

No. 616,885.

Patented Jan. 3, 1899.

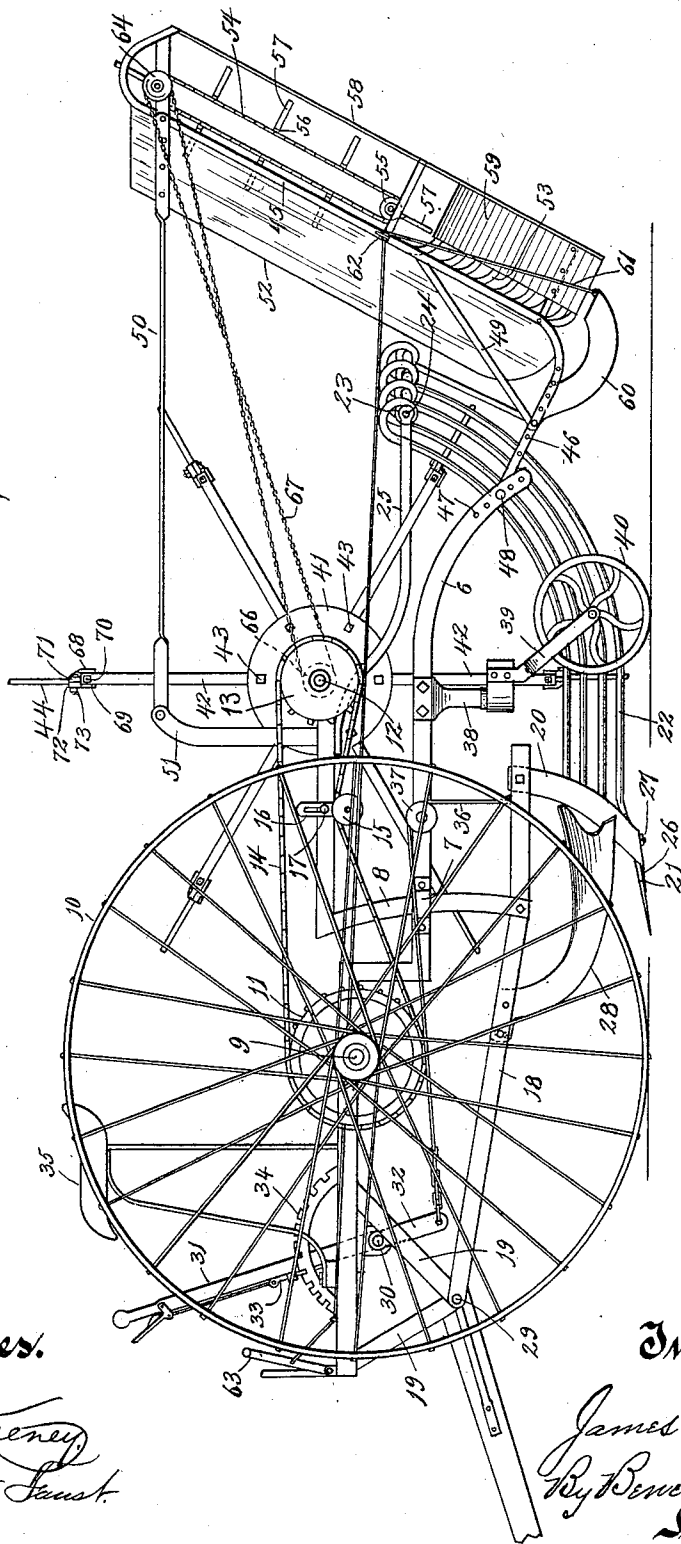
J. P. BRENNAN.
POTATO HARVESTER.

(Application filed Jan. 3, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



Witnesses.

C. H. Keeney
Anna C. Faust

Inventor.

James P. Brennan
By Benedict & Morell
Attorneys

No. 616,885.

Patented Jan. 3, 1899.

