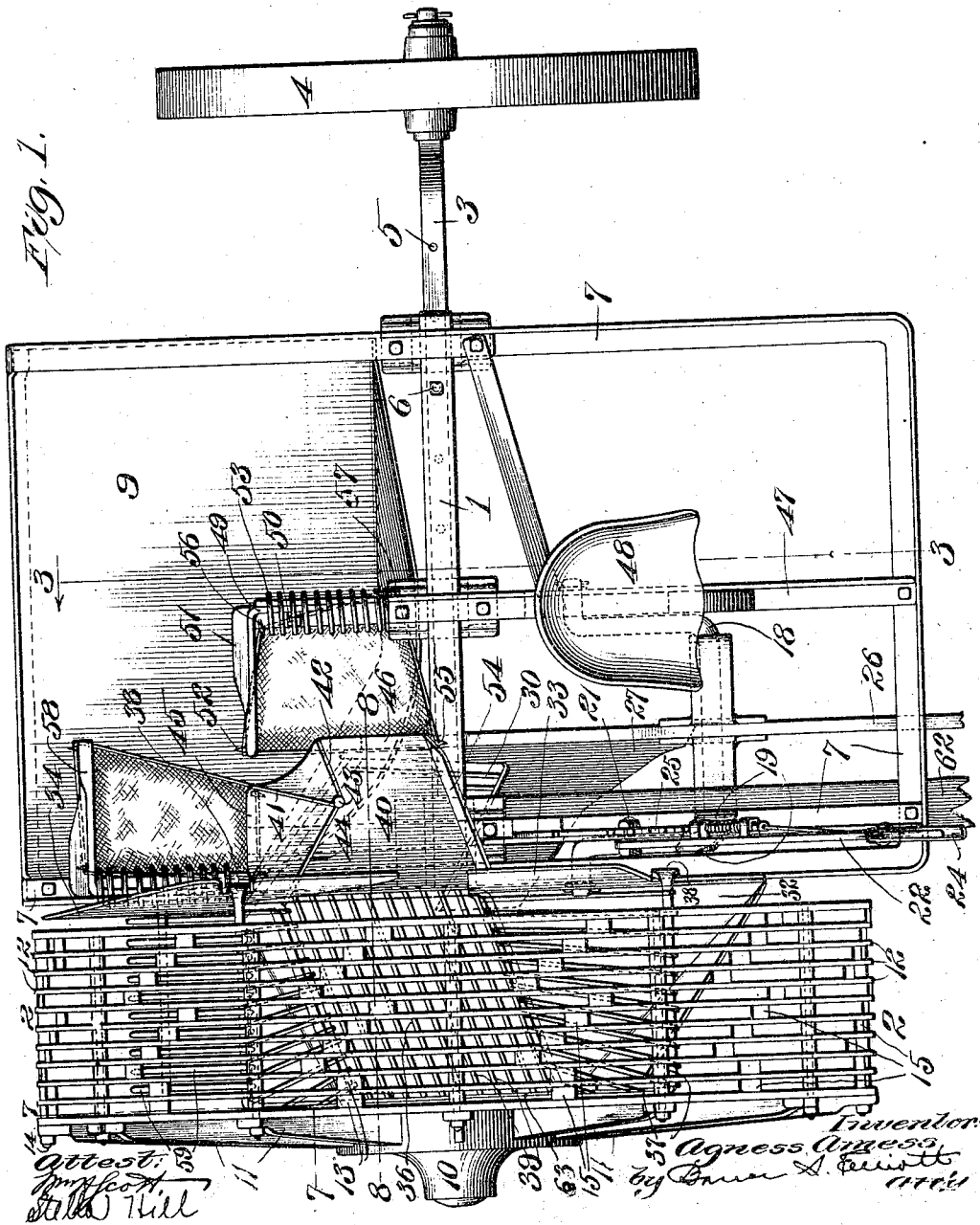


1,010,106.

