M. N. Ward.

Horse Rake

No. 86717 Patented Feb. 9, 1869.

Fig 1.

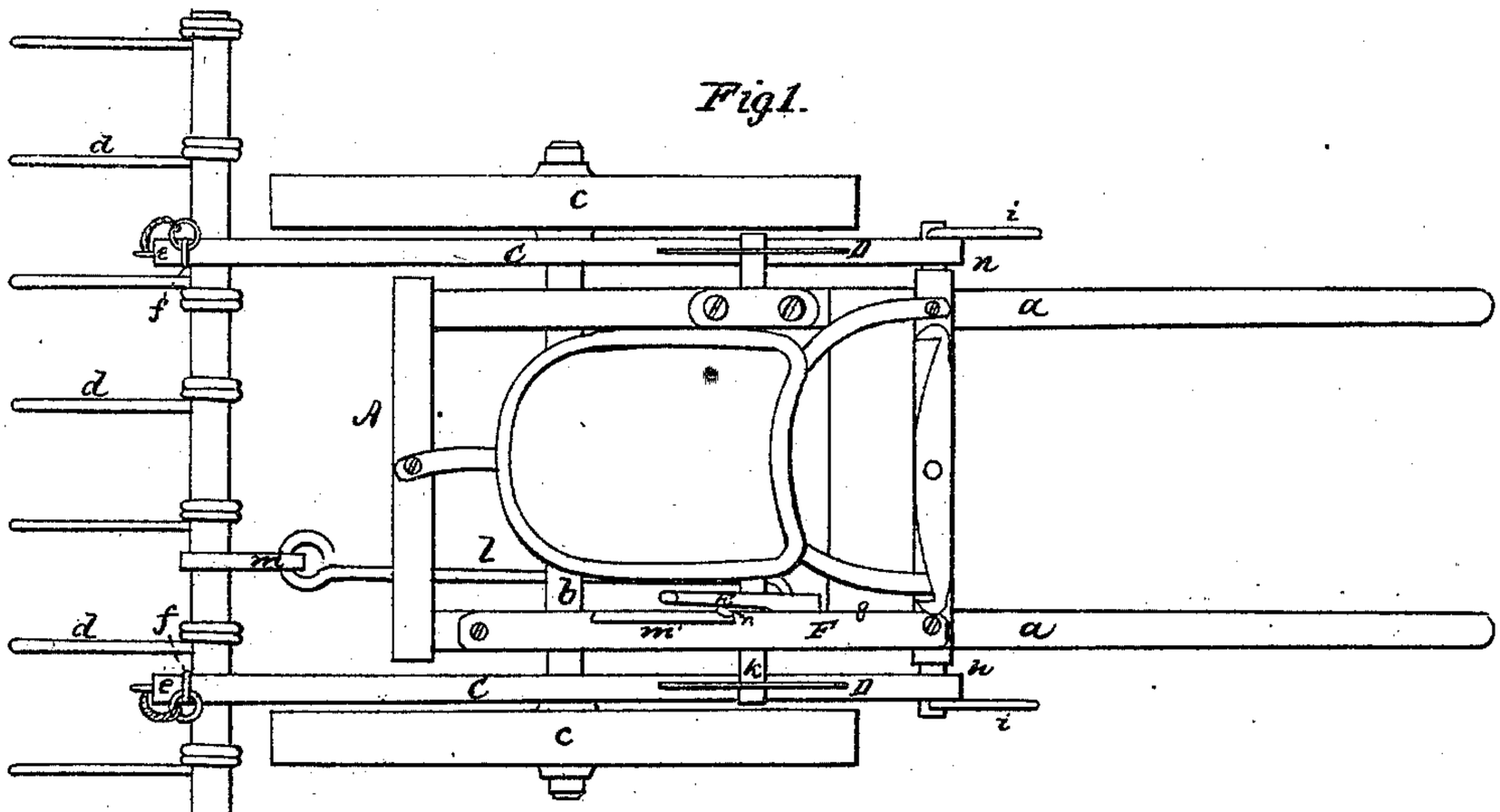
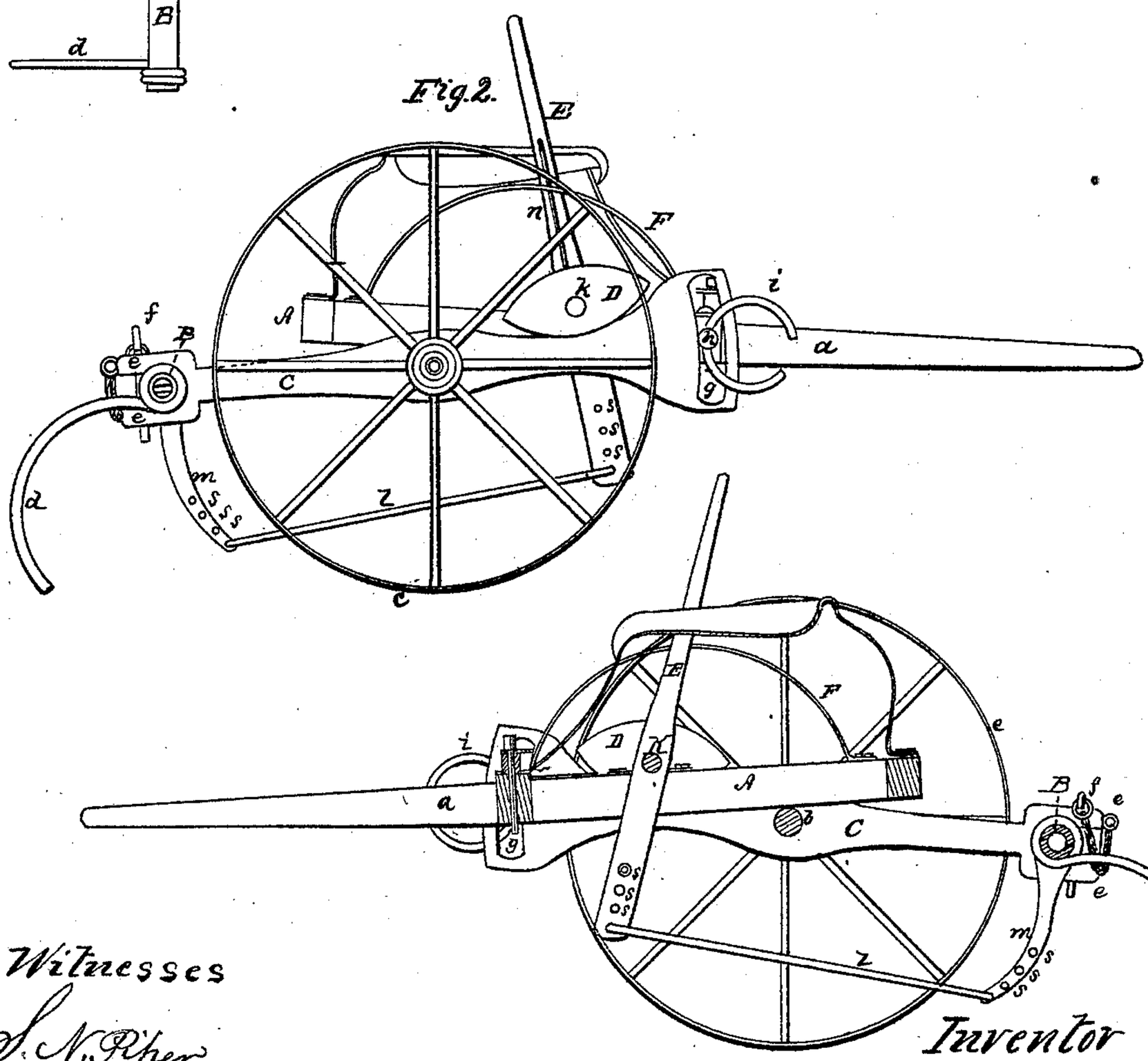


