

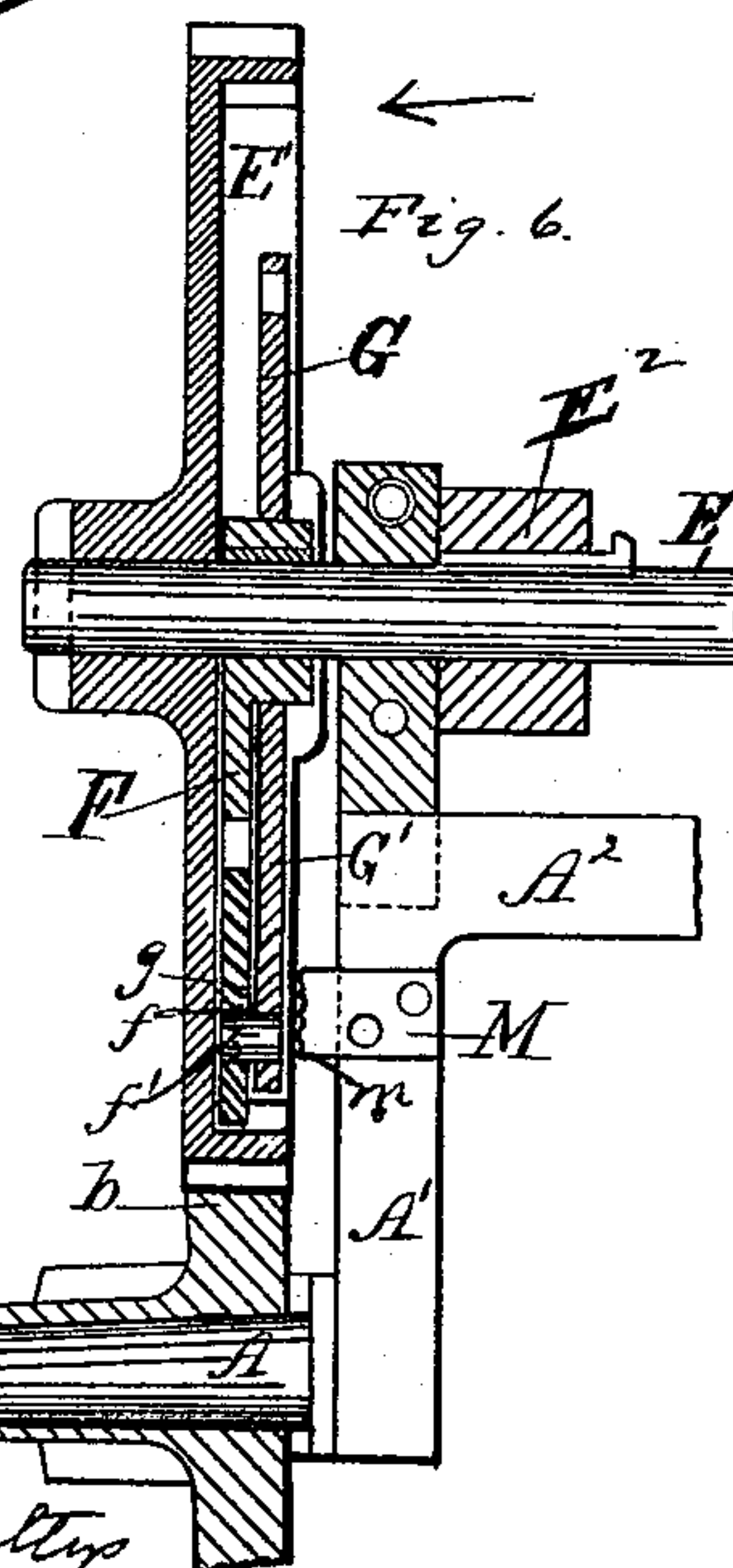
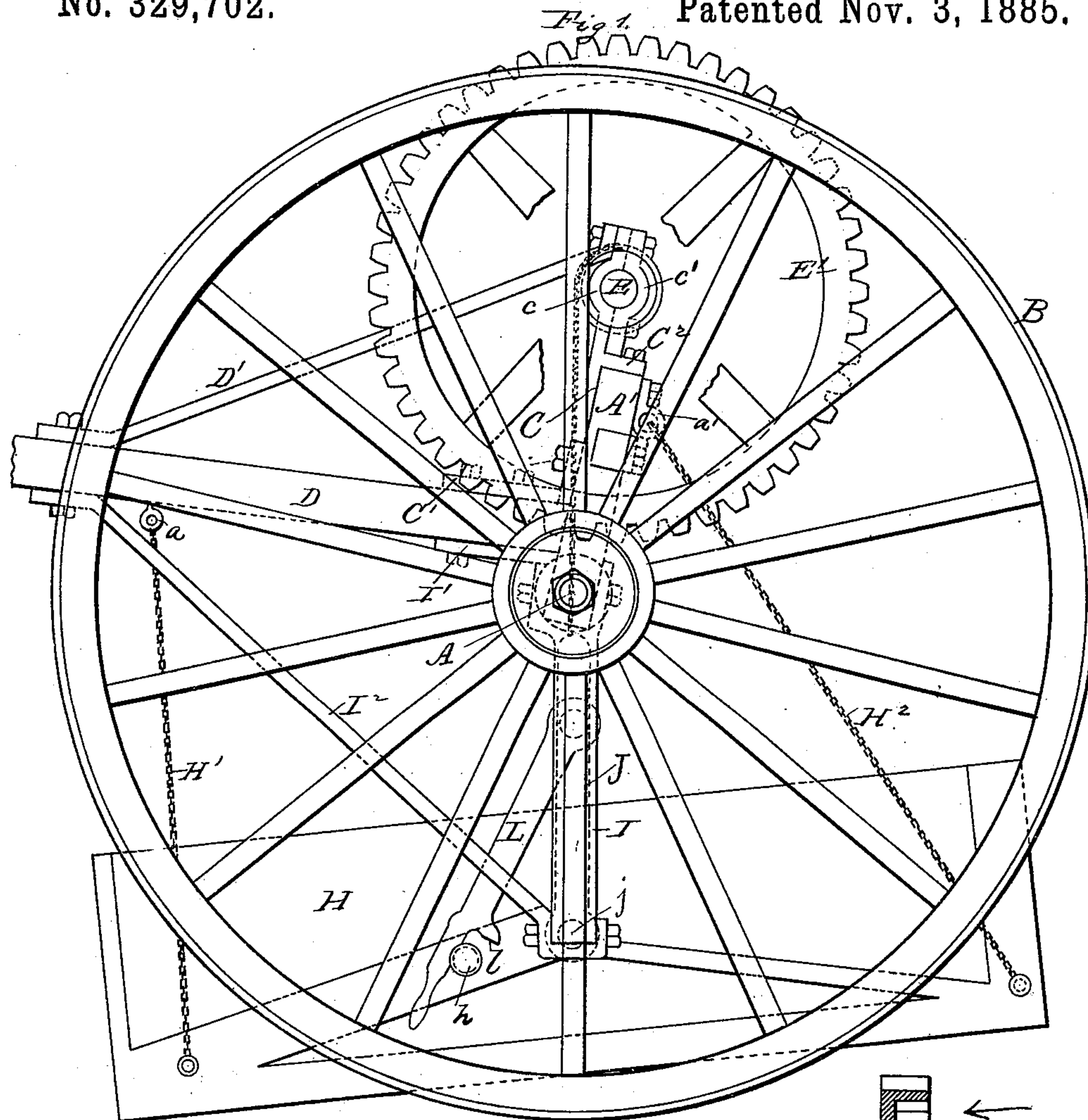
(No Model.)

