June 29, 1937. J. D. RUST ET AL 2,085,046

COTTON PICKING MACHINE

Original Filed June 13, 1935 8 Sheets-Sheet 1

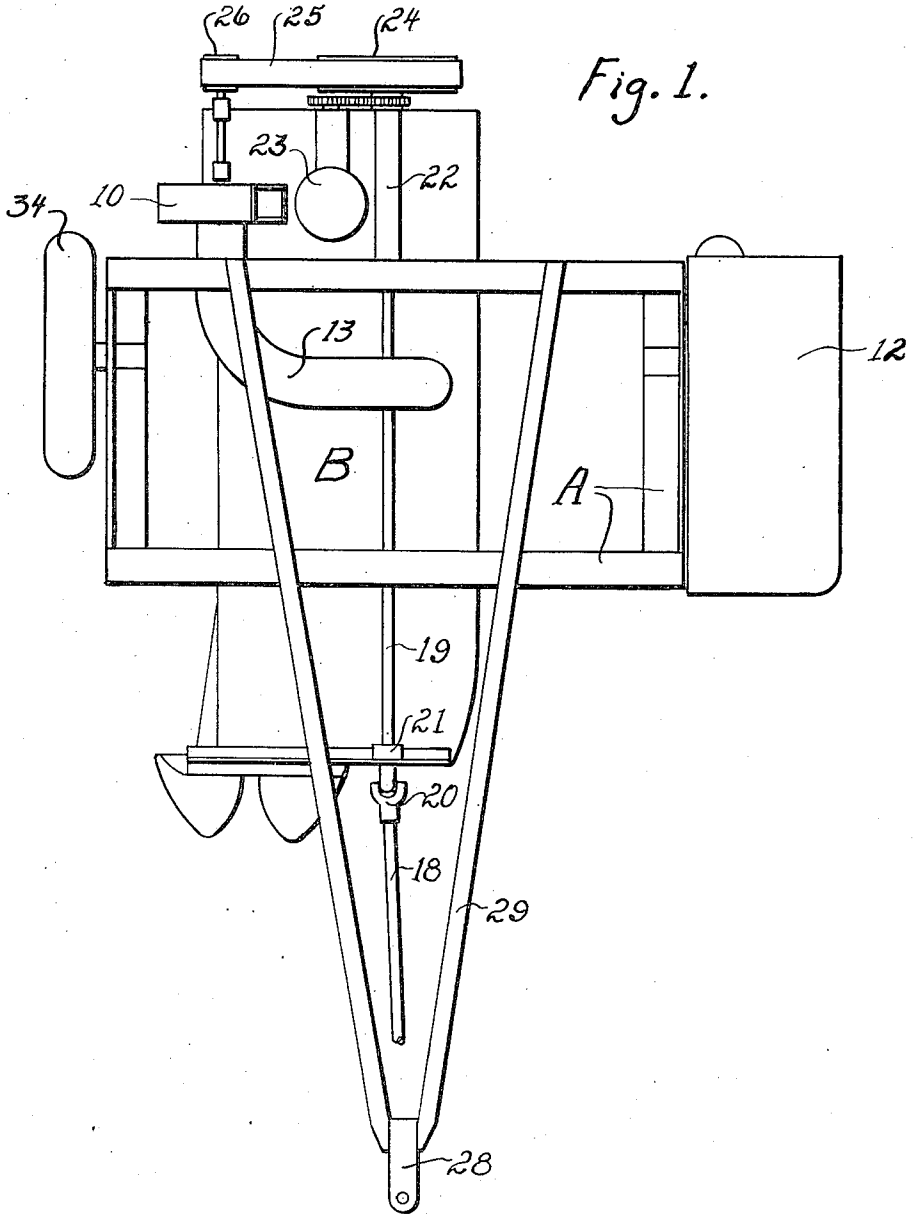


Fig. 1.

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COTTON PICKING MACHINE

Original Filed June 13, 1935 8 Sheets-Sheet 2

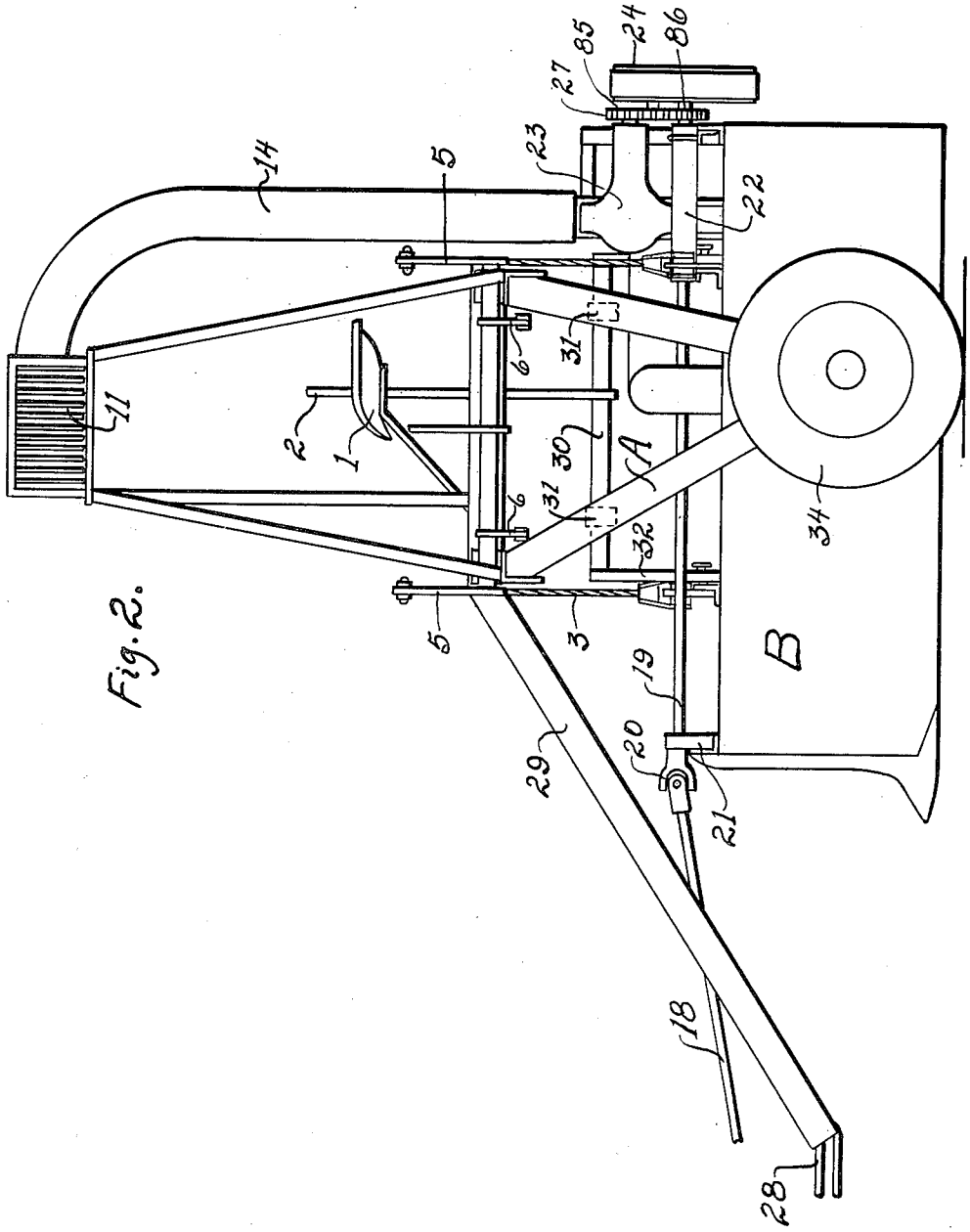


Fig. 2.

