

No. 686,071.

Patented Nov. 5, 1901.

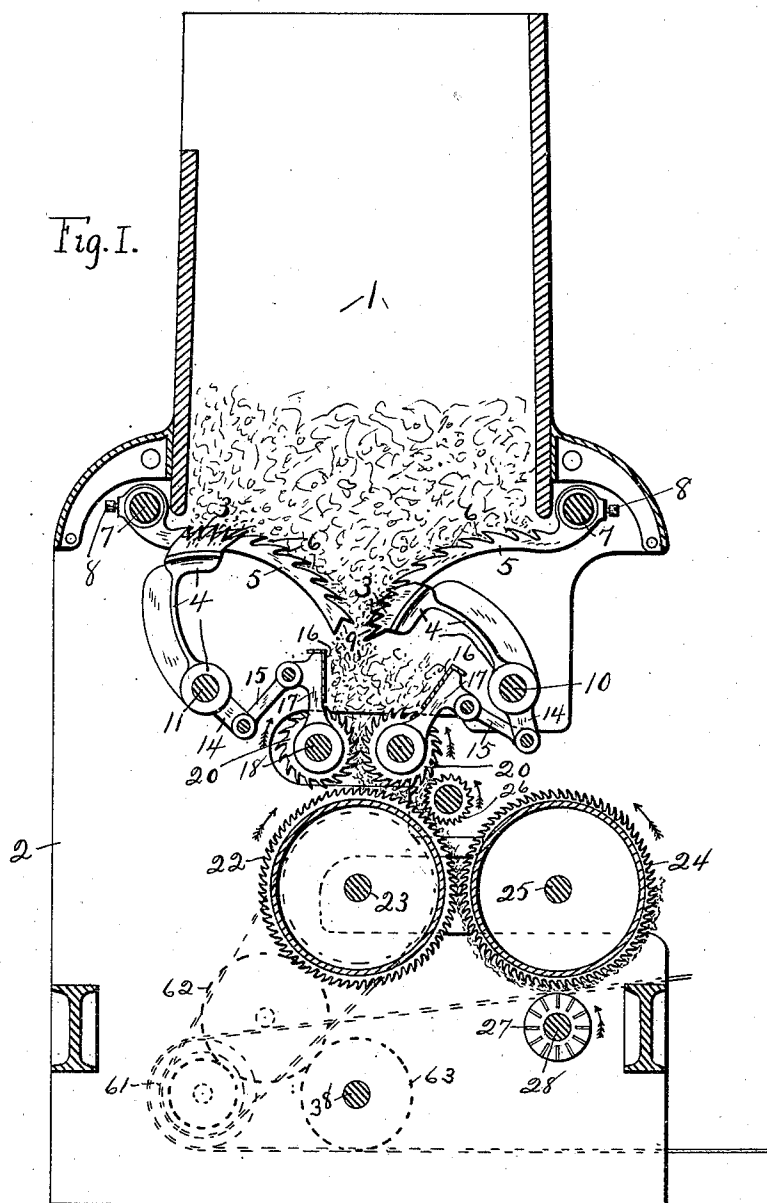
J. HOGG.

FEEDING MECHANISM FOR CARDING MACHINES.

(Application filed Sept. 13, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

