Jan. 31, 1950 E. J. STULA 2,495,874

TOBACCO SPEARING MACHINE

Filed Jan. 13, 1948 2 Sheets-Sheet 1

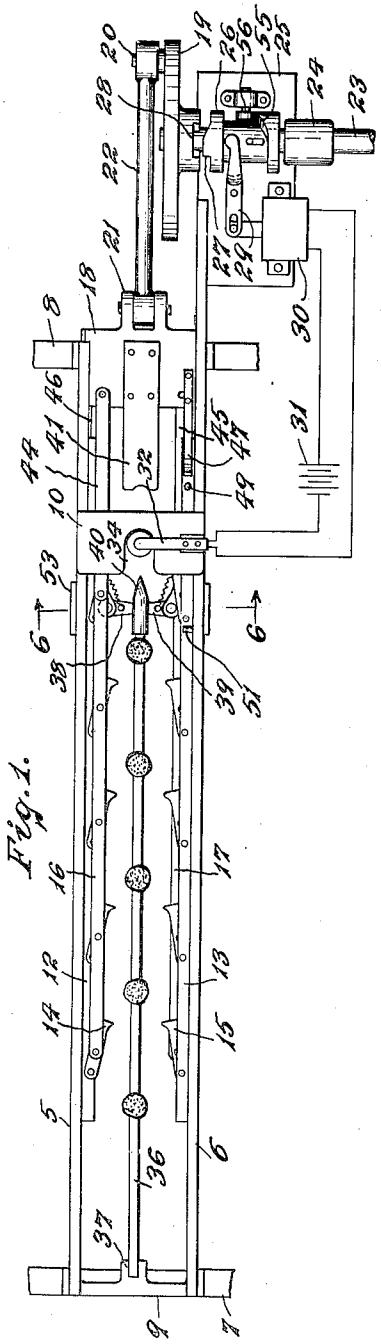


Fig. 1.

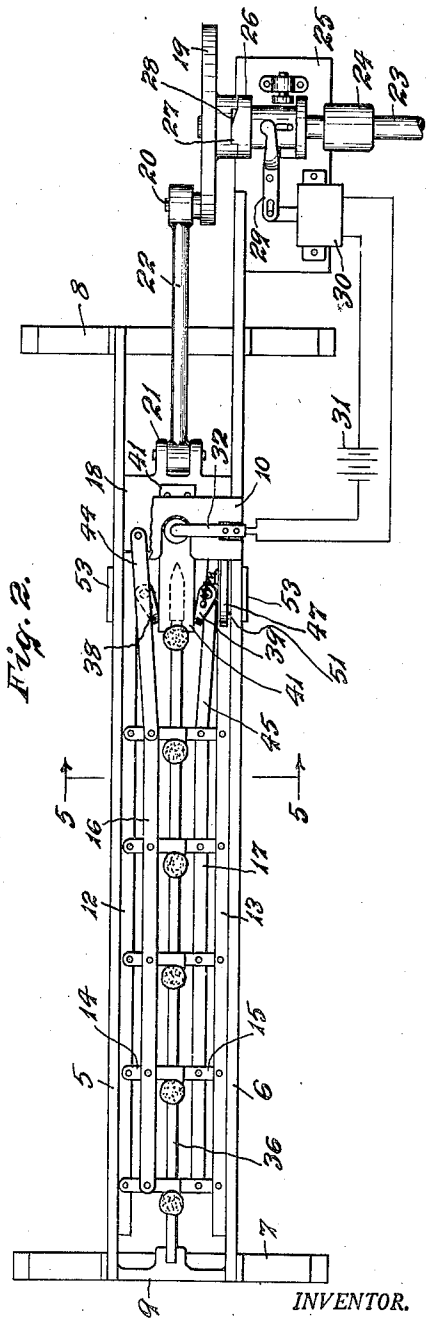


Fig. 2.

