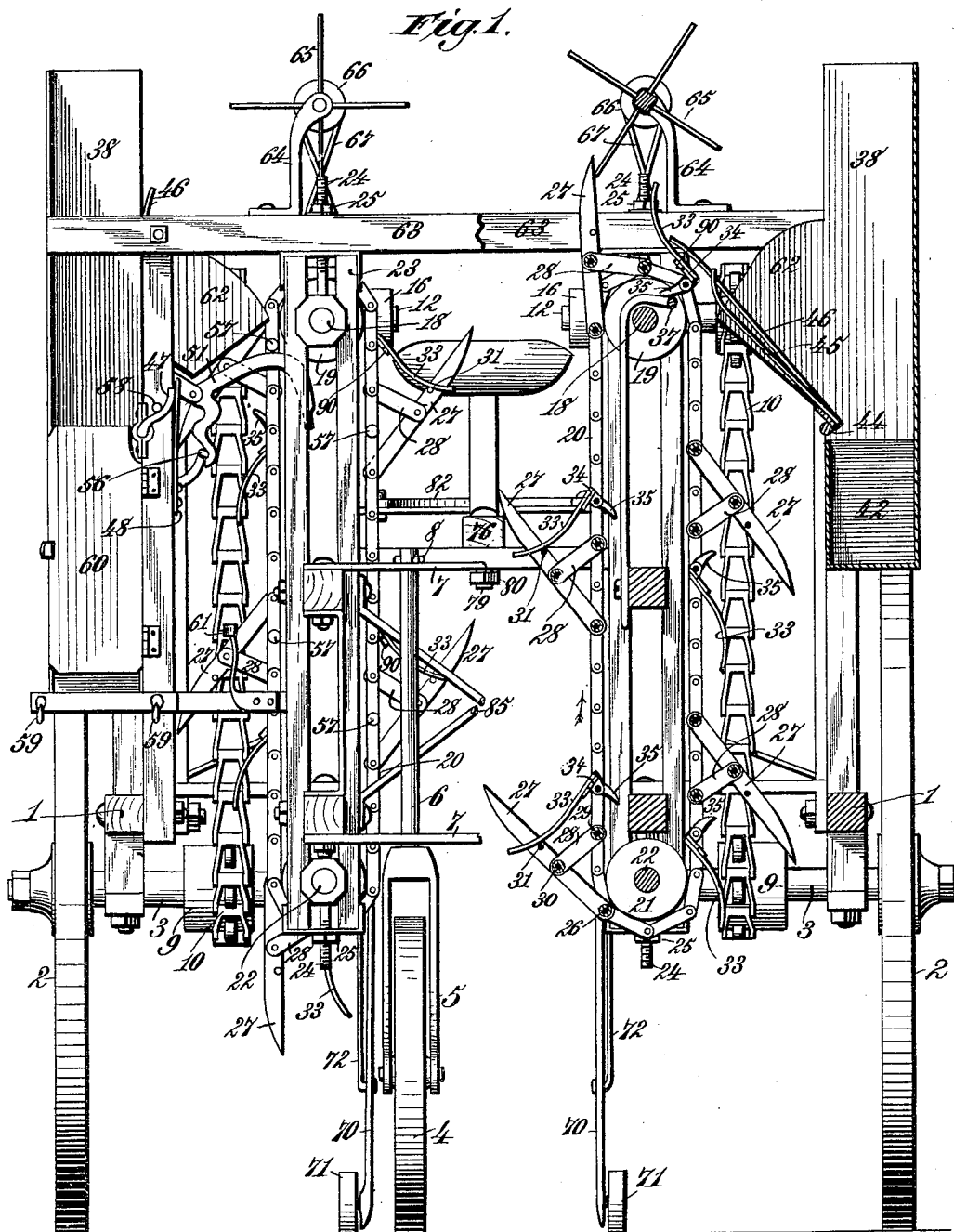


A. G. PERRY.
COTTON HARVESTER.

No. 480,131.

Patented Aug. 2, 1892.



Witnesses.
Robert Emmett,
J. A. Rutherford.

Inventor.
Alvy G. Perry.
By James L. Norris,
Atty.

(No Model.)

