

No. 661,170.

Patented Nov. 6, 1900.

W. F. ELLIS.

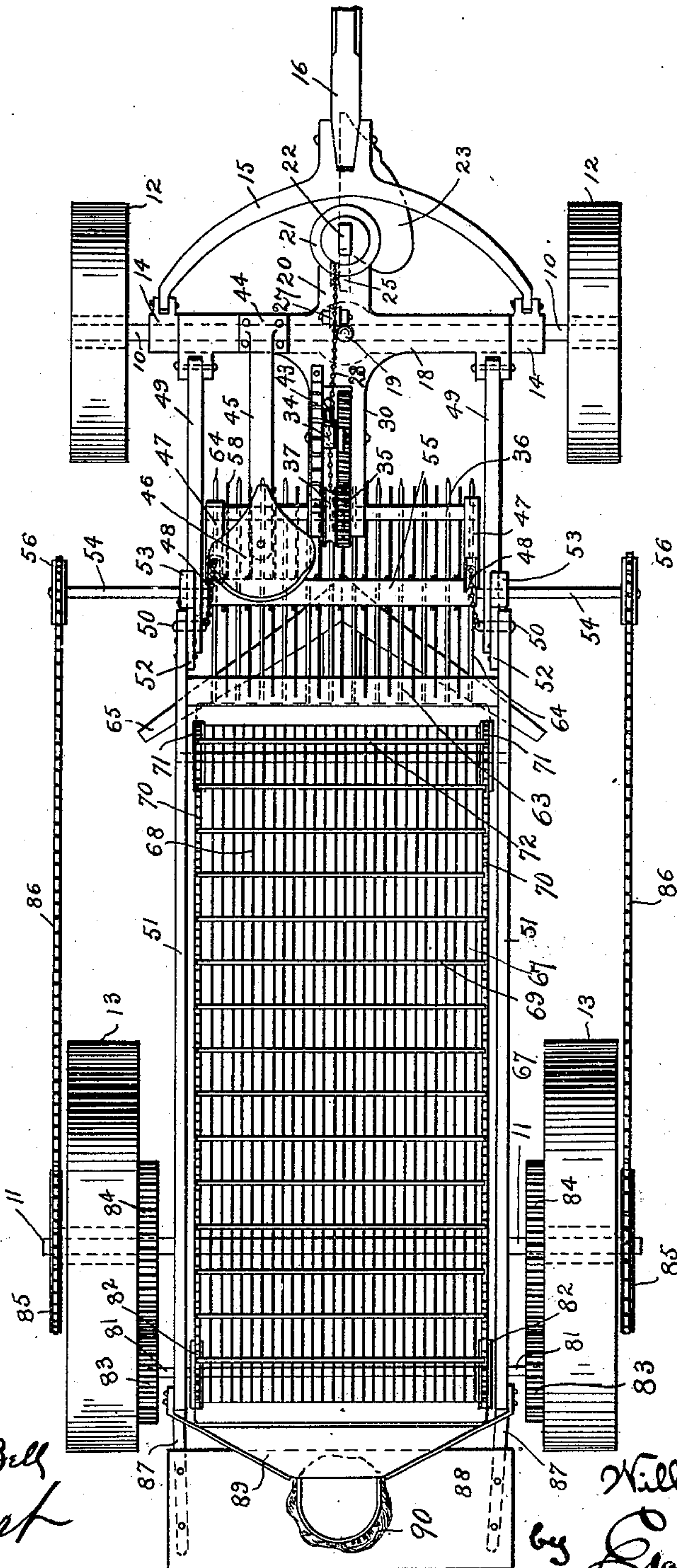
POTATO HARVESTER.

