

No. 765,584.

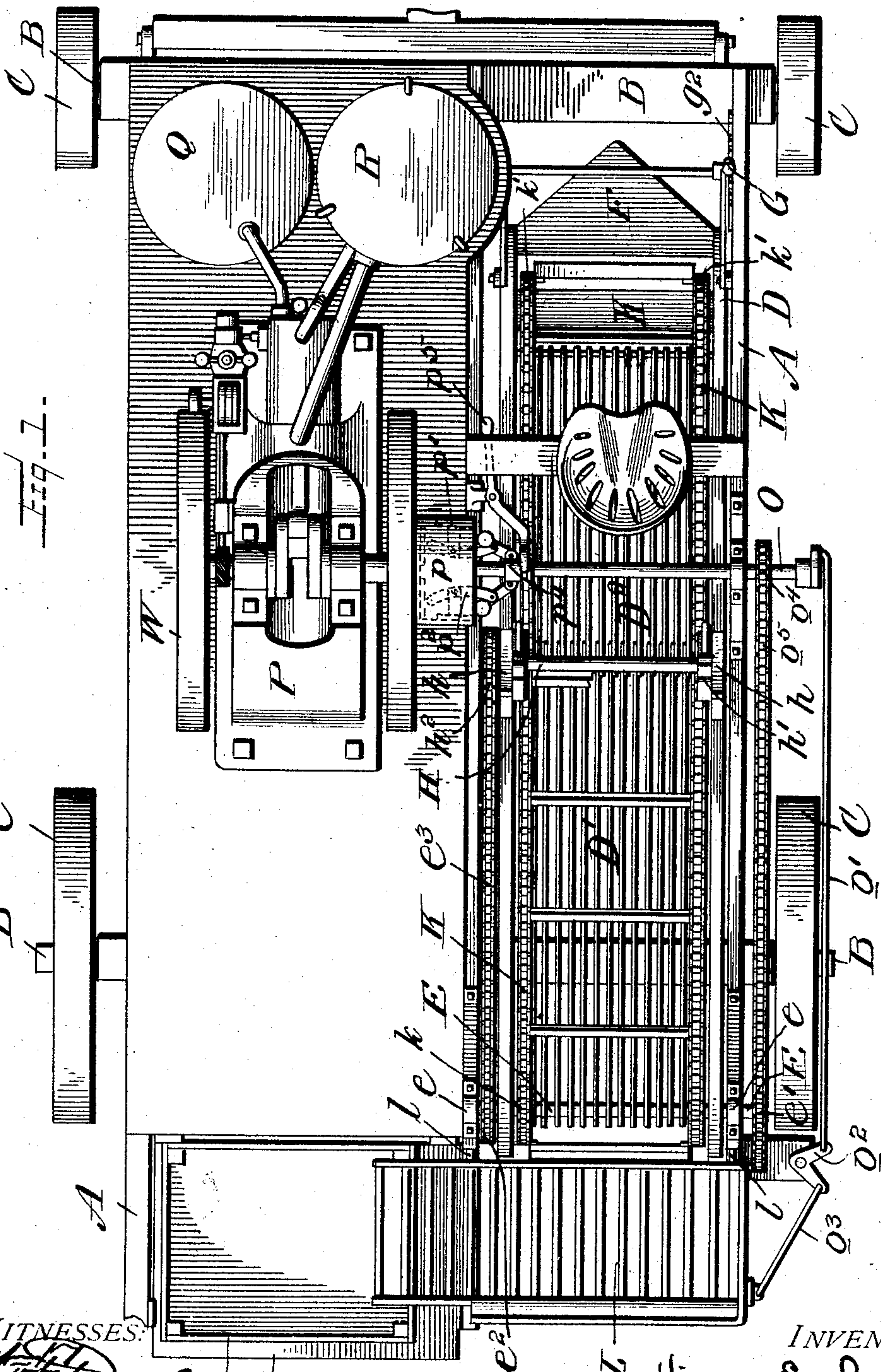
PATENTED JULY 19, 1904.

H. E. LORD.
POTATO DIGGER.

NO MODEL.

