No. 676,188. Patented June 11, 1901.

H. H. HIGDON.

POTATO HARVESTER.

(Application filed Aug. 13, 1900.)

(No Model.) 3 Sheets—Sheet 1.

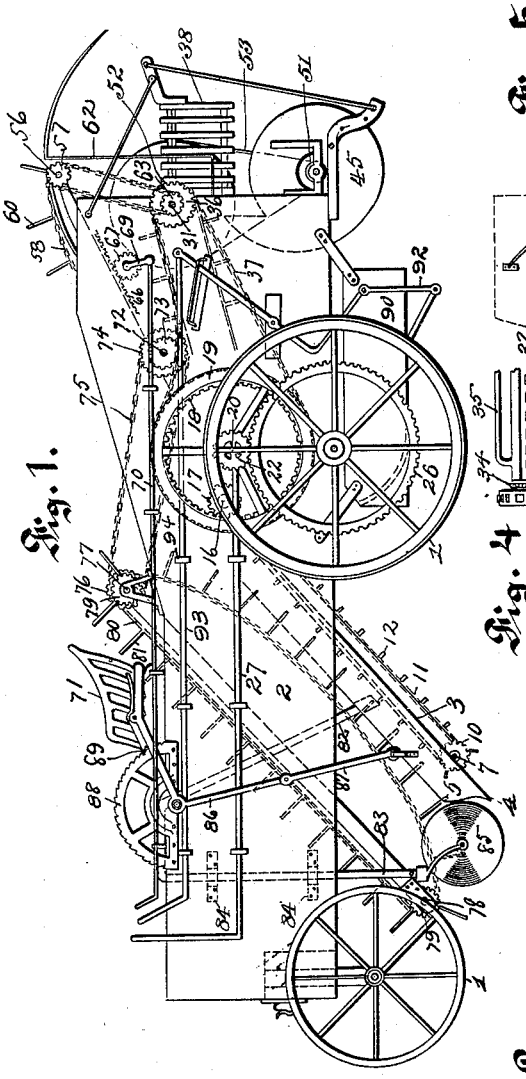

Fig. 1.

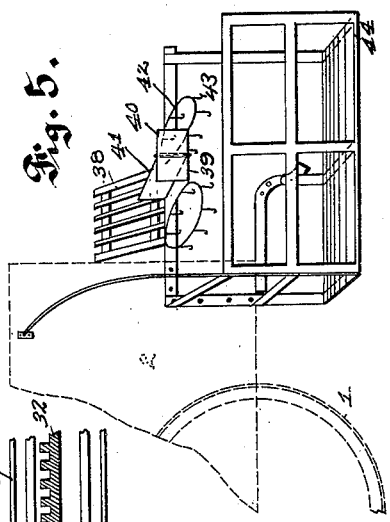

Fig. 5.

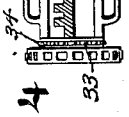

Fig. 4.

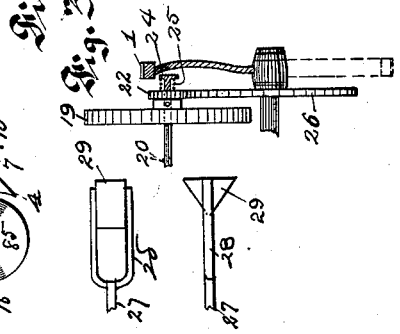

Fig. 3.

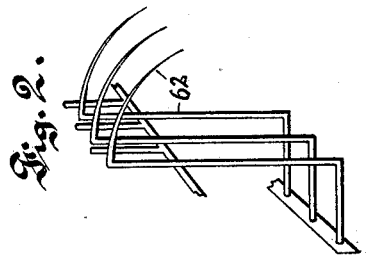

Fig. 2.

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Fig. 6.

