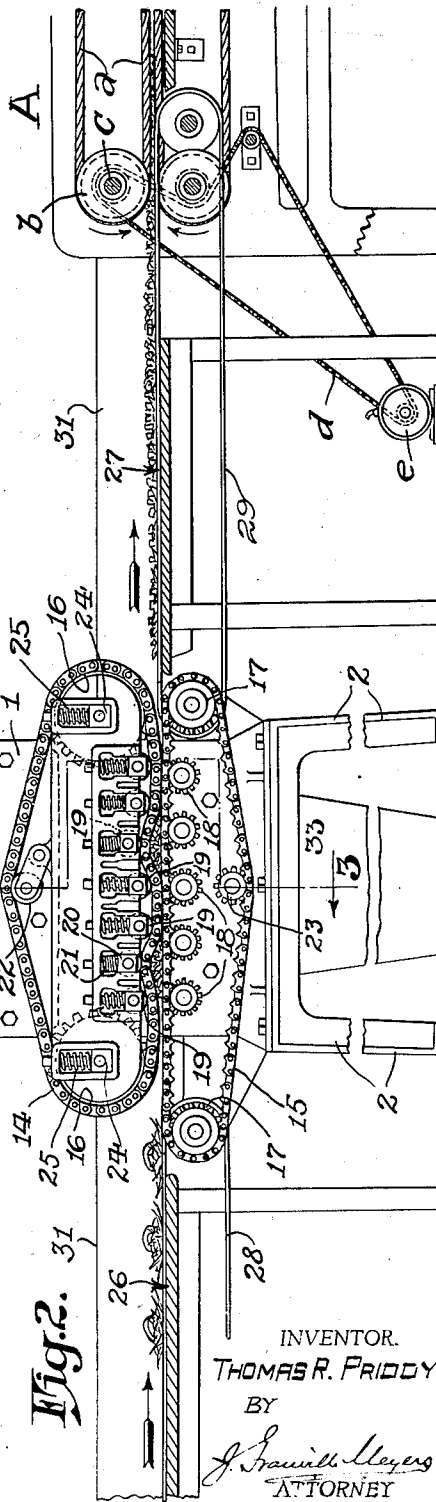
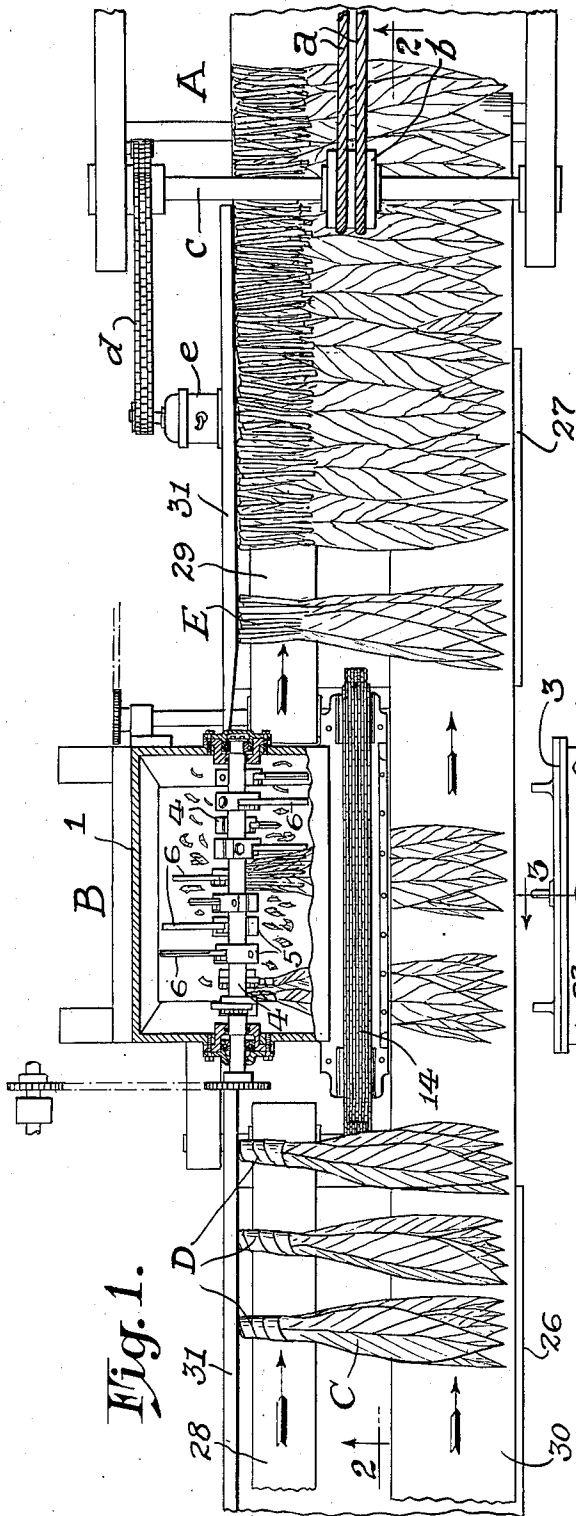


