

(No Model.)

3 Sheets—Sheet 1.

W. E. JACOBS.

WHEELED SCRAPER OR EXCAVATOR.

No. 289,841.

Patented Dec. 11, 1883.

Fig 1.

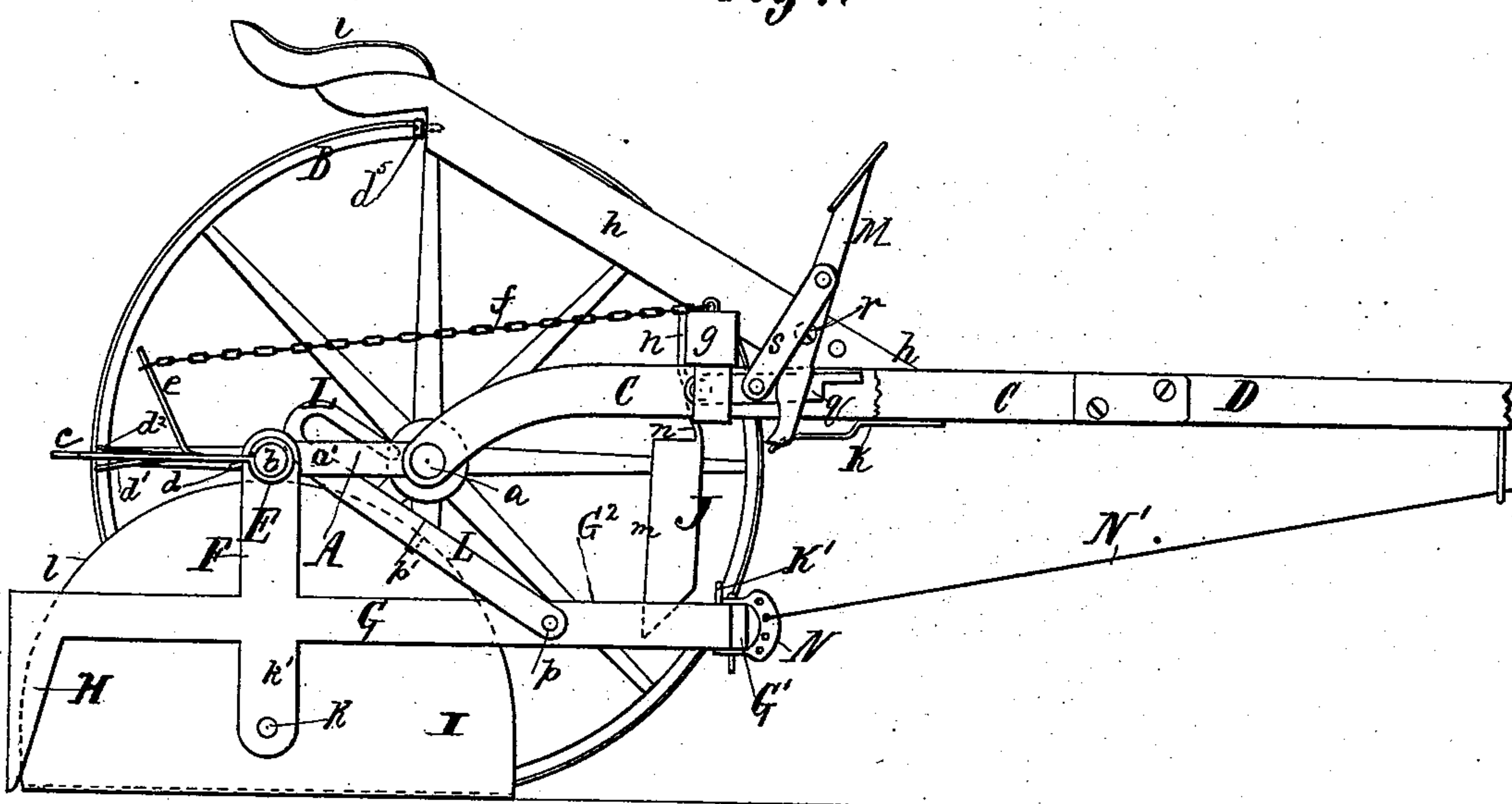
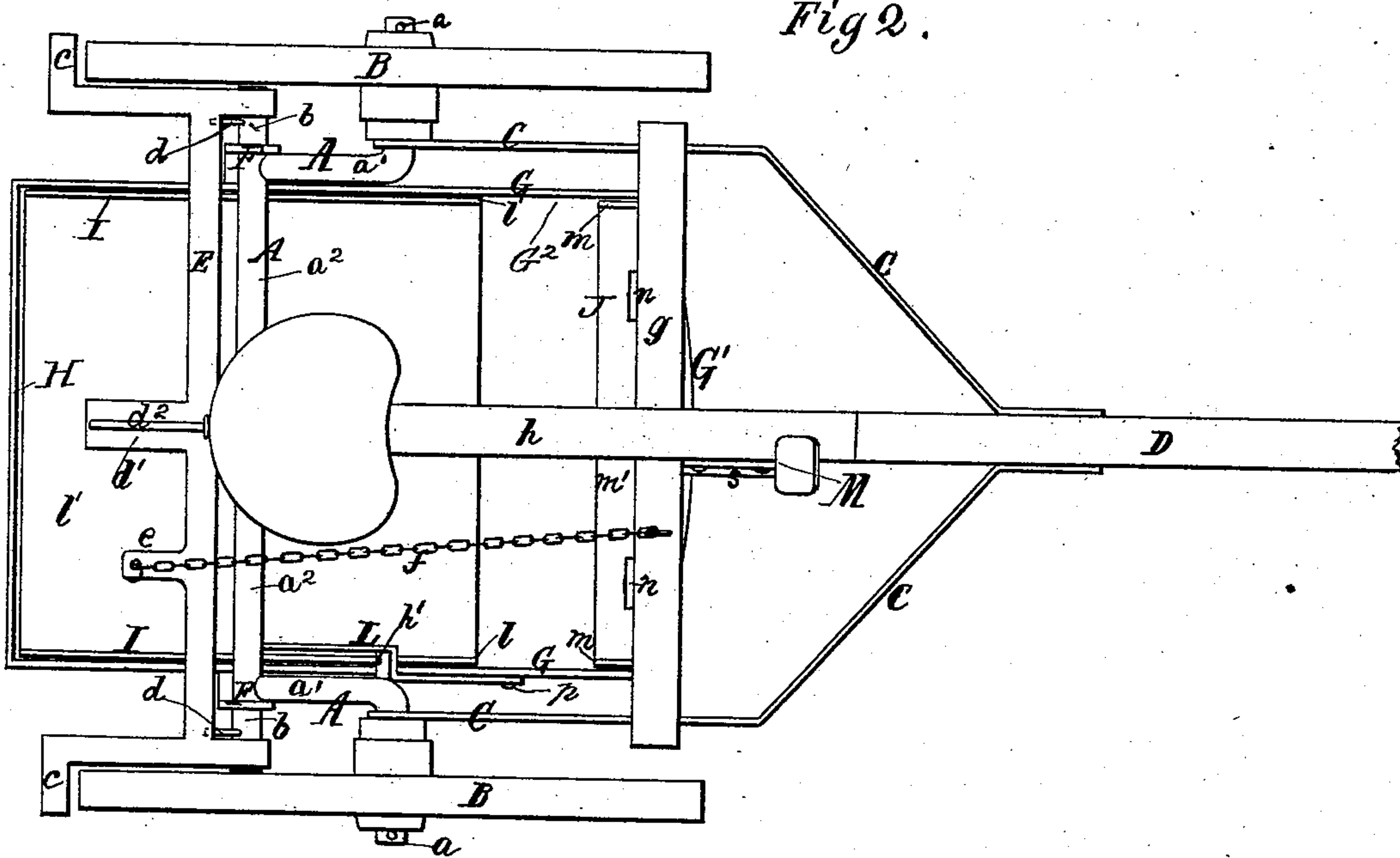


