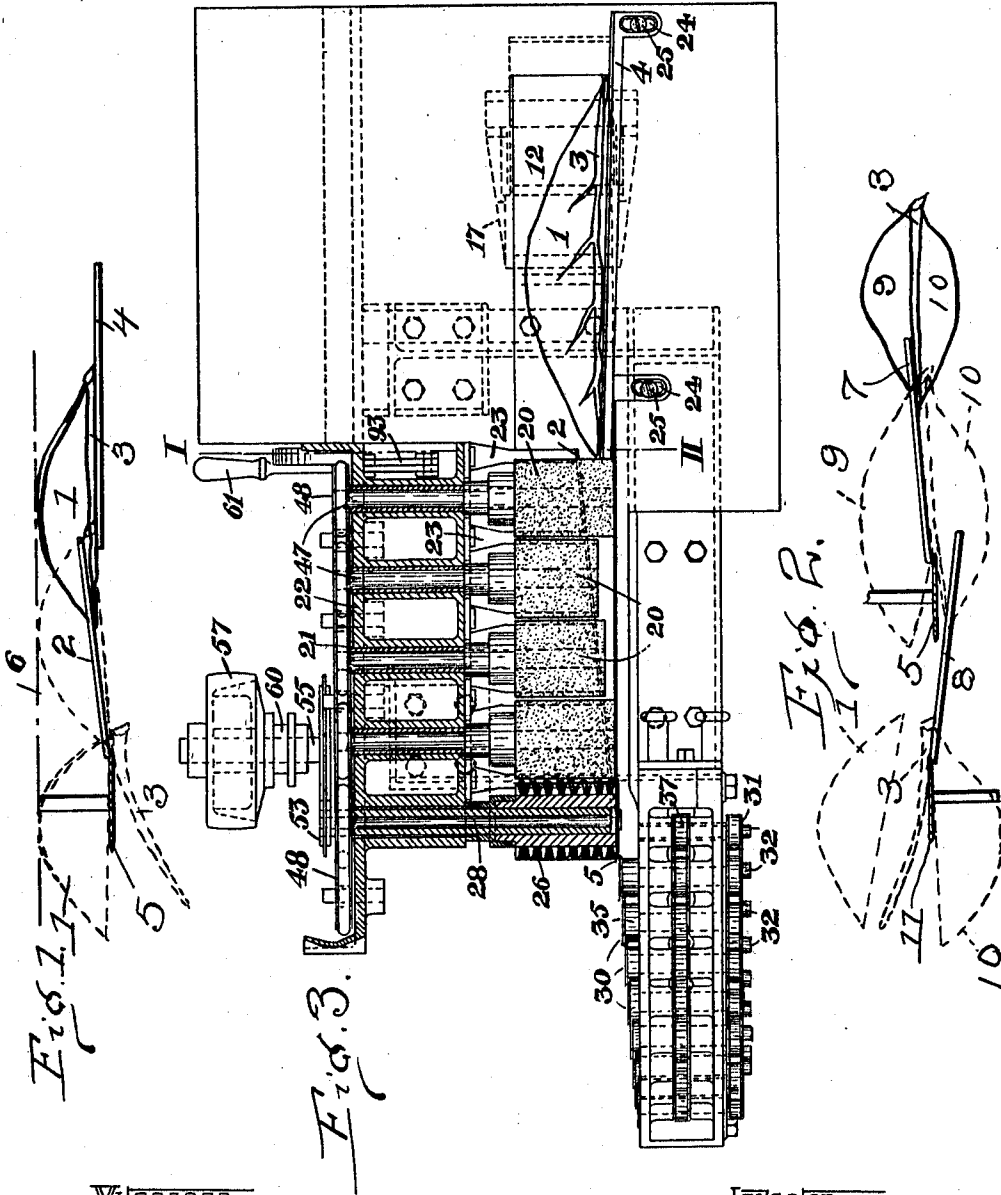


F. SALOMON.
TOBACCO STRIPPER.
APPLICATION FILED OCT. 5, 1908.

1,003,951.

Patented Sept. 19, 1911.

8 SHEETS-SHEET 1.



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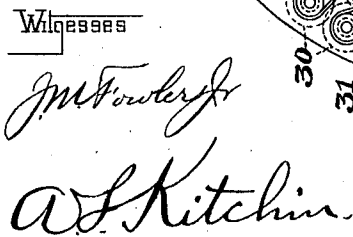
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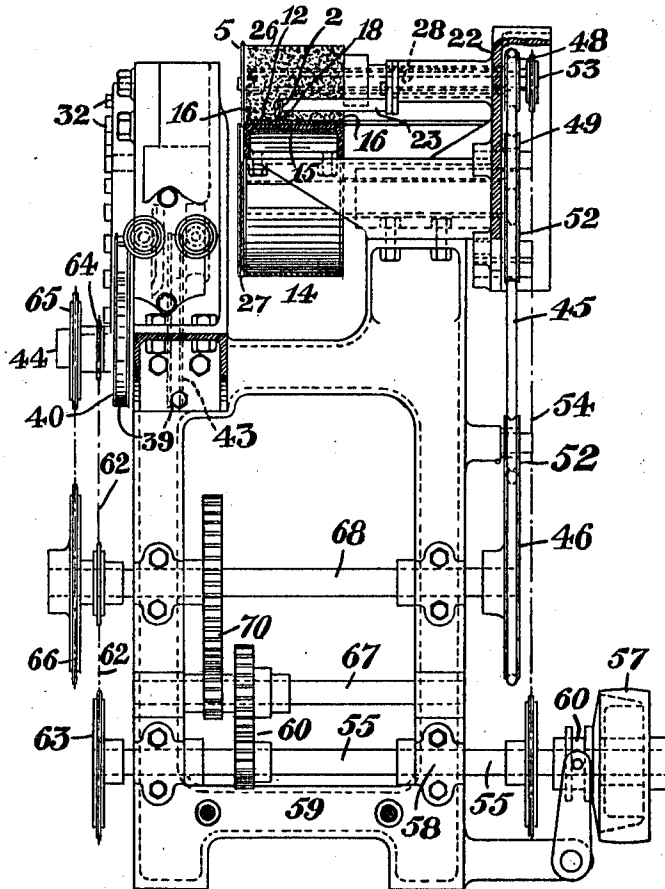
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8 SHEETS—SHEET 3.

