P. M. PENCE.

TOBACCO HARVESTER.

APPLICATION FILED NOV. 24, 1915.

1,217,495.

Patented Feb. 27, 1917.

2 SHEETS—SHEET 1.

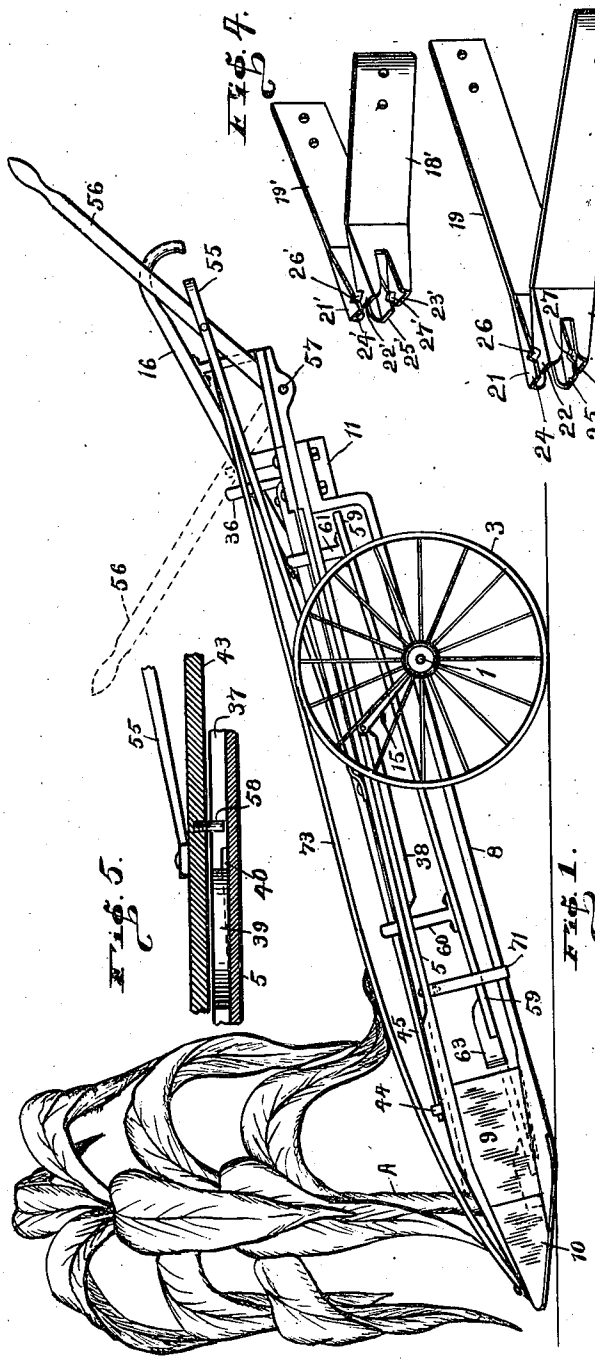


Fig. 1.

Fig. 4.

Fig. 3.

Fig. 5.

