

I. FRIEDRICH.

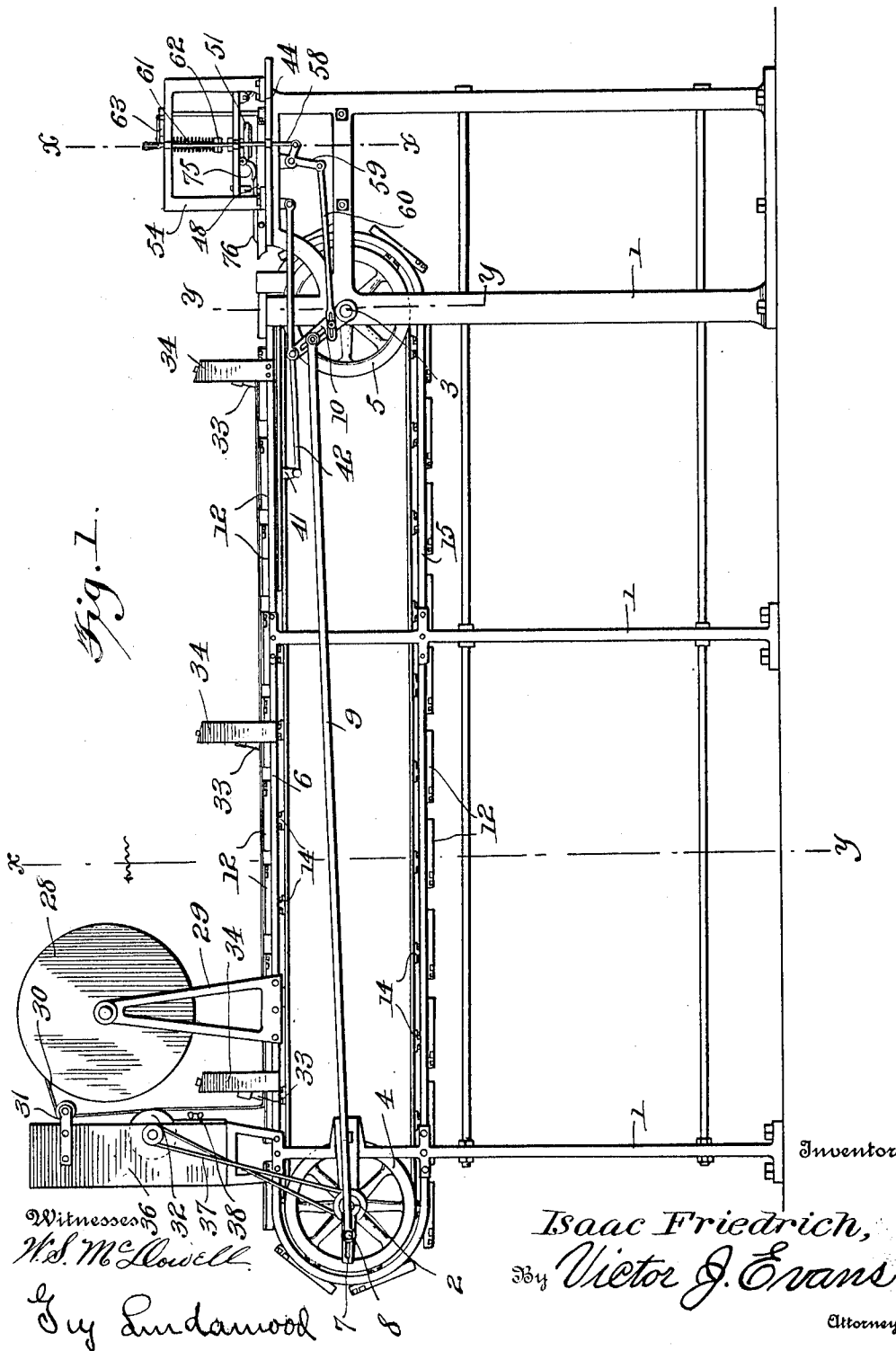
ARTIFICIAL LEAF STEMMING AND FINISHING MACHINE.

APPLICATION FILED JUNE 5, 1914. RENEWED MAR. 30, 1915.

1,170,622.

Patented Feb. 8, 1916.