APPLICATION FILED MAR. 19, 1904.

4 SHEETS—SHEET 1.



WITNESSES:

W. H. Doyle
J. K. Moore

INVENTOR

Hiram E. Lord
BY
Whitman Perot Attorneys

No. 765,584.

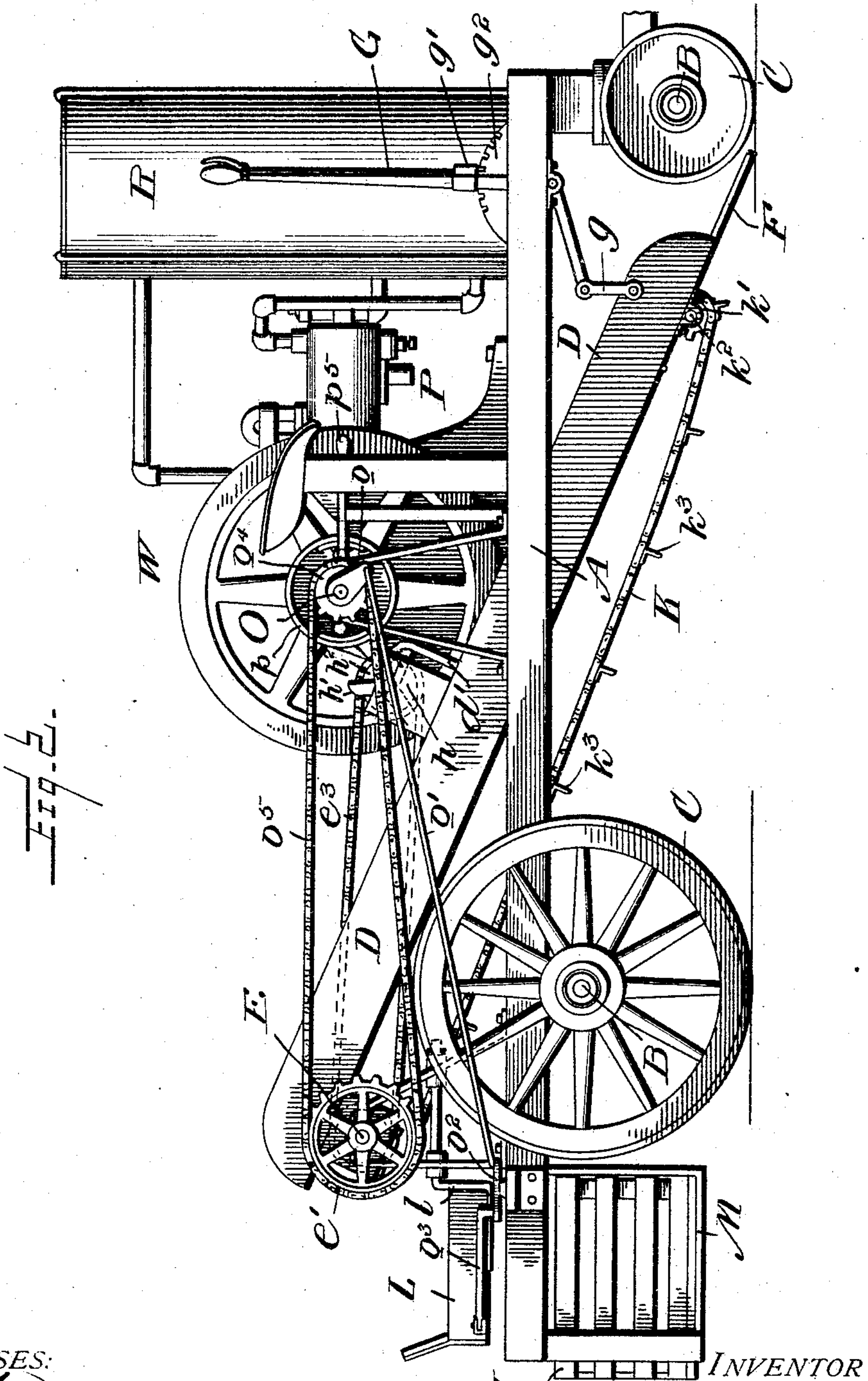
PATENTED JULY 19, 1904.