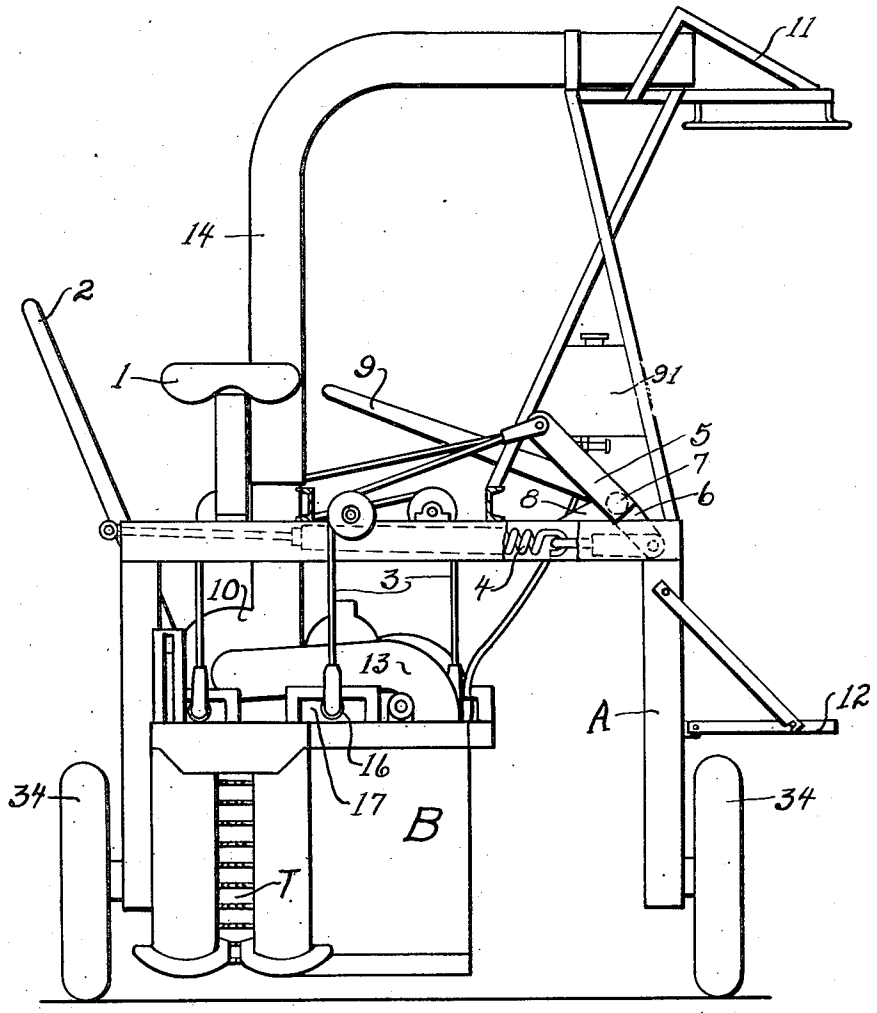
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COTTON PICKING MACHINE

Original Filed June 13, 1935 8 Sheets-Sheet 3

Fig. 3.



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June 29, 1937. J. D. RUST ET AL 2,085,046

COTTON PICKING MACHINE

Original Filed June 13, 1935 8 Sheets-Sheet 4

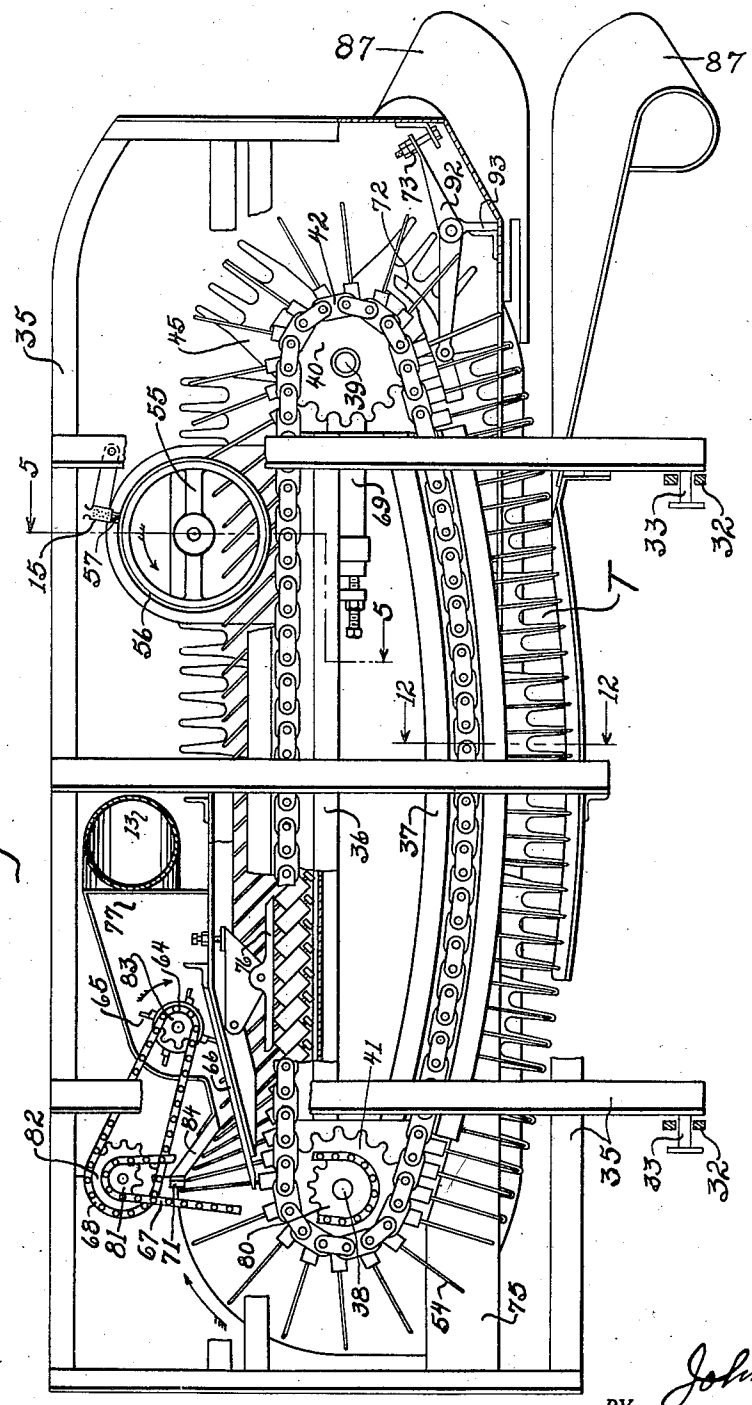


Fig. 4.

