fitted loosely on the extended end of the roll-shaft 46, said lever having a longitudinal slot 51 therein, said division receiving the ratchet 52, which is made fast with the shaft. This ratchet is adapted to turn the shaft when the loosely-mounted lever is oscillated through the medium of a pawl 53, the latter being pivoted in the short arm of the lever and in a position to engage with the teeth of the ratchet. The long arm of the lever has a longitudinal pitman-slot 54, in which is adjustably fitted a bolt 55, which serves to connect one end of the pitman 56 to the lever, the other end of said pitman being pivoted to a crank-arm 57, which is made fast with the rock-shaft 30. The ratchet feed mechanism may be applied to either end of the rock-shaft and the roll-shaft 46, and when applied as herein shown serves to drive the rolls in the direction indicated by the arrow, or said parts may be reversed to rotate the rolls in an opposite direction. The described connections between the rock-shaft and the roll-shaft 46 serve to positively turn the roll 44 in one direction, and as the other roll 45 is drawn by the links and springs into intimate engagement with the cotton which passes through the chute the roll 45 is made to turn on its axis by frictional engagement with the cotton which is forced by the roll 44 from the chute, whereby the two rolls coact to feed the cotton and condense the same into a bat. The arc of travel of the short arm of the lever may be varied by shifting the position of the pitman-bolt in the slot of the long lever-arm, so as to make the pawl take a variable number of teeth on the ratchet. Hence the roll 44 may be turned more or less to feed cotton in variable quantities from the chute—that is to say, the bolt 55 may be adjusted toward the roll-shaft to increase the stroke of the lever and make the pawl embrace an increased number of ratchet-teeth to give an increased turning movement to the roll 44; but by shifting the pitman-bolt toward the outer end of the lever the arc of travel of the lever may be decreased to make the pawl travel over a decreased number of teeth on the ratchet, and consequently give a decreased turning movement to the roll.

The operation may be described briefly as follows: The gin is actuated in the ordinary way to rotate the roll 13 and reciprocate the plate 15 relatively to the plate 14 and the roll. The rock-shaft is driven from the roll 13, so as to reciprocate the feed-board 25 and also oscillate the lever 50, which, through the pawl and ratchet, rotates the roll 44. The cotton is forced from the chute in regulated quantities by the coacting rolls 44 45, which condense the cotton and serve to check the escape of a surplus quantity from the chute. The cotton discharged from the chute lodges upon the frame or the rake-fingers 26 and the stop-fingers 40, the cotton thus lying in the path of the feed board or plate 25. As this feed-board is pushed downward by the rock-shaft it forces the cotton through the space between the plates for the purpose of crowding the cotton against the roll 13, and simultaneously with the movement of the feed-board the bell-crank lever 37 is vibrated to move the connecting-bar 28 and shift the fingers 26, which serve not only to clear the feed-board, but also to crowd the cotton toward the roll 13. The parts are returned by the rock-shaft to their normal positions, and the operations above described are repeated.

Changes may be made in the form and proportion of some of the parts while their essential features are retained and the spirit of the invention embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

In my improved feed mechanism the parts other than the feed-rolls are actuated differently in three distinct ways—first, the feed-board is reciprocated in a rectilinear path inclined with relation to the gin-roll, the fingers 40 swing with the movable plate toward and from the gin-roll, and the rake-fingers travel over the series of fingers 40 and below the feed-board to keep the parts clear. The board and the fingered bar 40^a, which is movable therewith, are driven at high speed, the

rate of, say, about six hundred and fifty revolutions of the crank or eccentric shaft in a minute; but, as the other elements are driven at a relatively-slower speed, the mechanism acts efficiently in feeding long-staple cotton to the gin.

Having thus described the invention, what I claim is—

1. In a roller-gin, the combination of a reciprocatory feed-plate movable toward and from the gin-roll, laterally-shiftable rake-fingers extending beyond the feed-plate toward the gin-roll and means for automatically actuating said feed-plate and said rake-fingers, substantially as described.

2. In a roller-gin, the combination of a movable feed-plate, a rock-shaft having operative connections with the gin-roll shaft and connected with said feed-plate, and rake-fingers projecting beyond the feed-plate and connected operatively therewith, said rake-fingers being adapted to be actuated transversely to the path of said feed-plate, substantially as described.

3. In a roller-gin, the combination of a reciprocatory feed-plate, a series of shiftable rake-fingers arranged below and projecting beyond the feed-plate, and connecting devices between said feed-plate and said series of rake-fingers adapted to shift said rake-fingers transversely across the path of the feed-plate, substantially as described.

4. In a roller-gin, the combination of a feed-plate, a series of rake-fingers pivoted individually below the feed-plate, a connecting-bar pivoted to said rake-fingers, and a lever connected to said feed-plate and said connecting-bar, substantially as described.

5. In a roller-gin, the combination of a frame, a series of fingers, spanning the space between the frame and the gin-roll, a feed-plate guided on the frame, shiftable rake-fingers between the frame-fingers and the feed-plate, and means for actuating the rake-fingers simultaneously with the feed-plate, substantially as described.

6. In a cotton-gin, the combination of a laterally-reciprocatory feed-plate movable toward and from the gin-roll, a series of pivoted connected rake-fingers, connections between said feed-plate and said series of rake-fingers, to convey motion from the former to the latter, and means for actuating said reciprocatory feed-plate, substantially as described.

7. The combination with a movable plate forming one element of a roller-gin, of a fingered bar movable with said plate, and feed devices movable above the bar and across the fingers thereon, for the purpose set forth, substantially as described.

8. The combination with a movable plate forming one element of a roller-gin, of a rock-shaft, swinging arms fast with said shaft and the plate, a bar secured to said swinging arms and provided with fingers extending toward the plate, and feed devices above the fingers on said bar, substantially as described.

9. The combination in a roller-gin, of a feed board or plate, a fingered bar and movable rake-fingers, said rake-fingers being arranged to play between and across the paths of said feed-board and said fingered bar, substantially as described.

10. The combination with a gin-roll, of a reciprocating feed-board movable toward and from the gin-roll, a series of pivoted rake-fingers projecting beyond the said feed-board, toward the said gin-roll, a bar, connecting said rake-fingers, and means to automatically operate said feed-board and said connecting-bar, substantially as described.

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

HANCIL C. CHAUNCEY.

Witnesses:

ELI. C. NONCE,

J. W. BEATY.