Oct. 5, 1926. 1,601,977

C. E. McHENRY

FIBER DECORTICATING MACHINE

Filed March 15, 1926 4 Sheets-Sheet 1

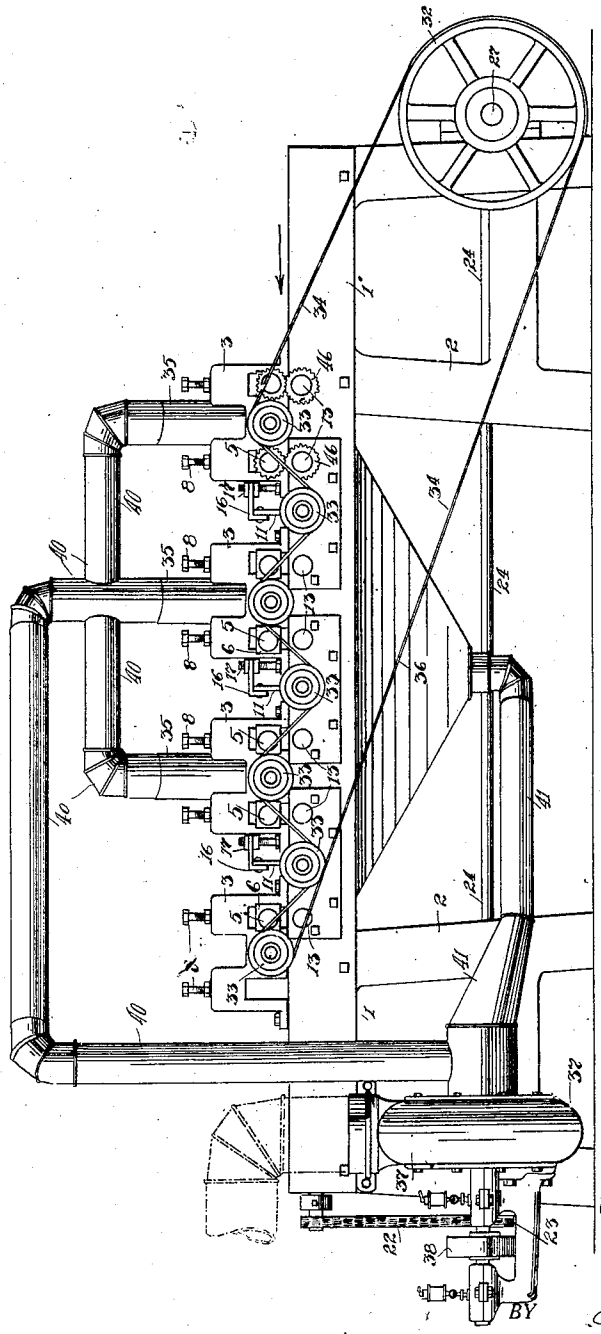


Fig. 1.

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Filed March 15, 1926 4 Sheets-Sheet 2