Fig 2.



Witnesses:

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Inventor:

William E. Jacobs
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Jenewick & Lawrence

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Fig 3.

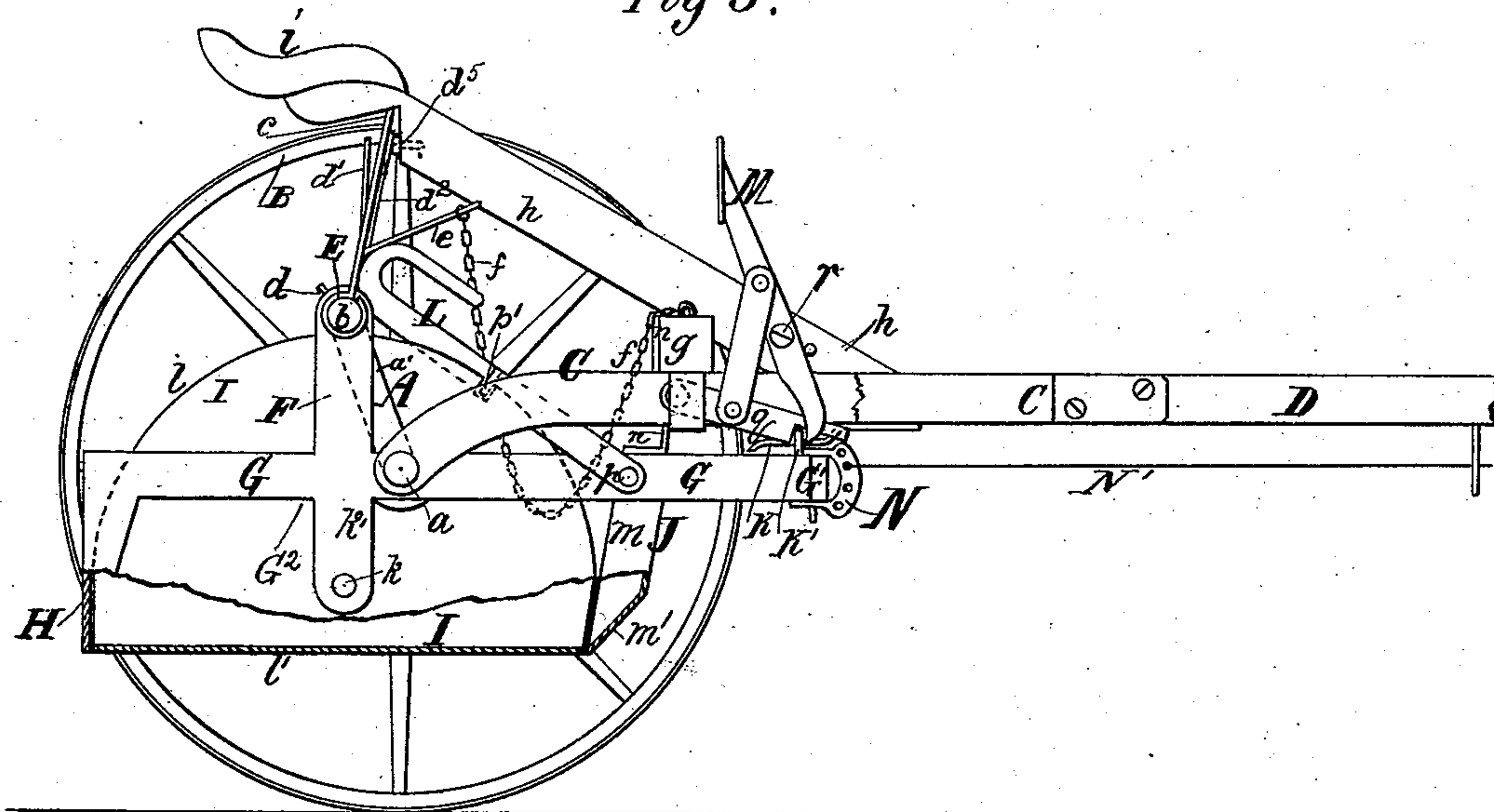
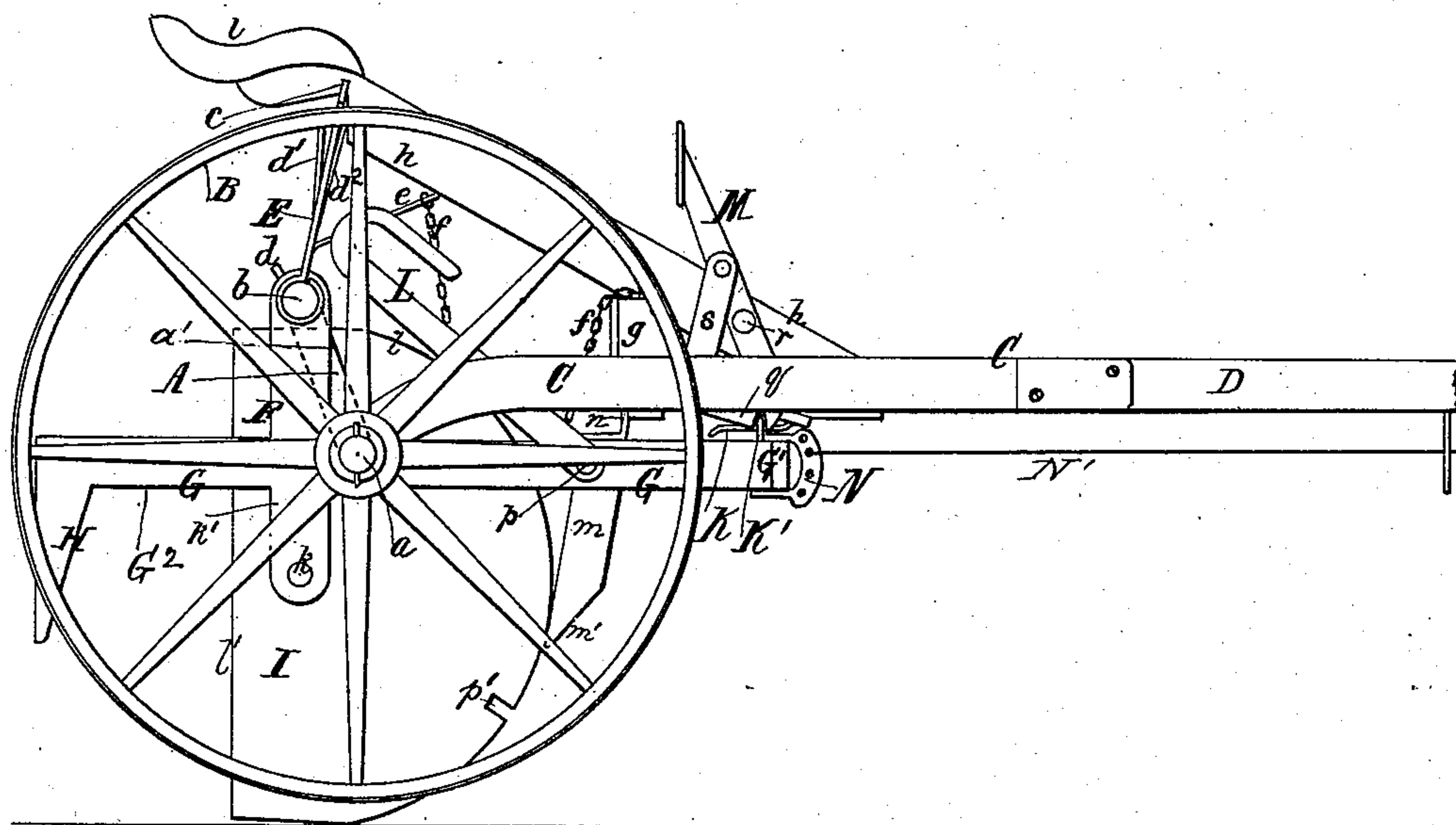