4 Sheets—Sheet 1.

J. N. BODINE.
DIRT CART.

No. 329,702.

Patented Nov. 3, 1885.



Witnesses.
W. Burke
L. B. Marshall.

Inventor.
J. N. Bodine
by Doubleday & Bliss attys

(No Model.)

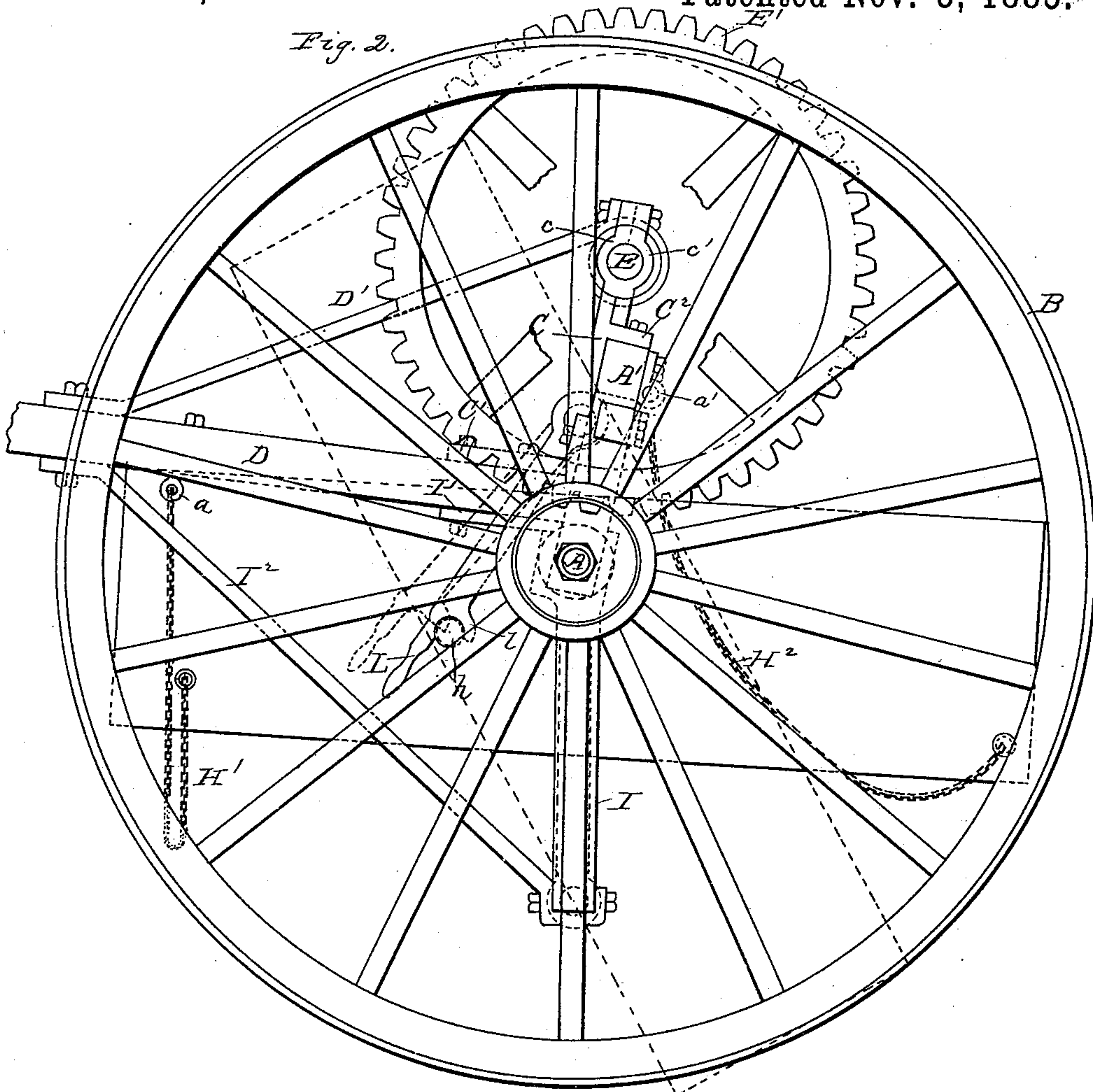
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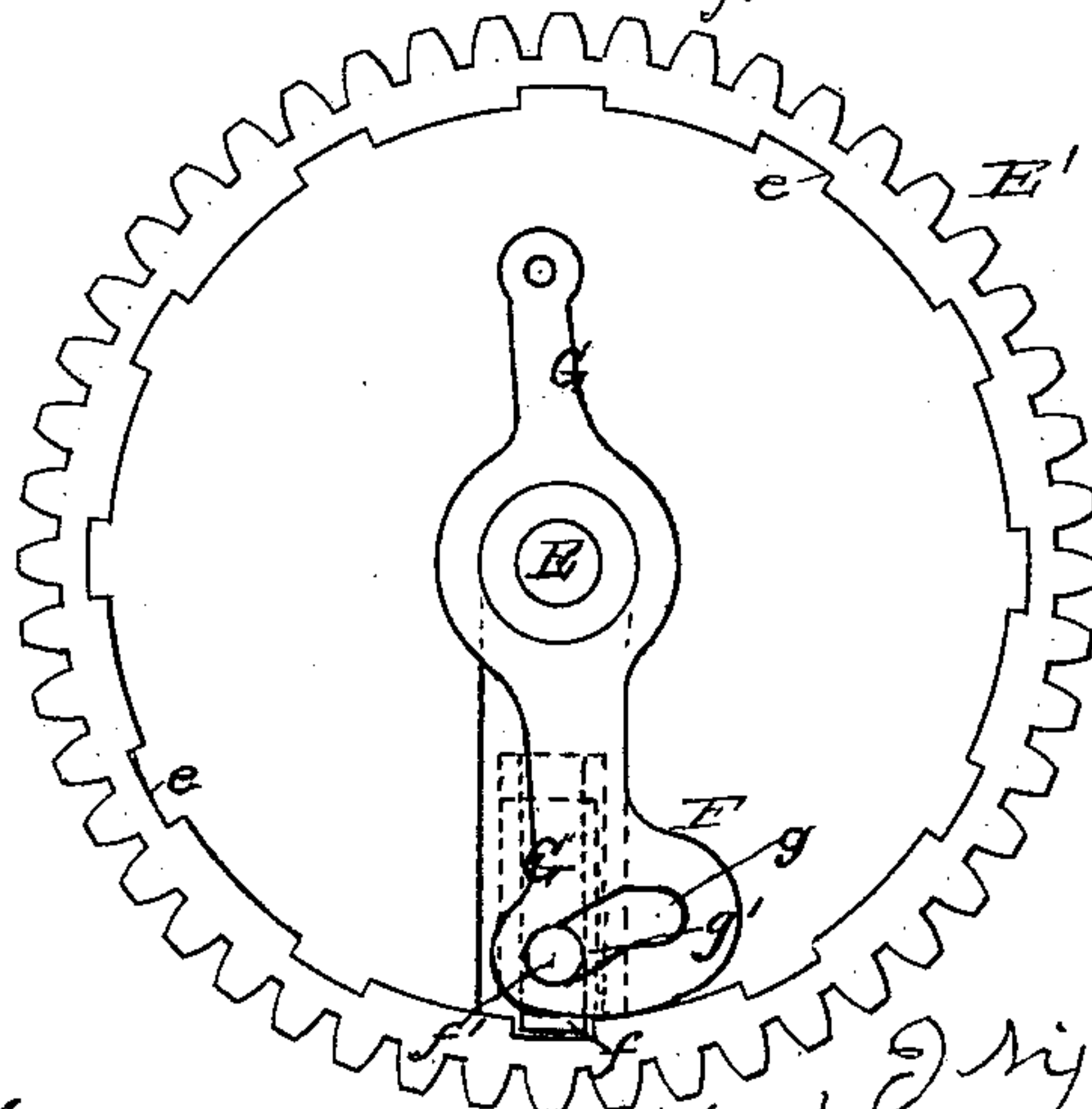
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Fig. 2.