J. P. BRENNAN.
POTATO HARVESTER.

(Application filed Jan. 3, 1898.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 2.

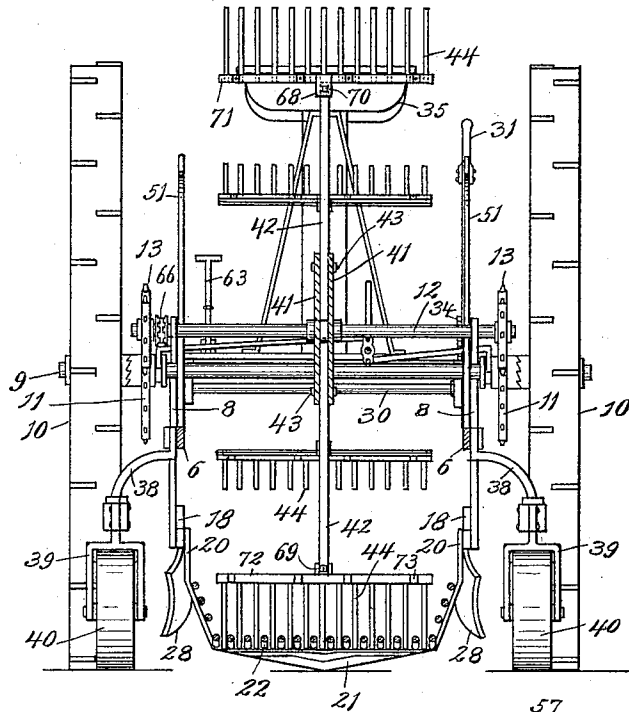


Fig. 3.

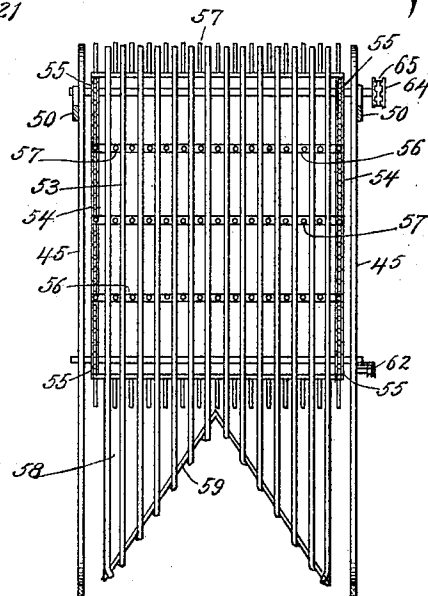


Fig. 4.

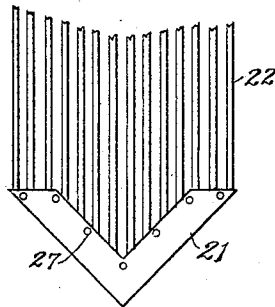
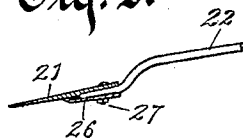


Fig. 5.



Witnesses.

A. H. Keeney.
Anna V. Sanst.

Inventor.

James P. Brennan.
By Benedict & Morsell
Attorneys

UNITED STATES PATENT OFFICE.

JAMES P. BRENNAN, OF ELBA, WISCONSIN.

POTATO-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 616,885, dated January 3, 1899.

Application filed January 3, 1898. Serial No. 665,329. (No model.)

To all whom it may concern:

Be it known that I, JAMES P. BRENNAN, of Elba, in the county of Dodge and State of Wisconsin, have invented a new and useful
5 Improvement in Potato-Harvesters, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention relates to improvements in
10 potato-harvesters.

It consists more particularly in certain improvements upon Letters Patent of the United States issued to me on September 15, 1896, No. 567,846, which will be hereinafter more
15 fully set forth and which comprehend certain parts and combination of parts or their equivalents, as hereinafter more fully set forth.