(Application filed July 14, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1



WITNESSES

Edwood Bell
F. A. Stewart

INVENTOR

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ATTORNEYS

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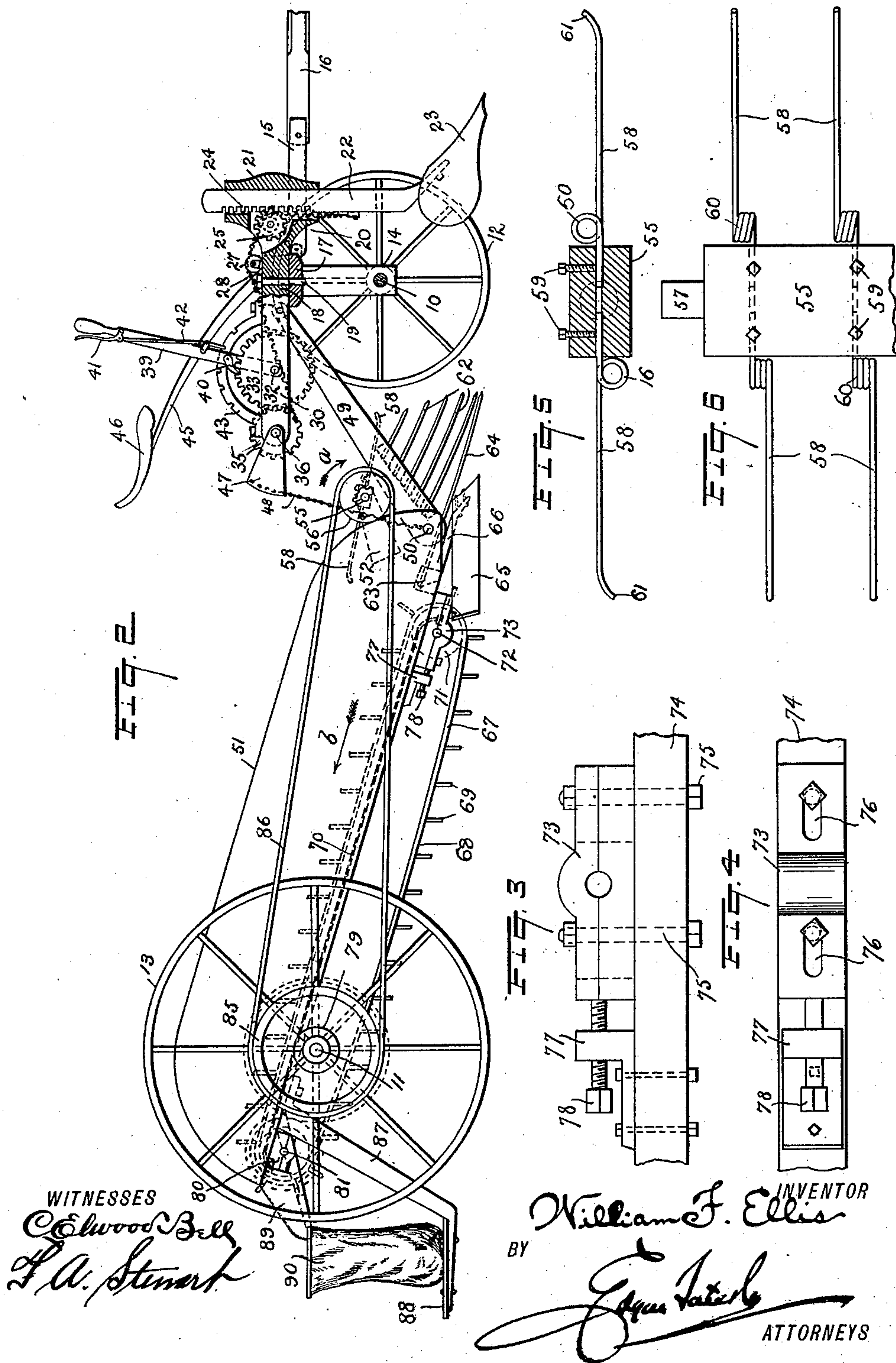
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3 Sheets—Sheet 3.

