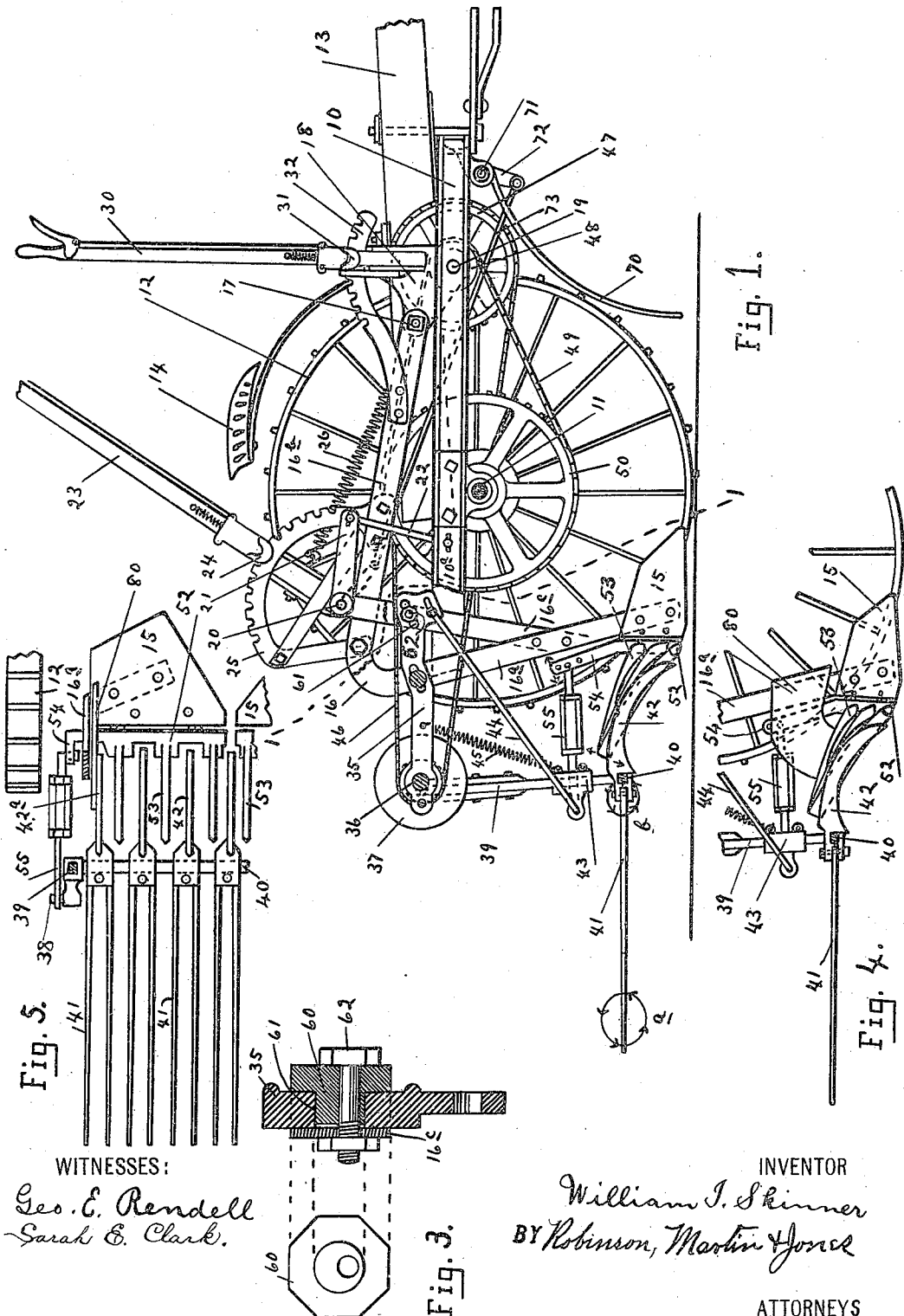


W. I. SKINNER.
POTATO DIGGER.
APPLICATION FILED APR. 1, 1909.

961,545.

