No. 649,710. Patented May 15, 1900.

W. WARMACK.

COTTON PICKER.

(Application filed Sept. 5, 1899.)

(No Model.) 3 Sheets—Sheet 1.

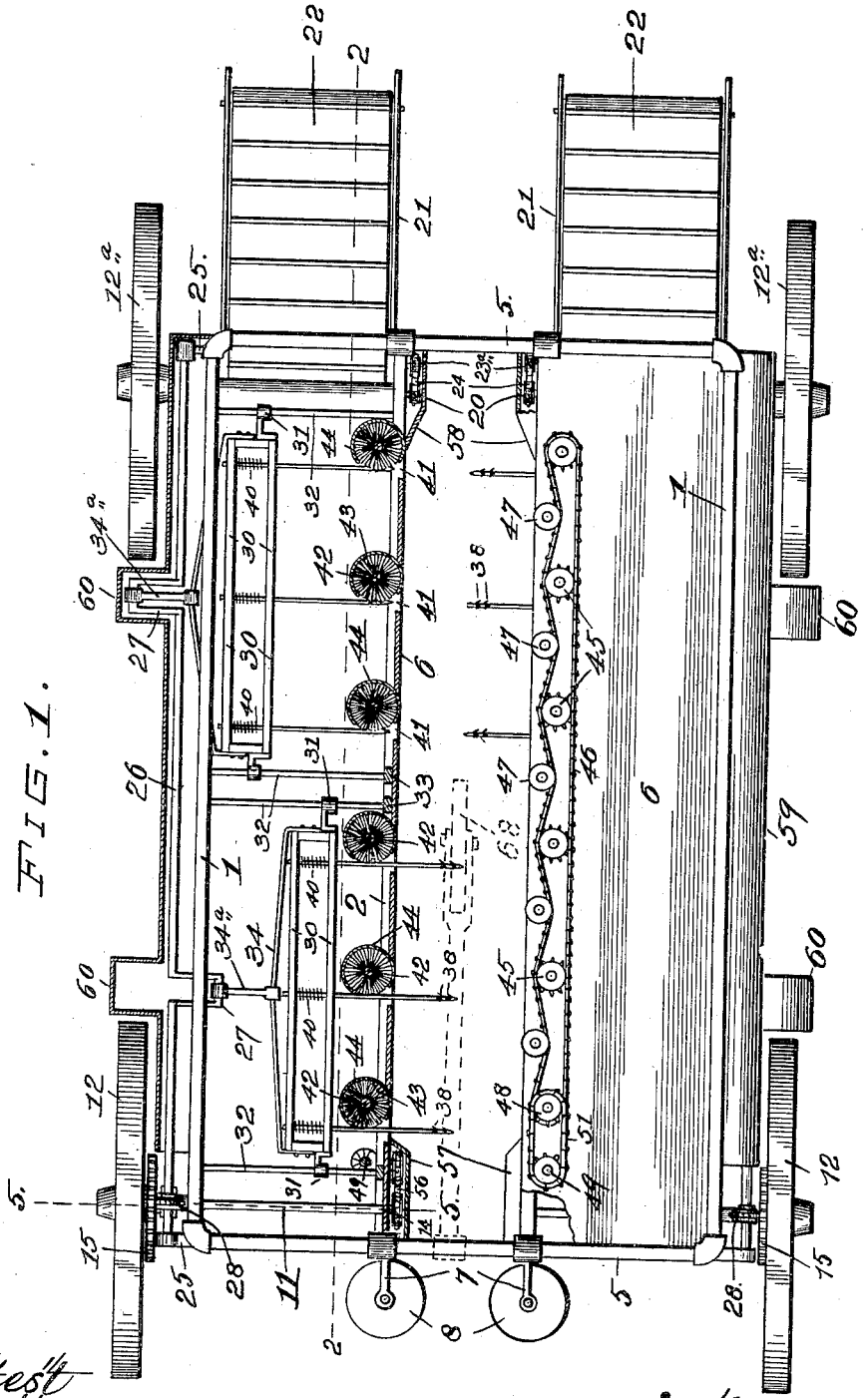

FIG. 1.