x Fig. 5.



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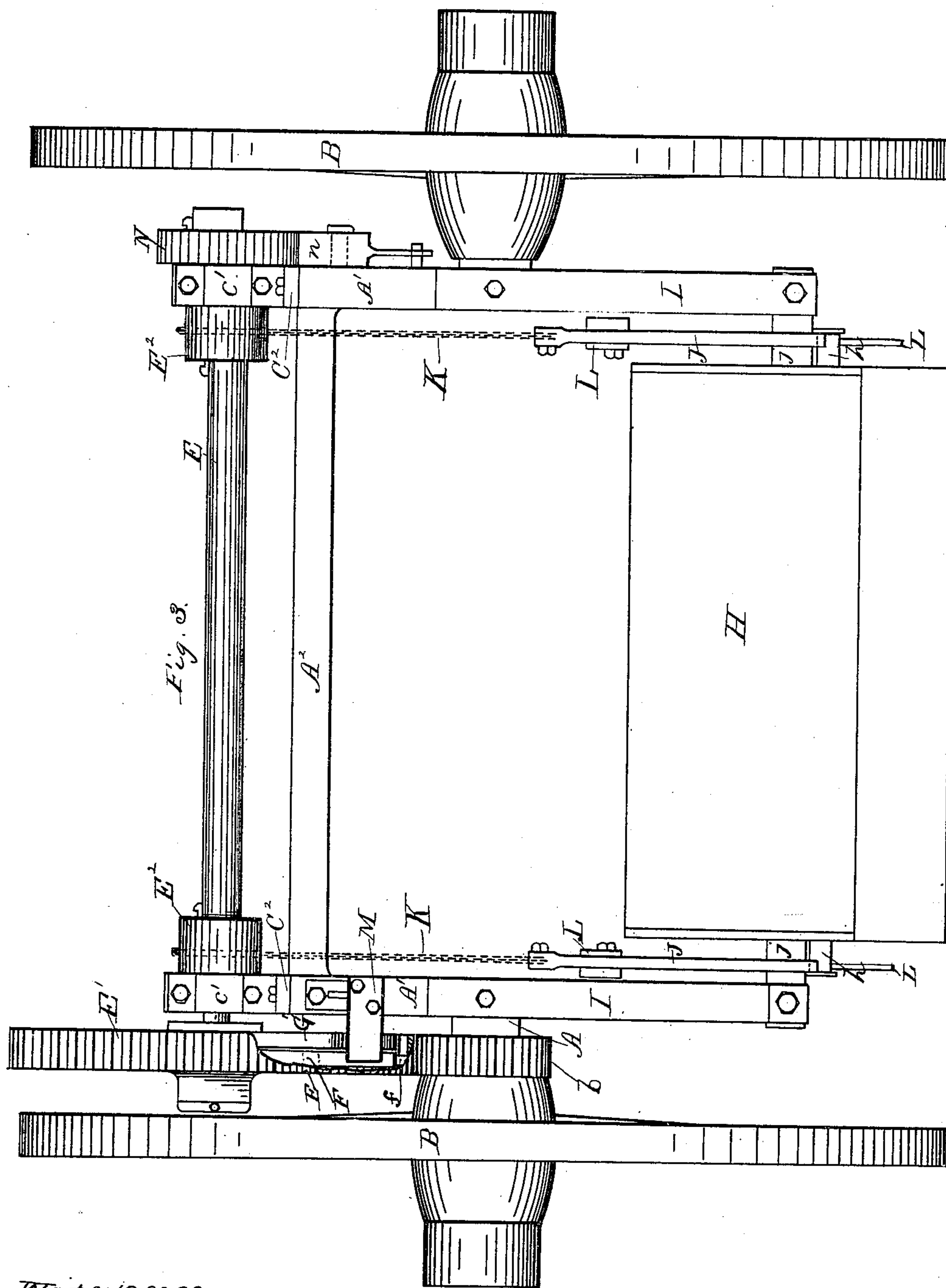
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