In the accompanying drawings, Figure 1 is a side elevation of the complete machine.
20 Fig. 2 is a transverse section looking toward the forward end of the machine. Fig. 3 is a detail view of the conveyer mechanism. Fig. 4 is a fragmentary detail view of the grate and the plow at the forward end thereof, and
25 Fig. 5 is a section through Fig. 4.

Referring to the drawings, the numeral 6 indicates the main portion of the frame, consisting, substantially, of two similar side pieces. These side pieces are provided with
30 keepers or guides 7, through which pass the downwardly-extending portions of right-angular frames 8.

A shaft 9 is journaled in the side pieces constituting the main portion 6 of the frame
35 toward and near the forward ends of said side pieces, and on this shaft are mounted the main drive-wheels 10 10. Also mounted on this shaft are sprocket-wheels 11 11.

Mounted in the rear ends of the horizontal
40 members of the right-angular frames 8 is a rear shaft 12. On opposite ends of this shaft are carried sprocket-wheels 13 13, which are connected to the sprocket-wheels 11 by means of sprocket-chains 14. These sprocket-chains
45 pass over tightening-pulleys 15, which are adjustable by means of upwardly-extending slotted arms 16, which are connected to the right-angular frames by means of adjusting-screws 17, passing through the slots and entering
50 said frames. By loosening the screw the tightening-pulley may be adjusted so as

to regulate the tension of the chain which passes over the same.

Connected to the lower ends of the upright or vertical members of the angular
55 frames 8 are longitudinal beams 18 18. The forward ends of these beams are connected to the main frame in any suitable manner, preferably by means of the short beams 19 19. (Shown in Fig. 1.) To the rear ends 60 of the longitudinal beams are connected the downwardly-extending plow-beams 20 20, which carry at their lower ends the plow or shovel 21, advisably of the V-shaped form shown. To the rear end of the shovel or plow
65 is secured a suitable grating, formed preferably from a number of longitudinal slats or rods 22. These rods have a gradual upward curvature toward the rear, and their rear extremities are bent around into partly circular
70 form, the extremities forming eyes 23, which receive a transverse connecting-rod 24. To the extremities of this rod 24 are connected the rear ends of bars 25, which bars extend forwardly and are secured to the angular
75 frames 8, respectively. The connection of the forward ends of the slats or rods 22 of the grating with the V-shaped plow is preferably made in the manner most clearly shown in Fig. 5. In this figure the plow proper is
80 formed by an upper plate, beneath which the forward ends of the slats pass and fit in grooves therefor upon the under side of said plate. A retaining-plate 26 is fitted beneath
85 the plow proper and is provided with registering grooves to receive the ends of the slats. This retaining-plate is held to the plow by means of bolts 27. By this provision a most
90 simple means for connecting the grate bars or slats to the plow is presented, and at the same time should any of the bars become broken or the plow damaged the parts may be readily separated and new parts substituted for the damaged ones with the least
95 possible delay.

Connected to and extending downwardly and rearwardly from the longitudinal beams 18, just in advance of the plow, are fish-shaped deflecting-plates 28 28. These plates are adapted to cut grass and weeds and to
100 also deflect the waste dirt that is not needed to go through the plow outwardly into the fur-

row, at the same time deflecting or throwing the cut grass and weeds laterally, thereby leaving the plow perfectly clean.