FIG. 7

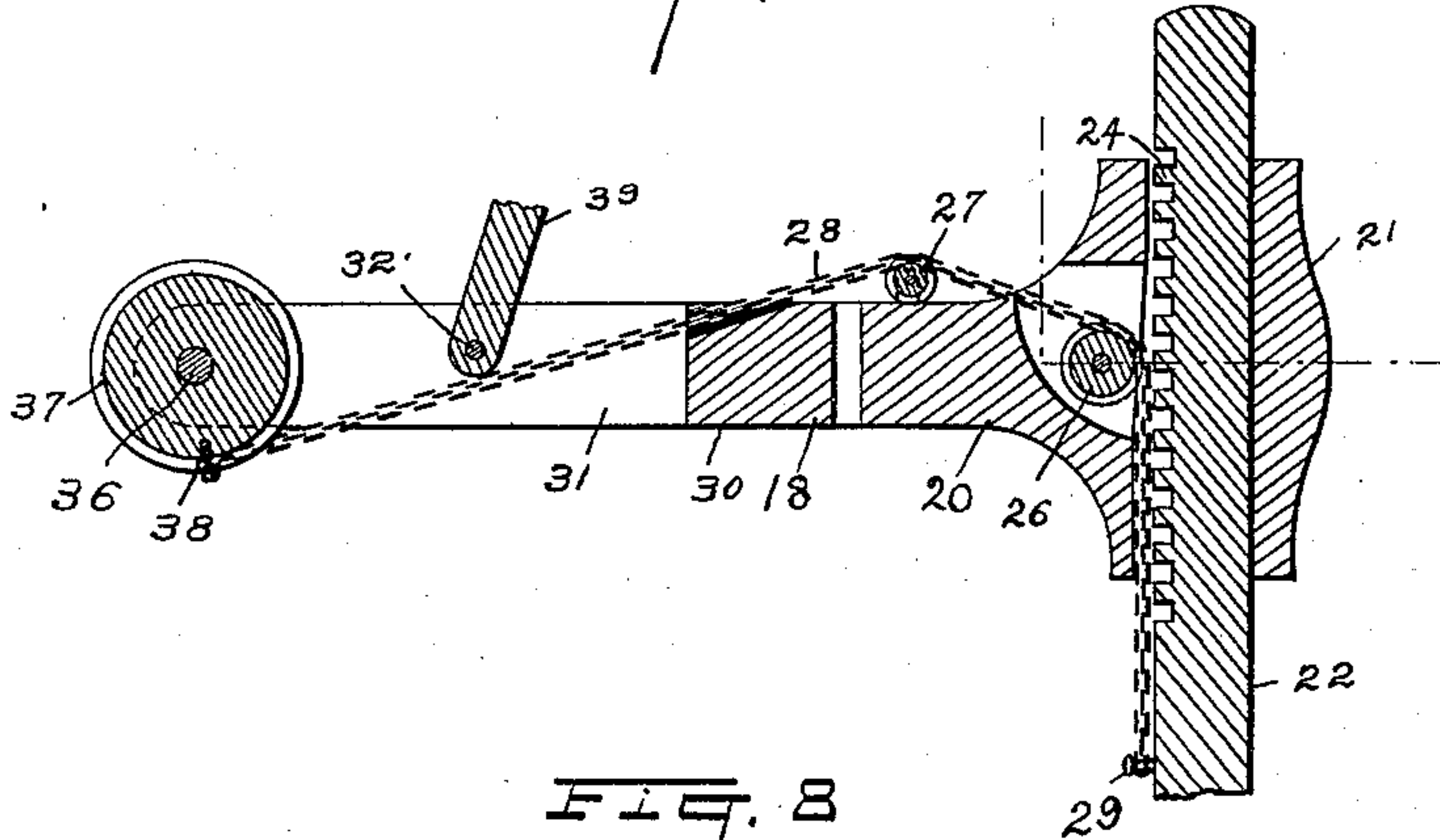