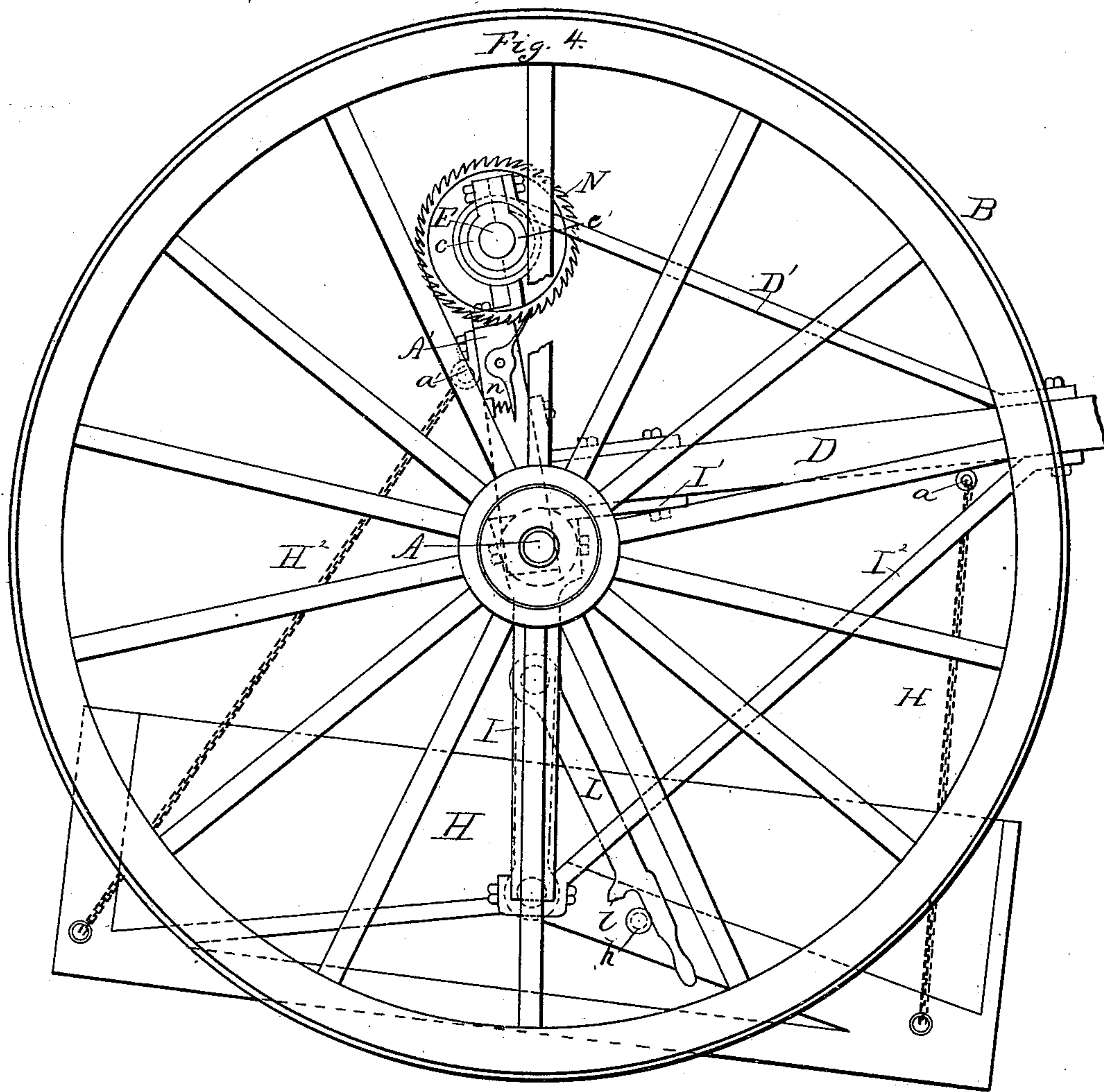
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4 Sheets—Sheet 4.