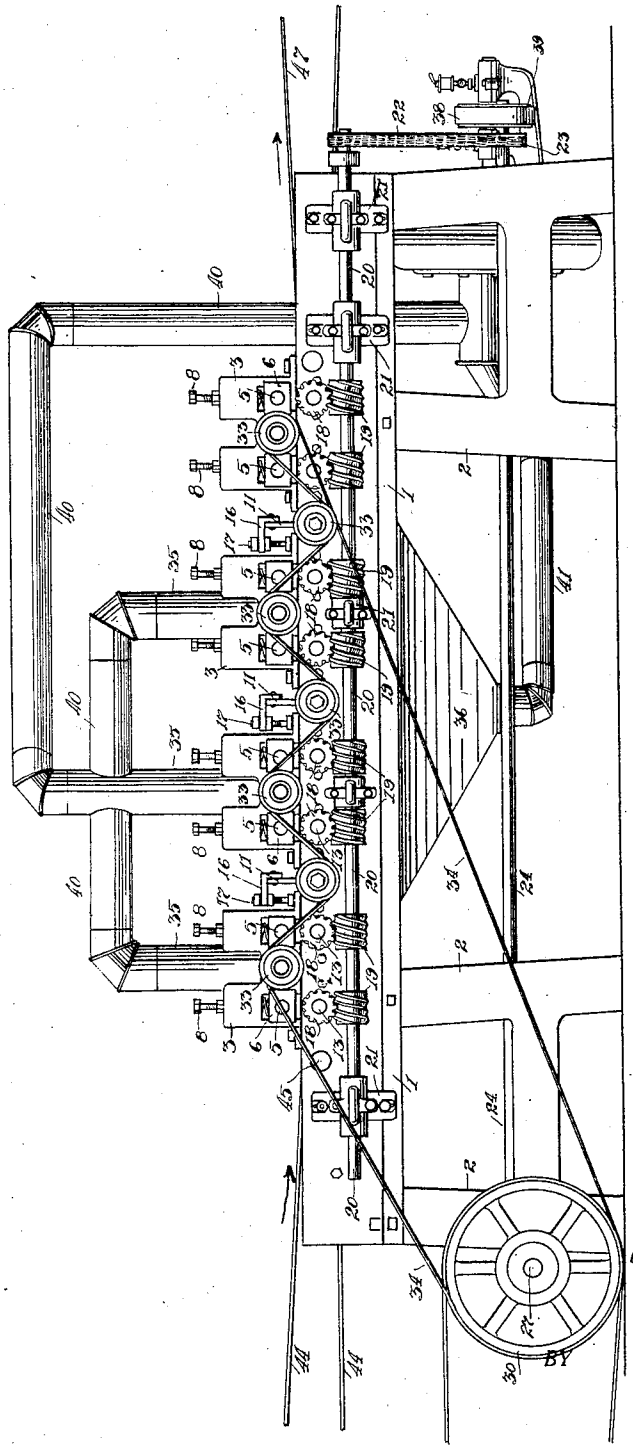


Fig. 2.

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FIBER DECORTICATING MACHINE

Filed March 15, 1926 4 Sheets-Sheet 3

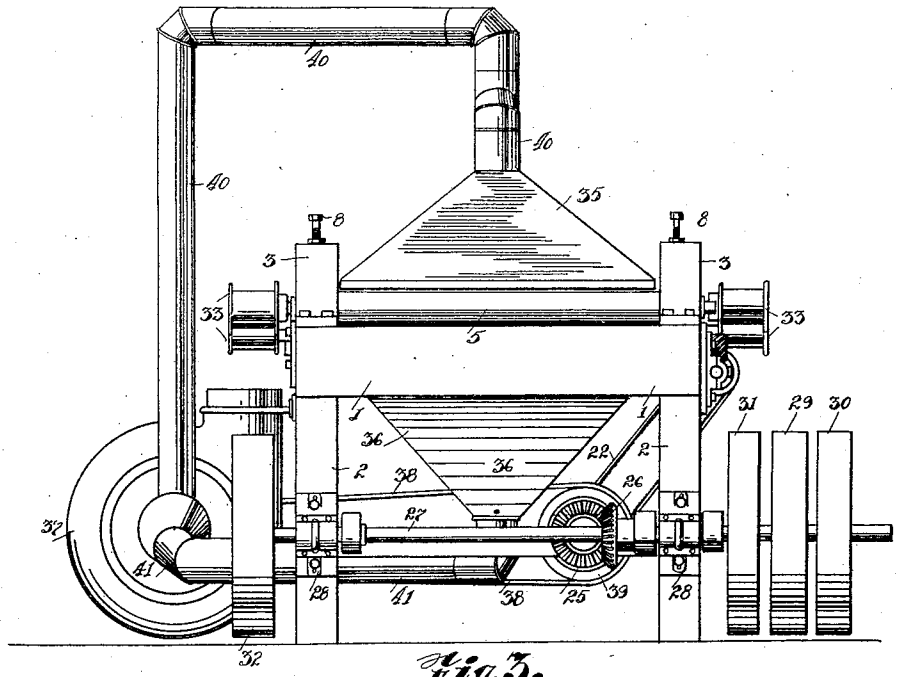


Fig. 3.

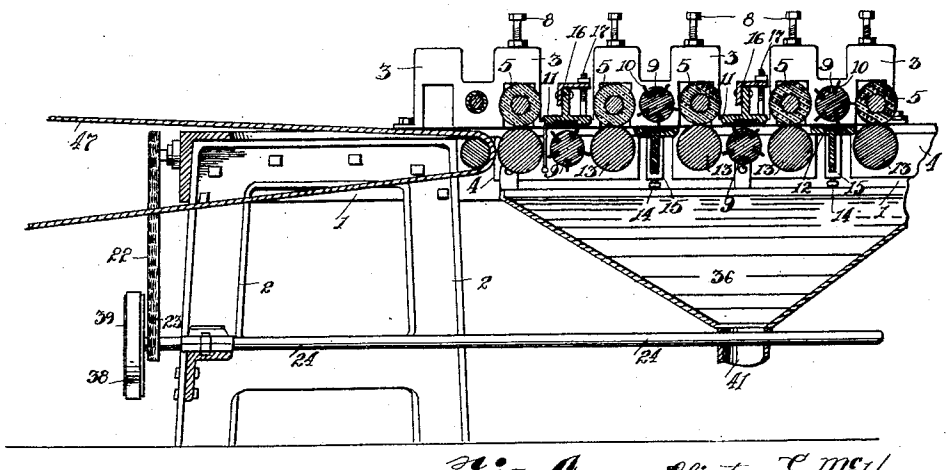


Fig. 4.