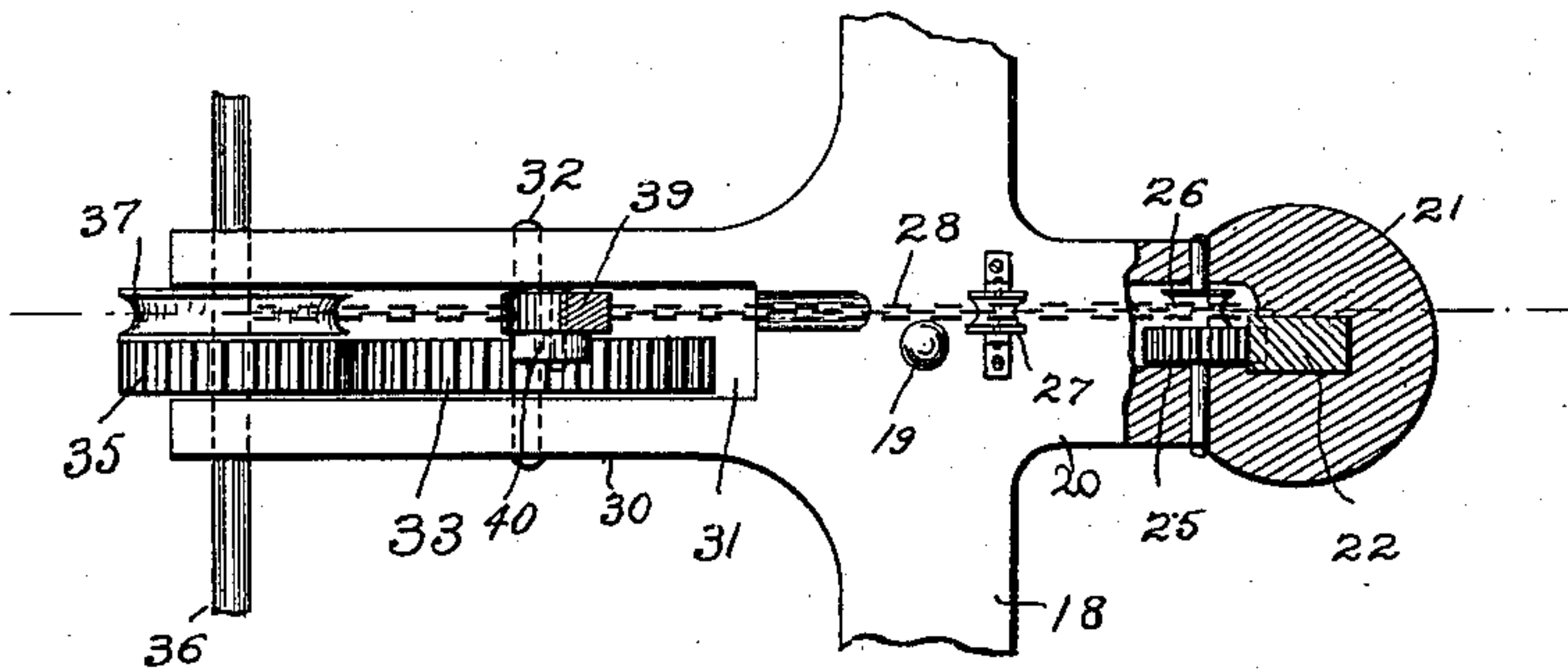


