April 4, 1939. L. R. KERSEY 2,152,965

APPARATUS AND METHOD FOR CLEANING TOBACCO

Filed March 8, 1933 4 Sheets-Sheet 1

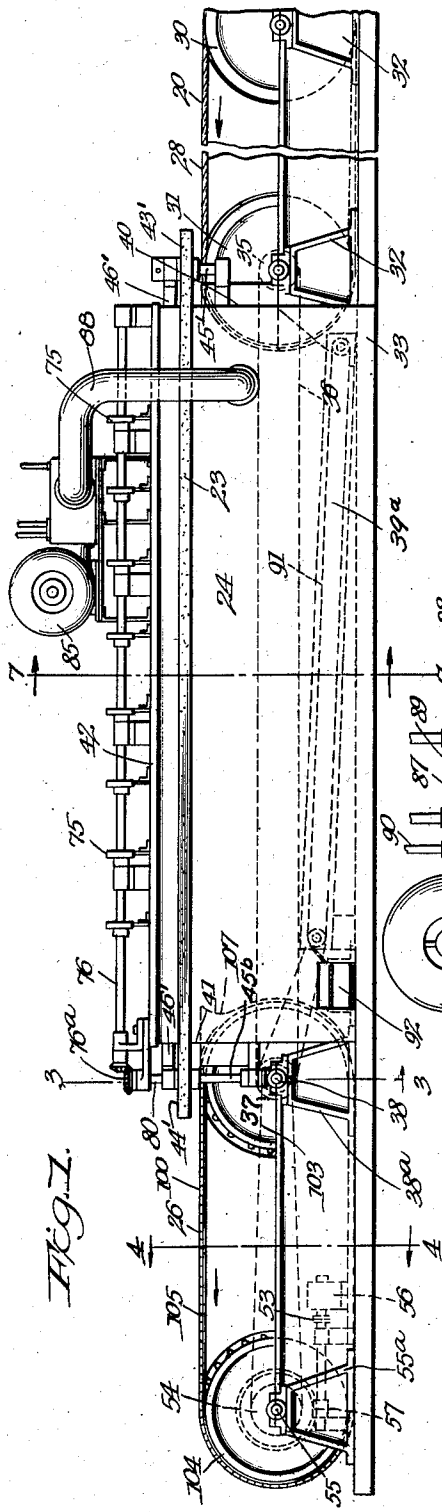


Fig. 1.

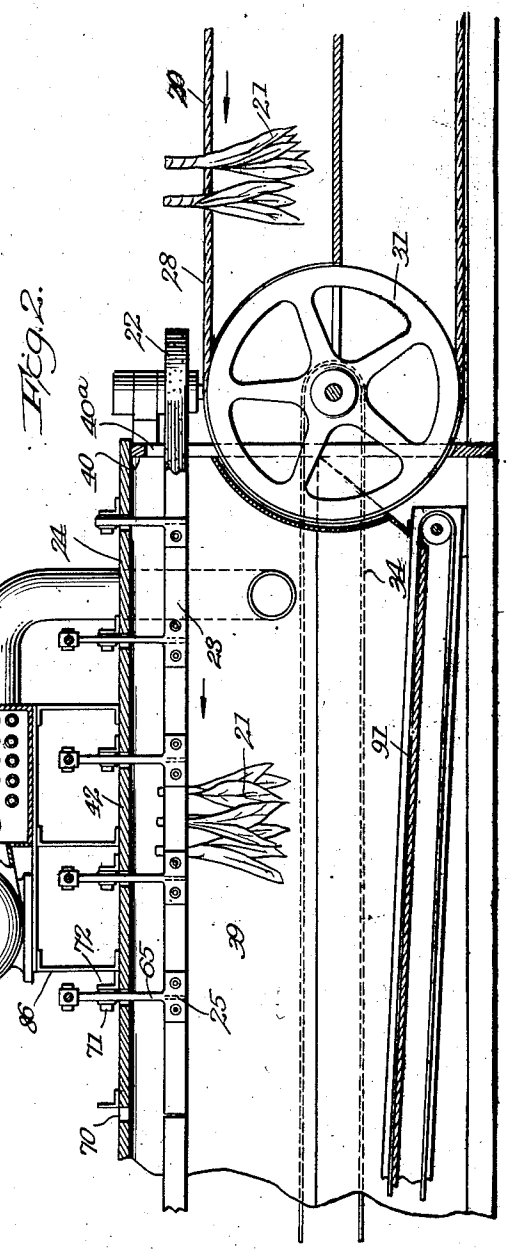


Fig. 2.

Inventor

Lemuel R. Kersey.

By Cushman, Darby & Cushman

Attorneys

April 4, 1939. L. R. KERSEY 2,152,965

APPARATUS AND METHOD FOR CLEANING TOBACCO

Filed March 8, 1933 4 Sheets-Sheet 2

Fig. 3.

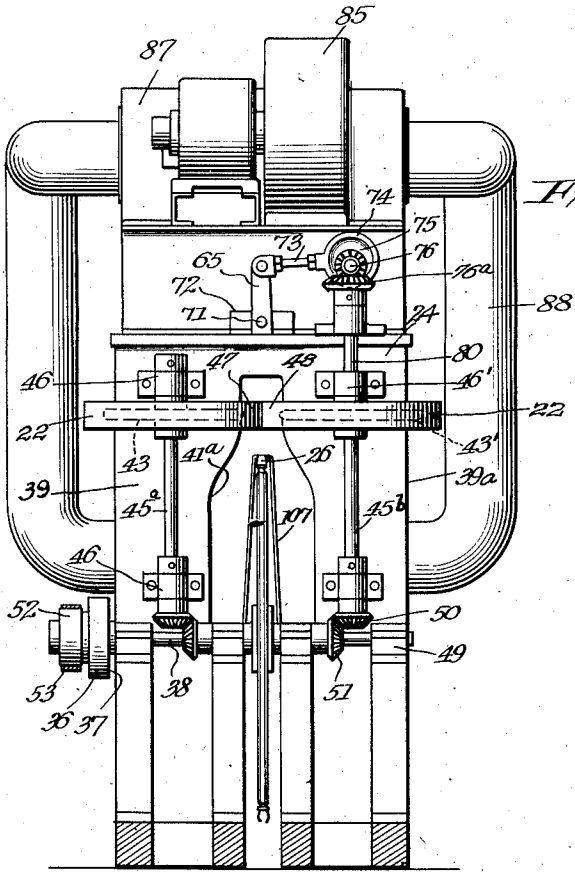


Fig. 4.

