

W. C. RAYNOR.

HORSE-RAKE.

No. 171,423.

Patented Dec. 21, 1875.

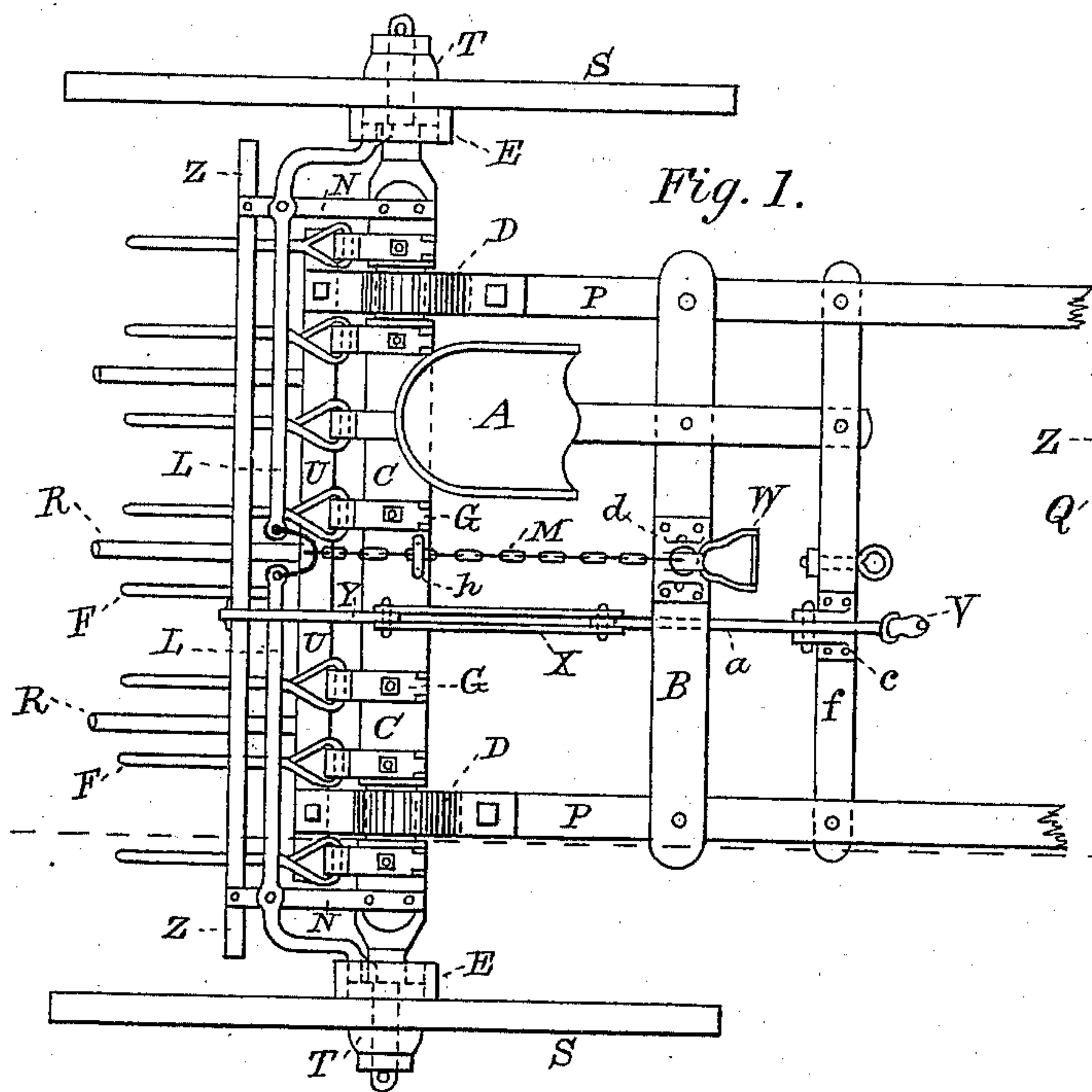


Fig. 1.

