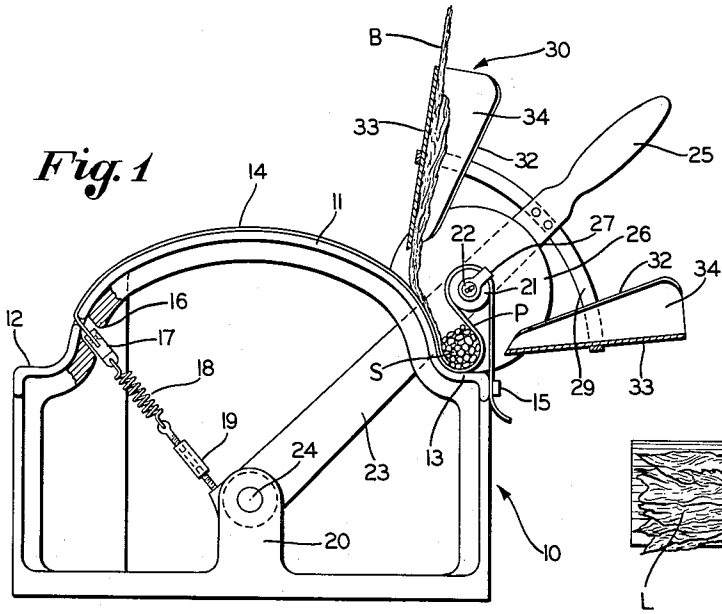
Dec. 13, 1960 S. BENNING ET AL 2,964,043

APPARATUS FOR FORMING BUNDLES OF TOBACCO LEAVES

Original Filed July 16, 1953

Fig. 1



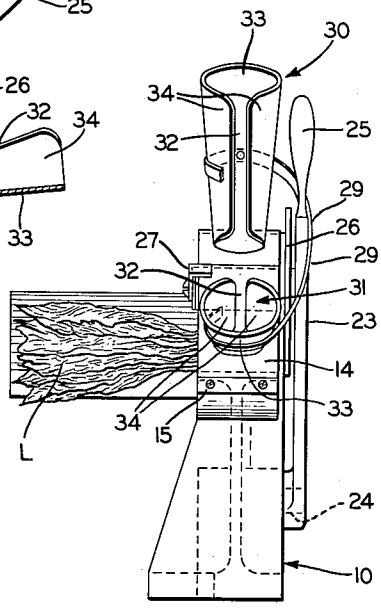


Fig. 2

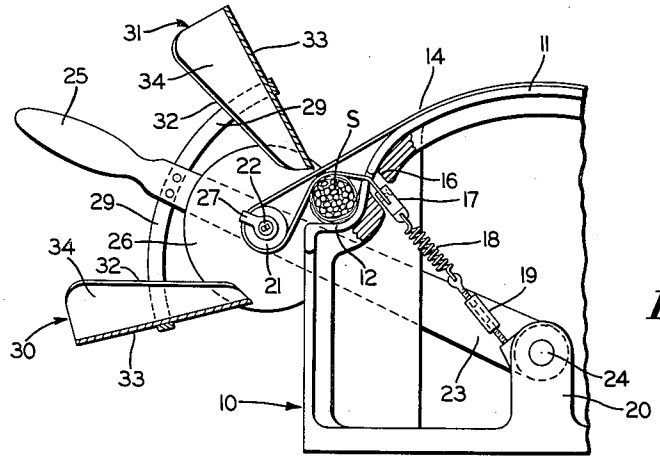


Fig. 3

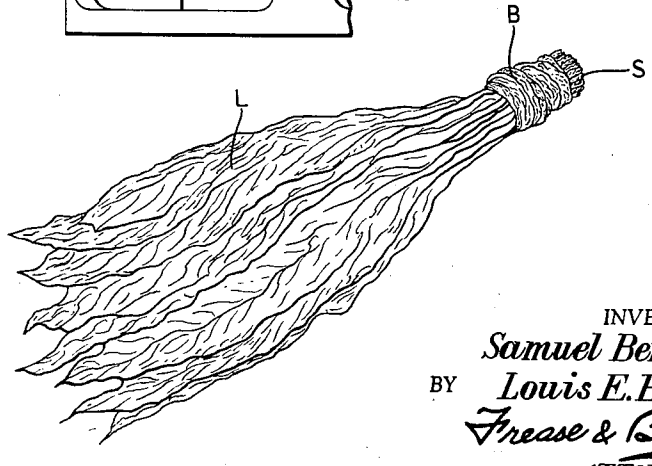


Fig. 4

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United States Patent Office 2,964,043 Patented Dec. 13, 1960