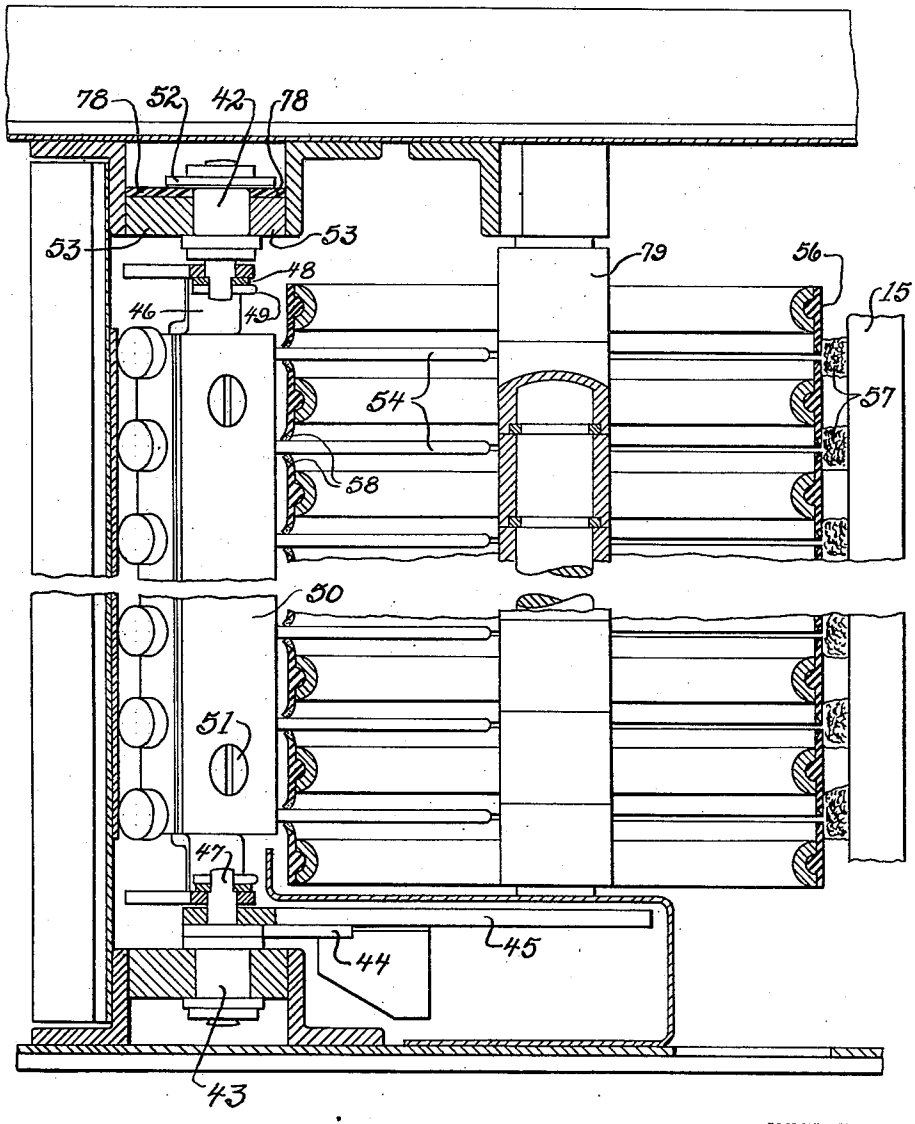
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COTTON PICKING MACHINE

Original Filed June 13, 1935 8 Sheets-Sheet 5

Fig. 5.



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June 29, 1937. J. D. RUST ET AL 2,085,046

COTTON PICKING MACHINE

Original Filed June 13, 1935 8 Sheets-Sheet 6

Fig. 6.

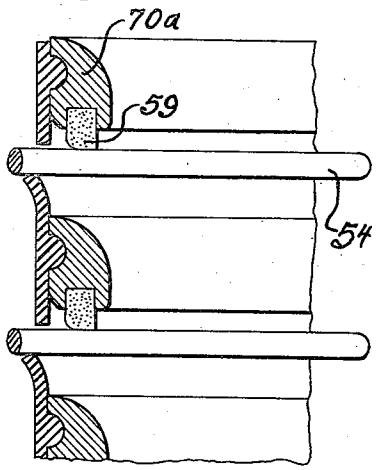


Fig. 9.

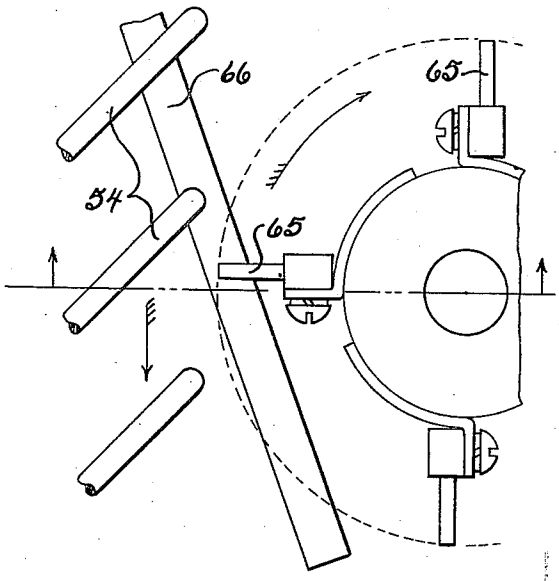


Fig. 7.

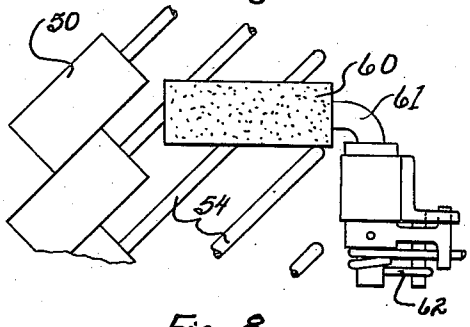


Fig. 8

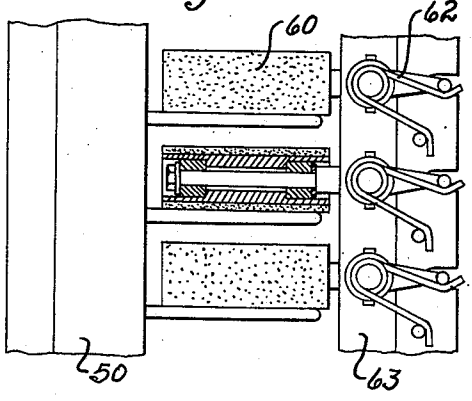
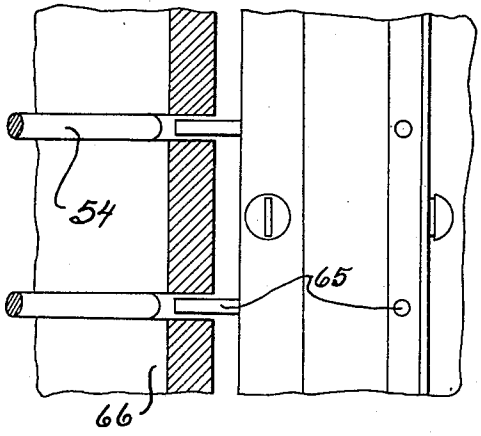


Fig. 10.



