

(No Model.)

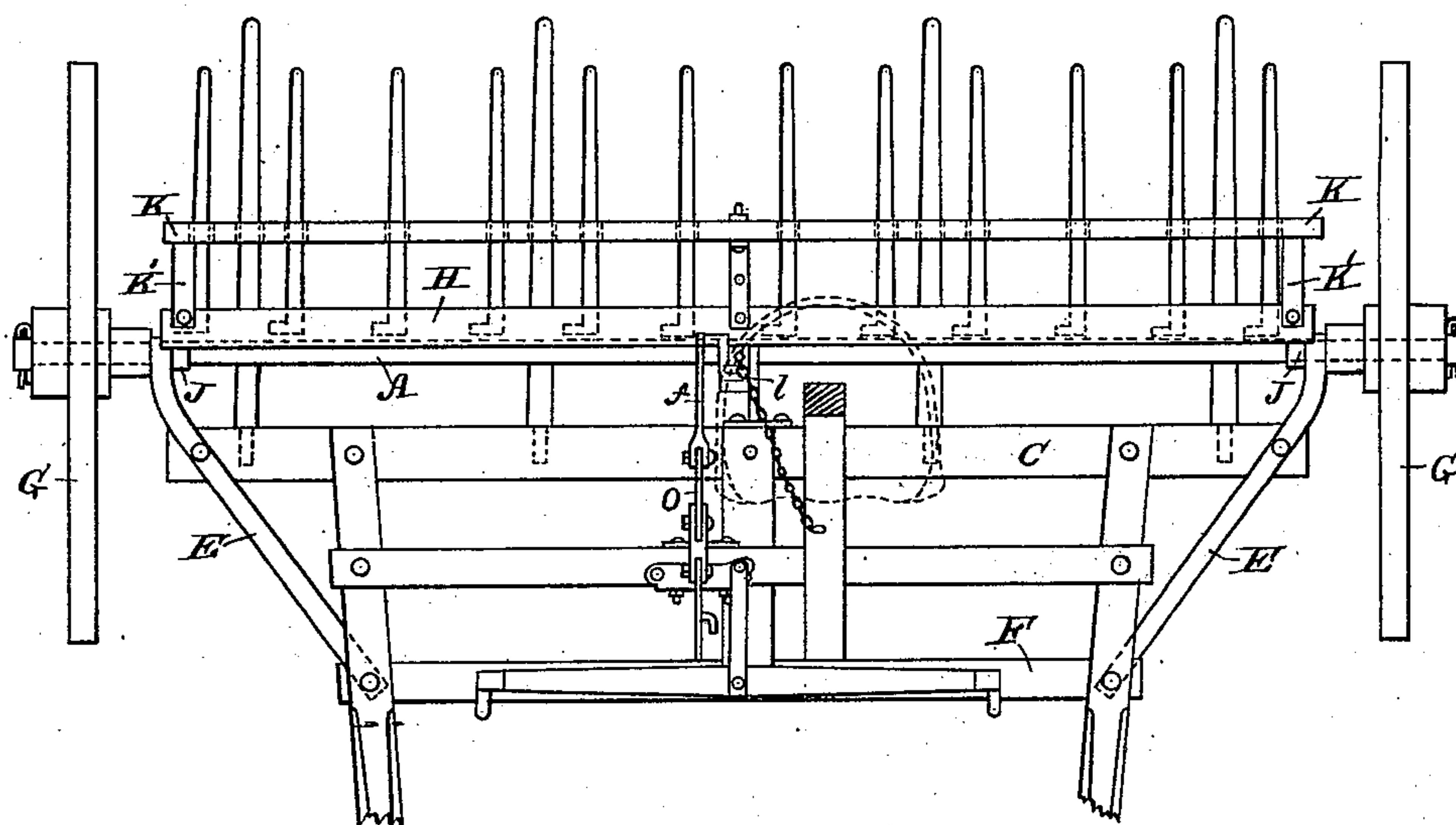
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C. LA DOW.  
HORSE HAY RAKE.