Sept. 22, 1936.

T. R. PRIDDY  
METHOD OF AND MACHINE FOR CUTTING AND REMOVING  
TIE LEAVES FROM HANDS OF LEAVES  
Filed March 5, 1935

2,055,306

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 3.

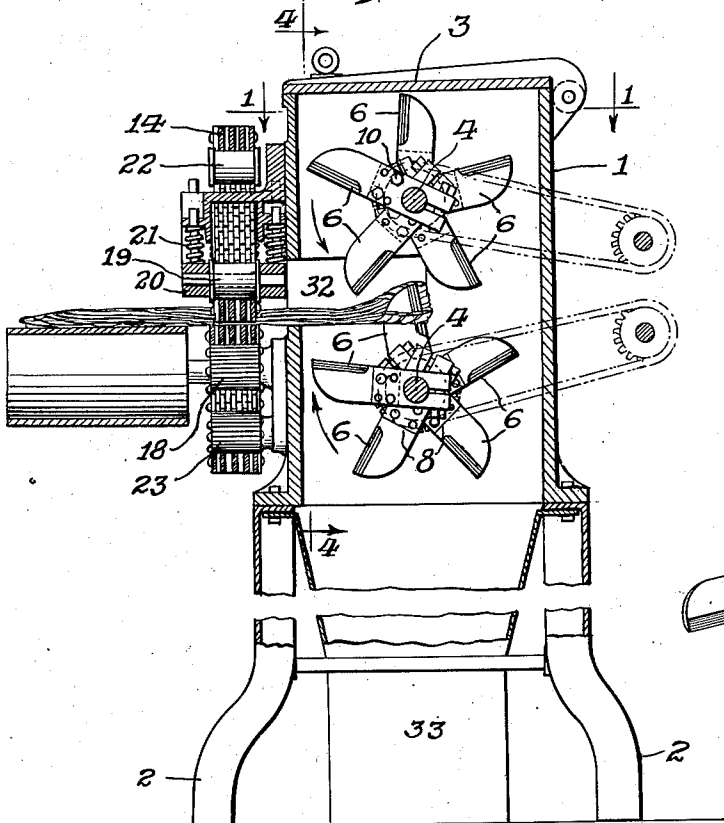


Fig. 4.

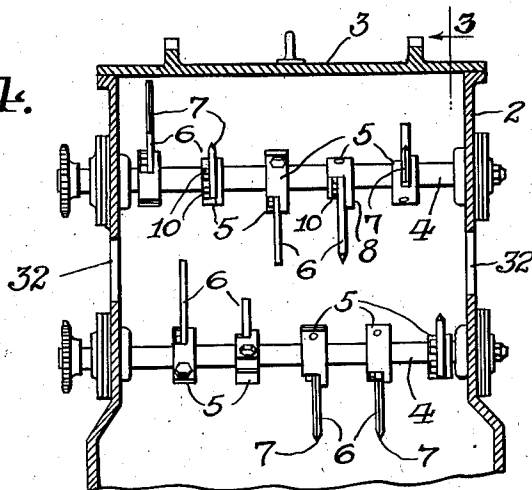


Fig. 7.

