June 26, 1945. R. D. TOUTON 2,379,117

METHOD FOR CONDITIONING TOBACCO

Filed Aug. 2, 1938 4 Sheets-Sheet 1

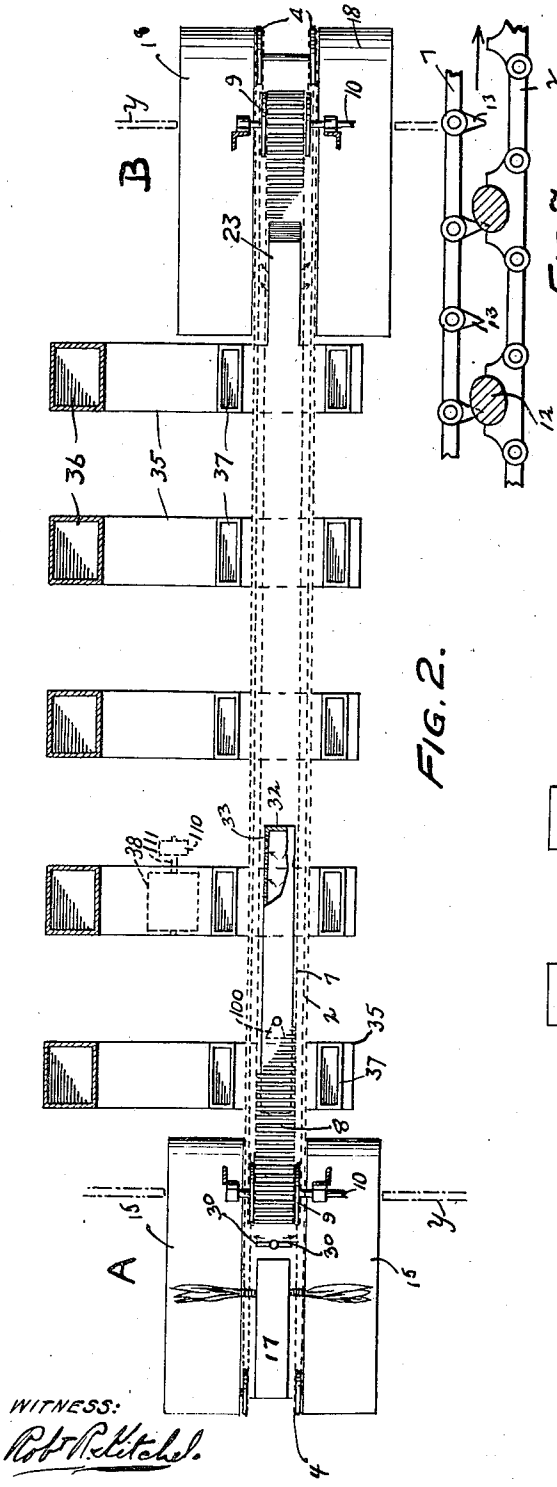


FIG. 2.

FIG. 7.

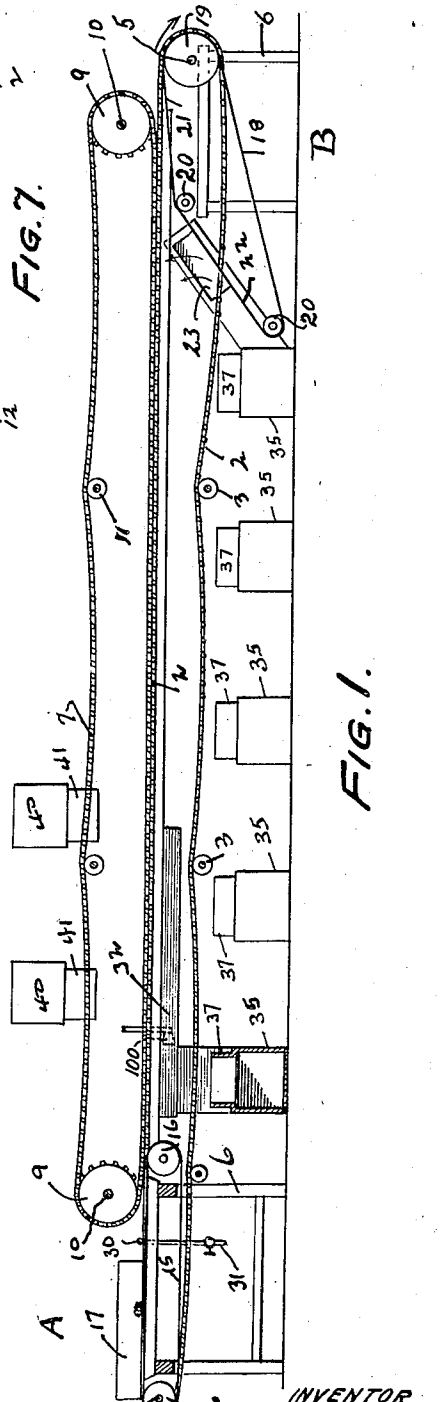


FIG. 1.

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METHOD FOR CONDITIONING TOBACCO

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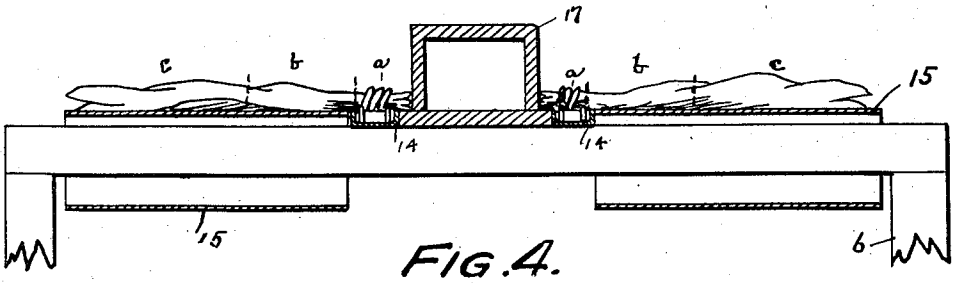


FIG. 4.