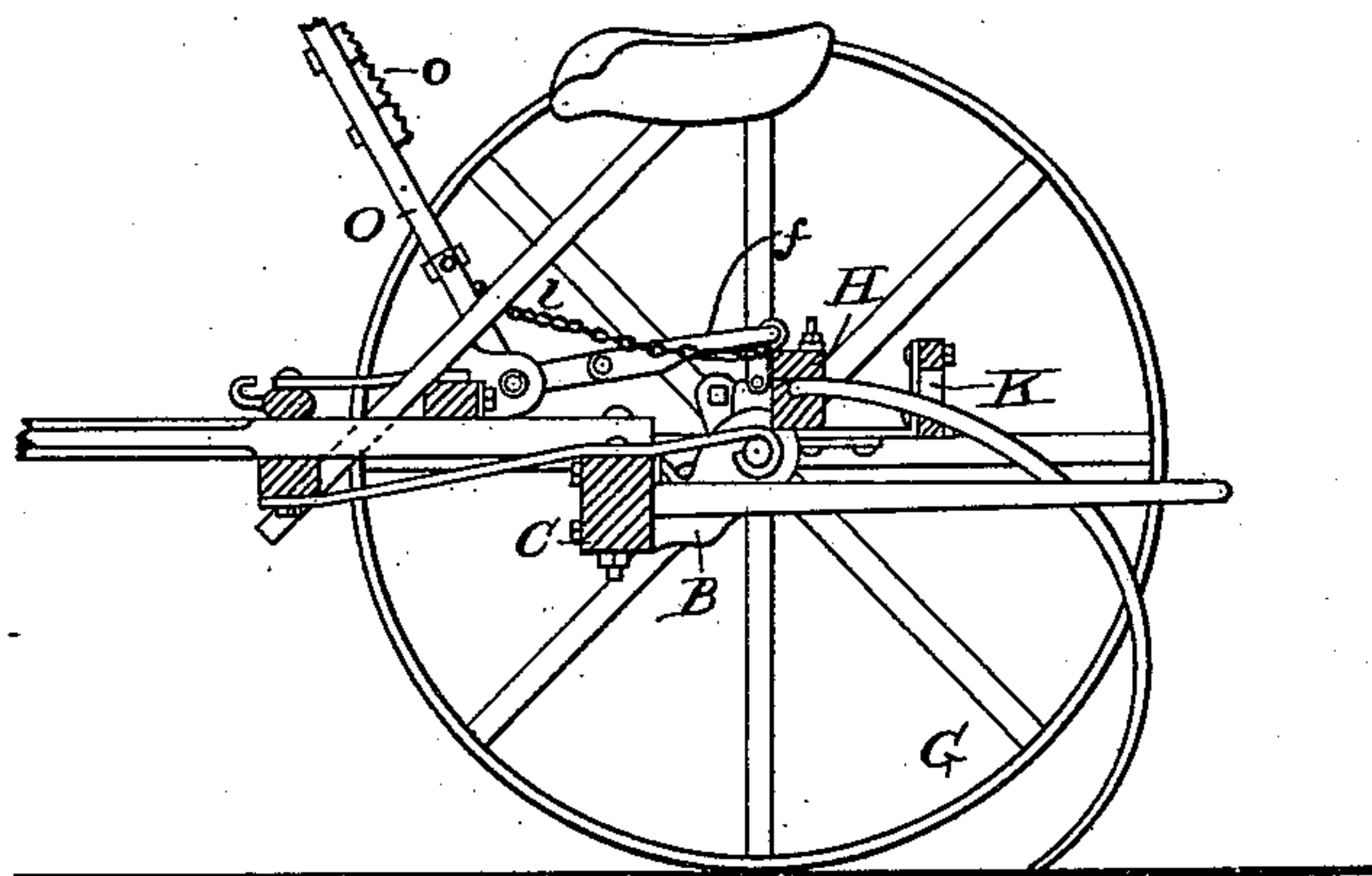
No. 355,539.

Patented Jan. 4, 1887.