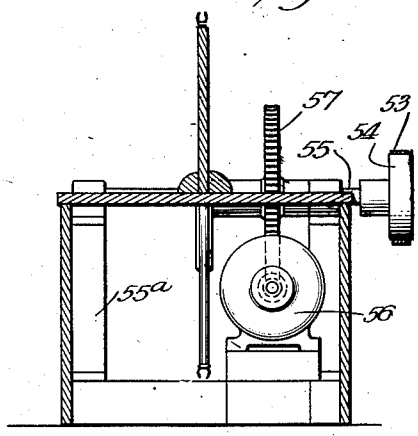


Fig. 5.

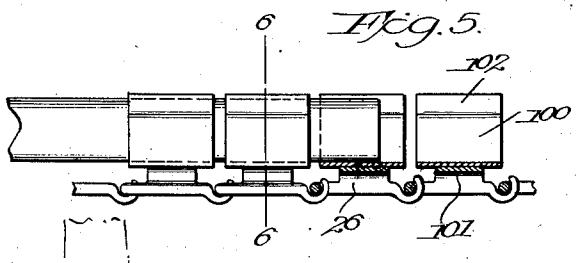
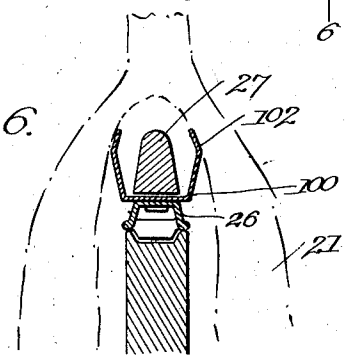


Fig. 6.



Inventor

Lemuel R. Kersey

By Cushman, Bryant, Darby & Cushman

Attorneys

April 4, 1939. L. R. KERSEY 2,152,965

APPARATUS AND METHOD FOR CLEANING TOBACCO

Filed March 8, 1933 4 Sheets-Sheet 3

Fig. 7.

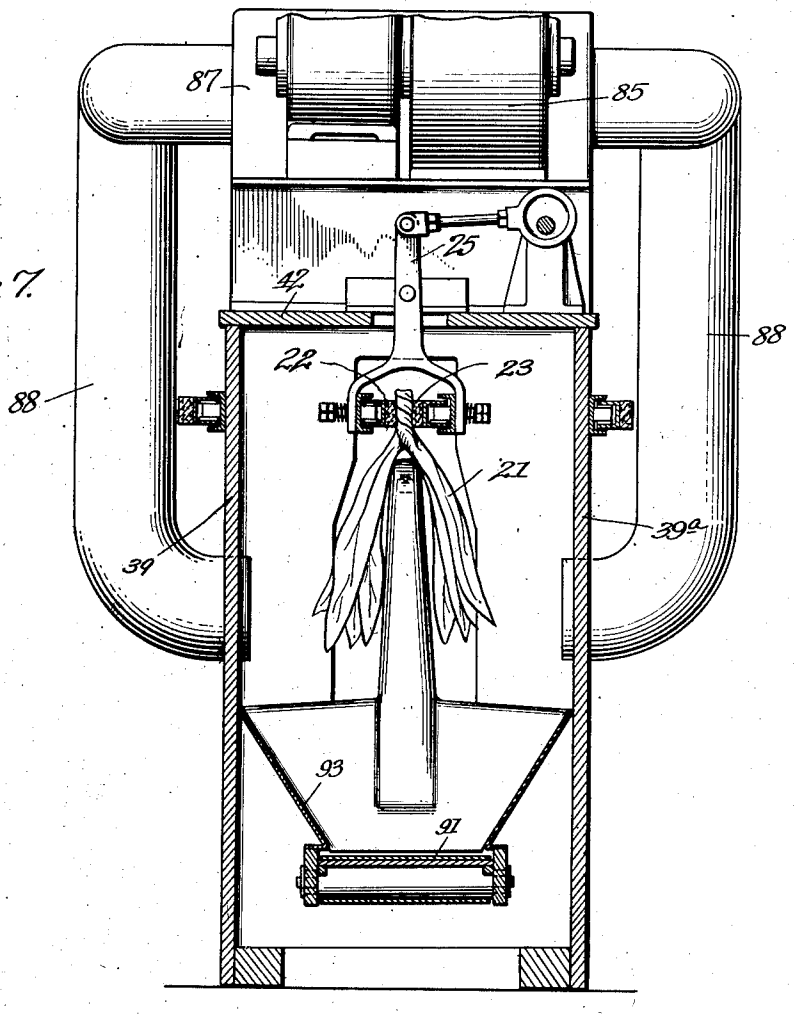
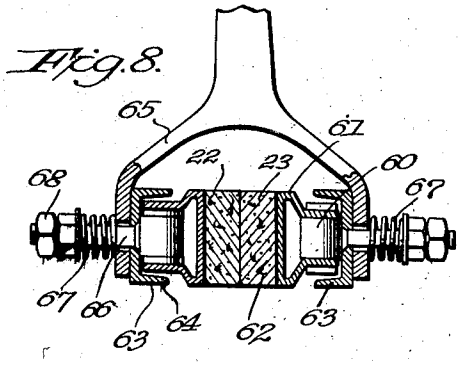


Fig. 8.