Patented June 14, 1910.

2 SHEETS—SHEET 1.



WITNESSES:
Geo. E. Rendell
Sarah E. Clark.

INVENTOR
William I. Skinner
BY Robinson, Martin & Jones
ATTORNEYS

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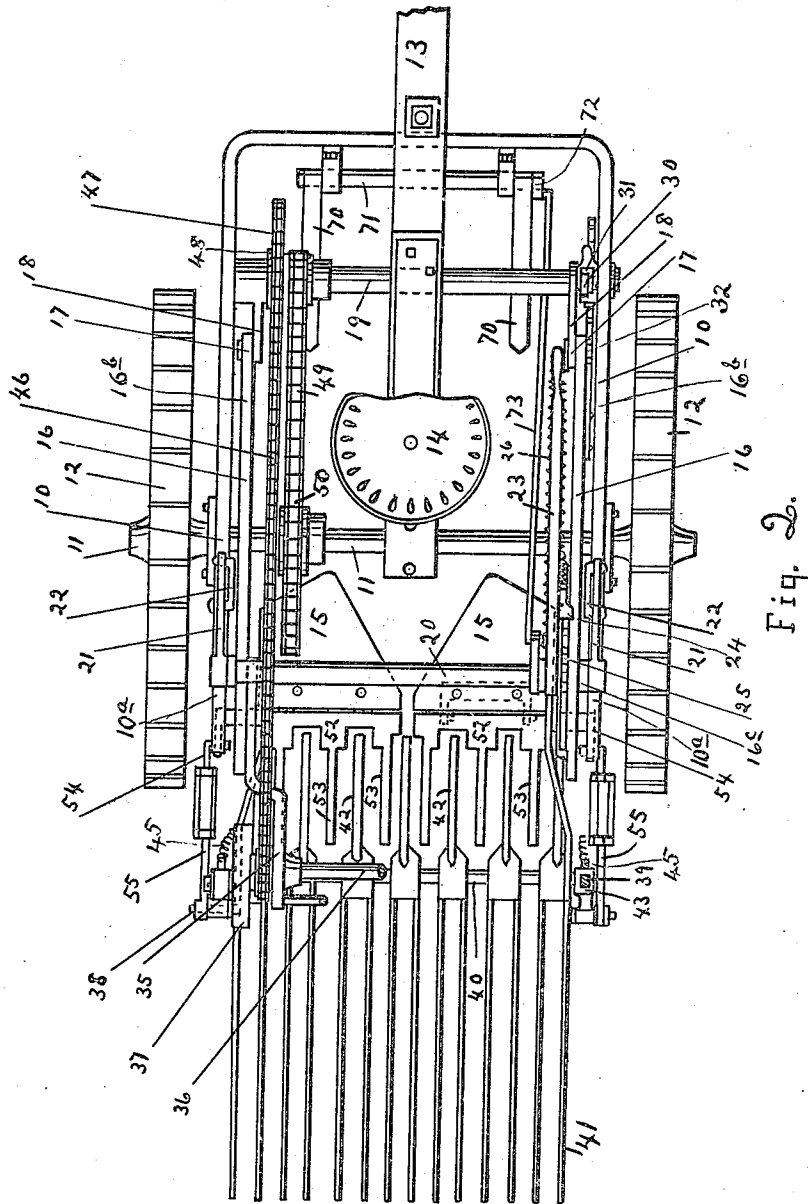


Fig. 2.

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UNITED STATES PATENT OFFICE.

WILLIAM I. SKINNER, OF RICHFIELD, NEW YORK.

POTATO-DIGGER.

961,545.

Specification of Letters Patent. Patented June 14, 1910.

Application filed April 1, 1909. Serial No. 487,209.

To all whom it may concern:

Be it known that I, WILLIAM I. SKINNER, of Richfield, in the county of Otsego and State of New York, have invented certain
5 new and useful Improvements in Potato-Diggers; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make
10 and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form part of this specification.