*Fig. 1.*



*Fig. 2.*



WITNESSES

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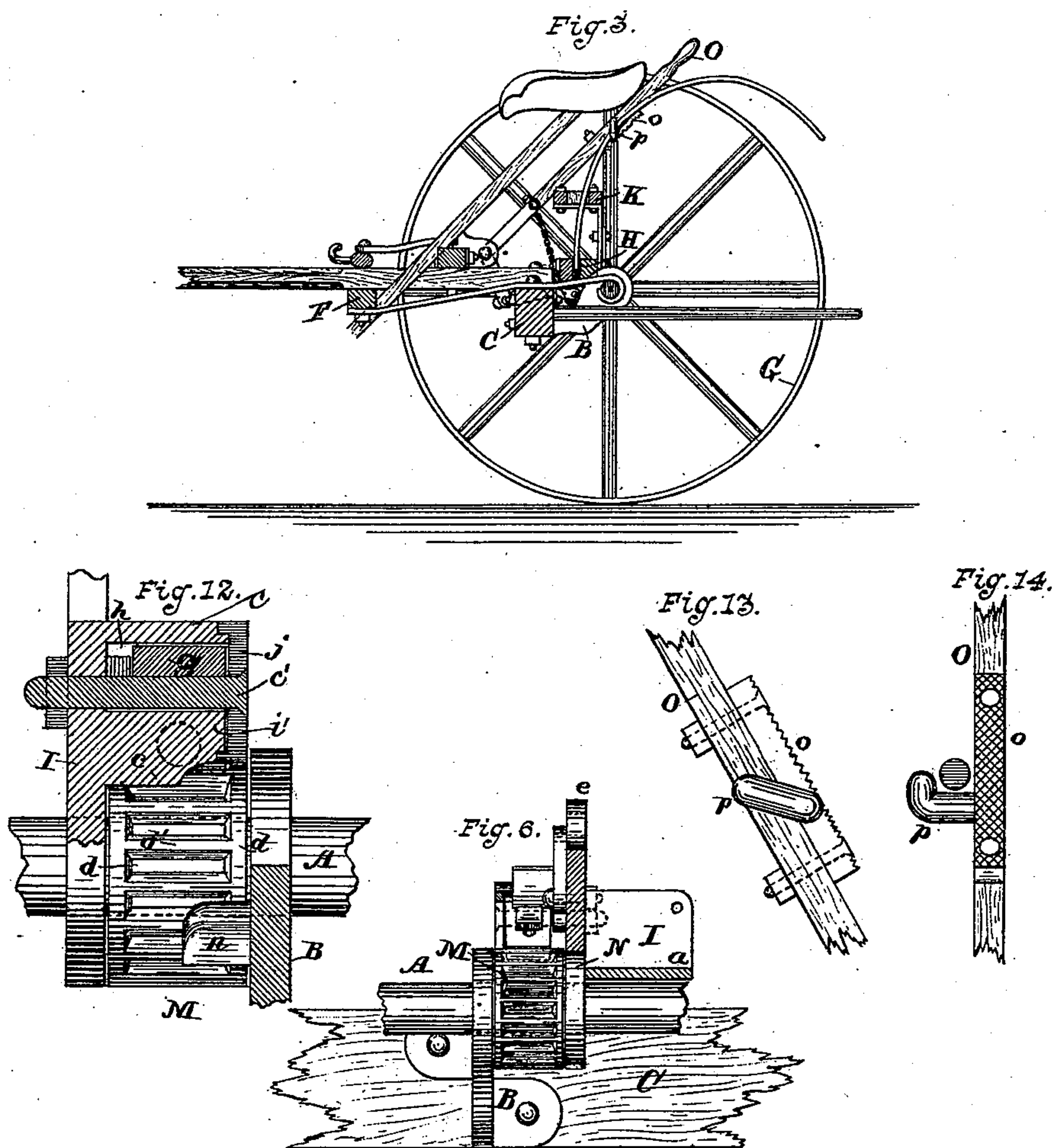
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# UNITED STATES PATENT OFFICE.

CHARLES LA DOW, OF ALBANY, NEW YORK.

## HORSE HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 355,539, dated January 4, 1887.

Application filed August 29, 1884. Serial No. 141,774. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES LA DOW, of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Horse Hay-Rakes, of which the following is a specification.

My invention mainly consists in improved lifting and dumping mechanism, but also involves improvements in the main frame.

In the accompanying drawings, Figure 1 is a plan view of my improved machine; Fig. 2, a transverse section thereof, showing the teeth down or in working position; Fig. 3, a similar view with the teeth elevated; Fig. 4, an enlarged cross-section of a part of the lifting and dumping mechanism; and Figs. 5 to 14, inclusive, are detailed views of the lifting and dumping mechanism.

The revolving axle A is journaled in the outer end of a bracket, B, bolted to the cross-beam C of the sulky-frame, at about the middle of the beam. The axle is also connected to the main frame by braces E, secured to the frame in line with the front cross-beam, F, and connected to the axle close to the wheels G. The ends of the braces embrace the axle and permit its revolution. The braces may also be bolted to the cross-beam C, as illustrated in Fig. 1. By this arrangement the frame is made rigid and strong, and is not liable to spring or break when the machine is turned.