Inventor

Lemuel R. Kersey.

By Cushman, Darby & Cushman

Attorneys

April 4, 1939. L. R. KERSEY 2,152,965

APPARATUS AND METHOD FOR CLEANING TOBACCO

Filed March 8, 1933 4 Sheets-Sheet 4

Fig. 9.

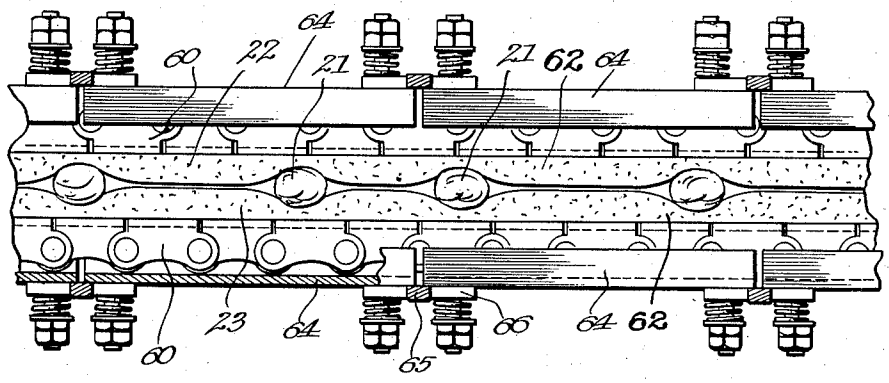


Fig. 10.

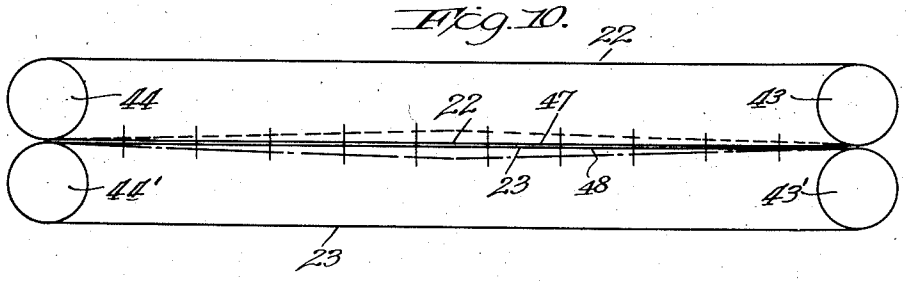


Fig. 12.

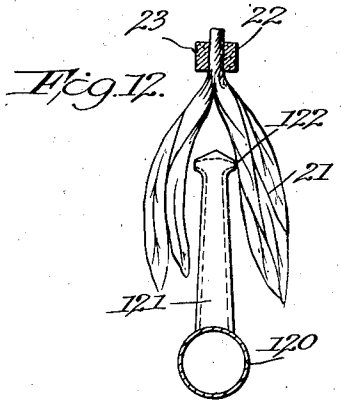
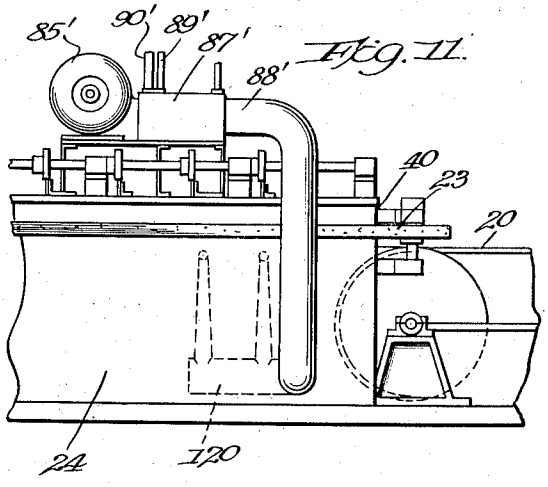


Fig. 11.



Inventor

Lemuel R. Kersey.

By Cushman, Bryant, Darby & Cushman

Attorneys

Patented Apr. 4, 1939 2,152,965

UNITED STATES PATENT OFFICE

2,152,965

APPARATUS AND METHOD FOR CLEANING TOBACCO

Lemuel R. Kersey, Richmond, Va., assignor to The Imperial Tobacco Company (of Great Britain & Ireland) Limited, Richmond, Va., a corporation of Great Britain and Ireland

Application March 8, 1933, Serial No. 660,656

31 Claims. (Cl. 131—55)

The present invention relates to an apparatus and method for cleaning and preparing tobacco leaf for re-drying.

After tobacco has been cured, and before it is sold by the planter, a number of leaves, usually eight or nine, are grouped with their stalks together and another leaf, a tie leaf, is wrapped about the assembled stalks to form a tobacco hand.

The leaves of the tobacco hand have on their surfaces a coating of particles of dirt or sand accumulated during their growth and it is desirable to remove this foreign matter from the tobacco before the tobacco is made available for manufacture into various tobacco products.

The method of removing dirt from the tobacco hands which is now generally followed is to have the hands shaken manually. By this method, an operator shakes the tobacco hands vigorously to cause the leaves to be agitated or shaken, so that the major portion of the dirt will fall from the leaves.

The tobacco hands are brought in baskets to the point at which the shaking operation is conducted and in performing the shaking operation, the shakers remove hands from the various baskets, and shake the hands, which are subsequently assembled upon a stick. The hands are placed upon the stick by spreading the leaves so that the hands will straddle the stick with their butt ends uppermost. The baskets delivered to the shakers may each be from different planters and the hands assembled upon the sticks are usually mixed to produce a uniformity of the grade of the tobacco. The sticks, with the tobacco hands placed thereon, are then passed through a re-drying apparatus.