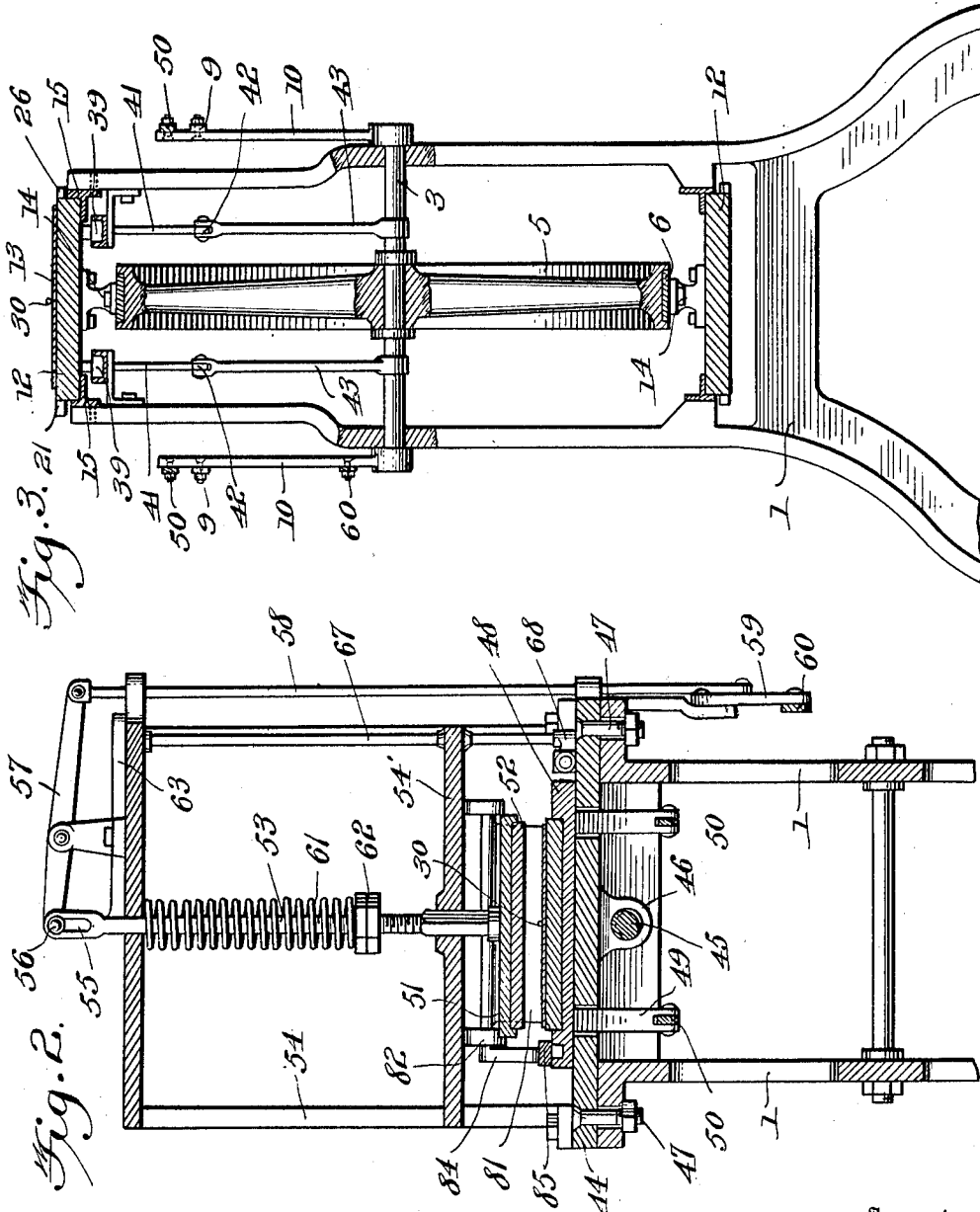
7 SHEETS—SHEET 1.



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7 SHEETS—SHEET 2.



Witnesses

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E. J. Lindamood.

