No. 647,198.

Patented Apr. 10, 1900.

R. RASMUSSEN.

POTATO DIGGER.

(Application filed Jan. 27, 1899.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 5.

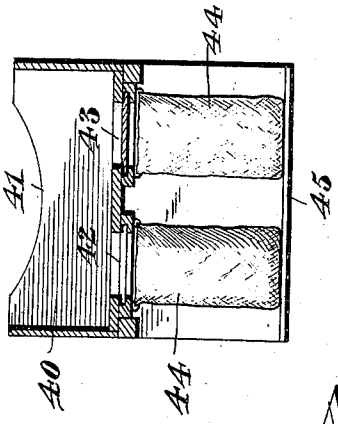
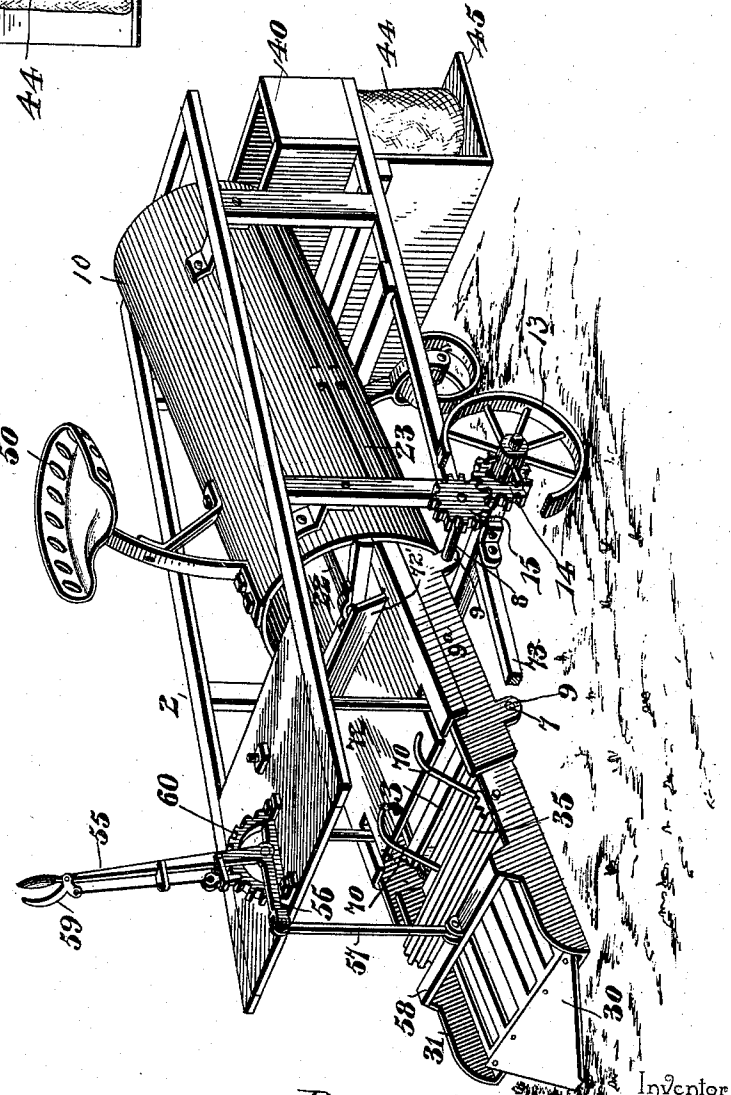


Fig. 1.