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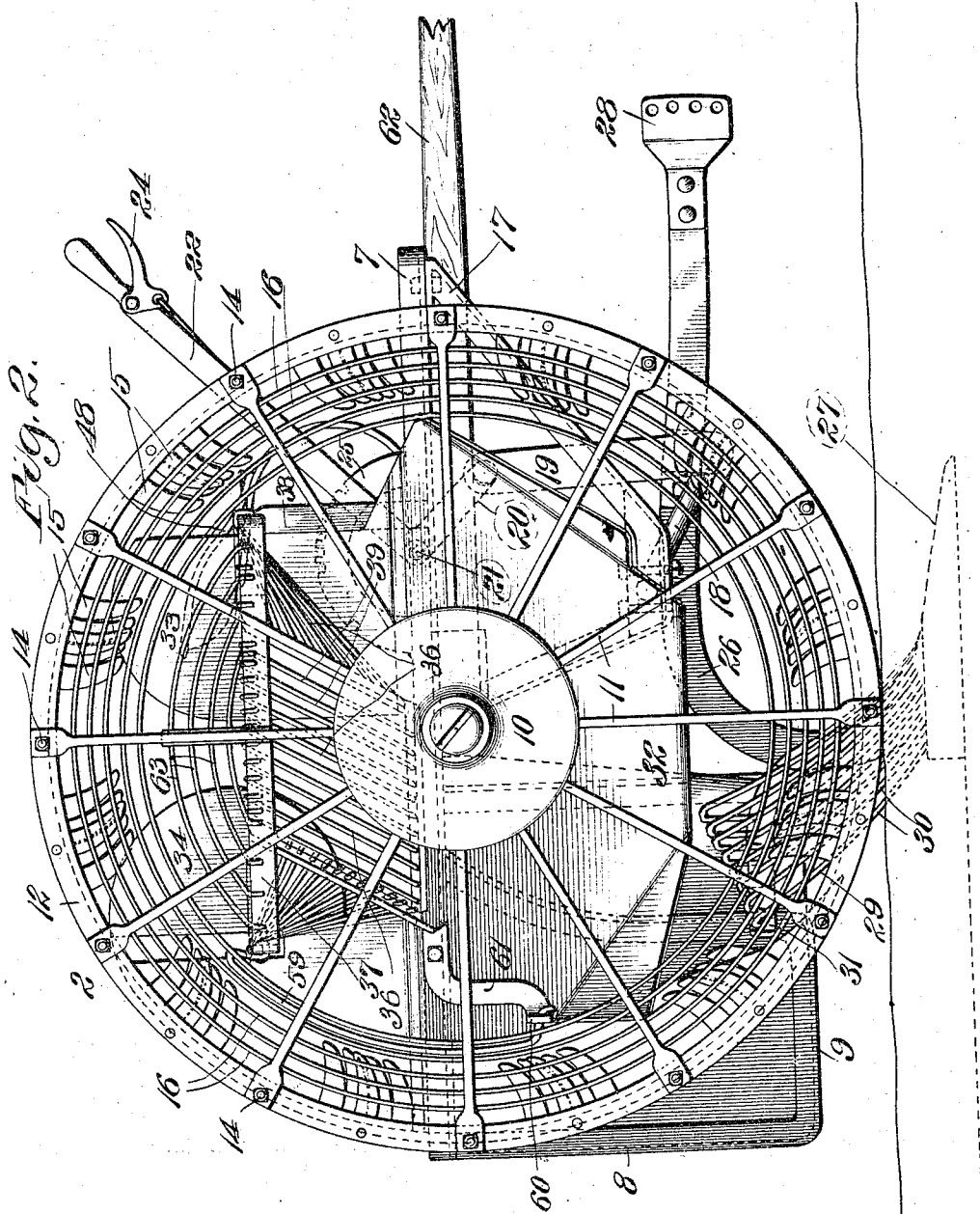
Patented Nov. 28, 1911.
5 SHEETS—SHEET 1.



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 5 SHEETS—SHEET 2.

1,010,106.



