No. 622,588. Patented Apr. 4, 1899.

A. R. ALLISON.

TOBACCO STEMMING MACHINE.

(Application filed Nov. 18, 1898.)

(No Model.)

Fig. 1.

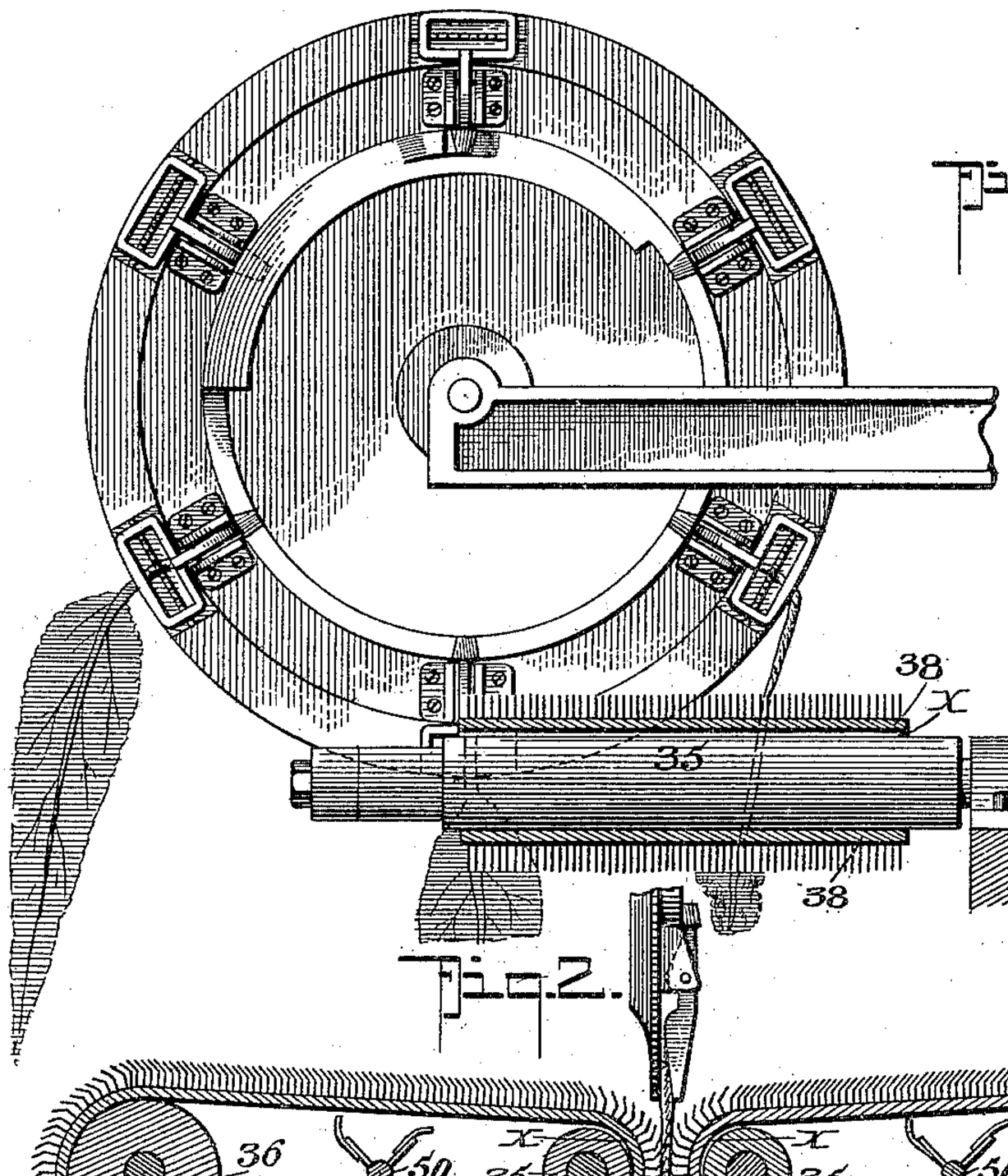


Fig. 2.