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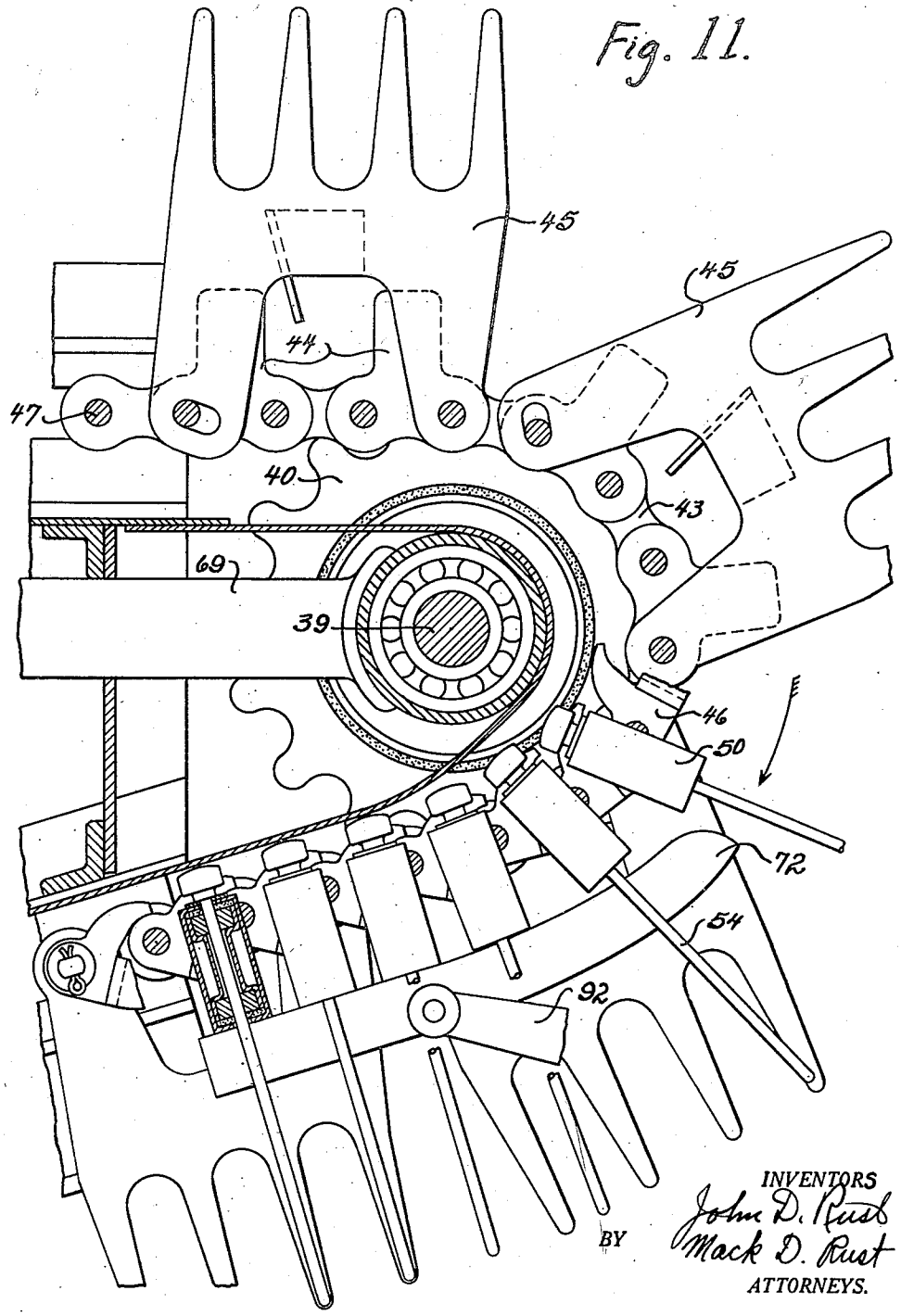
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June 29, 1937. J. D. RUST ET AL 2,085,046

COTTON PICKING MACHINE

Original Filed June 13, 1935 8 Sheets-Sheet 7

Fig. 11.



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June 29, 1937. J. D. RUST ET AL 2,085,046

COTTON PICKING MACHINE

Original Filed June 13, 1935 8 Sheets-Sheet 8

Fig. 12.

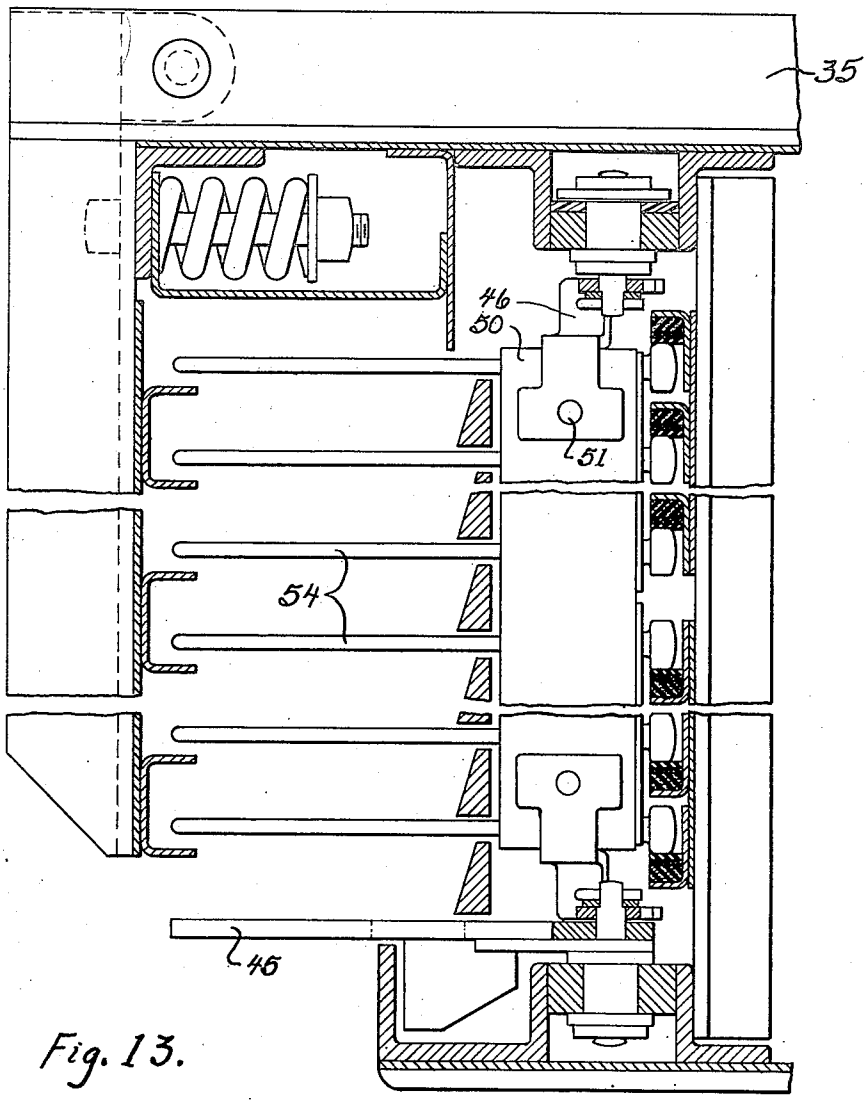
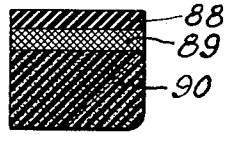


Fig. 13.