Attest:
M. P. Smith
Alfred A. Fisher

Inventor:—
Wm. Warmack.
By Higdon, Longan, Atty's

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FIG. 2.

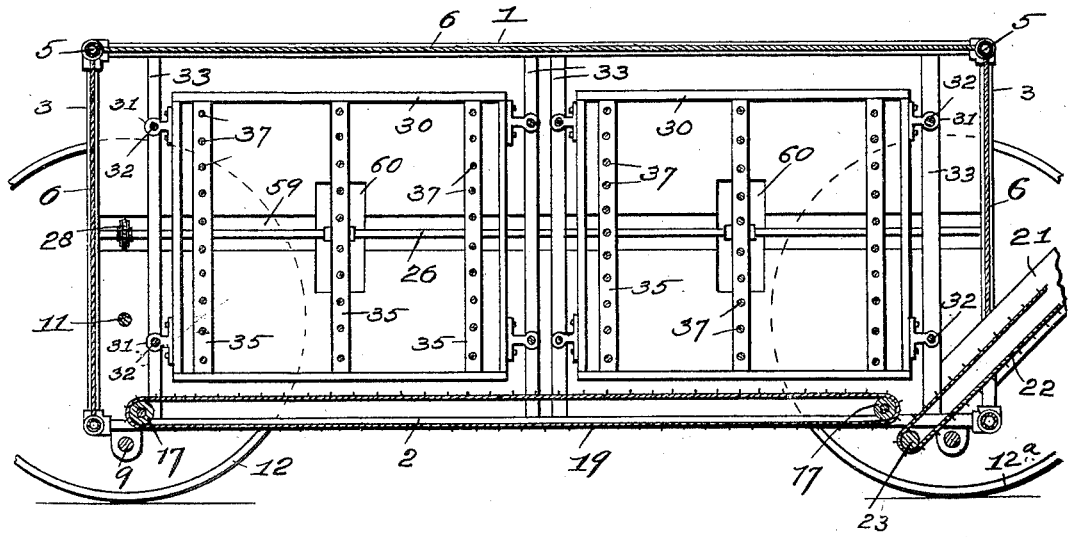
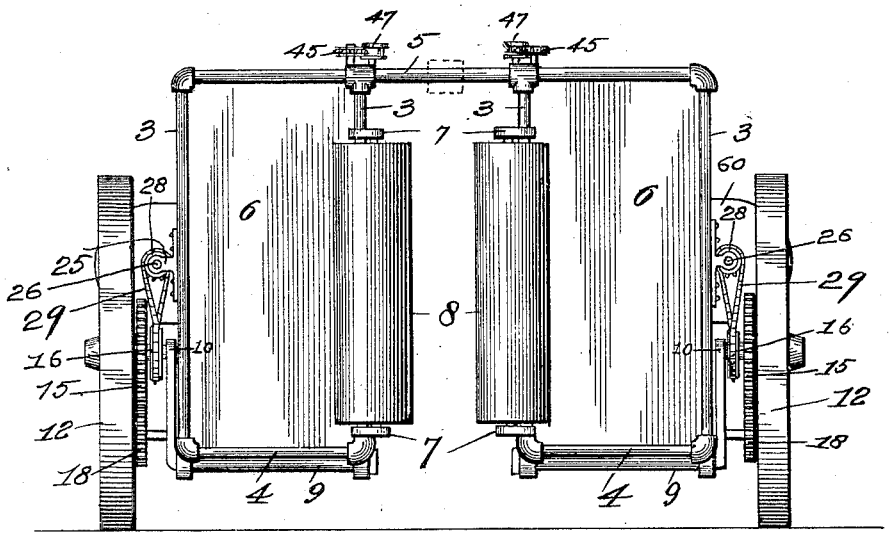


FIG. 3.