H. E. LORD.
POTATO DIGGER.

NO MODEL.

APPLICATION FILED MAR. 19, 1904.

4 SHEETS—SHEET 2.



WITNESSES:

H. F. Doyle
J. K. Moore

INVENTOR

Wm. E. Lord

BY

Whitaker & Tabor
Attorneys

No. 765,584.

PATENTED JULY 19, 1904.

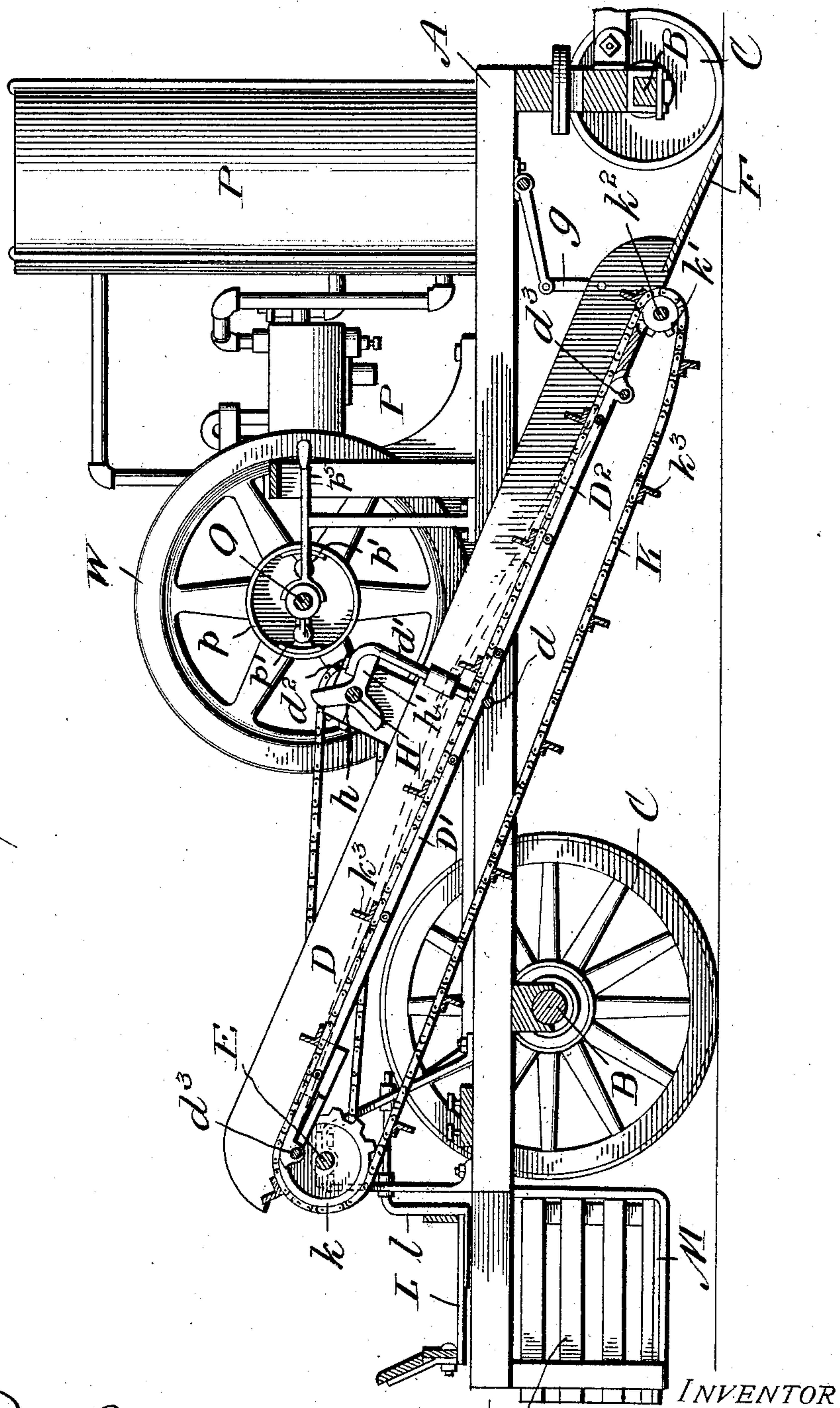
H. E. LORD.
POTATO DIGGER.

