

(No Model.)

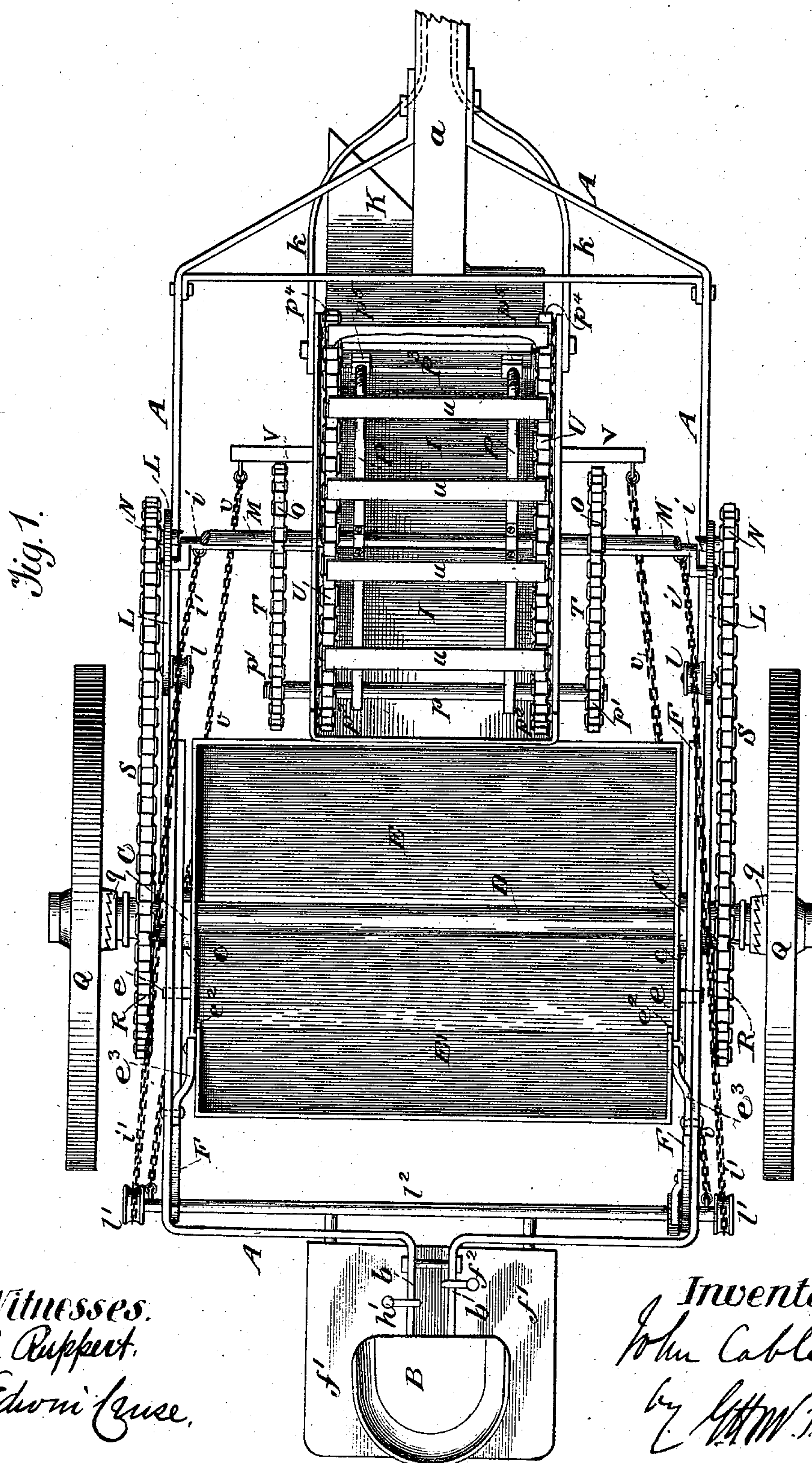
3 Sheets—Sheet 1.

J. CABLE.

EXCAVATOR AND SELF LOADING CONVEYER.

No. 376,708.

Patented Jan. 17, 1888.