The rake-head H is carried by a casting, I, rocking on the revolving axle A, near its middle, and by connections J, near the wheels. The casting I is formed with a right-angled notch or seat, *a*, in which the rake-head is bolted. A light wrought-iron extension, *b*, which forms a support for the rake-board K, projects from the rake-head seat *a*, as shown in Fig. 4. The rake-board is also supported from the rake-head by an arm, K', attached to a connection, J, near each end of the rake-head. A slot, *k*<sup>2</sup>, for each tooth is made in the board; but it may be constructed in any other well-known way. The rake-teeth are hinged by lateral right-angled projections at the ends which lie in a groove in the rake-head, formed in a well-known way of two pieces of wood clamped together by bolts, and having the groove for the angled ends of the teeth formed

the entire length of either the cap or bed-piece of the rake-head.

The casting I is formed with a hollow housing or hub-like portion, *c*, which projects from the casting at right angles on the side toward the bracket B. The housing *c* constitutes a socket, in which a lifting-dog, *g*, is pivoted on a pin, *c'*, as shown in Figs. 4, 7, and 12. It is left open on one side, at *c*<sup>2</sup>, to permit proper play of the dog, and is closed at the end by a cap, *j*, Figs. 9 and 12, which fits over the hub *c*, so as to exclude all clogging matter, and is secured in place by the pin *c'*. A lug, *i*, formed on the housing *c*, carries a spiral spring interposed between it and the dog *g*, Fig. 2. The spring tends to throw the dog out of engagement with the toothed lifting-wheel M fast on the axle. This wheel is formed with side flanges or rims, *d*, that connect the ends of the teeth *d'* and close up the intervening spaces at their ends, thus materially strengthening the wheel and preventing hay, &c., from being drawn into its meshes. A lifting-arm, *e*, formed on the casting I, projects rearwardly over the top of the rake-head, and its upper end is connected by means of a swiveled link, *f*, with the hand-lever O in front of the driver's seat.

Figs. 10 and 11 are views showing a socket of ordinary construction, in which the hand-lever is hinged. An elbow-lever tripping-arm, *k*, pivoted on the lifting-arm *e*, is connected to a chain, *l*, secured to the standard of the driver's seat. It is so located with reference to the dog *g* that its end *k'* strikes the dog when the arm is drawn forward. When the machine is in motion and the chain *l* is depressed by the foot of the driver, the tripping-arm will throw the dog *g* into engagement with the toothed wheel M, and cause the rake to be raised until the adjustable stop or screw *m*, carried by the dog, strikes the stop-stud *n* on the bracket B, Fig. 4. This will throw the dog out of engagement with the toothed wheel, and the rake will fall. The movement of the dog *g* away from the wheel M is limited by the rear upper corner of the housing or hub *c*. By adjusting the screw *m* in the dog the elevation to which the rake is to be raised may be regulated. The stop-stud *n* may, if desired, also be adjustably secured in a slot in the bracket



B, for a similar purpose. The upper end of the dog *g* is placed over and hinged in advance of the lifting-wheel, as clearly shown in Fig. 4, by which arrangement it readily engages with the toothed wheel and tends to bottom therein, and thus maintains a strong hold until thrown out by the stud *n*.

By my improvements I am enabled to employ toothed lifting-wheels of smaller diameter than those heretofore used, and can therefore bring the rake-head near to the axle without dividing it. This is a material advantage, inasmuch as the head will swing easier when thus located. A less number of coupling-irons are needed, the head is stronger, and the bent ends of the teeth may all be turned the same way, thus avoiding the necessity in manufacture of bending some in one direction and others in the opposite direction, as has been heretofore the case in rakes having a head divided between its end. Upon reference to Figs. 4 and 7 it will be seen that the lifting-dog *g* is merely formed with a hooked end, which embraces the pin *c'* and fits snugly in the housing or hub *c*. The end thrust of the dog is therefore received by the housing, which is braced by the cap *j* enveloping its end.

It will be noted that the rake-head is coupled to the axle close to one side of the toothed wheel, and that the cross-bar *C* of the main frame is coupled to the axle on the other side of the toothed wheel. This arrangement affords a firm and compact structure, and prevents displacement of the parts relatively to each other. It will also be noted that the casting *I* is connected to the revolving axle at one point only and to the rake-head at two points—i. e., at bolts *x y*—which secure the rake-head to the angular seat in the casting. The advantage of this construction is that when assembling the parts for mounting the machine the casting will stand in a true perpendicular line with both the axle and the rake-head, while if it had two connections with the axle, as has been customary heretofore, it would be difficult to get it in proper line with the head without great care in its manufacture. When the lifting-arm has but one connection with the axle, this result may be attained whether the lifting-arm has flanges adapted to be bolted to one or more sides of the rake-head or not. The toothed wheel *M* fits snugly between the casting *I* and the bracket *B*, and with the aid of the braces *E E* is thus always held in proper relation to the dog *g*.