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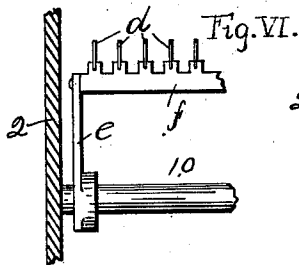
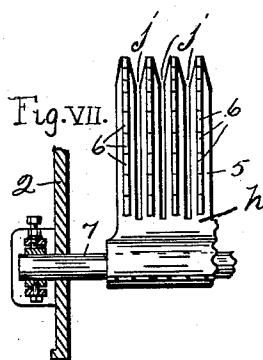
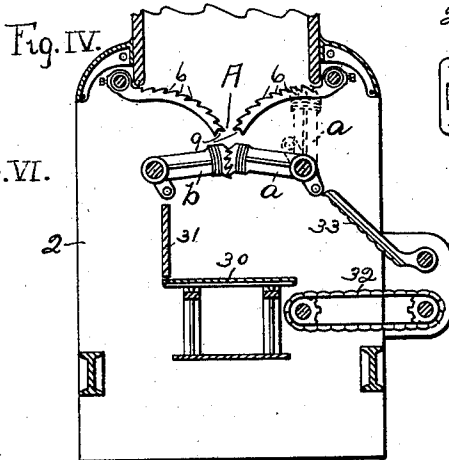
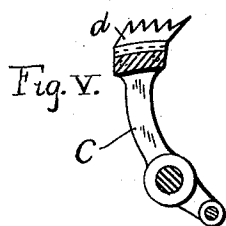
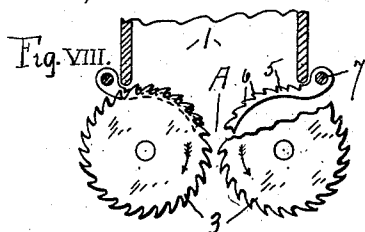
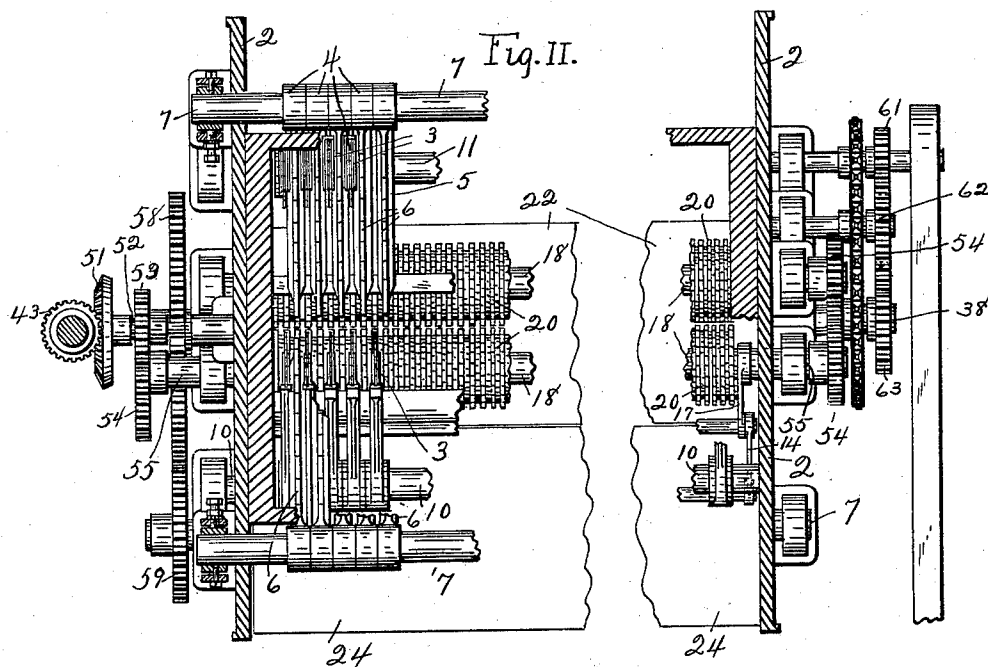
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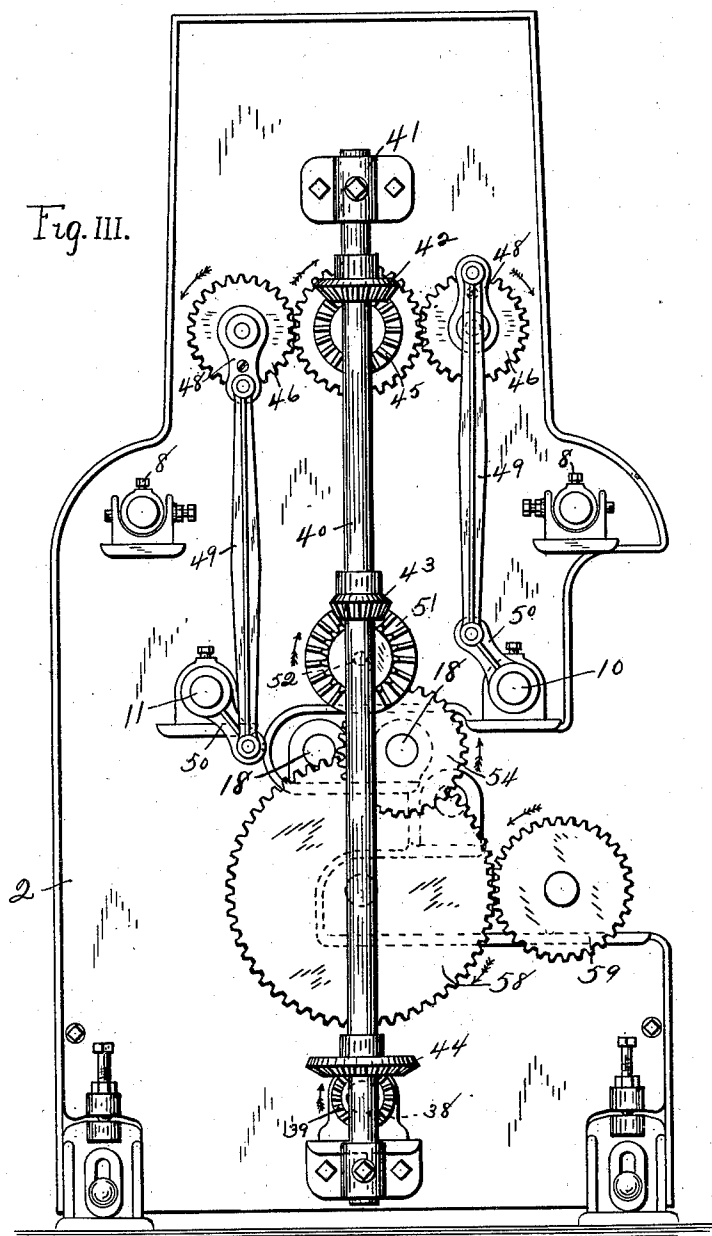
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