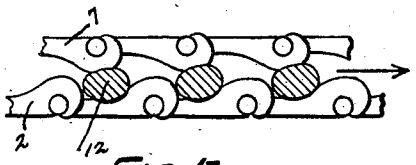


FIG. 5.

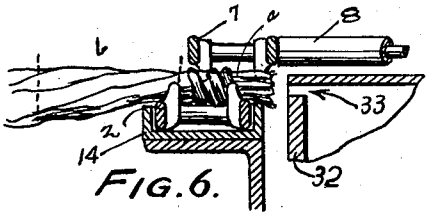


FIG. 6.

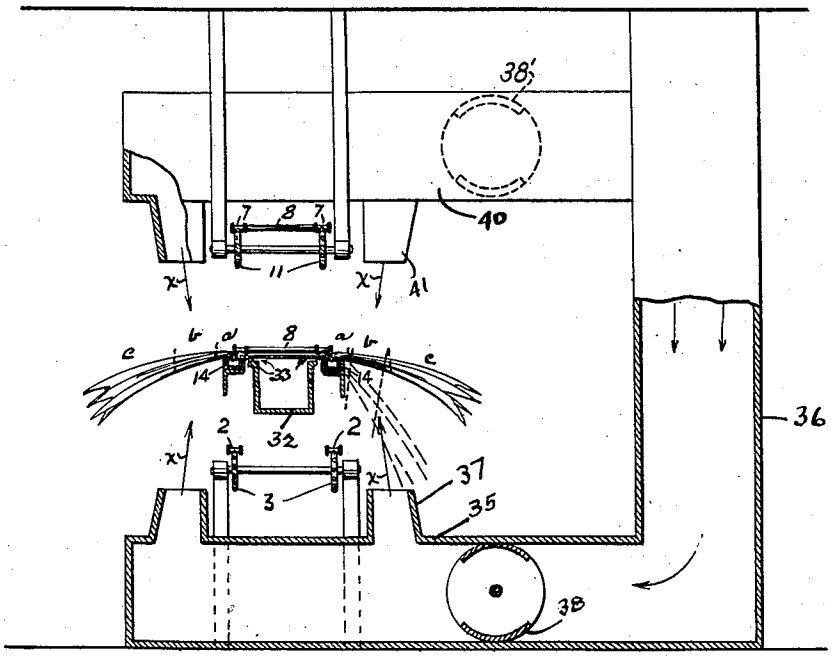


FIG. 3.

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METHOD FOR CONDITIONING TOBACCO

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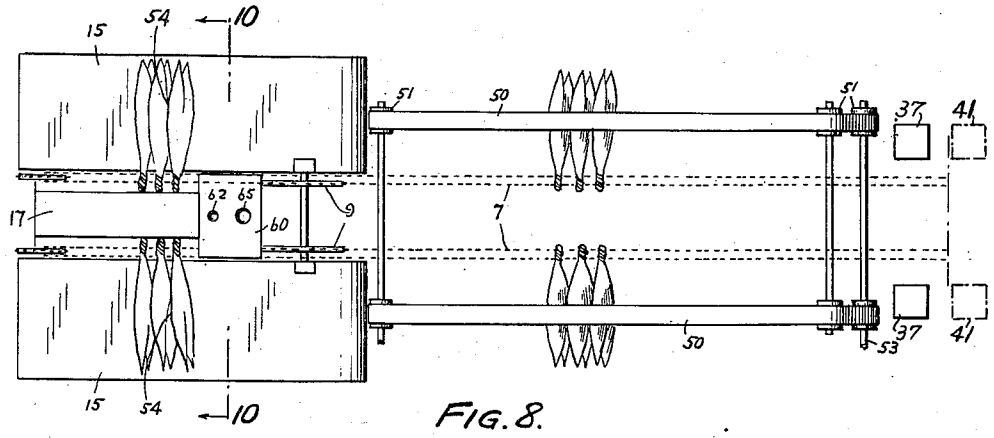


FIG. 8.

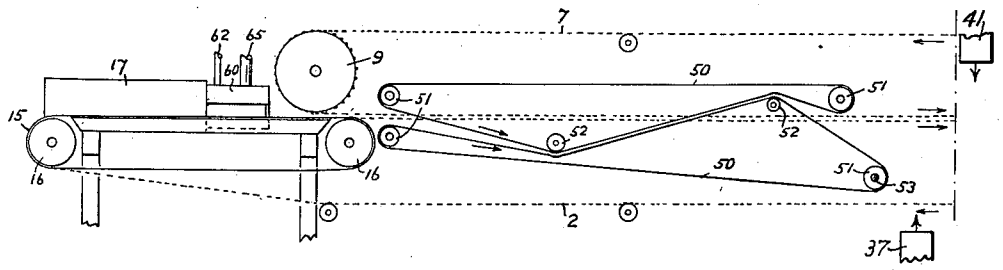


FIG. 9.

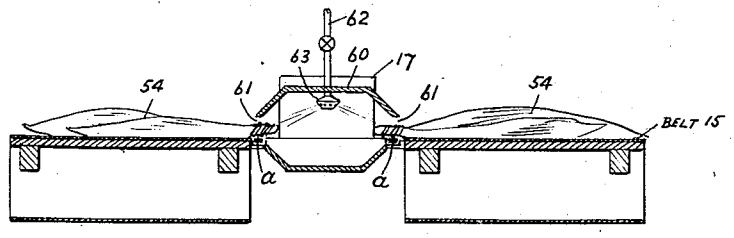


FIG. 10.

