May 8, 1934. J. F. PERKINSON 1,957,727

TOBACCO HANDLING MACHINE

Filed Dec. 9, 1933 2 Sheets-Sheet 1

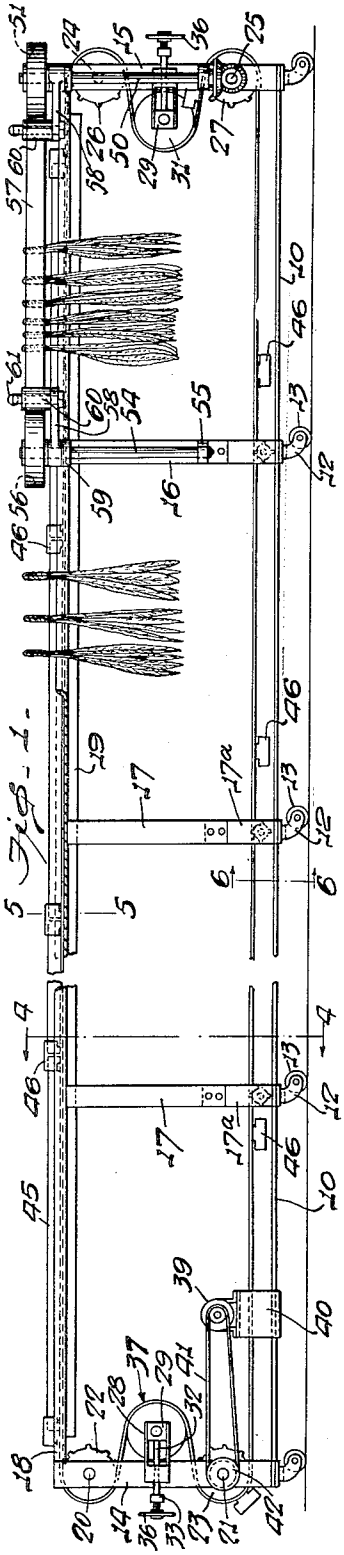


Fig. 1.

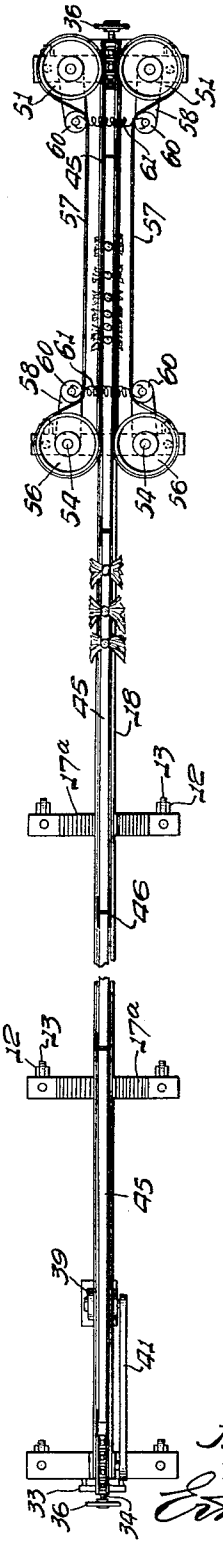


Fig. 2.

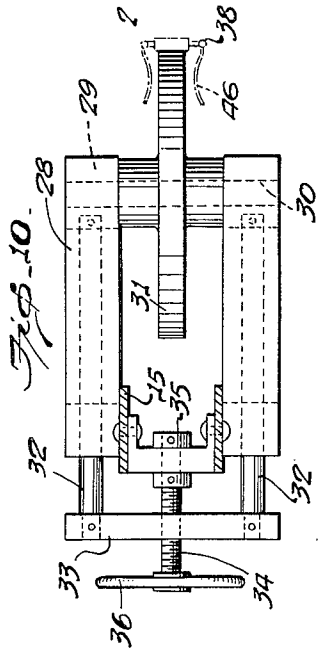


Fig. 10.

INVENTOR
J. F. Perkinson
BY
Ernest J. Mechlin
ATTORNEY

May 8, 1934. J. F. PERKINSON 1,957,727

TOBACCO HANDLING MACHINE

Filed Dec. 9, 1933 2 Sheets-Sheet 2

Fig. 3.