FIG. 8



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM F. ELLIS, OF NEW YORK, N. Y.

POTATO-HARVESTER.

SPECIFICATION forming part of Letters Patent No. 661,170, dated November 6, 1900.

Application filed July 14, 1900. Serial No. 23,690. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM F. ELLIS, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Potato-Harvesters, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to potato-harvesters, and the object thereof is to provide an improved machine for this purpose which will dig, pick up, and bag potatoes; and the invention consists in a machine constructed as hereinafter described and claimed.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which the separate parts of my improved machine are designated by the same reference characters in each of the views, and in which—

Figure 1 is a plan view of a machine embodying my invention; Fig. 2, a side view thereof, part of the construction being shown in section; Fig. 3, a side view of a detail of the construction; Fig. 4, a plan view thereof; Fig. 5, a sectional end view of a detail of the construction; Fig. 6, a plan view thereof; Fig. 7, a sectional side view similar to that shown in Fig. 2 of a part of the construction on an enlarged scale; and Fig. 8, a plan view thereof, part of the construction being shown in section.

In the practice of my invention I provide a front axle 10 and rear axle 11, said axles being provided, respectively, with wheels 12 and 13 and forming part of a truck, the frame of which consists of the body portion of the machine. The front axle is provided at its opposite ends with uprights 14, with which is pivotally connected a yoke 15, with which in practice the tongue 16 is connected, and the uprights 14 are connected by a transverse bar 17, (shown in Fig. 2,) on which is placed a bolster 18, which is connected therewith by a king-pin 19, and which is provided centrally with a forwardly-directed extension 20, having a vertically-arranged keeper 21, in which is mounted the shank-bar 22 of a digger, preferably consisting of an ordinary plowshare 23. The shank-bar 22 is provided

on its rear edge with ratchet-teeth 24, as clearly shown in Figs. 2 and 7, and mounted in the rear side of the keeper 21 is a ratchet-pinion 25, which operates in connection with the ratchet-teeth 24, and on the same shaft with the ratchet-pinion 25 is a small grooved wheel 26, as shown in Fig. 7, and between the keeper 21, through which the shank-bar of the plowshare is passed, and the support of the bolster 18 is another grooved wheel 27, over which is passed a chain 28, which is connected with the shank-bar 22 of the plowshare, near the bottom thereof, as shown at 29, and passed upwardly through the keeper 21 and over the grooved wheels 26 and 27. The bolster 18 is also provided with a backwardly-directed arm 30, in which is formed a longitudinal slot 31, centrally of which is placed a transverse shaft 32, provided with a gear-wheel 33 and a small grooved wheel 34, beneath which the chain 28 is passed, and in the rear end of the slotted arm 30 is another gear-wheel 35, mounted on a shaft 36, which is also provided with a grooved wheel 37, to which the chain 28 is secured at 38, said chain being passed downwardly from the wheel 27 through the slot in the arm 30 and connected with the lower portion of said wheel 37.

The gear-wheel 35 is smaller than the gear-wheel 33, and connected with the shaft 32 of the wheel 33 is a hand-lever 39, provided with a pivoted pawl 40, which operates in connection with the teeth of the gear-wheel 33, and pivotally connected with the upper portion of the hand-lever 39 is a catch-lever 41, with which is pivotally connected a catch 42, which operates in connection with a segmental rack-bar 43, secured to the backwardly-directed arm 30 of the bolster 18.

Secured to the bolster 18 at 44 is a backwardly and upwardly directed seat-support 45, to which is secured a seat 46, and this seat is placed on the left side of the machine, so as to enable the operator to operate the hand-lever 39 and parts connected therewith by the right hand.

The shaft 36 in the rear end of the arm 30 and to which the gear-wheel 35 and the grooved wheel 37 are secured is extended at each end and provided with a crank 47, and connected with each of these cranks is a

chain 48, and pivotally connected with the opposite ends of the bolster 18 is an arm 49, and these arms 49 extend backwardly and downwardly, and the chains 48 are connected with the lower rear ends thereof or with a pivot-pin 50 passing therethrough, with which are also connected the forward ends of side boards 51, which extend backwardly and upwardly over the rear axle 11.

Connected with the forward ends of the side boards 51 are forwardly and upwardly directed supports 52, provided with bearings 53, through each of which is passed a shaft 54, and these shafts 54 are firmly fixed at their inner ends in a transverse bar 55, or may extend entirely therethrough, and form one continuous shaft, and at the outer ends thereof the shafts 54 are provided each with a sprocket-wheel 56. The transverse bar 55 is preferably provided, however, at each end with a bearing 57, in which the shafts 54 are secured, and said bar is also provided with a plurality of spring-fingers 58, connected therewith, as shown in Figs. 5 and 6, preferably by means of set-screws 59, and said fingers are composed of steel wire bent adjacent to said bar to form spring loops or coils 60, and the ends thereof are also preferably turned in opposite directions, as shown at 61 in Fig. 5. The backwardly and downwardly directed arms 49 are also provided with forwardly-directed fingers 62, which increase in length from the top downwardly and which are arranged in a substantially-vertical plane, and secured to the bottom of the forward ends of the side boards 51 is a transverse bar 63, to which are secured a plurality of spring-fingers 64, which project downwardly and forwardly and which are arranged at practically the same distance apart as the fingers 58, and in the operation of the machine as hereinafter described the bar 55 is revolved and the spring-fingers 58 passed between the fingers 64.