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METHOD FOR CONDITIONING TOBACCO

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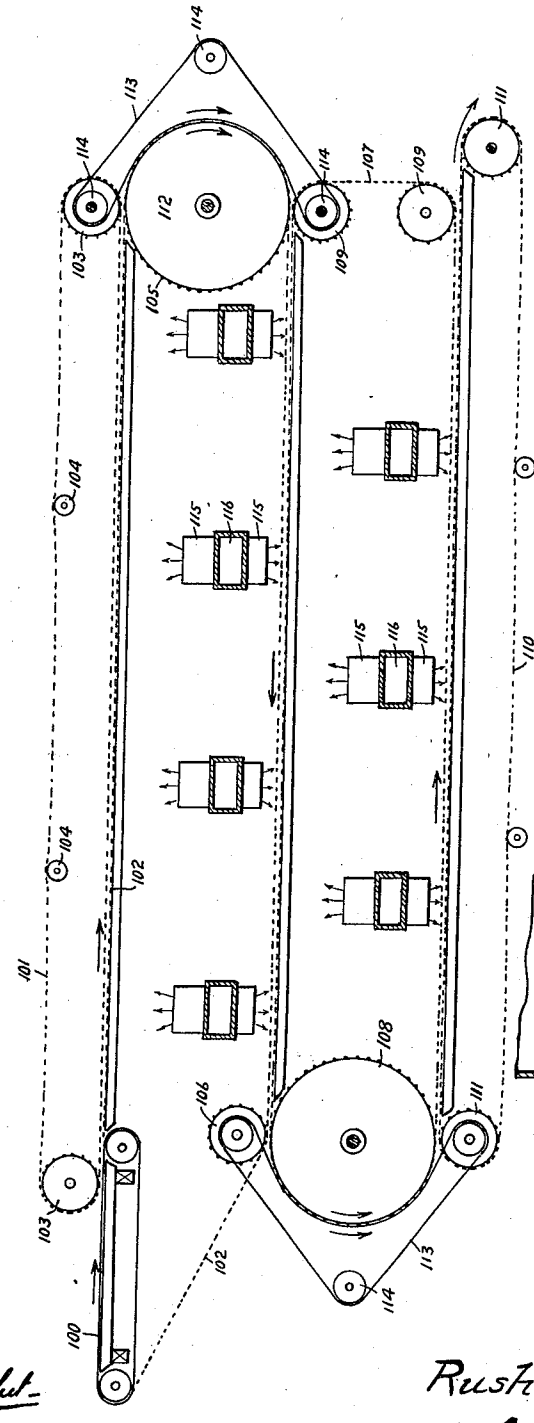


FIG. 11.

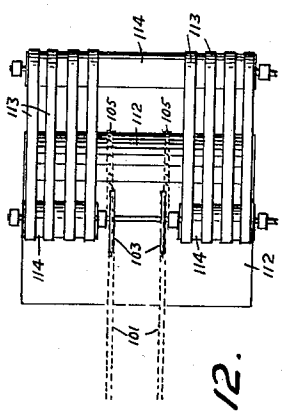


FIG. 12.

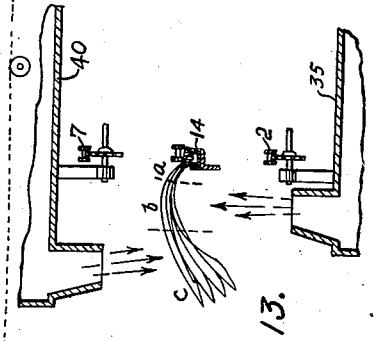


FIG. 13.

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2,379,117

UNITED STATES PATENT OFFICE

2,379,117

METHOD FOR CONDITIONING TOBACCO

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Application August 2, 1938, Serial No. 222,595

23 Claims. (Cl. 131—140)

This invention relates to a method for conditioning tobacco.

More particularly this invention relates to certain procedure adapted for the conditioning of tobacco by the removal or addition of moisture thereto for the adjustment of its moisture content to that desired for further processing as, and for example, fermentation, packing, the fabrication of cigars.

Heretofore it has been known to effect the conditioning of tobacco by subjecting hands of tobacco to an atmosphere conditioned with respect to temperature and relative humidity so that moisture will be removed from or added to the tobacco, as the case may be, to bring it to a moisture content desired with respect to its further processing. And in connection with such treatment, it has been known to subject the tobacco while in the conditioned atmosphere to a certain manipulation, by means of jets of air or by mechanical agitation, to effect an opening of the hands and separation of the leaves in order to promote uniformity of the treatment through the hands.

Various prior procedures used have proved practical and essentially effective for the purposes intended, but certain difficulties have been met with in obtaining uniformity of condition due to the hygroscopic structure of the tobacco leaves composing the hands and the formation thereof with the butts which are difficult to moisten tightly bound together. Further, prior procedure has not been adapted for the treatment of hands of tobacco in the form of layers such as naturally separate when a bale of tobacco is taken apart.

In connection with the concept and development of this invention, consideration has been given to the fact that the tobacco leaf comprises a butt or stem portion, *a* in Figure 4, which is relatively coarse and dense and is consequently slow to lose or absorb moisture, a tip portion, *c* in Figure 4, which is of a delicate character, which loses or absorbs moisture readily, and a median portion, *b* in Figure 4, which possesses the characteristics of both the tip and the butt portions to a degree, and the fact that stem portions are necessarily bound together in the form of hands when the leaves are treated. Consideration has also been given to the relative degrees of flexibility of the several portions of the leaf and the effects of manipulation thereof under different degrees of moisture content and temperature. And further consideration has been given to the effect of the layers of air lying adjacent to the several leaves of the hands as they absorb moisture or lose it by evaporation.

The method in accordance with this invention from the broad standpoint involves passing tobacco in hands, or layers of hands, through an atmosphere, conditioned with respect to whether moisture is to be added to or evaporated from the tobacco and whether the tobacco is to be heated or cooled, and, at the same time, subjecting the tobacco to definite streams or jets of air directed variously at the various parts of the leaves in the hands or layers of hands in a manner such that the various parts of the leaves will receive treatment adapted to their respective capacity for the absorption or evaporation of moisture and for absorbing or losing heat and, at the same time, effecting a particular manipulation of the hands, or layers of hands, all to the end that the leaves comprising the hands will be uniformly brought to a desired moisture content and temperature condition in a minimum of time and without deleterious effect upon the color, texture or quality of the tobacco.