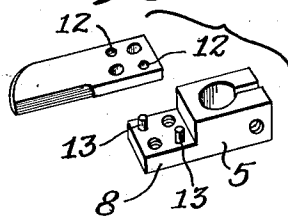


*Fig. 5.*

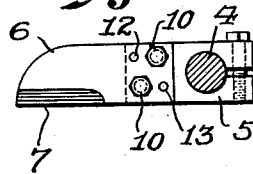
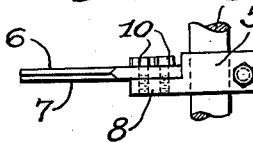


Fig. 6.



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## UNITED STATES PATENT OFFICE

2,055,306

METHOD OF AND MACHINE FOR CUTTING  
AND REMOVING TIE-LEAVES FROM  
HANDS OF LEAVESThomas R. Priddy, Richmond, Va., assignor to  
The American Tobacco Company, New York,  
N. Y., a corporation of New Jersey

Application March 5, 1935, Serial No. 9,506

10 Claims. (Cl. 131-57)

My present invention relates generally to tobacco stemming machines and more particularly to mechanism for feeding "hands" or tied bundles of leaves and for removing the tie-leaf from each "hand" or bundle as it is fed to the stemming machine where the membranous portions of the leaves are stripped from their stems.

As is well known in the art a so-called "hand" of tobacco consists of a number (from 20 to 50) of tobacco leaves tied together at their butt ends with another tobacco leaf which is wound about the butts with the free end of the tie-leaf tucked in between the stems of two adjacent leaves in order to hold the "hand" or bundle intact for future handling, such as curing, ageing and other treatments.

It is also well known in the art that it is the prevailing practice in tobacco manufacturing establishments to first remove the tie leaf from each "hand" of tobacco before the leaves are fed into the stemming machine. This work of removing the "tie" leaves from the "hands" is now performed manually and is therefore slow and tedious thus materially increasing the cost of the stemming operation.

The object of the present invention is to provide for feeding "hands" of tobacco leaves toward and into a tobacco stemming machine and for automatically removing the "tie" leaves from the "hands" as they are thus fed forward in order that the leaves of the "hands" may be spread or separated before they enter the stemming machine.

So far as I am aware I am the first in the art to provide any such "hand" feeding and tie-leaf removing mechanism cooperatively associated with a stemming machine so that the untied "hands" may be fed intact to be automatically untied as they are advanced toward the stemming machine.

Briefly and generally stated the invention comprises an endless feeding means for advancing the "hands" of leaves toward the tobacco stemming machine and a tie-leaf cutting and removing mechanism associated with and located in the path of travel of the "hands" and operating to cut and remove the tie-leaves from the "hands" as they are successively moved forward, the said tie-leaf cutting mechanism being positioned at a point slightly in advance of the inlet end of the stemming machine in order to permit the leaves of the "hands" to be more or less uniformly spread and straightened just before they are fed into the stemming machine.

I have elected to show my invention in associa-

tion with a tobacco stemming machine of the type disclosed in the patent to C. G. Maxwell, No. 1,986,781, dated Jan. 1, 1935, with which machine it is now in successful operation, but I do not wish to be understood as limiting myself to an association with that particular type of machine as the invention is well adapted for use in association with other types of stemming machines as well as for independent use.

In order to enable others skilled in the art to understand, construct and use my said invention, I will now proceed to describe the same in detail, reference being made for that purpose to the accompanying drawings, wherein—

Fig. 1, is a top plan view of the machine shown applied to a known type of stemming machine.

Fig. 2, is a vertical section taken along the line 2-2 of Fig. 1.

Fig. 3, is a vertical section taken on the line 3-3 of Fig. 2, showing the "hand" feeding and tie-leaf cutting mechanism.

Fig. 4, is a vertical section on the line 4-4 of Fig. 3.