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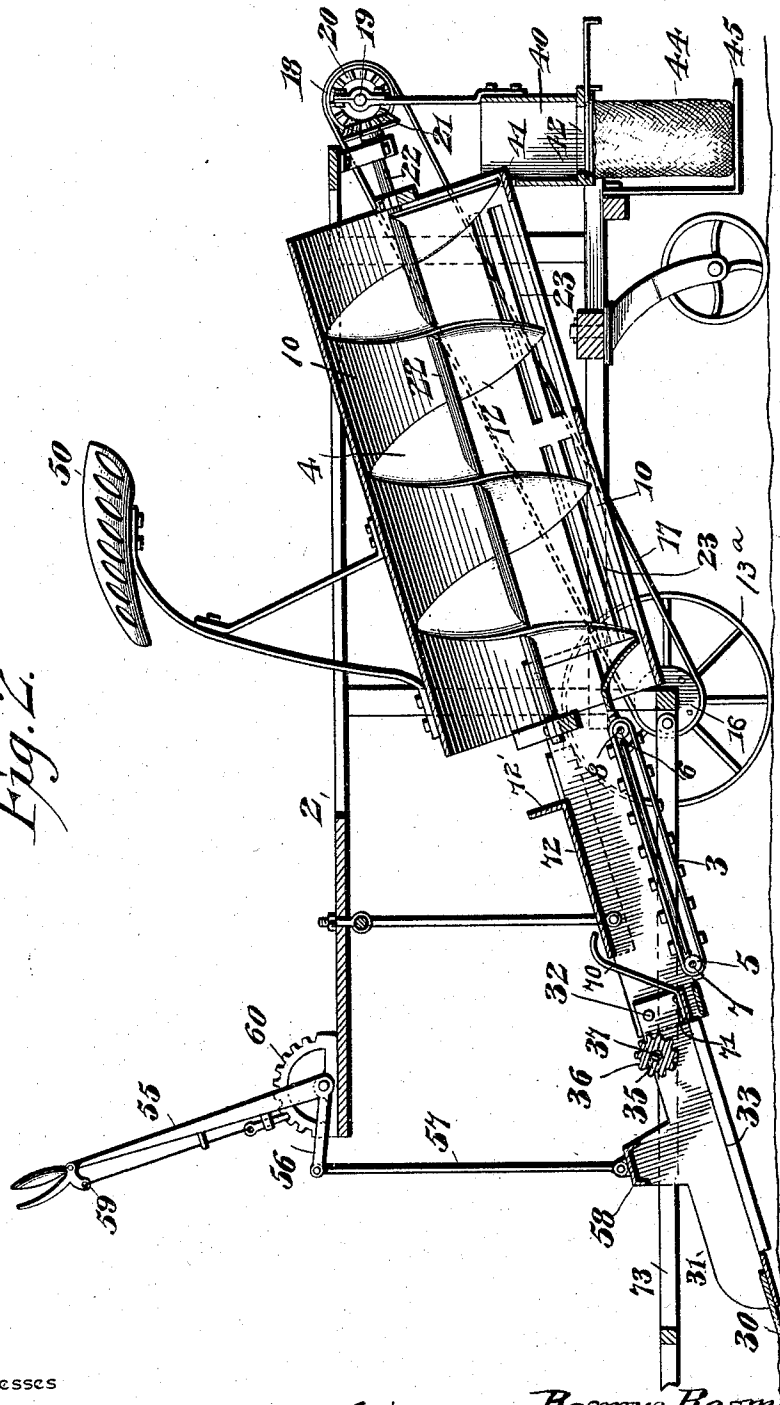


Fig. 2.

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3 Sheets—Sheet 3.

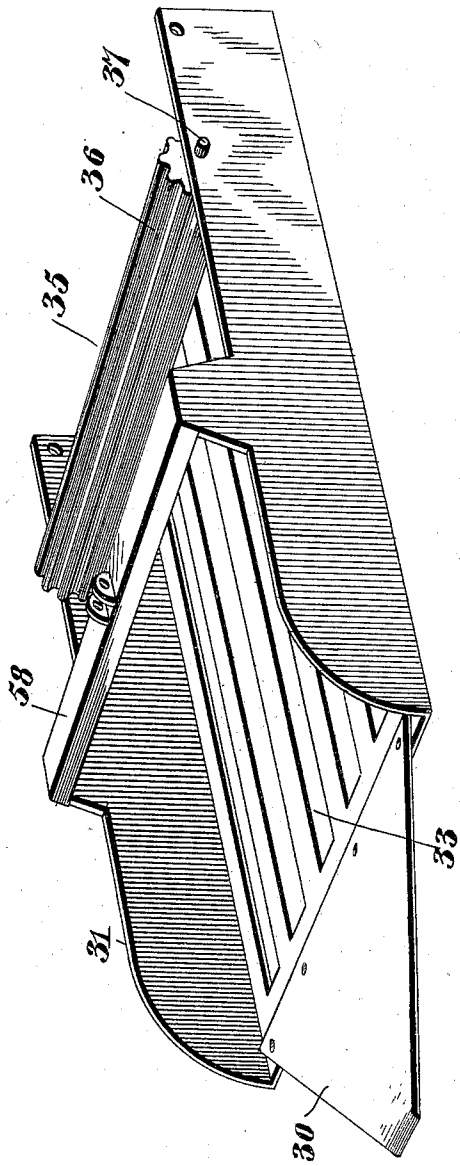


Fig. 3.