It will be understood that the longitudinal beams 18 are pivoted at their forward ends to the short beams 19, as indicated at 29, so as to permit the rear ends of said longitudinal beams to be drawn upwardly or lowered, as desired. Of course when said longitudinal beams are raised or lowered the deflecting-plates, the plow, and the grate are carried therewith, as also the angular frames 8, which move in the keepers or guides 7, and said angular frames carry therewith the rear shaft 12. It will be noticed that the upright or vertical arms of the angular frames are struck from the arc of a circle and are consequently permitted to move by the turning of the longitudinal beams on their pivots. To provide for this turning of the longitudinal beams and the movement therewith of the parts just referred to, I employ a rock-shaft 30. At one end of this rock-shaft is mounted a lever 31, which lever extends down below said shaft for a desired distance. The opposite end of the rock-shaft has also extending downwardly therefrom an arm 32. The lever carries a spring-controlled dog 33, which as the lever is turned on its pivot is adapted to be brought into engagement with any of a series of recesses arranged in a segmental rack 34, whereby the lever is held to adjusted position. This lever is arranged so as to be conveniently operated by a person sitting on the seat 35. To the portion of the lever which extends below the rock-shaft and also to the depending arm 32 of said rock-shaft are connected the forward ends of cables or equivalents 36. These cables are extended rearwardly and pass over pulleys 37 and extend downwardly from said pulleys and connect at their extremities to the longitudinal beams 18. It will be obvious that by disengaging the dog from the segmental rack 34 the lever 31 is free to be swung on its pivot, so as to either raise or lower the longitudinal beams and the parts connected thereto, as hereinbefore described.

Extending downwardly from the side pieces 6, near the rear ends thereof, are curved brackets 38 38. To these brackets are connected straps 39, which at their lower ends are bifurcated to form bearings for the axes of small wheels 40 40, said wheels 40 serving as balance-wheels. Mounted medially on the rear shaft 12 are two plates 41 41, preferably of annular form. Extending between these plates are the inner ends of radial arms 42. These arms are held between the plates by means of bolts 43. The arms, therefore, can be readily removed when damaged or otherwise injured. The outer ends of the arms are formed or provided with tines 44. The shaft 12 and the radial arms just referred to are so arranged with relation to the grate that said radiating arms will sweep the length or substantially the length of the grate, and the fingers of the tines will pass between the

grate-bars, said arms and fingers being of such length as to permit the fingers to extend below the bars about one-half of an inch, as shown in Fig. 1. This provides for keeping the grate-bars clean at all times and free from entangling matted grass, &c.

At the rear end of the machine is located certain mechanism which will now be described. The framework of this mechanism consists of two uprights or metallic straps 45. The lower end of each of these uprights is bent forwardly at an angle and is provided with a series of perforations 46. The rear ends of the side pieces of the main frame 6 are also provided each with a series of perforations 47. A pin 48 is adapted to be passed through any of the perforations 47 which may be brought into register with any of the perforations of the series 46, whereby the uprights 45 are capable of being adjustably connected to the main frame of the machine, so as to bring said uprights to any desired inclination. Brace-rods 49 connect the forwardly-bent ends of the uprights with the rearwardly-inclined upwardly-extending portions thereof, and brace-rods 50 extend from the upper ends of the uprights 45 forwardly to connect with upwardly-extending standards 51. Extending forwardly from the uprights 45 and longitudinally thereof are side boards 52. Between these side boards, at the rear edges thereof, is located a grating 53, said grating consisting of a series of grate bars or rods suitably spaced apart. A conveyer is located just back of the uprights 45, said conveyer consisting of endless chains 54 54, passing around suitable sprocket-wheels 55. These chains are connected by means of transverse slats 56, from which extend fingers 57, said fingers adapted to project through the spaces between the several slats of the grate 53. To the rear of the conveyer-belt is suitably secured a rear plate 58, which plate is formed or provided at its lower portion on the forward side thereof with an inverted-V-shaped guide 59.

Pivoted to the forwardly-extending portions of the uprights 45 and located between said uprights is a cup 60, which is just below the space between the side boards 52. To the rear end of this cup is connected a cord or equivalent 61, which extends upwardly through a suitable guide 62. The cord is then extended forwardly and is connected to a foot-operated lever 63, said lever being in convenient position for operation by the person seated on the machine.