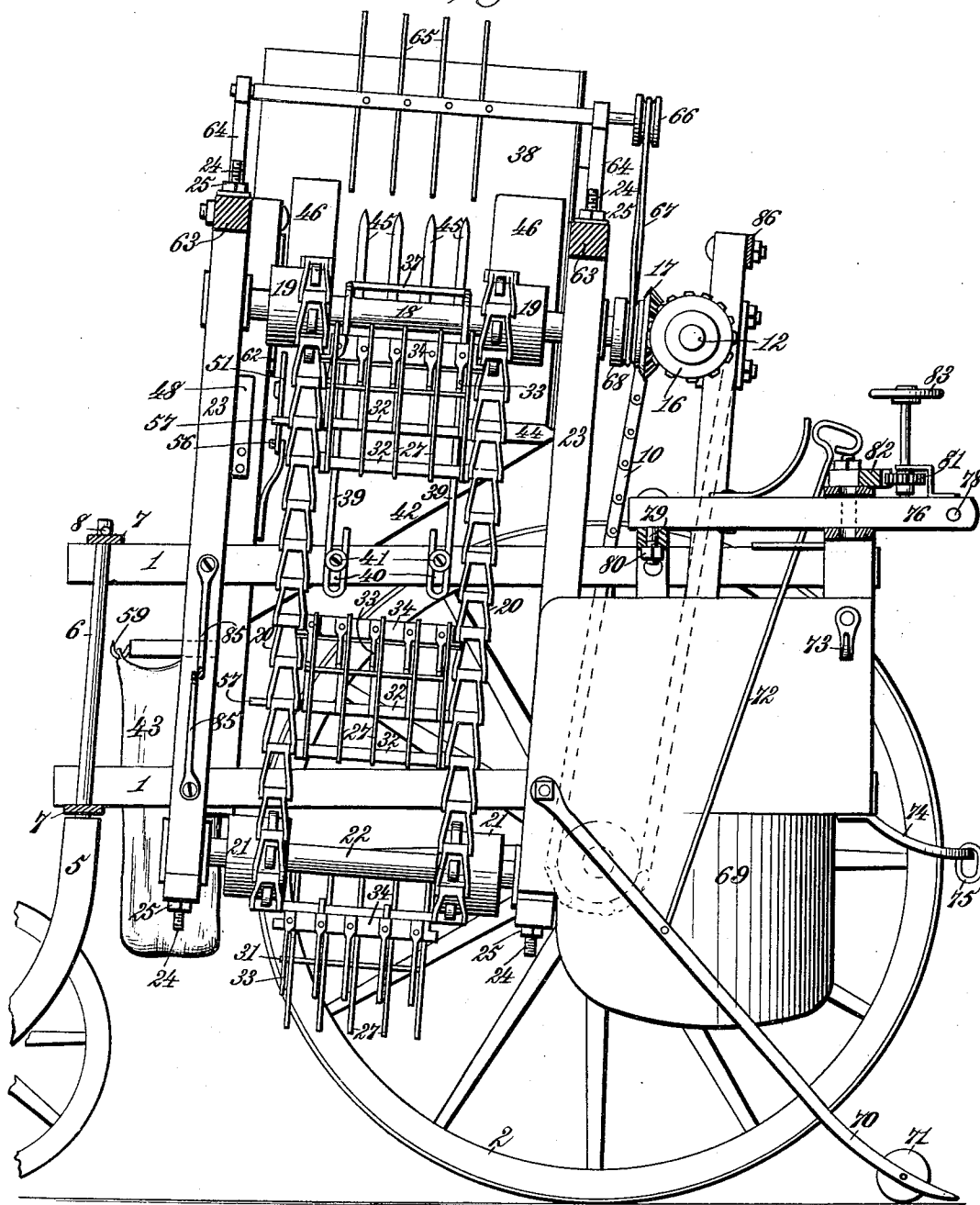
4 Sheets—Sheet 2.

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Fig. 2.