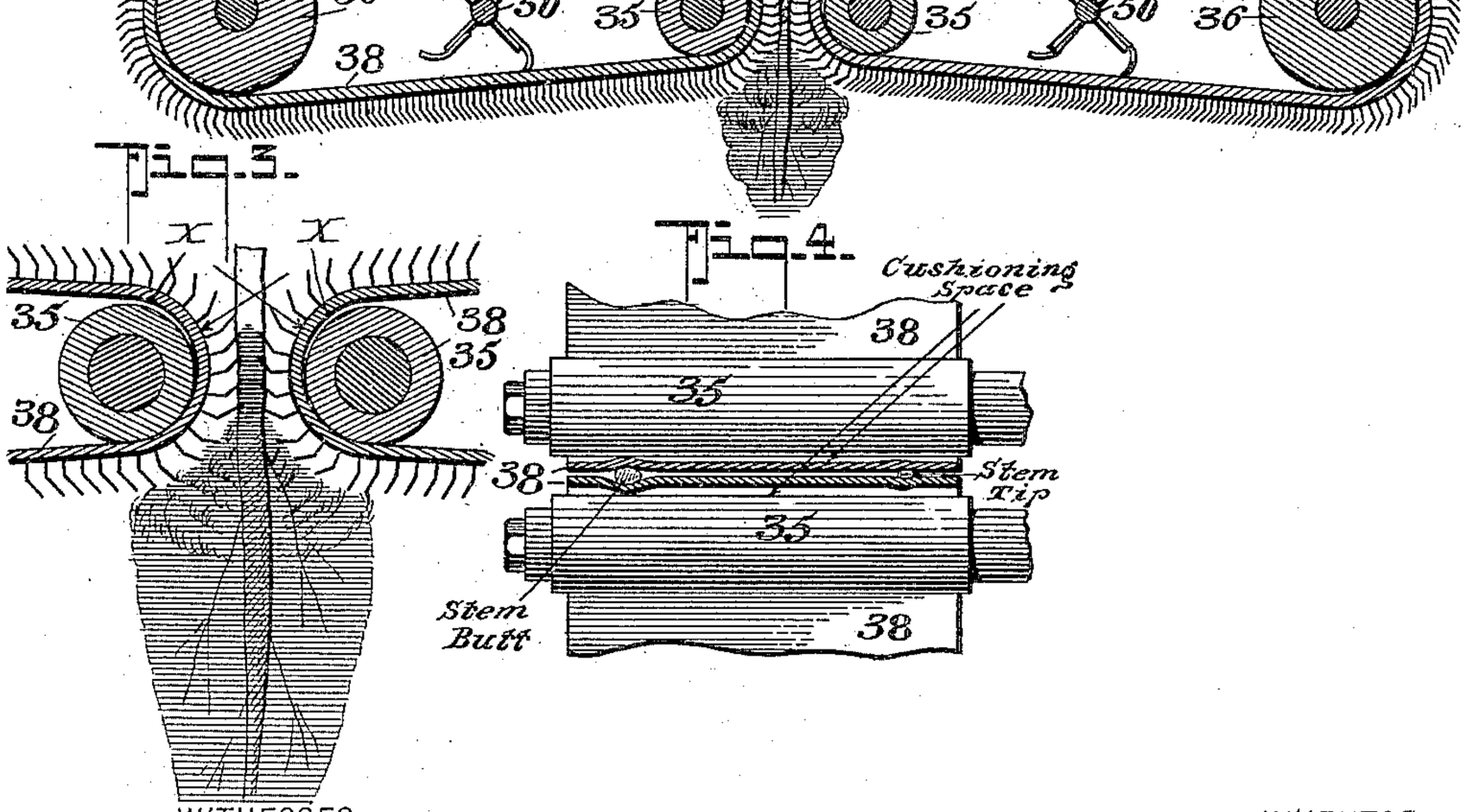


Fig. 3.