2,964,043

APPARATUS FOR FORMING BUNDLES OF TOBACCO LEAVES

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Original application July 16, 1953, Ser. No. 368,430, now Patent No. 2,809,641, dated Oct. 15, 1957. Divided and this application Aug. 28, 1957, Ser. No. 680,736

7 Claims. (Cl. 131—149)

The invention relates to apparatus for forming bundles or "hands," as they are commonly known in the industry, of tobacco leaves by placing the desired number of leaves together and winding a leaf or other binding strip around the stems of the bundles, and present application is a division of our copending application, Serial No. 368,430, filed July 16, 1953, now Patent No. 2,809,641, issued October 15, 1957.

Tobacco leaves are customarily bound into bundles or "hands" by the tobacco planter and grower, and are ordinarily sold in this form. Heretofore, this binding of the tobacco leaves into bundles or "hands" has been performed by hand at a considerable cost in labor and time.

In carrying out this operation manually, the desired number of tobacco leaves to form a bundle are gathered together in a bunch, with the stems located parallel and coextensive with each other, and a binding leaf is then wound tightly around the stems of the bunch, producing a bundle or "hand" of tobacco leaves.

This is not only a tedious and time-consuming job, but becomes quite strenuous and tiring, as it involves considerable strain upon the hands and arms of the workman in holding the collected stems of the bunch of leaves tightly together with one hand and tightly winding the binding leaf around the stems with the other hand.

The present invention has for an object the provision of mechanical means for quickly, easily and efficiently bundling tobacco leaves into "hands," thereby not only greatly reducing the labor cost but also relieving the workers from physical discomfort and strain.

Another object is to provide for the bundling of tobacco leaves by rolling the collected stems of a bunch of tobacco leaves along a surface and simultaneously winding a binding leaf around the stems.

A further object is to provide apparatus for bundling tobacco leaves, comprising an elongated bed having a transverse recess at each end, a flexible apron connected at opposite ends to the bed, and a roller adapted to rotate on an axis movable longitudinally over the bed, the flexible belt having a certain amount of slack which is taken up by the roller and leaves.

A still further object of the invention is to provide such a device in which the bed is of arcuate form and the roller is mounted to travel in an arcuate path over the bed.

Another object is to provide a device of the character referred to having a stop disc upon one end of the roller for contacting the ends of the stems of the bunch of tobacco leaves to maintain them in substantially coextensive relation, throughout the bundling or binding operation.

A further object is to provide an elastic, or elastically mounted flexible apron in a device of the character referred to.

The above and other objects, apparent from the drawings and following description, may be attained, the above described difficulties overcome and the advantages and

results obtained, by the apparatus, construction, arrangement and combinations, subcombinations and parts which comprise the present invention, a preferred embodiment of which, illustrative of the best mode in which applicants have contemplated applying the principle, being set forth in detail in the following description and illustrated in the accompanying drawings, in which:

Fig. 1 is a front elevation of an apparatus embodying the invention for binding tobacco leaves into bundles or hands, showing the start of the operation;

Fig. 2 is an end view of the machine shown in Fig. 1;

Fig. 3 is a fragmentary front elevation of the apparatus showing the end of a bundling or binding operation; and

Fig. 4 is a larger scale perspective view of a bound bundle or hand of tobacco leaves as formed upon the machine.

Referring now more particularly to the embodiment of the invention illustrated, an apparatus is shown comprising a frame indicated generally at 10 provided with an arcuate bed 11 terminating at opposite ends in the recesses 12 and 13.