Inventor

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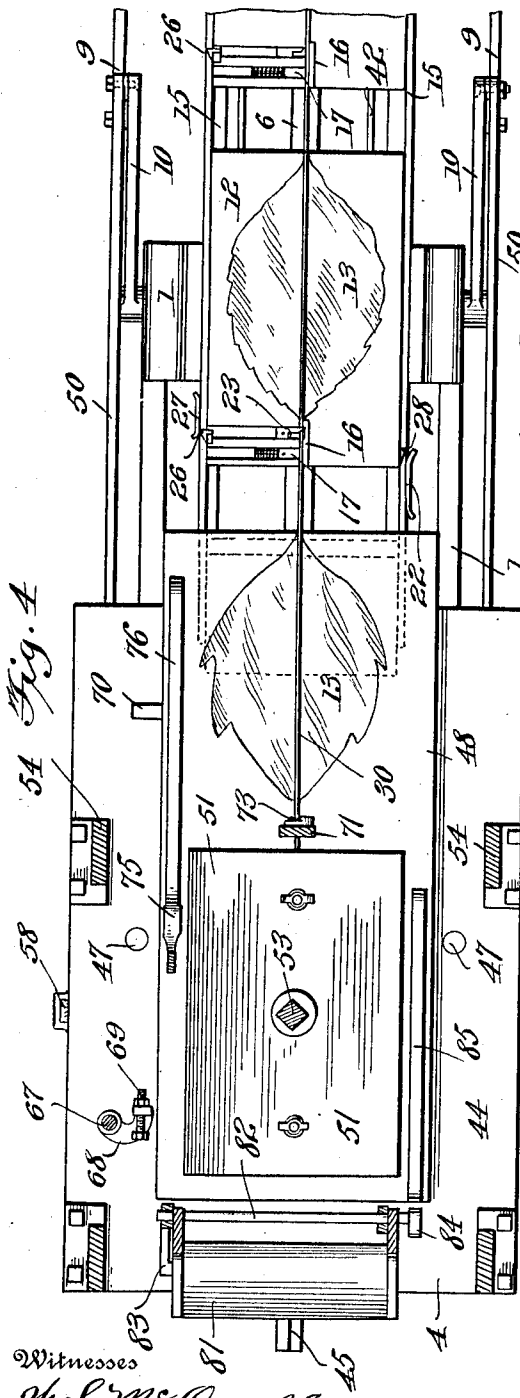
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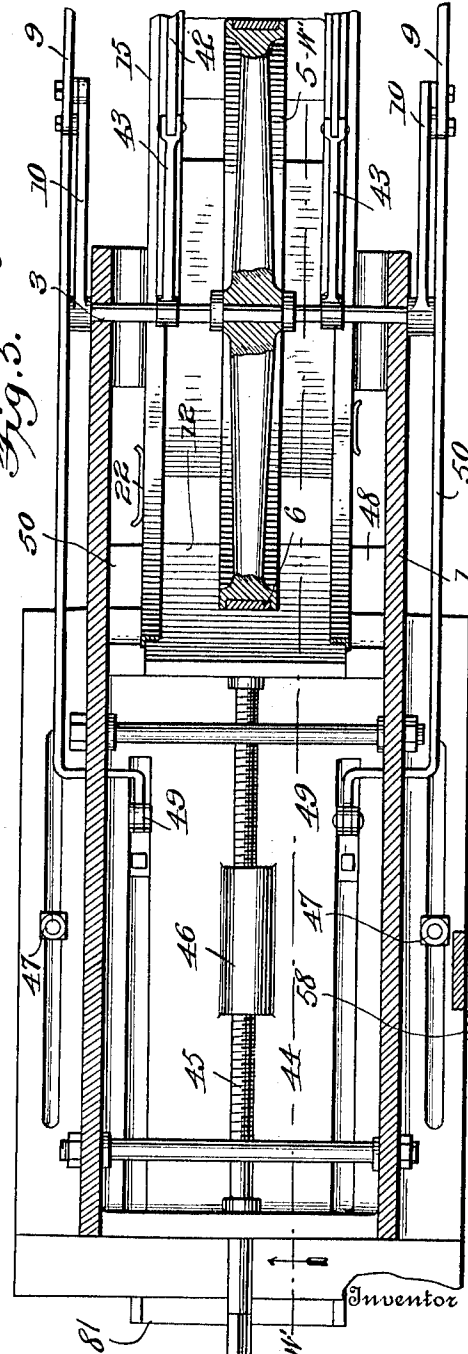
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Witnesses
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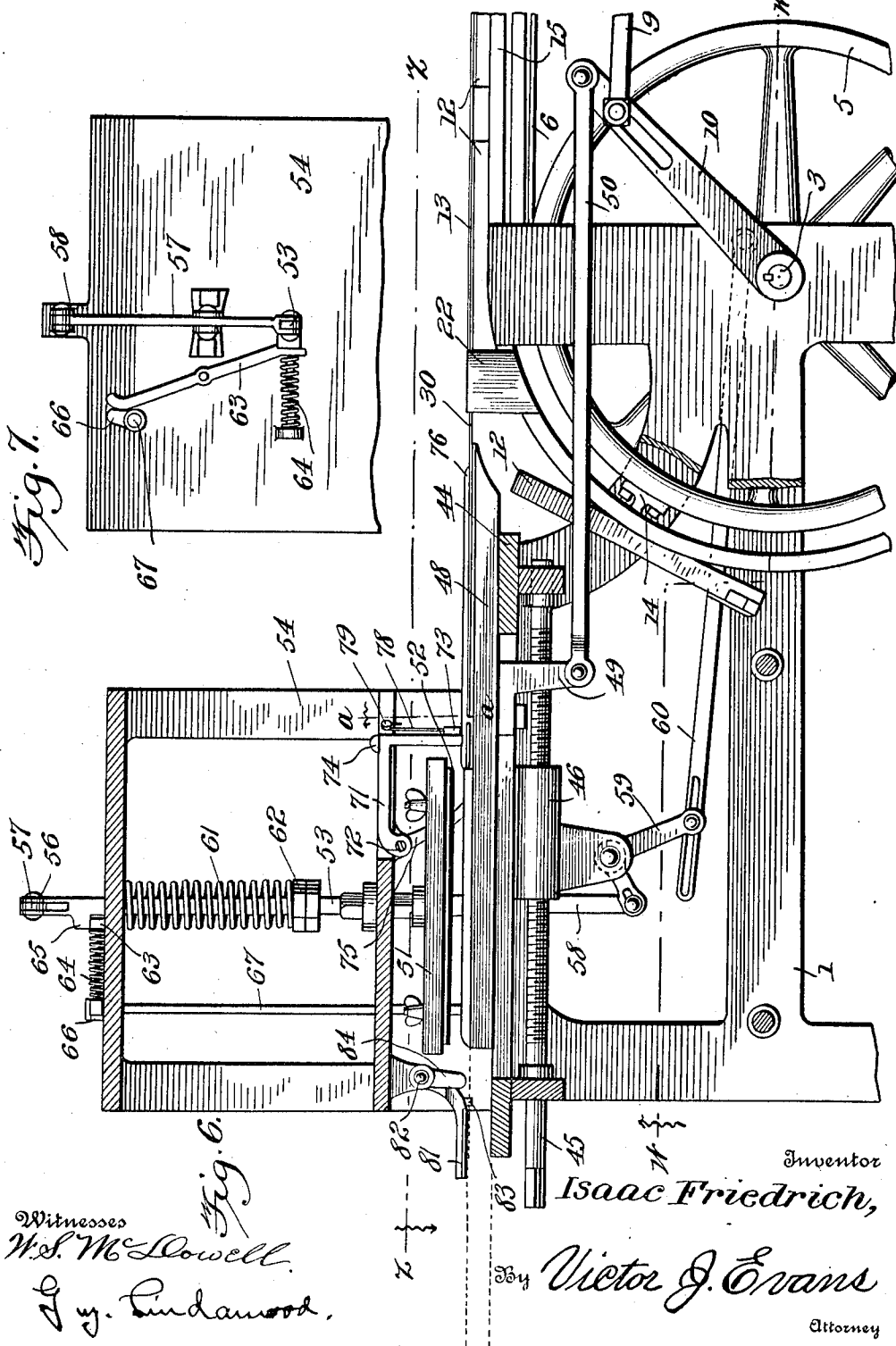
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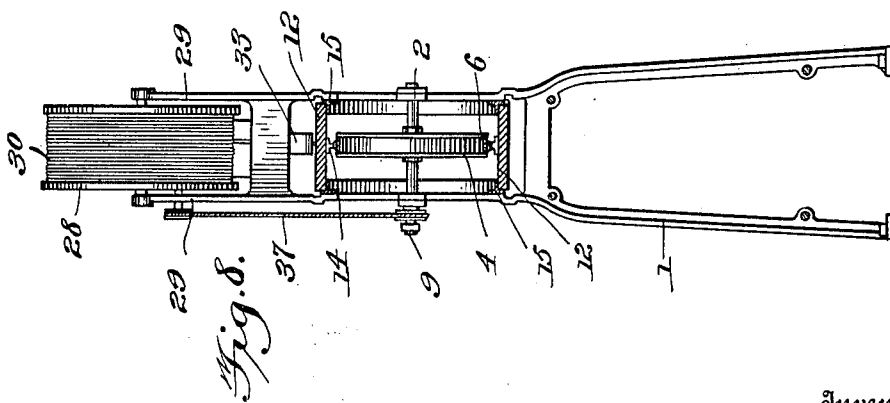
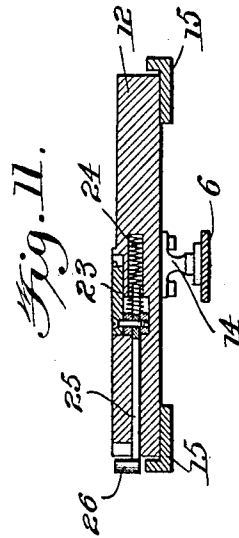
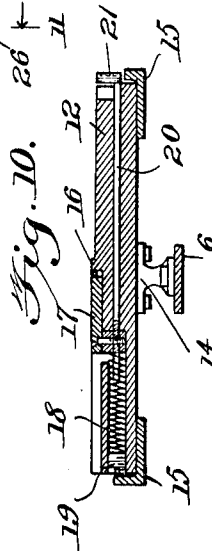
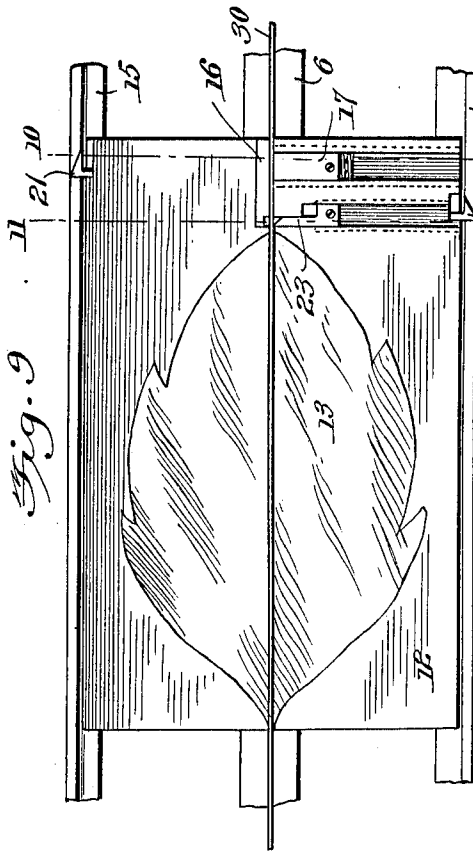
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7 SHEETS—SHEET 6.