On one end of the shaft or axis of the upper sprocket-wheel 55 of the conveyer is a pulley 64, said pulley provided peripherically with a series of connected recesses 65. Mounted on the shaft 12 is a similar pulley 66. These two pulleys are connected by a crossed chain 67. By this arrangement the rotation of the shaft 12 is imparted to the shaft or axis of the upper sprocket-wheel, the recesses 65 in peripheries of the pulleys 64 and 66 serving

to provide openings for the reception of the links of the chain, and thereby acting in the nature of teeth. By this means rotation of the endless conveyer is secured.

5 In the operation of my invention the plow or shovel and the grate connected thereto, as well as the other parts hereinbefore mentioned, are adjusted to the proper height by manipulating the lever 31. The machine is
10 placed astride of the row of potatoes to be unearthed, and as said machine advances the shovel or plow will penetrate the earth to a sufficient depth to unearth the potatoes, together with the adherent earth. The pota-
15 toes and whatever earth may adhere thereto will be forced backward by the advancement of the machine and will pass from the shovel or plow onto the slats or rods 22, forming the forward grate, where the loose dirt will be
20 permitted to sift through and drop back to the surface of the ground. It will of course be understood that as the machine advances rotation is imparted to the rear shaft 12, as well as to the conveyer mechanism, by the
25 described connections. This will cause a rotation of the radiating arms carrying the tines at their outer ends and cause said tines to pass between the slats or rods 22. The tines, therefore, will engage the potatoes, to-
30 gether with any adhering earth, which will be raked or swept rearwardly with more or less rapidity and be discharged against the rear inclined grating 53. The potatoes will now fall into the cup 60, and by turning the
35 foot-operated treadle or lever 63 the cup may be turned downwardly and emptied of its contents. Any grass or weeds which have been carried to the grating 53 will be caught in the fingers of the conveyer, and said grass
40 and weeds will be carried upwardly and then downwardly in the space just in front of the rear plate 58. The fingers of the conveyer, therefore, are adapted to engage grass or
45 weeds and carry the same upwardly and then downwardly into the space in advance of the rear plate 58. The dirt which is carried against the grating 53 passes through the bars thereof and against the rear inclined
50 plate 58. This dirt, together with the grass and weeds which have been carried into this rear space by the conveyer-fingers, now falls onto the inverted-V-shaped deflector and is thrown sidewise into the furrows made by the
55 plow, and thus said furrows are filled up and the surface of the ground left practically level and even after the plow has accomplished its function of unearthing the potatoes.

It will be noticed that the grating formed by the slats or rods 22 is so shaped that the
60 rotating arms which carry the tines will clear the upper ends of said slats or rods without contact therewith.

I prefer to form the tines or fingers separate from the radiating arms and connect said
65 tines to the arms by a simple means, which will enable the tines to be radially detached when occasion should require—as, for instance,

when one of the fingers of a tine becomes broken and it is desired to substitute a new
tine therefor. With this end in view I pro-
70 vide for each radiating arm 42 a bracket 68, which is provided with a groove 69 for the reception of the upper end of the radiating
arm, said radiating arm being held in the
75 groove by means of a bolt 70. The upper end of the bracket is formed with a transverse
member 71, which is provided in one face with a series of half-round recesses. (Not shown.)
The inner ends of the fingers 44 are fitted in
80 these recesses, and a retaining-plate 72 is adjusted lengthwise of the member 71 and is
likewise provided with half-round recesses. (Not shown.) The inner ends of the fingers
therefor fit in these registering recesses. The
85 plate 72 is held to the transverse member 71 by means of bolts 73. It will be seen from this
that a most simple means is provided for hold-
ing the fingers constituting the tines in place
and for permitting said fingers to be removed
90 when desired, as it is only necessary in order to accomplish this to remove the bolts 73.

I claim—

1. In a potato-harvester, the combination,
of a main frame, a pivoted frame, angular
frames secured to said pivoted frame, the up-
95 right arms of said angular frames passing through guides secured to the main frame, a rotatable shaft journaled in the horizontal
members of the angular frames, a series of
arms radiating from the shaft and carrying
100 tines at their outer ends, a plow secured to the pivoted frame, and means for turning said pivoted frame on its pivots.