A flexible apron 14, which is of greater length than the bed 11, is shown fixed to the frame at one end, as indicated at 15, and the other end may extend through a slot 16 in the bed. This other end of the apron has a connection 17 secured thereto for attachment to one end of a coil spring 18, the other end of the spring being connected to one end of a turnbuckle 19 which is secured to the central lug 20 of the frame or base. The apron 14 may thus be adjusted in length with any desired amount of tension thereon. The apron may be thus elastically mounted upon the bed, or may be formed of elastic material.

A roller 21 is journalled upon a shaft 22 carried by the lever 23. This lever is fulcrumed as at 24 upon the central lug 20 of the frame, and is provided at its outer end with a hand grip portion 25 by means of which the lever may be manually operated to move the roller 21 in an arcuate path over the bed 11, from one end thereof to the other, that is from the position shown in Fig. 1 to that shown in Fig. 3, and vice versa.

For the purpose of maintaining the ends of the leaf stems coextensive during the binding and bundling operation, a stop in the form of a disc 26 may be mounted upon one end portion of the shaft 22 of the roller in such a manner as to move therewith adjacent to that side of the bed 11.

A clip 27 may be provided upon one end of the shaft 22 to hold the apron in line on the roller and to assist in holding the apron down upon the roller in better position to receive a bundle of leaves.

As disclosed in our copending application, Serial No. 368,430, which issued as Patent No. 2,809,641, of which this application is a division, guide troughs may be provided for the purpose of guiding a binder leaf around the stems of a bunch of tobacco leaves. These troughs are preferably of funnel shape, as shown in the drawings, and are indicated generally at 30 and 31.

As best shown in Figs. 1 and 3 these funnel shape guide troughs converge toward their lower ends and may have the longitudinal openings 32 along their opposed sides. As shown in the drawings, the converging lower ends of the guide troughs 30 and 31 are disposed slightly below and on opposite sides of the roller 21, so as to guide the binder leaf onto the apron, substantially tangential to and around the bunch of stems.

Each of these funnel-shape troughs 30 and 31 has an arcuate back or bottom wall 33, the opposite side edges of which converge downwardly, and the opposed flanges 34 which extend toward each other to the longitudinal opening 32 forming guide flanges by means of which a binder

leaf passing downwardly into the smaller end of either funnel, will be folded into a binding strip and directed tangentially to the stems of a bunch of tobacco leaves placed upon the apron.

The guide troughs 30 and 31 are carried upon the bracket arms 29 which are secured to the lever 23 above the stop disc 26, and project in opposite directions therefrom.

In operating the machine to form bundles or "hands" of tobacco leaves, the required number of leaves L are placed together in a bunch, with the stems S thereof held together in bundles, as shown in the drawings.

This bundle of stems is placed in the loop or pocket P of the apron 14, located in either recess 12 or 13 at either end of the bed 11, as shown in Fig. 1, with the ends of the stems butted against the stop disc 26.

As shown in Fig. 1, the roller 21 is located at the right hand end of the bed 11, with the bundle of leaf stems S inserted into the pocket P of the apron, between the roller 21 and the recess 13 of the bed.

A binder leaf is then selected and fed, tip end forward, into the upper open end of the trough or funnel on the side of the roller 21 adjacent to the bed 11. As shown in Fig. 1, the roller is located at the right hand end of the bed with the bundle of leaf stems S inserted into the pocket of the apron between the roller and the recess 13 of the bed.

In that position of the bed the binder leaf indicated at B is inserted into the upper open end of the trough or funnel 30 at the left side of the roller, as viewed in Fig. 1. The lever 23 is then operated to move the roller 21 to the left, as viewed in Fig. 1, toward the opposite end of the bed.

During this operation the binder leaf B is folded as it is passed down through the funnel or trough from the tip end thereof, being advanced toward the apron, substantially tangential to the bundle of stems S so that as the roller 21 advances toward the other end of the bed 11, this binding leaf may be wrapped around the stems S.