Fig 4.



Witnesses:

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Fig. 5.

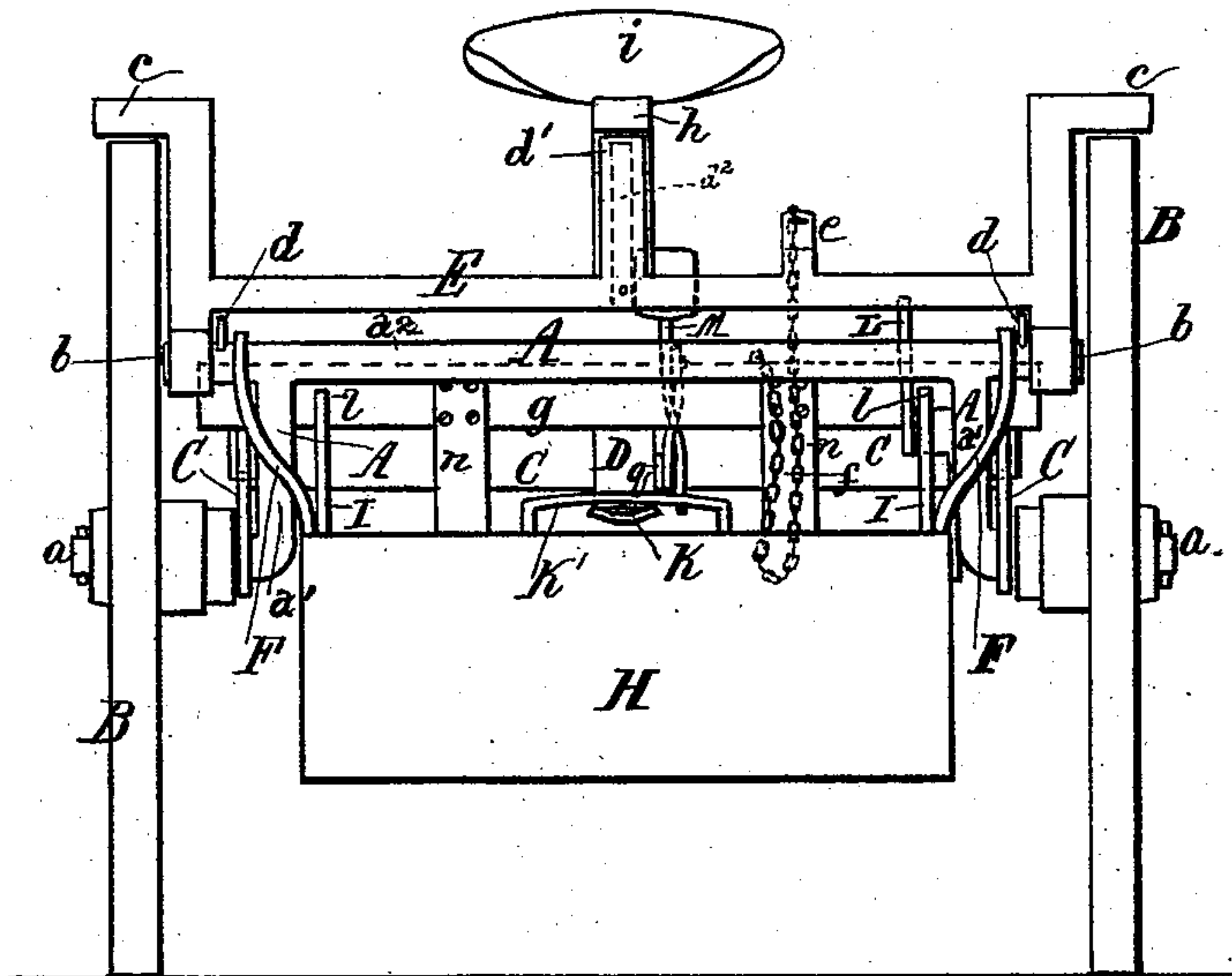
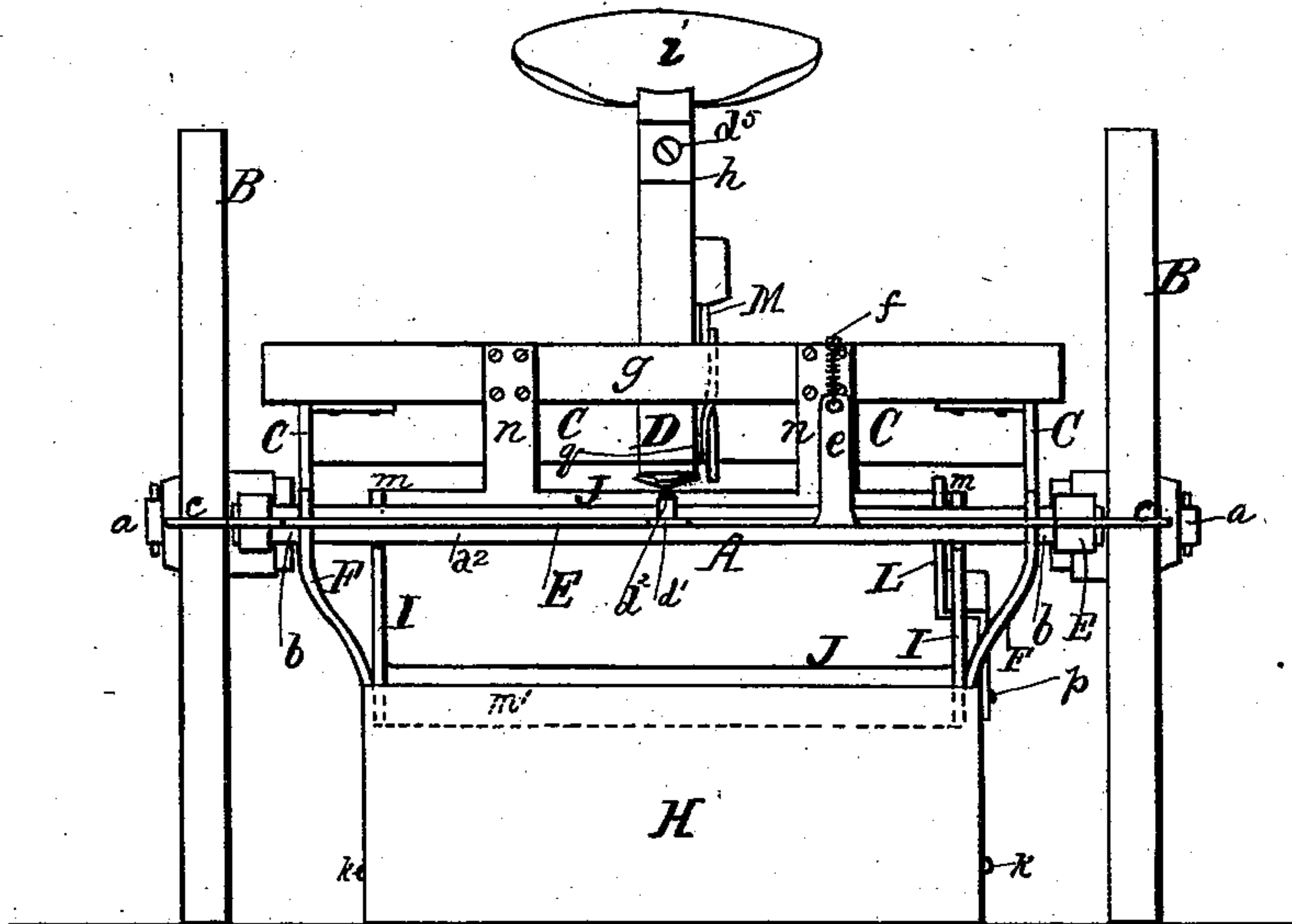


Fig. 6.



Witnesses:

B. C. Fenwick
Robt. L. Fenwick

Inventor:

William E. Jacobs
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UNITED STATES PATENT OFFICE.

WILLIAM E. JACOBS, OF COLUMBUS, OHIO.

WHEELED SCRAPER OR EXCAVATOR.

SPECIFICATION forming part of Letters Patent No. 289,841, dated December 11, 1883.

Application filed August 9, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. JACOBS, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a new and Improved Wheel Scraper or Excavator, of which the following is a specification.

My invention relates to a wheeled scraper or excavator with a bowl which revolves on pivots; and the nature of the improvements made by me will be fully understood from the following description and claims, in connection with the accompanying drawings, in which latter—

Figure 1 is a side elevation of my improved wheeled scraper or excavator as adjusted for collecting a load. Fig. 2 is a plan view of Fig. 1. Fig. 3 is a side elevation and partial section of the wheeled scraper or excavator as raised with its load and latched, the right-hand supporting-wheel being removed from its short journal on the crank-axle, and portions of the scraper broken out and shown in section. Fig. 4 is a side elevation of the wheeled scraper complete, the scraper-bowl being unlatched and shown partly revolved. The supporting-wheels are also shown raised slightly above the ground, in order to allow the scraper-bowl to make its revolution. Fig. 5 is a rear view of the scraper with the parts adjusted as in Fig. 3; and Fig. 6 is a similar view to Fig. 5, showing the parts adjusted as in Fig. 1.