Witnesses.
Robert G. Smith,
J. A. Rutherford

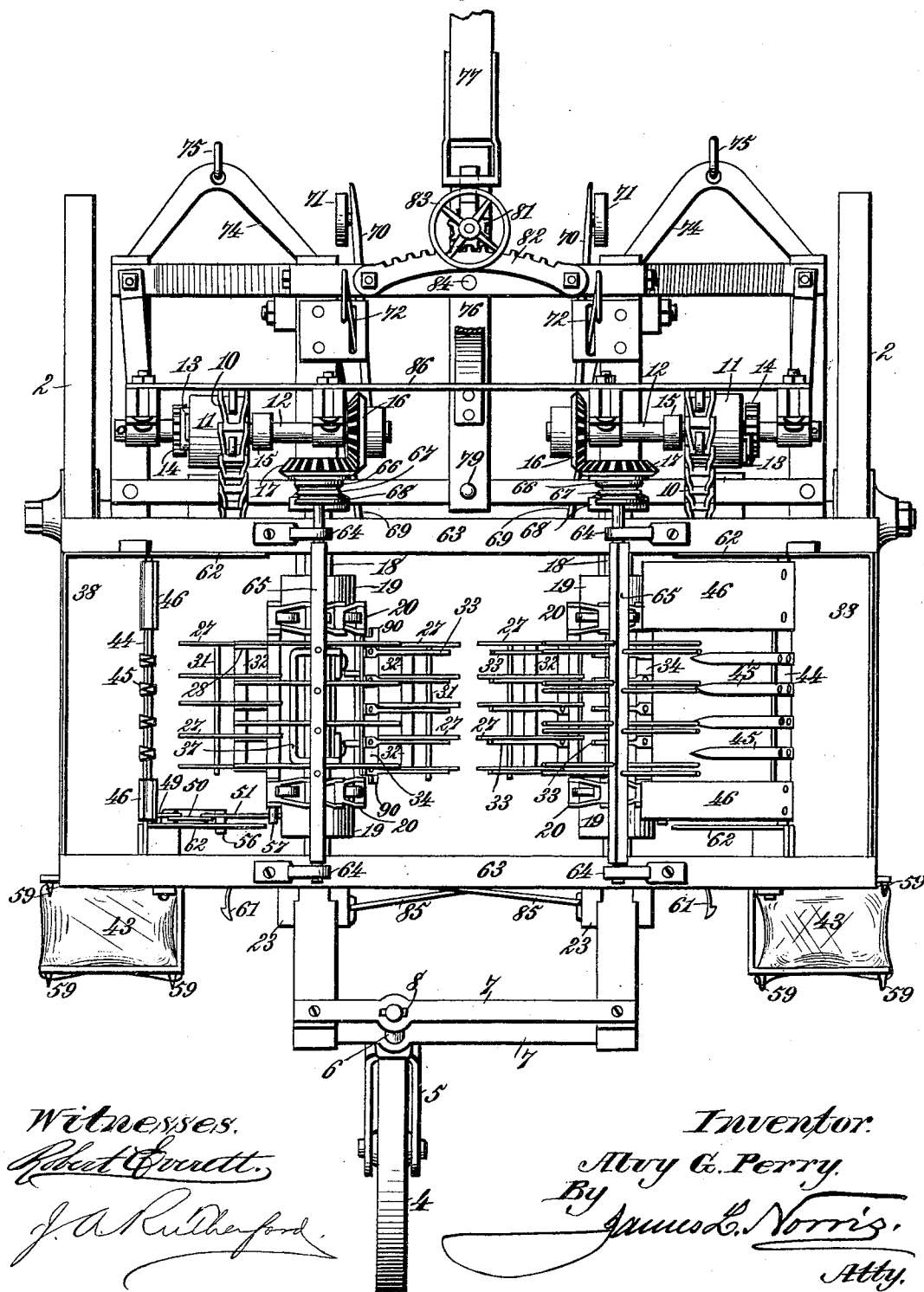
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Fig. 3.



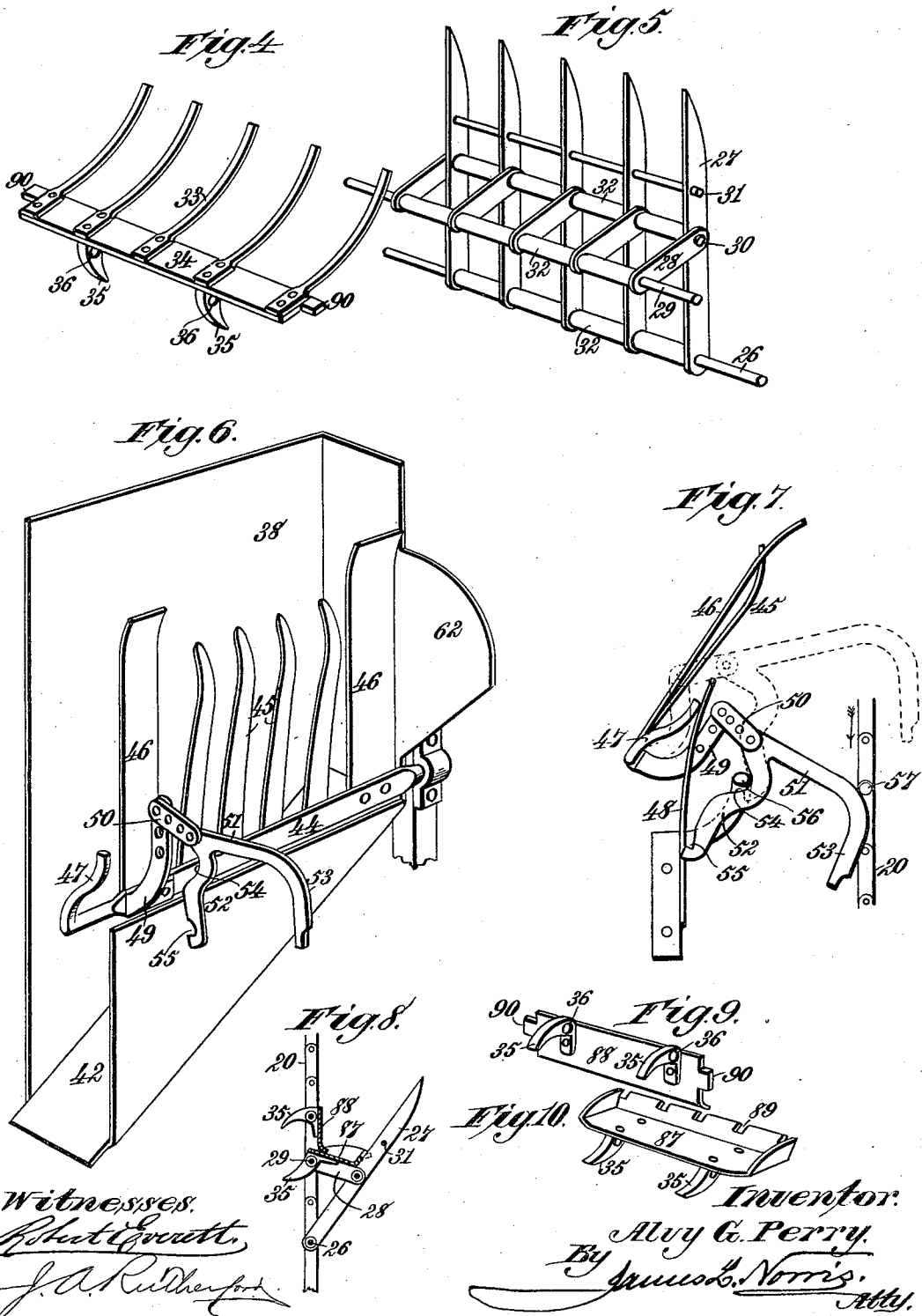
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UNITED STATES PATENT OFFICE.