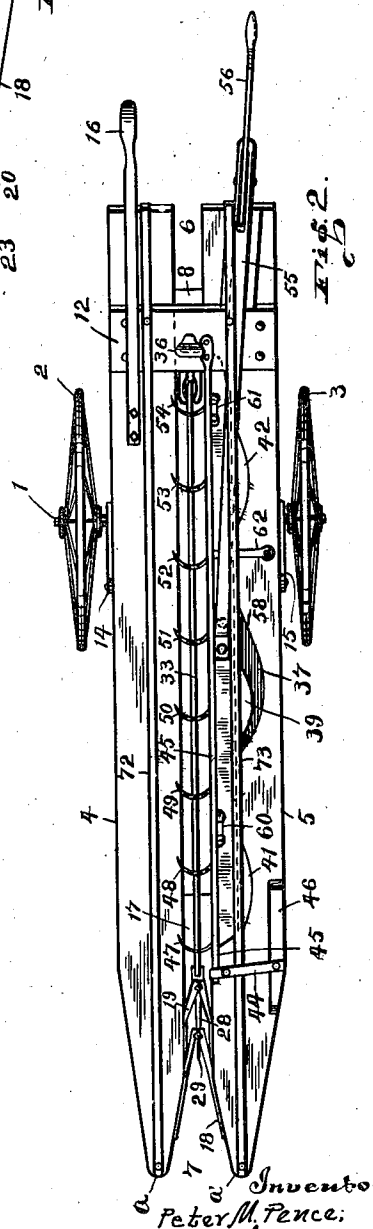


Fig. 2.

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2 SHEETS—SHEET 2.

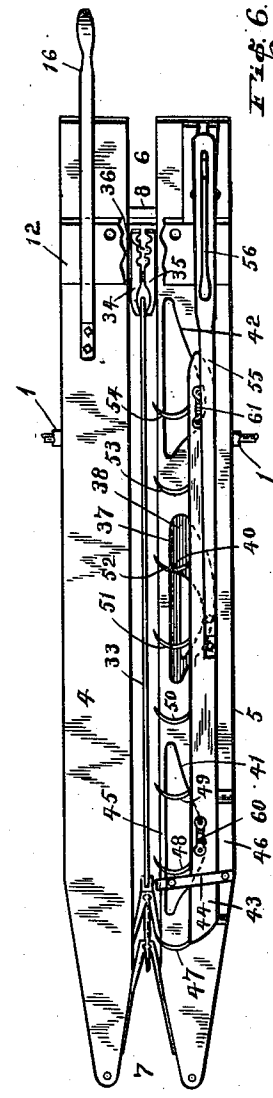


Fig. 6.

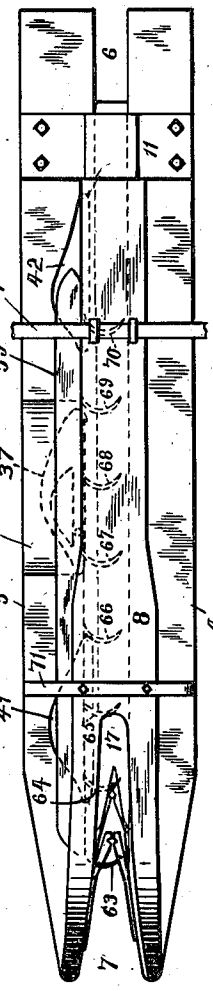


Fig. 7.

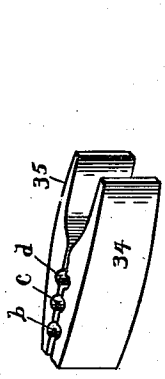


Fig. 11.

Fig. 8.

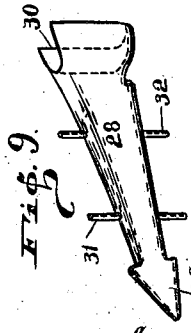


Fig. 9.

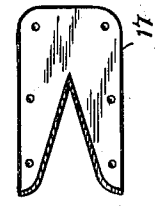


Fig. 10.

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UNITED STATES PATENT OFFICE.

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TOBACCO-HARVESTER.

1,217,495. Specification of Letters Patent. Patented Feb. 27, 1917.

Application filed November 24, 1915. Serial No. 63,330.

To all whom it may concern:

Be it known that I, PETER M. PENCE, a citizen of the United States, residing in New Paris, in the county of Preble and State of Ohio, have invented a new and useful Construction for Tobacco-Harvesters, of which the following is a full, clear, and comprehensive specification and exposition, the same being such as will enable others to make and use the same with exactitude.