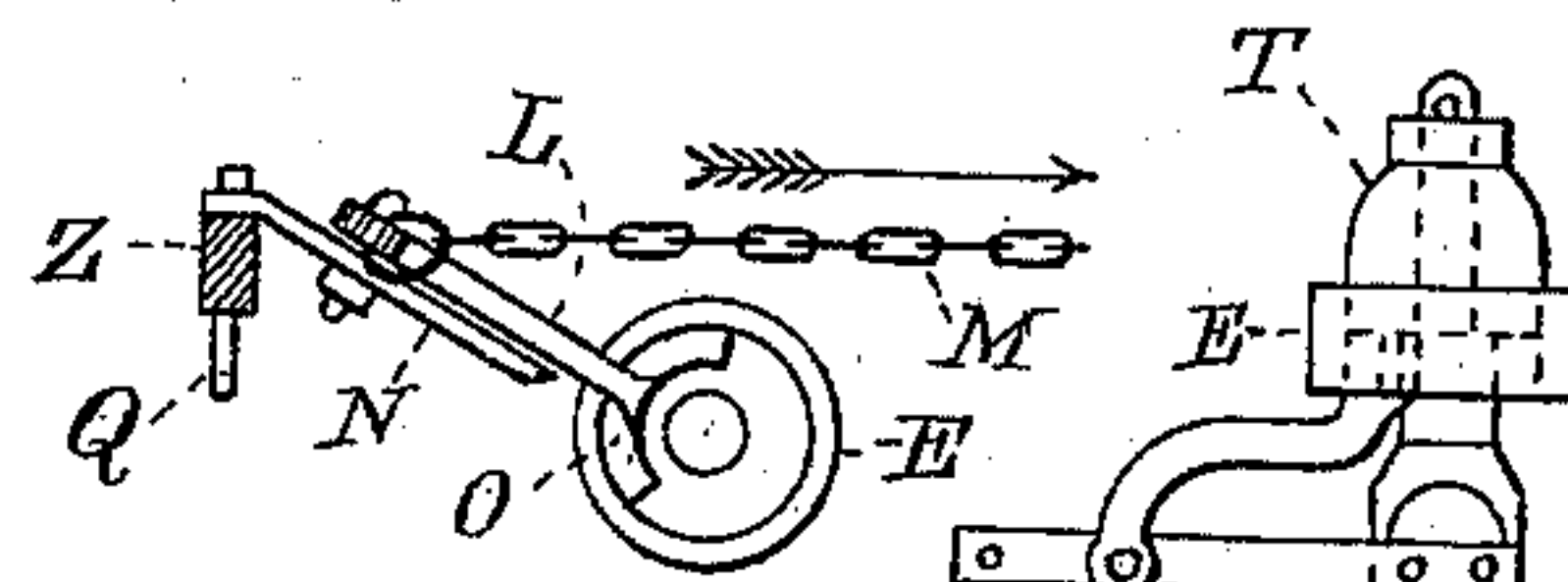


Fig. 3.

Fig. 4.