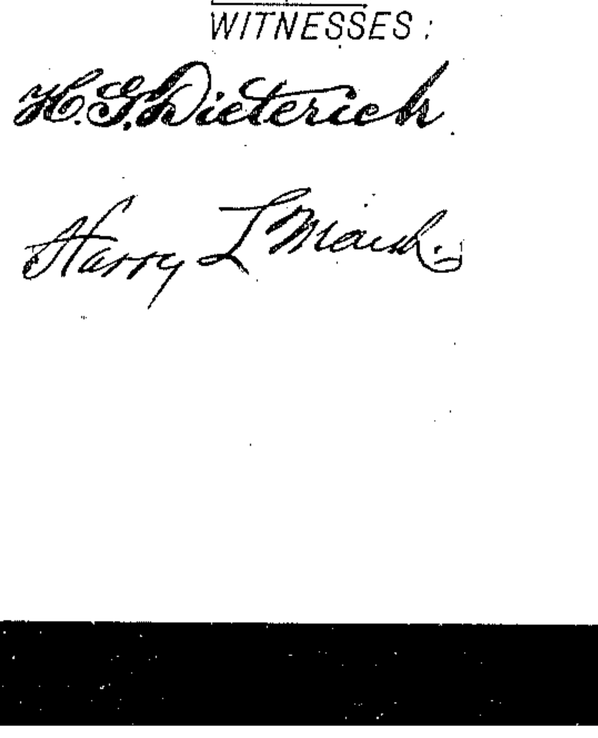
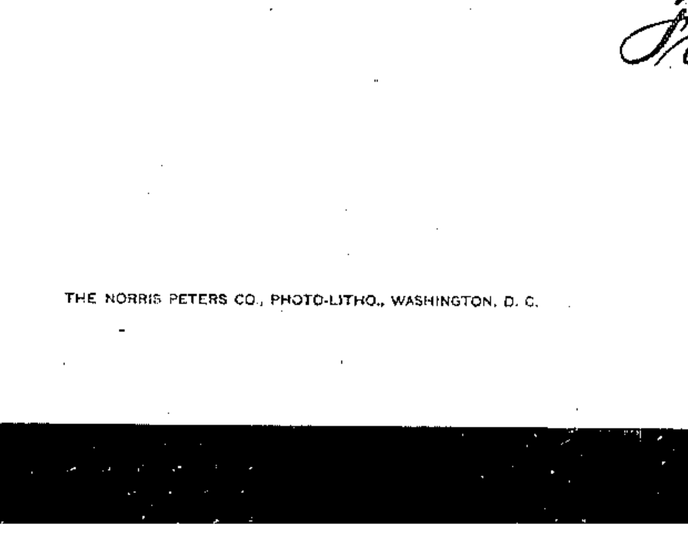


Fig. 4.



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UNITED STATES PATENT OFFICE.

ALPHONSO ROSS ALLISON, OF RICHMOND, VIRGINIA, ASSIGNOR TO THE UNIVERSAL STRIPPING MACHINE COMPANY, OF SAME PLACE.

TOBACCO-STEMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 622,588, dated April 4, 1899.

Application filed November 18, 1898. Serial No. 696,796. (No model.)

To all whom it may concern:

Be it known that I, ALPHONSO ROSS ALLISON, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Tobacco-Stemming Machines, of which the following is a specification.

My present invention is in the nature of an improved means for stripping or wiping the blade of the tobacco-leaf from its stem, and it particularly refers to that form of stripping mechanism having coacting opposing surfaces arranged to engage the leaf and having a wiping action—such, for example, as shown in the patents to R. W. Coffee, No. 569,575, and W. H. Butler, No. 595,041, in which the working faces are formed of card-teeth fixedly secured upon the roll-stocks.

In the form of stripping mechanism referred to it is necessary to wind the card-clothing on the roll-stock spirally to produce a substantially uniform spaced relation of the card-teeth. In the said form of stripping mechanism it has also been demonstrated by practical operation that by reason of the card-clothing being fixedly secured to the roll-stock a line of wiping-surface is produced having substantially a uniform pressure longitudinally, as also in its transverse direction. That such relation of wiping-surfaces cannot effect the desired results necessary to properly strip tobacco-leaves in such manner as to give them a high commercial value is best explained as follows: As is well known, the laminæ or blade portions of the tobacco-leaf adhere more tenaciously to the butt-end of the stem than to its tip-end, and as said tip-end is considerably more fragile than the butt-end any wiping or stripping action which exerts the same pressure on the butt-end as it does on the tip either will not grip the butt-end with sufficient force to properly remove the blade from the stem or it will wipe the tip or more fragile end with such force as to break the stem, and thereby render the separated leaf particles unfit for the best uses. Furthermore, in rolls having fixedly-held card-teeth faces the point of contact—that is, the wiping-line of the rolls—is at best a limited rubbing-surface and usually in a plane with the axis of the rolls, and during the passing of leaves having stems or their bulk of varying thicknesses it follows that the only yielding of pressure thereagainst to accommodate the varying thicknesses of the leaf is through the resiliency of the card-teeth, which by reason of the said back pressure and the substantial rigid connection of their base portions with the rolls soon causes the said teeth to be bent out of shape and lose their efficiency as strippers and also so shapes them as to cause them to easily tear the leaf. Another and serious disadvantage encountered in the use of card-covered stripper-rolls having the card-clothing diagonally wound thereon is that as the teeth become worn or bent out of shape for reasons above mentioned portions of the teeth of one roll frequently become so bent as to lie crosswise on the corresponding faces of the opposing roll, which not alone impairs the proper wiping action of the rolls, but meshes or crowds the leaf between the teeth to such an extent as to clog them and cause them to soon fill with small leaf particles, thereby making it necessary at times to stop the machine to clean the wiping-surfaces sufficiently to enable them to effect a stripping action. Another objectionable result met with in the use of stripping-rolls having spirally-wound and fixedly-attached card-clothing surfaces is that by reason of the direct and quick impact or engagement of the wiping-surfaces with the leaf the said leaf is frequently forced between the teeth in such manner that it will turn and twist at considerable angles to the sidewise feed of the leaf through the wiping-surfaces, thereby not only clogging or choking the card-teeth surfaces, but also causing particularly the tip end of the leaf to catch in the teeth in such manner that it will readily break off.