Attest
W. P. Smith
Alfred A. Ficks

Inventor:—
Wm. Warmack.
By Higdon & Longan Atty's.

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(No Model.) 3 Sheets—Sheet 3.

FIG. 4

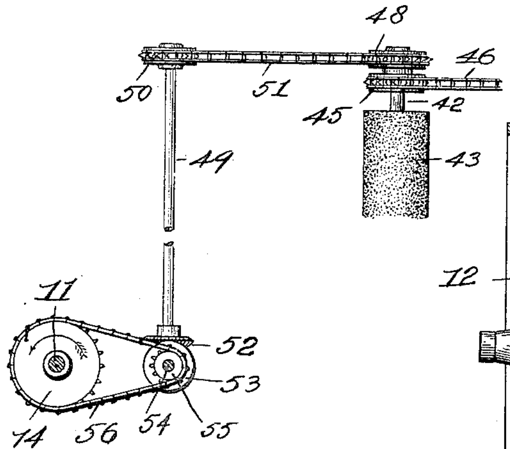


FIG. 5

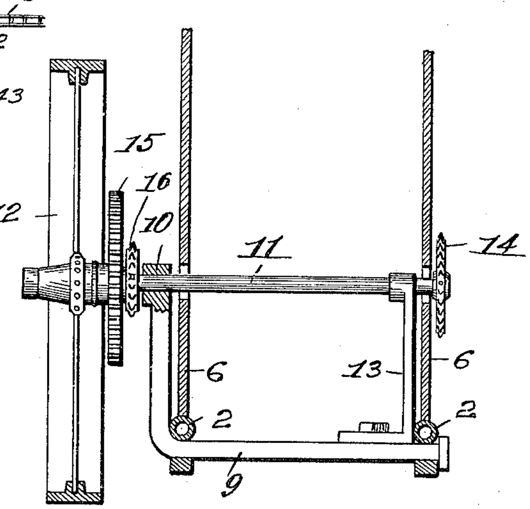


FIG. 6.

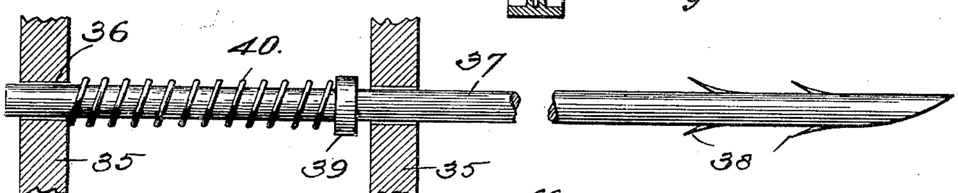


FIG. 7

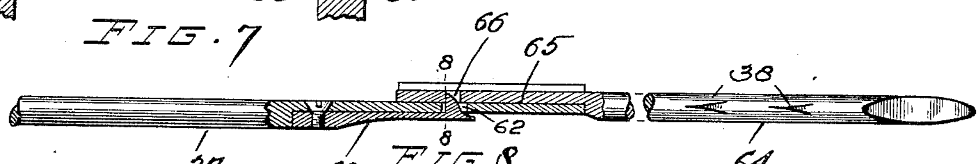


FIG. 8.

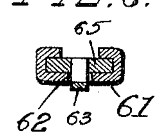


Fig. 9.