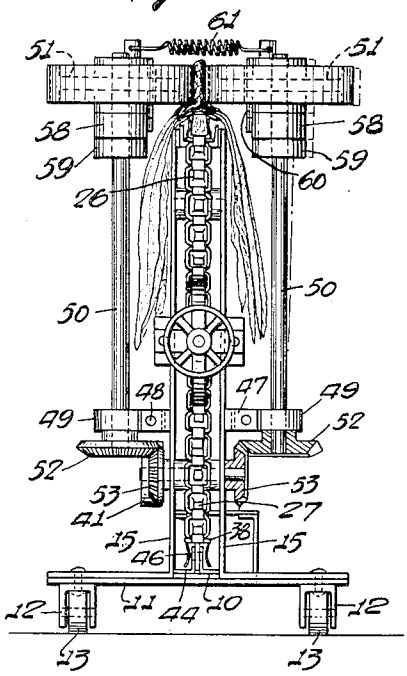



Fig. 4.

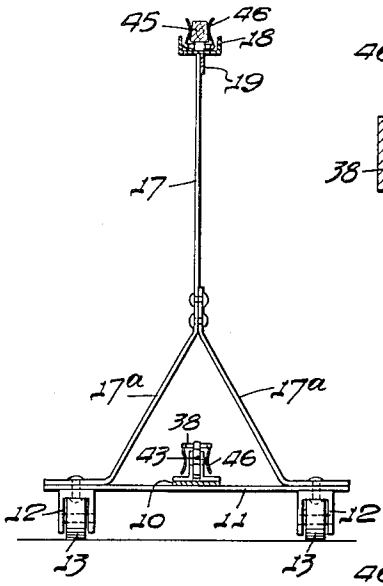



Fig. 5.

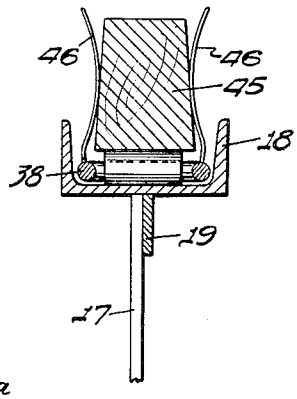



Fig. 6.

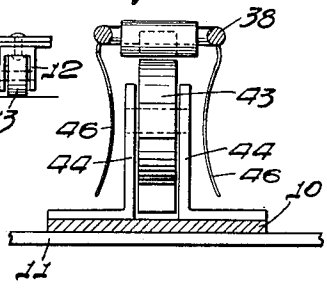



Fig. 7.

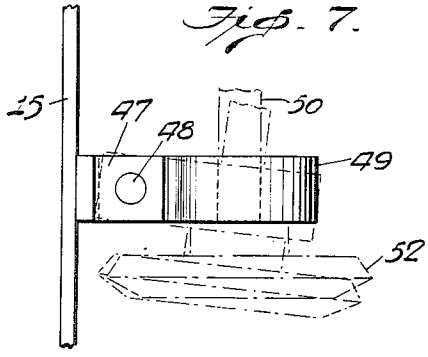



Fig. 8.

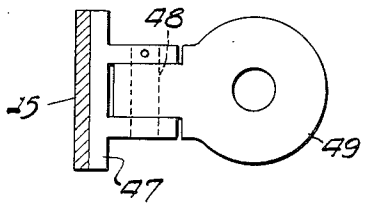
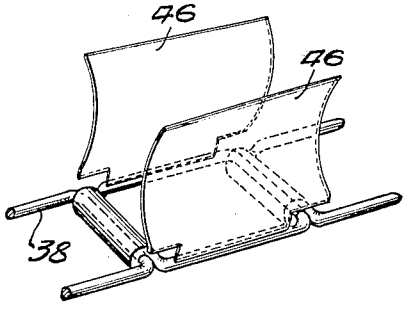



Fig. 9.




INVENTOR
J. F. Perkinson
BY
Ernest J. Mechlin
ATTORNEY

Patented May 8, 1934 1,957,727

# UNITED STATES PATENT OFFICE

1,957,727

## TOBACCO HANDLING MACHINE

James Frank Perkinson, Danville, Va.