Having thus outlined briefly some of the disadvantages incident to the use of surfaces of the character stated, I shall now set out the main objects of this invention. First, it seeks to provide a stripping mechanism having coacting wiping-surfaces so mounted that loose particles caught up on the said surfaces during the operation thereof are readily discharged by gravity, the centrifugal force along

the parallel surfaces of the belts, or by means of supplemental devices adapted to act upon the wiping-surfaces to cause the adhering leaf particles to discharge with more certainty; second, the invention seeks to provide coacting wiping-surfaces capable of effecting a yielding or varying pressure in its horizontal plane in such manner that the pressure on the leaf will be gradually diminished from the entrant to the exit end, due to the varying thickness of the leaf, it also having for its purpose to provide a varying pressure transversely, (in the direction of the rotation of the surface,) whereby the wiping-surfaces will be automatically increased or decreased, according to the thickness of the leaf being engaged, without affecting the resiliency or shape of the card-teeth; third, to provide coacting wiping-surfaces in the nature of card-teeth secured to the flexible base having a yielding back pressure as they pass through the wiping-zone, whereby the coacting surfaces will be made to engage the leaf with a gradually-increasing impact or pressure from the point of contact to the line of greatest pressure, in contradistinction to engaging it with stripping-surfaces having a fixed line of wiping action; fourth, to provide coacting stripping-surfaces having a flexible base which may be provided with either card-teeth or clearly-defined surface corrugations and which are so mounted that their planes of wiping-surfaces will yield proportionately to the character of the different portions of the leaf passing therethrough.

With these objects in view the invention consists in the construction and arrangement of parts hereinafter described, and specifically pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a view illustrating so much of a leaf-stemming machine as is necessary to disclose my invention, one of the stripper-belt members being shown in section and that portion about to move into engagement with the leaf elevated above the roll-stock. Fig. 2 is a diagrammatic longitudinal section of my improved form of stripping mechanism, the wiping-surfaces being in the nature of card-teeth. Fig. 3 is a view, on an enlarged scale, illustrating the manner in which the wiping-surfaces yield in the transverse direction as they move into engagement with the leaf and stem. Fig. 4 is a similar plan view, the stripping-belt being shown in section on the plane of its wiping-line, the faces of the belt being shown plain—that is, without card-teeth or corrugating-surfaces—to better illustrate the most essential feature of this invention.

In the practical construction my improved stripping mechanism, so far as it relates to the leaf-feeding and stem-drawing devices, is arranged precisely similar to the construction shown in my copending application, Serial No. 695,119, filed March 25, 1898, and another copending application filed by myself and C. E. Buek, August 30, 1898, Serial No. 689,856. In this latter application my form of endless belt with card-teeth wiping-surfaces is specifically described and fully illustrated to clearly define the advantages of the particular arrangement of the card-teeth in connection with the same, which forms a part of the subject-matter of the joint invention disclosed in said application.

Referring now to the accompanying drawings, it will be observed that the inner and outer rolls 35 36 have a fixed relation to each other, and on each pair of rolls is mounted an endless belt 38, preferably formed of a single member and having card-teeth uniformly arranged in longitudinal rows, the two belts being, however, so mounted that the teeth-rows on one belt alternate with those on the other, the purpose of which is fully set out in the joint application before referred to.

While I have illustrated wiping-surfaces formed of card-teeth, it is observed said surfaces may be in the nature of corrugations, as shown in my other application, Serial No. 675,119.

By forming the stripping devices in the nature of belts the wiping-surface is sufficiently increased to permit of the dislodgment of some leaf particles adhering to the surfaces either by gravity or centrifugal force before the surface or teeth pass back to the wiping-line, and such increased surface also permits, if necessary, the employment of an agitator (see 50, Fig. 2) to engage the belt and jar it at points between its roll-bearings sufficiently to throw off the adhering leaf particles, thereby providing for a perfect cleaning of the wiping-surfaces during the running of the machine and in consequence effecting a more perfect stripping action of such surfaces.

The belts 38 are loosely mounted on their respective rolls, the term "loosely" being used in contradistinction to "fixedly," which describes the manner in which the card-clothing is secured to the rolls in that type of wiping-surfaces disclosed in the Coffee and Butler patents hereinbefore referred to, it being, however, understood that in my arrangement of wiping-surfaces the belts engage the rolls with sufficient tightness to be properly moved by frictional engagement therewith.