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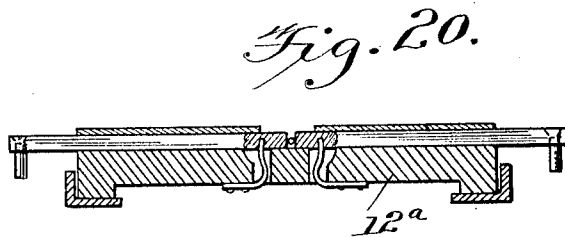
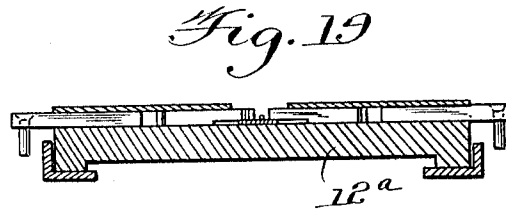
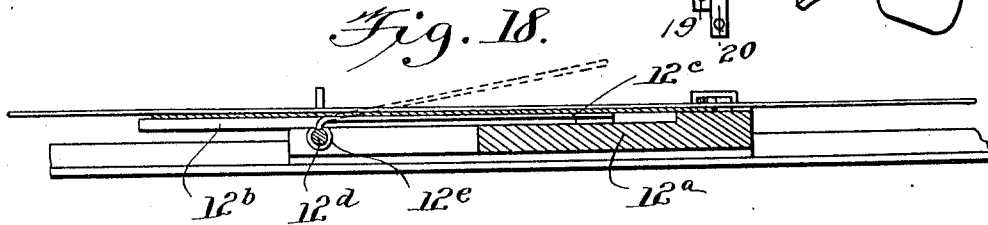
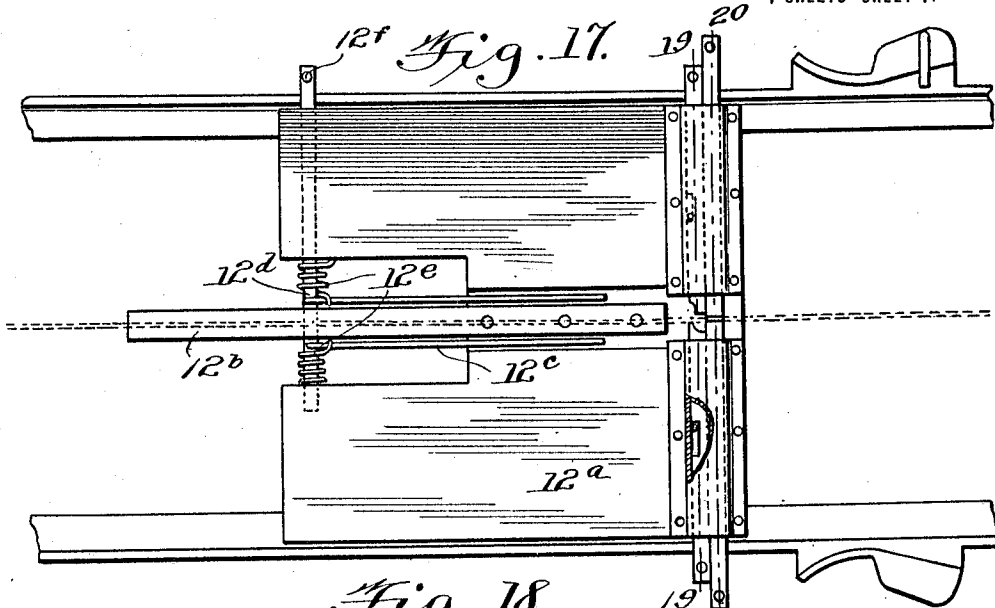
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UNITED STATES PATENT OFFICE.