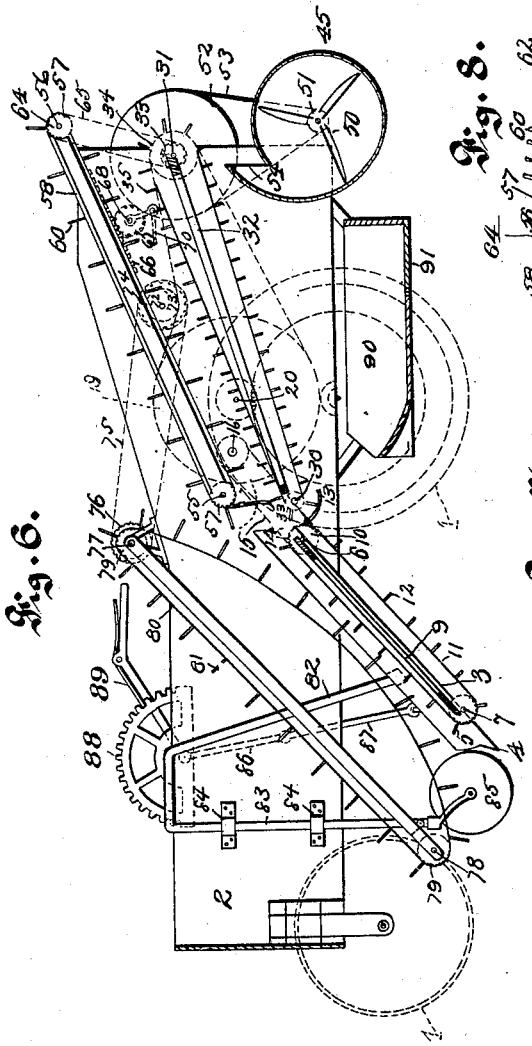


Fig. 8.

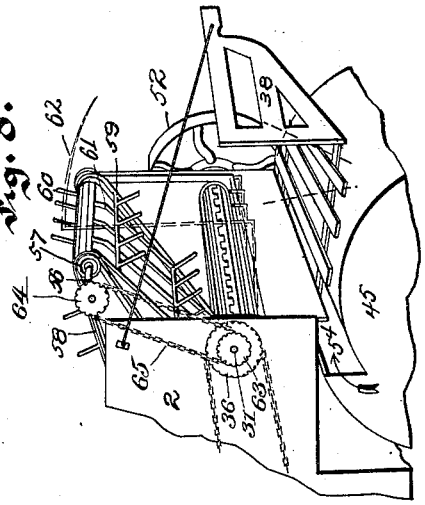
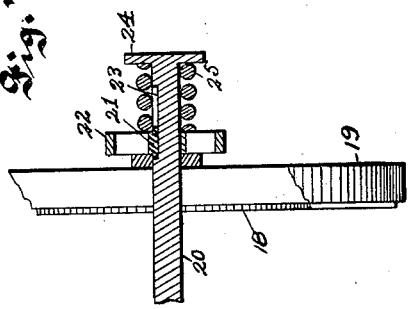


Fig. 7.



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(No Model.) 3 Sheets—Sheet 3.

Fig. 10.