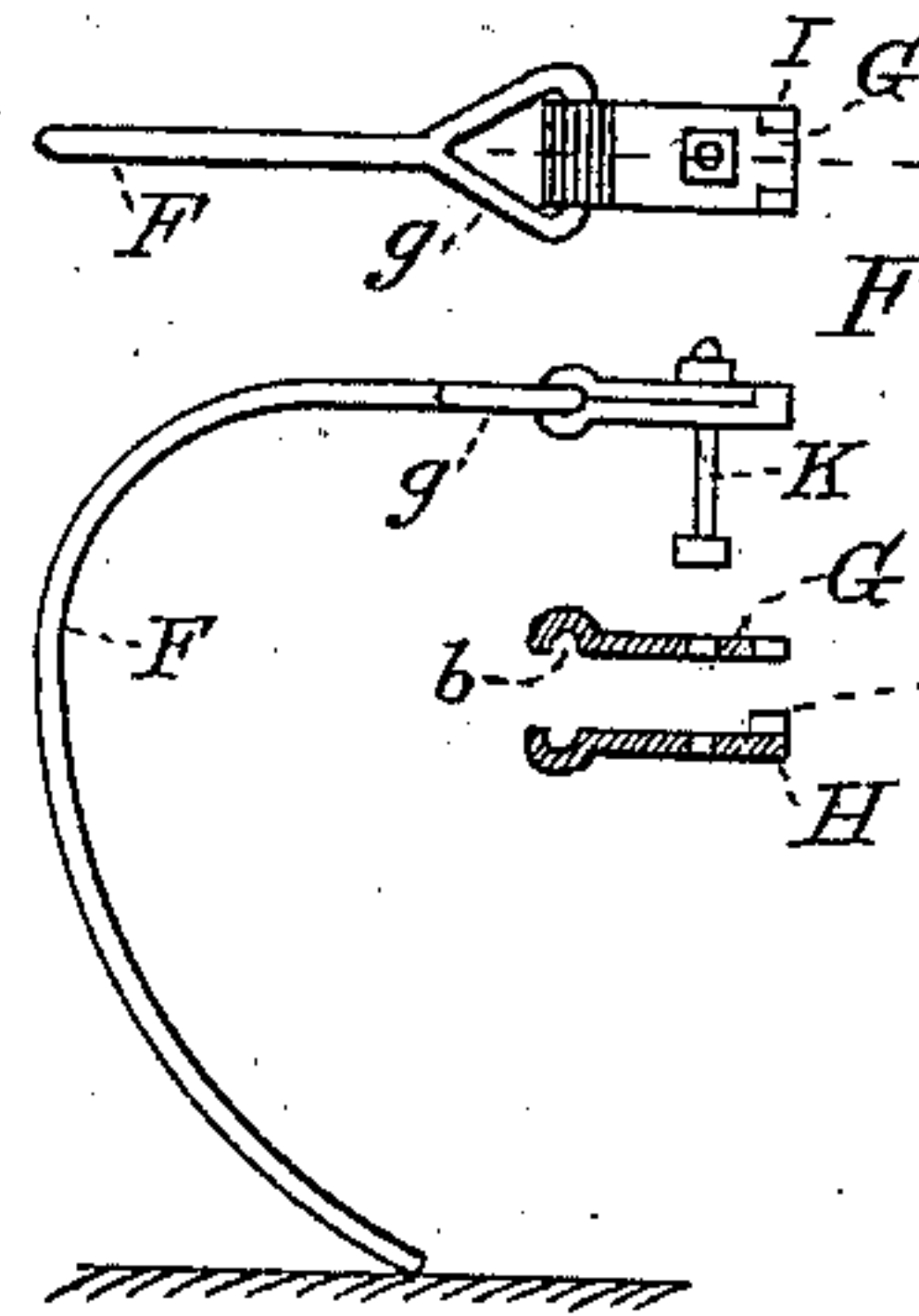
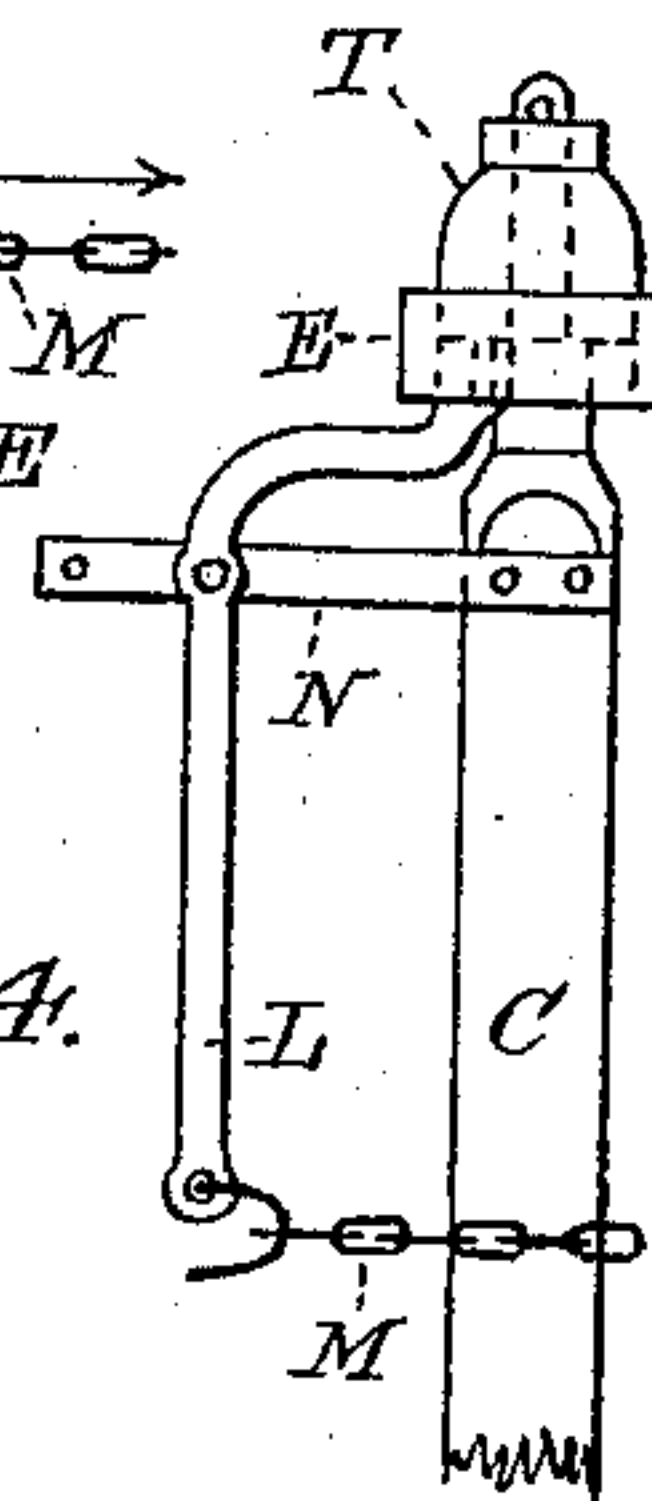


Fig. 5.