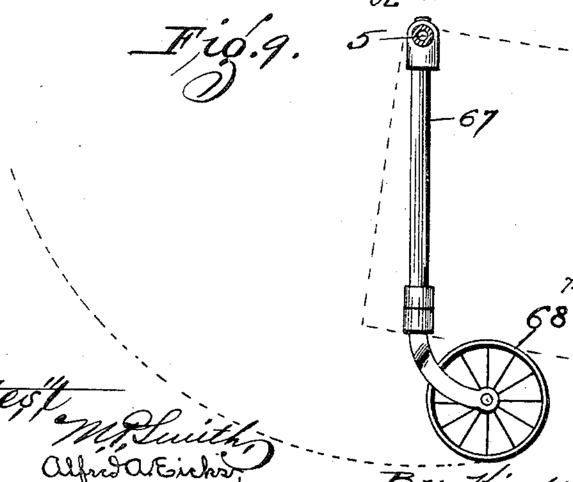
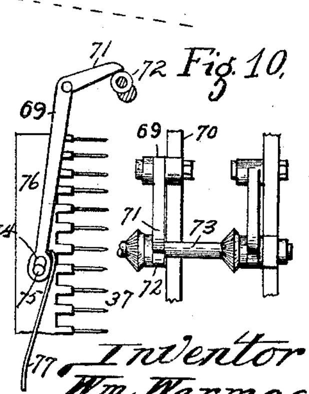


Fig. 10.



Attest: M. P. Smith, Alfred A. Eicks.

Inventor:— Wm. Warmack.

By Higdon & Longan Att'ys.

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UNITED STATES PATENT OFFICE.

WILLIAM WARMACK, OF PLUTO, MISSISSIPPI.

COTTON-PICKER.

SPECIFICATION forming part of Letters Patent No. 649,710, dated May 15, 1900.

Application filed September 5, 1899. Serial No. 729,517. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM WARMACK, of the city of Pluto, Holmes county, State of Mississippi, have invented certain new and useful Improvements in Cotton-Pickers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to cotton-pickers; and it consists of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

Figure 1 is a plan view of my improved cotton-picker, parts thereof being in section to more clearly illustrate the same. Fig. 2 is a longitudinal sectional view taken approximately on the line 2 2 of Fig. 1. Fig. 3 is a front elevation of the picker. Fig. 4 is a detail sectional view illustrating the mechanism for driving the brushes that are used in my improved picker. Fig. 5 is an enlarged detail sectional view taken approximately on the line 5 5 of Fig. 1. Fig. 6 is an enlarged side elevation of one of the picker-stems made use of in carrying out my invention. Fig. 7 is a side elevation, partly in section, of a modified form of one of these picker-stems. Fig. 8 is a cross-sectional view taken approximately on the line 8 8 of Fig. 7. Fig. 9 is a detail view illustrating a caster-wheel which may be applied to the forward end of the picker when it is desired to turn the same. Fig. 10 is a detail top and face view, with parts broken away, showing a modified form of picker-frame-operating device.

The body of my improved picker comprises two rectangular frames separated a slight distance from each other, said frames being constructed of suitable tubing, such as gas-pipe or other suitable material, each frame comprising a pair of longitudinally-extending top members 1 and a pair of longitudinally-extending bottom members 2, said top and bottom members being joined together at their ends by the vertically-arranged members 3, and each pair of said vertically-arranged members 3 are united at their lower ends by the transversely-arranged members 4. Transversely-arranged members 5 connect the upper ends of the vertically-arranged members 3 at each end of the pairs of members 1, thus uniting the two frames and forming an arch at each end of the body of the picker. The sides, ends, and tops of the two frames comprising the body of the picker are housed in by plates 6 of sheet metal or analogous material. Carried by the central pair of upright members 3 at the front end of the picker are the forwardly-projecting bearings 7, in which are rotatably arranged the journals on the ends of compression-rollers 8, said compression-rollers being for the purpose of compressing the cotton-plant just previous to the time the picker passes over said plant.

The horizontal members of L-shaped bars 9 are arranged beneath the forward end of each of the rectangular frames, the upper ends of the vertical members of said bars being formed into bearings 10 for the rotating axles 11, on which are fixed the front wheels 12 of the picker. The inner ends of these axles 11 are rotatably arranged in bearings formed on the upper ends of standards 13, which are fixed upon the inner ends of the horizontal portions of the bars 9. The inner ends of these axles 11 project through the inner walls of the frames comprising the body of the picker, and upon said inner ends are fixed sprocket-wheels 14. The rear wheels 12^a are mounted upon stub-axles at the rear end of the body of the picker.