Attest:
 W. H. Scott
 Sella Hill

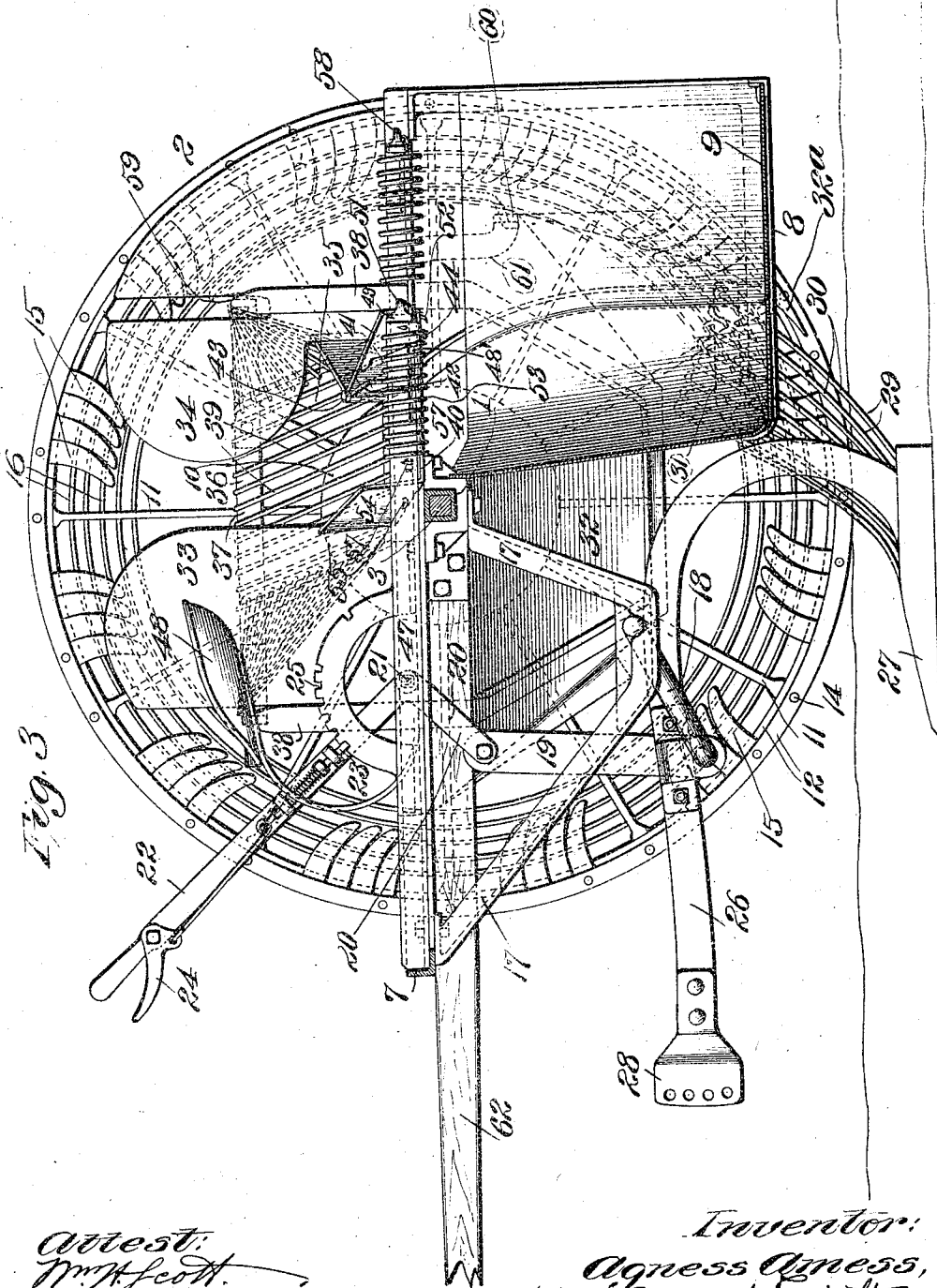
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6 SHEETS—SHEET 3.