Application December 9, 1933, Serial No. 701,699

7 Claims. (Cl. 131—21)

This invention relates to the treatment of tobacco preparatory to its manufacture into tobacco products, and is particularly concerned with a method and apparatus for blending and conditioning the tobacco into redrying plants.

The tobacco to be treated at the redrying plant after its purchase from the growers is usually in the form of bundles of raw, leaf tobacco, and in the redrying plant it is blended and dried. In most such redrying plants, the tobacco is brought in from the warehouse in separate baskets each containing tobacco taken from a separate lot. These baskets are then placed alongside a moving belt conveyor and a man is stationed at each basket. As the belt passes each man, he lays a certain portion of his tobacco on the belt, the result at the far end of the belt being a blended batch made up of bundles taken from all the several lots. Upon reaching this end of the belt, the pile of separate loose bundles is taken off into other baskets which are carried some distance to a hanging room where each bundle or "hand" of tobacco is taken out separately by hand and a number of these "hands" hung on sticks supported on hanging racks. After enough such loaded sticks have accumulated, they are taken down from the rack by hand, piled on push trucks and these trucks are then rolled some distance to the redrying apparatus to be fed therein by hand.

This method of handling the tobacco in the redrying process thus involves a large number of distinct, separate manipulations, necessitating the employment of a large number of laborers and extensive floor space.

It is the chief object of the present invention to provide an apparatus for handling leaf tobacco in redrying or conditioning plants whereby the number of steps required to get the tobacco ready for the redrying apparatus will be substantially reduced, with a consequent reduction in the number of attendants and the amount of floor space, as well as the time required for blending the tobacco and delivering it to the drying apparatus.

A very important object of the invention is to provide a conveyor for handling elongated sticks upon which the "hands" of tobacco are straddled and which is provided with means for positively gripping and holding the butt ends of the bunches or "hands" so that an attendant may grasp and strip off defective leaves or those which are for any reason undesired for further treatment or which may be intended to be put in a lower grade of stock, this gripping means being of such construction as to accommodate, automatically, bundles or "hands" of different thickness without detracting from the gripping effect and without danger of breaking any of the parts of the mechanism.

Another object of the invention is to provide a conveyor device for holding and carrying along the tobacco sticks, the conveyor itself being formed as a chain having novel clamping means thereon for resiliently clamping and holding the adjacent ends of successive sticks so that they will be carried on properly and not be permitted to become dislodged until the discharge end of the machine is reached.

Yet another object is to provide an apparatus of this character having a novel means for effecting tightening of the conveyor itself to insure a proper tension thereon at all times, for instance to take up wear or to compensate for any other condition which may exist so that there can be no sagging and resultant impairment of the operation.

An additional object is to provide a mechanism of this character for the above or an analogous purpose which will be comparatively simple and inexpensive to make, assemble and set up, easy to operate, positive in action, efficient and durable in service, and a general improvement in the art.

To the attainment of the foregoing and other objects and advantages, the invention preferably consists in the details of construction and the arrangement and combination of parts to be hereinafter more fully described and claimed, and illustrated in the accompanying drawings in which:

Figure 1 is a side elevation of the complete device,

Figure 2 is a top plan view thereof,

Figure 3 is an elevation of one end,

Figure 4 is a vertical cross section taken on the line 4—4 of Figure 1,

Figure 5 is a detail cross section taken along substantially the line 5—5 of Figure 1,

Figure 6 is a detail sectional view taken on substantially the line 6—6 of Figure 1 with parts omitted,

Figure 7 is a fragmentary view illustrating, in elevation, one of the lower bearings for supporting each of the vertical shafts of the gripping mechanism, different positions of the shaft and gear thereon being shown by dot and dash lines,

Figure 8 is a plan view of what is shown in Figure 7,

Figure 9 is a detail perspective view of a pair of cooperating stick clamps,

Figure 10 is a detail sectional view showing in plan one of the conveyor chain tighteners.

At the very outset while the introductory portion of the specification sets forth a method of blending tobacco, it should be understood that my device is not limited to use for this purpose as it may be used simply as a conveyor for the tobacco sticks and means for permitting adequate inspection and removal of defective leaves. As a matter of fact the device is capable of employment wherever it might be of advantage, there being no restriction in this respect.