JAMES HOGG, OF AMSTERDAM, NEW YORK, ASSIGNOR TO AMERICAN CARD FEEDER COMPANY, OF AMSTERDAM, NEW YORK.

FEEDING MECHANISM FOR CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 686,071, dated November 5, 1901.

Application filed September 13, 1900. Serial No. 29,868. (No model.)

To all whom it may concern:

Be it known that I, JAMES HOGG, of Amsterdam, in the county of Montgomery, in the State of New York, have invented new and useful Improvements in Feeding Mechanism for Carding-Machines, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to a feed mechanism for carding-machines of a new construction and mode of operation in which the stock—such as wool, cotton, or other fiber—is drawn out of the receptacle by two combs arranged one on each side, by which the fiber is maintained in the best possible condition without being rolled up or sorted and delivered in light uniform locks continuously in the center between the combs, where it may be received by any suitable mechanism—such as toothed rolls, a toothed apron, or scale—for transfer to the cards, pickers, washers, driers, or other mechanism.

The essential features are a gravity feed chute or receptacle having openings in its bottom, in which openings move toothed extractors to draft or draw out the stock. The bottom of the receptacle may be of any suitable construction. Preferably there are two series of parallel grooves or slots, one each side, communicating with a common central opening at right angles to the slots. In such a construction there would be two series of extractors arranged on each side of the central opening and at equal distances therefrom. Each series of extractors operates in its corresponding series of slots, which may be formed by toothed cross-bars or bars of other suitable construction. One series of extractors would operate, (in one series of slots;) but two, as here arranged, are much better.

In the drawings herewith and in this specification the same reference characters indicate the same parts in all the figures.

Figure I is a vertical cross-section of a feed mechanism, showing a desirable form of my invention. Fig. II is a top plan view with portions shown in section and portions broken away. Fig. III is an end elevation showing the operating shafts, gears, &c. Fig. IV is a vertical section showing diagrammatically a

combination of my invention with another form of delivering mechanism. Fig. V is an enlarged plan of a toothed finger. Fig. VI shows in plan one end of a modified form of comb. Fig. VII shows in plan a portion of a modified form of grating. Fig. VIII shows a modified form of the comb, in which toothed disks are used as extractors instead of reciprocating fingers.