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FIBER DECORTICATING MACHINE

Filed March 15, 1926 4 Sheets-Sheet 4

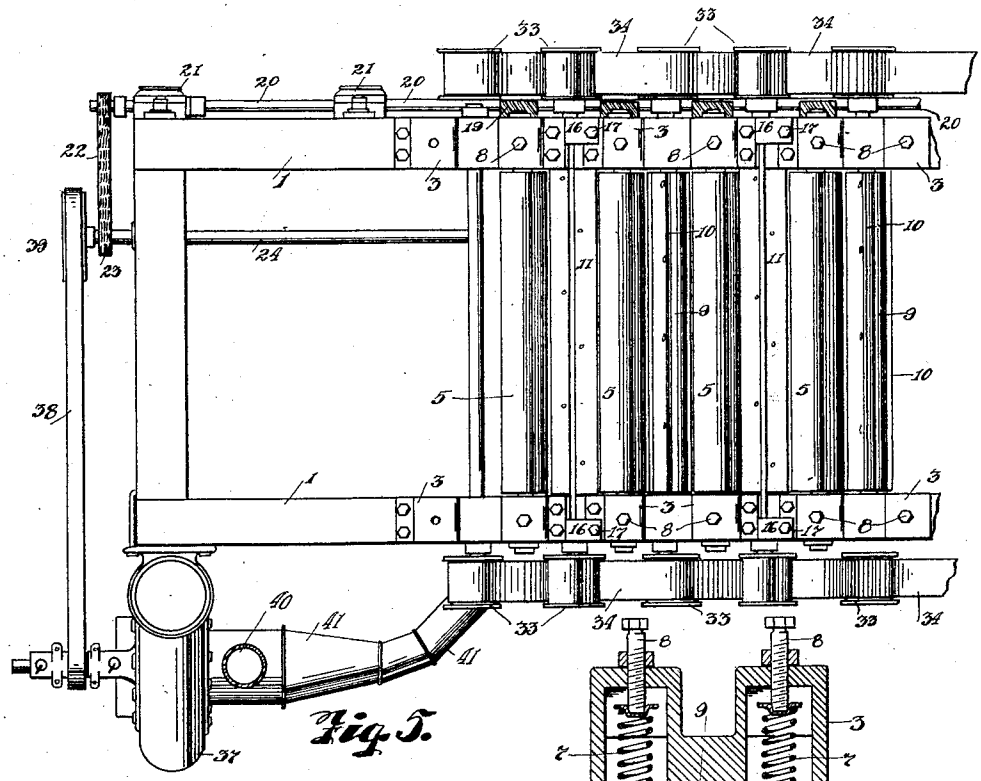


Fig. 5.

Fig. 6.

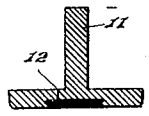


Fig. 8.

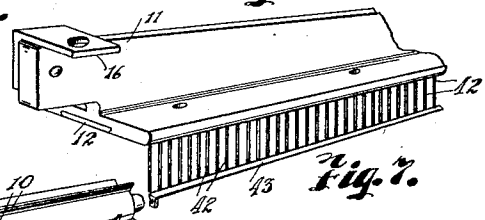


Fig. 7.

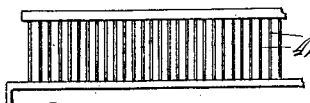


Fig. 10.

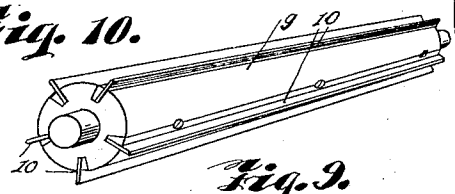


Fig. 9.

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Patented Oct. 5, 1926. 1,601,977

UNITED STATES PATENT OFFICE.

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FIBER-DECORTICATING MACHINE.

Application filed March 15, 1926. Serial No. 94,632.

This invention relates to a machine and process for the reduction to raw fiber for spinning, weaving and converting into merchandise, the stalk or leaf of fibrous plants, and the foremost object of the machine is in the provision of certain novel expediences for the complete separation of the bark, chaff and other foreign substances from the fibrous filaments of the plant after thorough dehydration of the latter, during which time the plant is subjected to a continuous air draught, to insure a positively clean condition of the fiber upon emerging from the machine.

The invention further aims among its objects to increase materially the percentage of raw fiber extracted from plants while in a green stage, concurrent with the obvious saving in material, freight, and other expense incident to the production of fiber in this manner.

Still another object of the invention resides in the novel assembly of rollers whereby the commodity may be conducted through the machine on substantially a horizontal plane, during its subjugation to the process of bark elimination, and by being so conducted, any disruptive bending, folding, or twisting action is avoided which may prove detrimental to the quality or tensile strength of the product, rendering it unfit for ultimate use.

Yet another object of the invention resides, especially in the decortication of Letchguilla, Megue, and similar fibrous plant leaves, a means in the form of yieldable rollers, to avoid injury to the extracted fiber strands, by preventing the flattening or crushing into an oval shape the natural tubular or cylindrical fiber more prevalent in this type of plant, and in addition, to establish an equally effective holding and decorticating means for the leaves of non-uniform size.

With these and other novel objects and advantages in view, the invention has particular reference to its salient features of construction and operation of parts which will be manifested in the course of the following detail description and illustrated in the appended drawings, wherein:

Figure 1 represents a side elevational view of the machine illustrating the means for imparting reverse movement to a multiplicity of brush cylinders disposed in staggered relationship on the machine.