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UNITED STATES PATENT OFFICE.

J. NIXON BODINE, OF BRIDGETON, NEW JERSEY.

DIRT-CART.

SPECIFICATION forming part of Letters Patent No. 329,702, dated November 3, 1885.

Application filed May 21, 1884. Serial No. 132,284. (No model.)

To all whom it may concern:

Be it known that I, J. NIXON BODINE, a citizen of the United States, residing at Bridgeton, in the county of Cumberland and State of New Jersey, have invented certain new and useful Improvements in Dirt-Carts, of which the following is a specification, reference being had therein to the accompanying drawings.

Figure 1 is a side elevation of my invention with the dirt-cart in position for loading. Fig. 2 is a similar view, except that the dirt-cart is elevated in position for transportation. Fig. 3 is a rear elevation. Fig. 4 is a side elevation taken from the side of the cart opposite to that shown in Figs. 1 and 2, with the dirt-box let down in position for loading. Fig. 5 is a detached view of a part of the gearing looking in the direction of the arrow, Fig. 6. Fig. 6 is a central vertical section of Fig. 5, together with additional parts.

This invention relates more particularly to that class of excavators in which the dirt-box is automatically loaded, and then elevated for transportation.

Similar letters of reference relate to like parts in all the figures.

A A' A² is a crank-axle of which the parts A are adapted to receive the supporting-wheels B B, the parts A' A' being substantially vertical, and the part A² substantially horizontal. The supporting-wheels may be of any usual or approved construction, except that one or both of their hubs are adapted to receive and rotate spur-pinions b b. At each end of the crank-axle there is an angular standard, of which the part C is nearly vertical, the part C' is nearly horizontal, and the part C² is at right angles to the part C, these parts or sections C C² being bolted firmly to the nearly upright part A' of the crank-axle.

c is a semicircular bearing formed in the rear face of the upper projecting end of each angular standard, and, together with a cap, c', constitutes a bearing for one end of a shaft.

D is the thill, there being of course one on each side of the part, and D' D' are braces connecting the upper ends of the angular standards to the thills, the horizontal part C' of each standard being also bolted to one of the thills, and thus serving not only to support the standard, but also to connect the thills with the crank-axle. The shaft E, which

is supported at its ends in the bearings c c', carries at one or each end a cog-wheel, E', loosely mounted thereon, and meshing with the spur pinion or pinions b. The inner face of the cogged rim of each wheel E' is provided with a series of recesses or seats, e e. (See Fig. 5.) At one or each end of the shaft E there is a driving-arm, F, firmly keyed to the shaft, and provided with a sliding locking-bar, f. (See Fig. 6.) The outer end of the driving-arm may be slotted, the walls of the slots being either grooved or V-shaped in cross-section, so as to constitute ways to engage with correspondingly-shaped sides of the locking-bar f; or other suitable construction may be employed to mount the locking-bar upon the outer end of the driving-arm and permit it to slide on a line substantially radial to the shaft E.

G G' is a shipper, which may be hung on the shaft, or, as in this instance, be mounted upon the hub of the driving-arm, this hub being keyed or otherwise rigidly attached to the shaft E. The part G' of the shipper is in close contact with the driving-arm, and is provided with a cam-slot, g g', in its lower expanded end.

f' is a button-headed pin passing through this cam-slot and seated in the sliding locking-bar, so that when the shipper is oscillated about the shaft E and relatively to the driving-arm the engagement of the button-headed pin with the walls of the cam-slot will move the locking-plate longitudinally relatively to the driving-arm, in order that when the locking-bar is moved outwardly into one of the recesses e the rotation of the cogged wheel E' will rotate the shaft E and the drums E² E², which are keyed to the shaft just inside of its bearings c c'.