Fig 2.



Witnesses

S. N. Piper

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Inventor

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by his attorney.

R U Eddy

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MOSES N. WARD, OF BANGOR, MAINE, ASSIGNOR TO HIMSELF, BENJAMIN S. GRANT, AND THOMAS HERSEY, OF SAME PLACE.

Letters Patent No. 86,717, *dated February* 9, 1869.

IMPROVEMENT IN HORSE-RAKES.

The Schedule referred to in these Letters Patent and making part of the same.

To all persons to whom these presents may come:

Be it known that I, MOSES N. WARD, of Bangor, in the county of Penobscot, and State of Maine, have invented a new and useful Improvement in Horse-Rakes; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view,

Figure 2, a side elevation, and

Figure 3, a longitudinal section of a horse-rake provided with my invention.

In such drawings, A represents a carriage-body provided with thills *a a*, an axle, *b*, and two wheels *c c*, the latter being applied to the axle, so as to revolve freely on its journals.

The rake-head is shown at B, it being a shaft, having a series of spring-teeth, *d d d*, applied to it in the ordinary manner.

The said head is supported by two forked independent levers C C; that is to say, it extends through the opening between the prongs *e e* of the fork of each lever, and is kept in connection with the lever by means of a pin, *f*, going down through such prongs. The head turns freely in the forks of the levers.

Each lever has the axle B for its fulcrum, and turns freely on such axle, and extends both in advance and in rear of it, in manner as represented.

In the front arm of each lever is a curved slot, *g*, the centre of whose radius of curvature is in the axis of the axle.

A stud, *h*, projects from the carriage into and through the slot, a pin or ring, *i*, being carried laterally through the stud, for the purpose of keeping the lever, while in movement, close up to the carriage.