Figure 2 is a side elevational view of the opposite side of the machine.

Figure 3 represents an end elevational view of the machine.

Figure 4 represents a fragmentary end elevation in longitudinal cross-section.

Figure 5 represents a fragmentary end plan view.

Figure 6 is a view in vertical section of one of the roller bearings.

Figure 7 represents a fragmentary detail view in perspective of one of the rubberized contact or baffle plates.

Figure 8 is a cross-sectional view of the plate shown in Figure 7.

Figure 9 represents a detail perspective view of one of the brush cylinders, and

Figure 10 repreesnts a detail view of the means for reducing the masses of fiber to bunches of predetermined sizes as it passes from the machine.

As hereinbefore mentioned and defined as being included among the prime objects of the present invention, it is especially pointed out in proceeding further that in traveling through the machine, the plant maintains strictly a horizontal plane throughout, and no bending, buckling or disruptive action aside from this plane is required to free the woody part of the plant from the fiber proper, thus enabling the finished product to emerge from the machine positively free from bark, chaff, and without bends, waves, or undulations created through its passage about irregularly surfaced rollers.

Now, in proceeding more in detail with the drawings, particular attention is directed to Figures 1 and 2, depicting opposite side elevations of a machine, constructed according to the invention, and in which is shown a frame 1, supported upon legs 2, spaced apart.

Along the frame 1, a multiplicity of rollers are provided, which are divided into units containing preferably two of such rollers and a cylinder brush, more specifically referred to hereinafter as cylinders. These units are situated both above and below the horizontal plane of the frame 1, allowing their contacting surfaces to aline with the plane surface of the frame. The units situated above this plane are maintained in posi-

tive relationship by having their ends mounted in adjustable end bearings 3, a detail example of which is clearly depicted in Figure 6, and defined later. The lower rollers, as apparent in Figure 4 have their shafts extended through spaced plates 4, on the inner sides of the frame 1, and provided with suitable ball bearings, the latter not being shown.

Embodied in each of the units above the surface of the frame 1 are a pair of rollers 5, suitably jacketed with rubber or with a material having equal resiliency, and whose ends are provided with brass or equivalent bearings 6, having vertical movement under tension being imposed upon the bearings 6 by springs 7, against which lock set screws 8 are adapted to bear, as in the detail view of the bearings shown in Figure 6. Intermediate each of the rollers 5, a brush cylinder 9 is rotatably mounted, which is provided with cutters 10, spaced radially about the body thereof and extending from end to end as shown in Figure 9. This brush cylinder is likewise mounted in the end bearings 3, at approximately the center thereof. Reference to the Figure 4 will disclose that directly below, and in contacting engagement with the circular line of travel of the cutters 10 of the cylinder 9, a baffle plate 11 is provided which is of substantially T shape in cross-section, and in the cross member thereof, a yieldable pad or facing 12 is caulked as particularly shown in Figures 7 and 8, and against which the cylinder cutters 10 contact, during rotation thereof.

In vertical alinement with each of the rubber surfaced rollers 5, see Figure 4, a steel roller 13 is rotatably mounted to slightly contact therewith, such point of contact being, as mentioned previously, in alinement with the surface of the frame 1. These lower units each include likewise a brush cylinder 9, and while the baffle plate 11 is inverted, or reverse to its position in the upper units, the purpose thereof is the same. The plates 11 have facilities for their proper adjustment with respect to the cylinders 9, as obviously disclosed in Figure 4, such adjustment being accomplished in the lower plates by set screws 14 through brackets 15 into which the ends of the plates 11 are thrust, while the upper plates are equipped with end flanges 16, through which a bolt 17 protrudes from the frame 1. It is preferred that the plates 11 nearest the feeding end of the machine be so adjusted as to leave a slight space between its point of contact with the circular path of the cutters 10 of the cylinder 9, and the distance between each remaining assembly be successively diminished by adjustments in accordance with the diminishing bulk of commodity as it travels through the machine.

The rubber jacketed rollers 5, aside from the two first rollers at the feeding end of the machine as shown in Figure 1 are of course idle and gain their rotation only through the rotative action of the steel rollers 13 directly therebeneath. These latter rollers, although being rotated simultaneously with the cylinders 9, their movement is much slower than the latter. A system of gearing, composed of a series of worm gears 18, one of which, mounted on the protruding end of each of the shafts of the rollers 13, and a like number of cylinder worm gears 19, mounted upon a longitudinal shaft 20, is provided to transmit rotation to the rollers 13, from the power applied to rotate the brush cylinders 9. A reduction to the minimum of friction is established by the application of a worm drive such as illustrated, however, alterations may be made in this arrangement to accord with circumstances of different scope.