More specific aspects of the method will appear from the following detailed description of a preferred embodiment of the apparatus for carrying out the method.

Having now indicated in a general way the nature and purpose of this invention, I will proceed to a detailed description thereof with reference to the accompanying drawings, in which:

Figure 1 is a side view, partly in section, showing the essential elements of an apparatus for carrying out this invention.

Figure 2 is a plan view, partly in section, of the apparatus shown in Figure 1.

Figure 3 is a cross-sectional view of the apparatus shown in Figure 1.

Figures 4, 5, 6 and 7 are sectional views showing details of construction.

Figure 8 is a plan view showing a modification of the structure shown in Figure 1.

Figure 9 is a side view of the structure shown in Figure 8.

Figure 10 is a sectional view on line 10—10, Figure 8.

Figure 11 is a side view of a modified form of apparatus for carrying out this invention.

Figure 12 is a plan view showing a detail of construction of the form of apparatus shown in Figure 11.

Figure 13 shows a detail of construction.

Referring now to Figures 1–7 of the drawings, the reference characters 2, 2 indicate a pair of endless chains passing over spaced pairs of sprockets 4, 4, mounted on shafts 5, 5, which are supported in any suitable manner from frames 6, 6. The upper reaches of the chains 2, 2 are tight while the lower reaches are slack and supported by idlers 3, 3. One of the shafts 5 is driven through any suitable connection to a prime mover, as an electric motor, not shown, so that the chains travel in the direction of the arrow, Figure 1.

A second pair of endless chains 7, 7, connect-

ed by weighted rods 8, pass over spaced pairs of sprockets 9, 9, mounted on shafts 10, 10, which are suitably supported in hangers so that the lower reaches of the chains 7, 7 will overlie the upper reaches of the chains 2, 2 throughout a distance between their ends, as shown in Figure 1. The upper reaches of chains 7, 7, which are slack, are supported by means of idlers 11, 11.

The links of the chains 2, 2 and 7, 7 are out of line and their upper and lower reaches, respectively, lie together, the lower reaches of chains 7, 7 being held down upon the upper reaches of the chains 2, 2 by the weight of the rods 8, so that the butts 12 of hands of tobacco may be held between them and so that the chains 7, 7 will move with the driven chains 2, 2, as shown in detail in Figures 5 and 6. Again, the chains 7, 7 may be provided with downwardly extending spuds 13 which will pierce the butts 12 and secure the hands between the chains, as shown in Figure 7. At the front or charging end of the machine, indicated by A, the upper reaches of the chains 2, 2 extend beyond the sprockets 9, 9, about which the chains 7, 7 pass, and are supported in channels 14, 14, supported from the frame 6. A pair of endless conveyor belts 15, 15, passing about pulleys 16, 16, mounted on the shafts 5, are arranged adjacent to the chains 2, 2, respectively, and with their upper reaches on a level therewith, as shown in Figures 2 and 4. The upper reaches of the belts 15, 15 run with the upper reaches of the chains 2, 2 and extend somewhat beyond the point of overlie or nip of the chains 7, 7, with the chains 2, 2.

Between the chains 2, 2 at the charging end where the chains run with the belts 15, 15 is a stop member 17, presenting, as shown in Figures 2 and 4, surfaces spaced from and extending above the chains 2, 2.

At the discharge end of the apparatus indicated by B, Figures 1 and 2, a pair of conveyor belts 18, 18 pass over pulleys 19, 19 on shaft 5 and, supported by idlers 20, 20, extend from beyond the sprockets 9 about which the chains 7, 7 pass, downwardly at a small angle to the chains 2, 2 forming a reach 21 and then at a relatively large angle forming a further reach 22, as shown in Figure 1. The belts 18, 18 are adjacent to the chains 2, 2, as shown in Figure 1.

It will now be noted that the chains 2, 2 and 7, 7 form a conveyor for hands of tobacco, the butt ends of which are clamped between the upper reaches of the chains 2, 2 and the lower reaches of the chains 7, 7, with the leaf portions of the hands extending laterally of the direction of travel of the chains, as will be clear from an inspection of Figure 3.

The conveyor is charged with hands of tobacco by laying the hands, or layers of hands, upon the conveyor belts 15 with the butts overlying the chains 2, 2, and abutting the surfaces of the stop 17, as shown in Figures 1 and 4. The belts 15 carry the hands progressively to and into the nip of the chains 7, 7 with the chains 2, 2, the sprocket 9 and pulley 16 being positioned so that the chains are close together at the nip to the end that the butts of the hands are received and clamped between the chains and carried along to the discharge end of the machine where they are discharged. The chains are so arranged at the nip that the links of the chain 7, or the spuds 13, are positively pressed into the butts of the hands so that the butts are positively engaged between the chains.

As will be obvious, to maintain the conveyor loaded, it is only necessary to maintain a supply of tobacco hands, or layers of hands, arranged on the belts 15, 15, which will support them equally whether they be dry and stiff or moist and limp.

In the travel of the conveyor the hands of tobacco are subjected to conditioning treatment, as will be hereinafter described in detail, and hence on reaching the discharge end are flexible and depend more or less from their butt portions clamped between the chains. As the depending leaf portions of the hands approach the discharge end they are lifted, and contact with the steep reaches 22 of the belts 18, 18, by blasts of air discharged laterally from a nozzle 23, positioned between the reaches 22 of the belts 18. The leaf portions in the continued travel of the conveyor are supported and lifted by the belts 18, as they travel with the conveyor through reaches 22 and into the reaches 21 until the butts of the hands are released with the separation of the chains 7, 7 and 2, 2 and are supported wholly by the belts 18, 18 from which they are discharged or manually removed.