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Patented June 29, 1937

2,085,046

UNITED STATES PATENT OFFICE

2,085,046

COTTON PICKING MACHINE

John D. Rust and Mack D. Rust, Memphis, Tenn.

Application June 13, 1935, Serial No. 26,363
Renewed July 13, 1936

36 Claims. (Cl. 56—14)

The present invention relates to cotton picking machines of a type similar to that disclosed in our Patent No. 1,894,198, granted January 10, 1933, the present invention embodying certain improvements over those disclosed in our applications, Serial No. 678,670 filed July 1, 1933, Serial No. 723,423 filed May 1, 1934, and Serial No. 733,687 filed July 3, 1934.

An object of the invention is to provide a cotton picking machine that may be pulled and powered by an ordinary row-crop tractor.

Another object is to provide means for guiding the cotton picking unit onto the cotton row, to some extent independent of the course of the tractor.

In practice we have found there is a tendency for the surface of the wire spindles which we use in our machine to become polished as a result of the cotton being continuously stripped from them. This polished surface is less effective in winding up the cotton from the plants than the original surface of the wire as it comes from the factory. It is an important object, therefore, to provide means for preventing a polished surface from developing on the spindles.

Another object is to provide means for preventing the clogging of cotton in the cracks between the stripping bars even when the cotton is damp or wet.

Another object is to provide improved means for pivoting the spindle carrying slats and the spindle guards.

Another object is to provide improved means for carrying the weight of the endless spindle carrier within the frame of the picking unit.

Another object is to provide improved means for checking the speed of the spindles at the ends of the machine and for loosening the cotton on the spindles to facilitate its removal from same.

Another object is to provide improvements in resilient drive rails for rotating the picking spindles.

This invention also consists of certain other features of construction and of the combination and arrangement of the several parts, to be hereinafter fully described, illustrated in the accompanying drawings, and specifically pointed out in the appended claims.

In describing the invention in detail, reference will be had to the accompanying drawings wherein like characters denote like or corresponding parts throughout the several views, and in which:—

Figure 1 is the top plan view of the machine embodying our present invention, with some parts omitted.

Figure 2 is a side elevation of the same, some parts being omitted.

Figure 3 is a front view of the same, with some parts omitted.

Figure 4 is a top plan view of the picking unit, parts being broken away.

Figure 5 is a fragmentary view, partly in section, taken on line 5—5 of Figure 4, showing detail of spindle guards, spindle conditioner, and spindle slat mounting on the slat carrying chain.

Figure 6 is a fragmentary view in section of an alternate spindle conditioning device showing an inset of carborundum, or similar material.

Figure 7 is a fragmentary view showing another method of preventing the surface of the spindles from becoming polished.

Figure 8 is another fragmentary view, partly in section, of the same spindle conditioning device of Figure 7.

Figure 9 is a fragmentary view of doffer, showing extended teeth for preventing any cotton from clogging in the cracks between the stripping bars.

Figure 10 is a fragmentary view of the same doffer, in elevation.

Figure 11 is a fragmentary view showing in detail the spindle guard and the slat hinge assembled on the extended pins of the slat carrying chain.

Figure 12 is a cross sectional view taken on line 12—12, Figure 4.

Figure 13 is a detail view showing the construction of the spindle drive rail.

In the drawings, in which like numerals and letters of reference designate like parts in all the figures, A represents a truck-like carrying frame and B indicates the picking unit. The picking unit may be carried by the frame A in any suitable manner, but preferably by cables and sheaves as shown in Figure 3.

Referring now particularly to Figures 2 and 3, it will be observed that 1 designates the operator's seat and 2 a lever for manually controlling the lateral position of the picking unit B in relation to the carrying frame A. The weight of the picking unit B is suspended by the cables 3 and is counterbalanced by adjustable springs 4 by means of arms 5 and 6 which are fastened securely to shaft 7 which is in turn pivoted against a bearing 8. The hand lever 9 is fastened securely to the shaft 7 and enables the operator to raise or lower the picking unit B at will. The blower fan 10 draws the cotton from the picking

unit through suction pipe 13 and delivers it through exhaust pipe 14 against screen 11 from which it drops into a sack (not shown).

Referring to Figures 1 and 3, a platform 12 is provided for the cotton sack to rest upon. The letter T designates the picking tunnel through which the cotton plants pass as the machine is drawn over the row. The antifriction rollers 16 which work in horizontal slots 17 allow the picking unit to be easily shifted laterally by means of the guide lever 2.

Referring to Figure 2, drive shaft 18 is connected at its front end to a power-take-off on any standard row-crop tractor and connected to shaft 19 by universal joint 20. Hitch 28 couples onto the draw-bar of any standard row-crop tractor, and the machine is drawn along by the tongue 29. Shaft 19 is supported at the front end by bearing 21 and at the rear end by a bearing assembly 22. From this shaft the power is transmitted by a chain 27 through sprockets 85 and 86 to a conventional bevel-gear assembly contained in housing 23. The mechanism of the picking unit is driven by vertical shaft 38 which is powered through the bevel-gear assembly (see Figures 2 and 4). On the rear end of shaft 19 is secured a pulley 24 which drives blower fan 10 by means of belt 25 and small pulley 26 in Figure 1.

In Figures 2 and 3 is shown a manual control for shifting the picking unit laterally to compensate for inaccurate driving of the tractor operator. Hand lever 2 is securely fastened to shaft 30 which is journaled in bearings 31. The lever arms 32 extend downward connecting with pins 33. The truck wheels 34 are spaced to straddle two rows. The operator's seat 1 is positioned to be directly over the row being picked, and the hand lever shifting arrangement enables the operator easily to keep the machine on the row even though the tractor varies considerably from the proper path.

Referring to Figure 4, the picking unit comprises a frame 35 in which is mounted a longitudinally extending inner frame indicated by 36 and 37. The power for driving the picking mechanism is applied to rear vertical shaft 38, as hereinabove indicated. The rear shaft 38 carries upper and lower sprockets 41, and the shaft 39, which is mounted at the front end of the unit, carries upper and lower sprockets 40. The upper and lower chains 42 and 43 pass around these sprockets. The picking unit is enclosed, save for a tunnelway through which the plants are passed, there being provided, however, an opening in the floor at the rear of the unit for the discharge of trash which may be thrown from the spindles. The endless chain carrier for the picker spindles is similar in construction to that disclosed in our applications aforesaid, but in Figure 5 is shown a detailed view of the construction of the improved chains 42 and 43 with the assembly of the spindle slat hinges, the spindle guards, and spindles, in conjunction with a sectional view of the spindle conditioner. This arrangement of the slat hinges and spindle guards has the advantage of requiring fewer parts, there being also much less wear on the spindle guards in this structure than the one shown in our application No. 678,670. By pivoting the slat hinge on extended pins of the roller chain, we not only simplify the structure but make possible the more accurate spacing of the spindles on the picking side of the machine because the extended pins are more accurately aligned than the bent lug types we have used previously. The bottom carrier chain 43 has extended side plates 44 which support the weight of the spindle guards 45.