After the tobacco hands have been manually shaken in the manner referred to above and before they are passed through the re-dryer, it has been proposed that they be passed through a chamber in which they are subjected to blasts of air, steam, or other fluids, these blasts being intended to further loosen and remove particles of foreign matter from the tobacco hands.

Neither the shaking operation referred to above nor the subjection of the tobacco hands to blasts of air or the like have been completely effective for cleaning the tobacco hands. The manual shaking does not efficiently remove all the particles of dirt from the leaves and the subjection of the hands to blasts of fluid in the manner described cannot entirely correct the deficiencies of the manual shaking. The manual shaking is also very apt to cause breakage and shattering of the leaves of the hands.

The thorough cleaning of the tobacco naturally materially improves its quality and the quality of the final tobacco product manufactured therefrom.

The cleanliness of the tobacco is also important to concerns which import tobacco hands into certain countries from the United States to effect a saving in import duties.

Since the ordinary methods of removing foreign particles from the tobacco which have been referred to above do not satisfactorily clean the tobacco, the result is that if tobacco treated by these previous methods is exported to countries which levy a duty on tobacco in acordance with its weight, the importing concern must necessarily pay a tax upon the foreign matter included with the tobacco hands.

The principal object of the present invention is to provide an apparatus and method for thoroughly cleaning tobacco and readily and efficiently preparing it for re-drying and which will perform this operation much more readily than it can be performed by the usual processes and apparatuses. The apparatus is also designed in such a manner that attendants take the tobacco hands from the baskets and place them directly upon the apparatus, mixing the hands from the various baskets. Furthermore, the apparatus is so constructed that the tobacco hands may be very readily removed therefrom after passage therethrough by means of the sticks or rods now generally used to support the tobacco hands during their passage through the re-drying machine.

Broadly considered, by the apparatus and method of the present invention, the tobacco hands are preferably placed upon an endless infeed conveyor, which conveyor is of such a form that the leaves of the hand may be divided so that the hands will straddle the conveyor, with their butt ends uppermost. This conveyor delivers the hands to a treating chamber provided with a shaking conveyor which removes the tobacco hands from the infeed conveyor. Means is provided to vibrate or shake the latter conveyor, this conveyor and the shaking means being so designed that the tobacco hands are shaken or oscillated with considerably more effectiveness than can be accomplished by a manual shaking. In order to further assist in the cleaning and the preparation of the hands, a current of warm air aids in removing foreign matter from the tobacco hands and the effect of the moisture in the current of warm air is to soften the leaves and there-

by render the shaking action even more effective. The warm, moist air also prevents undue breakage and shattering of the leaves.

The degree of moisture which is imparted to the stream of air prior to its passage through the chamber is insufficient to wet the leaves. In prior art machines of this general type, sufficient moisture has been imparted to the leaves to wet them or to produce wet spots upon the leaves. The wetting of the leaves is, in certain instances, most undesirable.

In a modification of my method and apparatus, a blast of heated and moistened air is directed against the leaves by means of a nozzle mounted upon the upper end of a pipe or header which extends up between the leaves of the hand. The nozzle used upon the header is so designed that it projects blasts of air substantially horizontally upon the leaves of the hand.

In prior art machines, blasts of air or other fluid have been directed either upwardly against the depending ends of the leaves of the hands or downwardly against the butts of the hands. The arrangements of these prior art machines have not been entirely satisfactory due to the fact that the blasts of air or fluid are not effective upon the interior leaves of the hand. Also, the upwardly directed blast tends to deposit upon the upper portions of the hand and under the tie leaf, the dirt removed from the lower portions of the hand.

The shaking or oscillation of the hands in the manner performed by my apparatus and followed in my process, accompanied by treatment with warm moist air, insures the complete separation of the leaves in the hand. This will increase the effectiveness of the re-drying.

Other objects and advantages of the invention will be apparent from the following drawings, in which:

Figure 1 is a side elevation of the apparatus of the present invention, portions thereof being shown in section.

Figure 2 is a vertical longitudinal sectional view through a portion of the apparatus.

Figure 3 is a transverse vertical sectional view of the machine, taken on the line 3—3 of Figure 1.

Figure 4 is a transverse vertical sectional view on the line 4—4 of Figure 1.

Figure 5 is a detail view, partly in section, showing one of the supporting conveyors used in the machine.

Figure 6 is a vertical sectional view on the line 6—6 of Figure 5.

Figure 7 is a vertical transverse sectional view taken on the line 7—7 of Figure 1.

Figure 8 is an enlarged detail view, in vertical transverse section, of the conveyor mechanism illustrated in Figure 7.

Figure 9 is a detailed view, in plan, showing the conveyor mechanism of Figure 7.

Figure 10 is a diagrammatic view of the shaking mechanism.

Figure 11 is a side elevation of a portion of the machine showing a modified arrangement for directing a current of air against the tobacco hands, and

Figure 12 is a view of one of the nozzles used in the apparatus of Figure 11, showing the manner of its use with respect to the tobacco hands.

For an understanding of the preferred form of my apparatus, it may be broadly described, as follows: The apparatus comprises an endless infeed conveyor 20 (Figure 1) upon which tobacco hands 21 are placed by the operators or attendants, the leaves of the hands being spread so that the hands will straddle the upper run of the conveyor and will have their butt ends projecting upwardly. The upper run of the conveyor 20 carries the hands to the left and between the adjacent inner runs of two endless belt conveyors 22 and 23 preferably having resilient faces. The two endless conveyors 22 and 23 constitute a shaking conveyor. The butt ends of the hands are gripped between the opposed faces of the runs of the conveyors 22 and 23, as shown in Figure 9, and these latter conveyors remove the hands from the inner end of the infeed conveyor 20. The belt conveyors 22 and 23 carry the hands through the treating chamber or casing 24, and during their passage through the chamber 24, the hands are preferably subjected to treatment by a current of conditioned air. At the same time, vibrating means, generally designated by the numeral 25, causes the runs of the conveyors 22 and 23 to be vibrated or shaken, with the result that the leaves of the hands will be vigorously agitated. The vibrating means 25 is arranged in such a manner that the belts 22 and 23 will be given a wider shaking or vibrating movement at the longitudinal center of the chamber 24 and less shaking movement toward the opposite ends of the chamber. Upon passage from the left hand end, (Figure 1) of the chamber 24, the hands will be positioned by the conveyors 22 and 23 upon an outfeed conveyor 26, the leaves of the hands being guided in such a manner as to spread the leaves apart so that they will straddle the upper run of the conveyor 26. As is best shown in Figure 6, the outfeed conveyor 26 is constructed in such a manner that the crotches of the hands will be spaced above the conveyor, so that a stick 27 may be placed upon the upper run of the conveyor 26 beneath the crotches of the hands and a number of hands lifted from the conveyor upon the stick.