The hands of tobacco on the conveyor are passed through an atmosphere conditioned for adding moisture to or evaporating it from the tobacco and for adjusting its temperature and to such end the conveyor is enclosed in a chamber or room in which a conditioned atmosphere is maintained, it being understood that the conveyor will be of a length and run at a rate such that the tobacco will be brought to desired condition. If desired, the charging belts 15, 15 and the discharging belts 18, 18 may extend without the chamber, as through openings in the end walls of a room, indicated by dotted lines *y*, *y*, Figure 2, in order that the conveyor may be charged from without the chamber and the conditioned tobacco discharged therefrom, thus avoiding subjecting the operators to the discomfort of the conditioning atmosphere.

In the conditioning of the tobacco there are associated in particular relationship with the conveyor, above described, various means for subjecting the several portions of the hands to conditioned air and to manipulation in addition to the conditioned atmosphere in the chamber enclosing the conveyor.

Thus, between the chains 2, 2, ahead of the nip of the chains 7, 7 with the chains 2, 2, are positioned a pair of fixed spray nozzles 30, 30 facing oppositely and in line with the butts of hands of tobacco on the charging belts 15, 15. The nozzles 30, 30 are connected to a valved water supply pipe 31 and operate, when dry tobacco is to be moistened, to wet the butts of the hands as they, fully exposed, pass the nozzles on their way toward the nip of the chains 7, 7 and 2, 2. Where the use of water is undesirable, any highly conditioned atmosphere differing from the atmosphere in general circulation and discharged from the air jets may be supplied through pipe 31. Where tobacco is to be dried the nozzles 30 are not used or may be used to direct jets of heated dry air into the butts.

Between the chains 2, 2 and extending for a distance from the charging end of the apparatus is a duct 32, supplied with highly conditioned air from any suitable source, and this air will desirably carry more moisture than that in general circulation and used for treating the leaf portions, and provided with lateral openings 33 in line with the butts of hands of tobacco on the conveyor. As the butts of the hands pass the

openings 33, in the travel of the conveyor, jets of conditioned air from the openings enter the butts in a direction parallel to the extension of the stems and serve, if the tobacco is to be moistened, to drive into the butts and distribute the moisture applied thereto from the nozzles 30 and also to add moisture for insurance of the proper and uniform moistening of the butts. Where moisture is to be removed from the tobacco the duct 32 may be supplied with air at a different condition from that obtaining in the chamber as a whole and from that supplied to the tobacco in jets from other ducts to be described. If desired, for the moistening of tobacco the duct 32 may be supplied with steam or with air carrying free moisture, and, if desired, water may be sprayed into the duct 32 through any suitable form of spray head 100 positioned within the duct.

At spaced intervals along the length of the conveyor and extending laterally beneath it are a number of ducts 35 adapted to be connected through risers 36 to a source of supply of conditioned air. The ducts 35 are provided with upwardly extending nozzles 37 positioned on opposite sides of the conveyor and so formed as to direct air upwardly into the path of travel of hands of tobacco on the conveyor, to strike the median portion *b* of the leaf portions of the hands, as shown by the arrows *x*, *x*, Figure 3. The ducts 35 are provided with valves 38, which may be suitably driven rotary valves, adapted to cause the nozzles 37 to deliver jets of conditioned air in a series of puffs of more or less short intervals.

The jets of air issuing from the nozzles 37 are, desirably, forceful and the nozzles are so formed, directed and sized that the median portion *b* of the hands receives substantially the full force of the jets when, in the travel of the conveyor, the hands are in line with the nozzles. The jets 37 perform two functions, first, they effect treatment mainly of the median portions *b* of the leaves with slight effect upon the tip portions *c*, which are primarily subjected to the conditioned atmosphere obtaining in the chamber as a whole; and second the jets effect a manipulation of the leaves by bending them upwardly with respect to the butts as shown in Figure 3 through the application of a force to their relatively tough median portions and without exerting other than indirect and gentle force upon their delicate tip portions. Such manipulation operates upon the median portion of the hands in which the leaves are most tightly adhered, separates the leaves and opens up the hands without damage, such as variously occurs where jets are directed so that all the air enters the tips of the leaves or the hands are agitated by agitation of a support or conveyor to which the butts are secured.

The valve 38 may be left open or driven, by a prime mover connected to pulley 110 on shaft 111, for the intermittent supply of air to the nozzles 37. When the valve 38 is operated the puffs of air issuing from the nozzles 37 operate to manipulate the leaves, as described, intermittently, the leaves being permitted to fall back under gravity between puffs.

At spaced intervals, and extending laterally above the conveyor between the ducts 35, are a series of ducts 40, connected to the risers 36 and provided with downwardly extending nozzles 41. The nozzles 41 are similar in form and size to the nozzles 37 leading from the ducts 35 and direct conditioned air from above upon the median portions *b* of the hands in the same manner as do the nozzles 37. The ducts 40 are provided with valves 38' similar to the valves 38 in duct 35, to provide intermittent jets or puffs of conditioned air from the nozzles 41. If desired, the nozzles 41 and 37 may be placed in longitudinal alignment in such arrangement laterally that the nozzles 37 will direct air at the median portions of the leaves and the nozzles 41 will direct air simultaneously at the tips of the leaves to insure a thorough flexing and opening of the hands as shown by Figure 13.

Referring now to Figures 8 and 9, means for flexing the hands, or layers of hands, of tobacco are associated with the conveyor and operate to bend the leaf portions of the hands with respect to the butts above and below the line of travel of the conveyor to preliminarily loosen the bond between the leaves for more ready access of conditioned air and separation of the leaves when subjected to the jets 37 and 41.