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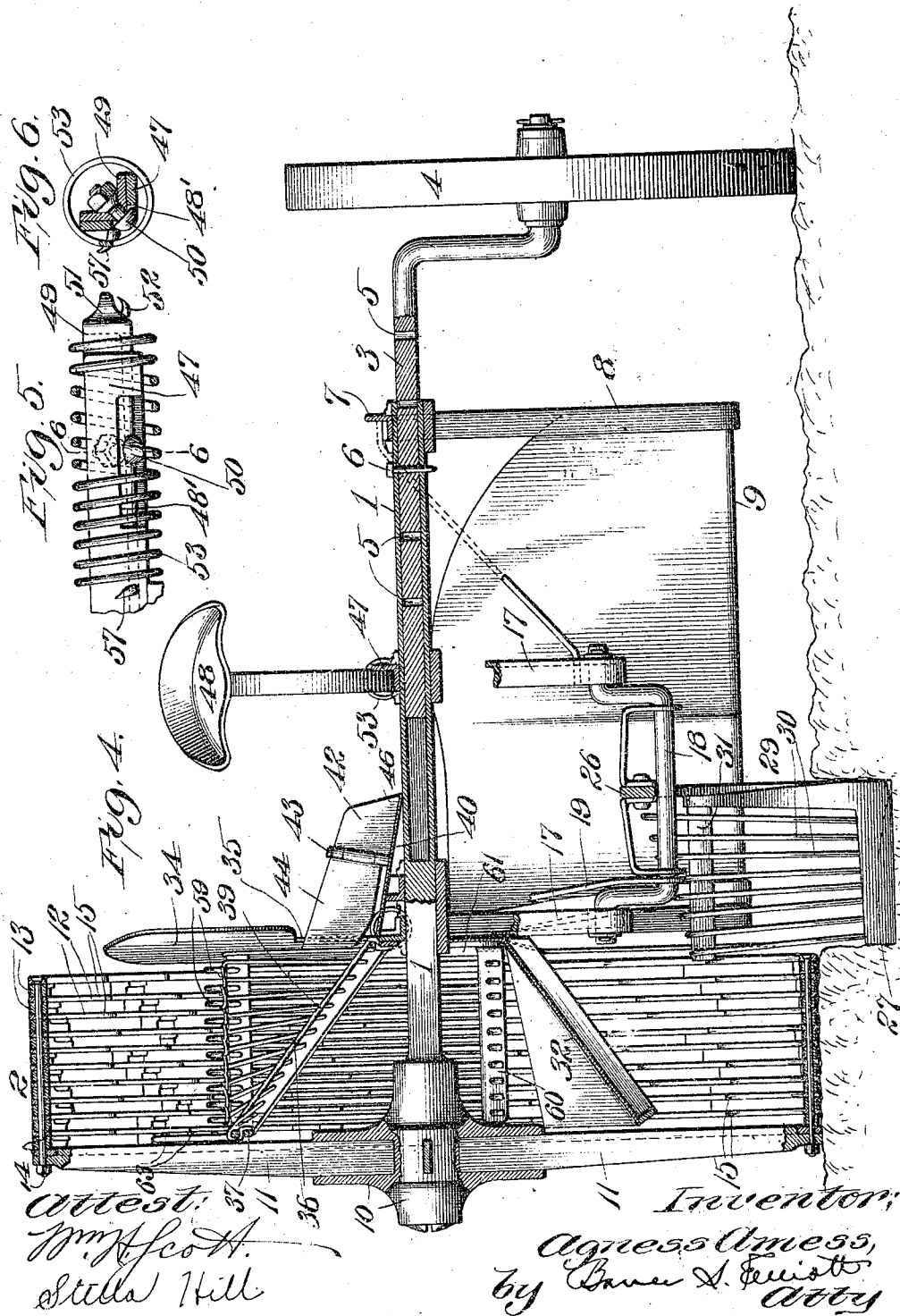


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Inventor:
 Agness Amess,
 by Anna S. Elliott
 atty

Patented Nov. 28, 1911.