Fig. 5.



Witnesses

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Fig. 8.

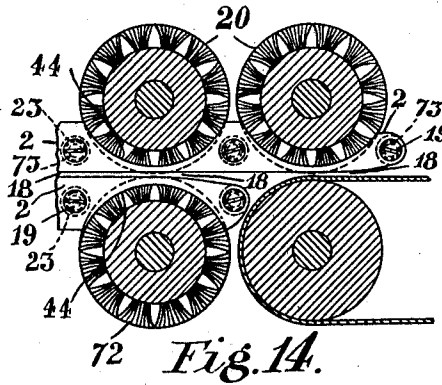
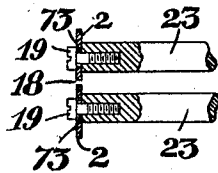


Fig. 7.

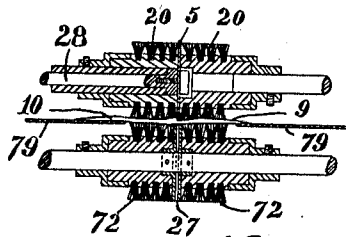
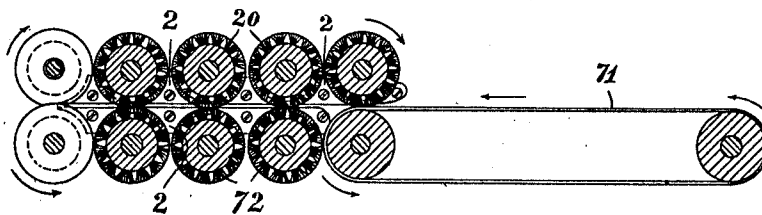


Fig. 15.

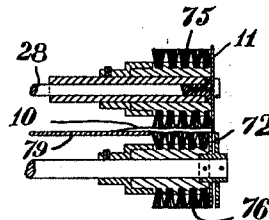


Fig. 16.

Witnesses

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8 SHEETS-SHEET 5.

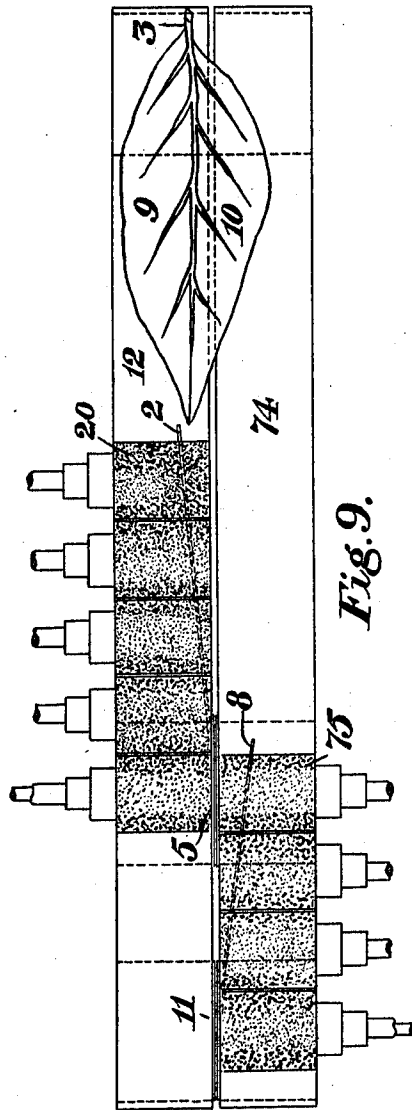


Fig. 9.

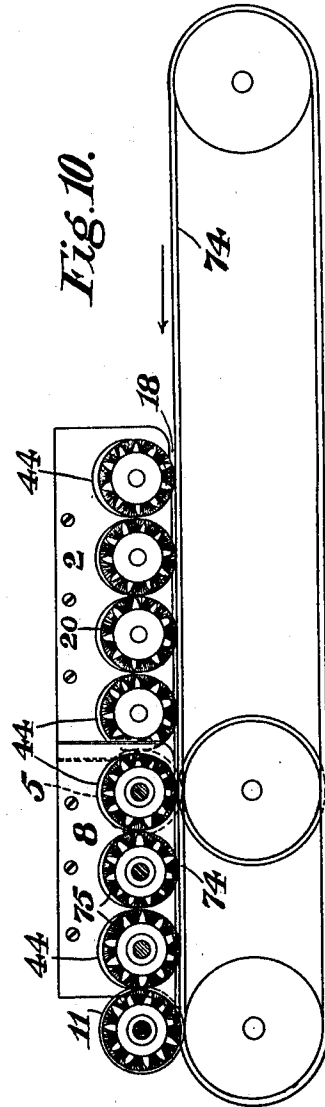


Fig. 10.

