C. DAVIS.

POTATO HANDLING MACHINE.

APPLICATION FILED SEPT. 6, 1917.

1,301,109.

Patented Apr. 22, 1919.

2 SHEETS—SHEET 1.

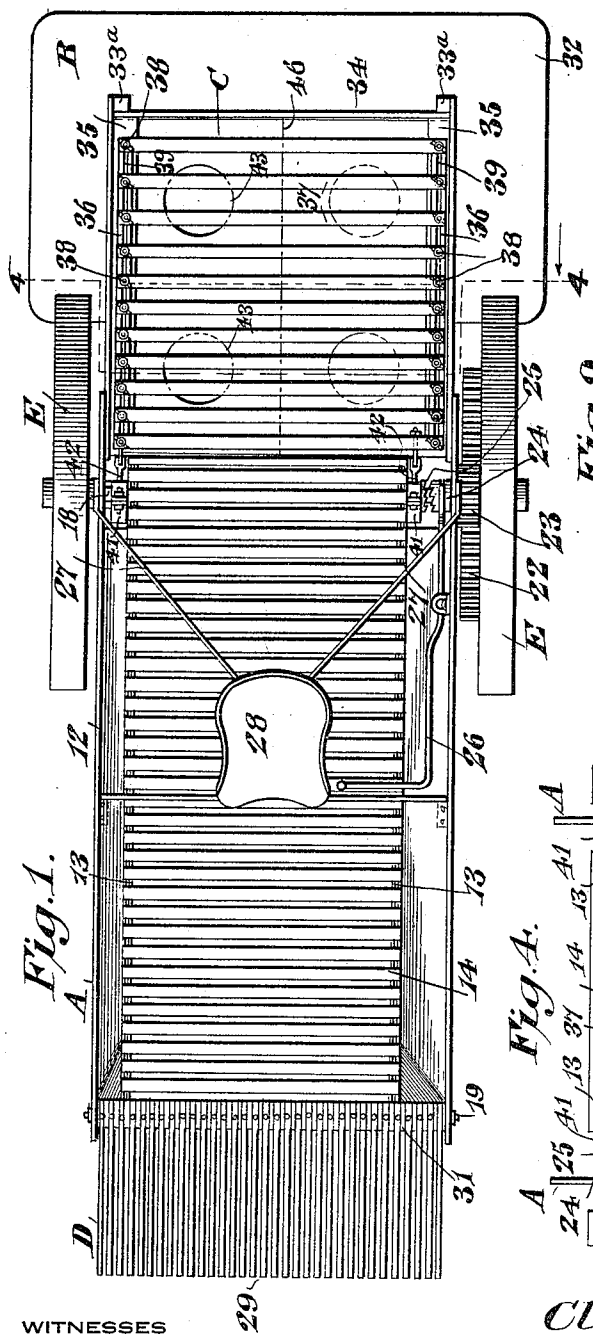


Fig. 1.

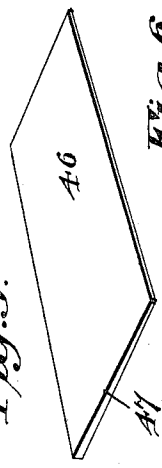


Fig. 9.

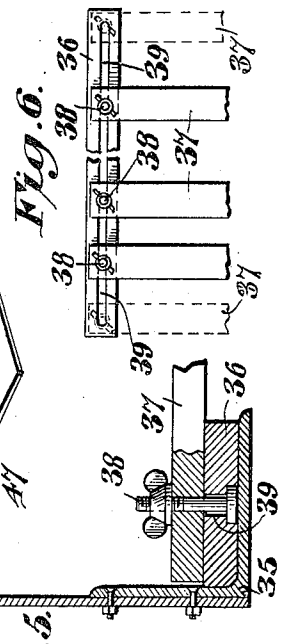


Fig. 6.

Fig. 5.