It is to be noted that although the chains 42 and 43, when all spindle slats are in place, travel substantially in fixed planes spaced a definite distance apart, it is possible to disconnect any one slat from the chain without deflecting the chains from their planes. This is made possible by reason of at least one of the hinges 46 being made detachable from the slat 50 to which it is secured by screw 51. Assume that it is desired to remove the slat 50, shown in Figure 5, all that it is necessary to do is to disconnect one of the hinges 46 from the slat by withdrawing the screw 51; then, by removing the pins 49, the detached hinge may be removed from the chain and the slat with the other hinge taken out by simply lifting or lowering it, as the case may be, until the undetached hinge leaves its hinge pin.

The arrangement of the spindle guard and slat hinge is shown in further detail in Figure 11.

In Figure 5, it will be observed that both the spindle guard 45 and the slat hinge 46 are pivoted on extended chain pins 47. The hinges and the guards are held in place by means of the washers 48 and the cotter pins 49. The spindle carrying slats 50 are securely fastened to the hinges 46 by screws 51. The weight of the endless carrier is carried by specially designed wide side plates 52 on the upper side of the upper carrier chain 42. The side plates are supported by tracks 53. Strips of replaceable bearing material 78 are inserted between the supporting tracks 53 and the side plates 52. The spindles, 54, when in a picking position, are rotated in a manner similar to that disclosed in our Patent No. 1,894,198 (see Figure 12.)

In Figure 13 is shown a detail of our improved type of spindle drive rail, which has proved highly satisfactory in practice. The track face 88 is made of very rough material, preferably rubber. The fabric insert 89 gives the rail tensile strength required for our method of holding the rail at the front end only. The cushion 90 is made of sponge rubber, or the like, and in practice compensates for any commercial inaccuracies in the spindle drive system.

Referring to Figure 4, the numeral 55 represents a combination rotary spindle conditioning device. With this one device, we accomplish several important results. Leaf sap and dirt are automatically washed off the spindles incident to applying the moisture to the spindles to cause them to pick up the cotton. The series of flexible bands 56 serve to drag off any wisps of cotton that may be left on the spindles by the stripping means, and owing to the abrasive material that has been imbedded in the edges of these flexible bands the surfaces of the spindles are prevented from becoming polished. As the spindles 54 pass through the slits in the vertical cylinder 55, the cylinder rotates and gathers moisture on the edges of the bands 56 from the sponges 57, the sponges being supplied with water from a container 91 carried in a suitable place. The bands in turn apply the moisture to the spindles.

In Figure 5 is shown a fragmentary sectional view of the spindle conditioner in detail. 58 indicates the portion of the rubber bands containing the imbedded grit for scouring the surface of the spindles.

Referring to Figure 6, we show an alternate method of obtaining the same results. In this figure, 59 represents a ring of carborundum, or

the like, set into the rims 70a of the spindle conditioner wheels 79 in a manner that will prevent a polished surface from developing on the spindles 54.

Still a third method of preventing the polished surface from developing on the spindles is illustrated in fragmentary views, Figures 7 and 8. The numeral 60 represents a cylinder having a covering of carborundum or a similar material. This cylinder contacts the spindles on the stripping side of the picking unit and is rotated on its shaft 61 as the spindles pass by. The spring 62, by obvious means, holds the roller 60 in contact with the spindles 54. 63 is a portion of the vertical member supporting these carborundum rollers. It will be understood, of course, that a similar effect could be had by substituting stationary carborundum elements for the rollers 60. It is believed, however, that the rollers would cause less wear on the spindles and would require less power to draw the spindles past them.

In Figure 4 is shown our improved type of doffer 64 which is provided with teeth 65 extending from the body of the doffer. These teeth pass through the cracks between the stripping bars 66 and prevent cotton from clogging in these cracks and insure proper delivery of the cotton to the suction box 77.

A detailed fragmentary top view of this doffer is shown in Figure 9.

Figure 10 is another fragmentary view of the same, partly in section.

Having reference again to Figure 4, it will be noted that the doffer 64 is driven by chains 67 and 68 through sprockets 80, 81, 82, and 83, from vertical shaft 38. The sprockets 40 may be moved forward to take up slack in chains 42 and 43 by means of the adjustable slide bars 69.

In the same figure a bumper 71 serves the double purpose of absorbing the shock of the spindles at the point illustrated and loosening the cotton on the spindles incident to their sudden stop at this point. It will be noted that the speed of the spindles is somewhat accelerated as they pass around the sprockets 40 and 41 at the ends of the machine. The sudden change of the speed at the point where the chain leaves the sprockets would, without special shock absorbers, tend to put undue abuse on the slat hinges. In our application, Serial No. 733,687, we proposed a system of shock-absorbers to eliminate this abuse on the slot hinges, but in practice we have found the type of shock-absorbers herein proposed to be simpler in construction, much cheaper to manufacture, and more effective in operation. The bumper 71 at the rear may be made of rubber or similar material and may be quickly replaced. At the front end is provided a bar 72 which absorbs the shock of the spindles through direct contact with the slats at the proper moment. This shock-absorber may be adjusted, as indicated, by bolt 73, through lever arm 92 which is pivoted on bracket 93. Upright board 84 causes the spindles to take the proper angle on the stripping side, and this angle is maintained by means of runner 76 until the spindles have passed through the stripping mechanism.

In Figure 4 will be noted the sheet iron shield 74 which forms the outer wall of the tunnel T through which the plants pass. The stalk guards 75 form the inside wall and have been fully described in our applications No. 723,423; No. 678,670; and No. 733,687. Boll lifters 87 serve to gather up the low bolls and limbs and insure their contact with the picking spindles.

As shown in Figure 4, a tubular structure 15 is provided for holding the moistening sponges 57.

Operation

As the machine is driven through the field the wheels straddle two rows, the unit B picking the cotton from one row. The cotton stalks enter the picking mechanism through the throat thereof.

As the machine moves forward the cotton stalks enter the tunnel T (see Figure 4) of the picking mechanism where the plants are engaged by the spindles 54, the cotton being wrapped around the spindles and removed from the bolls as the plants pass along the tunnel. As the spindles pass through this tunnel at the picking side of the machine, they are moved rearward at the same rate of speed that the machine is traveling forward. This timing of the speed allows the spindles to gather the open cotton from the plants without harm to the stalks or green bolls. The spindles are rotated incident to their rearward motion, resulting in the cotton being wound about them. The outer wall of the tunnel presses the stalks and bolls into contact with the spindles to enable them effectively to gather the open cotton from the bolls. Passing further along toward the rear of the tunnel T, the spindles with the cotton wound around them are gradually withdrawn from the tunnel and from the plants, the plants being held from following the spindles by reason of the presence of the guards 75.

The cotton laden spindles are now carried around the sprockets 41. As the spindles swing around the rear sprockets 41 they throw loose from themselves the bulk of any trash gathered from the stalks, and the trash is discharged through a suitable opening provided in the floor of the housing, as in the machine of our application, Serial No. 678,670 aforesaid.