The means for this purpose, an embodiment of which is shown in Figures 8 and 9, comprises a pair of endless belts 50, 50, one pair being positioned at opposite sides of the conveyor formed by chains 1, 1 and 2, 2. The belts 50, 50 are arranged to travel over pulleys 51, 51, mounted on shafts 53, 53, one of which for each belt is driven, in any suitable manner, for movement of the belts in unison at the same speed as that of the chains 1, 1 and 2, 2. The pulleys 51, 51 are positioned so that the adjacent reaches of the belts 50, 50, which travel in the same direction as the conveyor, are initially spaced apart so that they will not contact the hands of tobacco on the conveyor. Idler pulleys 52, 52 above and below the adjacent reaches of the belts 50, 50 are arranged to cause the adjacent reaches of the belts to travel downwardly below the line of travel of the conveyor and toward each other, then to travel upwardly together above the line of travel of the conveyor.

In operation layers of hands of tobacco 54 are placed on the charging belts 15 and move into the nip of chains 1, 1 and 2, 2, forming the conveyor, and are clamped between the chains as above described. In the travel of the conveyor the leaves of the hands pass between the adjacent reaches of the belts 50, 50, are engaged therebetween and, in the continued movement of the conveyor, are bent downwardly and then upwardly with respect to the line of travel of the conveyor and thus flexed. Finally, the leaves are released by the belts 50, 50 and continue on the conveyor for subjection to the action of the air from jets 37 and 41.

The belts 50, 50 flex the leaves while holding them and prepare them for the further flexing given by the jets of air, both the belts and the alternate upward and downward jets of air giving to the leaves a wave-like motion as they are carried along by the conveyor.

Referring again to Figures 8 and 9 and to Figure 10, modified means for initially moistening the butts of the hands are shown. In the several figures 60 indicates a casing having longitudinal slots 61 in its opposite sides. The casing is positioned between the charging belts 15 and ahead of the chains 1, 1 as they pass around the pulleys 9. The slots 61 admit the butts *a*, of hands of tobacco on the charging belts, into the casing for travel therethrough in the travel of the hands on the belts toward the nip of the chains 2, 2 and 1, 1, as shown in Figures 8 and 10.

Extending into the upper portion of the casing 60 is a valved conduit 62, terminating in a spray

head 63 and connected with a supply of water, or, if desired, steam, and from which water in the form of a spray or mist, or steam, is sprayed down upon the butts and fills the casing, when the butts are to be moistened, as shown in Figure 10. A second conduit 65 extends into the upper part of the casing 60 and is connected to a suitable source of hot air and serves for the introduction of hot air into the casing and down upon the butts and fills the casing where the butts are to be dried.

Referring now to Figures 11 and 12, in which a modified form of the apparatus is shown, 100 indicates a charging belt such as heretofore described and adapted for the charging of tobacco hands or layers of hands into the nip of pairs of endless chains 101 and 102. The upper chains 101, similar to the chains 7, 7, extend about sprockets 103, one of which is suitably driven, and their upper reaches are supported by idlers 104. The chains 102, which cooperate with the chains 101 for holding the butts of hands of tobacco as heretofore described, extend about sprockets 105 of large diameter oppositely to the charging belt 100 and are supported adjacent the charging belt by sprockets 106 so that their upper reaches cooperate with the lower reaches of chains 101 and their lower reaches similarly cooperate, for the holding of hands, with the upper reaches of chains 107, which in turn pass around sprockets 108 of large diameter located oppositely to the sprockets 105. The chains 107 are supported opposite to the sprockets 108 by sprockets 109 and their lower reaches cooperate, for the holding of the butts of hands of tobacco with chains 110, which are supported by sprockets 111. Drums 112 of the same diameter as the sprockets 105 and 108 are mounted on the shafts supporting the sprockets, which for rotation of the sprockets are driven in any suitable manner.

A series of belts 113, arranged in parallel, pass over pulleys 114, positioned so that the belts will bear against the periphery of the drums 112 through nearly half of their circumference, as shown in Figure 11. The belts 113 are driven at the same speed as the drums 112 and sprockets 105, which may be readily accomplished by securing various of the pulleys on the shafts carrying the sprockets 103, 106, 109 and 111, all of which rotate at the same speed.

Between the upper and lower reaches of the chains 102 and 107, nozzles 115, communicating with air ducts 116, extend upwardly and downwardly for the direction of jets of air into the path of tobacco carried by the chains. The nozzles 115 between the upper and lower reaches of the chains 102 are staggered with reference to the nozzles between the upper and lower reaches of the chains 107.

The apparatus shown in Figures 11 and 12 will, in general, operate as described above in that hands of tobacco, or layers of hands, laid on the charging belt 100 will be delivered and gripped between chains 101 and 102 and will be carried thereby over the upwardly directed nozzles 115. As the chains 102 pass around the sprockets 105 and the hands of tobacco are released by the chains 101, as they pass around the sprocket 103, the leaf portions of the hands will be engaged by the belts 113 and thereby held to the drum 112, which will carry them around and deliver the butt portions thereof into the nip of chains 102 with chains 107. The butts will then be gripped between chains 102 and 107 and carried between the upwardly and downwardly directed nozzles 115, until released by the passage of chains 102 around the sprockets 106, when they will be carried around the second drum 112 as chains 107 pass around sprockets 108 and delivered into the nip of chains 107 and 110, from which they will be finally discharged with the aid of lateral and upwardly directed air jets, as heretofore described. In the passage from one conveyor to the other, it will be noted that the hands, or layers of hands, are flexed laterally at right angles to the direction in which they are flexed on the conveyors, also the hands are turned over so that new surfaces are presented for treatment by reason of the action of gravity on the reversed hands.

The apparatus of Figure 11 will be essentially similar to the embodiment heretofore described with the difference that pairs of chains forming conveyors will be superimposed with means for transferring tobacco hands after discharge from one conveyor to engagement with another conveyor, thus enabling desired length of travel to be obtained in a space of restricted length.