Witnesses.
A. Ruppert,
Edwin Luse,

Inventor:
John Cable
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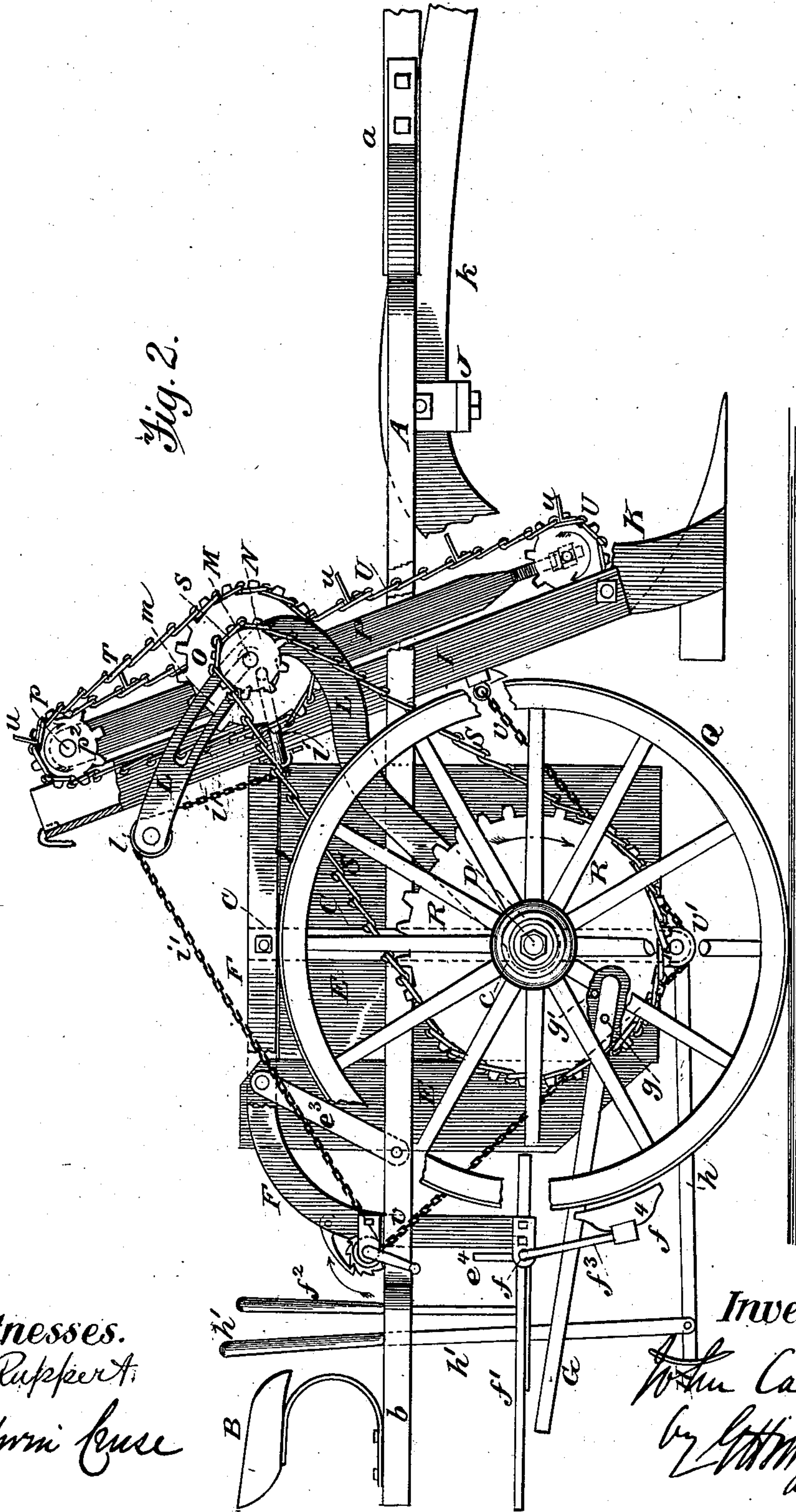
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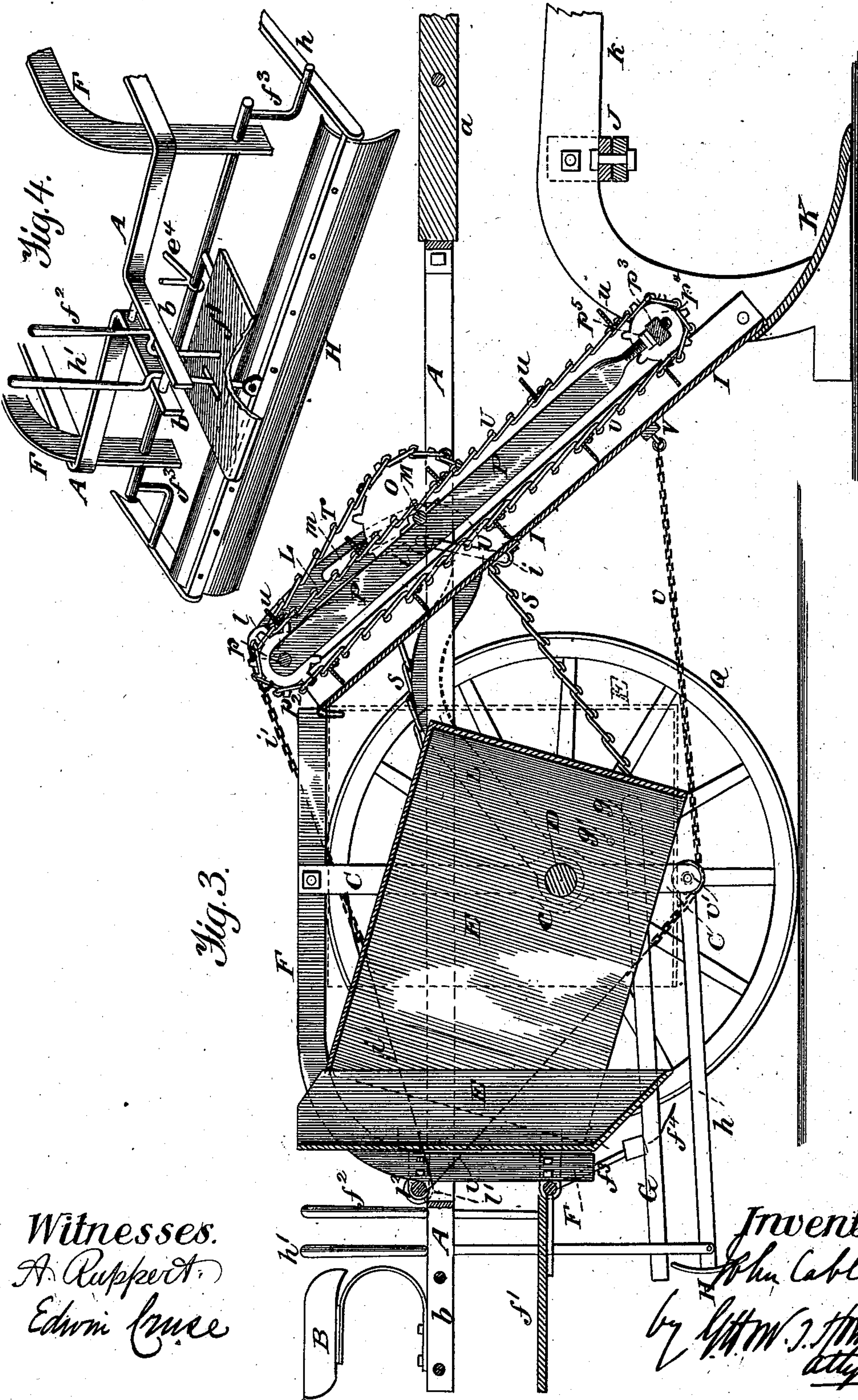
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A. Ruppert,
Edwin Bruce