INVENTOR.
EDMUND J. STULA.
BY
Louis V. Lucia

Jan. 31, 1950 E. J. STULA 2,495,874

TOBACCO SPEARING MACHINE

Filed Jan. 13, 1948 2 Sheets-Sheet 2

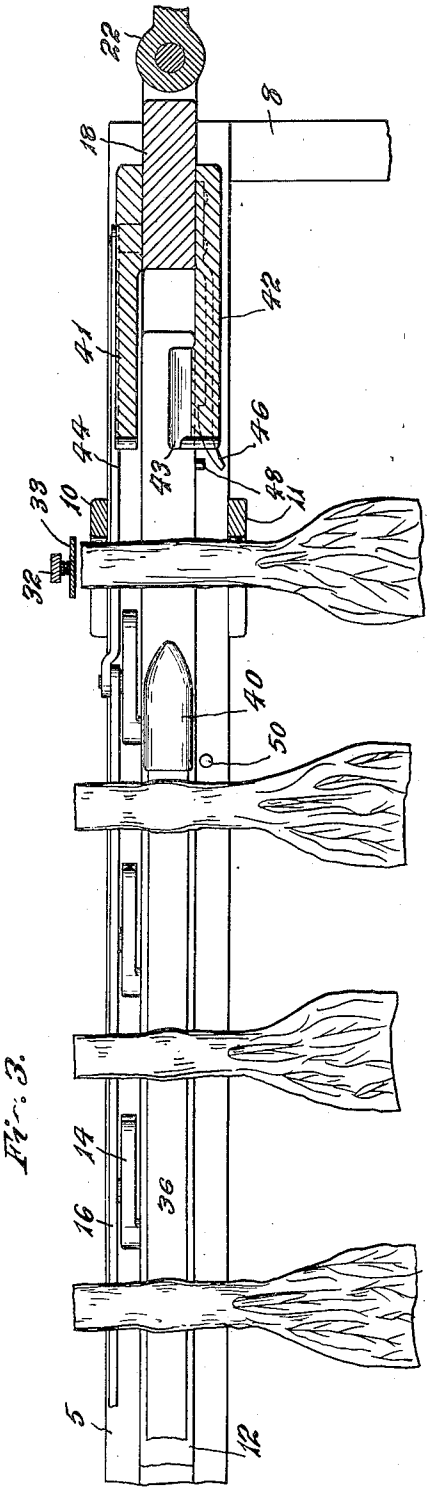


Fig. 3.

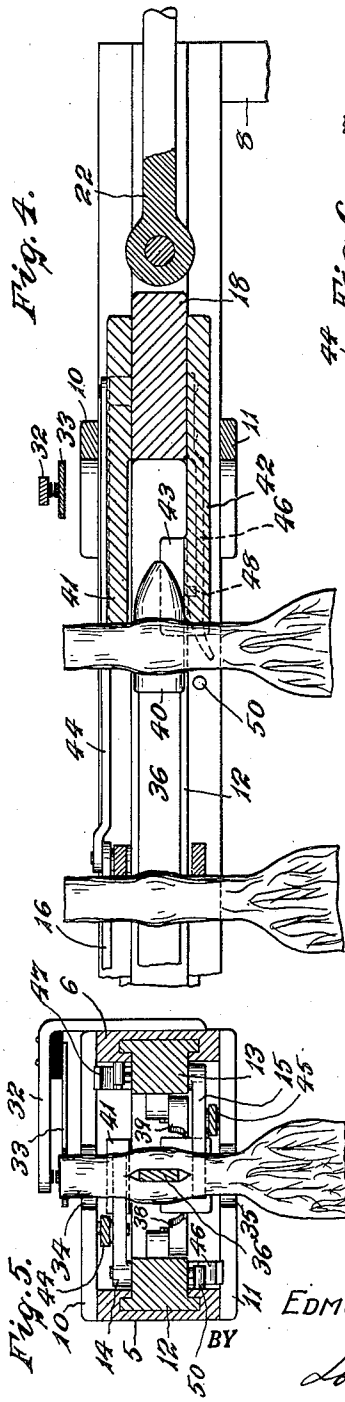


Fig. 4.

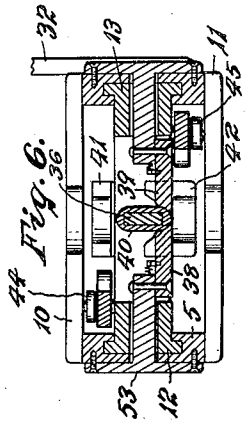


Fig. 6.

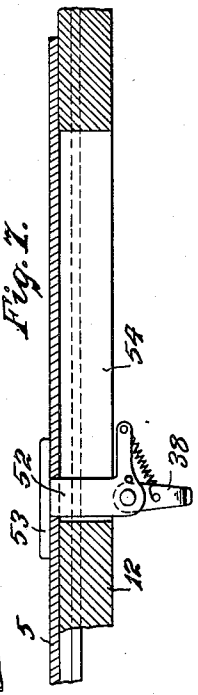


Fig. 7.