ISAAC FRIEDRICH, OF PHILADELPHIA, PENNSYLVANIA.

ARTIFICIAL-LEAF STEMMING AND FINISHING MACHINE.

1,170,622.

Specification of Letters Patent.

Patented Feb. 8, 1916.

Application filed June 5, 1914, Serial No. 843,307. Renewed March 30, 1915. Serial No. 13,160.

To all whom it may concern:

Be it known that I, ISAAC FRIEDRICH, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Artificial-Leaf Stemming and Finishing Machines, of which the following is a specification.

In the manufacture of artificial leaves, the stems have been applied thereto in a general way by hand and such operation besides being slow and tedious is comparatively expensive.

The present invention provides a machine which affixes the stems to the leaves and finishes the latter by embossing or otherwise applying the veins to stimulate the natural leaf, both operations being performed by the same machine in a continuous operation without requiring any intermediate handling, said machine being adjustable in its parts to accommodate leaves of different sizes and shapes.

The invention consists of a table for receiving the leaf to be stemmed and finished, and, for convenience, a plurality of tables are employed and connected to a carrier which is endless so that the tables are advanced and returned to normal position in a cycle of operation.

The intervention further provides means for intermittently moving the carrier for advancing the leaves to the stemming and finishing mechanism, such mechanism being adjustable to adapt the machine to the various sizes of leaves employed in the art.

The invention further consists of means for applying an adhesive to the stem and pressing such stem upon the leaf, and means for separating the leaves and the stems thereof preliminary to advancing the leaves into a position to be acted upon by the veining mechanism.

The invention also further consists of a clamp for retaining the leaf in position upon the table until the leaf reaches a position to receive the finishing operation when such clamp is tripped to effect the release of the leaf which is fed into proper position to be acted upon by the finishing or veining mechanism.

The invention also further consists of a

novel actuating mechanism cooperating with the veining mechanism and subsequent to the operation of such veining mechanism to effect a release of the leaves and a delivery of the same from the machine.

The invention consists of the novel feature, details of construction and combination of parts, which hereinafter will be more particularly set forth, illustrated and claimed.

In the drawings hereto attached:—Figure 1 is a view in elevation of a machine for applying stems to artificial leaves and finishing such leaves by embossing or otherwise imprinting the veins thereon in imitation of the natural leaf, such machine illustrating an embodiment of the invention. Fig. 2 is a transverse section on the line $x-x$ of Fig. 1 showing the parts on a larger scale. Fig. 3 is an enlarged cross-section on the line $y-y$ of Fig. 1. Fig. 4 is a horizontal section on the line $z-z$ of Fig. 6. Fig. 5 is a horizontal section on the line $w-w$ of Fig. 6 looking upward as indicated by the arrows. Fig. 6 is a vertical longitudinal section on the rear portion of the machine on the line $w'-w'$ of Fig. 5. Fig. 7 is a top plan view showing more clearly the means for holding the veining plunger elevated and the parts intimately associated therewith. Fig. 8 is a transverse section on the line $x-y$ of Fig. 1 looking to the left. Fig. 9 is a top plan view of one of the tables for receiving a leaf showing the same on a larger scale. Fig. 10 is a transverse section on the line 10-10 of Fig. 9 looking to the left. Fig. 11 is a cross section on the line 11-11 of Fig. 9 looking to the left. Fig. 12 is an enlarged sectional detail of a portion of the reciprocating table and leaf releasing mechanism on the line $a-a$ of Fig. 6 looking to the left. Fig. 13 is an enlarged section of the lower portion of the paste mechanism and tables showing the wire reel and presser foot for holding the wire in position when affixing the same to the leaf. Fig. 14 is an enlarged section of the operating ends of two tables and the means whereby such tables are intermittently moved forward. Fig. 15 is a detail view showing the means for adjustably securing the connecting rod to the arm of the main drive shaft. Fig.

16 is a sectional view on the line *d-d* of Fig. 15. Fig. 17 is a top plan view of a modified form of leaf receiving table. Fig. 18 is an end view thereof, the dotted lines showing the leaf detacher elevated. Fig. 19 is a cross section on the line 19-19 of Fig. 17. Fig. 20 is a cross section on the line 20-20 of Fig. 17.

Corresponding and like parts are referred to in the following description, and indicated in all the views of the drawings, by the same reference characters.

The machine comprises a suitable frame work 1 which embodies uprights and longitudinal and transverse members. Transverse shafts 2 and 3 are located at opposite ends of the frame work, the shaft 2 being positively driven. Pulleys or wheels 4 and 5 are loosely mounted upon the respective shafts 2 and 3 and are preferably grooved in their outer edges to receive a belt 6 which is prevented from lateral movement. The pulleys or wheels 4 and 5 have an intermittent rotary movement imparted thereto. The drive shaft 2 is continuously rotated, whereas the shaft 3 has an oscillatory movement imparted thereto. An arm 7 is secured to the shaft 2 so as to rotate therewith, such arm being slotted as shown most clearly in Fig. 15 and receiving a pin 8 which is adjustable in the slot and is adapted to be secured in adjusted position. A connecting rod 9 has one end mounted upon the pin 8 and its opposite end is adjustably connected to a slotted arm 10 which is secured to the shaft 3. The connection of the rod 9 with the arm 10 is at a greater distance from the shaft 3 than the point of connection of the rod 9 with the arm 7, the purpose being to have the arm 10 receive an oscillatory movement whereas the arm 7 rotates with the shaft 2.