ALVY G. PERRY, OF COLDWATER, MISSISSIPPI.

COTTON-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 480,131, dated August 2, 1892.

Application filed December 5, 1891. Serial No. 414,151. (No model.)

To all whom it may concern:

Be it known that I, ALVY G. PERRY, a citizen of the United States, residing at Coldwater, in the county of Tate and State of Mississippi, have invented new and useful Improvements in Cotton-Harvesters, of which the following is a specification.

This invention relates to a wheeled cotton-harvesting machine adapted to straddle a row of cotton-plants and operate on the opposite sides thereof in such a manner as to pluck, pull, or gather all the bolls, whether open or unopen, and convey them into suitable shoes or receptacles on opposite sides of the machine, whence they are conducted through inclined chutes into bags or sacks suspended at the rear end of the machine-frame.

The invention consists in the various novel features of construction and in the combinations and relative arrangement of devices in a cotton-harvester, as hereinafter more fully set forth, and then pointed out in the claims.

In the annexed drawings, illustrating the invention, Figure 1 is a rear elevation of a cotton-harvesting machine embodying my improvements, one side of the machine being shown in transverse section. Fig. 2 is a vertical longitudinal section of the machine. Fig. 3 is a plan of the machine. Fig. 4 is a perspective of a set of rocking stripping-fingers. Fig. 5 is a perspective of a set of rigid gathering-fingers. Fig. 6 is a perspective of a shoe and accompanying mechanism that receives the cotton-bolls from the pulling or gathering and stripping devices. Fig. 7 is a side view of the mechanism for actuating the pivotal fingers and guards with which the receiving-shoe is provided. Fig. 8 is an edge or side view of a portion of a gathering-belt, illustrating a modification in the construction and arrangement of the pulling or gathering devices. Fig. 9 is a perspective of a dished plate, and Fig. 10 is a similar view of its fellow, the two constituting a modified form of device for accompanying the rigid gathering-fingers and effecting the transfer of the bolls therefrom into the receiving-shoe.

The numeral 1 designates the machine-frame, which may be of any suitable construction, adapted to straddle a row of cotton-plants. The machine-frame is supported at opposite sides on traction-wheels 2, that are

rigidly secured to short axles 3, which are independent of each other. At the rear of the machine is a caster-wheel 4, journaled in a forked standard 5, having a vertical portion or stem 6, that is supported in suitable openings in a cross-bar or cross-bars 7 and arranged to turn freely therein, so that the caster-wheel may assist in turning the machine as well as aid in maintaining a proper level of the machine while performing its work. By withdrawing a pin 8 in the upper end of a vertical shaft or stem 6 the caster-wheel can be detached, if desired.

On each short independent axle 3 is secured a sprocket-wheel 9, which is connected by a sprocket-belt 10 with a sprocket-wheel 11, that is loose on a short transverse shaft 12, journaled in suitable bearings in the upper part of the machine-frame. Each loose sprocket-wheel 11 carries on one side a spring-pawl 13, which in the forward movement of the machine is adapted to engage a ratchet-wheel 14, fast on the shaft 12, and thereby rotate said shaft. By this manner of connecting the sprocket-wheels 11 and their shafts 12, the said shafts will not rotate should the traction-wheels be moved backward, and thus during any rearward movement of the machine the gathering-belts actuated from the shafts 12, as presently explained, will remain stationary and be driven only when the machine is moved forward. The loose sprocket-wheels 11 on the shafts 12 may be held against the ratchet-wheels 14 by means of a collar 15 on each shaft. On the inner end of each shaft 12 is secured a miter-gear 16, which meshes with a miter-gear 17, secured on the forward end of a longitudinally-arranged shaft 18, that is journaled in suitable boxes in the upper part of the machine-frame. The parallel longitudinal shafts 18 each have secured thereto a pair of sprocket-wheels 19 on which are supported the gathering-belts 20, composed of sprocket-chains that also pass around sprocket-wheels 21, secured in pairs on parallel longitudinally-arranged shafts 22, journaled in suitable boxes in the lower part of the machine-frame. The standards 23, that support the boxes of the shafts 18 and 22, are preferably inclined slightly forward, as shown in Fig. 2, for the purpose of giving a slight cant to the gathering-belts, and the boxes of