A in the views of the drawings represents a crank-axle, consisting of crank-arms a' , short journals aa , and a long axial portion, a^2 . On the journals aa wheels B B are fitted so as to revolve loosely, and inside the wheels B B on the journals aa side bars, forming hounds C C, are hinged loosely, said hounds being connected rigidly to a tongue or pole, D, of the wheeled scraper, upon which is fastened a cross-bar, g , for supporting a standard, h , with driver's seat i , as shown. The part a^2 of the crank-axle is provided with short arms or journal-extensions bb , directly opposite the journals aa , and upon them is hung loosely a locking brake-bar, E, having shoes cc , which bear upon and lock the wheels B B to the crank-axle A, so as to cause the axle and

wheels to revolve together when it is desired to elevate the loaded scraper-bowl. The brake-bar is allowed limited vibration on the arms or extensions bb , in order that it may be moved eccentrically against and from the wheels at times when it is necessary to lock the axle and wheels together or to unlock the same. The downward movement of the brake-bar E is controlled by pins dd , while its upward and forward movements while coming into action are arrested by the periphery of the wheels B. At the middle of the brake-bar E a spring, d^2 , is applied upon an extension or releasing lug, d' , of the bar, for the purpose of throwing the brake-shoes back and holding them off the wheels after they have been released by the lug d' striking a set-screw, d^3 , in the rear shoulder of the standard h , immediately under the driver's seat, during the operation of elevating the load for transportation to the place of "dump." On the right side of the lug d' of the brake-bar a lever-arm, e , is provided, and to this arm a chain, f , is fastened by one of its ends and carried forward and fastened by its other end to a staple or pin of the cross-bar g .

On the extensions or arms bb of the crank-axle, and inside of the arms which carry the brake-shoes, is hung a swinging frame, G^2 , comprising longitudinal side bars, G G, vertical hanger and supporting arms F and k' , and cross connecting-bars $G'H$. This frame forms a support and bail for a revolving scraper, and if the scraper is not formed with a rear tail-board the portion H may be constructed, as shown, to form and serve as such end-board or tail-piece. The arms F of this frame are loosely fitted by eyes to the extensions bb of the crank-axle, while the scraper-bowl I is connected by a pivot, k , to the arms k' as low down as possible, as shown in the drawings. The scraper I is applied within the side bars and tail-piece, and it is formed with both its front and rear ends open, or it may have its rear end closed, sides consist of half-circular plates ll , and its bottom of a plane-surfaced plate, l' . For forming a front end for the scraper when it is in its raised position, as in Figs. 3 and 5, a stationary plate, J, with narrow end flanges, mm , and a narrow inclined

bottom flange, m' , is provided, the same being hung pendent from the cross-bar g by means of hangers n .

To the front piece, G' , of the frame G^2 a clevis-iron, N , is applied, and to this iron the draft-rod N' of the team is fastened. On the under side of the pole or tongue D a supporting-iron, K , is applied, and the rear end of this iron enters a loop, K' , provided on the upper side of the cross-piece G' of the said frame, and thereby supports the scraper when it is raised to the position shown in Figs. 3 and 5.

In order to latch the revolving bowl to the bar G' while the parts are in the position shown in Figs. 1, 2, and 6, a lever-latch, L , is pivoted at p to one of the side bars, G , of the frame G^2 , and a notch, p' , is formed in the segmental edge of one of the sides of the scraper-bowl, and by dropping the lever-latch L into the notch p the bowl will be held from revolving; or by withdrawing the lever-latch L from said notch the bowl will be free to revolve. The lever-latch L is angularly bent across the edge of the bowl, as shown in Fig. 2, and is formed with a hooking end, by which it can be raised with the toe of the operator's boot or with the hand.

For locking the frame G^2 and the scraper-bowl in the raised position shown in Figs. 3 and 5, a shouldered or notched latch, q , is pivoted upon the tongue or pole D , and the shoulder of this latch falls behind the loop K' immediately before the brake-shoes are released and thrown back, thereby preventing a disconnection from said loop by a backward movement on the iron K . A treadle-lever, M , pivoted at r to the standard h of the driver's seat i , and extended down below and forward of the loop K' , is connected by a link, s , to the latch q , and by the driver pressing his foot against this treadle-lever the latch q is raised and the frame G^2 and scraper-bowl are caused to drop backward off the iron K of the tongue.