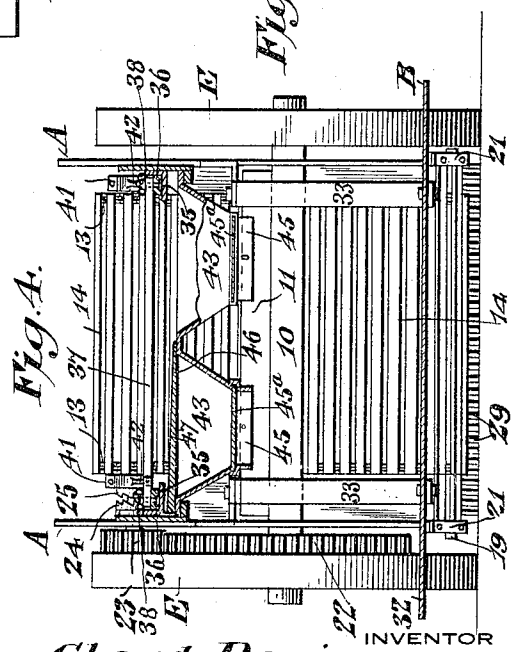


Fig. 4.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

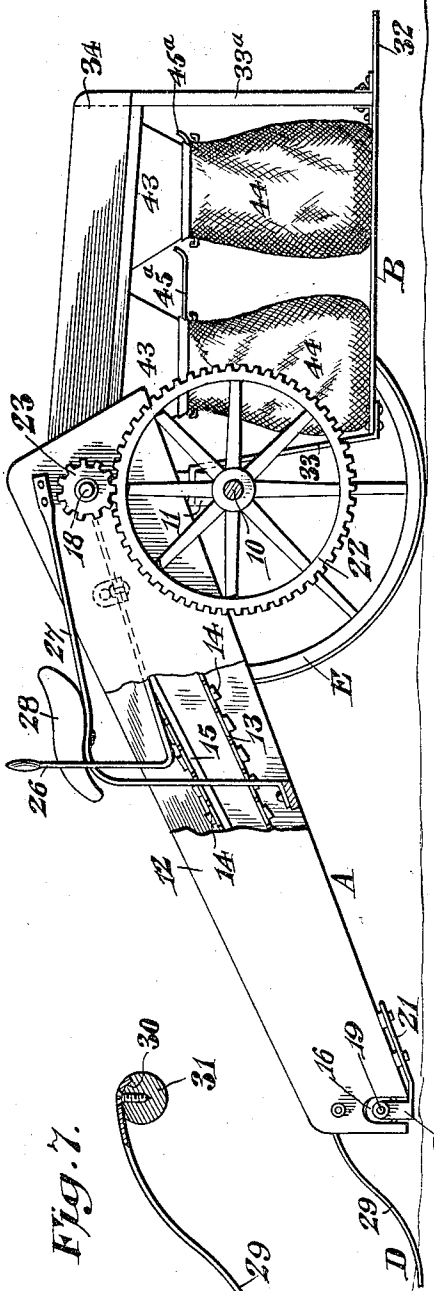


Fig. 3.

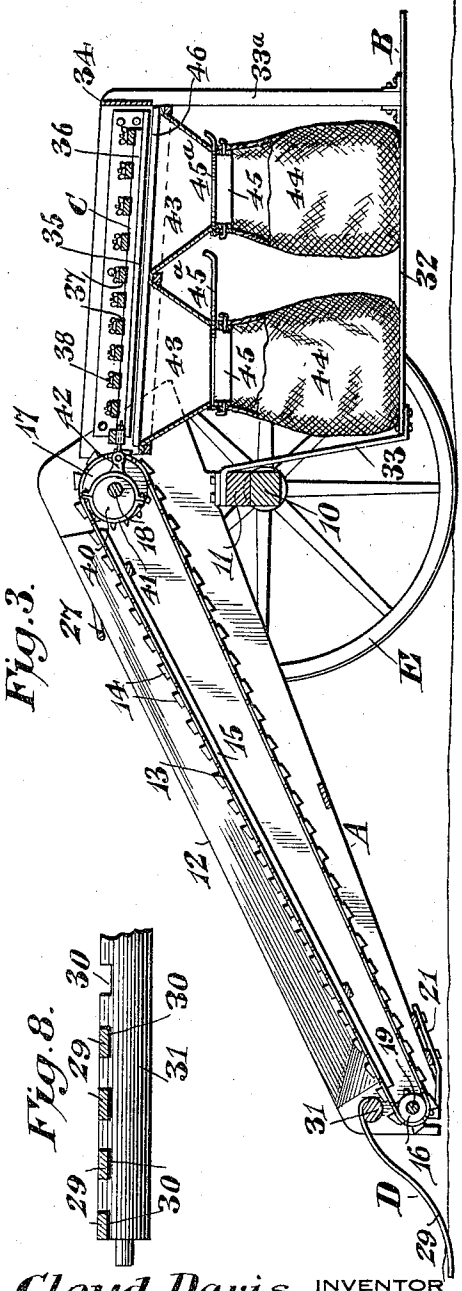


Fig. 7.