In the figures, 1 indicates the feed-box or gravity-chute to which the mixed wool or other fibrous stock is delivered by any suitable means.

2 2 are the end plates supporting the box and other parts of the mechanism. The bottom of the box is composed of a grating of any desirable form. In the grooves between its cross-bars reciprocate the toothed fingers 3 3 of the feed-combs 4 4 to draw out from the chute and deliver the wool uniformly in very light fine open locks to the receiving mechanism (without separating the different kinds of stock) through the central opening A. The teeth of the fingers are hooked or inclined more or less toward the center to engage with the fiber. The bottom of the box may be made of curved bars 5 5, having teeth 6 6, pointing inwardly and downwardly to prevent the pushing back of the wool by the combs. These bars are sustained on shafts 7 7 by set-screws 8 8, permitting vertical adjustment of the bars, so that the teeth of the combs, extending above them more or less, bring down a greater or less amount of wool. Notches 9 9 are formed in the end of the bars to engage with any wool that may remain in the fingers as they are returning and clear them.

The toothed fingers or extractors 3 3 are arranged in two opposite series on the rock-shafts 10 and 11, by which they are reciprocated between the racks to engage with the wool and deliver it substantially in the center. The comb and finger may be of any desirable form and provided with a greater or less number of teeth arranged in one or more series on each finger. The fingers are cheaply and easily cut from a sheet of metal and then secured to the shaft. The combs may be arranged to operate together, bringing down the wool from both sides simultaneously or

alternately, as shown in Fig. I, which is better, delivering continuously by alternate combfuls instead of intermittingly, both combfuls coming down together.

5 The combs or extractors may be of different forms and operated in different ways, the essential feature being the teeth extending up through the slots in the box-bottom and moved to draft the stock. The elements
10 which make up the comb may be of any suitable form, such as toothed fingers secured to a rock-shaft or otherwise reciprocated or rotating toothed disks performing the same function.

15 To describe the other parts of the mechanism shown in Fig. I, arms 14 14 of the combs or fingers are pivotally connected by links 15 15 to the rocking guide-bars 16 16, whose supporting-arms 17 17 fit around the ends of
20 the resisting-roll shafts 18 18, as shown in Fig. I. These rocking guide-bars form a second receptacle for the wool and are rocked by their connection to the combs to press the wool constantly but lightly toward the center,
25 so that it is kept in a more compact and uniform condition, and a continuous supply is more uniformly delivered by the spiked feeding and resisting rolls 20 20 to the first spiked drafting-roll 22 on shaft 23, from which
30 the wool is picked off by the faster-moving second spiked drafting-roll 24 on the shaft 25.

26 is a wiping-roll or stripper-roll operating at a speed between that of the feeding-rolls and of the faster drafting-roll to insure cleaning of the resisting-roll. A bur-guard 27 on
35 shaft 28 may be arranged under the second drafting-roll for cleaning the wool and preventing the passage of foreign bodies.

Fig. IV is a diagrammatic representation
40 of an adaptation of my invention, in which the combs and gravity feed-chute are arranged to deliver the stock without the feeding or other spiked rolls directly to a scale, whence it is delivered by a continuous apron
45 to the card mechanism. The fingers of the combs are here indicated by *a* and *b*, respectively, so arranged and operated as to move alternately and when reaching the lower position rest there momentarily till the other
50 comb has come down, by which the stock is cleaned or stripped from the fingers of the first. In Fig. IV the comb *a* has moved down first and is timed to rest there momentarily till comb *b* has come down. Comb *a* is now
55 about to return to dotted position for another supply of wool, during which time comb *b* will rest in the position as shown. In this figure, 30 indicates a receiving-platform arranged on scales connected by a tripper to
60 stop the operation of the combs when the scales have received a sufficient weight of stock. This is then automatically delivered by the delivering-plate 31 to the apron 32, on which it is uniformly compressed by the
65 presser-bar 33 and then carried to the carding mechanism. This arrangement is adapted to any situation where greater certainty is

necessary in feeding to deliver a uniform quantity of stock in a given time.

The extractors and rolls are operated by 70 any suitable mechanism, such as best shown in Figs. II and III.

38 is main shaft journaled in bottom of frame carrying beveled gear 39.