In order that the machine may be readily adapted for different sizes of leaves, it is necessary that the rod 9 have adjustable connection with the arms 7 and 10. A plurality of tables 12 are provided for receiving and supporting the leaves 13, and such tables are of a size depending upon the sizes of the leaves to be fitted with stems and finished with veins or in any other way. The tables or leaf supports 12 are preferably of metal and are connected to the endless belt 6 in a manner to admit of different sizes of tables being placed in position. Inasmuch as it is desirable to avoid subjecting the belt 6 to excessive strain and at the same time provide for movement of the tables around the pulleys 4 and 5, it is preferred to attach such tables at a central point to the belt, and for this purpose bracket lugs 14 are employed and are secured by suitable fastenings to the tables and belt to admit of the parts being readily detached when required. Tracks 15 are located at opposite sides of the frame

work and support the tables 12, such tracks consisting of angle bars which prevent any lateral movement of the tables. Each of the tables 12 is provided with a clamp and cutter, the clamp serving to hold the stem, whereas the cutter severs such stem at the proper time.

The clamp consists of a fixed jaw 16 and a movable jaw 17, the movable jaw being held pressed toward the fixed jaw by means of an expansible helical spring 18 arranged in an opening formed in an edge portion of the table 12. The tension of the spring 18 may be regulated by means of a plug 19 threaded into the opening in which the spring 18 is placed. A rod 20 connected at its inner end with the movable jaw 17 is formed with a cam 21 at its outer end to ride upon a trip 22 arranged in the path of the cam 21 so as to effect a release of the stem an instant after the same has been cut. The cutting mechanism embodies a suitable cutter 23 which is arranged within a recess formed in the table. An expansible helical spring 24 normally exerts a pressure upon the cutter 23 to hold the same in a normal position so as to clear the stem. A rod 25 is connected at its inner end with the cutter 23 and projects beyond the table and is formed at its outer end with a cam 26 which is adapted to engage a trip 27 at one side of the track and in the path of the cam 26. The rods 20 and 25 are slidable in transverse openings formed in the table 12 and projects beyond opposite edges of such table. The trip 27 is located in advance of the trip 22 whereby the cutting mechanism is actuated in advance of the means for releasing the stem after the latter has been cut.

It is to be understood that within the purview of the invention, the cutting and stem holding mechanism may be of any construction and arrangement so long as the wire constituting the stem is retained in proper position during the affixing thereof to the leaves and is subsequently cut into the required lengths to form the stems.

A reel 28 is located at or near the front end of the machine and is mounted in suitable supports 29. The wire 30 forming the stems is wound upon the reel 28 and may be of any construction such as is commonly employed in connection with artificial flowers. The wire 30 after leaving the reel 28 passes around a guide pulley 31, thence over a rotary paster 32 and beneath a presser foot 33. It is proposed to provide a number of presser feet 33 and locate the same at intervals in the length of the track so as to hold the wire pressed upon the leaves. Each presser foot 33 is mounted in a support 34 and is acted upon by means of a spring 35 which is mounted upon a stem of the presser foot and confined between a shoulder of such presser foot and the support 34. The length of the endless carrier is such as to insure a thor-

ough setting of the paste or like adhesive before the wire is cut and the leaves released preliminary to being advanced to the veining or finishing mechanism.

5 The paste or other form of adhesive employed for attaching the stems to the leaves is contained in a box 36, such box having an outlet near its lower end through which the paste distributor 32 projects. The paste distributor 32 consists of a wheel which is
10 grooved in its periphery to center the wire. The paste distributor 32 is positively driven, being connected by means of a belt 37 with the drive shaft 2. A wiper 38 is adjustable
15 so as to remove surplus paste from the distributor 32 so that the proper amount may be supplied to the wire 30. The tables or leaf supports 12 are intermittently advanced by suitable means such as a member 39
20 which is mounted upon the frame work in such a manner as to have a reciprocatory movement imparted thereto. A weighted dog 40 is pivoted to the member 39 and is adapted to engage the tables 12 and move
25 the same forward. As shown most clearly in Fig. 14, the weighted dog 40 has its forward end upwardly curved and as a result such curved end rides under a table when the member 39 is returning to a normal
30 position preliminary to moving forward for advancing the tables. Lugs 41 depend from the sliding member 39 and pass through slots therein. Rods 42 connect the lugs 41 with arms 43 secured to the shaft 3. It is to be
35 understood that the connections are such as to advance the tables the predetermined distance at each operation, this being regulated at the outset when adapting the machine for operating upon leaves of a given size. A
40 table 44 is adjustably mounted upon the rear portion of the frame work 1 and supports the veining or finishing mechanism and adjunctive parts and an adjusting screw 45 is mounted in parts of the frame work 1 and has screw
45 thread connection with a sleeve 46 depending from the table 44. After the table 44 has been adjusted to properly position the veining mechanism, it is held in the located position by means of bolts or like fastenings 47.
50 A table 48 is slidably mounted upon the table 44 and has bracket lugs 49 depending therefrom and connected by means of rods 50 with the arms 10. The table 48 receives a reciprocatory movement of such amplitude
55 as to carry a leaf in proper position to receive the finishing operation. The table 48 is of a length to receive two leaves at one time and its receiving end is adapted to extend beneath the leaf of the rearmost table
60 12 so as to receive such leaf when the rear table 12 passes around the pulley or wheel 5. At this time the leaf is released from the clamp of the rear table 12. It is to be understood that the front portion of the
65 table 48 is provided with one part of the fin-