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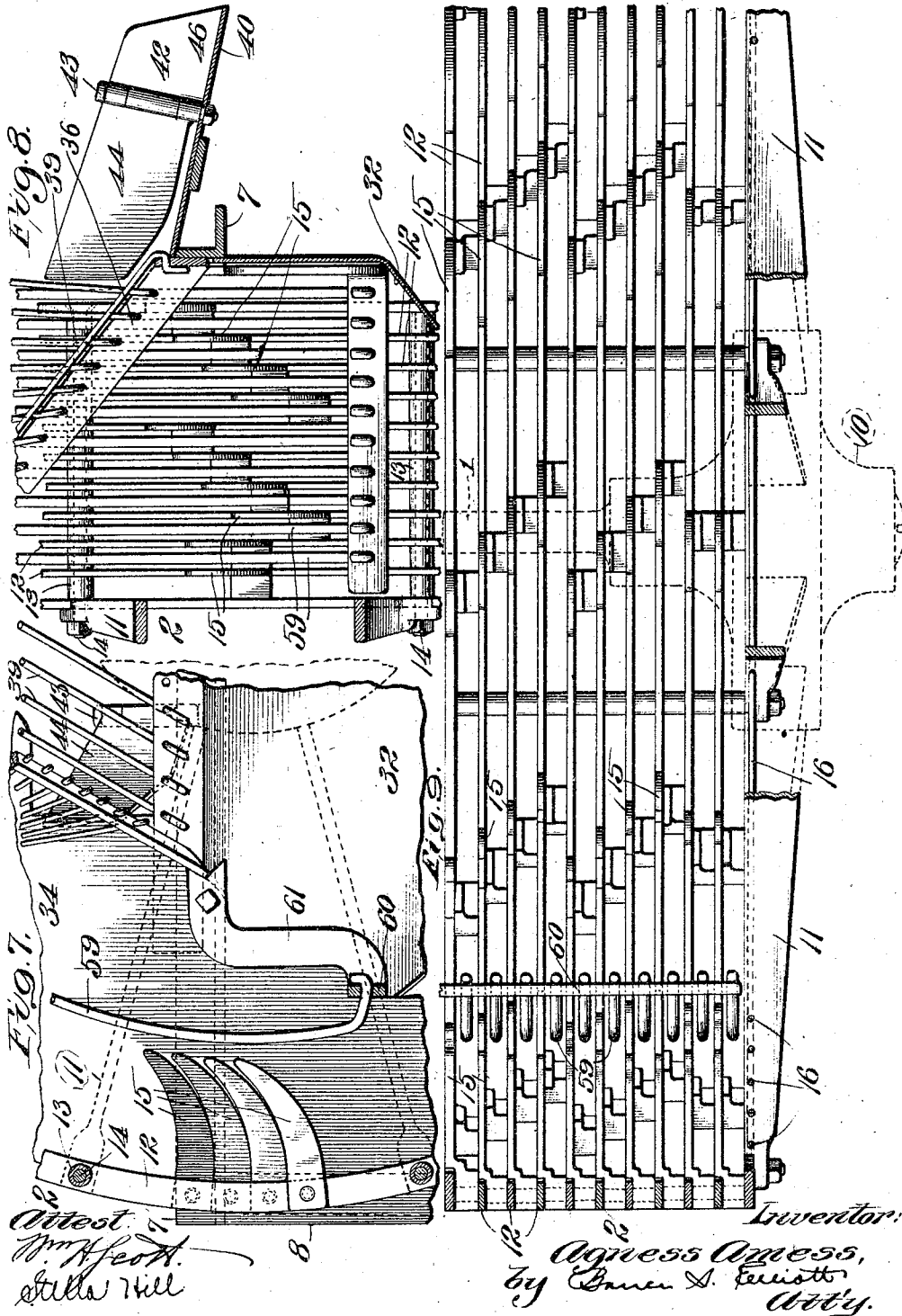


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5 SHEETS—SHEET 5.



UNITED STATES PATENT OFFICE.

AGNESS AMESS, OF ST. LOUIS, MISSOURI.

POTATO DIGGER AND HARVESTER.

1,010,106.

Specification of Letters Patent. Patented Nov. 28, 1911.

Application filed February 27, 1911. Serial No. 611,192.

To all whom it may concern:

Be it known that I, AGNESS AMESS, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented new and useful Improvements in Potato Diggers and Harvesters, of which the following is a specification.

This invention relates to a certain new and useful device for digging and harvesting potatoes and kindred products, the operation being performed in a continuous manner as the machine is driven over the ground.

The invention consists essentially in a machine of the above character which shall operate to continuously dig up the potatoes and deposit them on an endless elevator which, in turn, delivers them into a chute, whence they pass to the sacks.

Various details of construction and combinations and arrangements of parts are included within the scope of the invention, but these will be more clearly understood from the detailed description to follow.

In the accompanying drawings—Figure 1 is a plan view of a machine constructed according to my invention; Fig. 2 is a view in side elevation of the same; Fig. 3 is a sectional view taken on the line 3—3 of Fig. 1, viewed in the direction of the arrows; Fig. 4 is a view partly in broken elevation and partly in section, looking at the front of the machine; Fig. 5 is a detailed view illustrating one of the bag holders; Fig. 6 is a section on the line 6—6 of Fig. 5; Fig. 7 is an enlarged broken sectional view of a portion of the elevating wheel, the view being taken substantially on the line 7—7 of Fig. 1; Fig. 8 is likewise an enlarged broken sectional view taken on the line 8—8 of Fig. 1; Fig. 9 is an enlarged broken horizontal sectional view of the elevating wheel.

Referring now to the drawings, the numeral 1 indicates the main axle of the machine on which is mounted the elevating wheel 2, which also operates as one of the supporting wheels of the machine. The axle 1 is rectangular and is hollow for a portion of its length at the end opposite that on which the wheel 2 is mounted, and inserted in the hollow portion, and fitting snugly therein, is an adjustable axle 3, bent downward and outward at right angles to itself, and on the outer portion is mounted a wheel 4. The adjustable axle 3 is provided with a number of vertically-disposed apertures 5 by means of which the axle may be held in