Formed on or fixed to the inner ends of the hubs of the wheels 12 are the large gear-wheels 15, and integral with the inner faces of said gear-wheels are the small sprocket-wheels 16. Rollers 17 are transversely arranged at each end of each of the frames of the body of the picker, the ends of said rollers being rotatably arranged in suitable bearings carried by the lower pairs of tubular members 2, and upon the outer ends of the pair of rollers at the front end of the picker are fixed small pinions 18, the same being in mesh with the gear-wheels 15. Operating around these rollers 17 are the endless carriers 19, and fixed upon the inner ends of the pair of rollers at the rear ends of the frames are the sprocket-wheels 20.

Extending upwardly and rearwardly from the lower portions of the rear ends of the frames are the chutes 21, in each of which operates the endless carrier 22, the same operating around rollers 23, rotatably arranged in the end of each of the chutes, the inner ends of the

lower pair of these rollers 23 being provided with sprocket-wheels 23^a, which are connected to the sprocket-wheels 20 by the sprocket-chains 24.

Rotatably arranged in bearings 25, which are carried by the outer pair of uprights 3, are the crank-shafts 26, in each of which is formed a pair of cranks 27, and fixed upon said shafts, adjacent the forward ends thereof, are the sprocket-wheels 28, the same being connected with the sprocket-wheels 16 by the sprocket-chains 29, and as the sprocket-wheels 16 and 28 are at right angles to each other said sprocket-chains 29 must be twisted a quarter of a turn when positioned around said sprocket-wheels.

Located in each one of the rectangular frames comprising the body of the picker is a pair of reciprocating frames which carry the picker stems or fingers, all of said frames being alike in construction and operation. Each frame comprises a rectangular skeleton structure 30, on the sides of which, adjacent the top and bottom, are fixed bearing-brackets 31, which slide upon horizontally-arranged rods 32, the ends of which are fixed in standards 33, carried between the longitudinally-extending tubular members 1 and 2, and fixed to the rear side of each of the structures 30 is a bar 34, the same being connected to the crank 27 by a connecting-rod 23^a. Vertically arranged in the structure 30 are a plurality of pairs of bars 35, each pair of said bars being provided with oppositely-arranged apertures 36, through which pass the picker-stems 37. These picker-stems 37 are constructed of stiff metallic rods, the front ends of which are tapered or beveled off, and formed on the opposite sides of the forward ends of said picker-stems are the pairs of rearwardly-extending barbs or prongs 38. Fixed upon each of the picker-stems 37 just inside the front one of each pair of bars 35 is a collar 39, and an expansive coil-spring 40 is located upon said picker-stem 37 between this collar 39 and the rear one of the pair of bars 35.