The infeed conveyor 20 is positioned exteriorly and at one end (the right hand end as viewed in Figure 1) of the treating chamber 24 and the upper run of the carrying element 28 thereof moves toward the chamber 24 in order that tobacco hands, indicated by the numeral 21 in Figure 2, will be moved toward and into the chamber 24.

The carrying element of the infeed conveyor 20 is designated by the numeral 28 and preferably comprises a rope or the like which passes about two pulleys 30 and 31 fixed to spaced horizontal shafts journalled in suitable supports 32 secured to the base 33 of the machine or to the floor of the building in which the apparatus is positioned. The shaft upon which the pulley 31 is secured is provided with a pulley 35 about which moves a belt 36 driven by a pulley 37 fixed to a shaft 38 journaled in brackets 38a at the opposite end of the chamber 24. The manner of driving shaft 38 will hereinafter be described in detail.

The chamber 24 is mounted upon the base 33 of the apparatus or upon the floor of the building in which the apparatus is positioned and comprises side walls 39 and 39a and end walls 40 and 41 and a top wall 42. The right-hand end wall 40 is provided with an opening 40a of a size and outline to permit a portion of the pulley 31 to extend therethrough and also to enable the hands supported on the infeed conveyor 20 to pass into the treating chamber. The two horizontally moving endless conveyors 22 and 23 are arranged upon sprocket wheels or pulleys so positioned with

respect to the chamber 24, that one run of each of the conveyors will pass through the chamber 24, both of these runs moving in the same direction and with their faces in opposed contact.

More particularly, the conveyor 22 moves upon sprocket wheels 43 and 44, respectively carried upon vertical shafts 45 and 45a journaled in brackets 46 which project horizontally from the opposite end walls 40 and 41 of the chamber 24. The brackets 46 are so positioned, as shown in Figures 2 and 3, that the outer run of the belt 22 will pass along the exterior of the side wall 39 of the chamber 24, while the inner run 47 of the conveyor will pass through the interior of the chamber 24 centrally of the latter and in substantially the same vertical plane, but above, the upper run of the rope 28 of infeed conveyor 20. The endless conveyor 23 is mounted to move about sprocket wheels 43' and 44' respectively journaled exteriorly of and upon the opposite ends of the chamber 24. The sprockets 43' and 44' are respectively fixed to shafts 45' and 45b journaled in brackets 46' positioned at the opposite side of the longitudinal center line of the chamber 24 from the shafts 45 and 45a in order that the inner run 48 of conveyor 23 will move horizontally through the chamber 24 in contact with the inner run 47 of the conveyor 22. The outer run of conveyor 22 moves exteriorly of the chamber 24 along the side wall 39 thereof.

As shown in Figure 3, the vertical shafts 45 and 45b at the left-hand end of the machine are driven from the horizontal shaft 38. The driving connection comprises bevel gears 50 carried at the lower ends of the shafts 45a and 45b and which mesh with bevel gears 51 fixed to the horizontal shaft 38. A pulley 52 is fixed to the horizontal shaft 38, and a belt 53 rotates this pulley, the belt being driven (Figure 1) by the pulley 54 fixed to a shaft 55 journaled in bearings 55a and driven by a motor 56 by means of a worm and worm wheel 57.

As is shown in Figures 1 and 2, the positioning of the shafts and pulleys upon which the endless conveyors 22 and 23 of the shaking conveyor move is such that when the tobacco hands 21 reach the limit of their horizontal movement upon the upper run of the infeed conveyor 20, and before they can be moved down about the pulley 31 with the conveyor element 28, the upwardly projecting butts of the tobacco hands will move in between the opposed faces 47 and 48 of the respective endless conveyors 22 and 23. The opposing faces of the last mentioned conveyors will grip the butt ends of the hands between them and will thereby remove the hands 21 from the infeed conveyor 20 to conduct the hands through the chamber 24.

As is best shown in Figures 7, 8 and 9, the endless conveyors 22 and 23 each comprise an endless roller link chain 60, each link including a substantially U-shaped portion 61, as shown in Figure 8. A resilient band of rubber or similar material is adhesively or otherwise secured to the outer faces of the U-shaped portions 61 of the links of the chain 60. In actual practice, crepe rubber is preferably used for the band 62, since it provides a band of high resilient qualities which will securely grip the butt ends of the hands without crushing. The inner runs 47 and 47 of the endless conveyors 21 and 22, respectively, move in track members 63 of substantially U-shaped form, the track members 63 being oppositely disposed as shown in Figure 8 and each formed of a plurality of sections 64 as shown in Figures 7 and 9. The sections 64 of the track members 63 are held in horizontal alignment by means of hangers 65 positioned at the adjacent ends of the sections 64. As is best shown in Figure 8, the lower ends of the hangers 65 are bifurcated so that each hanger supports oppositely disposed track sections 64. The track sections 64 are provided with rearwardly extending rivets or bolts 66 extending through apertures in the lower ends of the bifurcated arms of the hangers 65 and coil springs 67 positioned upon the bolts have their inner ends bearing upon the outer faces of the bifurcated arms of the hangers 65, while their outer ends bear upon adjusting lock nuts 68. Each arm of each hanger 65 is sufficiently wide, in a horizontal plane, to overlap the adjacent ends of adjoining track sections 64 to support adjoining sections.