After the bundle or hand of tobacco leaves is ejected from the machine, the stem end of the binder leaf B may be tucked into the space between the stem or leaves in conventional manner, forming a bundle or hand of tobacco leaves as shown in Fig. 4.

The operation may be repeated by placing another bunch of leaves in the machine with the stems thereof located in the pocket of the apron formed between the roller and the recess 12, and the lever 23 operated in the opposite direction, moving the roller to the right hand end of the bed. At the same time a binder leaf is inserted in the right hand guide trough or funnel 31, and a bundle is formed and ejected from the machine at the right hand end thereof.

It will be seen that throughout the operation the stop disc 26 will maintain the ends of the stems of the bunch of leaves substantially coextensive. It will also be obvious that the binding or bundling of tobacco leaves into hands or bundles may be very quickly and easily performed, the only manual steps required being the insertion of a binder leaf into the trough at the beginning of each operation and the manual movement of the lever from one end of the bed to the other, and the removal of the bundle or hand from the machine and tucking under of the end of the binder leaf stem at the completion of each operation.

In the foregoing description, certain terms have been used for brevity, clearness and understanding, but no unnecessary limitations are to be implied therefrom beyond the requirements of the prior art, because such words are used for descriptive purposes therein and are intended to be broadly construed.

Moreover, the embodiments of the improved construction illustrated and described herein are by way of example, and the scope of the present invention is not limited to the exact details of construction.

Having now described the invention or discovery, the construction, the operation, and use of preferred embodiments thereof, and the advantageous new and useful results obtained thereby; the new and useful constructions, and reasonable mechanical equivalents thereof obvious to those skilled in the art, are set forth in the appended claims.

We claim:

1. Apparatus for binding tobacco leaves into bundles, comprising a bed having at each end a transversely disposed recess, a flexible apron of greater length than the bed extending longitudinally above the bed, means connecting opposite ends of the apron to opposite ends of the bed, the means connecting one end of the apron to the bed including a resilient member, a roller mounted to rotate above the bed and engaging the underside of the apron, and forming a transverse pocket therein, means for moving the roller longitudinally over the bed for carrying said pocket over the bed by said roller, means mounted upon each side of the roller to move with the roller above the apron for guiding a binding strip between the apron and the stems of a bunch of tobacco leaves when the roller is moved in either direction, and stop means adjacent one side of the bed for contacting the ends of the stems of a bunch of tobacco leaves rolled in said pocket, and maintaining the stems coextensive with each other, the other side of the bed being unobstructed throughout its entire length.

2. Apparatus for binding tobacco leaves into bundles, comprising a bed having at each end a transversely disposed recess, a flexible apron of greater length than the bed extending longitudinally above the bed, means connecting opposite ends of the apron to opposite ends of the bed, the means connecting one end of the apron to the bed including a resilient member, a roller mounted to rotate above the bed and engaging the underside of the apron, and forming a transverse pocket therein, means for moving the roller longitudinally over the bed for carrying said pocket over the bed by said roller, means mounted upon each side of the roller to move with the roller above the apron for guiding a binding strip between the apron and the stems of a bunch of tobacco leaves when the roller is moved in either direction, a stop disc carried at one end of the roller adjacent one side of the bed for contacting the ends of the stems of a bunch of tobacco leaves rolled in said pocket and maintaining the stems coextensive with each other, the other side of the bed being unobstructed throughout its entire length.

3. Apparatus for binding tobacco leaves into bundles, comprising a frame, an arcuate bed upon the frame, said bed having a transversely disposed recess at each end thereof, a flexible apron of greater length than the bed and extending longitudinally above the bed, means connecting one end of the apron to the adjacent end of the bed, there being an opening in the other end of the bed, the other end of the apron being located through said opening, a resilient member connecting said other end of the apron to the frame below said bed, a roller mounted to rotate above the bed and engaging the underside of the apron and forming a transverse pocket therein, means for moving the roller longitudinally over the bed for carrying said pocket over the bed by said roller, a downwardly and rearwardly angled funnel movable with the roller for guiding a binding strip between the apron and the stems of a bunch of tobacco leaves in said pocket, and stop means adjacent one side of the bed for contacting the ends of the stems of a bunch of tobacco leaves rolled in said pocket and maintaining the stems coextensive with each other, the other side of the bed being unobstructed throughout its entire length.