Fig. 8.

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UNITED STATES PATENT OFFICE.

CLOYD DAVIS, OF MINEOLA, NEW YORK.

POTATO-HANDLING MACHINE.

1,301,109. Specification of Letters Patent. **Patented Apr. 22, 1919.**

Application filed September 6, 1917. Serial No. 190,009.

To all whom it may concern:

Be it known that I, CLOYD DAVIS, a citizen of the United States, residing at Mineola, in the county of Nassau and State of New York, have invented a new and useful Potato-Handling Machine, of which the following is a specification.

The invention relates to a potato handling machine, and more particularly to the class of grading and bagging machines for potatoes.

The primary object of the invention is the provision of a machine of this character, wherein potatoes, after the digging thereof from the ground, are lifted and conveyed to a grading frame to be automatically assorted and subsequently delivered to receptacles in predetermined quantities in a single operation, thereby minimizing labor in the handling of potatoes for this purpose and assuring the easy gathering, assorting and bagging thereof with despatch.

Another object of the invention is the provision of a machine of this character, wherein loose dirt, gravel, stone, or the like, are separated from the potatoes, when the same are lifted from the ground, as they are combed therefrom; thereby avoiding the choking of the machine in the operation of the same.

A further object of the invention is the provision of a machine of this character, wherein the assorting elements are readily adjustable to vary the assortment of the potatoes into different sizes and any lumps of dirt, stones, or the like, will be readily removed therefrom during the assorting operation.

Furthermore, the invention has for other objects to generally improve machines of the indicated character, in various particulars, to the end that efficiency in operation may be promoted, as well as simplicity in construction and the working and control thereof.

The invention will be particularly explained in the specific description following.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all views.

In the accompanying drawings:

Figure 1 is a top plan view of a machine constructed in accordance with the invention.

Fig. 2 is a side elevation thereof, with the elevator partly broken away.

Fig. 3 is a vertical longitudinal sectional view through the machine.

Fig. 4 is a vertical transverse sectional view, taken on the line 4—4 of Fig. 1, looking in the direction of the arrow.

Fig. 5 is a fragmentary vertical transverse sectional view through the grading device, showing in detail the adjustable slat connection.

Fig. 6 is a fragmentary plan view of the grading frame, showing by full lines certain positions of the slats and by dotted lines adjusted positions thereof.

Fig. 7 is a detailed vertical sectional view, partly in elevation of the lifting comb.

Fig. 8 is a fragmentary vertical transverse sectional view thereof.

Fig. 9 is a perspective view of the removable slide.

In constructing a practical embodiment of the invention in accordance with the illustrated example, A designates the elevator, B the support for the receptacles or bags, C the adjustable grading device, D the lifting comb, and E the ground or traction wheels of the potato handling machine, hereinafter more fully described.

The ground or traction wheels E are supported and journaled upon a stationary axle 10, which carries a cross beam 11, to which is connected the elevator A, which comprises the forwardly inclined sides 12, constituting guards of the frame thereof, between which travels an endless conveyer belt 13 having at intervals the usual cross slats 14. The upper stretch of the belt is movable over guides 15 in the frame of said elevator to prevent the sagging thereof, and is trained over front and rear sprocket gears 16 and 17, respectively, the latter being of greater size than the gears or rollers 16 and are fixed to a driven shaft 18, journaled in the sides 12 of the frame of said elevator. The gears or rollers 16 are fixed to an idle shaft 19 journaled in the bearings 20 of a belt tightening device 21 mounted upon the frame of the elevator A, so that the belt 13 can be readily tightened or slackened, as the case may require.

Fixed to one of the traction wheels E is a gear 22 with which meshes a pinion 23 loose upon the shaft 18, and has associated therewith one clutch member 24 for engagement with the companion clutch member 25 fixed

to said shaft 18, the clutch member 24 being controlled and operated from a hand lever 26, pivoted to one side 12 of the elevator and extending in convenient reach of an operator, so that when the lever 26 is thrown in one direction, the clutch members 24 and 25 will engage with each other, and motion will be imparted to the belt 18 for the driving thereof on the advancement of the machine. The machine is advanced in any desirable manner, either by a potato digging machine or a tractor connected therewith, or drawn by animals.

Mounted on the elevator A are suitable supports 27 for an operator's seat 28, which is of conventional form.

