The present invention relates to a fiber cleaning machine and is designed and constructed to clean the fiber from Lechuquilla plants which are grown in great quantities in Mexico and along the Rio Grande River in the United States and the fiber is used for making what is known to the trade as Tampico fiber.

Another important object of the invention resides in the provision of a machine of this nature which eliminates the use of a large number of men in cleaning the fiber from the plant.

A still further important object of the invention resides in the provision of a machine of this nature which is efficient and reliable in separating the barks and then combing off the bark and hulk.

A still further important object of the invention resides in the provision of a machine of this nature which is simple in its construction, compact and convenient in its arrangement of parts, not likely to easily become out of order, inexpensive to operate, and thoroughly efficient and reliable in operation and otherwise well adapted to the purpose for which it is designed.

With the above and numerous other objects in view as will appear as the description proceeds, the invention resides in certain novel features of construction, and in the combination and arrangement of parts as will be hereinafter more fully described and claimed.

In the drawings:

Figure 1 is a side elevation of the machine embodying the features of my invention,

Figure 2 is an end elevation thereof,

Figure 3 is a detail vertical section taken substantially on the line 3-3 of Figure 2,

Figure 4 is a side elevation taken opposite to that shown in Figure 1,

Figure 5 is an enlarged detail sectional view taken substantially on the line 5-5 of Figure 3,

Figure 6 is a fragmentary perspective view of one of the conveyor chains,

Figure 7 is an enlarged detail vertical section taken substantially on the line 7-7 of Figure 6,

Figure 8 is an enlarged detail section taken substantially on the line 8-8 of Figure 14,

Figure 9 is a sectional plan view of the structure shown in Figure 8,

Figure 10 is a fragmentary perspective view of one of the endless conveyor members,

Figure 11 is a vertical transverse section taken substantially on the line 11-11 of Figure 1,

Figure 12 is a fragmentary detail perspective view showing the mounting of a pivoting adjusting bar,

Figure 13 is a fragmentary perspective view showing another portion of the bar, and

Figure 14 is a top plan view of the machine.

Referring to the drawings in detail it will be seen that the numeral 5 denotes the bottom frame section which has a plurality of uprights arranged in pairs and denoted by numerals 6, 7, 8, 9 and 10 rising therefrom. Longitudinal bars 11 are supported on the uprights 6, 7, 8, 9 and 10. A platform 12 is supported on cross bars 13 and 14 and extend outwardly beyond one of the bars 11 adjacent uprights 6 and 7. A cross bar 16 is disposed between uprights 6 and has bearings 17 mounted thereon for rotatably receiving shafts 18, 19, and 20 with pulleys 21, 22, and 23 thereon respectively. A power belt 24 from a suitable source is trained over a second pulley 25 on the shaft 20, then under the pulley 22 and then over and about the pulley 21. A shaft 26 is journaled across bars 13 and 14 adjacent the inner end of the platform 12 and has a pulley 27 thereon. A belt 28 is trained over pulleys 23 and 27 and is engaged by an idler pulley 29. The shafts 20 and 26 are braced by a bar 30 in respect to each other. A drum 31 is mounted on the shaft 26 and has a plurality of teeth 32 radiating outwardly therefrom in a plurality of annular series. Uprights 33 rise from the inner end of the platform and have a cross member 34 at their upper ends a distance above the platform so as to provide a limited opening 35 through which the plants are forced into engagement with the teeth 32 of the drum 31 for the purpose of separating the blades which are then dropped into a feed box 36 mounted between uprights 7. The Lechuquilla plant grows in heads or bunches connected at the bottom. The bottom is thrust against the drum 31, the teeth of which separate the blades, which are then dropped upon the conveyor chain 39. The feed box 36 is kept supplied with these blades, and as shown in Figure 3, the conveyor runs through the lower part of this feed box. The shaft 38 is journaled across the bottom of the feed box 36 and has
sprockets thereon over which is trained a chain 39 shown in Figure 6 to advantage, as comprising a plurality of plate-like links 40 hinged together as at 41 and provided with curved teeth 41' one at each side of each link. This chain is further trained over a shaft 42 disposed below the bars 11 and between uprights 8 and 9 being journaled in suitable brackets 43 on the uprights 8 and 9. A guide bar 44 is disposed longitudinally of the machine being mounted on cross bars 45 and 46 on legs 7 and 8 respectively, and has plates 47 fixed to the sides thereof as at 48 and rising above the upper surface thereof. The upper run of the chain 39 rides on the upper surface of the guide bar 44 between the plates 47. A top guide bar 49 is mounted as is illustrated to advantage in Figures 12 and 13 taken in conjunction with Figure 14, wherein it will be seen that one end of the top guide bar 49 is attached to an arm 50 having an adjustable pin and slot connection 51 with a cross bar 52 on the longitudinal bars 11 whereas the other end of the bar is similarly mounted by another arm 50 on the cross bar 12. Thus the top guide bar 49 may be raised or lowered in respect to the bottom guide bar 44.

Side plates 54 are secured to the sides of the top guide bar 49 and depend below the lower surface of the bar 49. The width of the bar 49 and the space between the plates 54 are such that the plates 54 could be adjusted to extend between the plates 47 as is clearly shown in Figure 5. When the chain 39 is in operation traveling in the direction of the arrow adjacent thereto in Figure 4, it will be seen that the blades from the feed box will be caught at one end by the chain and drawn between one of the plates 54 and one of the plates 47 to extend outwardly through the sides thereof. A drum 60 is mounted on the shaft 19 and rotates in the direction of the arrow 61' therein in Figures 1 and 14. The forward end of the drum 60 tapers into a conical formation as is shown at 60'. A plurality of teeth 61 project from the drum proper and teeth 62 project from the conical portion 60' thereof.