4. Apparatus for binding tobacco leaves into bundles, comprising a frame, a bed upon the frame, said bed having a transversely disposed recess at each end thereof, a flexible apron of greater length than the bed and extending longitudinally above the bed, means connecting

one end of the apron to the adjacent end of the bed, there being an opening in the other end of the bed, the other end of the apron being located through said opening, a resilient member connecting said other end of the apron to the frame below said bed, a lever fulcrumed upon the frame at one side of the bed, a transversely disposed shaft carried by the lever, a roller journalled upon said shaft to rotate above the bed, said roller engaging the underside of the apron and forming a transverse pocket therein, said lever being arranged for moving the roller longitudinally over the bed for carrying said pocket over the bed by the roller, a stop disc carried by the shaft adjacent to the lever for contacting the ends of the stems of a bunch of tobacco leaves rolled in said pocket and maintaining the stems coextensive with each other, a downwardly and rearwardly angled funnel movable with the roller for guiding a binding strip between the apron and the stems of a bunch of tobacco leaves in said pocket, and a clip carried by the other end of the shaft and engaging over the adjacent edge of the apron for holding the apron against the roller and in line therewith, the other side of the bed being unobstructed throughout its entire length.

5. Apparatus for binding tobacco leaves into bundles, comprising a frame, an arcuate bed upon the frame and having transversely disposed recesses at each end thereof, a flexible apron of greater length than the bed and extending longitudinally above the bed, means connecting opposite ends of the apron to opposite ends of the bed, a lever fulcrumed upon the frame concentric with the bed, a roller journalled upon the lever to rotate above the bed and engaging the underside of the apron and forming a transverse pocket therein, said lever being arranged for moving the roller longitudinally over the bed for carrying said pocket over the bed by said roller, a downwardly angled funnel inclined toward the roller and mounted upon the lever for guiding a binding strip between the apron and the stems of a bunch of tobacco leaves in said pocket, and stop means adjacent one side of the bed for contacting the ends of the stems.

6. Apparatus for binding tobacco leaves into bundles, comprising a frame, an arcuate bed upon the frame and having transversely disposed recesses at each end thereof, a flexible apron of greater length than the bed and extending longitudinally above the bed, means connecting opposite ends of the apron to opposite ends of the

bed, a lever fulcrumed upon the frame concentric with the bed, a roller journalled upon the lever to rotate above the bed and engaging the underside of the apron and forming a transverse pocket therein, said lever being arranged for moving the roller longitudinally over the bed for carrying said pocket over the bed by said roller, a pair of downwardly angled funnels mounted upon the lever on opposite sides of the roller and inclined toward the roller for guiding a binding strip between the apron and the stems of a bundle of tobacco leaves in said pocket when the lever is moved in either direction, and stop means adjacent one side of the bed for contacting the ends of the stems.

7. Apparatus for binding tobacco leaves into bundles, comprising a frame, an arcuate bed upon the frame and having transversely disposed recesses at each end thereof, a flexible apron of greater length than the bed and extending longitudinally above the bed, means connecting opposite ends of the apron to opposite ends of the bed, a lever fulcrumed upon the frame concentric with the bed, a roller journalled upon the lever to rotate above the bed and engaging the underside of the apron, and forming a transverse pocket therein, said lever being arranged for moving the roller longitudinally over the bed for carrying said pocket over the bed by said roller, a downwardly angled funnel inclined toward the roller and mounted upon the lever for guiding a binding strip between the apron and the stems of a bunch of tobacco leaves in said pocket, a stop disc between the lever and the adjacent end of the roller for contacting the ends of the stems of a bunch of tobacco leaves rolled in said pocket, and a clip adjacent the other end of the roller and engaging over the adjacent edge of the apron for holding the apron against the roller and in line therewith.

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