Secured beneath the forward ends of the side boards 51 is a triangular share or fender 65, the object of which will be hereinafter described, and which is connected with said side bars by means of forwardly-directed braces or supports 66, as shown in Fig. 2, and the apex of which projects forwardly about half the distance of the length of the fingers 64, and the sides of which project backwardly and outwardly or rearwardly and laterally of the forward end of the conveyer 67, which is mounted between the side boards 51, and which consists of flexible longitudinal strips 68 and transverse ribs or plates 69, connected therewith in any desired manner. The conveyer is also provided at its opposite sides with ordinary drive-chains 70, which pass over sprocket-wheels 71, mounted on a shaft 72, supported in bearings 73, shown in detail in Figs. 3 and 4, and which are longitudinally adjustable on their supports 74 by means of bolts 75, passed through said supports and

through longitudinal slots 76 in said bearings, and the rear ends of the supports 74 are provided with brackets 77, through each of which is passed a set-screw 78, by means of which the bearings 73 may be adjusted longitudinally of the side boards 51, with which the supports 74 are connected. This adjustment of the bearings 73 of the shaft 72 may be made in any desired manner, however, and forms no part of this invention.

The rear ends of the side boards 51, which form, as will be understood, suitable guides and supports for the conveyer, are mounted on the rear axle and connected therewith by sleeves 79, and at the rear ends of said side boards, which project rearwardly of the rear axle, are suitable bearings or supports 80, in which is mounted a shaft 81, provided with sprocket-wheels 82, over which the drive-chains 70 of the conveyer pass, and the shaft 81 is provided at each end with a gear-wheel 83, and the gear-wheels 83 operate in connection with larger gear-wheels 84, mounted on the rear axle 11, and said rear axle is also provided outside of the main drive-wheels 13 with a sprocket-wheel 85, and these sprocket-wheels 85 are geared in connection with the wheels 56 on the shaft 54 by drive-chains 86.

The rear ends of the side boards 51 are provided each with a downwardly and backwardly directed arm 87, with which is connected a transverse support 88, and connected with the rear ends of said side boards, rearwardly of the arms 87, is a downwardly and backwardly inclined chute 89, with which in practice the top of a bag 90 is connected, said bag being supported on the transverse plate or support 88, and instead of the bag 90 any other suitable receptacle may be employed.

The share or fender 65 is intended to form a partial support for the central portion of the machine, also to level off the ground and to provide for the free operation of the conveyer, of which the sides of said share or fender serve as a protector.

The operation will be readily understood from the foregoing description when taken in connection with the accompanying drawings and the following statement thereof.

It will be apparent that the shank-bar of the plowshare 23, and consequently the plowshare itself, may be raised at any time by pulling the hand-lever 39 backwardly, and this operation also raises the rear ends of the arms 49 and the front end of the conveyer and the side boards by which it is supported and other parts connected therewith, it being understood that the separate parts of the machine or those parts connected with the front and rear axle are all pivotally connected by means of the pins 50, with which the chains 48 are connected, and the said plowshare and the forward end of the conveyer and parts connected therewith, together with the rear ends of the arms 49, may be lowered at any time by moving the hand-lever 49 forwardly,

it being understood that said hand-lever may be locked in any desired position by means of the catch 42 and the rack-bar 43.