Figs. 5 and 6 are detail views of one form of tie-leaf cutting blade and its mounting.

Fig. 7, is an exploded view of the cutting blade and its mounting.

Referring to Figs. 1 and 2 of the drawings, the reference letter A indicates generally the feed end of a tobacco stemming machine, as, for example, the machine of the C. G. Maxwell patent, No. 1,986,781, and the reference letter B indicates generally my improved tie-leaf cutting and feeding mechanism shown in association with such a tobacco stemming machine.

In the stemming machine of the Maxwell patent, the leaves to be stemmed are carried through the machine by means of opposed groups of endless cables *a*, as more clearly described in the said patent, said cables being mounted in part upon pulleys *b*, that are in turn mounted upon shafts *c*, driven in any suitable manner as by means of a sprocket *d*, from a motor *e*.

My improved tie-leaf cutting and removing means consists, in the illustrated form of the invention, of a housing 1, mounted upon legs 2, the housing having a hinged cover 3 at its upper end whereby access may be gained to the interior thereof.

Journalled in bearings carried by the end walls 3 of the housing and extending transversely thereof are two horizontal shafts 4, one of which is located above the other, said shafts being rotated in opposite directions by any suitable means, such as the chain and sprocket arrange-

ment illustrated in Figs. 1 and 3, although it is obvious that any other arrangement of driving means may be employed, the means illustrated being merely by way of illustration.

Upon each of the shafts 4 is mounted a plurality of blade holders 5, each of which carries a removable blade 6, having a cutting edge 7. Each blade-holder 5, as more clearly shown in Figs. 6 and 7, has an offset flange 8 to receive its blade 6, which is removably secured thereto by means of screw bolts 10, the blades being further provided with spaced openings 12 to align with suitable pins 13 carried by the offset portion 8. Obviously, the removable cutting blades may be otherwise mounted upon the shafts 4 without departing from the spirit of the invention. The blades 6 are made readily removable from their holders in order that they may be quickly detached for sharpening purposes and then quickly replaced.

As will be seen by reference to Fig. 4, I have shown each of the shafts 4 as provided with five spaced-apart cutting blades 6, the blades on each shaft being preferably arranged at different angles so as to present a substantially spiral arrangement, and it will also be seen that the blades of one set are offset laterally with relation to the blades of the other set. It will also be seen by referring to Fig. 3, that the tip ends of the blades of one shaft overlap the tip ends of the blades of the other shaft during the rotation thereof, and that the blades operate alternately and successively upon the tie-leaves of the "hands" of leaves, as will hereinafter more clearly appear.

According to my invention I provide at the front of the housing 1, and in spaced relation to the two sets of rotary cutters, a mechanism for gripping and advancing the "hands" of leaves through the housing and in the range of action of the cutting blades, so that said blades will cut and remove the tie-leaves that are wrapped around the butt ends of the "hands", or bundles of leaves during such advance. In Fig. 1 of the drawings the "hands" of leaves are indicated by the letter C, and the tie-leaves are indicated by the letter D.

This means for gripping and advancing the "hands" of leaves, as illustrated in the present embodiment of the invention, comprises an upper endless chain of links 14, preferably composed of fiber links, although metal links may be employed if desired, and a lower set of endless links 15. The upper set of endless chain links is mounted upon spaced-apart sprockets or pulleys 16 disposed at opposite ends of the housing 1, and the lower set 15 of endless chain links is mounted upon sprockets 17, as more clearly shown in Fig. 2. The two endless chains of links have opposed parallel runs forming between them a gripping means for gripping and transporting the "hands" of leaves C fed therebetween, and for carrying them within the range of action of the cutting blades 6 so that during the movement of the "hands" through the cutting range of the blades, the tie-leaves D are cut and removed from the "hands", leaving the "hands" or bundles of leaves untied, so they will assume substantially the condition shown at E to the right of Fig. 1.