various adjusted positions, according to the width of the rows of potatoes, by means of a pin 6 passing through the axle 1 and through one or the other of the apertures 5. Secured on the axle 1 is a rectangular frame 7 which at the rear of the axle has downwardly extending portions 8 on which is supported a platform 9 for the use of an attendant, who places the bags in position to be filled and removes them after they are filled. The elevating wheel 2 consists of a hub 10 from which radiate a series of spokes 11, and of a number of rings 12 which are separated by means of distance blocks 13 located in transverse series at suitable intervals throughout the circumference of the wheel. Bolts 14 extend through said rings and said distance blocks, and through the outer ends of the spokes 11 to secure the said rings to the spokes and to each other to form a rigid structure. I have shown the wheel 2 as having eleven of the rings 12, but obviously this number could be varied. Between each pair of rings 12 I secure a finger 15, which fingers extend upwardly and are curved rearwardly with respect to the base line of the machine. These fingers likewise serve to brace the rings 12, but instead of being arranged to extend in a straight direction across the periphery of the wheel, each series of fingers is arranged in two or more sets, the fingers in each set being located successively the one in advance of the other, or *en échelon*. In the drawings I have shown in each series, two sets of fingers of four each, and an outer set of two each, which latter may be arranged side by side. The purpose of this construction will be defined later on.

The outer side of the elevating wheel 2 is preferably provided with a series of concentric wires 16 extending in spaced relation from near the rim of the wheel a given distance toward the center thereof to form a guard to prevent the potatoes from falling out of the wheel at the side. It will be seen from the foregoing that the elevating wheel is of open-work construction, spaces being provided between the rings 12, the fingers 15 and the wires or guards 16, whereby to permit the soil thrown into the wheel to freely escape from the same during the latter's rotation. Pivotally supported on hangers 17 depending from the frame 7 on the side thereof adjacent to the elevating wheel is a bent crank arm 18 pivotally connected

to which is the lower end of a link 19. The upper end of the said link is connected to the outer end of one member 20 of a bell-crank lever which is pivoted at 21 on the frame 7, the other member of said bell-crank lever forming a lever-arm 22 which is provided with a spring detent 23 operated by a lever 24 pivotally mounted on the lever arm 22. Mounted on the frame 7 is a segmental rack 25 between the teeth of which the detent 23 is adapted to engage.

26 indicates a plow-beam which is pivotally mounted intermediate its ends on the crank arm 18 and is provided with a plowshare 27 and a draft device 28, in the usual manner. By releasing the detent from the rack 25, and moving the lever-arm 22, the plowshare may be lowered or elevated to vary the depth to which it will pass into the soil, in a well-known manner.

Instead of the ordinary mold-board I connect to the plowshare 27 a grating 29, which is composed of stout wires or rods 30 spaced a suitable distance apart and extending rearwardly and upwardly from the plowshare. The lower end of said grating is secured to the rear part of the plowshare, and the upper end to a curved bar 31 secured at one end to the plow-beam 26 adjacent to the plowshare. This open-work mold-board inclines downwardly from its inner to its outer side, the latter being the side adjacent to the elevating wheel 2, and has the compound-curved shape of the ordinary mold-board. The outer side of the plowshare and of the open-work mold-board are in close proximity to the inner side of the elevating wheel 2 so that as the plowshare passes through the soil the earth and potatoes will ride up on the said mold-board and be continuously thrown over into the elevating wheel. A portion of the soil, of course, passes between the bars of the mold-board, said bars being placed sufficiently close together, however, to prevent the potatoes passing between them.

Mounted on the frame 7 is a sheet metal dirt-guard or deflector, 32, which is inclined outwardly from its top to its bottom to cause it to project well within the elevating wheel, and its lower end to be positioned close to the side thereof, whereby to prevent any dirt carried up by the wheel from falling back on to the potatoes in the lower part of the wheel, the member 32 causing such falling dirt to be deflected outward through the side of the wheel. The deflector 32 is extended upward above the frame 7 and is there formed in two parts 33 and 34, providing a central opening 35 to permit the passage of the potatoes from a chute 36, the upper end of which projects well within the elevating wheel 2 and is located sufficiently close to the side of said elevating wheel to prevent the passage of the potatoes between it and said wheel. A portion of the plate forming

said deflector is extended downward in close proximity to the inner side of the wheel, as indicated at 32^a, such portion being located directly to the rear of the mold-board of the plowshare, and operating to prevent the potatoes from falling out of the inner side of the wheel at the rear of said mold-board. The chute 36 comprises a rectangular frame member 37, said frame member being composed preferably of a single metal bar bent upon itself at right angles at opposite ends of said bar being then bent downwardly at right angles, as indicated at 38, and secured to the main frame 7.