Besides the two independent levers supporting the rake-head, and turning on the axis as a fulcrum, other mechanism, which I will proceed to describe, is applied to the said levers, the carriage, and the rake-head.

A shaft, *k*, extends across the carriage, and is supported in suitable bearings applied thereto.

Fixed on this shaft, and directly over the front arm of each lever, C, is a cam, D, formed as represented.

Furthermore, a lever, E, fixed to the shaft *k*, and having it for its fulcrum, and extending both above and below the said shaft, is connected, by means of a rod, *l*, with an arm, *m*, projecting down from the rake-head. The said rod *l* is hinged or jointed to the said arm and lever.

Extending upward from the carriage, and alongside of the upper arm of the lever E, is an arch, F, provided on its inner edge with a long notch, *m'*, whose ends serve as stops to arrest the motion of the lever E, there being a lip, *n*, extended from such lever and into the notch.

By pressing forward the handle or upper arm of the lever E, the cams will be caused to depress the front arms of the two independent levers, so as to cause such levers to elevate the rake-head.

In the mean time, the lever E, the connecting-rod *l*, and the arm *m*, will cause the rake-head to partially revolve, so as to bring the rake into a proper position for dumping a mass of hay.

The independent levers allow the rake to play or tip laterally, as well as up and down, so as to accommodate itself to the surface of the ground over which it may be drawn.

In the arch there are one or more other notches, *o*, which are to receive the lip of the lever, into either of which it may be sprung, the arch being elastic laterally to admit thereof.

When the lip is in such notch, the said lip, the lever, connecting-rod, and arm, and the cams and levers *c c*, as described, will serve to hold the rake up into its highest position, so as to be entirely out of action on the surface over which the carriage may be moved.

The principal advantages of my mechanism for supporting and operating the rake-head, relatively to the carriage, may be thus stated:

It enables the rake-teeth to be maintained, from time to time, at their best working-distance from the ground, however undulating may be its surface.

Furthermore, by means of the longer notch of the arch, the lever E is left free to play therein, from end to end of such notch.

When the lever is at the front end of the said notch, the rake will be held in a position for raking hay.

The object of having the lever free to play in the notch, viz, from its front to its rear end or terminus, is to enable the rake, when the machine is being run backward, to readily turn into a position to freely pass back over any lost hay, or an obstacle, without hindrance therefrom, and, when next started forward, to come into a position to readily catch up such hay.

Thus it will be seen that there is an automatic action of the rake, in passing backward and forward over and taking up hay, which renders it entirely unnecessary for the attendant on the machine to elevate and otherwise operate the rake-head by manual power, in order to effect the passage of it over a mass of hay, and its downward movement, in order that when next advanced it may catch up such hay.

The advantage of applying the independent levers directly to the axle, so that it may constitute a fulcrum for each of them, is that under such circumstances the axle will present no impediment to the downward motion of the levers, as it would were the levers placed over it, and hinged at their front ends to the carriage-body.

Furthermore, such arrangement of levers, with their application to the carriage, by means of the slots and studs, as described, enables the vibratory or up-and-down movements of the carriage, caused by the horse or draught-animal while walking, to take place independently of the rake, and without creating any such movement of it.

In the arm *m*, as well as in the lower arm of the

lever E, is a series of holes, *s s s*, such enabling the connecting-rod to be arranged at different distances from the shaft *k* and the rake-head.

I herein make no claim to the combination of two independent levers with the carriage and rake-head, such levers being hinged or jointed at their front ends to the carriage, and arranged above and so as to extend over the axle, without being pivoted thereto.

I claim as my invention in the above-specified machine, or horse-rake, the following; that is to say—

I claim the application of the independent levers C C to the axle and carriage-body, in manner as described, that is, by pivoting each of such levers directly to the axle, and connecting the lever with the said body by a curved slot, *g*, and pin *h*, and a holding-ring, *i*, or the equivalent of the latter, the whole being as set forth.

I also claim the combination and arrangement of the stops *h h* (projecting from the carriage A) and the slots *g g*, (formed in the levers C C,) with such carriage and levers, arranged and combined with a rake-head, B, as set forth.

I claim, in combination with the two independent levers C C, the rake-head B, and carriage A, the mechanism for depressing the front arms of the said levers, (to effect the raising of the rake-head B,) and for partially revolving the rake-head, as circumstances may require, such mechanism consisting of the shaft *k*, the cams D D, the lever E, the connecting-rod *l*, and the arm *m*, the whole being applied to the rake-head, the carriage, and the independent levers.

I claim the combination of the elastic arch F, (notched as described,) the lever E, the shaft *k*, the cams D D, the connecting-rod *l*, and the arm *m*, as applied to the independent levers C C, the carriage A, and the rake-head B, and so as to operate the latter, as described.

Witnesses: MOSES N. WARD.

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F. P. HALE, Jr.