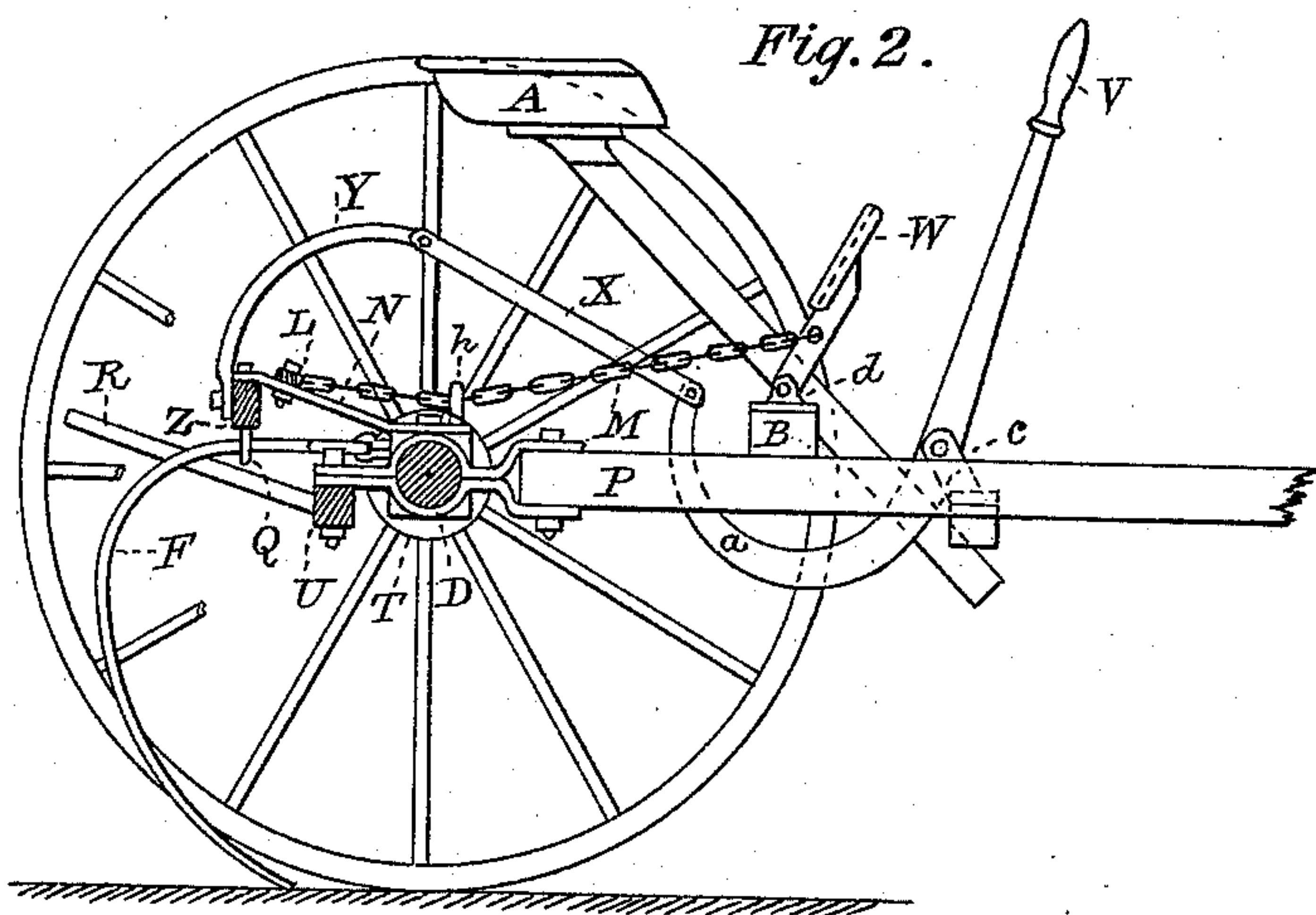


Fig. 2.

Witnesses.  
*Samuel Martin.*  
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# UNITED STATES PATENT OFFICE.

WILLIAM C. RAYNOR, OF MILWAUKEE, WISCONSIN.