H is the dirt-box, having its front end open, and by preference either shod with metal or armed with a metal knife-edge to facilitate its entering the soil. The rear end of this dirt-box is by preference hinged at or near its upper edge, and is locked in position to retain the dirt by means of detachable fastenings, which can be released to discharge its load. This box is connected to the thills by means of chains H' H', which are attached to eyes or eyebolts a a, (which may be adjustable,) and is also connected at its rear ends to the crank-axle by means of chains H² and eyes

a' a'. At each side of the cart there is a guiding-post, *I*, provided at its upper end with a forwardly-projecting angle iron or arm, *I'*, which is bolted to both the crank-axle and to one of the thills, the rear fork or shank being also bolted to the crank-axle. Each of these slotted guiding-posts are also braced to one of the thills by means of a bar or brace, *I''*, which at its lower end receives the lower end of the post and is bolted thereto.

J is a hanger—one at each side of the cart—connected at its upper end by a chain with one of the drums *E''*, and at its lower end with the side wall of the dirt-box by means of a gudgeon, *j*, which is attached to the side of the dirt-box about midway between its front and rear ends or edges, and, projecting through the lower end of the hanger *J*, extends into or through the slot *i* of the slotted guiding-post. At each side of the dirt-box there is a latch-plate, *L*, pivoted at its upper end to the hanger *J*, and provided at its lower end with a jaw, *l*, adapted to engage with a stud, *h*, which projects outwardly from the sides of the wall of the dirt-box. By preference this stud *h* is button-headed, as is indicated in Figs. 1 and 3.

M m is a stop attached to the upright part *A'* of the crank-axle or other convenient part of the frame, and projecting into the path of the shipper *G G'*, there being a similar stop at each end of the machine when gears are used at both ends of the shaft, so that when the drums have revolved this far the locking-bar *f* shall be withdrawn from the recesses *e*, thus permitting the continued revolution of the cogged shell-wheels *E' E'* without further winding up of the chains *K K*. Of course the engagement of the spring-pawl *n* with the ratchet-wheel *N*, which is made fast to the shaft *E*, as plainly shown in Figs. 3 and 4, will prevent the unwinding of the chains after the locking-bar has been thus withdrawn, and will therefore support the cart in its elevated position until the pawl is withdrawn from its engagement with the ratchet-wheel.

The position of the stop *M m* in the path of rotation of the shipper *G G'* is plainly indicated in Figs. 3 and 6, the gear-wheel *E'* being broken away in Fig. 3 to show the relation of the parts to each other, the inner end, *m*, of the stop being broken away in Fig. 6 to show more clearly the relative arrangement of the shipper, the arm *F*, the locking-bar *f*, and the button-headed pin *f'*, which passes through the cam-slot *g g'*.

My cart may be operated as follows: Supposing the parts to be in the position shown in Figs. 1, 3, and 4, the ground having been previously loosened, (preferably by plowing,) one or more lead horses are attached and the cart drawn forward until a sufficient amount of earth has accumulated in the dirt-box. This earth should be moved by hoes or otherwise, and so disposed within the box that the box will tilt backward upon the gudgeons *j* until the studs *h h* engage with the jaws *l l* of the latch-plates. If now the shippers *G G'*

be moved into the position shown in Figs. 5 and 6, the continued forward movement of the cart will wind up the chains *K K* upon the drums *E'' E''* until the shippers come in contact with the stops *M m*, at which time the dirt-box will have been elevated to the position shown in full lines of Fig. 2, as will be readily understood without further explanation. The load of earth should be so disposed that it will be properly balanced upon the gudgeons *j j* without producing too great an upward thrust upon the locking-latches *L L*, the chains *H' H''* being of course slackened when the dirt-box is lifted. After reaching the place where it is desired to deposit the earth, the locking-latches *L L* may be moved into the positions shown in dotted lines, Fig. 2, when the dirt-box will automatically swing into the position shown in dotted lines of that Fig. 2, thus dumping the load. After the dirt-box has been tilted back to the position shown in full lines of Fig. 2, the cart may be hauled back for a new load, and after arriving at the place where it is desired to reload, the pawl *n* (shown in Figs. 3 and 4) may be withdrawn from engagement with the ratchet-wheel *N* on the shaft *E*, thus allowing the dirt-box to drop down in position to scoop up another load of earth, when the above-described operations may be repeated. It will of course be understood that when the dirt-box is being drawn forward to scoop up the earth it is propelled by the gudgeons, which are seated in the lower ends of the slotted guide-posts, so that the chains *H' H''* will keep the box from tilting upon its gudgeons sufficiently to interfere with properly loading the earth into it. The excess of weight behind the gudgeons should by preference be just enough to keep the stud *h* engaged with the jaw *l* when the box is being elevated and transported to a convenient dumping-place. It will be seen that the position and relative arrangement of the sliding hangers, to the lower ends of which the dirt-box is pivoted, the chains *H'*, the latch-plates *L*, and the studs *h* are such that this latch will serve to keep the front side or cutting-edge of the box down to scoop up the earth under some conditions, even though the rear chains, *H'' H''*, were omitted; hence I do not wish to be limited to the employment of these chains *H''*, although in practice I prefer to employ them. It is not essential that there should be cogged gearing at both ends of the shaft *E*, because under ordinary circumstances one will be sufficient to hoist the box; nor is it essential to use the crank-axle, because an ordinary straight one might be used if the supporting-wheels are large enough to permit the dirt-box to be hoisted and dumped.