It will be seen that the pivots of the scraper-bowl are centrally located, so that the bowl may be revolved in either direction for dumping its load. By a slight pressure on either the front or rear end of the bowl, its revolution is secured when the latch L is raised out of the notch p' . It will also be seen that the arrangement of the crank-axle with scraper-bowl and frame G^2 upon it is such that the descent of the axle, bowl, and said frame by a downward and backward movement will be insured when the latch q is moved upward. It will also be seen that the suspension of the frame G^2 and scraper upon the crank-axle by the hanger and supporting-arm F , and drawing it by the longitudinal side bars, G , and front clevis-bar, G' , of frame G^2 , together with the latching of the bowl, insure a level position of the scraper-bowl while collecting a load; and while this is the case the frame G^2 is free to turn on the axle and the bowl to revolve on its pivots at such times as are nec-

essary during the operation of the wheeled scraper.

With the latching device L , provided for latching the scraper-bowl, and the latching device q , for latching up the frame G^2 and scraper-bowl, as shown in Figs. 3 and 5, it will be seen that while the bowl will be automatically latched after it has revolved entirely around in either direction the frame G^2 and bowl will also be automatically latched up when the scraper has been raised from the position shown in Figs. 1 and 2 to the position shown in Figs. 3 and 5, in which position it is raised by the action of the team and wheels B , as follows: The driver presses his foot upon the chain f , and thereby causes the brake-bar E to apply the brake-shoes c bindingly against the periphery of the wheels B , and the locking-contact thus established between the shoes and the wheels causes the wheels, through the power of the team, to revolve the crank-axle, the wheels and axle moving together until the crank-arms stand nearly vertical and the scraper-bowl and frame G^2 thereof are in a position for being latched to the tongue, whereupon the latching takes place automatically, and the further movement of the crank-axle and wheels together is arrested by the lug d' striking the set-screw d^5 at the rear end of the seat-standard, and thereby releasing the brake-shoes, so that they may be thrown by the spring d^2 back and off from the wheels B . The driver, when he arrives at the place of dump, can effect the revolution of the scraper-bowl in either direction, so as to discharge the load of dirt which may have been collected, by simply lifting the latch L out of the notch p' , applying slight pressure to either end of the bowl, and keeping the team in motion.

The operation of the scraper described may be stated briefly thus: The machine is driven to the place for its load, while its bowl is adjusted as in Fig. 3, which is about ten or twelve inches above the level of the road. From this position the frame G^2 and bowl are lowered by pressing the foot on the treadle-lever M , and being thus lowered the team draws the scraper forward until a load is collected. Thereupon the driver presses his foot upon the chain f , and thereby causes the crank-axle A , wheels B , frame G^2 , and scraper-bowl I to move together and assume the position shown in Figs. 3 and 5, in which position the latch q catches the scraper and frame, while the lug d' , by striking the set-screw d^5 , releases the brake and allows the spring to throw it back to its normal position, out of contact with the wheels. The load of dirt, when the scraper is raised, is confined by the sides and bottom of the scraper, the end piece, H , of the frame G^2 , or by an end piece on the scraper itself, and the flanged pendent front piece, J . When the team arrives with the load at the place of dump, the driver lifts the latch L , and thereby frees the scraper-bowl I , so that it may be caused to revolve in either direction completely

around, and thereby dump all the dirt it contains and relatch itself in position for a new scraping or excavating operation.

In practice, a boy or any person who can manage a team can operate my improved scraper with ease without leaving his seat, and in dumping there is no chance of any of the dirt remaining in the scraper-bowl, as the scraper revolves entirely over and around.

10 The manner in which the scraper-bowl is constructed and hung by frame G^2 to extensions b of the crank-axle A and latched, and whereby the bowl is enabled to keep level the same as though its position were a given fixed one, 15 is a very important feature of my invention, as the bowl is by this means prevented from being easily upset or turned over when scraping or excavating. Another important feature is the location of the pivots of the bowl at a 20 central point very near its bottom, whereby it can be easily tilted and turned over when unlatched. Another important feature is the provision made for a complete revolution of the scraper-bowl in either a forward or backward 25 direction by the slightest pressure of the operator forward or behind the pivots of the bowl, for at times it is desirable to dump some of the loads backward and others forward, in order to scatter or level off the pile of dirt; and 30 another essential feature is the swinging draft-frame with clevis, to which the team is hitched, whereby the team controls the scraper-bowl while filling and raising it, as well as while dumping the load.

35 As a modification of the manner of applying the brake-bar with its shoes, I propose to form the wheels with long hubs, and to have the brake-shoes arranged so as to bear upon said hubs. This arrangement would be the 40 same in principle as the plan shown and described, but the leverage power for raising the bail and bowl would not be as great.

I would state that if the brake bar and shoes are properly set and weighted they would fall 45 back by their own gravity when the lug d' strikes the set-screw d^5 , and under such construction the spring d^2 could be dispensed with. Therefore I shall adopt either construction, as found most desirable, the one being an equivalent 50 of the other.