ishing mechanism corresponding to the veins of the leaves in their finished state. When the table 48 is moved rearward, the leaf received upon its front portion is brought beneath a plunger 51 which has a die 52 at-
70 tached thereto, such die being the counterpart of the finishing surface of the table 48. the plunger 51 has its stem 53 mounted in cross pieces of a frame work 54 which is secured to the table 44 so as to move there-
75 with. The upper end of the stem 53 has a vertical slot 55 which receives a stud 56 projecting laterally from one end of a lever 57, the other end of such lever being connected by means of a rod 58 with one arm of a bell
80 crank 59, the other arm of such bell crank being connected by means of a rod 60 with the arm 10. An expansible helical spring 61 is mounted upon the stem 53 and is confined between a stop 62 and the upper cross
85 piece of the frame 54. The stop 62 is adjustable to admit of varying the tension of the spring 53. The normal tendency of the spring 53 is to force the plunger 51 downward. When the plunger 51 is elevated, it
90 is held in the raised position by means of a detent 63 which consists of a lever pivoted between its ends upon the upper cross piece of the frame 54. A spring 64 normally
95 presses the detent 63 into engagement with the stem 53, the latter being provided near its upper end with a stop 65 which engages over the lever 63 thereby holding the plun-
100 ger 51 elevated against the tension of the spring 61. A trip 66 secured to the upper end of a vertical shaft 67 is adapted to engage the detent 63 and effect a disengagement of such detent from the stem 53
105 whereby the plunger 51 is permitted to descend at the proper moment to effect the veining or finishing of the leaf in position thereunder. An arm 68 is secured to the lower end of the vertical shaft 67 and is provided with an adjustable stop 69 ar-
110 ranged in the path of a stop 70 provided upon the table 48. When the table 48 is moved rearward after receiving the leaf and when the latter reaches a proper position beneath the plunger 51, the detent 63 is
115 tripped by the stop 70 striking the stop 69 and the plunger 51 being released is thrown downward by the action of the spring 61 thereby forming the veins or otherwise finishing the leaf.

It has been found that there is a tendency
120 of the leaf to stick to one or the other of the finishing members, hence it has been necessary to provide means for detaching the leaf from such members. The leaf de-
125 tacher comprises an L-shaped arm 71 which is secured at one end to a shaft 72, the other end of such arm being provided with a grip 73. The leaf detaching arm 71 is limited in its downward movement by stop means 74
130 which consists of laterally extending lugs

arranged to engage portions of the lower cross piece of the frame 54' bordering upon the slot through which the part 71 operates. The arm 71 is moved by means of an arm 75 which is secured to the shaft 72 and has its lower end arranged to be engaged by means of a cam 76 provided upon the table 48. The grip 73 is pivoted between its ends to the vertical or depending portion of the arm 71 and is weighted at one end and formed at its opposite end with a hook 77 which is arranged to engage the stem 30 and hold the same against the lower end of the arm 71 during the return of the table 48 to a normal position, when the grip 73 is actuated to release the stem thereby permitting the leaf previously detached from the veining or finishing members to drop upon the rear portion of the table 48. A wire 78 is connected at its lower end to the weighted grip 73 and its upper end is adapted to engage a pin 79 projecting from a part of the frame work 54. A stop 80 projects from the lower end of the arm 71 and is adapted to engage the grip 73 and limit the downward movement of its weighted end. Normally the weighted end of the grip 73 is held a short distance above the stop 80 by the upper end of the wire or like connection 78 engaging the pin 79 but when the arm 71 is raised, the stop 80 is brought into contact with the grip 73 thereby causing such grip to rise with the arm 71, and when the arm 75 clears the cam 76, the arm 71 falls quickly and the weighted end of the grip 73 being arrested in its downward movement by the part 78 engaging the pin 79 causes such grip to turn upon its pivot connection with the arm 71 and either grip or release the stem according to the position of the table 48. The cam 76 is of such a length as to clear the arm 75 at the end of the movement of the table 48 in each direction.

A deliverer is located at the rear end of the machine for removing the leaves from the table 48 when the same returns to a position to receive the next leaf from the stemming mechanism. This deliverer consists of a plate 81 which is pivoted at 82 upon a transverse rod mounted in lugs depending from the lower cross piece of the frame work 54. A stop 83 limits the downward movement of the leaf deliverer 81. An arm 84 is secured to one end of the rod 82 and is adapted to be engaged by means of a track 85 carried by the table 48. When the table 48 moves rearward, the track 85 engages the arm 84 and lifts the part 81 so that the leaf may pass beneath the deliverer. Upon the return movement of the table 48 and before the same reaches the limit of its travel, the track 85 clears the arm 84 thereby permitting the deliverer 81 to fall upon the leaf and drag the same

from the table 48, such leaf dropping into a suitable receptacle placed to receive the same.

As hereinbefore stated, the machine is adapted to stem and finish artificial leaves of different lengths hence tables 12 of different lengths are adapted to be placed in position and attached to the belt 6. The veining or finishing mechanism is adjustable in the manner stated so that its position may be fixed with reference to the size of the leaf to be veined or otherwise finished. The various adjustments indicated, provide for variation in the movements of the different parts according to the length of the leaves to be operated upon.

In the modification shown in Figs. 17 and 18, the table 12^a is provided with a stem supporting bar 12^b, which is detachably connected thereto so as to be replaced by bars of different lengths. To prevent the leaf sticking to the table 12^a, a detacher 12^c is provided, the same consisting of a wire which is attached at one end to the lock shaft 12^d, which is acted upon by means of a spring 12^e, said lock shaft having an arm 12^f to be engaged by a suitable trip for elevating the leaf detacher as indicated by the dotted lines in Fig. 18.