The object of my present invention, broadly speaking, is to provide a tobacco harvester, adapted to operate upon tobacco standing in the field, which will be strong and durable in construction, easily operated and controlled, which will not in any manner injure the leaves of the tobacco being harvested thereby, will afford means for mechanically spearing and stringing the tobacco in the field without contact with the operator, and which can be manufactured and sold at a comparatively low price.

More specifically stated, my object is to provide a tobacco harvester adapted to cut and spear the standing stalks of tobacco in the field, and to place them in proper position upon the slats to be cured in the usual manner.

Other minor objects and particular improvements and advantages of my invention will suggest themselves in the course of the following specification.

One manner for carrying out the details of my invention in a practical manner is shown in the accompanying two sheets of drawings, in which—Figure 1 is a side elevation of my harvester complete as it would appear in actual use in a field.

Fig. 2 is a top plan view of the invention. Fig. 3 is a perspective view of the forward pair of spear-holding clamps. Fig. 4 is a perspective view of the rear pair of spear-holding clamps. Fig. 5 is a detailed section showing the cam operating means. Fig. 6 is a top plan of the invention, certain of the parts being omitted and others broken away in order to show certain of the parts therebelow. Fig. 7 is a plan view of the bottom or underside of the machine. Fig. 8 is a longitudinal central section of the machine. Fig. 9 is a perspective view of the floating spear. Fig. 10 is a plan view of the knife or cutter alone. And Fig. 11 is a perspective view of the clamp for holding the rear end of the slats.

Similar indices denote like parts throughout the several views.

In order that the construction, the operation, and the advantages of my invention may be more fully understood and appreciated, I will now take up a detailed description of the several parts.

In the drawings numeral 1 denotes the axle on which the machine is mounted. On the ends of the axle are the ground wheels 2 and 3. Numerals 4 and 5 denote the two body plates, which are simply flat oblong plates having forward convergent ends, *a* and *a'*, respectively which ends diverge with relation to each other. The said plates are located on the same plane with relation to each other, and they are spaced apart forming a throat 6 extending the entire length thereof. And by reason of the tapered forward ends, *a* and *a'*, there is provided a mouth 7, which is V-shaped, being wider at the forward extremity and formed convergently rearward into said throat, and forming the entrance passageway for the stalks of tobacco and focusing them to the proper working points.

Numeral 8 denotes the base plate, which is mounted on the axle 1, extending across centrally thereof, and parallel with the plates 4 and 5, and located centrally of and below the throat 6.

The forward end of the plate 8 curves slightly upward and terminates back of the forward ends of the body plates, with which it is connected by the two spaced apart side plates 9 and 10, which form the sides of the mouth 7. The plate 9, on the right, is considerably longer than plate 10, that is it extends back farther.

The rear portion of the base plate 8 extends upward and then rearward forming a foot which is united with the lower cross-tie 11, the latter being secured to the under sides of the body plates to hold them in proper relation to each other. And for the same purpose there extends across the tops of the body plates, immediately above the plate 11, the upper cross-tie 12. A brace 71 extends across under the central forward portion of the base plate, with its end portions extending upward and secured to the body plates 4 and 5, to form supports therefor. Braces 14 and 15 extend upwardly from the axle 1, with their upper portions attached to the respective body plates 4 and 5.

The above comprises the body or frame of the device, which is adapted to be propelled over the ground by the handle 16, the latter being secured to the plate 4 and extending rearward as shown. From the above it will be observed that the forward end of the machine curves upward in order that it may slide over the ground without engaging therein, permitting it to be easily inserted under the tobacco plants.

The forward end portion of the base-plate 8 should be formed forked, or V-shaped, merging into and forming the rear portion of the mouth 7. Secured across the forward portion of the plate 8 is the V-shaped cutter or knife 17, which converges rearwardly, the cutting angle thereof conforming with the angle of the mouth 7. From the above it will be seen that if the machine be driven forward against a stalk, as the stalk A, the stalk will be guided into the mouth 7, and the forward pressure of the machine will cause the blade 17 to engage the stalk severing the stalk at a point a short distance above the ground.