the upper and lower parallel shafts 18 and 22 may be made vertically adjustable by means of screws 24 and nuts 25, so that they can be moved in the proper direction to tighten or slacken the said belts, as required. The endless belts or chains 20 in each pair are connected by rods 26, that are supported at suitable intervals in the joints of the links that compose said belts or chains. On some of these rods 26 are mounted the rigid gathering-fingers 27, which are also connected by means of braces 28 with other rods 29, that are supported and carried by the gathering-belts. The rigid gathering-fingers 27 are mounted on the gathering-belts 20 in gangs or series arranged at suitable intervals, as shown in Figs. 1 and 2, and the fingers in each gang or set are connected with each other by the rods 26, 30, and 31, as shown. The rods 26, 29, and 30 may be provided with thimbles 32 to keep the fingers in each set at suitable distances apart, as shown in Fig. 5. Each set or gang of rigid gathering-fingers 27 is accompanied by a set of pivotally-supported stripping-fingers 33, secured to a bar 34, that is pivotally attached to the gathering-belts 20 at a suitable distance from a gang of rigid fingers. The finger-carrying bars 34 are provided on one side with trip-lugs 35, having openings 36 for passage of one of the connecting cross-rods of the chains or gathering-belts 20, by which said bars 34 are pivotally supported. These trip-lugs 35 come in contact at the proper time with a suitable trip-rod 37, whereby the fingers 33 are partly revolved to strip or disengage the cotton-bolls from the gathering-fingers and discharge them into a shoe 38 on either side of the machine. As shown in Fig. 2, the trip-rod 37 is provided at its opposite ends with depending arms 39, that are formed at their lower ends into slots 40 for engagement with set-screws 41, by which the trip-rod is adjustably attached to the machine-frame.

On each side of the machine, outside the gathering-belts 20, is arranged a shoe 38 for receiving the cotton-bolls from the gathering-fingers and conducting them through an inclined chute 42 into a sack 43, suspended at the rear of the machine.

In the lower part of the inner side of each shoe 38 is journaled a longitudinally-arranged rock-bar 44, to which are secured fingers 45 and guards 46, as shown in Fig. 6. These fingers 45 and guards 46 occupy a normally-vertical position at the entrance to the shoe, the said guards being located near the ends of the rock-bar and slightly curved toward the center of the machine, while the fingers are placed between the guards and curve in the opposite direction. On one end of the rock-bar 44 is a rigid curved arm 47, against which bears a spring 48, Figs. 1 and 7, whereby the fingers 45 and guards 46 are held in a normally-erect position. The rock-bar 44 also has an upwardly and inwardly curved arm 49, to which is pivotally connected a link 50,

that in turn connects with a double-armed lever 51, composed of a depending crook or notched arm 52 and a downwardly-curved arm 53, which normally projects alongside the path of the downwardly-moving portion of the gathering-belts. The arm 52 is provided with notches 54 and 55 to engage a bracket-arm 56, that is secured to the frame of the machine in such position as to serve as a fulcrum for the lever 51 in pulling outward the fingers 45 and guards 46 against the action of the spring 48, and thereby facilitate the entrance of the cotton into the shoe. At suitable intervals on the gathering-belts 20, adjacent to the gathering-fingers 27, are lugs or projections 57, that are adapted to bear down on the curved lever-arm 53 and through the link 50 draw on the arm 49, thereby rocking the bar 44 and pulling the attached fingers 45 and guards 46 into the inclined position shown in Fig. 1, whereby a free entrance to the shoe is afforded. In the normal vertically-erect position of the fingers 45 and guards 46 the arm 47 on the rock-bar 44 is forced back against a stop 58, Fig. 1, by the action of the spring 48, and the lever 51 is elevated in such position that the lowermost notch 55 of its depending arm 52 is engaged with the bracket-arm 56, while the curved lever-arm 53 projects alongside of the adjacent gathering-belt 20 and in the path of the lugs 57 projecting therefrom. During the operation of the machine the endless gathering-belts 20, carrying the fingers 27 and 33, are caused to move upward through the central portions of the machine in contact with the opposite sides of a row of plants; and in passing upward the rigid gathering-fingers 27 pull or strip the cotton-bolls from the stalks of the plant and throw them back onto the pivotal stripping-fingers 33, which project between the rigid fingers 27 and normally rest on the stop-rods 31, that are carried by said rigid fingers. As the outermost portions of the gathering-belts pass downward one of the lugs 57 comes in contact with the upper edge of the curved lever-arm 53, thereby forcing the lever 51 down and causing it to pull on the link 50 and rock-arm 49, so as to rock the bar 44 and throw the fingers 45 and guards 46 into the inclined position shown in Fig. 1, during which movements the lever-arm 52 moves downward in contact with the bracket-arm 56, so that the fulcrum is gradually changed from the lower notch 55 to the upper notch 54 in such a manner that though the lever 51 is shortened from the first movement of its curved arm 53 the pressure of the rock-bar 47 on the spring 48 is gradually increased until the downward movement of the lever-arm 53 ceases. The upper notch 54 of the depending lever-arm 52 now remains in engagement with the fixed bracket-arm 56, and the lug 57 passes down along the outer curved end of the lever-arm 53 without further depressing the lever 51, but exerting sufficient pressure thereon to hold the