Fig. 5.

INVENTOR.
EDMUND J. STULA.
BY
Louis V. Lucia

Patented Jan. 31, 1950 2,495,874

UNITED STATES PATENT OFFICE

2,495,874

TOBACCO SPEARING MACHINE

Edmund J. Stula, Rockville, Conn.

Application January 13, 1948, Serial No. 2,119

6 Claims. (Cl. 214—5.5)

1

This invention relates to tobacco spearing machines and more particularly to machines which are adapted to spear tobacco plants onto a lath so that they may be hung up to dry.

An object of this invention is to provide a machine which is easy to operate and which will automatically initiate a cycle of operation to spear a tobacco plant as it is placed in position within said machine.

A further object of the invention is to provide a spearing machine in which the lath for receiving the plant may be easily inserted and removed therefrom as the plants have been speared onto it.

A still further object of the invention is to provide a machine which is simple in construction and inexpensive in its operation.

Further objects and advantages of this invention will be more clearly understood from the following description and from the accompanying drawing, in which:

Fig. 1 is a plan view of a machine embodying my invention and showing the same in its normal position.

Fig. 2 is a similar view showing the machine in operation and in the position wherein a tobacco plant is being speared onto a lath.

Fig. 3 is an enlarged side view of a portion of the machine in central vertical section, illustrating the position of the tobacco plant after it is inserted in the machine.

Fig. 4 is a similar view illustrating the machine in the position wherein the said tobacco plant is being speared onto the lath.

Fig. 5 is an end view in vertical section on line 5—5 of Fig. 2.

Fig. 6 is a similar view on line 6—6 of Fig. 1.

Fig. 7 is a sectional plan view of a portion of one side of the machine illustrating the construction of the lath supporting mechanism.

As shown in the drawings a machine embodying the present invention may comprise a frame including side bars 5—6 which are preferably supported on legs 7—8 at the opposite ends of the machine.

The said bars are connected at one end by means of a crossbar 9 and at the opposite end by means of cross plates 10—11, both of which are spaced from the end of the machine.

Slide bars 12—13 are slidably mounted in the slide bars 5 and 6, respectively, preferably by means of dovetails on said slide bars which are slidable in dovetail grooves in the side bars, as clearly illustrated in Figs. 5 and 6.

2

A plurality of pusher dogs 14—15 are pivotally carried upon the slide bars 12—13 and operatively connected, respectively, by operating bars 16—17.

A header 18 is slidably mounted in the dovetail grooves of the side bars 5—6, at the plant spearing end of said machine, and the said header is operated by means of a suitable mechanism, such as a crank disk 19 having a crank stud 20 between which and the lugs 21 on the header there is connected a crank rod 22 for operating the header. The said crank disk 19 is carried on and rotates with a shaft 23 that is mounted in a suitable bearing 24 carried on a supporting plate 25 which is mounted on the end of the side bars 6, and a suitable clutch mechanism may be employed for causing a cycle of rotation of said crank disk 19 by the shaft 23 when a tobacco plant is inserted in the machine.

The said clutch mechanism may comprise a clutch collar 26 which is keyed to and is slidable on the shaft 23 and has a projection 27 for engaging a co-operating recess 28 in the hub of the disk 19. The said collar may be operated by means of a lever 29 which in turn is operated by a suitable solenoid 30 that is energized by a source of electric current 31 when an electric circuit between said source and solenoid is closed by means of an electric switch such as shown in Fig. 5. This switch preferably includes a locating bar 32 that carries a flexible switch bar 33 that is co-axial with and overlies the notches 34—35, respectively, in the plates 10—11 which notches receive the stalk of the tobacco plant, as clearly shown in Fig. 3, and locate it in position to be speared onto the lath 36 that is removably supported in said machine by means of a supporting notch 37 in the bar 9 and the fingers 38—39 which engage the spear head 40, of conventional form, that is placed over the spearing end of the lath 36. These fingers are urged by springs against stops as shown in Fig. 7, by means of which they are normally positioned perpendicularly to the lath.

It will be noted that the header 18 carries pusher bars 41—42 for pushing the tobacco plant over the spear head and that the bar 42 has a V-formation, at 43, to receive and support the spear head, and thereby the free end of the lath, while the plant stalk is being pushed thereonto.