Referring more particularly to the drawings, I have shown the device or apparatus as comprising an elongated frame which may consist of any necessary or desirable number of parts secured together in any preferred manner as such is a mere mechanical detail. However, the frame is represented as including a horizontal bottom member 10 secured upon transverse elements 11 preferably equipped with depending brackets 12 within which are journaled rollers 13 for the purpose of enabling the device to be moved readily from place to place where its use is desired. The frame also includes a plurality of uprights 14, 15, 16 and 17, the first two mentioned being at the ends, the uprights 16 being adjacent the uprights 15, and the uprights 17 being at spaced points throughout the length. While these uprights may be of any desired or preferred form, those indicated at 14, 15 and 16 are each represented as being arranged in pairs and secured to certain transverse elements 11, while the uprights 17 are disclosed as single with divergent arms 17a at their lower ends likewise secured to other transverse elements 11. Carried by and connecting the upper ends of all of the uprights is a longitudinally extending horizontally disposed channel bar 18 to the sides of which are secured the pairs of uprights 14 and 15 and which has a depending flange or rib 19 to which the upper ends of the intermediate uprights 16 are secured. While these details of construction are mentioned, it should be understood that this is merely for purposes of illustration as almost innumerable variations in these structural details might be resorted to.

Journaled through the uprights 14 are upper and lower shafts 20 and 21 carrying sprockets 22 and 23, respectively. Journaled in the uprights 15 are shafts 24 and 25 carrying sprockets 26 and 27, respectively, and which are preferably exactly similar to the sprockets 22 and 23.

Mounted at each end of the frame and secured upon the uprights 14 and 15, respectively, is a frame 28 within which are slidable blocks 29 constituting bearings for a shaft 30 carrying a disk 31. Slidable through the frame 28 are rods 32 secured at their inner ends to the blocks 29 and having their outer ends connected by a cross member 33 through which is threaded a screw 34 swiveled at 35 onto the uprights and having its other end equipped with a hand wheel 36. The disks 31 of the two devices comprising the parts 28 to 36 are located inwardly of but between the sprockets 22 and 23 at one end and the sprockets 26 and 27 at the other end of the machine and the sprockets and disks 31 constitute guide and tightening means for a conveyor chain indicated as a whole diagrammatically in Figure 1 by the numeral 37. This chain comprises a plurality of pivotally connected links 38 shown in detail in Figure 9. For driving this conveyor chain any suitable power device may be provided such for instance as a small electric motor 39 mounted at some convenient location on the lower part of the frame as shown at 40 and driving a belt 41 engaged about a pulley 42 which may for instance be applied to the shaft 21. Obviously any other equivalent power device may be provided for driving purposes. It is clear that the purpose of the screw 34 with its hand wheel 36 is to enable the disks 31, about which the chain is trained, to be moved in order to take up any slack in the chain and keep it sufficiently taut for efficient operation of the mechanism.

The upper stretch of the conveyor chain travels along the channel bar 18 as will be apparent from an inspection of the drawings. In order to eliminate sag in the bottom stretch, I provide supporting means therefor comprising small sprockets 43 journaled in brackets 44 mounted on the bottom bar 10, these sprockets meshing with the links of the chain as will of course be apparent.

The purpose of the chain is of course to convey through the machine the elongated sticks 45 which are commonly used for supporting bunches or "hands" of tobacco, this being the common method of handling the tobacco at least in certain sections of the country, the bunches or "hands" being simply straddled upon the sticks. The idea is of course to have the conveyor chain carry these sticks through the machine and along the channel bar 18 and in order to provide an adequate drive connection between the chain and these sticks which are arranged in series, I provide certain links of the chain with resilient clamping plates 46 which are secured or formed on the sides of certain spaced links and which are preferably of curved shape with outwardly flaring upper or outer edges as clearly shown in Figure 9 so that these plates will be capable of frictionally gripping the sticks engaged between them. Moreover these plates are intended to be of appreciable length so as to be capable of gripping the abutting or adjacent ends of successive sticks as indicated in Figures 1 and 2. Clearly, when the chain is driven, the sticks engaged between the plates 46 will be carried along through the machine.