I prefer to provide a plurality of spaced-apart idler sprockets 18, upon which the upper run of the lower endless chain may be supported, and I further prefer to provide a plurality of yieldably mounted rollers 19 to press or bear upon the lower run of the upper endless chain, so as to yieldingly press the upper run of the chain against

the "hands" of leaves as they are fed forward by the chains and so as to prevent the leaves from moving endwise under the pulling strain of the cutting-blades during the tie-leaf cutting operation. The idler rollers 19 are mounted in vertically-movable bearings 20 normally urged downward by means of coiled springs 21, as more clearly shown in Fig. 2, and the upper chain 14 is provided with a tensioning roller 22. The lower chain links 15 are provided with a tensioning sprocket 23. I also prefer to mount the sprockets 16 upon vertically-yielding bearings 24, that are normally urged downward by means of springs 25. Obviously, any other approved "hand" gripping and advancing means may be employed in lieu of the means described.

As will be seen by referring to Figs. 1 and 2, the the endless "hand" gripping and transporting means presents parallel runs, which extend across and slightly beyond the entire width of the housing for the cutters so that the "hands" of leaves fed between the parallel runs will be firmly gripped at a point intermediate their ends during the entire time they are transported through the tie-leaf cutting and removing mechanism.

A table 26 is provided at the feed end of the "hand" gripping and conveying means and another table 27 is interposed between said means and the feed end of the stemming machine A, as more clearly shown in Figs. 1 and 2. And endless feed belt 28 is arranged to travel over the table 26, and operates to feed or advance the "hands" of leaves up to the entrance end of the "hand" gripping and transporting mechanism, and a similar endless feed belt 29 is arranged between the exit end of the tie-leaf cutting and removing means and the entrance or feed end of the stemming machine A, said feed belts being mounted upon suitably arranged pulleys that may be driven in any suitable manner. I also provide a feed belt 30, which is arranged to travel over the two tables 26 and 27, and in front of the tie-leaf cutting and removing means, and which belt likewise extends into the feed end of the stemming machine. The three belts 28, 29 and 30, together with the endless "hand" gripping and transporting means, convey the "hands" of leaves through the tie-leaf removing means, and from thence directly into the stemming machine where the membranous portions of the leaves are removed.

The tables 26 and 27 are provided at their rear ends with upstanding guide boards 31 against which the butt ends of the "hands" of leaves may be caused to abut in order to properly align the "hands" and the leaves.

As will be seen by referring to Figs. 3 and 4, the end walls 2 of the housing 1, are cut away to provide openings 32, which are located in the path of travel of the "hands" of leaves so that the latter may be transported through the housing and in the range of action of the cutting blades.

I prefer to arrange or locate the tie-leaf cutting and removing means a slight distance in advance of the feed end of the stemming machine A, as more clearly shown in Figs. 1 and 2, and provide the separate endless feeding means described in order to leave sufficient space at this point to accommodate one or more operators who can spread or separate the leaves of the "hands" by hand after the tie-leaves have been removed therefrom, so that the leaves may be more uniformly separated or spread before being fed into the stemming machine.

It will be understood that the endless means

for feeding the "hands" of leaves as shown at the left-hand end of Figs. 1 and 2 and the associated table 26, will be of considerable length in order to accommodate a sufficient number of operators to place the "hands" of leaves upon the endless feed belts. This is desirable, if not necessary, because the capacity of the stemming machine, which is a high capacity machine, depends for its output upon the rapidity with which the leaves are fed thereto, and it is desirable, therefore, to arrange to keep the feed belts 28 and 30 leading up to the tie-leaf cutting and removing means fed to substantial capacity with the "hands" slightly spaced one from the other substantially as shown to the left of Fig. 1.

The housing 1 is provided at its lower open end with a hopper 33 to convey away the fragments of the cut tie-leaves as they are cut and removed from the "hands". The lower end of the hopper may lead to a conveyor or to a lower floor of the building in which the stemming operations are carried on.

As far as I am aware, I am the first in the art to provide a machine for automatically cutting and removing the tie-leaves from "hands" or bundles of leaves, and the first to associate such a means with a tobacco stemming machine, and I have demonstrated by actual practice of the invention that by the use thereof the cost of the stemming operation is very materially reduced, and the productive capacity of the stemming machine materially increased.