fingers 45 and guards 46 in the required inclined position against the action of the spring 48, which still remains pressed outward by the arm 47 on the rock-bar 44, to which said fingers 45 and guards 46 are secured. While the fingers 45 and guards 46 are thus held in an inclined position the continued movement of the gathering-belts 20 brings a gang of fingers 27 and 33 into such position that the trip-lugs 35 in passing over the trip-bar 37 will impart a rocking movement to the pivotally-supported fingers, thereby raising them from the stop-rod 31, causing them to pass upward and outward between the rigid gathering-fingers 27, stripping the cotton-bolls therefrom and throwing them over into the shoe. In this movement of the pivotally-supported or rocking stripping-fingers 33 they are caused to pass between and into engagement with the fingers 45 and guards 46 of the shoe 38, and at the instant that the lug 57 passes out of engagement with the curved lever-arm 53 the spring 48, acting on the rock-bar arm 47, throws the fingers 45 and guards 46 again into an erect position, thereby causing them to pass rapidly from between the fingers 33 and strip therefrom any adhering cotton or cotton-bolls. This movement of the spring 48 and rock-bar arm 47 through the arm 49 and link 50 returns the double-armed lever 51 to its former position, and the operations just described are continuously repeated during the forward movement of the machine. The cotton thus gathered or harvested passes, as before mentioned, through the shoes 38 and inclined chutes 42 into sacks 43, that may be suspended from hooks 59, attached to the rear of the machine-frame at the lower ends of the chutes. Each chute 42 is provided at its lower end with a door or shutter 60, that should be closed to prevent the escape of cotton from the chute while the sacks are being detached and replaced. In order to fasten back these doors 60 when opened, any suitable catch 61 may be employed.

The shoes 38—one on each side of the machine—may be of any suitable form to adapt them for receiving the cotton-bolls and are preferably provided on each end with wings 62, Figs. 3 and 6, that form sufficiently-close joints with the pivotally-supported guards 46 to prevent the escape of cotton at either end when the fingers 45 and guards 46 are in an inclined position.

On the standards 23 are supported cross-bars 63, to which are secured brackets 64, that afford bearings for reels 65, one of which is arranged above and parallel with each endless gathering-belt. These reels 65 are each composed of a rotary shaft to which are secured a number of transverse rods or fingers that are arranged to revolve between the ends of the gathering-fingers 27 and free them from any adhering matter that may obstruct their proper action. On each reel-shaft is a pulley 66, through which it is driven by means of a

crossed belt 67 from a pulley 68 on the upper shaft 18 of the gathering-belts.

Secured to inner portion of the machine-frame on opposite sides and in front of the gathering-belts are metallic shields 69, that are somewhat flaring in front for the purpose of passing on opposite sides of the row of cotton-plants in such a manner as to hold them up to the action of the gathering-fingers. The front portion of the machine is provided with a pair of pivoted lifting-rods 70, that are arranged to pass on opposite sides of the row of cotton in position to be employed for lifting low limbs or fallen stalks and conducting them backward to the fingers on the gathering-belts. The lower ends of these lifting-rods 70 are furnished with small wheels or rollers 71 to prevent the rods from running into the ground, but at the same time allowing them to run low enough to pass under the cotton. By means of suitable operating rods 72, attached to the lifters and extended up to near the driver's seat, the said lifters or pivoted lifting-rods 70 can be readily actuated to raise the lower limbs of the plants, as required. When about to turn the machine, or at any other time, if desired, the lifting-rods 70 can be elevated and supported in hooks 73, so as to be out of the way.

To the forward end of the machine are secured brackets 74, provided with links 75, for attachment of draft devices for a double team. Above these brackets the machine-frame is provided with a detachable arched tongue composed of a rear pivotal section 76 and a detachable arched section 77, that forms the forward end of said tongue and which may be provided with any suitable breast-yoke for connection with the harness-collars. The tongue-sections 76 and 77 have a jointed connection with each other at 78, so arranged that the forward section may work up and down. The pivot of the rear tongue-section is a vertical bolt 79, held in place by a nut 80, so that by detaching said bolt and nut the tongue can be wholly removed, if desired.

On the forward portion of the rear tongue-section 76 is journaled a pinion 81, that meshes with a transverse segmental rack-bar 82, secured to the front of the machine-frame. On the pinion-shaft is a hand-wheel 83 within reach of the driver and by which he can guide the machine while driving; but when desired the tongue can be held rigid by means of a pin 84, passed down through said tongue and through a cross-bar of the machine-frame in rear of the guiding-gear.