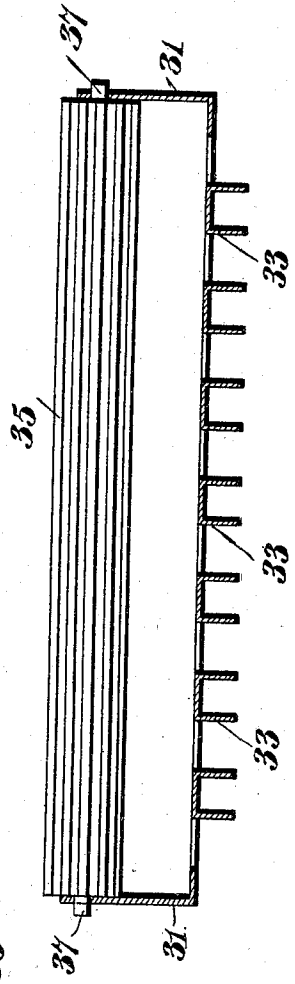


Fig. 4.

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UNITED STATES PATENT OFFICE.

RASMUS RASMUSSEN, OF OREGON, WISCONSIN, ASSIGNOR OF ONE-HALF TO A. E. RASMUSSEN, OF SAME PLACE.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 647,198, dated April 10, 1900.

Application filed January 27, 1899. Serial No. 703,605. (No model.)

To all whom it may concern:

Be it known that I, RASMUS RASMUSSEN, a citizen of the United States, residing at Oregon, in the county of Dane and State of Wisconsin, have invented a new and useful Potato-Digger, of which the following is a specification.

This invention relates to potato-diggers, the object of the invention being to provide a simple and efficient machine of this character which is constructed to unearth and thoroughly clean the potatoes of dirt which adheres to them upon being dug up and then to convey the cleaned potatoes to a bagging apparatus or other convenient receptacle for shipment.

My improved apparatus involves, preferably, in connection with conveying mechanism embodying two separate conveyers of different characters, a plowshare provided with a suitable plow-point and an earth crushing or pulverizing device mounted on the plowshare. This earth crushing or pulverizing device serves to break or disintegrate the lumps of dirt while on the plowshare, thereby preventing the same from being conducted rearward, as in such an event they tend to retard or block the conveying mechanism.

The earth-crusher consists, preferably, of a roll the axis of which is usually parallel with the floor of the plowshare, and said roll is mounted upon the plowshare at a point near the junction of the latter with the primary conveyer, and said roll is preferably corrugated, the corrugations being so located as to be operated upon by the mass of earth and potatoes, thereby to rotate the roll, so as to bring the successive portions of its periphery or outer surface into position to act in the manner before specified.

In the drawings accompanying and forming a part of this specification, Figure 1 is a perspective view of a potato-digger in accordance with my invention. Fig. 2 is a longitudinal section of the same. Fig. 3 is a perspective view of the plowshare and the parts carried thereby on an enlarged scale. Fig. 4 is a cross-section of the same, taken at a point just in front of the crusher-roll and also on an enlarged scale. Fig. 5 is a sectional elevation showing the bagging mechanism.

Similar characters designate like parts in all the figures of the drawings.