The operation of the machine will be clear from the foregoing description, suffice it to add that the "hands" of leaves are transported horizontally sidewise with their tied butt-ends free, the transporting means operating to hold the leaves against endwise movement, and while being thus transported the said butt-ends are brought successively into the range of action of the rapidly rotating cutting blades, which deliver to the tie-leaves a rapid succession of cutting impacts directed transversely across the tie-leaves to cut and remove them in fragments and to thus free the butts of the leaves of the "hands".

I claim:

1. In combination with a tobacco stemming machine, of means for advancing "hands" of leaves toward said machine with the leaves of each "hand" bound together with a tie-leaf, and means located in the path of movement of the "hands" for removing the tie-leaf from each "hand" as it is moved forward by the advancing means.

2. In combination with a tobacco stemming machine, of means for successively advancing "hands" of leaves toward said machine with the butts of the leaves of each "hand" bound together with a tie-leaf, means located in the path of movement of the "hands" toward the said machine for cutting the tie-leaf from each "hand", and endless means for gripping the "hands" transversely at a point intermediate their ends and for transporting the tied butt ends in the range of movement of the cutting means.

3. In combination with a tobacco stemming machine, of means for advancing "hands" of leaves toward said machine with the "butts" of the leaves of each hand bound together with a tie-leaf, and rotary cutting blades located in the path of movement of the "butts" of the "hands"

for cutting and removing the tie-leaves therefrom as the "hands" are moved forward by the advancing means.

4. In combination with a tobacco stemming machine, of means located in advance of the feed end of the machine for cutting the tie-leaves from "hands" of leaves, a conveyor for advancing "hands" of leaves to the cutting means, endless means for gripping the leaves of the "hands" and transporting them in the range of action of the cutting means, and a conveyor leading from the cutting means to the feed end of the stemming machine.

5. A machine for cutting the tie-leaves from "hands" of leaves, comprising two opposed sets of rotary cutting blades mounted upon horizontal axes, and endless means for gripping and advancing "hands" of leaves in a horizontal path with the tied butt ends within the range of action of the said cutting blades.

6. A machine for cutting the tie-leaves from "hands" of leaves, comprising a housing having a pair of horizontal shafts arranged one above the other and journaled in bearings in the opposite walls of the housing, a plurality of cutting blades secured to each shaft, said blades being offset relative to each other, and endless means for gripping and advancing the tied butts of the "hands" within the range of action of the said cutting blades.

7. A machine for cutting the tie-leaves from "hands" of leaves, comprising two opposed sets of rotary cutting blades with the blades of one set offset relative to those of the other set, means for rotating the blades in opposite directions, and opposed endless gripping and advancing means having parallel runs located for travel in a horizontal path in front of and in a plane between the said two sets of cutting blades.

8. A machine for cutting the tie-leaves from "hands", comprising two opposed sets of rotary cutting blades with the blades of one set offset relative to those of the other set, means for rotating the blades in opposite directions, opposed endless gripping and advancing means having parallel runs located for travel in a horizontal path in front of and in a plane between the axes of the cutting blades, and means for yieldingly urging one run of the endless advancing means toward its companion run.

9. The method of removing tie-leaves from tied "hands" of tobacco leaves, which consists in gripping a succession of "hands" transversely at a point intermediate their ends and advancing them horizontally sidewise leaving their tied butt-ends free, and then subjecting the tie-leaves to a succession of transversely directed cutting impacts as the "hands" are thus transported to sever and remove the tie-leaves in fragments.

10. The method of removing tie-leaves from tied "hands" of tobacco leaves, which consists in advancing a succession of the "hands" of leaves horizontally sidewise with their "butt" ends free, holding the "hands" against endwise movement as they are advanced, and then subjecting the tie-leaves to a succession of cutting impacts directed across the tie-leaves and longitudinally of the "hands" to sever and remove the tie-leaves in fragments.

THOMAS R. PRIDDY.