The operation of the machine is as follows:—The wire forming the stems of the leaves is wound upon the reel 28 and is drawn therefrom by the movement of the tables 12 when advanced. The leaves are placed upon the tables 12 in succession and are moved forward as the tables are advanced. The wire 30 when unwound from the reel 28 is supplied with an adhesive by means of the paste distributor 32 and such wire is placed upon the leaves by means of the presser feet 33. By the time the leaf reaches the veining mechanism, the adhesive has set or hardened. After the rear-most table passes around the pulley or wheel 5, the leaf supported thereby passes upon the table 48 and at the proper moment the wire 30 is cut and an instant thereafter the clamp holding the leaf is actuated to release such leaf which is now supported solely by means of the table 48. The instant the leaf is fully deposited upon the table 48, the latter moves forward to bring such leaf beneath the plunger 51 and when the table 48 has reached the limit of its forward movement, the detent 63 is actuated to release the stem 53 thereby admitting of the plunger being forced downward by the action of the spring 51 thereby veining or otherwise finishing the leaf. At this stage of the operation, the leaf detaching arm 71 is moved to cause the grip 73 to engage the stem of the leaf just finished, thereby insuring the disengagement of the leaf from the table and plunger, such leaf being held until the table 48 has returned to a normal

position when the part 71 is again moved to cause the grip 73 to release the leaf which drops upon the rear end of the table to be removed therefrom at the next operation of the table by means of the leaf detach-
 5 81 in the manner stated.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device
 10 which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the invention as claimed.

Having thus described the invention, what is claimed as new is:—

1. In a machine for applying stems to artificial leaves and finishing the latter, the same comprising a plurality of tables for receiving and supporting the leaves, a reel containing a stem forming element wound thereon, means for applying an adhesive to the said stem forming element, means for pressing and holding the stem forming element upon the leaves placed upon the tables, a cutting mechanism for severing the stem forming element into predetermined lengths, means for effecting a release of the leaves
 25 from the tables, a second table for receiving the leaves from the stemming tables, operating means for said second table, a plunger for finishing the leaves, and operating means for actuating the said plunger.

2. In a machine for stemming and finishing artificial leaves, the combination of a plurality of leaf supporting tables connected in a series, means for supplying a stem forming element in continuous length, means for supplying an adhesive to such stem forming element, presser members at intervals in the path of said tables for holding and pressing the stem forming element upon the leaves, and a cutting mechanism for severing the stem forming element into predetermined lengths.

3. In a machine for stemming and finishing artificial leaves, the combination of an endless belt, supporting means for such belt, leaf supporting tables attached to the belt, a track for supporting and giving proper direction to the leaf supporting tables, means for applying a stem to the leaves placed upon the tables, a second table arranged to receive the leaves when stemmed from the first mentioned tables, means for imparting a reciprocatory movement to the second table, and a finishing mechanism for operating upon the leaves when properly positioned by the said second table.

4. In a machine of the character specified, the combination of spaced pulleys, an endless belt supported by means of such pulleys, a track arranged between the pulleys, a plurality of leaf supporting tables attached to the said belt and arranged to travel upon the track, means for supplying a stem forming element in continuous length, means for affixing such stem forming element to the leaves, a cutting mechanism for severing the stem forming element into given lengths, and a finishing mechanism arranged to receive the leaves when stemmed.

5. In a machine for applying stems to artificial leaves, the combination of a connected series of leaf supporting tables, a clamp and cutter mounted upon each of such tables means for supplying a stem forming element in continuous length, and actuating means for operating the clamp and cutter of each of the tables at different times whereby the stem forming element is cut in advance of the operation of the clamp to effect the release of the stem.

6. In a machine for stemming and finishing artificial leaves, the combination of a connected series of leaf supporting tables, a clamp and cutter mounted upon each of such tables, trips for operating the clamps and cutters, the one in advance of the other, means for imparting an intermittent movement to the connected series of leaf supporting tables, means for supplying a stem forming element in continuous length, and means for attaching the stem forming element to the leaves.

7. In a machine for stemming and finishing artificial leaves, the combination of a connected series of leaf supporting tables, means for applying stems to the leaves, a second table for receiving the leaves when stemmed, means for imparting a reciprocating movement to the said second table, a finishing mechanism including a plunger, operating means for the plunger, and means for disengaging the leaves from the finishing mechanism.

8. In a machine for stemming and finishing leaves, the combination of a connected series of leaf supporting tables, means for imparting an intermittent movement to the tables, a second table for receiving the leaves when stemmed, means for imparting a reciprocating movement to the second table, a leaf finishing mechanism including a plunger, means for detaching the leaves from the leaf finishing mechanism, and means for delivering the finished leaves from the said second table.

9. In a machine of the character specified, the combination of a reciprocating table, a plunger arranged to cooperate therewith, a stem projecting from the plunger, a spring normally exerting a pressure upon the plunger, a detent for holding the plunger spaced

from the table against the tension of the plunger actuating spring, and a trip for disengaging the detent from the plunger to admit of the latter being thrown forward
5 by the spring.

10 10. In a machine of the character specified, the combination of a reciprocating table, a spring actuated plunger arranged to coöperate with the table, a detent arranged to normally hold the plunger away from the table,

and a trip adapted to be actuated by the table for effecting a release of the detent from the plunger to admit of the latter being thrown forward by means of the spring.

In testimony whereof I affix my signature 15
in presence of two witnesses.

ISAAC FRIEDRICH.

Witnesses:

HELEN G. DALEY,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."