Witnesses

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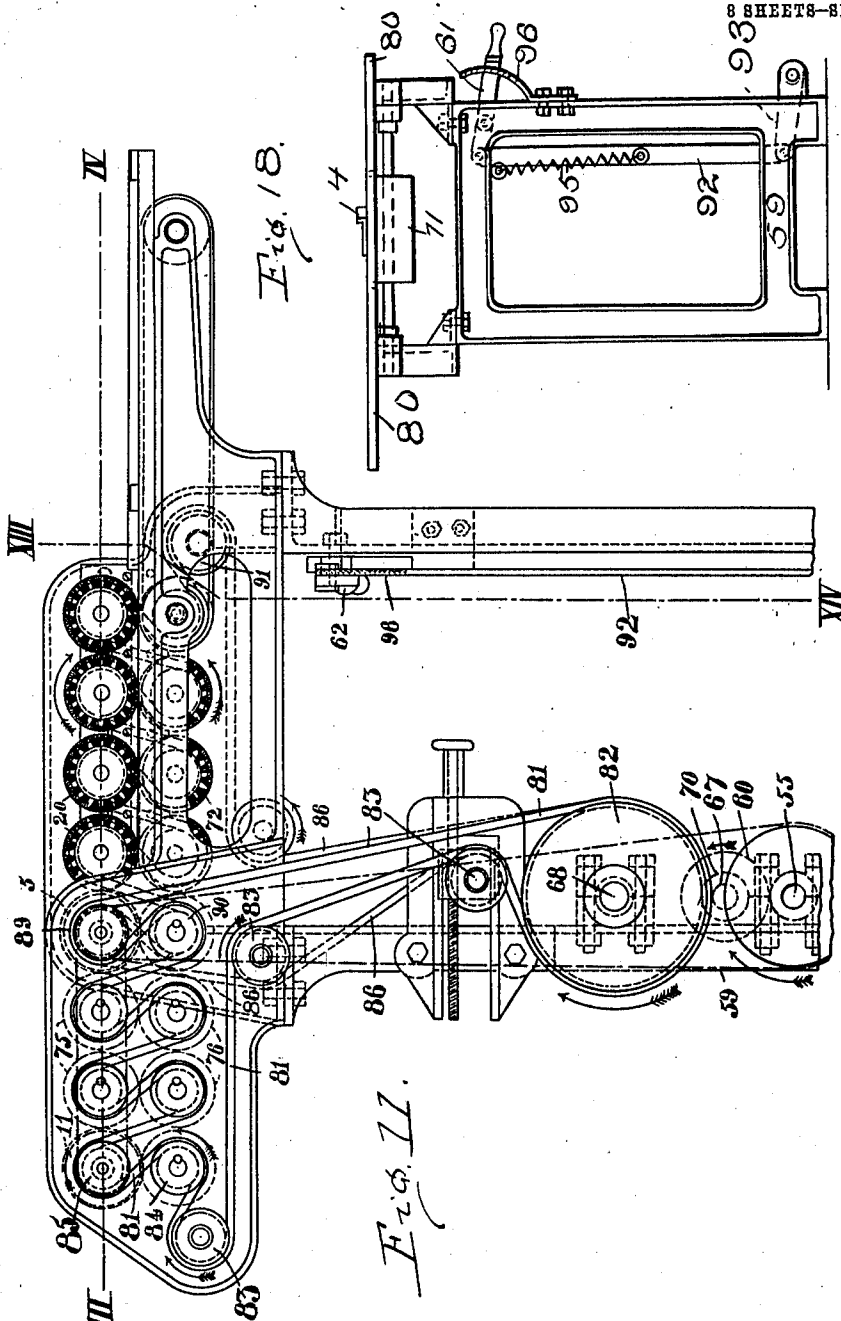
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Witnesses
J. M. Fowler
A. L. Kitchen.

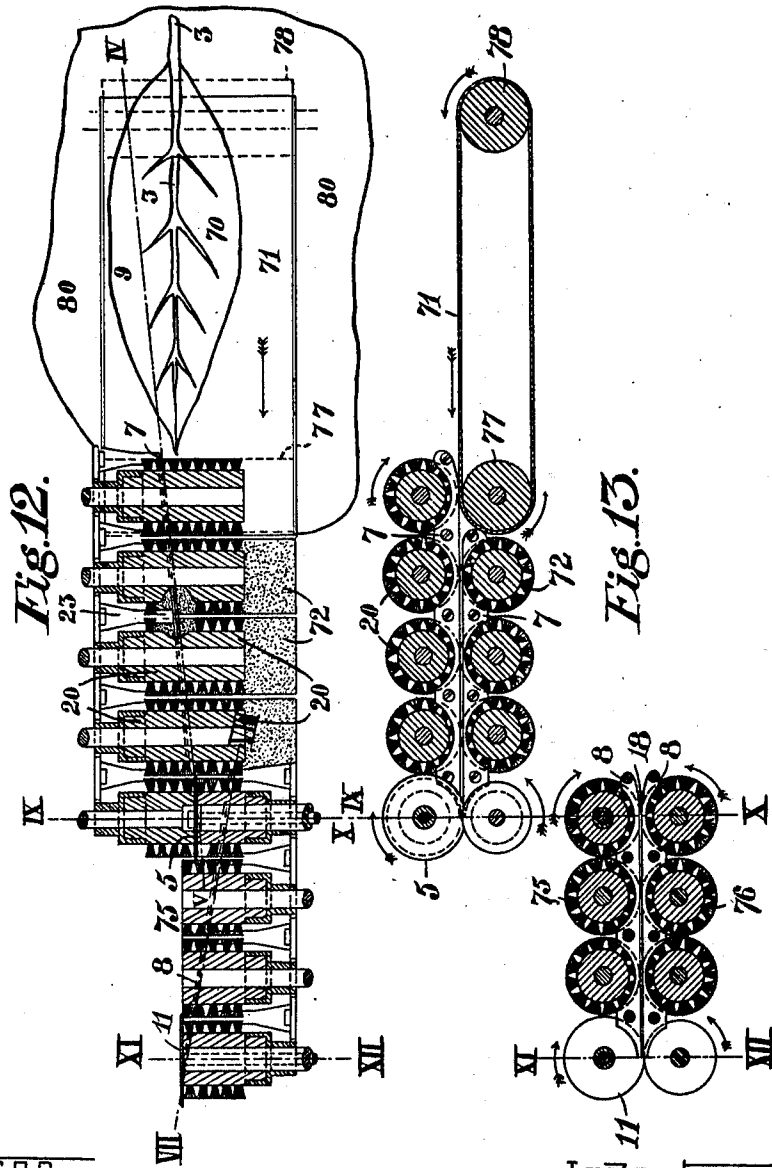
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APPLICATION FILED OCT. 5, 1908.