Located in the forward portion of the throat 6 are two pairs of spring spear-holding clamps, as shown in Figs. 3 and 4, one pair being in advance of the other. The members of the forward pair of said clamps comprise the flat body portions 18 and 19, which are secured to the inner edges of the respective members 4 and 5, and the rearwardly extending parallel portions 20 and 21, each having an upper and a lower inturned flange, 22—23 and 24—25, respectively. The edges of the flanges 22 and 24 are arranged to clamp together, and the edges of the flanges 23 and 25 are adapted to clamp together. Formed in the adjoining edges of the flanges 22 and 25 is an aperture 26, a segment of it being in each flange 22 and 25. Likewise formed in the adjoining edges of the flanges 23 and 25 is an aperture 27.

The above is a description in detail of the front pair of said clamps, and as the rear pair of said clamps are identical therewith except that the body portions are shorter in the rear clamps, therefore the above description will answer for both, the parts of the rear pair of clamps being denoted by like numerals with exponents to denote the corresponding parts.

Numeral 28 denotes the body portion of the floating spear, the same having the forward pointed head 29 from which the body gradually enlarges to the rear, the body being oval in cross section, the longer diameter in cross section being vertical when the spear is in operative position. Formed in the larger or rear end of the spear is a cavity 30, which opens rearward and upward. Extending vertically through the body of the spear are the two pins 31 and 32 whose distance apart is equal to the distance apart of apertures 26—27 with relation to the apertures 26′—27′ of the clamps. The upper end of the pin 31 is adapted to be held in the aperture 26 and the lower portion in the aperture 27. And in like manner the upper portion of the pin 32 is adapted to be held in the aperture 26′ and the lower portion in the aperture 27′. It will be apparent that the flanges of said clamps prevent the spear from moving up or down while the pins prevent it from moving forward or rearward.

Numeral 33 denotes a slat on which the tobacco stalks are to be strung. The forward end of the slat 33 is adapted to fit in the cavity 30 of the spear. The rear end of said slat is to be secured in the clamp shown in Fig. 11, which is located between the ties 11 and 12, and it comprises the two jaws 34 and 35, whose forward ends are adapted to be clamped upon the rear end of the slat by inserting a wedge 36 into one of the apertures *b*, *c* or *d* to spread the rear parts of the jaws apart and thereby closing their forward ends upon the rear end of the slat.

Formed in the central portion of the plate 5 is a D-shaped aperture 37, the straight portion of which is inward and parallel with the throat 6, the curved portion extending outward as shown. Secured to the underside of the plate 5, and located directly under the aperture 37, is the plate 38. Located in said aperture 37 and secured to the plate 38, is the cam-block 39, which is also D-shaped, and its periphery does not contact with the walls of said aperture 37 but is spaced therefrom to form a raceway entirely around said block. Extending slightly up from the rear corner of the cam-block 39 and projecting centerward and rearward, is the deflector 40, the purpose of which will hereinafter be set forth.

Also formed through the plate 5, forward and rearward of the aperture 37, are the respective triangular apertures 41 and 42 which correspond with and are in alinement with the aperture 37.

Slidably located on the plate 5 and extending parallel therewith is the movable feed-bar 43, which is adapted to slide forward, rearward, and laterally over the apertures 37, 41 and 42.

Numeral 44 denotes a spring guide-finger which is secured to the guide-block 46, the latter being secured on the surface of the plate 5. Said finger 46 extends across to the right over the bar 43 to the throat 6, and it is adapted to press down upon the bar 46 to retain said bar in sliding contact with the plate 5. Numeral 45 denotes a guide-bar whose forward end is secured in the suspended right-hand end of the spring finger 44, and its rear end is secured on the surface of the cross tie 12, and it is adapted to

prevent the bar 43 moving too far to the right, for the purpose which will hereinafter be apparent.