While I prefer to make the ends of the cam-slot *g g'* practically tangential to a radial line intersecting the shaft *G* in order to hold the shipper in position after adjustment, yet I do not wish to be limited to such construction; nor do I wish to be limited to arranging the shaft *E* above the axle, because it might be be-

low, in which case it might be supported in boxes directly to the vertical parts A A', or by hangers which project downwardly from the horizontal part of the crank-axle or other axle.

5 So, also, I propose to use a friction wheel and brake of any usual or approved construction—such, for instance, as a strap surrounding a friction-wheel, with a lever to force it against the rim of the wheel, which latter may be cast
10 upon the side of the ratchet-wheel, or upon the side of the gear-wheel, or upon one of the drums. Again, I propose under some circumstances to mount the pinion *b*, or both pinions, where two are used, upon the axle of the cart-
15 wheel in such manner that it can slide longitudinally of the wheel, where it may be thrown into and out of mesh with the gear-wheel E; or, if preferred, the large gear-wheel may be slipped horizontally in or out of gear with the
20 small pinion.

What I claim is—

1. In a dirt-cart, the combination of supporting-wheels and an axle, the upright guides, the hangers sliding on the guides, the dirt-box
25 pivoted to the hangers, the chains supporting the front edge of the box against downward thrust, and a latch pivoted at its upper end to a sliding hanger, and engaging at its lower end with the dirt-box, and adapted to prevent
30 the front edge of the dirt-box from tilting upward, substantially as set forth.

2. In a dirt-cart, the combination of supporting-wheels and an axle, the upright guides, the hangers sliding in the guides, the dirt-box
35 pivoted to the hangers, the latch pivoted to and traveling with the hangers, the lifting-chains, means for winding up the chains and lifting the dirt-box to a predetermined height, means for automatically stopping the further
40 winding of the chains, and means for supporting the dirt-box after the winding of the chains has ceased, substantially as set forth.

3. In a dirt-cart, the combination of supporting-wheels and an axle, the upright guides,

the hangers sliding on the guides, the dirt- 45 box pivoted to the hangers, the lifting-chains, means for winding the chains and lifting the dirt-box to a predetermined height, means for automatically stopping the winding of the chains, and means for supporting the box 50 after the winding of the chains has ceased, substantially as set forth.

4. In a dirt-cart, the combination of supporting-wheels and an axle, the upright guides, the hangers sliding in the guides, the dirt-box 55 pivoted to the hangers, chains connecting the rear side of the dirt-box with the supporting-frame, chains connecting the front side of the dirt-box with the supporting-frame, the chains which lift the hangers, and means for wind- 60 ing the lifting-chains and elevating the dirt-box to a predetermined height, and means for stopping the winding of the chains after the dirt-box has been elevated to the predetermined height, substantially as set forth. 65

5. In a dirt-cart, the combination of supporting-wheels and an axle, the hangers, the dirt-box pivoted to the hangers, a latch for preventing the box from tilting during transportation, the lifting-chains, a general wind- 70 ing mechanism operated by the supporting-wheels, and means for automatically disconnecting the chain-winding mechanism from the wheels when the dirt-box has been elevated to a predetermined height, substantially 75 as set forth.

6. In a dirt-cart, as a means for winding the lifting-chains, the combination of the shaft E, the cogged wheel E', provided with seats *e e*, the arm F, the latch and the shipper, and the 80 pinion *h*, substantially as set forth.

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

J. NIXON BODINE.

Witnesses:

J. BOYD NIXON,

THOS. W. TRENCHARD.