40 is vertical shaft journaled at 41 41 and 75 carrying beveled gears 42, 43, and 44, the last meshing with gear 39. With gear 42 meshes gear 45, engaging with gears 46 46 to operate the combs through cranks 48 48, pitmen 49 49, and cranks 50 50 on shafts 10 11. 80 With gear 43 meshes gear 51 on shaft 52, carrying pinion 53, meshing with feeding-roll gear 54 at one end. At opposite end both feeding-roll gears 54 54 on shafts 18 18 engage, thus operating feeding-rolls. Gears 58 and 59 85 may be drawn by chain 60 from pulley 61 and main shaft 38 from pinion on the pulley through gears 62 and 63.

While my invention relates, broadly, to the combs with their spring-fingers operating in 90 the slots in the bottom of the chute, yet the forms of these parts may be varied, the fingers and rack-bars may each be cut or stamped from a single piece of metal, or, as shown in Fig. V, the finger may be made of the arm 95 *c*, with the toothed plate *d* riveted to its end, or, as shown in Fig. VI, an arm *e* may be secured to shafts 10 and 11 at each end carrying a solid continuous bar *f*, to which is secured the toothed plates *d d*. 100

In Fig. VII is shown a variation in the form of the grating and bars, the bars being a part of the solid piece *h*, fitted to the shaft 7, in which slots *j j* are cut for the passage of the toothed fingers. 105

The guide-bars 16 16 are preferably operated as I have described, but may be disconnected from the combs and maintained stationary about in the position of the left-hand rocking bar 16 in Fig. 1. 110

In Fig. VIII is shown a construction in which the combs are made up of series of toothed rollers extending up between the bars. The roller-teeth are inclined in the same direction as on the toothed fingers and the 115 rollers are rotated, as shown by the arrows, to draft the wool through the central opening.

The cotton, wool, &c., to be carded are generally blended of different qualities or of different lengths of fiber, the separating or sorting 120 out of these various qualities in the feed is very objectionable, the blended stock must also be freed from foreign matter, and the knotty locks or other portions be opened before feeding in order not to injure the 125 delicate card-clothing. Heretofore a spiked apron or roll has been used, which imparts a rolling motion to the stock and tends to sort it out, so that where the stock is composed of long and short fibers mixed the long resists the action of the comb or beater stripping off the surplus, while the short drops off and back into the supply, and the long stock is carried more readily to the card and 130

the supply gets poorer and poorer the longer the intervals between the renewal of the supply. It is a well-known fact among carders and mill men that the evils attending the common practice of feeding from one side of the supply and combing and beating the surplus back has always made it impossible to preserve the blend which has been so carefully manipulated in the picker-room, necessitating a good many doublings in the second breaker and finisher combs to remedy as far as possible the bad effects caused by imperfect feeding. This combing or beating back the surplus not only destroys the blend, but injures the fiber and rolls and balls it up so that it does not pass to the cards uniformly nor in a sufficiently open light condition. All these disadvantages are overcome by my present invention, with which there is no necessity of using a comb or beater to comb back the surplus. By my arrangement of receptacle and extractors the stock is brought down from the chute in small portions and in a very light open condition, so that it is supplied to the carding mechanism in the best possible condition and with great uniformity.

Having thus described my invention, what I claim, and desire to protect by Letters Patent, is—

1. In a feed mechanism for fibrous material, the combination with a gravity feed-chute having a stationary bottom formed with a central longitudinal outlet, and with parallel cross-slots extending therefrom on each side to about the sides of the chute, of two series of extractors supported below the bottom and extending into the respective slots to comb out small portions of the fibrous material through the outlet in light, open condition, and of means to operate the extractors.

2. In a feed mechanism for a wool-carding machine, the combination with a gravity feed-chute having a stationary bottom uniformly inclined from each side downwardly toward the center and formed with a longitudinal chute-outlet along the lowest portion of the bottom, and with parallel cross-slots extending from the longitudinal opening to about the sides of the chute, of extractors supported adjacent to the bottom and extending into the respective slots to comb small portions of the wool down through the chute-outlet, and of means to operate the extractors.