Numeral 62 denotes a guide which extends up from the plate 5 and over the bar 43 to the bar 54 simply to retain the bar 43 in proper relations at its rear.

Secured to the inner edge of the forward end of the bar 43 is the upper master-hook 47, which curves forward, inward, and then rearward in the segment of a circle, and of a length such as to extend across the throat 6. Also, similar thereto, and secured to the inner edge of the bar 43, and spaced an equal distance apart, are the spacing hooks 48, 49, 50, 51, 52, 53 and 54. The said hooks are adapted to extend across the throat 6 when the bar 43 is moved to its right-hand limit and to be withdrawn from across said throat when said bar is moved to its left-hand limit.

The said bar 43 is adapted to be moved manually, forward and backward as follows: Secured at its forward end to the central portion of the bar 43 is the pitman 55, which extends rearward and upward to where it is pivotedly connected to the lever 56. The said lever is pivoted at its lower end on the pivot 57, which latter is carried by the frame of the machine. It is now evident that by moving forward and rearward on the lever 56 that the bar 43 will be moved forward and rearward thereby.

Extending down into the aperture 37, from the central portion of the bar 43, is the cam-pin 58 which is adapted to engage the deflector 40 when the bar 43 is moved forward, after being first moved back to its limit, and thereby deflect said pin 58 outward, and therefore the bar 43 to the left, the said pin traveling forward around the curved portion of the aperture 37 and the cam-block 39, finally carrying the bar 43 to right-hand limit as the bar 43 reaches its forward limit of movement, then as the bar 43 is drawn back to the rear the pin 58 will travel in the straight portion of the aperture 37, sliding over the deflector 40, and finally reaching its rearward limit of movement.

Located some distance directly below the bar 43, and below the plate 5, and only slightly higher than the plate 8, is the lower movable bar 59, which corresponds in every essential particular with the bar 43. The bars 43 and 59 are rigidly connected together by the posts, or standards, 60 and 61, whereby the bar 59 is at all times caused to travel with and make the same movements as the bar 43. The standards 60 and 61 project up through and above the bar 43 to form stops which engage the bar 45 to limit the movement of the bars 43 and 59 to the right. As the bars 43 and 59 make their several movements the posts 60 and 61 travel in the respective apertures 41 and 42, thereby retaining the bars 43 and 59 at all times parallel with the throat 6.

Secured to the inner edge of the forward end of the bar 59 is the lower master hook 63, which is in vertical alinement with the hook 47. Also similar to the hooks on the bar 43 are the hooks 64, 65, 66, 67, 68, 69 and 70, which are secured an equal distance apart along the inner edge of the bar 59, and they curve forward, inward, and then rearward and each is located below the respective corresponding hooks of the bar 43 with which they register.

Numerals 72 and 73 denote the two guard rails, their forward ends being attached near the forward points of the ends a and a' of the plates 4 and 5, respectively, from which they curve upward and rearward, with their rear ends attached to the plate 12, but located thereabove, being carried on the standards 74, as shown in Fig. 8, or they may be otherwise secured if desired.

In practice the operation is substantially as follows: The lever 56 being first located back to its limit, the spear, and the slat being in position as described. The operator, grasping the handle 16 will then push the machine forward, causing the standing stalks of tobacco to enter the mouth 7 and be located well in the vortex thereof. The operator then moves the lever 56 forward to its limit, which will cause the master hooks 47 and 64 to pass around to one side of the stalk A and to come around in front thereof, then as the lever 56 is drawn back it is manifest that said hooks will grasp the stalk and force it against the point of the spear, causing the spear to pierce through the center thereof, and as the spear penetrates through the stalk the forward pair of clamps will then be forced apart and then as the stalk passes back it is evident that this clamp will close and again engage the pin 31; and immediately thereafter, as the machine moves forward the stalk will force apart the members of the rear spear-clamp, and after the stalk passes it is evident that this rear clamp will close and again engage the pin 32 in the rear of the stalk. It is also evident that as the machine moves forward that the stalk will pass off of the rear end of the spear and onto the slat, the slat of course passing through the vertical slot formed through the stalk by the spear. As the slat enters the stalk it is evident that the knife 17 will engage the stalk below the slat and the stalk will be severed from the stump.