1,003,951.

Patented Sept. 19, 1911.

8 SHEETS—SHEET 7.



Witnesses

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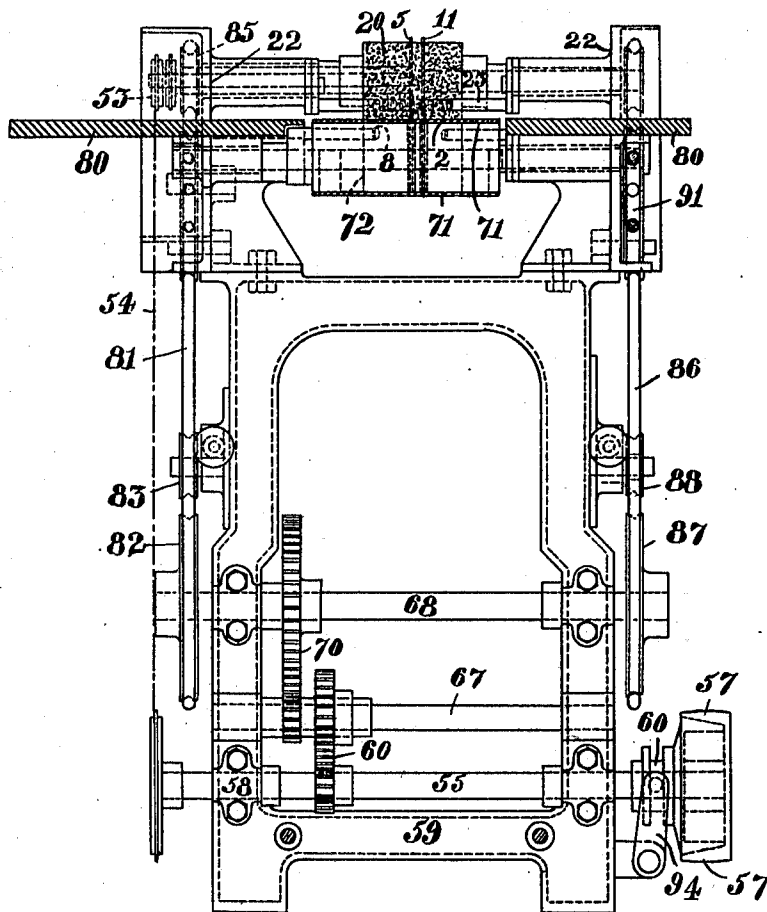
F. SALOMON.
TOBACCO STRIPPER.
APPLICATION FILED OCT. 5, 1908.

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Patented Sept. 19, 1911.

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Fig. 17.



Witnesses

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UNITED STATES PATENT OFFICE.

FREDERICK SALOMON, OF LIVERPOOL, ENGLAND.

TOBACCO-STRIPPER.

1,003,951.

Specification of Letters Patent.

Patented Sept. 19, 1911.

Application filed October 5, 1908. Serial No. 456,186.

To all whom it may concern:

Be it known that I, FREDERICK SALOMON, subject of the King of Great Britain, residing at Liverpool, in the county of Lancaster, in the Kingdom of England, have invented certain new and useful Improvements in Tobacco-Strippers, for which application has been made in Great Britain, No. 22,102, dated October 7, 1907.

This invention has for its object to construct a simple and effective machine for stemming and shredding tobacco leaves, and to these are added the actuating mechanism by which the several devices are made to operate in unison and at proper intervals to constitute an automatic machine.

In my application for United States patent, filed December 28th, 1906, Serial No. 349,914, I have set forth the idea that the removal of the stems from tobacco leaves may be accomplished by means of a straight edge or templet embodying two straight ribs or traveling bands with a narrow space between just wide enough for the folded web of the leaf to pass, but too narrow to admit of the stem passing through. These ribs or traveling bands were longitudinal and by feeding the leaves longitudinally and at the same time drawing the leaves laterally by brushes mounted at an angle, the stem of the leaf was drawn against the ribs or bands, which thus formed a straight edge or guide, so that the stems of the leaves were brought accurately in line and cut off with a clean straight cut by cutters.

In the present invention, I adhere to the same principle, but I place the ribs or traveling bands that hitherto formed a straight edge or guide, diagonally, and I feed the leaves longitudinally so that their stems come against the diagonal ribs or bands which thus deflect the stem or divert it out of its normal line of travel into another line of travel, different from its former line of travel. The result is, that the stem as it runs in contact with the deflecting device, is moved laterally or deflected, and consequently the web of the leaf is stretched by the lateral pull of the stems, and the stems are all brought into line, and presented to the cutter device, which severs the stem from the leaf. This I find in practice is a very simple and economical method of effecting the object in view, and forms a distinct improvement on my previous invention.