The shaft 20, it will be observed especially in Figure 2 is mounted in bearings 21 affixed to the sides of the frame 1, and its end protrudes beyond the end of the frame, where it carries a sprocket, about which a chain 22 is mounted and surrounds a similar sprocket 23, situated upon a shaft 24, the latter extending longitudinally beneath the machine the full length thereof. Now, referring to the end view of the machine in Figure 3, the power receiving end of the shaft 24 is shown as carrying a bevel gear 25, which enmeshes a similar gear 26, situated upon a shaft 27, laterally extending across the machine and supported in bearings 28, affixed to the legs 2. This shaft 27 likewise carries on one end, a drive wheel 29, and an idle wheel 30, in addition to a wheel 31 for the purpose of transmitting power to the brush cylinders 9, which arrangement will be more concisely set forth hereinafter. On the opposite end of shaft 27, a wheel 32 is mounted and is likewise adapted to impart rotation to the brush cylinders 9, to balance the power applied thereto, and to avoid any possibilities of said draft.

Particular attention is directed to the manner in which motion is imparted to the cylinders 9, to establish a constant forward movement of the stalks throughout the machine, and in this regard, reference is directed to Figures 1 and 2, in which a plurality of pulleys 33 are shown, one of which is situated upon the protruding shafts of each of the cylinders 9. Now, although alternate cylinders are situated above and below the line of travel of the plant stalks as they proceed through the machine, the peculiar alternate mounting of the belt 34 on the pulleys 33, transmits motion to each of the pulleys from the wheel 30, to move the said cylinders in reverse directions with respect to one another, but at all times in accordance with the movement of the plants.

Referring now to the means for extracting and dispensing with the bark and woody refuse of the plant after its disentegration, resulting from its passage through the machine, a plurality of hoods 35 is provided, one of which is adapted to be situated directly above each of the plates 11, and an apron 36 is mounted below the machine as shown, to include all of the cylinders 9. Although illustrating only three hoods, it is of course obvious that as many may be applied as required to accommodate all of the said cylinders. For the purpose of creating a draught through the machine, to insure thorough cleaning of the bark and chaff from the fiber as it travels therethrough, a large blower 37 is affixed to one of the legs 2, or at another convenient point, and which is operated through a belt 38, surrounding a pulley 39 disposed upon the longitudinal shaft 24. See Figure 5. A series of pipes 40, extend upwardly from the hoods 35, and are directed to the blower 37 and a similar communication from the apron 36 is established through a pipe 41 therebeneath. Through this arrangement of pipes, the blower 37 is enabled to maintain a dual suction from above and below the assembly of rollers and carry off all substance extracted from the fiber during the process of disintegration, such suction being augmented by the fanning action of the brushes 9, while in high speed of rotation.

It has been found to be of practical value to establish in the machine, an arrangement whereby the masses of fiber may be divided into bunches of a predetermined size upon issuing from the machine which may greatly aid in the handling of the product. An example of this arrangement is depicted in Figure 10, and which is composed of a number of spaced, vertically disposed wires 42, which depend from the plate 11 nearest the issuing end of the machine, and secured to a cross member 43, which is, in turn secured at either end to the sides of the frame 1. The fiber in passing from the machine, must pass between the wires 42, and be thereby separated into bunches the width of the space between the wires. An example of the manner in which this arrangement is applied in operative position on the machine may be seen in the longitudinal cross-section in Figure 5.

While the machine and process disclosed is not restricted necessarily to the producing, cleaning and development of fiber in a dehydrated state, such a condition is of course more desirable, since the plant is obviously more susceptible to disintegration, and thus yields the fiber more readily when passed through the machine in addition to the considerable saving in transportation costs from the point of harvest. With this in view, the plants are harvested and perforated by a suitable machine to aid in the expulsion of sap and moisture, after which it is dried in the sun, kiln dried, or by other artificial processes. When this is done, the plants are in condition for subjection to the cleaning process by the machine.

It will be seen in the drawings, Figure 2 that a carrier belt 44, of a material applicable to the purpose, is provided, which is directed over a roller 45, adjacent to the first set of rollers 5 and 13. The plants are placed upon this belt 44 in such a manner that the tops thereof will first be received between the rollers 5 and 13, and travel in this position as indicated by the arrows in Figures 1 and 2 throughout the machine. Notice will be taken in Figure 1, that the first two sets of rollers 5 and 13 are provided with intermeshing gears 46, and as the remaining upper rollers 5 are idle, as aforesaid, power is supplied to these first rollers from the worm drive on the opposite end of the shafts of the rollers 13, to insure the proper reception of the plants.