3. In combination in a feed mechanism for carding-machines, a receptacle for the stock, a bottom therefor formed with a central, longitudinal opening extending from end to end and with two series of cross-slots of uniform length extending from the central opening at right angles, one series on each side; two series of toothed extractors supported adjacent to the bottom on each side of the central opening and at equal distances therefrom and arranged to extend through said slots, into the receptacle; and means to operate the extrac-

tors, one in each of the slots, to draft the stock through the central opening.

4. In combination in a feed mechanism for carding-machines, a gravity feed-chute having a bottom formed with cross-slots and with a longitudinal, central opening at right angles to said slots, opposite series of toothed fingers suitably supported below the bottom of the chute on each side of said longitudinal opening and arranged to move in said slots, and means for reciprocating said fingers to comb down the stock from the chute through said central opening.

5. In combination in a feed mechanism for carding-machines, a gravity feed-chute for receiving and temporarily retaining the stock, having its bottom formed of two series of cross-bars extending from the sides to about the center and leaving a central opening between their ends, combs suitably supported on each side beneath the bars, each comb being formed of a series of toothed fingers keyed on a shaft and arranged to move in the openings between the cross-bars, and means to rock said shafts and reciprocate the fingers to draw down the stock through the central opening.

6. In combination in a feed mechanism for carding-machines, a gravity feed-chute, parallel shafts arranged on each side adjacent to its lower end, a series of toothed bars secured on each shaft adjacent to each other and extending inwardly across the chute, temporarily to support the stock therein and arranged to leave an opening between their adjacent ends; parallel rock-shafts arranged beneath said bars, a series of toothed fingers secured to each rock-shaft and arranged to move in the spaces between said bars, and means to rock said shaft and reciprocate the fingers to comb down the stock from the chute.

7. In combination in a feed mechanism for carding-machines, a gravity feed-chute, parallel shafts arranged on each side adjacent to its lower end, a series of toothed bars secured on each shaft adjacent to each other and extending inwardly and downwardly across the chute, temporarily to support the stock therein, and arranged to leave an opening between their adjacent ends, parallel rock-shafts arranged beneath said bars, a series of toothed fingers secured to each rock-shaft and arranged to move in the spaces between said bars, the teeth on the fingers pointing inwardly toward the opening, and means to rock said shafts and reciprocate the fingers to comb down the stock from the chute.

8. In combination in a feed mechanism for carding-machines, a gravity feed-chute, parallel shafts arranged on each side adjacent to its lower end, a series of toothed bars secured on each shaft adjacent to each other and extending inwardly and downwardly across the chute, temporarily to support the stock therein and arranged to leave a narrow space between their adjacent ends, the teeth on said bars pointing inwardly, parallel rock-shafts

arranged beneath said bars, a series of toothed fingers secured to each rock-shaft, and arranged to move in the spaces between said bars, the teeth on said fingers pointing inwardly, and means to rock said shaft and reciprocate the fingers to comb down the stock from the chute.

9. In combination in a feed mechanism for carding-machines, a gravity feed-chute, parallel shafts arranged on each side adjacent to the bottom thereof, a series of parallel cross-bars adjustably keyed at their outer ends to each shaft and having their inner ends extending adjacent to those of the other series, parallel rock-shafts arranged beneath said bars on each side, toothed fingers secured on said rock-shafts and arranged to move between the cross-bars, means to rock the shafts and reciprocate the fingers to comb down the wool from the chute, and parallel guide-bars arranged beneath the toothed fingers, forming a second receptacle for the stock.

10. In combination in a feed mechanism for carding-machines, a gravity feed-chute, parallel shafts arranged on each side adjacent to the bottom thereof, a series of parallel toothed bars keyed at their outer ends to each shaft and having their inner ends extending adjacent to those of the other series, parallel rock-shafts arranged beneath said bars on each side, toothed fingers secured on said rock-shafts and arranged to move between the bars, means to rock the shafts and reciprocate the fingers to comb down the wool from the chute, and parallel rocking guide-bars suitably supported beneath the toothed fingers and connected to the respective combs to move therewith and force the wool toward the center.