The spindles in swinging around the axis 38 encounter the bumper 71 as they pass into the stripping devices. The bumper 71 tends to loosen the cotton on the spindles and also prevents undue abuse on the slat hinges at this point. An upright board 84 serves to give the spindles the necessary inclination to the stripping bars 66, as the stripping action begins. The spindles are maintained in this position while leaving the stripping bars by the runner 76 (see Figure 4). The doffer 64 rotates rapidly near the stripping bars with the teeth 65 penetrating the cracks between the stripping bars, insuring the delivery of the cotton to the suction box 77.

The spindles now leave the stripping bars and are carried forwardly until they enter the rotary spindle conditioner 55 which rotates by means of its contact with the spindles, and in parting with the spindles it drags off all particles or wisps of cotton which might have been left thereon by the stripping means. At the same time the moistened flexible bands of the conditioner wheels automatically moisten and clean the spindles. The abrasive material carried by the conditioner wheels (see Figures 5 and 6) serves to prevent a polished surface from developing on the spindles, and thus the spindles are kept in perfect picking condition.

The spindles now pass from the conditioner around sprockets 40 at the front of the machine. The accelerated travel of the spindles as they are passed around the axis 39 is retarded, or ab-

sorbed, by the bar 72 before the spindles are again passed into the cotton plants. This completes the cycle of operation.

The structures disclosed in this application are the preferred ones, but we wish it to be understood that modifications, alterations in design and proportions of parts, and some changes in details of construction may be made by those skilled in the art without departing from the spirit of the invention.

In Figure 6 is shown a modification of the structure shown in Figure 5.

In Figures 7 and 8 are shown fragmentary views of another structure for preventing the spindles from developing a polished surface.

From the foregoing description, taken in connection with the accompanying drawings, it is thought the construction, operation, and advantages of our invention, together with the novel features thereof, will be clear to those skilled in the art.

What we claim is:

1. A cotton picking machine comprising a picking unit carried by a truck having wheels spaced to straddle two cotton rows, means for pulling and powering said picking machine by an ordinary row-crop tractor, and manually controlled means for guiding the picking unit on the row to some extent independently of the course of the carrying truck.

2. A cotton picking machine comprising a picking unit carried by a truck having wheels spaced to straddle two cotton rows, means for pulling and powering said machine by an ordinary row-crop tractor, and means for shifting the lateral position of the picking unit in its relation to the said carrying truck, said means comprising a lever arrangement which includes means whereby the picking unit may be shifted laterally by the operator, the weight of said picking unit being supported on rollers, horizontal slots providing for lateral movement of the picking unit in its relation to said rollers and said carrying truck.

3. In a cotton picking machine, a plurality of horizontal rows of smooth surfaced picking spindles and means for preventing a polished surface from developing on the picking portion of said spindles.

4. In a cotton picking machine, a plurality of horizontal rows of smooth surfaced picking spindles and means for preventing a polished surface from developing on the picking portion of said spindles, said means comprising a series of elements mounted on a vertical member, each of said elements being spaced and positioned to contact a horizontal row of said picking spindles, said elements having an abrasive surface.

5. In a cotton picking machine, a plurality of horizontal rows of smooth surfaced picking spindles and means for preventing a polished surface from developing on the picking portion of said spindles, said means comprising a series of rollers mounted on a vertical member, each of said rollers being spaced and positioned to contact a horizontal row of said picking spindles, said rollers having an abrasive surface.

6. In a cotton picking machine comprising a plurality of smooth surfaced picking spindles, means for rotating the spindles while in picking position, means for stripping cotton from said spindles, and a spindle conditioner for removing wisps of cotton from the spindles, applying moisture to the spindles, and preventing a polished surface from developing on the picking portion of said spindles.

7. In a cotton picking machine comprising a plurality of picking spindles, means for rotating said spindles, means for stripping the cotton from said spindles, means for removing wisps from said spindles subsequent to the passing of the spindles through the stripping means, said wisp removing means comprising a series of wheels having flexible bands around the rims thereof, abrasive material imbedded in the edges of said flexible bands for preventing a polished surface from developing on the picking portion of said spindles, and means for applying liquid to said flexible bands.

8. In a cotton picking machine comprising a plurality of picking spindles, means for rotating said spindles, means for stripping the cotton from said spindles, means for removing wisps from said spindles subsequent to the passing of the spindles through the stripping means, said wisp removing means comprising a series of wheels having flexible bands around the rims thereof, a series of circular abrasive elements carried by said series of wheels for preventing a polished surface from developing on the picking portion of said spindles, and means for applying liquid to said flexible bands.

9. In a cotton picking machine, an endless spindle carrying member arranged longitudinally of the machine, said endless member comprising upper and lower endless chains having extended pins and spindle carrying slats, said slats being pivoted on the extended pins of said chains, and spindle guards carried on the lower chain of said endless member, said spindle guards being pivoted on the extended pins.

10. In a cotton picker, an endless traveling member comprising upper and lower chains, and slats pivotally mounted thereto, a plurality of picking spindles journaled in the slats, means for rotating the spindles, means for stripping cotton from the spindles, means for carrying the weight of said endless traveling member, said carrying means comprising horizontal tracks for the upper chain arranged longitudinally of the machine, said upper chain being provided with extended side plates for carrying the weight of said endless member.

11. In a cotton picker, an endless traveling member comprising upper and lower chains, and slats pivotally mounted thereto, a plurality of picking spindles journaled in the slats, means for rotating the spindles, means for stripping cotton from the spindles, means for carrying the weight of said endless traveling member, said carrying means comprising horizontal tracks for the upper chain arranged longitudinally of the machine, said upper chain being provided with extended side plates for carrying the weight of said endless member, and replaceable bearing strips inserted between the said extended side plates and the said horizontal chain tracks.

12. In a cotton picking machine, an endless chain carrier taking around spaced-apart shafts having sprockets, spindle carrying slats hinged to said carrier, spindles projecting from said slats, in combination with means for absorbing the swinging shocks of the spindles as they pass around the axes of said sprockets, one of said absorbers comprising a resilient vertical member to engage the ends of the spindles as they approach the completion of their accelerated swinging movement.

13. In a cotton picking machine, an endless chain carrier taking around spaced-apart shafts having sprockets, spindle carrying slats hinged to

said carrier, spindles projecting from said slats, in combination with means for absorbing the swinging shocks of the spindles as they pass around the axes of said sprockets, one of said absorbers comprising an adjustable bar to engage and steady said slats as the spindles approach the completion of their accelerated swinging movement.

14. In a cotton picking machine, a traveling spindle carrier, a plurality of rows of spindles spaced apart horizontally and vertically and carried by said carrier, said spindles having rollers on the inner ends thereof, resilient tracks, one for each horizontal row of rollers, means to anchor said resilient tracks at one end, said resilient tracks comprising a face of tough friction material, another material for tensile strength, and a spongy cushion to compensate for commercial inaccuracies in the spindle drive mechanism.

15. In a cotton picking machine having a picking side and a stripping side, an endless traveling member, a plurality of spindles carried by said endless member, means for imparting motion to said endless member, means for applying moisture to the surface of the spindles, means for rotating the spindles at the picking side, means for stripping cotton from the spindles at the stripping side, said stripping means comprising bars diagonally positioned across the path of said spindles and forming longitudinal cracks through which the spindles pass, and doffing means comprising a rotary member having projections thereon which project into and pass through the space between the stripping bars at a point adjacent the position at which the points of the spindles recede from between the stripping bars, at least one of said projections being provided for each stripping crack.