APPLICATION FILED MAR. 19, 1904.

NO MODEL.

4 SHEETS—SHEET 3.

FIG. 3.



WITNESSES
W. F. Daylin
J. K. Moore

INVENTOR
Hiram E. Lord
BY
Whitaker & Perce
Attorneys

UNITED STATES PATENT OFFICE.

HIRAM E. LORD, OF CLAYTON, MICHIGAN.

POTATO-DIGGER.

SPECIFICATION forming part of Letters Patent No. 765,584, dated July 19, 1904.

Application filed March 19, 1904. Serial No. 199,008. (No model.)

To all whom it may concern:

Be it known that I, HIRAM E. LORD, a citizen of the United States, residing at Clayton, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Potato-Diggers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in the novel features hereinafter described, reference being had to the accompanying drawings, which illustrate one form in which I have contemplated embodying my invention, and the said invention is fully disclosed in the following description and claims.

Referring to the said drawings, Figure 1 represents a top plan view of a machine embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a central longitudinal vertical sectional view of the same. Fig. 4 is a rear view of the machine. Fig. 5 is a perspective view of portions of the grates and mechanism for operating the same.

Referring to the drawings and the letters of reference marked thereon, A represents the main frame of the machine, which is supported upon the axles B B, to which are attached the supporting-wheels C C C C in the manner usual in constructing wheeled vehicles, the front axle being pivoted to the frame A to enable the machine to be steered and provided with a tongue or other suitable draft appliances by means of which it may be drawn by horses or other suitable means.

The frame A is provided with a vertically-adjustable digger-frame D, which is preferably located at one side of the machine and is pivoted at its rear end and capable of being raised or lowered at its front end. In the present instance the digger-frame consists of two supporting side bars or rails pivoted at their rear ends upon a transverse shaft E, supported in suitable bearings *e e* above and adjacent to the rear of the main frame; the digger-frame being provided with bearings to engage said shaft, so as not to prevent it from being used for power purposes. It is obvious, however, that the digger-frame could

be pivoted in other ways. The digger-frame extends in an inclined direction downward through the main frame A to the front part of the machine, where it is provided with a triangular or pointed scoop-plow F. A hand-lever G is mounted upon the frame A adjacent to the driver's seat and connected by links *g* with the front end of the digger-frame D to enable the latter to be raised and lowered, and said lever is provided with the usual pawl *g'* and segment *g''* to permit of the vertical adjustment of the digger-frame.

Within the digger-frame D are two grates D' and D'', formed of longitudinally-disposed bars suitably spaced and connected, said grates being arranged, preferably, end to end, with the adjacent ends of their grate-bars overlapping adjacent to the center of the frame D. Devices are provided for the purpose of jarring these grates vertically, and in this instance I have shown the overlapping portions of the two grates supported by a horizontal bar *d*, extending transversely across the digger-frame and having its ends provided with upwardly-extending arms *d'*, provided with lugs or projections *d''*.

H represents a transverse shaft supported in bearings *h h*, mounted on frame A, and provided with the tappets or tappet-wheels *h'* to engage the projections *d''*. The tappets raise the supporting-bar *d*, thus raising the adjacent ends of the grates, and they drop it until the lugs *d'* engage the next tappet, thus permitting the grates to fall with a sharp jolt for the purpose of shaking the dirt adhering to the potatoes through the grates to the ground, as hereinafter described. The outer ends of the grates D' D'' may be pivotally supported in any desired manner in the digger-frame D, as by being secured to transverse rods *d'''*, as shown in the drawings, the connections being such as to permit the jolting of the grates in the manner described.