If the device is to be used simply as means for conveying from one part of a factory, storehouse or the like the sticks each carrying a plurality of bunches or "hands" of tobacco, the above described mechanism is sufficient. However, it is an important feature of my invention to provide means which will enable one or more inspectors or attendants to scrutinize the tobacco as it passes along and to tear off damaged or otherwise undesirable leaves in the "hands". To accomplish this highly desirable result, I provide at one end of the machine an automatic mechanism for gripping the butt ends of the bunches or "hands" and for positively carrying them along, this gripping means acting to hold the tobacco firmly in place while the undesired leaves are broken or snatched off.

The above mentioned gripping mechanism is here represented as comprising brackets 47 secured to the opposite sides of the uprights 15 and having pivoted thereon at 48 swingably mounted bearings 49 through which are journaled upright shafts 50 provided at their upper ends with pulleys 51 and at their lower ends with bevel gears 52 meshing with other bevel gears 53 secured on the shaft 25 so that as the conveyor chain is driven the shafts 50 and pulleys 51 will likewise be driven at the same speed.

Shafts 54 are similarly mounted on rockable bearings 55 carried by the pair of uprights 16 and are equipped at their upper ends with pulleys 56. Trained about the pulleys 51 and 56 at each side of the machine is a belt 57, and the inner or confronting stretches of these two belts are located at opposite sides of and are adapted to bear closely, yet yieldably, against the butts of the bunches or "hands" of tobacco. For bringing about this gripping yet yielding action, I provide arms 58 rotatably mounted upon the upper ends of the shafts 50 and 54 and restrained against downward displacement by collars 59. These arms have journaled thereon upstanding rollers 60 which are located outwardly of the belts 57 and which bear against the outer stretches thereof. The spindles of these rollers 60 are connected by tension springs 61 so that they will bear yieldably against the outer stretches of the belts and not only maintain the belts taut but also urge them yieldably into clamping relation to the butts of the hands.

In the operation of the machine, it will be seen that when the motor 39, or other power device, is in operation the belt 41 driving the pulley 42 will apply power to the shaft 21 which carries the sprocket 23. As the chain 37 is engaged about this sprocket it is clear that the chain will be driven, all of the shafts 20, 24 and 25 being correspondingly driven. Moreover, as the vertical shafts 50 at the end of the machine are geared to the shaft 25 it is clear that the pulleys 51 will be rotated and as they are engaged by the belts 57 the belts 57 will be caused to travel along the sides of the chain and at the same speed. If the machine is to be used for blending purposes, empty sticks 45 are fed into the left end and "hands" or bunches of tobacco from different lots are straddled onto the sticks as clearly shown in Figure 3. If the device is to be used simply for inspecting purposes the filled sticks may be placed on the chain and carried through the machine. In either event it will of course be apparent that the ends of successive sticks are gripped between the clamping plates 46 so that the sticks will be carried along with the chain. It will also be noted that the chain rides along the channel bar 18 and is consequently restrained against any downward or lateral displacement. The sides of the "hands" straddle not only the sticks and chain but also the channel bar as indicated in Figure 3. Regardless of whether the sticks be fed into the machine empty and then loaded or whether they be initially filled and then placed upon the chain, it is apparent that when the bunches or "hands" reach the pulleys 56 they will be gripped by the belts 57 and carried along thereby and will at the same time be gripped so that an inspector or attendant may view the tobacco as it goes through and tear off any defective, undesirable or low grade leaves. After passing between the pulleys 51, the sticks are of course discharged from the machine and may be readily lifted away or permitted to pile up, this detail being immaterial. If the gearing 52 and 53 be such as to drive the belts 57 faster than the chain 37 it is clear that the belts will move the bunches of tobacco faster than the sticks and will separate them as indicated in Figure 1 so that each bunch may be viewed more conveniently. However, this is a mere matter of preference and ratio of the gears.

The chain tighteners comprising the parts 28 to 36 inclusive have been described in detail though it is repeated that they are provided for the purpose of keeping the conveyor chain taut. Attention is invited to the fact that the disks 31 are narrow so as to be easily straddled by the clamping plates 46 as they pass around. The feature of supporting the lower stretch of the chain by means of the sprockets 43 has already been discussed, and in fact it is believed that all the details of construction and operation have been brought out.