It will now be observed from the method standpoint that tobacco hands on the conveyor, provided by the chains 2, 2 and 7, 7, are subjected to a conditioning treatment, whether for moistening or drying, with consideration for the relative capacities of the different portions of the leaf to absorb or evaporate moisture and, at the same time, the hands are subjected to manipulation by means of the force of jets of air applied to the median portion of the leaves and which may be applied intermittently and in opposite directions. Further, the hands of tobacco separately, or in a layer, in the conditioning operation will be held by the conveyor with the butts horizontal so that the leaf portions will be subjected to the pull of gravity causing them, if they be moist, or as they become moist, to drop or hang down with a natural arrangement.

Again, in the moistening of tobacco the jets issuing from the nozzles 37 and 41 will efficiently loosen up the median portions of the hands as they absorb moisture from the jets and when they have absorbed sufficient moisture to permit drooping of the leaves, the jets from the nozzles 37 will enter the hands from the tips of the leaves, as shown in dotted lines Figure 3, to bring the moisture content of the tips up to that desired and insure uniformity in the moistening of the hands as a whole.

More particularly, it will be noted that in the moistening of dry tobacco the several portions of the leaves are treated with jets successively with respect to the necessity or capacity for absorbing moisture and their relative toughness or delicacy. Thus, the butts are first treated, then the median portion of the leaves with application of force thereto and finally, when the leaves are sufficiently moist to droop, the tip portions are treated. With some tobacco the butt treatment will be continued throughout all or a part of the leaf portions and final treatment may be given to the butts after completion of the treatment of the leaves.

It will be understood that the above detailed description of procedure is given for purposes of illustration only and that it is not intended that this invention shall be limited thereby, it being contemplated that various modification in details of the procedure may be made, by those skilled in the art, without departing from the scope of the invention.

The apparatus disclosed herein has not been claimed herein, since such is claimed in an ap-

plication filed by me as a division hereof, Serial No. 361,528, filed October 17, 1940.

What I claim and desire to protect by Letters Patent is:

1. The method of conditioning tobacco which includes securing the butts of hands of tobacco to a moving carrier with the butts extending at an angle to the vertical, the leaf portions of the hands being free of the carrier and extending bodily laterally thereof, and subjecting the hands to jets of conditioned air directed from opposite directions and so directed that substantially the full force of the air from one direction will strike a face of the leaf portions mainly within the median portion thereof and substantially the full force of the air from the opposite direction will strike the hands mainly within the tip portions thereof.

2. The method of conditioning tobacco which includes supporting the leaf portions only of hands of tobacco on a conveyor and while the hands are on the conveyor subjecting the free butt portions of the hands to a conditioning treatment, discharging the hands from said first mentioned conveyor to a second conveyor engaging the butt portions of the hands only with the butts extending at an angle to the vertical and while the hands are on the second conveyor subjecting the free leaf portions of the hands to a conditioning treatment through the medium of jets of conditioned air directed at a face of the leaf portions of the hands.

3. The method of conditioning tobacco which includes supporting the leaf portions only of hands of tobacco on a conveyor and while the hands are on the conveyor subjecting the free butt portions of the hands to a conditioning treatment, discharging the hands from said first mentioned conveyor to a second conveyor engaging the butt portions of the hands only with the butts extending at an angle to the vertical and while the hands are on the second conveyor subjecting the free leaf portions of the hands to a conditioning treatment through the medium of jets of conditioned air directed at a face of the leaf portions of the hands and continuing the butt treatment for a distance in the travel of the second conveyor.

4. The method of conditioning tobacco which includes securing the butts of hands of tobacco to a moving carrier with the butts extending at an angle to the vertical, the leaf portions of the hands being free of the carrier and extending bodily laterally thereof, subjecting the hands on the carrier to a conditioning treatment, then when the hands are in a limp state directing a jet of air laterally against a face of the leaf portions to displace them laterally from their normal position with respect to the carrier, receiving the leaf portions so displaced on a second carrier and releasing the butts from the first carrier.

5. The method of moistening tobacco which includes directing a spray of water into the butts of hands of tobacco, securing the butts of hands to a moving carrier with the butts extending at an angle to the vertical, the leaf portions of the hands being free of the carrier and extending laterally thereof, subjecting the butts to jets of conditioned air directed so that substantially the full force of the jets will strike the free ends of the butts in line with the extensions of the butts, then subjecting a face of the leaves to jets of conditioned air so directed that substantially the full force thereof will strike mainly within the median portions of the leaves and finally, when the leaves have become sufficiently moist to droop, subjecting the leaves to jets of conditioned air so directed that a substantial portion of the force thereof will strike the tip portions of the leaves.

6. The method of conditioning tobacco which includes subjecting hands of tobacco extending in a plane with their leaf portions in free extension to a conditioning treatment, turning the hands of tobacco over about an axis parallel to their longitudinal axis while flexing the leaves about their longitudinal axes and subjecting them to a further conditioning treatment with the hands extending in a plane with their leaf portions in free extension.

7. The method of conditioning tobacco which includes subjecting hands of tobacco extending in a plane with their leaf portions in free extension to a conditioning treatment, turning the hands of tobacco over about an axis parallel to their longitudinal axis, then flexing the leaves upwardly and downwardly with respect to said plane and subjecting them to a further conditioning treatment with the hands extending in a plane with their leaf portions in free extension.

8. The method of treating tobacco which comprises supporting the leaf portion only of a hand of tobacco on a conveyor, engaging the butt portion only of a hand of tobacco with a second conveyor with the butt extending at an angle to the vertical, releasing the leaf portion of the hand from the first conveyor, subjecting the hand of tobacco to a conditioning treatment while it is on the second conveyor, engaging the leaf portion only of the hand with a third conveyor and releasing the butt portion of the hand from the second conveyor.

9. The method of treating tobacco which comprises supporting the leaf portion only of a hand of tobacco on a conveyor, engaging the butt portion only of a hand of tobacco with a second conveyor with the butt extending at an angle to the vertical, releasing the leaf portion of the hand from the first conveyor, subjecting the hand of tobacco to a conditioning treatment while it is on the second conveyor, engaging the leaf portion only of the hand with a third conveyor through the medium of a jet of air, and releasing the butt portion of the hand from the second conveyor.