This invention will be understood from the following description, reference first being had to the diagrammatic views of the accompanying drawings, in which:

Figure 1 is a diagrammatic view of the device in which the leaf is folded on the line of its stem. Fig. 2 is a similar view to Fig. 1, the leaf being shown in an open position. Fig. 3 is a plan, and Fig. 4 an elevation of a machine for stemming tobacco leaves, constructed in accordance with my invention, and in which the leaf is folded along the line of its stem. Fig. 5 is a sectional end view on line 1—2 of Figs. 3 and 4 showing the deflecting plate. Fig. 6 is a sectional view of the first pair of rollers and cutters of the shredding device. Fig. 7 is a side elevation of a modification showing brushes arranged below instead of a belt below. Fig. 8 is a cross section through the deflectors. Figs. 9 and 10 are a plan view and elevation of the machine in which the leaf is not folded along the line of its stem, this machine having belts below and brushes above the web of the leaf. Fig. 11 is a side elevation of the complete machine for treating unfolded leaves, this machine having brushes below as well as above the web of the leaves. Fig. 12 is a sectional plan view through the upper brushes on the line 3—4 of Fig. 11. Fig. 13 is a vertical section through the lines 5—6 and 7—8 of Fig. 12 but with the two sets of brushes separated. Fig. 14 is an enlarged view of the entrance to the first deflectors. Fig. 15 is a vertical section through line 9—10 of Fig. 12. Fig. 16 is a vertical section through line 11—12 of Fig. 12. Fig. 17 is a vertical cross section on line 13—13 of Fig. 11; and Fig. 18, is an elevation of the feed end of the machine.

Referring to Fig. 1, the leaves 1 folded on their stems are fed forward in any suitable manner longitudinally. 2 is a deflecting device located obliquely to the longitudinal travel of the leaves, and arranged to act as a deflector for the stems 3 of the leaves, while forming no obstacle to the web 1 of the leaves passing freely. This deflector can be arranged in various ways. For example, it might consist of two stationary plates or rods, placed one above the other, with a narrow space between, or of two moving endless bands forming a moving guide, or of a stationary plate and moving band in such manner as to act as a deflector for the

stems 3 of the leaves, while forming no obstacle to the webs 1 of the leaves passing freely between, or under it as hereinafter described. The deflecting device is however so arranged, that the space for the passage of the web can be adjusted to enable the thinner part of the stem to pass, together with the whole of the web, or prevent it doing so, but in any case prevent the thicker part of the stem from passing through. In connection with this oblique deflecting device I provide cylindrical brushes or feeding rollers, not shown in this diagrammatic view, the axes of which are at right angles to the travel of the belt or other device that carries the leaves longitudinally. 4 is a gage or fence at the feeding end of the machine. 5 circular serrated rotating cutters at the opposite end of the deflecting device, and it will be noticed that the fence bar 4 and the cutter 5 though approximately parallel, are not in line with each other.

The mode of action is as follows:—Each leaf 1 is carried along longitudinally and passes in turn through the open space allowed by the deflector 2, and in due time one end of the stems 3 of the leaves in succession, abut against the oblique deflecting device 2. The stem 3 can not pass through said space, though the web 1 can, and consequently the stem is deflected or moved out of its normal line of travel into another line of travel, different from its former line of travel; indeed the device acts in the manner of a switch, so that the stem is shifted or diverted from the feed line 4 into another line of travel 2. The opposite side of the leaf however always remains on the imaginary line 6. The result is that the stems 3 as they run successively into contact with the deflector are moved laterally, or are diverted, and the brushes or rollers put a resistance on the webs 1 which prevent them being as a whole shifted also, and consequently only that part of the webs adjacent to the stems are stretched by the lateral pull of stems 3. The action of the deflector is also to straighten the stems. The stems are after passing the end of the deflector 2 at once presented to the cutters 5, which sever the stems from the leaves 1.

In Fig. 1, one leaf is shown in full lines, partly in the feed line of travel, the dotted lines showing its progress firstly in the process of deflection, and secondly in the process of its having its stem cut off.

The leaf can be fed into the machine when not folded along the line of its stem. In that case however there are two deflecting devices 7 8 located as shown in Fig. 2. One side of the leaf is operated upon first, one edge of the stem 3 being brought by the feeding devices against one deflector 7, and thereby switched from the feed line into another line of travel, which presents one side

of the stem to the cutters 5, thus cutting off one side of the web from the stem. The second deflecting plate 8 is placed farther on, and slopes in the opposite direction to the other one, and as one side 9 of the leaf is cut from the stem, the other side 10 of the leaf comes under the influence of another set of feed rollers or brushes, and the stem is drawn against the second deflector 8, which diverts the stem into a line of travel, that stretches the leaf and presents the stem to the second cutters 11. The principle is the same in each case, whether a folded or unfolded leaf be acted upon, the main difference being that in one case only one deflecting plate is used, the leaf being doubled along the line of the stem. In the other case the leaf being opened flat with the web 9, 10, on each side of the stem 3, the stem is first brought against one deflecting plate 7, and one half 9 of the leaf cut off, then against the other deflecting plate 8, and the other half of the leaf 10 cut off, so that the stem 3 is entirely removed. Instead of using brushes above, and below for the webs of the leaves, a belt could be used below, and brushes or feed rolls above. In these diagrammatic views, the obliquity of the deflectors and other parts are somewhat exaggerated to show my meaning more clearly.

Figs. 3 to 8 refer to machines where the leaf is folded along the line of its stem; Figs. 9 to 18 to machines where the leaf is not so folded.