Soon after the above movements the lever 56 will have reached its rearward limit of movement, therefore the machine is again run forward to a second stalk of tobacco and the operation above described is repeated, and it is evident that as the second stalk is being strung on the slat that the hooks 48 and 64 will have engaged the first stalk and

moved it back along the slat the distance of one space between each pair of hooks, and in the next operation the third stalk will be speared and the first stalk will be carried back by the hooks 49 and 65, and so on until each of the hooks, except the master hooks, has spaced a stalk of tobacco on the slat 33, after which the machine is stopped and the lever 56 is pressed about half-way forward which will move all of the hooks out of the path of the throat 6. The wedge 36 is then removed to release the rear end of the slat, after which the front end of the slat may be lifted up and the slat removed with, in this instance, the seven stalks of tobacco strung thereon, after which a new slat is placed in position in the machine as before and the operation of filling the second slat is repeated as before.

The filled slats of tobacco may be taken to the barns or sheds and there treated in the usual manner.

It should be observed that the forward end of the machine is so constructed that it may be easily slid under the leaves near the ground without injury to the leaves, and that the guard rails 72 and 73 will support the leaves during the various operations and prevent damage thereto as the machine advances.

It is to be understood that I am not to be limited to the several details of construction, arrangement, or operation, as herein set forth, as these details may be variously changed and modified in order to meet various conditions and preferences. Neither am I to be limited to one pair of ground wheels, as it is evident that others may be added to support the forward part of the harvester. It is also evident that the harvester may be propelled mechanically or by animal power without changing the principles thereof.

Having now fully shown and described the preferred means for the construction of my invention, what I do claim and desire to secure by Letters Patent of the United States, is—

1. A tobacco harvester comprising a frame having a tapered forward end adapted to ride on the ground and to be projected under the leaves and on each side of the stalks of the standing tobacco, a throat formed in said frame and extending longitudinally thereof, a floating spear carried in the forward end of said throat, a pair of pins projecting through said spear and extending above and below the same, spring clamps spacedly mounted in the throat of said frame and in engagement with said pins, a cavity formed in the rear end of said spear, a removable slat extending longitudinally of said throat and in engagement with the cavity of said spear, a plurality of hook members mounted above and below said slat, and means for the reciprocatory operation of said hook members.

2. A tobacco harvester comprising a frame, a knife mounted in the forward part of said frame, a floating spear positioned above said knife, a removable slat extending rearward of said spear, an elongated bar mounted above said slat and extending longitudinally of said frame, an elongated bar mounted below said slat, means for connecting said bars, a lever mounted at the rear of said frame, a rod connecting said lever with the upper of said bars, and a plurality of hook members mounted on each of said bars.

3. A tobacco harvester comprising a frame, a knife mounted in the forward part of said frame, a floating spear positioned above said knife, a removable slat extending rearward of said spear, an elongated bar mounted at one side of said slat and parallel therewith, a lever pivoted on said frame and attached to one end of said bar, a pin depending from said bar, a D-shaped recess formed in the upper part of said frame, a cam member mounted in said recess, a straight working face formed on the side of said cam adjacent said slat, a convex working face formed on the other side of said cam, a deflecting extension formed at the junction of said working faces adapted to guide said pin on to said convex face of the cam and to give said bar a lateral movement upon its inoperative stroke, means for the reciprocatory operation of said bar, and a plurality of hook members carried by said bar.

In testimony whereof I have hereunto subscribed my name to this specification in the presence of two subscribing witnesses.

PETER M. PENCE.

Witnesses:

WILSON P. MILLS,

ROBERT W. RANDLE.