The non-resilient rollers 13 are adapted in practical use of the machine, to travel at the rate of approximately 250 R. P. M., while the brushes 9 rotate at a higher velocity of about 2500 R. P. M. This arrangement provides for the passage of a commodity between the rollers at a rate of approximately 150 linear feet per minute. Due to the resiliency obtained in the rollers 5 and 13, both through the surrounding jacket of the former, as well as through the yieldable bearing 6, the pressure imposed upon the plant by these rollers during its passage therebetween is only of such extent as to shatter and break the woody part of the plant, and does not in any respect injure the fiber strands or deteriorate the tensile strength thereof. During its passage between the rollers, the plant must pass across the plates 11, which, as mentioned previously, are equipped with yieldable pads 12. In thus passing, the revolving blades 10 of the brush cylinders 9 swipingly contact with the plants against this yieldable plate and toward the direction of travel of the said plants, thus imparting to the fiber strands a polishing, rather than a scraping action, and simultaneously, through the draught created by the velocity of its motion, the cylinders are instrumental in imparting a vibratory effect upon the disintegrated plant, thereby aiding materially in releasing and removing therefrom, the loose and clinging chaff, in addition to the air forces drawn through the machine by the blower 37.

Thus, the fiber passes entirely through each of the units and ultimately emerges from the last set of rollers in a very short period of time, and in a clean and polished condition positively free from chaff, bark or substance of any foreign character, after which it is conveyed onto the endless belt

47, shown in Figures 2 and 4, by which it is transported to a baler or other means of preparing for shipment, in a raw condition for ultimate weaving and converting into merchandise.

It will be understood of course, that while the machine has been specifically described as to its details of construction and use, certain minor changes and modifications as to its various structural elements and purpose may be resorted to if desired, without departing from the spirit or intent of the invention, provided such alterations are within the scope and meaning of the following claims therefor.

I claim:

1. A fiber producing machine including a frame and a multiplicity of paired resilient and non-resilient rollers in contacting engagement mounted across said frame in a relative parallel plane, plates having an insert of yieldable resilient material on their operative faces; said faces disposed on a horizontal plane with respect to the contacting points of said rollers intermediate the pairs of rollers, and cylinders having longitudinal blades spaced thereon arranged in staggered relationship along said frame and adapted to be rotated against the yieldable faces of said plates.

2. A fiber producing and cleaning machine including a frame and a series of bearings spaced above and below the top surface of said frame, a multiplicity of pairs of relatively parallel resilient and non-resilient rollers rotatably mounted in said bearings; adjustable plates having an insert of yieldable resilient material on their operative faces; facings, disposed in reversed relationship intermediate said pairs of rollers, and a series of cylinders having longitudinal blades spaced thereon arranged to rotate against the resilient facings of said plates.

3. A fiber producing and cleaning machine including a frame having spaced, removable bearings along its top surface, paired resilient rollers, having limited end adjustment rotatably mounted in said bearings; bearings mounted below the top surface of said frame and vertically alined with said first bearings; non-resilient rollers rotatable therein and slightly contacting with said resilient rollers on a relatively parallel plane; plates having an insert of resilient material on their operative surfaces laterally mounted on said frame in staggered relationship intermediate said pairs of rollers, and a series of brush cylinders provided with longitudinal spaced blades rotatably mounted adjacent said plates whereby their blades will slightly brush the resilient surfaces of said plates when rotated.

4. A fiber producing and cleaning machine including a frame having spaced, removable bearings along its top surface, and rotatably supporting a multiplicity of paired resilient rollers laterally of said frame in relative parallel relationship; non-resilient rollers mounted below said first rollers and in contacting engagement therewith, cylinders provided with longitudinal circumferentially spaced blades, rotatably mounted in staggered relationship intermediate upper and lower paired rollers, and plates having an insert of yieldable material in their operative surfaces adjustably arranged in reverse relationship in said frame, whereby said yieldable surfaces may be engaged by the blades of said cylinders when the latter are rotated.

5. A fiber producing and cleaning machine including a frame having spaced, removable bearings along its top and rotatably supporting a multiplicity of paired rollers having a jacket of yieldable resilient material, a multiplicity of paired non-yielding rollers spaced below said first rollers in contacting engagement therewith and arranged to be power driven; means to transmit said power to said upper rollers; T shaped plates laterally arranged on said frame intermediate said pairs of rollers, the cross member thereof having a strip of yieldable material therein and arranged to collectively aline with the point of contact of said rollers, a plurality of brush cylinders provided with longitudinal, circumferentially spaced blades, mounted in staggered relationship in said frame whereby said blades will wipingly engage the yieldable strip on stid T shaped plate; and means to impart reverse rotation to alternately disposed cylinders simultaneously with the rotation of said non-yielding rollers.

6. A machine of the character described including multiple pressure units, each of which is composed of paired rollers, the upper of said rollers having a coating of resilient material, the lower of said rollers being of non-yieldable material and arranged to contact with said first rollers in a relatively parallel plane; T shaped plates interposed between said pairs of rollers, the cross members thereof having therein an insert of resilient material and arranged to aline with the point of contact of said rollers, means to effect the endwise passage of fibrous plants between said contacting rollers horizontally and longitudinally of said machine, means arranged to scrapingly engage said plant after its disintegration by said rollers, during its passage across said T shaped plate; and means to maintain a constant air blast through said rollers to expel chaff loosened by said rollers.