In the drawings the framework upon which the conveying and other mechanisms are mounted is designated by 2, and said conveying mechanism consists in the present case of a primary conveyer 3 and a secondary conveyer 4, located substantially in alinement and angularly disposed, the conveyers being respectively of the endless and screw types. The primary or endless conveyer 3 is carried by rolls 5 and 6, whose shafts 7 and 8 are respectively supported by suitable bearings 9, located, respectively, near the front and rear ends of the frame or boxing 9^a, the primary conveyer leading into a longitudinal cylinder or drum 10, constituting a convenient casing for the screw conveyer 12. The primary conveyer is driven from a master-gear fixed to the inner end of the hub of a ground-wheel 13 and meshing with a pinion 15 on the rear shaft 8 of the primary conveyer, so that when the apparatus is moved forward in operation the upper run of the primary conveyer 3 will be driven rearward to carry the mass of earth and potatoes into the casing or cylinder 10, where it can be taken up by the screw conveyer 12 and fed toward the bagging apparatus, and it will be seen that the conveyer 3 is of the open type and that its carrier has no bottom, so that the dirt in the mass can sift through to a considerable extent to the ground.

The ground-wheel 13^a has a pulley 16 fixed to the inner end of its hub, and which pulley is connected by a belt 17 with the pulley 18, carried upon a shaft 19, mounted upon the rear of the screw-casing 10, the opposite end of the shaft being provided with a bevel-gear 20, meshing with a coöperating bevel-gear 21 on a suitably-supported conveyer-shaft 22, such mechanism forming a convenient means for driving the screw conveyer in a direction to force the mass of potatoes rearward. The casing 10 is preferably perforated upon its under side, thereby permitting the dirt which is not separated from the potatoes while on the primary conveyer to escape, and in the present case said casing has on its under side a series of elongated slots or apertures 23 in parallelism and located at two different places

in the length thereof and through which the dirt can pass.

The potatoes are unearthed by the plow-point 30, of some suitable construction, fixed at the front end of a plowshare 31, pivotally supported, as at 32, on the front end of the conveyer-frame 9, so as to be elevated or lowered, suitable mechanism being provided for effecting such operation of the plowshare.

The plowshare is in the form of a frame having an open bottom provided with longitudinal cross-bars 33, through the spaces between which bars a large part of the under portion of the dirt pushed rearward by the operation of the plow-point can pass, the mass when unearthed being pushed rearward to the primary conveyer 3 to be conducted to the secondary or screw conveyer 4.

In connection with the plowshare 31 and located, preferably, at a point near the junction of the latter with the conveyer-boxing 9^a an earth-crushing roll 35 is provided, said roll being corrugated longitudinally thereof, as at 36, and the corrugations being engaged by the mass of dirt as the latter is pushed rearward, thereby effecting the rotation of the roll, so as to bring successive portions of its corrugated periphery into contact with the lumps and clods in the mass to thoroughly disintegrate said lumps. The shaft 37 of the roll is carried by bearings on the opposite side walls of the plowshare.

The bagging apparatus includes in its organization a suitably-shaped receptacle 40, the front end of which is provided with an aperture 41, the wall of which is curved to correspond with and to fit against the under curved portion of the casing 10 at the rear end of the latter, suitable fastening means being provided to hold the receptacle 40 in place, and said receptacle is located just to the rear of the said casing, so as to receive the cleaned potatoes which pass through discharge-openings, as 42 and 43, formed in the receptacle 40, and beneath which bags, as 44, can be placed to receive the cleaned potatoes. The apparatus is equipped with a suitably-mounted rest or platform, as 45, upon which the bags or like receptacles can be placed while being filled with potatoes.

A suitable seat, as 50, for a driver can be mounted upon the casing 10, and forward of the same a hand-lever, as 55, will be fulcrumed, said lever having an offset 56, connected by a link 57 with a cross-piece 58 on the plowshare, such a construction constituting a simple means for raising and lowering the plowshare. The lever 55 is held in adjusted position by a detent or auxiliary lever 59, carried thereby, the lower end of which is adapted to engage between the teeth of a sector 60 and the upper end of which is within reach of the driver, so as to thrust the working end thereof into or out of engagement with the teeth of the sector.

In operation the apparatus will be driven forward, the plowshare having been previously lowered by the manipulation of the hand-lever 55, and the plow-point will unearth a mass of material and the same will be pushed rearward as the apparatus advances, and the rotating roll 35 will serve to crush the lumps in the mass, the latter after it leaves the plowshare passing successively on to the primary and secondary conveyers 3 and 4, respectively, and while on the same the dirt and other matter are separated from the potatoes, so that when they reach the receiver 40 they are thoroughly cleaned of adhering matter.