In Figs. 3, 4, 5, and 6, 12 is an endless traveling belt or band of steel or some other suitable material preferably of flat section with a smooth surface on which the leaves folded along the line of their stems are laid. The action of the belt is to feed forward longitudinally each leaf 1 in succession. The said belt 12 is guided around guide rollers 13 and 14 and is supported in the interval between the rollers by guides 15 channeled at 16 to receive the belt, or the said guide 15 can be made in the form of a grid. The belt is suitably tensioned to take up any sag by means of the adjusting device 17 by which the guide roller 13 can be moved longitudinally. Immediately above this belt at one place, and in proximity thereto is the deflector device 2 with a narrow space 18 between it and the belt 12, just wide enough for the folded web 1 of the leaf to pass through, but too narrow to permit of the stem 3 passing through. This deflector 2 is located obliquely to the travel of the belt, and of the leaves thereon, and acts as a deflector for the stems 3 of the leaves, while forming no obstacle to the webs 1 of the leaves passing freely underneath it. The deflector 2 is so fixed that it is adjustable vertically by undoing the screws 19, and the slotted holes in the deflector then permit of it being raised or lowered, and fixed in the

desired position by tightening up the screws 19. This enables the space 18, between it and the traveling belt 12 to be varied, and thus enables the thinner part of the stem 3 to pass underneath it, together with the whole of the web 1, or if desired to prevent any part of the stem 3 passing underneath. In connection with the belt 12 and with this oblique deflecting device 2, I provide cylindrical brushes 20 or feed rollers, the axes of which are at right angles to the line of travel, of the belt 12. They can be journaled at 21 in the framework 22, and the deflector is supported by arms 23 located between the brushes, and secured to the framework. The obliquity of the deflector 2 can readily be adjusted by providing means for adjusting the length of some of these arms 23 or shortening others. As the belt 12 travels along, and the cylindrical brushes 20 rotate, they grip the tobacco leaves 1 between them, that is between the belt and the brushes, and carry the leaves 1 positively forward in a longitudinal direction, the leaves being positioned on entering the machine by means of the gage or fence 4 against which the stems 3 are made to abut, while the brushes straighten out the leaf, and remove sand and dust therefrom, without however tearing the leaf or in any way injuring it. These brushes 20 are arranged each to rotate a little more quickly the nearer they approach the delivery end of the machine. The fence 4 projects above the feed belt 12, and is adjustable laterally by means of the slots 24 and pins 25, so as to vary the feed line, that is, vary at will the distance between the cutter line and the normal line of travel of the stems 3 before being diverted. One end of the oblique deflecting device 2 is adjacent to the first feed roller or brush 20 part way across the belt 12, and the other end is flush with the edge of the moving belt 12, and thus it lies obliquely across the belt, and slightly above it. The cutter or cutters 5 are placed beyond, or immediately at the other end of the deflector 2, but not in a direct line with the fence 4, consequently the leaf stem 3 has to be deflected or diverted out of the feed line of the fence 4 into the line of the cutter 5, and this is a duty which the deflector 2 is designed to perform. The cutting device is composed of an upper brush 26, and a lower draw roller 14 geared so as to rotate as a pair, or if desired the edge of the feed belt may take the place of the lower draw roller 14, and between these the web 1 passes. The cutter embodies a circular saw 5 (of thin gage, with fine teeth) at the end of the brush 26, and this overlaps or enters a groove 27 in the roller 14. The saw 5 rotates at a higher velocity than 26 and 14, being driven by a separate shaft 28. The saw 5 severs the stem 3 from the leaf 1 with a clean straight cut along the full length of the deflected stem 3, but if the stem 3 has to be shredded, a series of these draw rollers 29 and cutters 30 are provided to grip the stem, and so arranged that each saw blade 30 rotates in a different plane (see plan view Fig. 3), so as to shred or slice the stem, and the draw rollers are geared so as to rotate in pairs; each pair at an accelerated speed. The driving means consists of a pulley 31 fixed on each of the series of spindles 32 and a loose pulley 33 running idle on each of the series of spindles 34, and these spindles have fixed at their ends the cutter 30 and the draw roller 29 respectively which latter has a groove 27 for the cutting saw 30. Each top draw roller 35 has a sleeve 36 passing around the spindle 32 and has at one point a fixed pulley 37 attached. Opposite pulley 37 is a pulley 38, fixed on the spindle 34. Pulley 31 drives the saw at an accelerated speed. 39 is an endless driving cord or band, which is passed from the driving pulley 40 around one of the pulleys 31, thence around one of the loose pulleys 33, and so on around each pulley 31 and 33 alternately, to the guide pulley 41, then around tension pulley 42 back to the driving pulley 40. A similar driving cord or band passes from pulley 43 on shaft 44 around the series of pulleys 37 and 38, and so around guide or tension pulleys similar to 41 and 42 back to the drive pulley 43. The result is that when the driving pulleys 40 and 43 are set into motion, the cords or bands 39 rotate the pulleys 33 and 38 and the pulleys 31 and 37, and so give motion to the saw cutter 30 and the draw rollers 35 and 29, the latter rotating at a lesser speed, than the cutting saw 30. These rollers are arranged collectively in the arc of a circle (Fig. 4), by which means considerable space is economized and the shredded stems are delivered directly downward. The cylindrical brushes 20 are arranged across the deflector device, there being holes or embayments 44 in the deflector device, so that the brushes can pass through. The feed rollers or brushes are the full width of the feed belt 12. The brushes or rollers can be driven in any suitable manner, for example by a driving belt 45 passing from a driving pulley 46 around pulleys on the spindles 47 of the brushes, and intermediate rollers, in a circuitous path, and then back to the driving pulley. This is clearly shown in Figs. 3, 4 and 5, in which 48 is the pulley at the end of each spindle, and below these are the loose pulleys 49. 45 is the endless belt passing from the driving pulley 46 around the guide pulley 50, then around the first pulley 48, then around the drum pulley 51, then around the pulleys 48 and 49 alternately, and so back to the driving pulley 46, passing on its way the tension pulleys 52. The cutting saw 5 is driven by chain

sprocket wheels 53 and chain 54, deriving their motion direct from the driving shaft 55.