Extending downwardly and inwardly from the outer side of the frame 37 are parallel, spaced bars 39 which form the bottom of the chute and extend to the opening 35 afforded by the guard members 33 and 34 and terminate at an inclined platform 40 extending inward beyond the guards 33 and 34, as more clearly shown in Figs. 1 and 4. Similar bars extend from the ends of the frame inward to the sides of the bottom of the chute. Mounted on the platform 40 are two deflectors 41 and 42 which diverge from a vertically-disposed pivot member 43 on which is pivotally mounted a swinging gate 44. The deflectors 41 and 42 provide two outlets 45 and 46 from the platform 40, and by turning the gate 44 toward one or the other of the guard members 33 and 34 the potatoes may be directed to pass through one or the other of the said outlets into the bag supported beneath the same in the manner hereinafter described. The gate 44 while in a position to direct the potatoes through one outlet will prevent their passage to the other outlet, as will be clearly understood.

The frame 7 has a central member 47 on which is mounted a seat 48 for the driver. This central member or beam 47 projects rearwardly beyond the axle 1. The said beam is angular in shape, as shown by Fig. 6, and is provided toward its rear end at the angle with a slot 48^a. Slidably mounted in this beam at the rear end thereof is an arm 49 which is apertured and is held in slidable engagement with the beam 47 by means of a bolt 50. The arm 49 is bent at right angles to itself at its outer end, as indicated at 51, the extension 51 being provided at its outer end, on its outer side, with a hook 52. Surrounding the beam 47 and arm 49 is a coil spring 53 which tends normally to force the arm 49 outward. At the inner end of the platform 40 there is a vertically-disposed guard 54 for directing the potatoes through the outlet 46, and on the inner end of this guard is provided a hook 55. A similar hook 56 is provided toward the outer end of the arm 49, and another similar hook 57 is provided on the beam 47 adjacent to the axle 1, the latter

hook being shown in Fig. 3. A bag being supported on the hooks 55 and 57 and 52 and 56, the latter hooks being on the arm 49, the coil spring will press the mouth of the bag open and maintain it in such position so that potatoes passing through the outlet 46 will drop into the same. The side member of the frame 7 likewise has a bent arm 58 mounted thereon in the same manner as just described, which arm is provided with appropriate hooks for supporting the bag, corresponding hooks being provided on the under side of the platform 40.

The parts last described constitute what will be hereinafter referred to as bag-holders, one being located in position to support a bag under the outlet 45 and the other under the outlet 46. The guards 33 and 34, as indicated more clearly in Figs. 1, 3 and 4 of the drawings, are located directly in front of the chute 36, in order to prevent the potatoes from passing through the chute except at the bottom thereof through the opening 35.

It is necessary also to insure that the potatoes shall not drop from the fingers of the elevating wheel, except into the chute 36. To this end I further secure at the top of the chute 36 along one end thereof the upper end of a series of curved rods 59, which are in spaced parallel relation, the lower end of said rods being secured in an outwardly projecting bar 60 forming an integral part of a hanger 61 which is secured to the frame 7. As will be seen, particularly in Figs. 2 and 7, the grating formed by the curved rods 59 is located at the lifting side of the wheel and in sufficiently close proximity to the fingers 15 to prevent a potato from falling between said fingers and said rods. As clearly shown by Fig. 9, the fingers 15 have a staggered relation to the rods 59; that is, each finger is opposite the space between two rods.

62 indicates the tongue of the machine.

In operation, the plowshare having been adjusted to the required height by manipulating the lever-arm 22, the machine is started in operation by being driven in the ordinary manner, the driver occupying the seat 48, and an attendant standing on the platform 9 to attend to the bags. The plowshare, of course, is positioned to pass under the row of potatoes, and as the furrow is made the soil will pass up on the open-work mold-board 29, a part of the soil falling between the bars 30. Some of the soil, however, with the potatoes, will be caused, by the inclination and curvature of the mold-board, to pass into the elevating wheel 2, and as this wheel turns the potatoes and earth will be elevated. By having the fingers 15 arranged in the manner described the potatoes will be prevented from resting in a relatively fixed position, and will fall