It will be observed that the machine-frame is composed of standards and longitudinal and transverse bars or beams so arranged as to support the operating devices and their actuating mechanism and at the same time form an arch over the row of plants on which the machine is caused to operate during the forward movement. These beams and standards composing the machine-frame are firmly

connected and are strengthened by braces 85 and tie-rods 86, arranged at suitable points.

In Figs. 8, 9, and 10 I have shown a form of construction in which a pair of oblong dished plates or cups 87 and 88 are arranged to accompany each set or gang of rigid gathering-fingers 27 in place of the fingers 33, hereinbefore described. These cups or plates 87 and 88 are each provided on one side with trip-lugs 35, having perforations 36 for passage of rods 29, carried by the gathering-belts 20, on which rods said cups or plates are thus pivotally supported. It will be observed that the lowermost cups 87 are flanged at both ends and on one side, while the cups 88 are flanged slightly on only one side adjacent to the other plate of each pair. The plates or cups 87 rest normally on the braces 28 of the rigid gathering-fingers 27, and in each of these plates the side flange is provided with notches 89, in which the edges of said gathering-fingers 27 are adapted to fit. The plate or cup 88 is so suspended from its pivot as to normally rest with its slightly-flanged side edge on the plate 87, as shown in Fig. 8, the two pivoted plates or cups thus forming a double-hinged receptacle for the cotton-bolls pulled by the rigid gathering-fingers. When the upward movement of the innermost sides of the gathering-belts carries the trip-lugs 35 of the cups or plates 87 and 88 over and in contact with the trip-rod 37, the said plates or cups are successively rocked or tilted in such a manner as to strip the bolls from the gathering-fingers and throw them over into the adjacent shoe 38, the notches 89 of the plate 87 enabling it to readily pass by the fingers 45, that at this time occupy an inclined position, as hereinbefore described. The operation of the machine is substantially the same whether the rocking fingers 33 or the duplex rocking plates or cups 87 and 88 be employed. On the ends of the finger-carrying rock-bar 34, Fig. 4, and also on the ends of the cup or plate 88, Fig. 9, are stop-lugs 90, that are adapted to come in contact with the edges of the outermost or descending portions of the belts or chains 20 and prevent entangling of said plates or fingers with the transverse rods of said chains or gathering-belts.

The arrangement and operation of the gathering-fingers and accompanying harvester mechanism are such as to strip the cotton-plants of all bolls, whether opened or unopened, the open and unopened bolls being subsequently separated or assorted by appropriate means, after which the unopen bolls may be torn open by suitable mechanism and prepared for the action of the gin.

What I claim as my invention is—

1. In a cotton-harvester, the combination of a frame adapted to straddle a row of plants, short independent axles provided with traction-wheels and sprocket-wheels, transverse shafts journaled in the upper part of the machine-frame and having sprocket-wheels con-

nected with and driven from the sprocket-wheels of the axles, upper longitudinally-arranged and parallel shafts driven by miter-gearing from said transverse shafts and provided with sprocket-wheels, lower longitudinally-arranged and parallel shafts having sprocket-wheels, endless gathering chains or belts mounted on the sprocket-wheels of said upper and lower longitudinally-arranged shafts, gathering devices carried by said endless belts or chains and adapted to pluck or strip the cotton-bolls from the opposite sides of the row of plants, stripping devices carried by and moving with the endless chains or belts for removing the bolls from the gathering devices, and shoes located on opposite sides of the machine to receive the cotton from the gathering devices, substantially as described.

2. In a cotton-harvester, the combination of a frame adapted to straddle a row of cotton-plants and provided with short independent axles, vertically-movable endless chains or gathering-belts arranged in opposite sides of the machine-frame and actuated from said independent axles, a series of gathering devices supported at intervals on each of said gathering-belts and adapted to pluck or gather the bolls from opposite sides of the row of plants, shoes located on opposite sides of the machine to receive the cotton from said gathering devices, a set of pivotal fingers supported at the entrance to each shoe, levers actuated from the gathering-belts to pull down said fingers into an inclined position to permit the passage of the cotton into the shoes, and a spring to return said fingers to their normal position when the actuating-levers are released, substantially as described.

3. In a cotton-harvester, the combination of endless vertically-movable gathering belts or chains, transverse rods carried by and connecting said chains, a series of rigid gathering-fingers arranged in gangs at suitable intervals on the rods that connect said belts or chains, stripping devices accompanying each set or gang of rigid fingers and pivotally supported by said belts or chains, a shoe to receive the cotton-bolls from the gathering devices, and a trip-rod to tilt or rock the pivotally-supported stripping devices and cause them to strip the bolls from the rigid gathering-fingers and throw them into the shoe, substantially as described.