2. In a potato-harvester, the combination,
of a main frame, a pivoted frame, angular
frames secured to the pivoted frame, the up-
105 right arms of said angular frames passing through guides secured to the main frame, a rotatable shaft journaled in the horizontal
members of the angular frames, a series of
arms radiating from the shaft and carrying
tines at their outer ends, a plow secured to
the pivoted frame, a cable connected at one
110 end to the pivoted frame, a lever to which the opposite end of the cable is connected,
said lever carrying a spring-actuated dog,
and a segmental rack, with which the spring-
115 actuated dog is adapted to engage on the different adjustments of the lever.

3. In a potato-harvester, the combination,
120 of a main frame, a pivoted frame, angular frames secured thereto, the upright arms of said angular frames passing through guides secured to the main frame, a rotatable shaft journaled in the horizontal
members of the angular frames, a series of
arms radiating from the shaft and provided at their outer
125 ends with tines, a plow secured to the pivoted frame, deflecting-plates secured to the pivoted frame in advance of the plow, and
means for turning said pivoted frame on its
130 pivots.

4. In a potato-harvester, the combination,
of a main frame, a pivoted frame, angular

frames secured thereto, the upright arms of said angular frames passing through guides secured to the main frame, a rotatable shaft journaled in the horizontal members of the angular frames, a series of arms radiating from the shaft and provided at their outer ends with tines, a plow secured to the pivoted frame, a grating secured to the plow and extending rearwardly therefrom, and means for turning the pivoted frame on its pivots.

5. In a potato-harvester, the combination, of a rotatable shaft, plates mounted thereon, radiating arms having their inner ends passing between the plates, and the outer ends of the arms formed or provided with tines, and clamping-bolts passing through the plates and holding the inner ends of the arms therebetween.

6. The combination, of a frame, a rotatable shaft mounted therein, arms radiating therefrom, a bracket formed or provided at the outer end of each arm, said bracket formed with a transverse member having a series of recesses in one face thereof, a retaining-plate arranged lengthwise of the transverse member of the bracket, and provided with recesses registering with the recesses of said transverse member, tines fitting in the registering recesses, and a bolt or bolts connecting the plate to the transverse member.

7. The combination, of a rear grate, a plate back of the grate, and parallel or substantially parallel with the grate, said plate formed or provided with a deflector disposed between said plate and the rear grate, and adapted for throwing the dirt passing through the grate to one side.

8. The combination, of a rear grate, a plate back of the grate, and parallel or substantially parallel with the grate, said plate formed

or provided with an inverted-V-shaped deflector, disposed between said plate and the rear grate.

9. The combination, of a rear grate, an endless conveyer, the projecting fingers thereof extending between the grate-bars, and a rear plate parallel or substantially parallel with and located back of the endless conveyer, and formed or provided with a deflector, said deflector disposed between the plate and the rear grate and adapted for throwing dirt and other foreign matter to one side.

10. The combination, of a rear grate, an endless conveyer, the projecting fingers thereof extending between the grate-bars, a pivoted cup, and a rear plate parallel or substantially parallel with and located back of the endless conveyer and formed or provided with a deflector, said deflector being disposed between the plate and the rear grate and adapted to throw the dirt, and other foreign matter, to one side.

11. The combination, of a plow, a grate consisting of a series of bars extending rearwardly from the plow, the rear ends of said bars being curved rearwardly, a rotatable shaft, and a series of arms mounted on said shaft, the outer extremities of said arms being formed or provided with tines, which as the shaft is rotated are adapted to pass in the spaces between the bars, and to extend there-through for a desired distance, the arc of the circle described by the radiating arms being such as to cause the tines to clear the rear curved ends of the bars composing the grate.

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

JAMES P. BRENNAN.

Witnesses:

W. G. COLES,
ERNST VON BRIESEN.