Inventor:
J. Cable,
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UNITED STATES PATENT OFFICE.

JOHN CABLE, OF CABLE, MINNESOTA.

EXCAVATOR AND SELF-LOADING CONVEYER.

SPECIFICATION forming part of Letters Patent No. 376,708, dated January 17, 1888.

Application filed April 12, 1887. Serial No. 234,494. (No model.)

To all whom it may concern:

Be it known that I, JOHN CABLE, of Cable, in the county of Sherburne and State of Minnesota, have invented certain new and useful

Improvements in Excavators and Self-Loading Conveyers, of which the following is a specification, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature and object of my invention will be fully set forth in the following specification and claims.

In the drawings, Figure 1 is a plan view; Fig. 2, a side elevation; Fig. 3, a vertical longitudinal section, and Fig. 4 a detached detail.

Similar letters of reference indicate similar parts in the respective figures.

A is the frame of the machine, to the front of which is attached, in any well-known manner, the pole *a*. The rear part of the frame is formed into two arms, *b b*, which serve to support the driver's seat B, and also as rests or catches for two levers, as will be hereinafter described.

On the inner side of the frame A, and on each side of the machine, is secured, at a right angle to the frame, a bar, C, extending above and below the frame. These bars C are enlarged at *c* to permit the axle D to pass through them, and thus form the bearing or support for the frame of the machine.