As will be understood from the above, it is necessary to provide a plurality of hangers 65 spaced along the length of the chamber 24. The hangers 65 extend through apertures 70 in the upper wall 42 of the chamber 24 and are pivotally mounted at 71 upon brackets 72, preferably positioned upon the upper surface of the top wall 42.

As best shown in Figure 3, the hangers 65 extend upwardly past their pivot points 71 and these upper ends are connected by links 73 to straps 74 of band type which encircle eccentrics 75 fixed to a horizontal shaft 76 extending along the upper wall of the chamber 24. As shown in Figure 3, the links 73 are pivotally connected to the upper ends of the hangers 65, and it will be obvious from this that rotation of the eccentrics 75 will cause the hangers 65 to swing upon their pivots 71. The shaft 76 carrying the eccentrics 75 is rotated by a gearing connection 76a to an upward extension 80 of the shaft 45'.

Swinging movement of the hangers 65 in the manner described above will cause the track sections 64 to swing or vibrate in a horizontal plane, thereby imparting swinging or oscillating movement to the inner runs 47 and 48 of the endless conveyors 22 and 23 to shake or oscillate the tobacco hands gripped between these runs of the two conveyors.

In the preferred embodiment of my invention, the hangers of the trackways 64 at the longitudinal center of the chamber 24 are swung in a wider arc by their eccentrics 75 in order that the tobacco hands will be given a more violent shaking action or oscillation at this point in the chamber. To accomplish this purpose, the eccentrics 75 positioned above the longitudinal center of the chamber 24 have a wider throw than the remaining eccentrics. I also find it desirable to have the eccentrics on the shaft 76 between the central portion of the chamber 24 and the ends of the chambers of varying throws, the eccentrics at each end having relatively small throws and the successive eccentrics between the ends and the central portion having increased diameters, but of less diameter than the eccentric 75 above the center of the chamber. By this arrangement the shaking movement of the trackways 64 and the tobacco hands 21 will be relatively small at the infeed end 40 of the chamber 24, and the shaking action will be increased as a tobacco hand approaches the center of the chamber and will then gradually decrease to the point to which the hands pass from the chamber through the end wall 41. This action is diagrammatically shown in Figure 10.

My apparatus preferably includes means to slightly moisten the tobacco leaves during their passage through the treating chamber 24 in order

that the foreign matter which adheres to the leaves may be more readily removed therefrom. For this purpose, a blower 85 is positioned on a support 86 above the upper wall 42 of the chamber 24, which blower forces air through a heating chamber 87, the air then passing through conduits 88 respectively extending from the side walls of the chamber 87 to the side walls 39 and 39a of the treating chamber 24. As is best shown in Figures 1 and 2, the conduits 88 open to the treating chamber 24 at a point closely adjacent the infeed end 40 of the latter chamber. The heating chamber 87 is equipped with steam pipes 89 which may be supplied with steam from any suitable source and a steam nozzle 90 also opens into the chamber 87. The air passing through the chamber 87 will thus be heated to the desired degree and will be moistened to some extent by the admixture of steam therewith from the nozzle 90.

The action of the warm and preferably moist air will be to soften the leaves and since they are exposed to this air immediately upon entering the chamber, breakage and shattering of the leaves will be prevented.

The blower 85 may be driven from any suitable source of power.

An endless conveyor 91 is positioned in the lower portion of the chamber 24. Particles of dirt removed from the tobacco leaves will fall upon the conveyor and will be conducted to a second conveyor 92 which will remove the dirt from the chamber 24. The conveyors may be suitably driven from shaft 38. Inwardly inclined guide plates 93 may be provided, as shown in Figure 7, to direct dirt to the conveyor 91.

The outfeed conveyor 26 comprises a conveying element 100, which is shown in detail in Figures 5 and 6. This conveyor is in the form of a sprocket chain including links 101 which are provided with upwardly projecting U-shaped members 102, the opposite arms of which may be bowed as shown in Figure 6. The conveyor element 100 moves upon sprocket wheels 103 and 104 which are spaced from each other and so arranged that the upper run 105 of the conveyor 26 will be somewhat lower than the conveyors 22 and 23 and will receive tobacco hands fed outwardly from the chamber 24 by the conveyors 22 and 23. The sprocket wheels 103 and 104 are fixed to the shafts 38 and 55 respectively. As has already been explained, the shaft 55 is driven from the motor 56 and this causes the sprocket chain 100 to move about the two sprocket wheels with its upper run moving in a direction away from the chamber 24.

Tobacco hands moving out of the chamber 24 through the aperture 41a in the end wall 41 of chamber 24 and gripped between the elements of the conveyors 22 and 23 will have the leaves thereof spread by an inward projection 107 of a sprocket wheel housing enclosing the portion of the sprocket wheel 103 which extends into the chamber 24. The hands will thus straddle the upper run 105 of the conveyor 26, and, when the hands have been conducted to a point where their butt ends will no longer be engaged between the conveyors 22 and 23, they will be in straddling position with respect to the upper run of conveyor 26. As is shown in Figure 6, the upwardly extending elements 102 on the conveyor chain 100 will provide a space between the crotch of the tobacco hands and the horizontal portion of the U-shape members 102. In order to remove the tobacco hands from the outfeed conveyor 26, it is only necessary to place a stick such as 27 upon the upper run 105 of the conveyor 26, the outer end of the stick being held in the hands of the operator. When sufficient tobacco hands have moved out upon the conveyor 26 to cover the length of the stick 27, the stick may be raised vertically, thus lifting the tobacco hands from the conveyor. The stick 27 is preferably the type of stick which is used to support tobacco hands during their passage through a re-drying machine and it may be placed upon the conveyor of such a machine to permit the tobacco hands to be re-dried.