Formed in the sheet-metal housings 6, that form the inside walls of the frames comprising the body of the picker, is a plurality of vertically-arranged slots 41, the same being so located as to allow the free passage of the reciprocating picker-stems 30. Located to the rear of these slots 41 and just inside the walls in which said slots are formed are the vertically-arranged shafts 42, the ends thereof being rotatably arranged in suitable bearings carried by the inside pair of top and bottom members 1 and 2, said shafts 42 carrying the rotary brushes 43. Said brushes engage against the picker-stems 37, and circular casings 44 inclose said brushes on all sides, except the point where said brushes contact with said picker-stems. Fixed upon the upper ends of the shafts 42 are small sprocket-wheels 45, all of which are driven by a sprocket-chain 46, and there being idlers 47 arranged to engage against the sprocket-chain 46 between the sprocket-wheels 45. The front pair of the vertical shafts 42 are provided on their upper ends above the sprocket-wheels 45 with the sprocket-wheels 48, and arranged between the front pair of shafts 42 and the front of the picker are the vertically-arranged rotating shafts 49, on the upper ends of which are fixed sprocket-wheels 50, which are connected to the sprocket-wheels 48 by the sprocket-chains 51. Carried by the lower ends of these shafts 49 are beveled gear-pinions 52, the same being in mesh with beveled gear-pinions 53, carried by the horizontally-arranged shafts 54, that are journaled in suitable bearings fixed upon the inside pair of the lower tubular members 2, and carried upon the inner ends of these shafts 54 are the small sprocket-wheels 55, the same being driven by sprocket-chains 56, said chains passing around the sprocket-wheels 14. The sprocket-gearing last described imparts a uniform rotary motion to all of the brushes 43, said brushes removing the cotton from the prongs 38 on the picker-stems as said picker-stems are drawn rearwardly to a position where the brushes contact with said prongs, said cotton after leaving the brushes gravitating onto the endless carrier 19. The sprocket-wheels 14 55 and sprocket-chain 56 are all inclosed by means of a suitable sheet-metal casing 57, and the sprocket-wheels 20 and 23^a and the sprocket-chains 24 are inclosed by sheet-metal casings 58. The crank-shafts 26 are inclosed by suitable casings 59, there being extensions 60 in said casings, in which extensions operate the cranks 27.

In the modification of the picker-stems shown in Figs. 7 and 8 the main body 37 of each stem has its forward end flattened and formed into an elongated socket 61, in the bottom of which is formed an aperture 62, through which projects the point of the spring-catch 63. The removable head 64 of the picker-stem, which is provided with the prongs 38, previously described, has its rear end 65 flattened and constructed so as to enter the socket 61, and in said flattened end 65 is formed an aperture 66, into which the point of the spring-catch 63 engages when said flattened end 65 is engaged in said socket 61.

The device made use of when the picker is turned around comprises a single leg 67, the same being hinged to the center of the forward one of the tubular members 5, said leg being so hinged that it cannot swing beyond the vertical plane occupied by the tubular member 5 when said leg is swung downwardly to elevate the forward portion of the picker. This leg 67 is provided at its lower end with a swiveled caster-wheel 68, and when said leg is swung downwardly, so that said caster-wheel rides upon the ground, the forward end of the picker and the front wheels will be elevated from the ground.

In operating the picker-frame I may con-

struct a device, as shown in Fig. 10, which consists of a bar 69, fulcrumed at its top to a cross-bar 70 and so arranged as to have its angular projection 71 to communicate with a cam 72, located on the shaft 73, carried by the cross-bar 70 and operated by means of sprocket wheels and chains from the driving-gear. The lower end of the bar 69 is provided with a slot 74, in which operates a roller 75, secured to the frame 76, which carries the picker-stems 37. By this bar 69 the frame is manipulated by means of the revolving of the shaft 73, carrying the cam 72. When the frame 76 is brought forward by the bar 69, a spring 77, secured to the body and its free end communicating with the bar 69, presses the same rearwardly after the bar 69 has been released from the cam 72. This arrangement extends at intervals along the entire length of the picker, and the picker-frames are operated alternately or simultaneously, as desired.