10. The method of conditioning tobacco which includes securing the butts of hands of tobacco to a moving carrier with the butts extending at an angle to the vertical and the leaf portions of the hands being free of the carrier and extending laterally thereof, subjecting the leaf portions of the hands as a unit to positive displacement out of the plane of travel of the butt portions and then subjecting the leaf portions to jets of air directed at the faces of the leaf portions intermittently from above and from below the plane of extension of the butt portions.

11. The method of conditioning tobacco which includes supporting the butts of hands of tobacco on a moving carrier with the butts extending at an angle to the vertical, the leaf portions of the hands being free of the carrier and extending bodily in free extension laterally thereof and subjecting the hands intermittently to jets of conditioned air so directed from a point below the hands that substantially the full force thereof will strike a face of the leaf portions of the hands mainly within the median portion thereof only to effect upward bending of the leaf portions with respect to the butts.

12. The method of conditioning tobacco which includes securing the butts of hands of tobacco

to a moving carrier with the butts extending at an angle to the vertical, the leaf portions of the hands being free of the carrier and extending bodily in free extension laterally thereof, subjecting the butts to jets of conditioned air so directed in line with the extension of the butts that substantially the full force thereof will strike the exposed ends of the butts and then subjecting a face of the leaf portions to a positive fluid force to bend the leaf portions relative to the butt portions.

13. The method of moistening tobacco which includes supporting the butts of hands of tobacco on a moving carrier with the butts extending at an angle to the vertical, the leaf portions of the hands being free of the carrier and extending in free extension laterally thereof, subjecting the butts only to jets of conditioned air so directed that substantially the full force thereof will strike the ends of the butts, then subjecting a face of the leaf portions to jets of conditioned air so directed that substantially the full force thereof will strike mainly within the median portion thereof, and finally, when the leaves have become sufficiently moist to droop, subjecting the leaves to jets of conditioned air so directed that a substantial portion of the force thereof will strike the tip portions of the leaves and cause the leaves to be moved upwardly.

14. The method of conditioning tobacco which includes subjecting hands of tobacco extending in a plane with their leaf portions in free extension to a conditioning treatment, turning the hands of tobacco over about an axis parallel to their longitudinal axis and subjecting them to a further conditioning treatment with the hands extending in a plane with their leaf portions in free extension.

15. The steps in a method of treating tobacco which comprise presenting the butt of a hand of tobacco with the butt extending at an angle to the vertical to the nip of adjacent reaches of a pair of endless conveyor members in opposed relation and confining the conveyor members at a point adjacent the nip to cause one of the conveyor members to be positively and non-resiliently indented into the butt to support the hand by the weight of the indenting member with the leaf portion in free extension and then subjecting the hand of tobacco on the conveyor to a conditioning treatment through the medium of forceful jets of conditioned air.

16. The steps in a method of treating tobacco which comprise presenting the butt of a hand of tobacco with the butt extending at an angle to the vertical to the nip of adjacent reaches of a pair of link type endless conveyor members in opposed relation and confining the conveyor members at a point adjacent the nip to cause one of the conveyor members to be positively and non-resiliently indented into the butt to support the hand by the weight of the indenting member with the leaf portion in free extension, directing a stream of conditioned air at the butts and directing a stream of conditioned air at a face of the leaf portions of the hands to bend the leaf portions of the hands with relation to the butt portions.

17. The method of conditioning tobacco which includes securing the butts of hands of tobacco with the butts extending at an angle to the vertical and the leaf portions of the hands being in free extension and positively bending the leaf portions of the hands as a unit upwardly and downwardly with respect to the plane of extension of the butt portions.

18. The method of conditioning tobacco which includes maintaining the butt of a hand of tobacco substantially horizontal and at the same time maintaining the leaf portion of the hand in free extension from the butt and exerting positive fluid force on a face of the leaf portion to bend the leaf portion of the hand upwardly with respect to the butt.

19. The method of conditioning tobacco which includes maintaining the butt of a hand of tobacco substantially horizontal and at the same time maintaining the leaf portion of the hand in free extension from the butt and exerting positive fluid force on a face of the leaf portion to bend the leaf portion of the hand downwardly with respect to the butt.

20. The method of conditioning tobacco which includes maintaining the butt of a hand of tobacco substantially horizontal and at the same time maintaining the leaf portion of the hand in free extension from the butt and exerting positive fluid force on the faces of the leaf portion to bend the leaf portion of the hand upwardly and downwardly with respect to the butt.

21. The method of conditioning tobacco which includes moving hands of tobacco in a path while continuously maintaining the butts thereof in extension at an angle to the vertical and the leaf portions in extended free position and while so moving the hands directing jets of conditioned air from below toward the leaf portions so that substantially the full force of the jets will strike the faces of the leaf portions mainly within the median portion thereof only whereby the effective force of such jets will be directed essentially only against the median portion of the leaf portions to move the leaf portions relative to the butt portions of the hands.

22. The steps in a method of treating tobacco which comprise presenting the butt of a hand of tobacco with the butt extending at an angle to the vertical to the nip of a reach of a pair of endless conveyor members in superimposed relation, confining the conveyor members at a point adjacent the nip to cause one of the conveyor members to be positively and non-resiliently indented into the butt and thereafter maintaining the butt in engagement with the conveyor members with the leaf portion in free extension throughout the reach by the weight of the upper conveyor member.

23. The steps in a method of treating tobacco which comprise presenting the butt of a hand of tobacco with the butt extending at an angle to the vertical to the nip of a reach of a pair of link type endless conveyor members in opposed relation and confining the conveyor members at a point adjacent the nip to cause one of the conveyor members to be positively and non-resiliently indented into the butt and thereafter maintaining the butt in engagement with the conveyor members with the leaf portion in free extension throughout the reach by the weight of the upper conveyor member.

RUSH D. TOUTON.