A modified form of moistening and air-treating apparatus for use in the chamber 24 is shown in Figures 11 and 12. This apparatus includes a blower 85' and heating chamber 87', similar to those already described, the heating chamber being heated by means of steam passing through steam coils 89'. A jet of steam is also supplied to the heating chamber 87' by means of a steam nozzle 90'. The air passing through the heating chamber 87' passes through a conduit 88', which conduit extends into the chamber 24 and communicates with a header 120 which is provided with upwardly projecting pipes 121. At their upper ends, the pipes 121 are provided with a pair of oppositely opening nozzles 122. The pipes 121 are so positioned with respect to the inner runs of the conveyors 21 and 22, that the air blast from the nozzles 122 will be directed horizontally against the leaves at the inner portion of the tobacco hands 21. As shown in Figure 11, a relatively small number of the pipes 121 will be provided in the chamber 24 and such pipes will be positioned closely adjacent the infeed end 40 of the chamber 24.

The positioning of the nozzles 122 whereby air is directed horizontally with respect to the leaves of the tobacco hand will cause the leaves of the hands to be spread and properly conditioned for their shaking action. If the apparatus illustrated in Figures 11 and 12 is used in the chamber 24, it will be unnecessary to provide the chamber 24 with conduits 88 such as shown in Figures 1, 2, 3 and 7. The apparatus of Figure 11 is otherwise similar to the structure illustrated in Figures 1 to 10 and would include a dirt removing conveyor in the lower portion of the treating chamber.

It will be observed from the above that by my apparatus and method, tobacco hands will be thoroughly cleaned and prepared and that the use of the apparatus will in no way interfere with the practice now followed of mixing the hands of tobacco and passing them through a re-drier upon the usual type of stick, since the hands may be placed upon the infeed conveyor 20 in the desired order and will be arranged in that order upon the outfeed conveyor 26.

It will be understood that the invention is not limited to the details of construction shown in the drawings and that the examples of the use of the apparatus and method which have been given do not include all of the uses of which the apparatus is capable or by which the method may be followed; also, that the phraseology employed in the specification is for the purpose of description and not of limitation.

I claim:

1. An apparatus of the class described comprising a conveyor to support tobacco hands, means to shake said conveyor during its movement, said means being operative to impart different degrees of shaking action to different por-

tions of said conveyor, and means to operate said conveyor and shaking means.

2. An apparatus of the class described comprising a treating chamber, an endless conveyor mechanism moving in said treating chamber and adapted to support tobacco hands and move the same through said chamber, means to feed tobacco hands to said chamber and conveyor, means to receive tobacco hands from said chamber and said conveyor, means to shake said conveyor, means to supply conditioned fluid to said chamber, and means to drive said conveyor and said means.

3. An apparatus of the class described comprising a treating chamber, a pair of endless conveyors having portions of their respective runs in opposed relation during movement through said chamber, means to feed tobacco hands to said conveyors at one end of the opposed portion of their runs, means to receive tobacco hands from said endless conveyors at the opposite end of the opposed portion of their runs, means to shake the opposed portion of the runs of said conveyors, means to condition the atmosphere in said chamber, and means to drive said conveyors and said means.

4. An apparatus of the class described comprising a treating chamber, a pair of endless conveyors having portions of their respective runs in opposed relation during movement through said chamber, means to feed tobacco hands to said conveyors at one end of the opposed portion of their runs, means to receive tobacco hands from said endless conveyors at the opposite end of the opposed portion of their runs, means to shake the opposed portion of the runs of said conveyors, different sections of the opposed portions being shaken to different degrees, means to condition the atmosphere in said chamber, and means to drive said conveyors and said means.

5. An apparatus of the class described comprising a treating chamber, a conveyor adapted to support tobacco hands thereon in straddling position and with their butt ends uppermost, a conveyor mechanism moving within said chamber and adapted to receive tobacco hands from said first named conveyor and to grip the butt ends of the hands, means to shake said conveyor mechanism, a second conveyor adapted to receive tobacco hands from said conveyor mechanism, said second conveyor adapted to support the hands in straddled position thereon with the crotch of the hand spaced above said second conveyor, and driving means for said apparatus.

6. The combination with a tobacco treating machine including a supporting mechanism to support tobacco hands during movement therethrough, of conveyor means to receive tobacco hands from said supporting mechanism, said conveyor means including a conveyor element arranged to support a tobacco hand in straddled position on the conveyor means with a space beneath the crotch of the hand to permit the insertion of a tobacco supporting stick between the conveyor means and the crotch of the tobacco hand.

7. An apparatus for treating tobacco comprising a treating chamber, means to support tobacco hands and move the same through said chamber with their leafy portions in free and depending position, and means to direct a current of fluid against said leafy portions, said means including a nozzle positioned to be within the leafy portion of the hands and to direct the current of fluid horizontally and outwardly against the leaves of the hand to shake the same.

8. An apparatus for treating tobacco comprising a treating chamber, means to support tobacco hands and move the same through said chamber with their leafy portions in depending position, means to direct a current of fluid against the leafy portions to cause foreign matter thereon to be loosened, and means to subsequently shake the hands sufficiently to remove foreign matter therefrom.

9. An apparatus of the class described, comprising a treating chamber, a conveyor to support tobacco hands and move the same through said chamber, means to shake said conveyor during its movement and thereby remove dirt from the tobacco hands, means to receive the dirt and remove the same from the chamber, and means to operate said conveyor and said means.

10. An apparatus of the class described comprising conveyor means to support tobacco hands, and means to shake said conveyor means transversely of its direction of movement, said means being operative to impart different degrees of shaking action to different portions of said conveyor means.