16. In a cotton picker, an endless traveling member comprising chains, and slats pivotally mounted thereto, a plurality of picking spindles journaled in the slats, means for rotating the spindles, means for stripping cotton from the spindles, said stripping means comprising bars positioned diagonally of the path of the spindles diverging forwardly therefrom and rotary doffing means positioned adjacent the position at which the spindles are withdrawn from the cracks between the stripping blades, said doffing means having lateral pin like projections thereon which pass through the space between the stripping bars.

17. A cotton picking machine comprising a picking unit carried by a truck having wheels spaced to run between the cotton rows, means for pulling and powering said picking machine by an ordinary row-crop tractor, and manually actuated means for guiding the picking unit laterally in its relation to said carrying truck.

18. A cotton picking machine including a picking unit carried by a truck having wheels spaced to run between the cotton rows, means for pulling and powering said picking machine by an ordinary row-crop tractor, and means for shifting the picking unit laterally in its relation to said carrying truck, said means comprising a lever arrangement which includes means whereby the picking unit may be shifted laterally by the operator, the weight of said picking unit supported on rollers, horizontal slots providing for lateral movement of the picking unit in its relation to said rollers and said carrying truck.

19. In a cotton picking machine, a plurality of horizontal rows of substantially smooth surfaced picking spindles and means for maintaining a slightly roughened surface on the picking portion of said spindles.

20. In a cotton picking machine, a plurality of horizontal rows of substantially smooth surfaced picking spindles and means for maintaining a slightly roughened surface on the picking portion of said spindles, said means comprising a series of elements mounted on a vertical member, each of said elements being spaced and positioned to contact a horizontal row of said picking spindles, said elements having an abrasive surface.

21. In a cotton picking machine, a plurality of horizontal rows of substantially smooth surfaced picking spindles and means for maintaining a slightly roughened surface on the picking portion of said spindles, said means comprising a series of rollers mounted on a vertical member, each of said rollers being spaced and positioned to contact a horizontal row of said picking spindles, said rollers having an abrasive surface.

22. In a cotton picking machine comprising a plurality of substantially smooth surfaced picking spindles, means for rotating the spindles while in the picking position, means for stripping cotton from said spindles, and a spindle conditioner for removing wisps of cotton from the spindles, applying moisture to the spindles, and maintaining a slightly roughened surface on the picking portion of said spindles.

23. In a cotton picking machine comprising a plurality of picking spindles, means for rotating said spindles, means for stripping the cotton from said spindles, means for removing wisps from said spindles subsequent to the passing of the spindles through the stripping means, said wisp removing means comprising a series of wheels having flexible bands around the rims thereof, abrasive material imbedded in the edges of said flexible bands for maintaining a slightly roughened surface on the picking portion of said spindles, and means for applying liquid to said flexible bands.

24. In a cotton picking machine comprising a plurality of picking spindles, means for rotating said spindles, means for stripping the cotton from said spindles, means for removing wisps from said spindles subsequent to the passing of the spindles through the stripping means, said wisp removing means comprising a series of wheels having flexible bands around the rims thereof, a series of circular abrasive elements carried by said series of wheels for maintaining a slightly roughened surface on the picking portion of said spindles, and means for applying liquid to said flexible bands.

25. In a cotton picker, an endless traveling member comprising upper and lower chains having extended pins, slats pivotally mounted on said pins and connected thereby with said chains whereby the weight of the slats and lower chain is carried by the upper chain, a plurality of picking spindles journaled in the slats, means for rotating the spindles, means for stripping cotton from the spindles, horizontal tracks for supporting the weight of the upper chain and the slats and lower chain carried thereby, said upper chain being provided with extended side plates for carrying the weight on said tracks.

26. In a cotton picker, an endless traveling member comprising upper and lower chains, spindle carrying slats pivotally mounted and connecting said chains together as a unit, means for carrying the weight of said unit during its

travel, said carrying means comprising horizontal tracks for the upper chain, the upper chain being provided with extended side plates for carrying the weight of said unit.

27. In a cotton picker, an endless traveling member comprising upper and lower chains, spindle carrying slats pivotally mounted and connecting said chains together as a unit, means for carrying the weight of said unit during its travel, said carrying means comprising horizontal tracks for the upper chain, the upper chain being provided with extended side plates for carrying the weight of said unit, and replaceable bearing strips inserted between said extended side plates and said horizontal tracks.

28. In a cotton picking machine, a wheeled frame, a cotton picking unit, means for suspending said unit on said frame for movement in a vertical drection, weight counterbalancing means cooperating with said suspending means to counterbalance the weight of said unit, and means in virtue of which the unit may be moved bodily laterally without displacing the suspending means.

29. In a cotton picking machine, a wheeled frame, a cotton picking unit, means for suspending said unit on said frame for movement in a vertical direction, weight counterbalancing means cooperating with said suspending means to counterbalance the weight of said unit, means in virtue of which the unit may be moved bodily laterally without displacing the suspending means, and said last mentioned means comprising rollers on the suspending means operating in horizontally slotted members on the picking unit whereby the picking unit is permitted to move laterally to some extent independently of the course of the carrying truck while maintaining itself parallel to the ground.

30. In a cotton picking machine, a plurality of picking spindles and means for maintaining a slightly roughened surface on the picking portion of said spindles.

31. In a cotton picking machine, a plurality of picking spindles and means for maintaining a slightly roughened surface on the picking portion of said spindles, said means comprising a series of abrasive elements.

32. In a cotton picking machine, a pair of endless traveling chains, means to support said chains in parallel orbits, spindle carrying slats extending from chain to chain, said chains having their link pins extended toward the slats, slat hinges pivoted on said pins and means detachably securing at least one of the hinges of the slat to said slat for purposes described.

33. In a cotton picking machine a pair of endless traveling roller chains, means to support said roller chains in parallel orbits, spindle carrying slats extending from chain to chain, said roller chains having their link pins extending toward the slats, slat hinges pivoted on said pins and means detachably securing at least one of the hinges of the slat to said slat for purposes described.

34. In a cotton picking machine, a pair of endless traveling chains, means to support said chains in parallel orbits, spindle carrying slats extending from chain to chain, said chains having their link pins extending toward the slats, slat hinges pivoted on said pins, the hinge pivot being offset from the axis of the slat, and means detachably securing at least one of the hinges of the slat to said slat for purposes described.

35. In a cotton picking machine, a pair of endless traveling chains, means to support said chains in parallel orbits, spindle carrying slats extending from chain to chain, said chains having their link pins extending toward the slats, slat hinges pivoted on said pins, the hinge pivot being offset from and in lead of the axis of the slat, and means detachably securing at least one of the hinges of the slat to said slat for purposes described.

36. In a cotton picking machine, a pair of endless traveling chains, means to support said chains in parallel orbits, spindle carrying slats extending from chain to chain, said chains having their link pins extended toward the slats, slat hinges pivoted on said pins, means detachably securing at least one of the hinges of the slat to said slat for purposes described, and spindle guards carried on the lower chain of said endless member, said spindle guards being pivoted on said extended pins.

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