The operating bars 16—17 are connected to the header 18 by means of connecting links 44—45 which are pivotally secured to said operating bars and header and the said header carries

spring latch members 46—47 which are adapted to engage locking pins 48—49 so as to lock the slide bars 12—13 to the header for the purpose to be hereinafter described. Disengaging pins 50—51 are also provided and mounted on the side bars 5 and 6 so as to engage the ends of the said latch members 46—47 and disengage them from the locking pins 48—49 in the manner which will also be hereinafter described.

As illustrated in Fig. 7 of the drawings, the supporting fingers 38 and 39 are each pivotally mounted on a bracket 52 which has a base in the form of a plate 53 that is secured to the side of the respective side bars 5 and 6. The said bracket extends through a slot 54 in the side bar which permits sliding movement of said bar in the operation of the machine.

Assuming that the drive shaft 23 is in rotation and being driven by any suitable power means, and that it is desired to spear a number of tobacco plants upon laths, the spear head 40 is first attached to the end of one of the laths 36. The said lath is then placed in the machine in the position shown in Fig. 1 wherein the butt end of the lath is inserted and supported in the notch 37 and the spearing or leading end of the lath is supported with the spear head thereon resting upon the fingers 38 and 39, the ends of which are tapered to conform to the formation of the spear head, as clearly illustrated in Fig. 6, and thereby center said head and the lath thereon while at the same time supporting the spearing end of the lath. Consequently, the lath is supported by the notch 37 and the fingers 38 and 39 and butts against the end of the notch 37 so as to resist the force applied against said lath as the plants are moved thereonto.

The stems of the plants are now inserted, one at a time, into the notches 34—35, from the bottom of the machine, and then moved upwardly against the spring switch bar 33.

As each stem is so inserted, it forces said bar into contact with the locating bar 32. This locates the stem of the plant at the proper height and at the same time closes the electric circuit which connects the electric supply source 31 with the solenoid 30 and causes the said solenoid to operate the lever 29 and move the clutch collar 26 to lock the crank disk 19 to the drive shaft 23 which will cause rotation of the crank 19. As the said collar rotates the crank disk 19 and is about to complete a revolution, the cam portion 55 will be engaged by the fixed roller 56 which will move said collar rearwardly and disengage the drive shaft 23 from the crank disk, whereupon the cycle of operation of the machine is completed.

During the rotation of the crank disk for each cycle of operation, the header 18 will be moved forwardly so that the links 44—45 will operate the operating bars 16—17 to swing all of the pusher dogs 14—15 into a position where they will be perpendicular to the axis of the lath 36 and the ends of the slide bars 12—13 will abut the leading edge of the header 18, as clearly illustrated in Fig. 4, in which position the hooks 46—47 will engage the locking pins 48—49 and lock the said bars to the header to thereby prevent the dogs 14—15 from retracting as they push the stems forwardly on the lath. Continued forward movement of the header 18 in each cycle of operation will cause the said dogs to move longitudinally to the axis of the lath 36 and, during such movement, engage the stems of any plants that have already been speared onto said lath and move them forwardly thereon for a predetermined distance.

As the pushers 41—42 engage the stem of the plant which is inserted in the notches 34—35, they will move said stem away from the switch bar 33 and thereby permit the circuit to the solenoid 30 to be broken and that will also swing the fingers 38—39 to one side, as shown in Fig. 2 and, while the said fingers are in that position, the end of the lath will be supported in the V 43 of the lower pusher bar 42, as clearly illustrated in Fig. 4.

When the pusher bars have reached their foremost positions, as illustrated in Fig. 2, the latches 46—47 will engage the disengaging pins 50—51 and this will cause the said latches to be released from the locking pins 48—49 and thereby permit the dogs 14—15 to be swung back into retracted position by initial retracting movement of the header 18 which will then continue and return all of said dogs to their normal positions, as shown in Fig. 1, wherein they will be in position for the next cycle of operation during which they will engage the respective stems of the plants already on the lath and move them forward for one step.