7. A machine of the character described including multiple pressure units, each of which is composed of a plurality of rotatable resilient and non-resilient rollers; said latter rollers spaced below said first

rollers and in contacting engagement therewith on a horizontally parallel plane; adjustable baffle plates adjustably disposed intermediate pairs of said resilient and non-resilient rollers and horizontally alined with the contacting point of said rollers; means to effect the passage of plant stalks between said contacting rollers whereby the same will travel across the surface of said plate by the action of said rollers; means rotatable adjacent said plates having a blade arranged to successively engage said stalk against said plate to disintegrate the same; and means to effect constant draught of air through said rollers to expel the chaff from said disintegrated stalk.

8. A machine of the character described including a plurality of pressure units mounted on a frame; each of said units composed of rotating members arranged in contacting engagement in pairs on a horizontally parallel plane, the upper of said members having substantially flexible coatings, the lower of said members having non-flexible surfaces; plates having inserts of yieldable, resilient material in their operative faces interposed between each pair of said members in alternate reverse relationship; means to effect the passage of plant stalks between said contacting members, whereby the same will move horizontally over the yieldable face of said plates, means rotatable against the said yieldable face of each of said plates to brush the bark from said plant stalks during their passage thereover and direct the same forwardly through said machine; and means to maintain a draught of air through said machine to discharge the said bark from the machine.

9. In a machine of the character described for obtaining and cleaning fiber from fibrous plant stalks, the combination of a plurality of pressure units composed of a multiplicity of superimposed rotating members having horizontally alined points of engagement; plates arranged in alternate reverse relationship intermediate pairs of the upper and lower of said members and alined flush with the horizontal points of engagement of said members; means for conducting said plants into said machine whereby the same will travel across said plates on a horizontal plane after their disintegration by said contacting members, means disposed to rotate against the surface of said plate to brush the bark from said fiber during its passage across said plate; and means to expel said bark from the machine.

10. In a machine of the character described for cleaning bark and chaff from the fiber of fibrous plant stalks; the combination of a plurality of pressure units composed of a multiplicity of horizontally alined superimposed contacting rollers rotatably mounted in pairs, the upper of said rollers having a jacket of resilient material; means for conducting a fibrous plant on a relative horizontal plane between said rollers; means positioned in alternate reversed relationship intermediate pairs of said rollers for subjecting said plants to a swiping action to release the bark therefrom, and means to direct a constant blast of air through said plant stalk during its passage through said machine to release and expel the chaff therefrom.

11. In a machine of the character described for removing bark and chaff from the fiber of dry fibrous plant stalks, the combination of a plurality of pressure units including a multiplicity of resilient and non-resilient rollers arranged in longitudinal and superimposed alinement; means for conducting said plant between said rollers to permit the same to move longitudinally on a horizontal plane to the emerging point, means interposed in alternate reverse relationship between pairs of said rollers for subjecting said plant stalks to a brushing action to cleanse the bark from the fiber filements thereof, and means for subjecting said fiber to a draught of air to expel the chaff therefrom.

12. In a machine of the character described for removing bark and chaff from the filaments of dry fibrous plant stalks, the combination of a multiplicity of juxtapositioned rollers in superimposed and longitudinal alinement, means for conducting said plants stalks between said rollers in such a manner as to permit the same to move in an endwise direction and on a continuous horizontal plane; means for periodically subjecting said stalk to a brushing action to strip the bark from said filaments; and means to continuously subject said stalks to a current of air during their passage throughout said machine to remove the chaff and reduce the same to fiber strands.

13. In a machine of the character described for removing bark and chaff from the fiber filament of fibrous plant stalks, the combination with a supporting frame of a multiplicity of bearings thereover, laterally supporting rollers in pairs having longitudinal contacting peripheries on a horizontally parallel plane; means to conduct plant stalks endwise between said rollers on a horizontal plane; means to permit one unit of each pair of rollers to slightly yield to the bulk of said plant; lateral plates having inserts of yieldable material on their operative faces alined with the horizontal plane of the contacting rollers disposed intermediate each pair thereof in alternate reverse relationship, means rotatable against the yieldable surface of said plate for subjecting said stalks to a brushing action during its passage thereover, and means to create a draught of air through said machine to im-

part a vibratory action to the plant, whereby to expel the chaff therefrom.

14. In a machine of the character described for cleaning the bark and woody substances from fiber of fibrous plant stalks, the combination of a frame and a plurality of spaced bearings thereon; rollers carried by said bearings having longitudinal contacting peripheral points in pairs; means for conducting plant stalks in volume between said rollers in an endwise direction, lateral plates arranged in alternate reverse relationship intermediate the pairs of rollers and having surfaces horizontally alined with the contact points of said rollers collectively; means successively engaging said plate surfaces to subject said plants to a brushing and polishing action during their passage thereover, and means to maintain a constant draught of air through said rollers to cleanse the fiber and remove the chaff from said machine.

15. A machine for cleaning the bark and chaff from fibrous plants in the production of fiber for spinning and weaving including rollers spaced in pairs to obtain horizontally alined peripheral engagements; one roller of each pair having a substantially resilient coating; means for conducting plant stalks between said rollers; means in alternate reversed positions intermediate each of said pairs of rollers to subject said stalk to a scraping action subsequent to the crushing action of each of said pairs of rollers; and means to constantly urge a draft of air through said machine to expel the chaff from the fiber and directing the same from the machine.