The proper set or adjustment of the brake above referred to is effected by means of the set-screw d^5 , which, by being screwed inward or outward accordingly as required, can be 55 made to arrest the brake-bar and release the brake from the wheels just at the proper moment after the latch q has fallen behind the loop K' .

I would state that in the operation of dumping backward the bowl will finally revolve forward and find its position automatically for being again filled.

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

65 1. In a wheeled scraper, a swinging support-

ing and draft frame, G^2 , consisting of vertical portions F and K' , longitudinal side bars, $G G$, and cross-bars G' and H , supporting a pivoted bowl, I , which revolves either forward or backward when released from its retaining-latch, substantially as and for the purpose described. 70

2. A swinging draft-frame supporting a revolving bowl pivoted to it, and provided with a clevis, N , whereby the team is enabled to control the bowl in filling, substantially as described. 75

3. In a wheel-scraper, a revolving bowl pivoted to a swinging frame, G^2 , near its bottom, as at k , said bowl and frame being supported 80 by crank-arms of the axle A , substantially as and for the purpose described.

4. The combination, with a wheeled scraper-carriage provided with a brake mechanism, as at E , a latching device, q , and supporting-iron, 85 of an automatically-latching draft-frame, G^2 , provided with a latching-stop, K' , and a latching-lever, L , and an automatic latching scraper-bowl, I , pivoted to the frame, whereby the team controls the scraper-bowl in filling, and 90 it, when filled, is, with its frame, elevated and latched in that position, and the bowl latched against revolving until the machine arrives at the place of dump, when the bowl can be released and revolved to dump its contents, 95 and the frame unlatched, lowered, and the bowl relatched against revolving while again filling, substantially as described.

5. A wheeled scraper or excavator comprising a revolving bowl pivoted to a swinging 100 draft-frame, G^2 , to which the team is hitched, substantially as and for the purpose described.

6. A wheeled scraper or excavator comprising a head-piece, a revolving bowl, a swinging draft-frame, to which the bowl is pivoted and 105 to which the team is hitched, a crank-axle, a brake, and means for operating the brake and locking the axle to the wheels, substantially as and for the purpose described.

7. A wheeled scraper comprising a head- 110 piece, a revolving bowl, a swinging draft-frame, a crank-axle, a locking-brake, and a mechanism for latching the frame and bowl in their raised position, substantially as described. 115

8. A wheeled scraper comprising a head-piece, a revolving bowl, a swinging draft-frame, a crank-axle, a locking-brake, a mechanism for latching the frame and bowl in a raised position, and a mechanism for latching 120 the bowl while it is collecting a load and until it is desired to dump the load, substantially as described.

9. The combination, with the revolving bowl of a wheeled scraper and its swinging 125 frame, and mechanism whereby said frame is elevated and supported and latched, of the pivoted lever-latch L , substantially as and for the purpose described.

10. The combination of the swinging frame, 130

the pivoted revolving bowl I, hung loosely, and the crank-axle A, substantially as and for the purpose described.

11. A wheeled scraper provided with the swinging frame G^2 , with bowl pivoted to it, and the stationary head-piece J, substantially as and for the purpose described.

12. A wheeled scraper provided with the swinging frame G^2 , having bowl pivoted to it, and formed with the tail-piece H, substantially as and for the purpose described.

13. A wheeled scraper provided with a scraper-bowl which is suspended by the frame G^2 , and provided with a latching device whereby it is made to hang level and is caused to maintain its proper position while gathering its load, substantially as described.

14. The pivoted bowl, with its pivots near its lowest portion supported by the swinging draft-frame G^2 , whereby when it is disengaged it readily tips over, substantially as described.

15. A wheeled scraper provided with a scraper-bowl applied in a swinging draft-frame, G^2 , and which is made to revolve completely around, substantially as and for the purpose described.

16. A wheeled scraper provided with a revolving bowl and a swinging draft-frame, G^2 , to which the team is hitched, and whereby the team is enabled to control the bowl while gathering a load, substantially as described.

17. The scraper-bowl formed with a bottom, l' , and sides ll , having segmental-shaped edges,

in combination with the tail-piece H, substantially as described.

18. The scraper-bowl formed with a bottom, l' , and sides ll , having segmental-shaped edges, in combination with the head-piece J, substantially as described.

19. The combination, with the tongue or pole provided with the supporting-iron K, and carrying the cross-bar and the driver's seat and standard, of the gravitating latch q , the treadle-lever M, connected to latch q , and the draft-bar G' , having loop K' , substantially as and for the purpose described.

20. The combination of the chain f , cross-bar g , carrying standard with driver's seat, and the brake-bar, substantially as and for the purpose described.

21. The angularly-bent pivoted latch L, applied to the side bar, G, of the swinging draft-frame G^2 , in combination with the scraper-bowl having a notch, p' , in one of its segmental sides, said latch and notch being in convenient relation to the driver's seat, substantially as and for the purpose described.

22. In a wheeled scraper or excavator, the combination, with the standard of the driver's seat, of the vibrating brake-bar E, substantially as and for the purpose described.

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Witnesses:

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