From the foregoing description and a study of the drawings it will be apparent that I have thus provided a very simply constructed, easily assembled and likewise portable machine by means of which tobacco may be handled for various purposes, the device serving simply as a conveyor, if such is desired, likewise being of extreme advantage for blending purposes and being also highly advantageous to enable inspection to be made of the tobacco with the idea of removing inferior leaves. As a matter of fact it is believed from the above that the construction, operation and advantages will be readily apparent to one skilled in the art without further explanation.

While I have shown and described the preferred embodiment of the invention, it should be understood that the disclosure is merely an exemplification of the principles involved as the right is reserved to make all such changes in the details of construction as will widen the field of utility and increase the adaptability of the device provided such changes constitute no departure from the spirit of the invention or the scope of the claims hereunto appended.

Having thus described the invention, I claim:

1. An apparatus for preparing tobacco comprising a frame, a narrow conveyor-supporting member extending longitudinally of said frame, conveyor-supporting wheels at the ends of the frame, a narrow continuous flexible conveyor supported on said wheels and extending along the upper face of said supporting member, and spaced parallel spring clamping members carried by said conveyor and located at spaced intervals throughout the length thereof for gripping elongated tobacco-hanging sticks.

2. An apparatus for preparing tobacco comprising a frame including a narrow conveyor-supporting member at the top thereof and extending longitudinally, conveyor-supporting wheels at the ends of said frame, a narrow continuous flexible conveyor supported on said wheels and extending along the upper face of said member, clamping members carried by the conveyor and adapted to hold tobacco sticks, and means located above and travelling substantially with said conveyor for gripping bunches of tobacco suspended from said sticks.

3. An apparatus for preparing tobacco comprising a frame including a narrow conveyor-supporting member at the top thereof and extending longitudinally, conveyor-supporting wheels at the ends of said frame, a narrow continuous flexible conveyor supported on said wheels and extending along the upper face of said member, clamping members carried by the conveyor and adapted to hold tobacco sticks, means located above and travelling substantially with said conveyor for gripping bunches of tobacco suspended from said sticks, power means for driving one of said wheels, and means driven from another of said wheels for driving said gripping means.

4. A machine for handling tobacco comprising

a frame including a narrow conveyor-supporting member extending longitudinally of the upper portion thereof, conveyor-supporting wheels at the ends of said frame, a narrow continuous flexible conveyor supported on said wheels and extending along the upper face of said member, tobacco stick clamping members on said conveyor arranged to clamp sticks upon said conveyor, and a plurality of wheels journaled at the lower portion of the frame and arranged to support the lower stretch of the conveyor.

5. A machine for handling tobacco comprising a frame including a narrow conveyor-supporting member extending longitudinally of the upper portion thereof, conveyor-supporting wheels at the ends of said frame, a narrow continuous flexible conveyor supported on said wheels and extending along the upper face of said member, tobacco stick clamping members on said conveyor arranged to clamp sticks upon said conveyor, a plurality of wheels journaled at the lower portion of the frame and arranged to support the lower stretch of the conveyor, and means located at the ends of the frame inwardly of and between said wheels and in adjustable engagement with the conveyor for tightening the same.

6. A tobacco handling machine comprising a frame including a narrow conveyor-supporting longitudinally extending upper member, wheels journaled at the ends of the frame, a narrow continuous flexible conveyor supported on said wheels and having an upper stretch extending along the upper face of said member, clamping members carried by the conveyor at spaced intervals and arranged to clamp sticks upon the conveyor, and movable belts arranged in parallelism and located above the conveyor at opposite sides thereof adapted to grip and carry along bunches of tobacco suspended from the sticks.

7. A tobacco handling machine comprising a frame including a narrow conveyor-supporting longitudinally extending upper member, wheels journaled at the ends of the frame, a narrow continuous flexible conveyor supported on said wheels and having an upper stretch extending along the upper face of said member, clamping members carried by the conveyor at spaced intervals and arranged to clamp sticks upon the conveyor, vertical rockable shafts journaled at the sides of the frame, pulleys on the upper ends of said shafts, belts trained about the pulleys at opposite sides of the frame and located above and at opposite sides of the conveyor, the inner stretches of said belts being adapted to grip bunches of tobacco suspended from said sticks, and resilient means engaging the outer stretches of said belts for maintaining them taut and for urging them toward the conveyor.

JAMES FRANK PERKINSON.