The lifting and dumping mechanisms are mainly located in advance of the revolving axle, by which arrangement their weight preponderates in front of the axle, and aids as a counter-balance in lifting the rake, and also reduces the tendency of the rake to fall heavily. This result is also aided by the lightness of the wrought-iron extension *b*, (see drawings, Figs. 1 and 4,) in which the rake-board is seated.

The hand-lever *O* is provided with a plate, *o*, against which the driver may rest his foot

to hold the rake down to its work, and with a hook, *p*, in which one of the rake-teeth may be placed to hold the rake in an elevated position, as shown in Fig. 3.

It is obvious that changes may be made in the shape or structure of the parts without departing from the spirit of my invention.

I claim as my invention—

1. The combination of the main frame, the axle, the central bracket that connects the main frame to the axle, the rake-head, the central casting that connects the rake-head to the axle, a toothed wheel fastened to the axle between the bracket and the casting, dogging mechanism mounted on the casting which connects the rake-head and axle, and a stop or tripping device, substantially as set forth.

2. The combination of a frame, the axle, the rake-head connected with the axle by brackets pivoted on the axle and hung in rear thereof, a lifting-ratchet on the axle, and lifting and dumping mechanism pivoted on the axle and connected with and mainly located in advance of the rake-head.

3. The combination of a frame and axle, the rake-head which rocks upon the axle, a lifting-arm that also turns upon the axle as a center and extends from above the axle rearwardly over the top of the rake-head, the hand-lever, and the link that connects the lifting-arm to the hand-lever.

4. The combination of the rake-teeth, the hand-lever for elevating the teeth, and a hook on the lever that engages with one of the teeth to hold the rake in an elevated position.

5. The combination of an undivided rake-head, a revolving axle, a toothed wheel fastened to the axle, a casting that connects the rake-head to the axle, a housing on the casting which overhangs the toothed wheel, a dog carried by the casting and pivoted in said housing, and a device for throwing the dog into engagement with the toothed wheel.

6. The combination of the rake-head, the revolving axle, a toothed wheel fastened to the axle, a casting that connects the rake-head to the axle, a dog, a tripping device for throwing the dog into engagement with the toothed wheel, the adjustable screw on the dog, and the stop against which the screw impinges.

7. The combination of the frame and revolving axle, an undivided rake-head pivoted on and rocking relatively to the axle and in rear thereof, a rake-board carried by the rake-head, a toothed wheel fastened to the axle, a casting that connects the rake-head to the axle and is arranged above the axle, and a dog for engaging said toothed wheel carried by the casting in front of the axle.

8. The combination, substantially as set forth, of a rake-head, the lifting-casting in which the head is seated, a lifting-arm on the casting, a wrought-iron extension bolted to the lifting-casting, in which extension the rake-board is seated, a hand-lever, and connections between the lifting-arm and hand-lever.

9. The combination of a frame, a revolving



axle, a toothed wheel, a rake-head hinged at its ends on the axle, a rake-board arranged in rear of and supported by the rake-head, and an intermediate connection between the axle and head adapted to grasp the axle at one point only, to be attached to the rake-head at two or more points, and to extend back and support the rake-board.

10. The combination, substantially as set forth, of the toothed lifting-wheel, the rake-head, the casting connected with the rake-head, the housing on the casting, the hook-ended dog which fits closely in the housing, the bearing-pin in the housing which the hooked end embraces, and the cap-plate.

11. The combination of the frame, the revolving axle from which the power for dumping the rake is taken, the rake-head, the cast-

ing which is pivoted on the axle and connects the axle and rake-head and supports the head in rear of and above the level of the axle, and an extension from the casting which also supports the rake-board above the level of the axle.

12. The combination of the main frame, a revolving axle, a bracket that secures the middle of the frame to the axle, and braces that connect the ends of the axle and the front cross-bar of the frame, substantially as described.

In testimony whereof I have hereunto subscribed my name.

CHARLES LA DOW.

Witnesses:

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WM. P. RUDD.