The rotation of this drum commbs off the bark and pulp from the blades and thus cleans the fiber on one side. A shaft 63 is journaled in bearing brackets 64 on the uprights 8 and has belts 65 trained thereon as is clearly illustrated in Figures 8 and 9. Pulleys 66 being provided for this purpose. These belts are also trained over much smaller pulleys 67 in brackets 65 on arm 50 which is curved as at 70 to extend into the rear end of the drum 60 and to have journaled therein the rear extremity of the shaft 19.

A square sprocket 71 is mounted on the shaft 63 between the pulleys 66 and has trained thereover a chain 72 comprising a plurality of plates a hinged together as at 68 and having adjacent their sides ribs 69 arranged in pairs as is clearly illustrated in Figure 10. This chain 72 is trained over a sprocket 73 on a shaft 74 journaled in bracket structures 75 on the upright 10. A somewhat similar chain 76 is trained over square sprockets 77 and 78 on shaft 79 and 80 respectively. The chain 76 differs from the chain 72 in that there is only one rib 68' at the edges thereof which fit between the ribs 69 on the chain 72 when the runs of the chains are together as is illustrated to advantage in Figure 7 for receiving the blades from the belt 65. A pressure member 80 operates against the lower run of the chain 76 and a pressure member 81 operates against the upper run of the chain 72. Shafts 82 are journaled in arms 83 projecting from the pressure member 81 and sprockets 84 are mounted thereon and have trained thereover anti-friction chain 85 having rollers 86 which actually engage the upper run of the chain 72.

A chain 88 similar to the chain 85 is trained over sprockets 89 on arms 90 projecting from the follower 80. The pressure member 80 is provided with an arcuate upper section 92 as a guide for the upper run of the chain 88. The pressure member 81 is mounted on cross members 93 which are secured to the uprights 9 and 10. The pressure member 80 is mounted on cross bars 95 pivoted as at 96 at one end and the other end being apertured to receive rods 97 adjacently mounted in cross bars 98 and having springs 99 impinged downwardly thereagainst and proper tension may be applied thereto by nuts 100. A drum 101 is mounted on the shaft 96 and has teeth 102 to comb off the bark and pulp from the blades as they are progressed rearwardly by the operation of chains 72 and 76.

Belts 104 are trained over pulleys on the shaft 74 and over pulleys on a shaft 105 mounted on a bracket 106 at the rear end of the drum 101. The forward end of this drum is conical shaped as at 106 and has teeth 107 thereon. These belts convey the product of the machine to a suitable receptacle or the like.

The shaft 26 operates the shaft 63 through gearing 110. The shaft 63 through gears 111 and 112 operates a shaft 113 which has a bevel gear 114 thereon meshing with the bevel pinion 115 on a shaft 116 which has a bevel pinion 117 at the other end thereof meshing with the bevel gear 118 on the shaft 74.

It is thought that the construction, operation, and advantages of this invention will now be quite apparent to those skilled in this art without a more detailed description thereof. The present embodiment of the invention has been disclosed in detail merely.
by way of example since in actual practice it attains the features of advantage enumerated as desirable in the statement of the invention and the above description. It is apparent that changes in the details of construction, and in the combination and arrangement of parts may be resorted to without departing from the spirit or scope of the invention as hereinafter claimed or sacrificing any of its advantages.

Having thus described by invention, what I claim as new is:

1. In a combing apparatus of the class described, a drum, means for rotatably mounting the drum, means for conveying plants along the drum, a bracket extending into the rear end of the drum, pulleys mounted in the bracket, a shaft journaled for rotation behind the rear end of the drum and having pulleys thereon, and belts trained over said pulleys.

2. In a machine of the class described, a supporting structure, means in the supporting structure for separating the blades of the plants supplied thereto, a drum journaled longitudinally in the frame and having teeth projecting outwardly therefrom, a pair of endless chains, one above the other, having adjacent runs in abutment with each other, an upper and a lower pressure member, the lower pressure member being disposed within the orbit of the lower chain, and the upper pressure member being disposed within the orbit of the upper chain, said pressure members having anti-frictional means engaging thereabout to engage the upper runs of the chains, means stationarily anchoring the lower member on the supporting structure, the upper member having a bowed arcuate section thereabove, along which the upper run of the upper chain slides.

3. In a machine of the class described, a supporting structure, a drum journaled longitudinally in the frame, a pair of endless chains, one above the other, having adjacent runs in abutment with each other to engage plant blades to move them along the drum, an upper and a lower pressure member, the lower pressure member being disposed within the orbit of the lower chain and the upper pressure chain being disposed within the orbit of the upper chain, means stationarily mounting the lower pressure member on the supporting structure, the upper pressure member having a bolt section thereabove, along which the upper run of the upper chain slides, a cross bar, means for pivotally mounting the cross bar in the supporting structure, said upper pressure member being mounted on said cross bar, and spring means urging said cross bars to swing downwardly.

4. In a machine of the class described, a supporting structure, a toothed drum rotatable in the supporting structure, a feed box below the drum for receiving the blades separated by the drum, said feed box being anchored on the supporting structure, a combing drum in the supporting structure, an endless chain trained to move in a pre-determined orbit along the supporting structure, guide bars, one above and one below the chain, means for moving the guide bars in respect to each other, whereby the chains may move the blades from the feed box along the combing drum.

In testimony whereof I affix my signature.

CURTIS LLOYD HANNOLD.