The object of my present invention is to
15 provide certain improvements in potato diggers, whereby they are made more efficient and desirable.

Figure 1 shows as to the portion of the figure to the right of line 1—1, a side elevation of the machine, with the rear wheel removed, and as to the portion of the figure to the left of line 1—1 a vertical central section with the parts beyond the plane of the section shown in side elevation. Fig. 2 is a
20 plan view of the machine. Fig. 3 is a detail of the mechanism on an enlarged scale. Fig. 4 is a detail, inside-elevation view of the plow and portions of the shaker, showing a modified form of construction or additional
25 feature of a vine guard or a clearer. Fig. 5 is a partial plan view of a portion of the shaker and portion of the plow, and showing particularly the additional feature of a vine guard or clearer.

Referring to the reference letters and figures in a more particular description, 10 indicates the main frame preferably of angle metal continuous in the general form of a bow as to the front portion, and provided with bearing boxes by which it is
30 mounted on the axle shaft 11. The axle shaft 11 runs free in the bearings and engages at each end in the carrying and driving wheels 12. The tongue or pole 13 is secured to the front bowed portion of the frame 10 and also at its rear end to the axle 11. The driver's seat 14 is preferably mounted upon the rear end of the pole. The machine is provided with two plows or
35 blades 15—15, which are set at an angle with reference to the longitudinal plane of the machine, and also at an angle with reference to the transverse plane of the machine. A plow frame 16 is provided, consisting of
40 two parts, each part having a generally upright arm 16^a and a generally horizontal

arm 16^b. The plows 15 are mounted on the lower end of the arms 16^a. The forward end of the arm 16^b is hinged or pivoted at 17 to a crank 18 secured on the rock shaft 19, having bearing in the main frame 10. The members 16^a and 16^b are stayed or braced by the brace bar 16^c and the two parts of the plow frame are connected by transverse rods and braces so as to form one substantially
60 rigid frame. The main frame 10 is continued in rearward extensions 10^a between which the rear end of the plow frame is located, and which hold the rear end of the plow frame against lateral swing or play. On top of the plow frame 16 is mounted in
65 suitable bearings a rocking shaft 20 having cranks 21 at each end connected by a link 22 with the main frame 10. These rock shaft, cranks and links serve as the mechanism for raising and lowering the rear end of the plow frame, including the plows, and the rock shaft 20 is operated by a hand lever 23 in connection with which there is provided
70 a catch 24 adapted to engage with the segmental rack 25, whereby the elevation of the plows may be adjusted and secured.

A spring 26 extending between the main frame and the lower end of the lever 23 serves to assist the operator in handling the plow frame and plows. The rock shaft 19 before mentioned is manually operated by the hand lever 30, in connection with which there is provided a catch 31 adapted to engage with the segmental rack 32, whereby
75 the position of the rock shaft and more particularly the pivot 17 of the forward end of the plow frame can be adjusted and secured. The plow frame is provided with a pair of rearwardly projecting arms 35, which carry in their projecting ends the shaker shaft 36. This shaft is provided at each end with a wheel or disk 37 carrying a crank pin 38. Connected with the crank pin 38 are pitmen 39 cross-connected at their lower ends by a square bar 40. Secured rigidly to the bar 40 is a set of rearwardly projecting tines 41 and a set of forwardly projecting and downwardly curved fingers 42. Adjacent to the lower ends the pitmen 39 are provided with an adjustable sleeve 43, and a connecting rod 44 extending upwardly and forwardly connects an ear on the rear of the sleeve 43 with an ear on the lower side of the front end of the arm 35. This connecting rod 44 is secured by a joint which will allow it to vibrate in connection with the movement of the pitmen
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39. The upper forward end of the connecting rod 44 is secured in a slot which allows the rod to be adjusted so as to swing the lowered end of the pitmen 39 with the shaker and appurtenances mounted thereon. A spring 45 is provided connecting the sleeve 43 on the pitman with the arm 35 at a point about the middle, which spring assists in supporting the shaker and its appurtenances and particularly aiding in lifting the shaker in its movement. The shaft 36 is provided with a sprocket wheel and is driven by means of sprocket chain 46 passing around the sprocket wheel or pinion on the shaft 36 and a sprocket wheel 47 mounted on a shaft in the forward portion of the main frame. The sprocket wheel 47 is provided with a small side pinion 48 for driving the same, which pinion is driven by a sprocket chain 49 passing around a large sprocket wheel 50 on the axle shaft 11.