The lifting comb for raising the potatoes from the ground, after being extracted by a digging machine, comprises a plurality of upwardly, downwardly and forwardly curved relatively resilient tines 29, which are arranged in spaced relation to each other, as clearly shown in Fig. 1 of the drawings, and are fixed in counter-seats 30 formed in the top of a supporting roll 31, which at opposite ends is mounted in the sides 12 of the elevator A for the disposition of the roll 31 elevated above the forward end of the conveyer belt 13, the roll 31 being mounted in the elevator A in any desirable manner to properly hold the comb in working position relative to the ground. The lifting comb lifts the potatoes by combing the same from the loose earth and delivers the same onto the elevator. The combing of the potatoes eliminates the collecting of dirt, gravel, or stone, and in this manner avoids the choking of the machine.

The support B for the receptacles or bags is located rearwardly of the elevator A, and comprises a platform 32, which at its front end is supported by brackets 33 secured to and depending from the cross beam 11 on the main axle 10, while rising from this platform 32 are uprights or standards 33^a, which constitute legs for the assorting device C hereinafter described.

The assorting device C comprises a rearwardly inclined stationary body frame 34, which at the sides thereof is connected to the sides 12 of the elevator frame and the uprights or the legs 33^a, and to the inner faces of said sides are fixed rearwardly inclined substantially L-shaped tracks 35, on which is movably supported the adjustable assorting frame. The latter comprises longitudinally slotted end rails 36, and the cross slats 37, which are adjustably mounted on the end rails 36 by the bolt members 38, which are slidably engaged in the slots 39 in the end rails 36, so that the slats 37 can be moved relative to one another for varying the spaces therebetween to properly grade the potatoes dropping onto the same.

Fixed to the shaft 18 are eccentrics 40, about which are engaged the eccentric straps 41, the throw arms 42 of which are pivotally connected in any suitable manner to the front end of the adjustable assorting frame, so that on rotation of the shaft 18 this frame will be reciprocated on the tracks 35 for the shaking of the potatoes, when dropped thereon, to effect the grading thereof.

Supported in any suitable manner below the plane of the adjustable grading frame are delivery hoppers 43, which constitute measurers for the graded potatoes and deliver the same to receptacles, such as bags 44, detachably hung on the contracted delivery ends 45 of said hoppers 43, the measuring of the potatoes being effected in a manner presently described.

The hoppers 43 are arranged in pairs, the rearmost hoppers being designed to receive the larger potatoes, while the forward hoppers are adapted to receive the smaller potatoes, and in the smaller ends of said hoppers are fitted cut-off slides 45^a, which, when closed, retain the potatoes received within the hoppers for the purpose of measuring the quantity thereof, as each hopper has a capacity of a predetermined size, for example, to hold one-half or one bushel. To enable the filling of only two hoppers at a time at opposite sides of the center line of draft of the machine, there is provided an upper slide 46, which is formed with an inclined upper face 47, so as to direct the potatoes falling through the grading frame thereon from one side to the other thereof, and this slide covers two of the hoppers with the other remaining two open. The slide is reversed either to position the same at the left hand or right hand side of the machine as will be obvious.

The potatoes are first loosened from the soil by a potato digger, or other implement. In the operation of the machine, after said potatoes have been dug, it is drawn through a field, straddling the rows of potatoes, and the lifter comb raises the potatoes from the soil free of loose dirt and stones, and deposits the same onto the elevator, which conveys said potatoes onto the assorting device, which grades the potatoes and delivers the same to the measurers for aggroupment into predetermined quantities, whence these quantities are discharged into bags at the rear end of the machine.

From the foregoing, it is thought that the construction, and manner of operation of the invention will be clearly understood, and, therefore, a more extended explanation has been omitted.

What is claimed is:—

1. In a machine of the character described, the combination with a stationary body frame having tracks, of a grading frame comprising slotted end rails resting flat on the tracks and movable thereon, bolts

mounted in the slots of said rails and projecting therefrom, and grading slats resting at their ends on the end rails and engaged at each end by the bolts and adjustable thereby along said rails, and means for reciprocating said grading frame, the rails and slats moving as a unit upon the tracks.

2. In a machine of the character described, the combination with a rigid body frame having inwardly disposed L-shaped tracks, of a grading frame comprising longitudinally slotted end rails resting flat upon said tracks and movable therealong, grading slats resting at each end upon the end rails, bolts movable in the slots of said rails and engaging with the ends of said slats for adjusting the latter along said rails, nuts on said bolts to retain the slats in their adjustment, and means for reciprocating said grading frame, the rails and slats moving as a unit on said tracks.