By mounting the belts on the rolls in the manner stated I have found through practical experience that results are attainable not to be found in the rolls heretofore employed. It is obvious that owing to the high speed at which the belts are made to travel the wiping face or portion X on the upper down-going side of the roll by centrifugal force is thrown forward out of contact with that part of the roll, and by reason of the suction of air thereunder an air-cushion is formed, which, together with the centrifugal forward thrust, keeps that part of the belt at all times away from contact with the roll and imparts to the belts or base of the wiping-surface a flexible or yielding condition clearly not attainable were the belt so tightly

held on the roll that it must move fixedly therewith. Thus it will be readily seen by reference to the diagram in Fig. 4, in which belts 38 are shown without external teeth or corrugations, that as the wiping-face has a yielding base its length the same will yield or give proportionately to the thickness or character of the leaf or stem passing therebetween, the pressure being the greatest at the entrant end by reason of the greater reaction of the belts against the thick leaf-stem and the least at the exit end, where the thin or fragile part of the leaf or stem is being drawn through.

Another and important advantage of this form of stripping mechanism is that a wiping action of varying efficiency in the direction of the length of the stem is effected, and the first impact or shock on the leaf or stem incident to a wiping-surface fixedly secured to the roll as if engages the leaf and stem is avoided, and the danger of breaking off the leaf and stem is overcome, as well as providing for the varying length of peripheral rubbing-surface of the teeth, which increases or diminishes proportionately to the thickness of the leaf or stem it engages.

It will also be readily understood that as the belt to which the card-teeth are attached is of a flexible or yielding character at the point of contact with the leaf, particularly at the beginning of the wiping impact, the teeth will not be bent back, as they will give with the yielding base to the back pressure, and the mutilation or breaking of the said teeth will be reduced to a minimum. Thus by reason of the said belt having an air-cushion or yielding back rest the leaf-stem will be engaged by the wiping action with an easy pressure, gradually increasing as it passes to the point of its maximum wiping action.

This form of stripping mechanism permits the use of teeth arranged in parallel rows, and by reason of its self-adjusting yielding action the coacting faces will yield in the plane of their wiping-line, which is always approximately in the plane of the axes of the rolls, according to the character of the leaf passing therebetween, thus providing for coacting stripping-surfaces the wiping or pressure action of which is automatically governed by the character of the leaf and stem being stripped, thus presenting a wiping-surface of varying efficiencies in any direction.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a tobacco-stemming machine, a wiping mechanism comprising a pair of opposing coacting surfaces, said surfaces traveling in a horizontal plane during a part of their movement whereby to discharge adhering leaf particles by gravity or centrifugal force.

2. In a tobacco-stemming machine; a wiping mechanism comprising a pair of opposing coacting surfaces, said surfaces traveling in a horizontal plane, and means for agitating such horizontal portion, for the purposes stated.

3. In a tobacco-stemming machine, a wiping mechanism, comprising a pair of endless belts having coacting opposing surfaces, said belts being loosely mounted on driving-rolls disposed in a plane at right angles to the direction of the draw of the leaf-stem, whereby wiping-surfaces having differential pressure are provided for the purposes specified.

4. Leaf-stemming means; comprising coacting opposing surfaces adapted in operation to work with a wiping action upon the leaf, said surfaces being on endless belts loosely mounted on suitable bearing-pulleys, whereby wiping-surfaces having differential pressure are provided for the purposes specified.

5. A leaf-stemming means; comprising coacting opposing surfaces adapted to work with a wiping action on the leaf, said surfaces being on endless belts so mounted on suitable drive and bearing pulleys as to engage the leaf with the minimum amount of pressure at the point of its initial contact therewith and with gradually-increasing pressure from such point; for the purposes specified.

6. Leaf-stemming means; comprising coacting opposing surfaces, adapted to work with a wiping action on the leaf, said surfaces being in the nature of endless belts having card-clothing faces, said belts being loosely mounted on suitable bearing-rolls, and movable toward each other in a direction at right angles to the direction of movement of the leaf therebetween, for the purposes specified.

7. A stripping mechanism for tobacco-leaf-stemming machines of the character described, comprising coacting opposing surfaces adapted to operate with a wiping action upon the leaf, said surfaces being mounted on suitable bearing-pulleys, and constructed to move away from their bearings by centrifugal force as they approach and engage with the leaf, whereby said wiping-surfaces will exert differential and gradually-increasing pressure on the leaf, as set forth.

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Witnesses:
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C. W. BOURNE.