The mode of action is as follows:—The belt 12 and feed brushes 20 carry the leaves 5 along longitudinally, and the brushes 20 brush the leaves 1 and remove sand and dust therefrom. In due time one end of the stem 3 abuts against the oblique deflector 2. The stem 3 cannot pass underneath this device, 10 and consequently the stem is deflected or diverted out of its normal line of travel into another line of travel, different from its former line of travel. The webs or laminae 1 of the leaves however, are gripped between the rollers or brushes 20, and the belt 15 12. The result is that the stem as it runs into contact with the deflector 2, is gradually moved laterally or deflected, but the belt 12 rollers or brushes 20 put a resistance 20 on the lamina 1, which prevents the lamina 1 being shifted bodily in a lateral direction also, and consequently the lamina of the leaf adjacent to the stem is stretched, by the lateral pull of the stem 3. The stems 25 are also straightened by the action of the deflector. The diverted stem 3 is, after passing the deflector 2, at once presented to the cutting device 5, which severs the stem 3 from the leaf 1. It will thus be seen that 30 the stem as it runs endwise against the deflector 2 is diverted from the feed line into another line of travel, stretching the web 1 of the leaf, and bringing the stem 3 into position for being cut off by the cutters 5. 35 The stem of a tobacco leaf is tapered, being considerably larger at one end than the other, and in placing the leaves in the machine, the thin end of the leaf is preferably placed foremost, but not necessarily so, as 40 the thick end can if desired, be placed foremost. The stem being thus removed from the lamina, is next carried between the rollers 35 and 27, which being geared together carry forward the stem, and present it to 45 the shredding cutters 30 in succession, thus shredding the stem, and delivering the shredded strips at the delivery 56.

All the moving parts of the machine are connected through a series of gearing so 50 as to be driven from a single prime mover, such as the driving pulley 57, which is mounted on the driving shaft 55 supported in bearings 58 on the frame 59. 60 is a clutch operated by a handle 61, (similar to that shown in Fig. 18) by which the pulley 55 57 can be thrown into or out of gear with the driving shaft 55. 62 is the driving chain which imparts by means of the chain 60 wheel 63, the motion of the driving shaft 55 to the driving pulley 64, on the shaft 44, this pulley 64 driving the pulley 43 and so imparting motion to the draw rolls 35 and 29. On this shaft 44 is also mounted the chain pulley 65, driven by the chain pulley 65 66, and this pulley 65 drives the belt pulley

40, which imparts motion by the circuitous driving bands to the saw cutters 30. The driving pulley 66 derives its motion from the shaft 55, by means of the counter shafts 67 and 68 and the two sets of gear wheels 69 and 70. At the opposite end of the shaft 70 68 is the pulley 46, around which passes the endless belt 45, by which motion is imparted to the brushes 20 already mentioned. The cutting saw 5 derives its motion from the 75 driving pulley 53 driven from the driving shaft 55, by means of a chain 54 passing around the small pulley 53.

It is obvious that if desired the belt 12 can be dispensed with and brushes or rollers 80 used above and below for the webs of the leaves. This is shown in Figs. 7 and 8, in which 71 is the feeding belt, 20 one set of brushes above for brushing the uppermost side of the web, and 72 the other set of 85 brushes below for brushing the under face of the web. In this case the deflector device may consist of two plates 2, 2, fixed to the arms 23, but are attached to the framework 22, with a small space 18 between, 90 and the deflectors 2, 2, are adjustable so as to vary the distance between them by slackening up the screws 19 again, as shown in the holes 73 the plates 2, 2, can be brought 95 nearer together or farther apart. By tightening up the screws 19 again, as shown in Fig. 8, the plates are locked.

Figs. 9 and 10 show how the leaf can be fed into the machine without being folded 100 along the line of the stem. In this case the process is substantially the same. There are two feed belts 12, 74, and two sets of feed rollers or brushes 20, 75, two deflecting plates 7, 8, and two cutting devices 5, 11. 105 One side 9 of the leaf is operated upon first, one edge of the stem 3 being brought by the feeding device, against one deflector 7, and thereby diverted from the feed line, into another line of travel which presents 110 one side of the stem 3 to the cutter 5, thus cutting off one side of the web from the stem. A second deflecting plate 8 is placed farther on, and is angled in the opposite 115 direction to the other one, and as one side 9 of the leaf is cut from the stem the other side 10 of the leaf comes under the influence of the second belt 74, and second set of feed rollers or brushes 75, and the stem 3 is drawn against the second deflector 8, which 120 diverts the stem 3 into a new line of travel, that stretches the leaf, and presents the stem 3 to the second cutter 11.

Figs. 11, 12, 13, 14, 15, 16, 17, and 18 show the machine complete with its driving mechanism, of the type in which brushes 125 above and below are provided. There are one set of brushes 20 above for brushing one face of the leaf at one side of the web, and one set of brushes 72 below for brushing the under face of the web, at the same 130