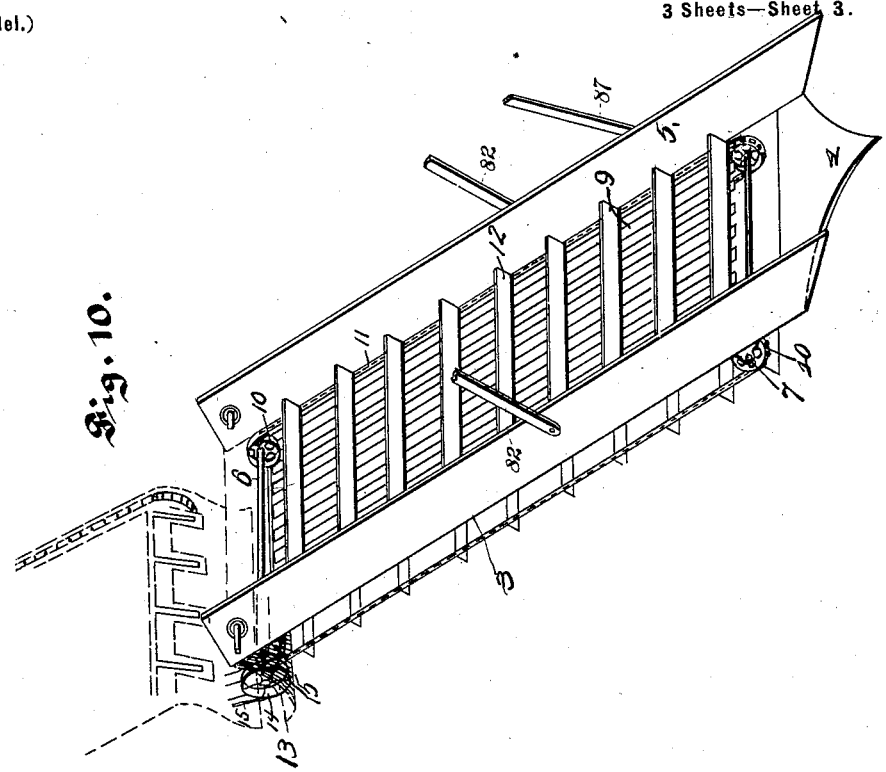
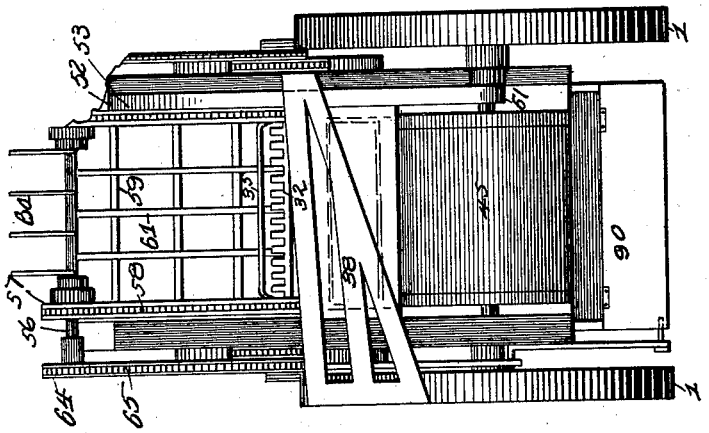


Fig. 9.



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Inventor:
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By Higdon Longan & Abbys

UNITED STATES PATENT OFFICE.

HENRY H. HIGDON, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO CHARLES J. BECKER, OF SAME PLACE.

POTATO-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 676,188, dated June 11, 1901.

Application filed August 13, 1900. Serial No. 26,756. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. HIGDON, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Potato-Harvesters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to potato-harvesters; and it consists of the novel construction, combination, and arrangement of parts hereinafter shown, described, and claimed.

Figure 1 is a side elevation of my improved harvester. Fig. 2 is a perspective view showing a number of hooks of which I make use in my improved potato-harvester. Fig. 3 shows a clutch by means of which the operating-gear is thrown into and out of operative position. Fig. 4 is a sectional view showing a portion of the carrier. Fig. 5 is a perspective view of a platform and support carried by the rear end of the machine. Fig. 6 is a longitudinal sectional view taken through the entire machine and shows the arrangement and construction of the different parts. Fig. 7 is an enlarged detail view showing the means by which the driving-gear is normally held in position. Fig. 8 is a perspective view of a portion of the mechanism carried at the rear of the machine. Fig. 9 is a view of the machine from the rear. Fig. 10 is a perspective view of the lower carrier.