## IMPROVEMENT IN HORSE-RAKES.

Specification forming part of Letters Patent No. **171,423**, dated December 21, 1875; application filed March 29, 1875.

*To all whom it may concern:*

Be it known that I, WILLIAM C. RAYNOR, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Horse Hay-Rakes; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon, which form a part of this specification.

Figure 1 is a view from above of my improved rake, which is of the usual well-known form in general features.

C is the axle. S S are the wheels. P P are the thills. In front of the axle the thills are connected by the cross-bars B and *f*. In rear of the axle is another cross-bar, U, which extends nearly the whole length of the axle parallel to it, and in which the clearing rods or sticks R are inserted. The cross-bar U gives great strength and stiffness to the thills, which form the frame of the rake, and does away with the necessity of cumbrous braces. U is fastened to the straps of iron D, which are also fastened securely to the rear end of the thills, and form a box for two bearings upon the axle, within which the axle freely rotates.

The teeth of the rake are shown in Fig. 5. F is the ordinary spring-wire tooth, of the usual curvature, and with its upper end bent into the shape shown at *g*. The teeth are attached to the top of the axle, by means of the boxes formed of the matched sections G and H, in each of which is made the groove *b*, semi-cylindrical in section, which holds the end of the tooth, permitting it to play freely vertically, so as to follow the inequalities of the ground. N N are bars of iron or other suitable material, fastened to the axle, as shown, and also to the wooden head-piece Z, which extends parallel with the axle above the teeth. A staple, Q, is fixed in the head-piece Z for each tooth, as shown. The tooth passes through the staple, and is permitted to play vertically about two (2) inches within it. The arm Y is attached, as shown, to Z. X is a rod, reaching from Y to the arm *a* of the curved lever V, which is pivoted to the thill-frame at

*c*. The peculiar curve of this lever, as shown in the drawing, gives great leverage when it is first pulled to dump the rake, which leverage gradually diminishes as the teeth rise and the resistance decreases. L L are levers of the general form shown in Fig. 1, pivoted to N N, as shown. At their inner ends they are attached to the chain M, which, at its other extremity, is fastened to W, a treadle pivoted at *d* to the cross-bar B. E is a circular collar fastened upon the wheel, (either to hub or spokes,) within which the outer end O of lever L (formed into a brake) extends, as shown in Fig. 4. Fig. 3 shows the shape of the outer end O of lever L, made in the shape of an arc of a circle, and conforming, as near as may be, to the inner surface of E. A is the ordinary rake-seat.

In operation the hay is gathered as in ordinary wheel horse-rakes. The driver, sitting in the seat A, can dump the rake at will by pulling upon the lever V, which causes the other arm, *a*, to draw down the connecting-rod X and arm Y, thereby rotating the axle, lifting the head Z through its attachment N N, and the teeth F by means of the staples Q, thus discharging the hay.

Instead of using the hand-lever V, the driver may press with his foot upon treadle W, which, by means of the chain M, will draw forward the inner end L L, and cause the other end of levers L L to bind closely against the collar or ring E. The friction thus caused will "set" the wheels upon the axle, and the axle, rotating with the forward movement of the wheels, will raise the teeth and dump the hay. Z is rigidly secured to the axle, and, when the axle rotates, rises and lifts the teeth by the staples Q.

It is obvious that the end O of lever L might be made to press against the outside of the collar or ring E, or even against the outside of the hub T, the same being an unimportant variation in construction.

I am aware that self-dumping devices employing the principle of friction in distinction from ratchets or cogs have been heretofore used; but none to my knowledge have been used formed of a single rigid lever, (applied to each wheel or to one only, if desired,) with but one pivotal point, and without any joint

or break in its entire length, and acting by a rigid pressure at or near the hub of the wheel in the manner of an ordinary wagon-brake.

I prefer to use the collars, as shown, on wheels with wooden hubs. Where iron hubs are used, the collar can be cast with the hub. Instead of the treadle W, a stirrup or equivalent device may be used.

What I claim as my invention is—

1. The combination of the two bands E E, attached to the wheels of a hay-rake, the two levers L L, provided with the friction clutch or brake O at their outer ends, arms N N', to which levers L L are pivoted, axle C, chain M,

and treadle W, substantially as and for the purposes described.

2. The combination of the tooth-boxes formed of the matched sections G and H, teeth F F F, formed with the square-ended loop *g'*, and axle C, substantially as and for the purposes described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

WILLIAM C. RAYNOR.

Witnesses:

W. E. HOWARD,  
JOHN F. BRUCE.