K K represent two sprocket-chains, which pass around sprocket-wheels *k k* on shaft E and sprockets *k' k'* on a transverse shaft *k''*, mounted in the digger-frame in rear of the plow F. These chains are connected at intervals by transverse bars *k'''*, formed, preferably, of angle-iron, the chains and bars form-

ing an endless conveyer which receives the dirt and potatoes dug up by the plow or scoop F and carries them upward over the grates D' D², where the dirt is shaken from them in the
5 manner described.

At the rear end of the digger-frame is a transversely-disposed horizontal rack L, swung on pivoted hangers *l l*, so as to be capable of a reciprocating motion, the said rack having its
10 bottom composed of slots with openings between them. The potatoes are discharged into the rack L from the conveyer, falling a slight distance, and are then gradually worked along to the delivery end of said rack by the
15 reciprocating motion thereof, thus further removing any particles of earth adhering to them. The rack L may be given a slight inclination, if desired, to facilitate the delivery of the potatoes therefrom.

20 Adjacent to and below the delivery end of rack L is a platform M, supported from the main frame, on which is placed the box, crate, bag, or other receptacle N into which the potatoes are delivered.

25 O represents the main drive-shaft of the machine, which is mounted in suitable bearings in the main frame, and said shaft is provided with a crank *o*, connected by a link *o'* to a bell-crank *o''*, pivoted to the rear end of
30 frame A and connected by link *o'''* to the rack L to impart the reciprocatory motion thereto. The driving-shaft O is also provided with a driving-sprocket *o⁴*, connected by a chain *o⁵* to a sprocket *e'* on the shaft E for giving
35 motion to the same to drive the endless carrier K K *k³*. The shaft E is also provided adjacent to the other side with a sprocket *e''*, connected by a chain *e³* with a sprocket *h²* on the tappet-shaft H for driving the latter to
40 give the jolting movement to the grates.

It is obvious that driving-shaft O could be driven in various ways, as by gearing from the wheels of the machine; but I have found the best results to be obtained by supplying
45 the power for driving shaft O from a source independent of the supporting-wheels, thus relieving the draft-animals of a great portion of the load that would otherwise be upon them. To this end I mount upon the frame
50 A a primary motor, to which the shaft O may be connected, which motor may be of any preferred kind. I prefer, however, to employ a gasoline explosion-engine for this purpose, a motor of this type being shown in the drawings.
55

P represents the engine, Q the gasoline-tank, and R the water-tank for the cooling system, said parts being of any preferred or usual construction.

60 The crank-shaft of the engine is provided with the usual balance-wheel W and with a friction-flange or clutch member *p*, said crank-shaft being preferably arranged in axial alinement with the driving-shaft O. The shaft
65 O is provided with friction pads or blocks *p'* to

engage the inner face of the flange *p*, said blocks being carried by arms *p²*, connected by links *p³* to a sliding collar *p⁴* on shaft O, said arms or links being preferably provided
70 with centrifugal-acting balls to assist in holding said blocks in frictional contact with the flange *p* when the clutch is thrown into operation. *p⁵* represents the clutch-lever, connected by a yoke with the sliding collar *p⁴*,
75 for throwing the clutch into and out of operation.

In operation the machine is drawn into a potato-field and made to straddle a row of potato-hills, so that the plow F is in line there-
80 with. The plow is then depressed by means of the hand-lever G to the required depth to dig up the hills. The engine is started and clutched to shaft O. The machine is then drawn along, and the earth and potatoes
85 will slide up on the plow onto the lower end of grate D², when the bars *k³* of the conveyer will take them and carry them along the grates, where the dirt is jolted off of the potatoes. The potatoes are delivered by the
90 conveyer into the rack L, where the remaining portions of earth are rubbed off as they are jarred or shaken toward the delivery end thereof, where the potatoes drop into the box or receptacle N. An operator will follow
95 the machine and remove the receptacle N and replace it by an empty receptacle. A number of empty receptacles may be carried upon the portion of the frame A in rear of the motor.

By relieving the draft-animals from the load of the operating mechanism and providing a
100 separate motor for this purpose the machine can be easily drawn by two horses over the rough and soft soil of a potato-field, where it would be impracticable to operate a machine without this arrangement.
105

The friction-clutch interposed between the motor and driving shaft enables the operator to start the motor without load, and after it is running properly the clutch is thrown in
110 to couple the motor to the driving-shaft. The clutch performs a further function in permitting the motor-shaft to slip with respect to the driving-shaft in case the mechanism, or any part thereof, becomes clogged or blocked,
115 thus preventing the breaking or straining of the parts.