Referring to the drawings, 1 indicates the traction-wheels, carried by which is a suitable frame or bed 2, preferably of corrugated iron. The said frame is provided with an open bottom, and pivoted to the sides of the said frame and inclining downwardly toward the front is a carrier-frame 3, which is provided on its lower end with a digger-point 4, the purpose of which is to operate beneath the surface and raise the potatoes up to the carrier. Said frame is provided with a vertical side 5, by means of which the potatoes are retained on the carrier, which will now be described.

The carrier-frame 3 is constructed with an open bottom and carries near its upper extremity a horizontal shaft 6, and a similar shaft 7 is carried near the lower end of the said carrier-frame. Inclined strips 9 form the bottom of the carrier-frame and are spaced a suitable distance apart to allow the passage of the soil as it becomes separated from the potatoes. If preferred, the bottom 9 may be shaken during the operation of the machine in order to facilitate the separation of the soil from the potatoes. Rigid with the shafts 6 and 7 are sprocket-wheels 10, around which are carried chains 11, to which are secured at suitable intervals the strips 12. The potatoes as they are raised by the point 4 are carried up to the strips 9, and the operation of the chains 11 carries them up by means of the strips 12, and at the upper end of the carrier-frame they are delivered into a suitable pocket 13, from which they are taken by the upper carrier and delivered to any suitable receptacle.

The carrier-frame 3, as stated, is pivoted to the frame 2, and may be raised or lowered and adjusted to variations of the surface-level. The shaft 6 projects a suitable distance through one side of the frame 2 and carries on its outer end a pulley 14, around which is passed a belt 15, which also passes around a similar pulley on the shaft 16, supported in bearings in the sides of the frame 2, and carried on the opposite end of the shaft 16 is a gear-wheel 17, which meshes with the internal gear-teeth 18 of the wheel 19. Said wheel 19 is keyed on the shaft 20, supported in bearings in the sides of the frame 2. The shaft 20 projects beyond the wheel 19, and feathered thereon by means of an integral key 21 is a gear-wheel 22, the key 21 operating within a keyway 23. The outer end of the shaft 20 is provided with an integral head 24, and a spring 25 is mounted around the shaft between the head 24 and the wheel 22, thereby holding the wheel 22 in operative position.

Rigid with the rear axle is a large gear-wheel 26, with which the spring 25 normally holds the wheel 22 in mesh, and as the machine is drawn over the surface the rotation of the axle and the wheel 26 will rotate the shaft 20, and through the connecting-belt 15 the shafts 6 and 7 will be rotated and the strips 12 will be moved, carrying the potatoes up and delivering them into the pocket 13 in the manner described. On some occasions it is desirable to move the machine with-

out operating the carrier and the digger, and to do this it is necessary that the wheel 22 be thrown out of mesh with the wheel 26, allowing the shaft 20 and the parts operated thereby to remain stationary. This is done by means of a friction-clutch, the construction of which is best shown in Fig. 3.

A rod 27 is supported by the side of the frame 2 and has its rear end bifurcated, as indicated by 28, and the bifurcated rear end engages around the shaft 20, between the wheels 19 and 22. A wedge-shaped member 29 is carried by the fork 28, and when the rod 27 is drawn forwardly the said wedge is drawn between the wheels 22 and 19 and the spring 25 is compressed, the wheel 22 being thrown out of mesh with the wheel 26. The parts may be retained in this position as long as desired, and when it is desired to throw them again into operative position the rod 27 is moved rearwardly, removing the wedge-shaped member 29 from between the wheels 19 and 22, and the tension of the spring 25 will automatically throw the gear 22 back into mesh with the wheel 26.