On each side of the machine a bent arm, F, is bolted to the upper part of the bar C and also to the frame A, extending a short distance below the frame. A rod, *f*, is loosely mounted in these arms below the frame A, and rigidly attached to this rod *f* is a platform, *f'*, which serves as a foot-rest for the driver. The platform is held up by means of the lever *f*², which is bent so as to rest on one of the arms *b* of the frame A. At each end of the rod *f* is an arm, *f*³, to which arms are attached the brake-shoes *f*⁴. When it is required to apply the brakes, it is only necessary to disengage the lever *f*² from the arm *b*, when the platform will drop down and the driver can apply the necessary force with his feet.

A hopper formed of two sections, E E', is supported in the following manner: The section E is sustained by the axle D and adapted to be revolved thereon. The section E', which

performs the function of a door, is suspended to the frame A by means of the links *e*³. The section E is provided on each side with a lug, *e*, which engages with the under side of the frame A and prevents it from tilting forward, which it would have a tendency to do while being filled. The section E' has an inclined bottom, and is made slightly smaller than the section E, so as to fit within it, but is prevented from entering too far by means of lugs *e*² on the inner faces of the sides of section E. The section E' is held in contact with the section E by means of an angle-bar, *e*⁴, mounted on the rod *f*, and can be operated by the foot of the driver. A lever, G, is pivoted to the side of the section E at *g*, the short arm of the lever coming in contact with a pin, *g'*, on the side of said section. This lever is for the purpose of tilting the section E when the contents of the hopper are to be discharged.

H is a leveler, which extends across the machine at its rear and is hinged to the lower ends of the bars C by means of the rods *h*. This leveler can be lifted up and secured, when not in use, by means of the lever *h'*, which passes up through the platform *f'*, and is bent to engage with one of the arms *b* of the frame A, thus being under the control of the driver.

I is a plate, of steel or other suitable metal, having its sides flanged, and being provided with a hook at the top of each flange to engage with the top of the hopper when in use. To the lower end of the plate I are bolted, one to each flange, two plow-beams, *k k*, to which is attached the plow K. A draft evener, J, is secured to the plow-beams *k*, to which the horses are hitched, both for the purpose of plowing and conveying.

L L are bent arms pivoted, one on each side of the machine, on the axle D. A shaft, M, is mounted in these arms, having a bearing on the bottom of the slot *m*. This slot is for the purpose of giving play to the elevating mechanism in case any large lumps should get between the plate I and the scrapers, to be hereinafter described. The shaft M extends beyond the arms L, and on each of its ends is mounted a sprocket-wheel, N. On the same shaft, but inside of the arms L, are mounted two sprocket-wheels, O.

P P are bars supported on the shaft M by means of boxes bolted on them. The upper

ends of these bars are connected by means of the shaft p , on which are mounted the sprocket-wheels $p' p'$ and $p^2 p^2$. The lower ends of the bars are drawn down and screw-threaded, and are connected by means of the rod p^3 , through which they pass. The rod p^3 , which is rectangular, is rounded at its ends to form a journal for the sprocket-wheels p^4 .

$Q Q$ are the draft-wheels, and $R R$ sprocket-wheels loosely mounted on the hubs of the wheels $Q Q$, each of said sprocket-wheels being provided with a clutch, q , adapted to engage with a similar clutch on the hub of one of the wheels Q . The engagement or disengagement can be made in any well known manner.

Chains $S S$ pass over the sprocket-wheels N and R , and constitute the main driving-chains.

$T T$ are chains which pass over the sprocket-wheels O and p' .

$U U$ are chains which pass over the wheels p^2 and p^4 . The tension of these chains U can be adjusted by means of the jam-nuts p^5 on the threaded ends of the bars P . Secured to the chains $U U$ are scrapers u , formed of angle-iron, which scrapers extend across the plate I and serve to push the dirt up the plate into the hopper.

To the back of the plate I is hinged an angle-bar, i , the ends of which rest on the frame A and are journaled in the arms $L L$. Attached to this angle-bar i , close to the bend at each end, are chains $i' i'$, which pass over a sheave, l , at the top of each of the arms L . The chains $i' i'$ are attached to reels l' on a shaft, l^2 , having bearings in the frame A at its rear end. The chains $i' i'$ are adapted to be wound upon the reels l' .

To the plate I is attached another bar, V , to each end of which is secured a chain, v . The said chain passes under a sheave, v' , on the lower end of the bar C , and is secured to the shaft l^2 , on which it is adapted to be wound. The shaft l^2 is provided with a crank and with a ratchet-and-pawl mechanism of ordinary construction.