side of the stem; another set of brushes 75 for brushing one face of the web at the other side of the stem, and a set of brushes 76 below, for brushing the under face of the web at the said other side. There are also two pairs of deflecting plates 7, 7, and 8, 8, and two cutting devices 5, 11. One side of the leaf as before is first operated upon, first one edge of the stem being brought by the feeding device, against one pair of deflectors 7, 7, and thereby deflected from the feed line into another line of travel, which presents one side of the stem 3 to the cutter 5, thus cutting off one side of the web from the stem. The second pair of deflecting plates 8, 8, is placed farther on, and are angled in the opposite direction to the other pair, and as one side of the leaf is cut off from the stem, the other side of the leaf comes under the influence of the brushes 75, 76, and the stem 3 is drawn against the second pair of deflectors 8, 8, which diverts the stem 3 into a new line of travel, stretches the leaf, and presents the stem 3 to the second cutter 11. 71 is a feeding belt for feeding the leaves into the machine, the said belt returning around the belt pulley 77, to the other pulley 27. The stem 3 is thus left free to be acted on by the deflectors 7, 7, and the brushes, and the cutters. 79 are tables which support any portion of the web which projects outside the brushes. For convenience there is by preference another table 80 at the feed end of the machine on which the leaves are laid, ready to be placed on the belt 71, with which table 80 the upper length of the belt 71 lies flush. 81 is an endless belt, passing from the driving pulley 82 around the guide or tension pulleys 83, then around the pulley 84 of the last of the lower row of brushes 76, then around the pulley 85 of the last of the upper row of brushes 75, and so on alternately and then back to the pulley 82. The other set of brushes 20, 72, are driven by an endless belt 86 from a pulley 87 on the same shaft as pulley 82 namely 68. This after passing around guide pulleys 88, passes first around the pulley 89 at the end of the last of the upper row of brushes 20, then around a pulley 90 on the last of the lower row of brushes 72, and so on alternately around these pulleys, and finally around guide pulleys 91 back to the pulley 87. The method of imparting motion to the shaft 68 is by means of the gear wheels 60 and 70 from the main shaft 55 which is driven by the pulley 57. 60 is a clutch operated by the handle 61 through the connecting rod 92, and crank arms 93 and 94. 95 is a spring, the pull of which keeps the clutch normally out of gear with the pulley, 96 a quadrant with notches for the hand lever 61 to engage in by which the clutch is kept in gear with the pulley 57.

In thus describing my deflecting device as set obliquely to the travel of the leaves, I wish it to be understood that I do not confine myself to a straight oblique line, as it can be curved or any suitable shape so long as it is angled to the line of travel of the leaves.

What I claim is:

1. In an apparatus for stemming tobacco leaves, a framework, feeding members arranged above and below the leaves to be fed through said framework, a deflecting member for deflecting the stem of said leaves into a different line of travel from the laminae, whereby the laminae is stretched as the same passes through the machine, said deflecting member comprising a plate set at an angle to the general direction of travel of said leaves and spaced above the lower feeding means for permitting the laminae to pass beneath the deflecting member but preventing the stem of the leaves from passing beneath.

2. In an apparatus for stemming tobacco leaves, feeding members arranged above and below the leaves designed to be fed through the apparatus, a deflecting plate arranged at an angle to the general travel of said leaves for deflecting the stem from the direction of travel of the laminae, whereby the laminae is stretched, means for adjusting vertically said deflecting device, and means for severing the stems of said leaves.

3. In an apparatus for stemming tobacco leaves, superimposed feeding means for feeding leaves through the apparatus, deflecting means embodying a plurality of plates set at an angle to the general travel of the leaf for stretching the stems of said leaves, means for adjusting each of said plates, and means for severing the stems of said leaves.

4. In an apparatus for stemming tobacco leaves, superimposed leaf feeding means, a leaf deflecting device embodying a pair of plates arranged obliquely to the general travel of leaves to the feeding means, means for adjusting vertically said plates for varying the distance between said plates for accommodating the varying thicknesses of leaves, and means for severing the stems of said leaves.

5. In an apparatus for stemming tobacco leaves, a framework, feeding brushes mounted in said framework, a feeding belt arranged below said feeding brushes which co-acts with said feeding brushes for feeding leaves through the apparatus, a stem deflecting plate spaced above said feeding belt, means for adjusting said stem deflecting plate, and means for severing the stems of the leaves moved by said feeding brushes and said feeding belt.

6. In an apparatus for stemming tobacco leaves when in an open condition, a frame-

work, means for feeding leaves through said framework, a deflecting device for deflecting stems of said leaves from their normal travel, means for severing the stems from one of their webs after the same have been deflected from their normal course of travel, a second deflecting plate arranged at a different angle from the first deflecting plate designed to deflect in an opposite direction the stems of said leaves, and means for severing said stems from the other of said webs.

7. In an apparatus for stemming tobacco leaves, a framework, feeding brushes arranged in said framework, feeding belts arranged below said brushes, a deflecting device for deflecting the stems of leaves as the same are forced through said framework by said brushes and said belt, a cutter for severing one of the webs of said leaves, a second deflecting plate for deflecting the stems of said leaves in an opposite direction to their first deflection, a second set of feeding brushes arranged above said second deflecting device, feeding means arranged below said brushes, and means for severing the stems of said leaves from the other web.

8. In an apparatus for stemming tobacco leaves, a framework, means for feeding leaves through said framework, deflecting means for deflecting said stems from their normal travel, means for severing said stems from their webs, a pair of draw-rollers arranged to receive said stems and advance the same, one of said draw-rollers being formed with a saw blade and the other of said draw-rollers being formed with a groove for receiving the edge of said saw blade, whereby said stem is firmly gripped

and drawn forward for insuring the entire stem being separated from its web.

9. In an apparatus for stemming tobacco leaves, means for removing the stems from the laminae, and means for shredding the stems, said shredding means embodying a series of pairs of rollers between which the stems are passed, a saw blade at the end of one roller in each pair arranged to rotate at a different speed from the roller, the other roller of each pair being formed with a groove into which said saws enter, each of said saws being arranged to rotate in a different plane so as to shred or slice said stem.

10. In an apparatus for stemming tobacco leaves, a draw roller having a sleeve journaled in bearings, a saw blade having a spindle passing through said sleeve, a second draw roll having a spindle journaled in bearings adjacent to said first mentioned draw roller, a pair of pulleys, one fixed on the stem of one roller and the other freely mounted on the spindle of the other rollers, a second pair of pulleys one fixed to the saw spindle and the other fixed to the adjacent draw rolls spindle, and a pair of endless driving cords or bands passed from a driving pulley around said pulleys, in such a manner as to drive the rolls and the saw blades at different speeds.

In witness whereof, I have hereunto signed my name this 26th day of September 1908, in the presence of two subscribing witnesses.

FREDERICK SALOMON.

Witnesses:

G. C. DYMOND,

T. S. SHILLINGTON.