Carried by the frame 2, adjacent to the pocket 13, is a shaft 30, and a similar shaft 31 is supported by the rear end of the frame 2. Supported between the shafts 30 and 31 is a frame 32, comprising a series of strips having their rear ends resting upon a suitable support adjacent to the shaft 31 and their forward ends adjacent to the shaft 30. (See Fig. 4.) Sprocket-wheels 33 are rigid with the shafts 30 and 31 within the frame 2, and chains 34 are passed around the said wheels and carry at intervals the carrier-strips 35. As shown in Fig. 6, the carrier-strips 35 operate within the pocket 13, and the potatoes as they are delivered into the pocket will be received by the upper carrier and will be carried upwardly above the frame 32 and delivered at the rear of the machine.

On the outer end of the shaft 31 is a sprocket 36, and a chain 37 passes around the wheels 19 and 36, thereby rotating the shaft 31 and operating the carrier when the machine is in operation. The potatoes at the rear of the machine are delivered onto a frame 38, arranged at a suitable incline, from which they move onto the delivering-platform 39. At the outer end of the platform 39 is a vertical member 40, hinged to which is a deflector-plate 41, by means of which the potatoes may be caused to pass on either side of the platform, as desired. Supporting-loops 42 are supported by the platform 39, and rigid with the said loops are the suspending-hooks 43, by means of which any receptacle may be supported adjacent to the platform 39 for receiving the potatoes. A platform or support 44 is carried below the platform 39, upon which the operator may stand when the machine is in operation.

Supported by the frame 2 below the frame 38 is a fan-casing 45, within which is carried a rotary fan 50, the shaft of which projects beyond the end of the casing and carries a small pulley 51. A pulley 52 is secured upon the end of the shaft 31, and a belt 53 is passed around the said pulleys 51 and 52, thereby rotating the fan 50 whenever the machine is in operation. The current of air created by the fan 50 passes out through an opening 54 and assists in removing foreign particles which may have been carried up with the potatoes.

The shafts 55 and 56 are supported by the frame 2 above the shafts 30 and 31, and wheels 57 are carried by the said shafts, around which are passed chains 58. Connecting-rods 59 are carried by the said chains 58, and projecting from the rods 59 are fingers or projections 60. Strips of flexible material 61 are connected to the rods 59 between the chains 58, thereby preventing the material carried by the projections 60 from becoming entangled within the mechanism. The shaft 55 is supported above the pocket 13, and the fingers 60 operate close to the pocket 13 and will engage with the grass and other herbage which is carried up by the carrier-frame and remove it from the potatoes, carrying it upwardly to the shaft 56, where it is removed by means of the hooks 62, with which it engages as the carrier-frame operates. The hooks 62 project rearwardly and downwardly, and the material which is engaged thereby will become detached and drop to the ground. A sprocket-wheel 63 is carried on the end of the shaft 31, and a similar sprocket-wheel 64 is carried by the shaft 56, and a chain 65, passing around the said sprocket-wheels, supplies the motive power whereby the shaft 56 is driven. The said shaft 56 is supported by the rear ends of the gear-racks 66, slidably carried by the frame 2. A gear-wheel 67, supported on the trunnion 68, meshes with the rack 66, and whenever said gear-wheel 67 is rotated the rack 66 and the shaft 56 will be operated. An arm 69 depends from the trunnion 68, and pivoted to the lower end thereof is an operating-rod 70, which projects forwardly along the side of the machine and terminates adjacent to the seat 71. The operator by moving the rod 70 will rotate the pinion 67, thereby operating the racks 66 and moving the shaft 56 inwardly or outwardly, as required. Whenever the shaft 56 is moved, the chains 58 will be placed in a greater or less tension, as the case may be.

Supported by the frame 2 above the chain 37 is a trunnion 72, upon the outer end of which is a small sprocket-wheel 73, which is operated by the chain 37. A second sprocket-wheel 74 is carried by the trunnion 72, and a chain 75 passes around the said trunnion and is carried forwardly around the sprocket-wheel 76, carried by the shaft 77, supported in bearings above the frame 2. A shaft 78, corresponding to the shaft 77, is supported below the frame 2 in advance of the carrier-frame 5, and sprocket-wheels 79 are keyed upon the said shafts. Chains 80 are passed

around the sprocket-wheels 79, and the carrier-strips 81 are secured to the said chains 80. By this means an auxiliary carrier is formed which coöperates with the carrier in the carrier-frame 3 and assists in elevating the potatoes into the pocket 13 and also assists the carrier mounted around the shafts 55 and 66 in engaging with the herbage.