It will be noted that the cranks 38 revolve with the shaft 36 in such direction that by reason of the arrangement of the inclined connecting links 44, the rear end of the shaker tines will have a movement substantially in the form of the ellipse shown at *a* in Fig. 1, while the bar 40 carrying the forward end of the shaker tines will have a movement in an elliptical form as indicated by the ellipse *b*, also in Fig. 1. The movements in both cases will be in the directions indicated by the arrow heads.

Hinged on the rear end of each of the plows 15 is a rocking bar 52 carrying a set of breaker fingers 53. These fingers 53 are interposed or intermediate of the shaker fingers 42, and are of a bow or curved form with the convex side upward, and on account of the inclined position of the rocker bar 52 are progressively of somewhat different shape, whereby they are adapted to occupy their several correct positions generally in the plane of the fingers 42. At the outer ends the rocker bars 52 are provided with upwardly projecting arms or cranks 54. The upper end of the crank 54 is connected by an adjustable connecting rod 55 with the sleeve 43 before referred to on the pitmen 39. Thus when the shaker and pitmen are making the movement heretofore mentioned incident to the revolution of the shaft 36, the breaker fingers 53 will be vibrated up and down, their ends swinging substantially as indicated by the arrows at the rear end of the fingers in Fig. 1. The combined movement of the shaker fingers 42 and the breaker fingers 53 is peculiar, in that the fingers 42 have an elliptical movement, and as the fingers pass upwardly on the forward ends of the ellipse the breaker fingers are being swung downwardly, and, vice versa, as the shaker fingers are moving downwardly on their course at the rear end of the ellipse the breaker fingers are being swung up-

wardly. This produces a peculiar breaking and grinding movement at this point, which is particularly effective in separating the potatoes from the dirt and prevent clogging from stones or weeds.

The plows 15 are shown at two independent devices with a passage between their adjacent inner edges, which will permit the passage of roots or weeds which the edge of the plow has failed to sever. This is the preferable form of plow, although it is obvious that a plow of a general shovel form having a V-shaped scoop form at its rear end could be effectively employed with the breaker tines and shaker above described.

In order to adjust the elevation and position of the shaker with reference to the plows and plow frame, the rearwardly projecting arms 35 are provided, having slotted openings at the point of engagement with the plow frame, as shown clearly in Fig. 1, and the forward end of the arms 35 is adjustably secured by having an eccentric washer 60 engaging in the slot 61, the washer being secured to the bar 16^c by a bolt 62. It is obvious that when the bolt is loosened, the arm 35 can be slid forwardly or rearwardly with reference to the plow frame, and that the rear ends of the arms carrying the shaft 36 may be elevated or depressed by rotating the eccentric washer 60.

In order to straighten out and clear away the vines ahead of the plows 15, there are provided at the front of the machine a pair of spring teeth 70. These are mounted at their upper ends on a rocking shaft 71 supported in bearings from the main frame, and the shaft is provided with a crank 72 which is connected by a connecting rod 73 with a crank on the rock shaft 20 before referred to. It will be noted that the arrangement is such that when the plow frame is lowered the working points of the teeth 70 will be thrown down, and, vice versa, when the plows are lifted the teeth or tines 70 will be lifted.