The operation is as follows: The picker is moved forwardly over the row of cotton-plants in such a manner that the plants will pass between the compression-rollers 8 and thence through the space between the two frames of the body of the picker, and as the entire picker moves forwardly the rotary motion of the shafts 11, resulting from the passage of the wheels 12 over the ground, will rotate the crank-shafts 26, owing to the sprocket-chain connections 29 between the sprocket-wheels 16 and 28, and as the crank-shafts 26 rotate the skeleton frames 30 will be reciprocated, for the reason that the rods 34^a connect said skeleton frames 30 with the cranks 27 in the crank-shafts 26. The cranks of each shaft are arranged opposite each other. Therefore the skeleton frames 30 on each side of the machine will reciprocate alternately, and during the reciprocation of said frames the bearings 31 will slide directly upon the rods 32 and the picker-stems 37 will travel through the slots 41 and past the brushes 43. The picker-stems 37 in making their outward movement will pass through the cotton-plant, and with the rearward movement of said picker-stems the cotton from the bolls will be engaged by the prongs 38 and will be pulled from said bolls, and when the forward ends of the picker-stems 37 move rearwardly to the point of contact with the rotating brushes 43 said brushes will remove the cotton from the prongs 38, and said cotton will gravitate downwardly onto the endless carriers operating in the bottoms of the frames of the picker. These endless carriers are driven from the gear-wheels 15, carried by the shafts 11, said gear-wheels meshing with the pinions 18, carried on the outer ends of the forward pair of rollers 17, and the cotton falling onto said endless carrier is carried rearwardly and finally delivered onto the endless carriers 22, operating in the chutes 21, said endless carriers 22 being driven by the sprocket-chains 24, passing around the pairs of sprocket-wheels 20 and 23^a. The endless carriers 22 carry the cotton upwardly to the upper ends of the chutes 21, and from thence said cotton passes into suitable receptacles carried beneath the upper ends of said chutes. Rotary motion for the brushes 43 is obtained through the sprocket-wheels 14, carried upon the ends of the shafts 11, sprocket-chains 56, sprocket-wheels 55, shafts 54, pairs of beveled gear-pinions 52 and 53, shafts 49, sprocket-wheels 50, sprocket-chains 51, and sprocket-wheels 48, the same being carried upon the upper ends of the first pair of shafts 42, and from thence the balance of the shafts carrying the brushes 43 are driven by the sprocket-chains 46, passing around the sprocket-wheels 45, carried upon the upper ends of the shafts on which the brushes are mounted. When it is desired to turn the machine, the leg 67, which is normally swung upwardly and over onto a suitable rest located upon the top of the picker, is swung forwardly and downwardly until the caster-wheel 68 rests upon the ground. Then as the picker is started forwardly this leg and caster-wheel will act as a lever to elevate the forward end of the picker, and after said forward end has been elevated the picker is free to be turned in any direction or moved to any position, and while so doing the entire weight of the picker rests upon the rear wheels 12^a and the caster-wheel 68. While the picker is thus being turned, the picker-stems, brushes, and endless carriers will not operate, owing to the fact that the front wheels 12, which drive the various parts, are not in contact with the ground, and of course are not rotating. The forward ends of the picker-stems are beveled off in order that they will pass off from the cotton-plant stalk easily, and said picker-stems are provided with the coil-springs 40 in order that they will give slightly in either direction should they come in contact with a stiff or solid stalk, and if desired the picker-stems 37, with the detachable points or heads, may be used, said heads or points being readily replaced in case the barbs become worn or broken.

The points of the picker-stems are made smooth on the front side, so that they will not catch the cotton-stalk. The barbs are on the bottom, top, and back sides of the stems.

A cotton-picker of my improved construction possesses superior advantages in point of simplicity, durability, and general efficiency, is very compact, can be easily drawn by a single pair of draft-animals, and will very thoroughly pick the cotton from the plants and deliver said picked cotton into a proper receptacle.

I claim—

1. In a cotton-picker, comprising a pair of frames forming a body, and vertically-alined rows of reciprocating picker-stems operating in each of said frames, vertical roller-brushes on one side of all of said rows of picker-stems,

and a semitubular casing encircling each of said rollers for removing the cotton therefrom, substantially as specified.

2. In a cotton-picker, a picker-stem comprising a body 37, its forward end being flattened and formed into a socket 61, a spring-catch 63 carried by said body, and a head 64 projecting into said socket and there held by the said spring-catch 63, substantially as specified.

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

WILLIAM WARMACK.

Witnesses:

EDWARD EVERETT LONGAN,

ALFRED A. EICKS.