11. An apparatus of the class described comprising moving band members having portions thereof opposed to support the butt ends of tobacco hands therebetween with the leaves of the hands free and pendant, and means to transversely shake the opposed portions of said band members.

12. An apparatus of the class described comprising members having portions thereof in opposed relation to support the butt ends of tobacco hands therebetween with the leaves of the hands free and pendant, means to shake said opposed portions of said members, means to feed tobacco hands to said members at one end of said opposed portion, and to receive tobacco hands from said members at the opposite end of said opposed portion.

13. An apparatus of the class described comprising endless members having portions thereof in opposed relation to support the butt ends of tobacco hands therebetween with the leaves of the hands free and pendant, means to shake said opposed portions of said endless members, means to feed tobacco hands to said endless members at one end of said opposed portion, and means to receive tobacco hands from said endless members at the opposite end of said opposed portion.

14. An apparatus of the class described comprising members having portions thereof in opposed relation to support the butt ends of tobacco hands therebetween with the leaves of the hands free and pendant, means to shake said opposed portions of said members, different sections of said opposed portions being shaken to different degrees, means to feed tobacco hands to said members at one end of said opposed portion, and means to receive tobacco hands from said members at the opposite end of said opposed portion.

15. An apparatus of the class described comprising a conveyor adapted to support tobacco hands in straddling position thereon, conveyor means to receive the tobacco hands from said conveyor and to support the hands by their butt ends with their leaves free and pendant, means to shake said conveyor means, and means to receive the tobacco hands from said conveyor

means and support the hands in straddling position.

16. An apparatus of the class described comprising a conveyor adapted to support tobacco hands in straddling position thereon, a treating chamber, conveyor means in said treating chamber to receive the tobacco hands from said conveyor and to support the hands by their butt ends, means to shake said conveyor means, and means to receive the tobacco hands from said conveyor means and support the same in straddling position.

17. An apparatus of the class described comprising a conveyor adapted to support tobacco hands in straddling position thereon, conveyor means to receive the tobacco hands from said conveyor and to support the hands by their butt ends, means to shake said conveyor means, and means to receive the tobacco hands from said conveyor means and support the same in straddling position, said last-named means including supporting elements for the hands provided with a space to permit the insertion of a tobacco hand supporting stick beneath the butt ends of the hands.

18. An apparatus of the class described comprising a conveyor adapted to support tobacco hands in straddling position thereon, conveyor means to receive the tobacco hands from said conveyor and to support the hands by their butt ends with their leaves free and pendant, means to shake said conveyor means, and means to receive the tobacco hands from said conveyor means and support the same in straddling position, said last named means including supporting elements for the hands provided with a space to permit the insertion of a tobacco hand supporting stick beneath the butt ends of the hands.

19. An apparatus of the class described comprising a treating chamber, conveyor means in said treating chamber to support tobacco hands, and means to shake said conveyor means transversely of its direction of movement, said means being operative to impart different degrees of shaking action to different portions of said conveyor means.

20. An apparatus of the class described comprising a treating chamber, moving band members in said treating chamber having portions thereof opposed to support the butt ends of tobacco hands therebetween with the leaves of the hands free and pendant, and means to transversely shake the opposed portions of said band members.

21. In an apparatus of the class described, supporting members having portions thereof in opposed relation to support tobacco hands therebetween with the leaves of the hands free and pendant, and means engaging the opposed portions of said members to shake the same.

22. In an apparatus of the class described, supporting members having portions thereof in opposed relation to support tobacco hands therebetween with the leaves of the hands free and pendant, and means engaging the opposed portions of said members to shake the same, said members being movable with respect to said means.

23. In an apparatus of the class described, a treating chamber, members movable in said treating chamber and having portions thereof within said chamber in opposed relation to support tobacco hands, and means engaging the opposed portions of said members to shake the same.

24. In an apparatus of the class described, a treating chamber, members movable in said treating chamber and having portions thereof within said chamber in opposed relation to support tobacco hands, and means engaging the opposed portions of said members to shake the same, said members being movable with respect to said means.

25. In an apparatus of the class described, a pair of endless band members having portions thereof in opposed relation to support tobacco hands therebetween, U-shaped members engaging the opposed portions of said members, and means to shake said U-shaped members.

26. In an apparatus of the class described, a pair of endless band members having portions thereof in opposed relation to support tobacco hands therebetween, U-shaped members engaging the opposed portions of said members, and means to shake said U-shaped members, said band members being movable with respect to said U-shaped members.

27. An apparatus of the class described comprising a treating chamber, an endless conveyor mechanism moving in said treating chamber and adapted to support tobacco hands and move the same through said chamber, means to feed tobacco hands to said conveyor, means to receive tobacco hands from said conveyor, means to shake said conveyor, means to supply conditioned fluid to said chamber, and means to drive said conveyor and said means.

28. The process of cleaning tobacco leaves comprising warming the leaves sufficiently to cause them to expand to such an extent as to loosen foreign matter adhering thereto and shaking the leaves to cause the foreign matter to fall from the leaves.

29. A tobacco cleaning apparatus comprising a chamber, conveyor means to support tobacco hands with their leaves free and pendant, means to shake the conveyor means, and means to deliver a current of conditioned fluid against the pendant leaves of the hands from points horizontally spaced from each side of the conveyor means.

30. A tobacco cleaning apparatus comprising a chamber, conveyor means to support tobacco hands in a single line longitudinally of the conveyor with their leaves free and pendant, means to shake the conveyor means, and means to deliver a current of conditioned fluid against the pendant leaves of the hands from points horizontally spaced from each side of the conveyor means.

31. A tobacco cleaning apparatus comprising a chamber, conveyor means to support tobacco hands with their leaves free and pendant, means to shake the conveyor means transversely of its path of travel, and means to deliver a current of conditioned fluid against the pendant leaves of the hands from points horizontally spaced from each side of the conveyor means.

LEMUEL R. KERSEY.