In connection with the plowshare 31 I provide a guard, the purpose of which is to prevent the weeds and stalks unearthed thereby from entering the primary conveyer casing or boxing 9^a, as in case they enter said casing or boxing they clog or block the operation of said primary conveyer. The guard for this purpose consists of the bent or deflected bars or fingers 70, secured at one end by bolts 71 or analogous fastening devices to the upper side of the plowshare, near the rear thereof, and in proximity to the primary conveyer or elevator 3. The free curved ends of these bars, which may be of any number, are located over the cover or top 72 of the elevator-casing 9^a, as clearly shown in Fig. 2. By reason of this construction any weeds or stalks which are taken up with the mass of earth and potatoes will be caused to travel up the bars 70, which are inclined to facilitate the purpose, and from thence will pass onto the cover 72, from which they can be readily raked or pushed off. Upon inspection of Fig. 2 it will be seen that the cover 72 is bent up at right angles at its rear, as at 72', to form a second guard, so that the stalks, &c., thereupon cannot possibly fall upon the primary conveyer. The apparatus is also provided with a draft apparatus, as 73, consisting of a substantially-rectangular frame surrounding the front end of the apparatus and hinged, preferably, to the forward axle thereof. To this draft appliance or frame 73 a pole or like device can be attached.

Changes in the form, proportion, size, and the minor details of construction within the scope of the appended claims may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

Having described the invention, what is claimed is—

1. In an apparatus of the class specified, the combination with a slotted plowshare provided with a plow-point, of conveying mechanism, a cover for the conveying mechanism, guard-fingers carried by the plowshare and extending above said cover, and a corrugated earth-crushing roller mounted in advance of said fingers and adapted to exert a crushing force against the slotted portion of the plowshare.

2. In a potato-digger, the combination with a slotted plowshare provided with a plow-point, of conveying mechanism, a cover for

the conveying mechanism, guard-fingers carried by the plowshare and extending above said cover, and a rotary earth-crushing roller mounted in advance of the guard-fingers adjacent to the slotted portion of the plowshare, and serving to crush lumps of earth against the slotted portion of the plowshare, said roller being rotated solely by the earth engaging therewith.

3. In a potato-digger, the combination with a slotted plowshare provided with a plow-point, of two independent conveyers, one of which is adjacent to the plowshare, a cover for said adjacent conveyer, guard-fingers carried by the plowshare and extending above the cover, an earth-crushing device mounted on the plowshare and parallel with the slotted bottom thereof, in advance of the guard-fingers, and adapted to engage and crush earth against the slotted portion of the plowshare, and means for raising and lowering the plowshare.

4. In a potato-digger, the combination with a slotted plowshare provided with a plow-point, and with two independent conveyers, a cylindrical casing for one of the conveyers, a cover for the other conveyer, guard-fingers carried by the plowshare and extending above and over said cover, a crushing-roll mounted on the plowshare in advance of the guard-fingers and adapted to crush earth against the slotted portion of the plowshare, a receiver fixed to the rear end of said casing of one of the conveyers and provided with discharge-openings, and a sack-rest adapted to receive a sack.

5. In an apparatus of the class specified, the combination with a plowshare provided with a plow-point, of a casing located in line with the plowshare, a conveyer in said casing, and a series of guard-bars secured to the share and the free ends of said bars being located over the cover of said casing, substantially as described.

6. In an apparatus of the class specified, the combination with a plowshare provided with a plow-point, of a casing located in line with the plowshare and having a cover provided with an upturned end, a series of guard-bars secured to the share near the rear end thereof and the free ends of said bars being located over the cover, substantially as described.

7. In an apparatus of the class specified, the combination with a pivotally-supported plowshare provided with a plow-point, of an endless conveyer located at the rear of said plowshare, a casing for inclosing the endless conveyer, an inclined cylindrical casing into which the endless conveyer feeds and containing a feed-screw, driving mechanism for the conveyer and feed-screw, a series of guard-bars secured to the plowshare and inclined and curved, the curved portions of said guard-bars being located over the casing for the primary conveyer, and an earth-crushing device sustained by the plowshare, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

RASMUS RASMUSSEN.

Witnesses:
HERBERT M. HASKELL,
NORRIS FETTS.