The operation of the machine is as follows: Supposing the plow and elevating mechanism to be in the position shown in Fig. 3, the machine is started, and, the sprocket-wheels R being thrown in gear with the draft-wheels Q , motion will be imparted to the chains $U U$ and scrapers u , in the direction indicated by the arrow, through the medium of the chains S and T , which will move in the direction indicated by their arrows. As the earth is loosened by the plow it will be forced up the inclined face of said plow until it is caught by the scrapers and carried up the inclined plate I and dumped into the hopper. When the hopper is sufficiently full, the machine must be stopped. Now, by winding the shaft l^2 , the chains i' will be wound on their reels, and the plate I , and with it the plow, lifted up independently of the elevating mechanism until the angle-bar i causes said plate I to jam with the elevating mechanism, when the arms L

will be lifted and will carry with them the plate I , the plow, and the elevating mechanism. At the same time the chain v will be wound on the shaft l^2 , and thus draw the bottom of the plate and also the plow and the elevating mechanism back toward the hopper until they will be in the position shown in Fig. 2, the ratchet-and-pawl mechanism on the shaft l serving to securely hold them in such position.

It will be seen that the chains i' have a longer distance to travel than the chains v , and the travel in the same time is accomplished by winding the chains i' on reels which have diameters greater than that of the shaft l^2 , on which the chains v are wound.

In order to discharge the contents of the hopper, the angle-bar e^1 is thrown out of contact with the section E' , when the weight of the dirt will force it back, and by pressing on the lever G the section E can be tilted sufficiently to discharge all its contents. By securing the lever G to the section E in the manner described, it will be seen that it is necessary only to use the lever until the equilibrium of the section E is overcome, when it will swing forward of its own momentum and independently of the lever, the long arm of which will rest on the leveler H , as shown in Fig. 3. The object and manner of operating the brakes and the leveler are obvious and need no further description here.

Having described my invention, I claim—

1. In an excavator and self-loading conveyer, a hopper in two sections, a plate having a plow attached thereto, and scrapers adapted to carry dirt up said plate, combined with sprocket-wheels mounted on the hubs of the draft-wheels, and adapted to engage therewith by means of a clutch mechanism, and a system of sprocket-wheels and chains for imparting motion to said scrapers, substantially as described.

2. A plate having a plow attached thereto, scrapers adapted to carry dirt up said plate, and a system of sprocket-wheels and chains for imparting motion to said scrapers from the draft-wheels, combined with a hopper in two sections, substantially as described.

3. In an excavator and conveyer, a hopper formed of two sections, one section being supported by the axle of the machine and adapted to revolve thereon, and the other section being suspended by the frame of the machine and adapted to perform the function of a door, substantially as described.

4. In an excavator and conveyer, a hopper formed of two sections, one section being supported by the axle of the machine and adapted to revolve thereon, and having a lever pivoted on one side and adapted to come in contact with a pin for the purpose of tilting it, and the other section being suspended by the frame of the machine, and adapted to enter slightly within the former section, combined with an angle-iron mounted on a shaft and adapted to hold the latter in contact with the former section, substantially as described.

5. In an excavator and conveyer, a platform

rigidly secured to a shaft mounted in bearings secured to the frame of the machine, said shaft having arms at its ends carrying brake-shoes, combined with a lever supporting the platform and adapted to release it in order to apply the brakes, substantially as described.

6. In an excavator and conveyer, an elevating mechanism and a plate having an angle-bar hinged to the back thereof, said bar being journaled in arms pivoted on the axle, and also resting on the frame of the machine, whereby the said arms are supported, combined with chains attached to said bar and passing over sheaves on the upper ends of said arms and connected to reels on a shaft mounted in the rear end of the frame of the machine, and on which they are adapted to be wound, whereby the said plate and elevating mechanism can be lifted, substantially as described.

7. In an excavator and conveyer, an elevating mechanism and a plate having an angle-bar hinged to the back thereof, said bar being journaled in arms pivoted on the axle, and

also resting on the frame of the machine, whereby said arms are supported, and chains leading from said angle-bar over sheaves on the upper end of said arms to reels on a shaft mounted in the rear end of the frame, combined with a bar secured to the back of the said plate near its lower end, and chains leading from said bar undersheaves on the end of a bar secured to the frame of the machine to the shaft aforesaid, whereby on revolving the shaft the plate and the elevating mechanism are lifted and at the same time drawn in toward the machine, substantially as described.

8. In an excavator and self-loading conveyer, the combination of a leveler, H, bars C, rods h, bent lever h', and arm b of the frame A, substantially as set forth.

In testimony whereof I have hereunto set my hand and seal.

JOHN CABLE. [L. s.]

Witnesses:

E. CRUSE,

C. B. THOMPSON.