When the machine is in operation, the plowshare is lowered substantially into the position shown in Fig. 2 and all the rest of the parts of the machine assume the position shown in said figure. The machine is then driven along a row of potatoes and the potatoes are thrown out by the plowshare 23. As the machine proceeds the potatoes are picked up by the fingers 64 and are moved backwardly over said fingers by the constantly-revolving fingers 58, which pass between the fingers 64 and which are operated by the drive-chains 86, which are geared in connection with the rear axle and with the shaft or shafts connected with the transverse bar 55, to which the fingers 58 are secured. The potatoes are thrown backwardly on the conveyer by means of the fingers 58, and the said fingers 62, secured to the arms 49, serve as guides to prevent the potatoes from being thrown off laterally. The conveyer in its operation carries the potatoes back over the rear axle and dumps them into the chute 89, from which they pass into the bag or other receptacle 90, and as often as the said bag or receptacle is filled it is removed and another substituted or the potatoes are emptied from said bag or receptacle into a wagon or other receiver, and in this operation the fingers 58 are revolved in the direction of the arrow *a* (shown in Fig. 2) and the conveyer of course moved in the direction of the arrow *b*, also shown in said figure.

It will be apparent that any suitable form of a conveyer may be employed and many changes in and modifications of the construction herein described may be made without departing from the spirit of my invention or sacrificing its advantages.

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A potato-harvester, comprising a front and rear axle, a conveyer-support the rear end of which is mounted on the rear axle, and the front end of which is pivotally connected with side arms which are pivotally supported above the front axle and extend downwardly and backwardly, a conveyer mounted in said conveyer-support and between side boards forming a part thereof, fingers connected with the front end of said support in front of the conveyer, and extending forwardly and downwardly and designed to pick up the potatoes, a vertically-movable plowshare supported in connection with the front axle, and devices for raising and lowering said plowshare and the front end of the conveyer-support, substantially as shown and described.

2. A potato-harvester, comprising a front and rear axle, a conveyer-support the rear end of which is mounted on the rear axle, and the front end of which is pivotally connected with side arms which are pivotally supported

above the front axle and extend downwardly and backwardly, a conveyer mounted in said conveyer-support and between side boards forming a part thereof, fingers connected with the front end of said support in front of the conveyer, and extending forwardly and downwardly and designed to pick up the potatoes, a vertically-movable plowshare supported in connection with the front axle, devices for raising and lowering said plowshare and the front end of the conveyer-support, and revoluble spring-fingers mounted over the first-named fingers and operating in connection therewith, substantially as shown and described.

3. A potato-harvester, comprising a front and rear axle, a vertically-movable plowshare supported by the front axle, downwardly and backwardly directed arms pivotally supported above the front axle and near the opposite ends thereof, and provided at the lower ends with forwardly and downwardly directed fingers, a conveyer-support mounted on the rear axle and extending forwardly and downwardly, and pivotally connected with said arms, a conveyer mounted in said conveyer-support, and in operative connection with the rear axle, fingers connected with the front end of the conveyer-support projecting forwardly and downwardly, a revoluble transverse bar mounted above said fingers and in operative connection with the rear axle, and provided with spring-fingers which operate in connection with said first-named fingers, means for raising and lowering the plowshare and the front end of the conveyer-support and parts connected therewith, and means for supporting a potato-receptacle at the rear end of the conveyer, substantially as shown and described.

4. A potato-harvester, comprising a front and rear axle, a plowshare supported in connection with and in front of the front axle and vertically movable, side arms pivotally supported above the front axle and projecting downwardly and backwardly, a conveyer-support mounted on the rear axle and extending forwardly and downwardly and pivotally connected with said arms, and a hand-lever supported rearwardly of and above the front axle and in operative connection with the plowshare and with the pivotal connection of said arms and the conveyer-support, said conveyer-support and side arms being also provided with forwardly-directed fingers, substantially as shown and described.

5. A potato-harvester, comprising a front and rear axle, a conveyer-support mounted thereon, a conveyer mounted in said support and geared in connection with the rear axle, suitable supports connected with the front axle and extending downwardly and backwardly and pivotally connected with the conveyer-support, fingers connected with said conveyer-support and extending forwardly and downwardly, a plowshare connected with the front axle and vertically movable, and a

hand-lever in operative connection with said plowshare and with the front end of the conveyer-support for raising and lowering the same, substantially as shown and described.