16. A machine for cleaning the bark and chaff from fibrous plant stalks for the reduction to fiber for spinning and weaving; including a multiplicity of units in spaced relationship each of said units composed of paired lateral rollers, one of each pair having a coating of yieldable material and arranged to contact collectively on a horizontally parallel plane, an adjustable baffle plate intermediate each of said pairs of said rollers provided with an operative face having an insert of resilient material, said operative face being horizontally alined with the point of contact of said rollers, and a member arranged to rotate against said contact surface during the rotation of said rollers.

17. A machine for cleaning the bark and chaff from fibrous plant stalks for the reduction to fiber for spinning and weaving including a multiplicity of units in spaced relationship, each of said units composed of paired lateral rollers having a point of engagement on a common horizontal plane; one roller of each pair having limited resiliency; an adjustable baffle plate having an insert of yieldable resilient material in its plane surface interposed between said pairs of rollers, said plane surface arranged to aline with the common horizontal engagement of said rollers, and a member disposed to rotate against the surface of said plate simultaneously with the rotation of said rollers.

18. A machine for cleaning the bark and chaff from fibrous plants for the production of raw fiber including a series of horizontally alined units of equal size, each of said units including a series of vertically paired rollers, one roller of each pair having limited yieldability, a member rotatable between each pair of said rollers having longitudinal circumferentially spaced blades rigidly embedded in its periphery thereon; a plate adjacent to said member to be brushingly engaged by said blades during rotation of said members; and means to cause simultaneous rotation of the movably disposed members of each of said units.

19. A machine for reducing to raw material for spinning and weaving the fiber from fibrous plant stalks including with a frame a multiplicity of non-yielding lateral rollers horizontally spaced longitudinally of said frame; a multiplicity of rollers having limited yieldability and disposed in contacting engagement above said first rollers on a common horizontal parallel plane; means to effect simultaneous rotation of said first rollers from a common driving means; plates staggeringly arranged between each set of contacting rollers whereby their surfaces will aline horizontally with said point of contact, and members rotatable in alternate reverse relationship above and below said point of contact; having blades thereon arranged to successively scrape the surfaces of said plates during rotation of said first rollers.

20. A fiber cleaning machine having multiple parallel bearings spaced along its sides supporting opposing ends of paired rollers adapted to be rotated against each other, one roller in each pair having a resilient coating; plates staggeringly mounted between each pair of rollers, means for conducting fibrous plant stalks endwise through said machine on an invariable horizontal plane to the emerging point, and members arranged to be rotated against said plates in alternate reverse directions to subject said plant stalk to a scraping action successively after emerging from between each pair of said rollers.

21. A decorticating machine for fibrous plants in combination with a frame, scraping units arranged on said frame on a horizontally parallel plane, each having, a bladed rotatable cylinder and a plate having an elastic insert on its operative surface adjacent to said cylinder arranged to be successively engaged by the blades of said cyl-

inder during the passage of plants thereover, and means to hold said plants during their subjugation to the action of said blades.

22. A decorticating machine for fibrous plants including a series of pressure units alined on a relative horizontal plane each consisting of a revoluble cylinder having a multiplicity of blades therein; and a plate having an insert of yieldable material adjacent to said blades adapted to be successively contacted therewith, means for conducting the leaves of said plants to a position to be subjected to the action of said blades, and means to yieldingly hold said leaves during such action.

23. A decorticating machine for fibrous plant leaves including pressure units alined on a relative horizontal plane, each composed of a revoluble cylinder having radially spaced, longitudinal blades thereon and a plate adjacent to the circular path of said blades, an insert of yieldable resilient material in the operative face of said plate, means for imparting motion to said cylinder and to conduct said plant leaves between said plate face and blades, and means for yieldably holding said leaves during their subjugation to the action of said blades.

24. A decorticating machine for fibrous plant leaves including a series of scraper units alined on a relative horizontal plane; a revoluble cylinder having radially spaced longitudinal blades therein, and a flat surfaced plate adjacent to the circular path of said blades during rotation thereof, said plate surface alined on a horizontal plane with said machine and having an insert of yieldable resilient material therein, means for directing plant leaves between said plate and blades to effect decortication thereof by the action of said blades, and means to yieldingly hold said leaves during their subjugation to said decorticating action.

25. A decorticating machine for fibrous plant leaves including pairs of yielding rotatable rollers disposed in horizontally parallel alinement and in contacting engagement adapted to hold a plant leaf during its passage therebetween; a decorticating cylinder having blades therein, and a yieldable surfaced baffle plate having an insert of yieldable resilient material on its operative face adjacent to said cylinder adapted to form an abutment for the action of said blades when said leaf is passed between the said plate and cylinder.

In testimony whereof I affix my signature.

CLINTON E. McHENRY.