The outside breaker finger 42^a of the shaker on each side is preferably provided with a rigid plate-like part 80 secured thereto and projecting upwardly and forwardly therefrom in close proximity to the inner side of the plow frame bar 16^a as shown in Figs. 4 and 5. As the shaker makes the elliptical movement heretofore referred to, the vine guard and clearer 80 partakes of the same elliptical movement. The guard 80 with its peculiar movement is particularly effective in maintaining the upright members of the plow frame which carry the plow at their lower end free from becoming clogged with wads of vines, grass, roots or other fibrous matter otherwise liable to accumulate thereon.

It is evident that modifications and changes in and from the construction herein

described may be made without departing from my invention as intended to be covered by the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. The combination with a plow of a set of hinged rearwardly projecting breaker fingers, means for vibrating the breaker fingers, a shaker having forwardly projecting fingers interposed between the breaker fingers, and means for vibrating the shaker and shaker fingers in unison with said breaker fingers, substantially as set forth.

2. The combination in a potato digger of a main frame supported and carried by a pair of wheels, a plow frame and means for raising and lowering the plow frame with reference to the main frame at the rear end, a plow carried by the plow frame, a shaker, rearwardly projecting arms mounted on and adjustable with the plow frame and carrying the shaker and shaker operating mechanism, whereby the shaker and plow are simultaneously adjusted by the vertical movement of said plow frame, said arms having means for adjusting them longitudinally and angularly with reference to the plow frame, substantially as set forth.

3. The combination in a potato digger of a main frame supported and carried on a pair of wheels, a plow frame of angular form having generally upright parts at its rear end and generally horizontal parts projecting forwardly with reference to the main frame, and hinged at their forward ends with reference to the main frame, means for raising and lowering the hinging points of the plow frame, means for raising and lowering the rear end of the plow frame, plows carried by the generally upright parts of the plow frame, and a shaker and shaker mechanism carried by said plow frame and adjustable therewith to maintain coöperating relation with said plows.

4. The combination in a potato digger of a plow consisting of two separate parts arranged angularly with reference to each other on the transverse line of the plows, a set of hinged rearwardly projecting breaker fingers mounted on the rear end of each plow part, a common shaker for both plow parts having forwardly projecting fingers interposed between the breaker fingers, and means for vibrating the shaker and shaker

fingers, and means for vibrating the breaker fingers, substantially as set forth.

5. The combination in a potato digger of a main frame, an independently adjustable plow frame, a plow carried by the plow frame, a rocking bar having a set of rearwardly projecting and curved breaker fingers, means for vibrating the breaker fingers, and a shaker coöperating with the plow and breaker fingers, substantially as set forth.

6. The combination in a potato digger of a plow consisting of two parts arranged angularly with reference to each other on the transverse line, a rocking bar mounted on and hinged to the rear of each part of the plow carrying a set of rearwardly and upwardly projecting curved fingers, a shaker having tines and a set of forwardly projecting and downwardly curved fingers interposed between the breaker fingers, means for vibrating the breaker fingers with their rear ends describing the arc of a circle, and means for operating the shaker and shaker fingers through the general course of a form of an ellipse, substantially as set forth.

7. The combination in a potato digger of a plow and plow frame carrying the plow, having portions extending upwardly from the plow, a shaker behind the plow, means for vibrating the shaker, and a vine guard and clearer consisting of a plate-like member connected with the shaker and partaking of the motion thereof, and arranged adjacent to the plow frame immediately above the plow, substantially as set forth.

8. The combination in a potato digger of a frame, a plow frame carrying the plow having bars projecting upwardly from the plow, a shaker arranged at the rear of the plow, means for moving the shaker in an elliptical path, and a vine guard and clearer consisting of a plate-like part secured to and partaking of the movement of the shaker, and located immediately above the plow adjacent to the plow frame bar, substantially as set forth.

In witness whereof, I have affixed my signature, in presence of two witnesses, this 26th day of March, 1909.

WILLIAM I. SKINNER.

Witnesses:

C. H. SKINNER,
EMMA S. HESSE.