5 6. A potato-harvester, comprising a front and rear axle, a conveyer-support mounted thereon, a conveyer mounted in said support and geared in connection with the rear axle, suitable supports connected with the front
10 axle and extending downwardly and backwardly and pivotally connected with the conveyer-support, fingers connected with said conveyer-support and extending forwardly and downwardly, a plowshare connected with
15 the front axle and vertically movable, and a hand-lever in operative connection with said plowshare and with the front end of the conveyer-support for raising and lowering the same, said conveyer-support being also pro-
20 vided with revoluble spring-fingers which operate in connection with the first-named fingers, substantially as shown and described.

7. A potato-harvester, comprising a front and rear axle, a conveyer-support mounted
25 on the rear axle and extending forwardly and downwardly, a conveyer mounted therein and geared in connection with the rear axle, fingers connected with the front end of said support and projecting forwardly and down-
30 wardly, revoluble spring-fingers mounted over the first-named fingers and geared in connection with the rear axle, a support mounted over the front axle, a vertically-mov-
35 able plowshare connected therewith, gear-wheels mounted in a backwardly-directed extension of said support, and geared in connection with the plowshare and also in connection with the front end of the elevator-
40 support, and a hand-lever for operating said gear-wheels, substantially as shown and described.

8. In a potato-harvester, a front and rear axle, a vertically-movable plowshare supported by the front axle, a conveyer the rear end
45 of which is supported by the rear axle, said conveyer being geared in connection with said axle, side arms pivotally supported above the front axle and extending downwardly and backwardly and pivotally connected with the
50 front end of the conveyer-support, and fingers connected with the conveyer-support and projecting forwardly and downwardly and adapted to pick up the potatoes and discharge them onto the conveyer, substantially as shown and
55 described.

9. A potato-harvester, comprising a front and rear axle, a bolster pivotally supported above the front axle, a plowshare supported by said bolster, and vertically movable, a con-
60 veyer-support the rear end of which is mounted on the rear axle, and the front end of which

is pivotally connected with side arms which are pivotally connected with said bolster, a conveyer mounted in said conveyer-support and geared in connection with the rear axle, 65 means for picking up potatoes and discharging them on the conveyer, and means for raising and lowering the front end of the conveyer and the said plowshare, substantially as shown and described. 70

10. A potato-harvester, comprising a front and rear axle, a bolster pivotally supported above the front axle, a plowshare supported by said bolster and vertically movable, a conveyer-support the rear end of which is mount- 75 ed on the rear axle, and the front end of which is pivotally connected with side arms which are pivotally connected with said bolster, a conveyer mounted in said conveyer-support and geared in connection with the rear axle, 80 means for picking up potatoes and discharging them on the conveyer, and means for raising and lowering the front end of the conveyer and the said plowshare, consisting of a hand-lever pivotally supported rearwardly of 85 said bolster and geared in connection with said plowshare or digger and with the front end of the conveyer-support, substantially as shown and described.

11. A machine of the class described, comprising a front and rear axle, a support mounted above the front axle, a plowshare connect- 90 ed therewith and vertically movable, side arms pivotally connected with said support and extending downwardly and backwardly, a conveyer-support mounted on the rear axle and projecting forwardly and downwardly and pivotally connected with said arms, a conveyer mounted in said support and geared in connection with the rear axle, fingers con- 95 nected with said conveyer-support and projecting forwardly and downwardly, revoluble spring-fingers mounted above said first-named fingers and geared in connection with the rear axle, other fingers connected with said arms 100 and projecting forwardly and downwardly at the sides of the first-named fingers, a hand-lever pivotally supported rearwardly of the front axle and geared in connection with the plowshare for raising and lowering the same, 110 and also in connection with the front end of the conveyer-support for raising and lowering the same, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 12th day of July, 1900. 115

WILLIAM F. ELLIS.

Witnesses:

F. A. STEWART,
C. C. OLSEN.