3. In a machine of the character described, the combination with a rigid body frame having inclosing walls and inwardly disposed continuous smooth tracks along opposite walls, at the bottom, of a grading frame comprising slotted end rails resting flat on the tracks and movable thereon, bolts mounted in the slots of said rails and projecting vertically therefrom, and grading slats resting at their ends on the end rails and engaged at each end by the bolts and adjustable thereby along said rails, and means connected to the grading frame for reciprocating the same, the rails and slats being rigidly connected by the bolts to move as a unit upon the tracks.

4. In a machine of the character described, the combination with an assorting device provided with a plurality of hoppers of a predetermined capacity adapted to communicate therewith, a slide at the bottom of each hopper, a single upper slide common to the several hoppers and movable above the tops thereof, said upper slide being adapted to be alternately reversed in position to cover certain of the hoppers leaving certain other hoppers uncovered, whereby the material delivered by the assorting device may be accurately measured.

5. In a machine of the character described, the combination with the stationary body frame, of a movable grading frame mounted in the upper part thereof, a plurality of hoppers depending from the stationary frame below the grading frame and having a predetermined capacity, a slide in the bottom of each hopper, an upper slide common to all the hoppers and having an area sufficient to cover some of the hoppers, leaving the others uncovered, said upper slide being movably mounted in the stationary frame between the bottom of the grading frame and the tops of the hoppers and adapted to be reversed in position to cover and uncover certain hoppers alternately whereby the material assorted by the grading frame may be accurately measured.

6. In a machine of the character described, the combination with an assorting device, provided with a plurality of hoppers arranged in pairs, lower slides in each hopper, and an upper slide common to the hoppers and adapted to cover a pair of the hoppers, leaving the other pair uncovered, said upper slide having an inclined upper face.

7. In a machine of the character described, the combination with assorting means, a plurality of hoppers communicating with said means, and a slide common to all the hoppers and adapted to cover certain of the hoppers leaving the others uncovered, said slide having an inclined upper face.

8. In a machine of the character described, an assorting device comprising a stationary body frame having tracks, a slatted frame movable on the tracks, means for reciprocating said slatted frame, hoppers supported on the body frame and communicating with the assorting device, a slide mounted on the body frame above the mouths of the hoppers and below the plane of the slatted frame for cutting off or establishing communication between the hoppers and the assorting device.

9. In a machine of the character described, an assorting device comprising a stationary body frame having tracks, a slatted frame movable on the tracks, means for reciprocating said slatted frame, hoppers supported on the body frame and communicating with the assorting device, a slide mounted on the body frame above the mouths of the hoppers and below the plane of the slatted frame for cutting off or establishing communication between the hoppers and the assorting device, said slide having its upper face inclined.

10. In a machine of the character described, the combination with a frame, elevating mechanism mounted thereon, and means for driving said mechanism, of a stationary body frame mounted upon said frame and having inclosing side and end walls, that portion of the body frame nearest to the elevating mechanism being open to allow direct communication therewith, an assorting frame mounted to reciprocate between the walls of said body frame, short throw arms connected to the assorting frame, and an eccentric connection between said elevating mechanism and said throw arms.

11. In a machine of the character described, the combination with a wheeled frame having elevating mechanism, of a stationary body frame mounted upon said wheeled frame in rear of the discharge end of the elevating mechanism and communicating therewith, said body frame having on

the inside tracks which are inclined downwardly toward the rear and provided with upright inclosing walls around the tracks, an assorting frame mounted to move on said tracks between said walls, and means for reciprocating the assorting frame, said means being actuated by gearing carried by the wheeled frame.

12. In a machine of the character described, the combination with a wheeled frame, elevating mechanism carried thereby, assorting means also carried by the wheeled frame and comprising a stationary body frame, and a slatted frame mounted to reciprocate upon said body frame, hoppers carried by the body frame, a platform for the support of receptacles depending from said hoppers, and means connecting the platform to the wheeled frame and the body frame for mutually supporting said parts.

13. An assorting device comprising a stationary body frame having inclosing walls and tracks along the inside thereof, a slatted frame movable on the tracks between said walls, means for reciprocating said slatted frame, hoppers supported on the body frame and depending therefrom and having their mouths communicating with the body frame below the slatted frame, and means mounted on the body frame below the plane of the slatted frame for cutting off or establishing communication between the hoppers and the assorting device.

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

CLOYD DAVIS.

Witnesses:

HAROLD J. BOGART,

JOHN O. BERGEN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."