It will be understood from the above description that, as the stem of each plant is inserted within the locating notches 34—35, it will close the electric circuit which will start the machine for a single cycle of operation. During this cycle, the plant will be speared onto the lath, over the end of the spear head 40, and during the successive cycles of operation the said plant will be moved forward one step at a time until it reaches the final position on the lath when, as in the embodiment shown, six plants have been speared onto said lath and it is full. The said lath may then be removed from the machine with the plants thereon by simply lifting it out of the notch 37 and off the supporting fingers 38—39, and passing the lath and plants under the machine, which may be done without interference from the pusher dogs 14—15 nor from any other parts of the machine.

It will also be understood that in their operation, the said pusher dogs first move into perpendicular position and in back of the stems already on the lath, then move forwardly to push the stems onto and along the lath, then swing back into their open position, as illustrated in Fig. 1, and then retract into normal position. It will also be noted that the dogs 14 are on a plane above the lath 36 while the dogs 15 are on a plane below said lath. This is so that they will engage each of the stems above and below the lath and thereby prevent tipping of said stems as they are moved along on the lath.

The said dogs 14—15 are evenly spaced apart in accordance with the distance desired between the different plants and the distance from the ends of the pusher bars 41—42 to the plant being inserted in the machine, when the said pusher bars are in the normal position, is predetermined so that the pusher dogs will be moved into their perpendicular positions relative to the axis of the lath and contact their respective stems on said lath as the ends of said pusher bars contact the stem of the plant in the locating notches 34—35, so that all of the stems will be moved forwardly on the lath at equal distances.

I claim:

1. A machine of the character described for spearing tobacco plants onto a lath; the said

machine comprising a frame, slide bars oppositely disposed in said frame, means for supporting a lath between said slide bars, a plurality of dogs equally spaced and pivotally carried on said slide bars above and below the axis of said lath, a header slidable in said frame, operating bars interconnected to said dogs and operable by said header to move them into stem engaging position by initial movement of said header, and means for locking said dogs in said last named position whereby, upon continued movement of said header, the said dogs will be simultaneously moved forwardly along said lath to move stems thereon for predetermined distances.

2. A machine of the character described comprising a frame, slide bars oppositely disposed in said frame, means for supporting a lath between said slide bars, a plurality of dogs equally spaced and pivotally carried on said slide bars, a header slidable in said frame, operating bars interconnected to said dogs and movable by said header to move the dogs into stem engaging position during initial movement of said header, and means for locking said bars to said header to retain the dogs in said last named position.

3. A machine as set forth in claim 2 including means for releasing the said bars from said header as the dogs have reached their forwardmost position, to thereby permit the dogs to be retracted by initial retracting movement of the header.

4. A machine of the character described for spearing tobacco plants onto a lath, the said machine comprising a frame, slide bars oppositely disposed in said frame, means for supporting a lath between said slide bars, a plurality of dogs equally spaced and pivotally carried on said slide bars, a header slidable in said frame, operating bars interconnected to said dogs and operable by said header to move them into stem engaging position upon initial movement of the header, means carried on said header for locking said slide bars thereto to retain the dogs in stem engaging position during the forward movement thereof relatively to the lath, and means for disengaging said locking means from the slide bars to permit said dogs to be retracted during the initial rearward movement of said header and

then moved to normal position during continued rearward movement of the header.

5. A machine of the character described comprising means for holding a lath, means for moving a stem of a plant to be speared onto said lath, and means for locating said stem and causing initial operation of said machine, the said locating means including a stop member, an electric switch mounted on said stop member, the said switch being operable upon insertion of a stem in said machine to close an electric circuit, and means adapted to be energized upon the closing of said circuit to cause a single cycle of operation of the machine.

6. A machine of the character described comprising a frame having a pair of parallel side bars, a pair of slide bars slidable in said side bars, a plurality of dogs pivotally mounted on each of said slide bars, means for supporting a lath between said dogs, said supporting means including a crossbar at one end of the machine for supporting the butt end of the lath, and a pair of pivotally mounted fingers for supporting the spearing end of a lath, a header having a projection for engaging a stem and forcing it onto the said spearing end of the lath, the said header also operating said slide bars and dogs to cause them to move pre-speared stems along said lath, means on said pusher for receiving and positioning the spearing end of said lath as the stem is pushed thereonto and said supporting fingers are out of engagement therewith, the said supporting fingers being adapted to move into lath supporting position as the projection on said header is retracted from the spearing end of the lath.

EDMUND J. STULA.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
933,127	Shinn	Sept. 7, 1909
945,717	Gullickson	Jan. 4, 1910
1,426,039	Candee	Aug. 15, 1922