from one finger on to the next, thereby knocking the dirt from the potatoes, and as the drop of the fingers, relative to the lifting side of the wheel, is toward the outer side thereof, the potatoes will thereby be continuously thrown toward said outer side of the wheel and be prevented from falling out of the front side. The dirt knocked off of the potatoes, as well as that thrown into the wheel by the plow, will fall through the rings of the wheel. As the wheel continues to revolve the potatoes on the lifting side of the wheel may have a tendency to fall off of the fingers and drop to the bottom of the wheel. This is prevented by the provision of the guard formed by the curved rods 59, which will prevent any potatoes falling or dropping to the bottom of the wheel, and will support them until they are carried over the end of said bars and drop into the chute. After the potatoes have been elevated a given distance they will fall off of the fingers 15 into the chute 36, which, being composed on its bottom and sides of spaced bars, in the manner of a grate, will permit any dirt dislodged from the potatoes or carried up by the fingers to pass through the bars of the chute so that the potatoes will pass out of such chute relatively clean. The potatoes now pass out from the chute on to the inclined platform 40 and then through one or the other of the outlets 45, 46, into the corresponding bag supported on the bag holders. As such bag is filled the attendant standing on the platform 9 will move the gate 44 to close the entrance to that outlet and simultaneously open the way to the other outlet, whence the potatoes will drop into the second bag. The attendant will then remove the filled bag and adjust an empty bag into its place.

The operation of the machine is continuous, and as will be seen, not only are the potatoes dug, elevated and sacked, but, owing to the rotation of the wheel 2 and of the arrangement of the fingers 15, which insures a certain degree of rolling action to the potatoes, the latter are cleaned from adhering dirt as well.

I may provide a series of curved concentric rods 63, spaced an appropriate distance apart, and rising from the side frame-member of the chute to further insure the falling of the potatoes into the chute and to prevent them from falling out of the side of the wheel.

I claim:

1. A wheeled machine for digging and harvesting potatoes, comprising a hollow wheel having an open inner side and provided with inwardly-extending fingers arranged around its circumference, a potato digging device carried by said machine and adapted to continuously deliver potatoes into the said wheel, and a chute extending

into said wheel for receiving potatoes falling from said fingers, said chute having a discharge outlet.

2. A wheeled machine for digging and harvesting potatoes, comprising a hollow wheel, having an open inner side and provided with inwardly-extending fingers arranged around the circumference thereof, a chute mounted on the machine and projecting into said wheel for receiving the potatoes falling from said fingers, and a guard located at one end of said chute and extending in proximity to said fingers on the lifting side of the wheel.

3. A wheeled machine for digging and elevating potatoes, comprising a hollow open-work wheel having an open inner side, inwardly-extending fingers located at intervals around the circumference of said wheel on the interior thereof, a potato digger carried by the machine and operating to continuously deliver potatoes into said wheel, and a chute mounted on the machine and projecting into said wheel for receiving potatoes as discharged from said fingers, a plurality of discharge outlets leading from said chute, a bag-holder located adjacent to each outlet, and means for delivering the potatoes from said chute through either of said outlets.

4. A wheeled machine for continuously digging and harvesting potatoes, comprising a plowshare having a grated mold-board, a hollow wheel having its periphery composed of a series of spaced rings located sufficiently close together to prevent potatoes from falling through the spaces, said wheel being open on its inner side and having such inner side located in close proximity to said plowshare, a plurality of inwardly-extending fingers arranged around

the interior of said wheel, and means carried by said machine for receiving and conveying away the potatoes elevated and discharged by said wheel.

5. A wheeled machine for continuously digging and harvesting potatoes, comprising a wheel composed of a series of rings arranged side by side in spaced relation, and having an open inner side and a protected outer side, series of lifting fingers arranged *en échelon* around the inner circumference of said wheel at distances apart, means for receiving and conveying away the potatoes elevated by, and falling from said fingers in the rotation of the wheel, and a plowshare arranged closely adjacent to the inner side of said wheel and adapted to continuously deliver potatoes into the same.

6. In a wheeled machine of the class described, in combination with a potato digger and a wheel having inwardly-extending fingers arranged at intervals around its circumference and adapted to receive the potatoes from said potato digger, and with a chute for receiving and conveying away potatoes falling from said fingers, a guard arranged on the interior of said wheel and extending substantially across the width thereof on the lifting side of the wheel, said guard being arranged in close proximity to the ends of said fingers and extending substantially from the horizontal axial line of the machine to the upper edge of said chute.

In testimony whereof, I have hereunto set my hand in presence of two subscribing witnesses.

AGNESS AMESS.

Witnesses:

JAMES C. BRAIN,
WILLIAM H. ANDERICH.