4. In a cotton-harvester, the combination of endless vertically-movable gathering belts or chains, rigid gathering-fingers arranged in sets or gangs at suitable intervals on said belts or chains, pivotally-supported tilting or rocking stripping devices accompanying each set of rigid fingers and provided with trip-lugs, a trip-rod with which said lugs engage to tilt or rock the pivotally-supported stripping devices, and a shoe to receive the cotton-bolls from the gathering mechanism, substantially as described.

5. In a cotton-harvester, the combination of

endless vertically-movable gathering belts or chains, rigid gathering-fingers arranged in sets or gangs at suitable intervals on said belts or chains, pivotally-supported tilting or
 5 rocking stripping devices accompanying each set of rigid fingers, a shoe to receive the cotton-bolls, pivotally-supported fingers located at the entrance to said shoe, levers actuated from the gathering-belts to pull down said
 10 fingers into an inclined position to permit the passage of the cotton into the shoe, a spring to return said fingers to their normal position, and a reel adapted to engage and clean the fingers carried by the gathering-belts,
 15 substantially as described.

6. In a cotton-harvester, the combination of a frame adapted to straddle a row of cotton-plants, vertically-movable endless gathering belts or chains arranged on opposite sides of
 20 the machine and carrying gathering devices adapted to strip the cotton-bolls from opposite sides of the row of plants, pivoted stripping-fingers carried by and moving with the endless chains or belts, and a pair of pivotally-supported lifting-rods provided with oper-
 25 ating handles or levers, whereby said lifting-rods are adapted to raise the lower limbs and fallen stalks of plants, substantially as described.

7. In a cotton-harvester, the combination, with the endless vertically-movable gathering belt or chain, of rigid gathering-fingers 27,
 30 carried by the chain and provided with a rod 31, which extends through these several fingers, and rocking stripping-fingers carried by and moving with the endless chain and normally resting on said rod, substantially as described.

8. In a cotton-harvester, the combination of the endless vertically-movable gathering belts or chains 20, connected by transverse rods 26
 40 and 29, the rigid gathering-fingers 27, mounted in gangs or sets on the rods 26, and connected by rods 30 and 31, the braces 28, connecting the rods 29 and 30, and the thimbles 32 on the rods 26, 29, and 30 to space said
 45 rigid gathering-fingers, substantially as described.

9. In a cotton-harvester, the combination of the endless vertically-movable gathering belts or chains 20, the rigid gathering-fingers 27
 50 and rock-bars 34, carried by said belts or chains, the stripping-fingers 33 and trip-lugs 35, secured to the rock-bars 34, and the trip-rod 37, with which the lugs 35 are adapted to engage to tilt or rock the bar 34 and attached
 55 fingers 33, substantially as described.

10. In a cotton-harvester, the combination of the vertical endless gathering belts or chains 20, provided with lugs 57, the rigid
 60 gathering-fingers 27, and pivotally-supported

stripping-fingers 33, carried by said belts or chains, the shoe 38, the rock-bar 44, journaled at the lower part of the entrance to said shoe and provided with arms 47 and 49, the fingers 45 and guards 46, carried by said rock-bar,
 65 the double-armed lever 51, having a curved arm 53 and a depending arm 52, provided with notches 54 and 55, the fulcrum 56, the link 50, connecting the arm 49 and lever 51, and the spring 48, bearing on the arm 47, sub-
 70 stantially as described.

11. In a cotton-harvester, the combination of the vertical endless gathering belts or chains 20, the fingers 27 and 33, carried by said belts or chains, the reel 65, and the shoe 38,
 75 substantially as described.

12. In a cotton-harvester, the combination of the vertical endless gathering belts or chains 20, the gathering devices carried by said belts or chains, the pivoted stripping-fin-
 80 gers 33, carried by and moving with the endless belts or chains, the shoe 38, having an inclined chute 42, and means for suspending a sack at the lower end of said chute, sub-
 85 stantially as described.

13. In a cotton-harvester, the combination of a frame adapted to straddle a row of plants, the vertical endless gathering belts or chains 20, provided with gathering devices adapted to operate on the opposite sides of the row of
 90 plants, the pivoted stripping-fingers 33, carried by and moving with the endless belts or chains, trip mechanism for the fingers, and the shields 69, located in front of the gathering-belts to hold up and guide the limbs of
 95 the plants, substantially as described.

14. In a cotton-harvester, the combination of a frame adapted to straddle a row of plants, the vertical endless gathering belts or chains 20, provided with gathering devices, the pivoted
 100 stripping-fingers 33, carried by and moving with the endless belts or chains, trip mechanism for the fingers, and the pivoted lifting-rods 70, having rollers 71, substantially as described.

15. In a cotton-harvester, the combination of a machine-frame adapted to straddle a row of plants, the vertical endless gathering belts or chains 20, provided with gathering devices, stripping devices carried by and moving with
 110 the endless belts or chains, the shields 69, the lifting-rods 70, and the shoes 38, having chutes 42, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of
 115 two subscribing witnesses.

ALVY G. PERRY. [L. S.]

Witnesses:

P. M. B. WAIT,

L. G. WOALLARD.