What I claim, and desire to secure by Letters Patent, is—

1. In a potato-digging machine, the combination with the main frame, of a digger-frame
120 connected therewith, a pair of movable grates mounted in said digger-frame and arranged end to end, said grates having their outer ends supported by devices stationary with respect to said digger-frame, means for simultaneously
125 jolting the adjacent ends of said grates and means for moving the potatoes longitudinally over said grates, substantially as described.

2. In a potato-digging machine, the combination with the main frame, of a digger-frame
130

connected therewith, a pair of movable grates mounted in said digger-frame and arranged end to end, said grates having their outer ends supported by devices stationary with respect to said digger-frame, means for simultaneously jolting the adjacent ends of said grates and an endless conveyer having a part adapted to be moved longitudinally over said grates whereby said grates are always in contact with said conveyer throughout their entire length, substantially as described.

3. In a potato-digging machine, the combination with the main frame, of a digger-frame connected therewith, a pair of movable grates mounted in said digger-frame and arranged end to end, said grates having their outer ends supported by devices stationary with respect to said digger-frame, means for simultaneously jolting the adjacent ends of said grates and an endless conveyer having a part adapted to be moved longitudinally over said grates whereby said grates are always in contact with said conveyer throughout their entire length, a motor mounted upon said main frame, operative connections between said motor and said conveyer and operative connections between said motor and the mechanism for jolting said grates and draft mechanism for said main frame, substantially as described.

4. In a potato-digger, the combination with the main frame, of a digger-frame connected therewith and provided with movable grates having overlapping portions, mechanism for imparting vertical motion having parts for engaging the overlapping portions of said grates to actuate two adjacent grates simultaneously, a scoop connected to said frame and a conveyer having a part passing over said grates, substantially as described.

5. In a potato-digger, the combination with the main frame, of a digger-frame connected therewith, a pair of grates mounted in said digger-frame and having the adjacent ends of their grate-bars overlapping, a tappet-shaft provided with tappets, arms having projections engaging said tappets, devices connected to said arms and engaging the grates adjacent to their overlapping portions, and a conveyer having a part extending over said grates, substantially as described.

6. In a potato-digger, the combination with

the main frame, of a digger-frame connected therewith, a pair of grates mounted in said digger-frame and having their adjacent ends overlapping, said digger-frame being provided with supports engaging said grates adjacent to their outer ends, a transverse bar extending beneath the overlapping ends of said grates, vertically-disposed tappet-arms connected to said bar, a tappet-shaft, tappets on said shaft for engaging said tappet-arms, and a conveyer having a portion extending over said grates, substantially as described.

7. In a potato-digger, the combination with the main frame, of a digger-frame connected therewith, a pair of grates mounted in said digger-frame and having their adjacent ends overlapping, said digger-frame being provided with supports engaging said grates adjacent to their outer ends, a transverse bar extending beneath the overlapping ends of said grates, vertically-disposed tappet-arms connected to said bar, a tappet-shaft, tappets on said shaft for engaging said tappet-arms, a conveyer having portions extending over said grates, a transversely-arranged shaking-rack located in rear of and below the upper end of said conveyer and provided with a slotted bottom and mechanism independent of the grates, operating mechanism for imparting a transverse shaking motion to said rack, substantially as described.

8. In a potato-digger, the combination with the main frame, provided with supporting-wheels and draft mechanism, of a digger-frame mounted in the main frame and provided with vertically-movable grates, a conveyer having portions passing over said grates and a scoop secured to the digger-frame in advance of said conveyer, a motor mounted on the main frame, operative connections between said motor and said conveyer, operative connections between said motor and said grates and a friction-clutch interposed between the motor and said operative connections, substantially as described.

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

HIRAM E. LORD.

Witnesses:

R. R. ROBBINS,
CHAS. H. SARDS.