11. In combination in a feed mechanism for carding-machines, a gravity feed-chute, parallel shafts arranged on each side adjacent to the bottom thereof, a series of parallel toothed bars keyed at their outer ends to each shaft and having their inner ends extending adjacent to those of the other series, parallel rock-shafts arranged beneath said bars on each side, toothed fingers secured on said rock-shafts and arranged to move between the cross-bars, means to rock the shafts and reciprocate the fingers to comb down the wool from the chute, opposite spiked feed and resisting rolls centrally arranged beneath the two fingers to receive the stock, and means to rotate said rolls.

12. In combination in a feed mechanism for carding-machines, a gravity feed-chute having its bottom formed of two series of cross-bars each series extending from the side to about the center and leaving a central opening between their ends, rock-shafts arranged on each side beneath the chute, a series of toothed fingers keyed to each shaft and arranged to move in the openings between the cross-bars, means to rock said shafts and reciprocate the combs to draw down the stock through the central opening, a pair of spiked

feed and resisting rolls arranged beneath said opening to receive the stock, and one or more spiked drafting-rolls to receive the stock from said resisting-rolls, and means for rotating the rolls.

13. In combination in a feed mechanism for carding-machines, a gravity feed-chute for receiving and temporarily retaining the stock, having its bottom formed of two series of cross-bars extending from the sides to about the center and leaving a central opening between their ends, combs suitably supported on each side beneath these bars, each comb being formed of a series of toothed fingers keyed to a shaft and arranged to move in the openings between the cross-bars, means to rock said shafts and reciprocate the combs to draw down the stock through the central opening, a pair of spiked feed and resisting rolls arranged beneath said opening to receive the stock, one or more spiked drafting-rolls to receive the stock from said resisting-rolls, a suitable case inclosing said bars, combs and rolls, a main shaft journaled without said case, and gears on said shaft meshing with gears connected with the shafts of said rolls and combs to operate the parts.

14. In combination in a feed mechanism for carding-machines, a gravity feed-chute for receiving the stock, having its bottom formed of two series of cross-bars extending from each side to about the center and leaving a central longitudinal opening between their ends, parallel rock-shafts arranged on each side beneath said bars, toothed fingers secured to said rock-shafts and arranged to move in the openings between the cross-bars to draw down the stock through the central opening, a pair of parallel shafts arranged beneath said opening, spiked resisting-rolls arranged on said shafts, one or more spiked drafting-rolls arranged beneath said resisting-rolls on shafts suitably journaled, a suitable case inclosing said feeding parts, a main shaft, a vertical shaft suitably journaled on the exterior of said case and geared to the main shaft, beveled gears on the vertical shaft, a chain of gears meshing with one of said bevel-gears and connected by cranks to said rock-shafts, a bevel-gear meshing with a second bevel-gear on the vertical shaft and connected by a chain of gears to the resisting-roll shafts, a pulley and chain for operating the drafting-rolls, and connections between the main shaft and the pulley.

15. In combination in a feed mechanism for fibrous material, a feed-chute having a central, longitudinal chute-outlet, a bottom having a series of parallel cross-slots on each side extending from the chute-outlet toward each side of the chute, a series of extractors on each side extending into their respective slots to draft the wool in light, open condition from the mass through the chute-outlet, and means to operate the extractors.

16. In combination in a feed mechanism for fibrous material, a feed-chute gradually widen-

ing toward the bottom having a central, longitudinal chute-outlet therein, a fixed bottom inclining from the side downwardly toward the outlet and having a series of cross-slots
5 on each side extending from the outlet toward each side of the chute, a series of extractors on each side extending into their respective slots to draft the wool in light, open condition through the chute-outlet, and means
10 to operate the extractors.

17. In combination in a feed mechanism for fibrous material, a feed-chute having a longitudinal chute-outlet, a chute-bottom formed with a series of cross-slots on each side ex-
15 tending from the chute-outlet toward the side

of the chute, a series of extractors arranged below the bottom and on each side of the outlet, extending into the chute through their respective slots, toothed drafting-rolls, a pair of feeding and resisting rolls arranged on
20 each side of the outlet and between the drafting-rolls and the bottom, and means to operate the extractors and the rolls.

In testimony whereof I have hereunto signed my name.

JAMES HOGG. [L. S.]

Witnesses:

EDWARD P. WHITE,
J. E. LARRABEE.