All the parts heretofore described are driven when the gear 22 is in mesh with the gear 26; but whenever the gear 22 is out of mesh with the gear 26 the entire mechanism will remain stationary and the machine may be drawn over the surface without operating any of the parts.

Connected to the sides 5 of the carrier-frame 3 are the rods 82, which extend upwardly within the frame 2 and operate within suitable guides. At the upper edges of the frame 2 the rods 82 are turned forwardly and are again bent downwardly, forming a vertical portion 83, which operates within the guides 84. (See Fig. 6.) On the lower ends of the vertical portions 83 are carried colters 85, which operate in alinement with the sides 5 of the carrier-frame.

On some occasions it is desirable to move the machine over the surface without having the lower carrier-frame in contact with the earth. As a means for raising the said carrier-frame I provide a lever 86, pivotally carried by the frame 2. To the lower arm of the lever is connected a rod 87, the opposite end of which is secured to the sides 5 of the carrier-frame. A ratchet-segment 88 is secured to the frame 2, and a pawl 89, carried by the upper arm of the lever 86, operates upon the said ratchet-segment, thereby retaining the carrier-frame in any adjustment in which it is placed.

The carriers 35 operate around the grate-frame 32, the members of which are arranged at such a distance from each other as to allow the smaller potatoes to drop downwardly and be received within a receptacle 90, supported below the frame 2, while the larger potatoes are carried upwardly and delivered onto the frame 38, from which they are removed in the manner described. The rear end of the receptacle 90 is provided with a hinged bottom 91, which may be operated downwardly, thereby allowing the potatoes which may be received within the said receptacle to be removed therefrom. I provide a means for operating the said bottom comprising the lever 92, which is connected by suitable connections to the rear end of an operating-rod 93, carried in suitable bearings 94, secured to the side of the frame 2. The forward end of the operating-rod is arranged adjacent to the seat 71, the arrangement of which is best shown in Fig. 1. By drawing the rod 93 toward the rear the lever 92 and the connections connecting the same to the rod 93 will be operated, thereby lowering the rear end of the bottom 91 and allowing the potatoes to drop out of the receptacle 90.

I claim—

1. In a potato-harvester, an inclined carrier-frame having a grate-bottom, an adjustable digger carried by said frame, an elevating-carrier operating around the grate-bottom of the carrier-frame, a pocket above the carrier-frame for receiving the potatoes, a vine-carrier operating close to said pocket, an auxiliary carrier above the inclined carrier-frame for assisting the elevating-carrier and for delivering the vines to the vine-carrier, a second potato-carrier for receiving the potatoes, means for assorting and for delivering the smaller potatoes into a receptacle supported below the frame, the larger potatoes being carried by said second-mentioned potato-carrier onto a suitable frame at the rear of the machine, and means for delivering said potatoes from said frame into any suitable receptacle, substantially as specified.

2. In a potato-harvester, the combination of a supporting-frame mounted on traction-wheels, a carrier-frame having a grate-bottom supported by said frame, a digger-point carried by said carrier-frame, a carrier operating within said frame, and around the said grate-bottom for carrying the potatoes upwardly, a rod 82 connected to each side of the carrier-frame and having an extension 83, a colter 85 carried by each of the extensions 83, a rod 87 at each side of the carrier-frame, a lever connected to each of the rods 87 whereby the carrier-frame and the colters 85 may be raised or lowered, and a segment adjacent to each of said levers for holding them in position, substantially as specified.

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

HENRY H. HIGDON.

Witnesses:
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JOHN D. RIPPEY.