

J. S. Shrawder, 2. Sheets, Sheet 1.

Horse Rake

No. 103,092.

Patented May 17, 1870

Fig. 1.

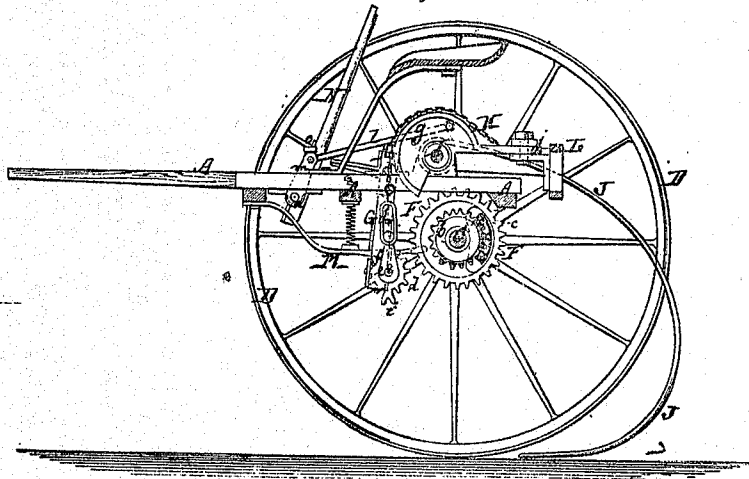
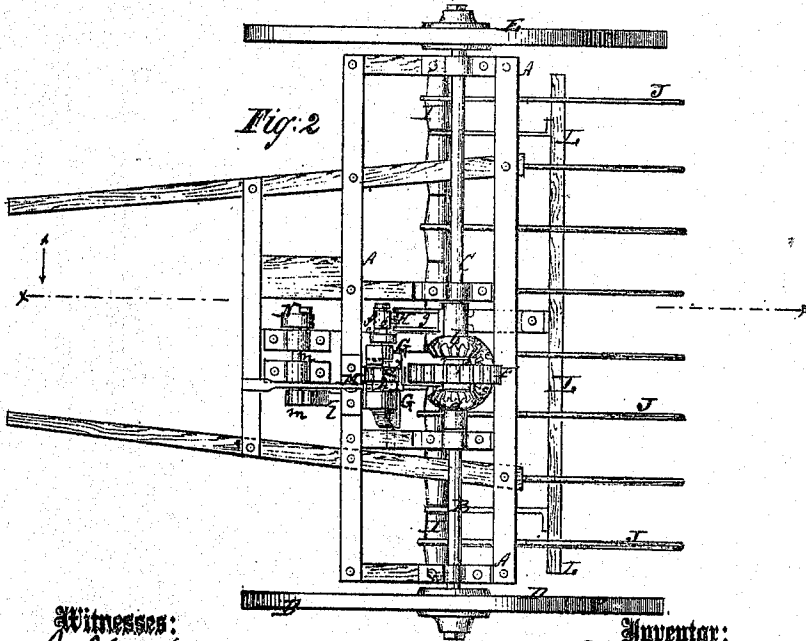


Fig. 2.



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# UNITED STATES PATENT OFFICE.

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## IMPROVEMENT IN HORSE HAY-RAKES.

Specification forming part of Letters Patent No. 103,002, dated May 17, 1870.

*To all whom it may concern:*

Be it known that I, JOHN S. SHRAWDER, of Fairview Village, in the county of Montgomery and State of Pennsylvania, have invented a new and Improved Horse Hay Rake; 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 make and use the same, reference being had to the accompanying drawings, forming part of this specification.

Figure 1 represents a vertical transverse section of my improved horse hay-rake, the plane of section being indicated by the line *x x*, Fig. 2, the direction of the eye being shown by the arrow in Fig. 2. Fig. 2 is an inverted plan view of the same. Fig. 3 is a vertical transverse section of the same taken on the plane of the line *y y*, Fig. 4. Fig. 4 is a detail plan or top view of the same.

Similar letters of reference indicate corresponding parts.

This invention relates to mechanism for intermittently elevating and emptying a hay-rake; and consists in an improvement thereon, which will be specified in claims.

A in the drawing represents the frame of my improved horse hay-rake, containing bearings for the axles B C of the driving-wheels D and E, the two axles being in line, as clearly shown in Fig. 1. The inner ends of the axles B C carry small bevel-gear wheels *a* and *b*, respectively, which mesh both into one intermediate bevel-wheel, *c*, which is hung in a larger toothed wheel, F, as shown. The wheel F forms the connecting-link of, and is hung upon the inner ends of, the axles B C, and can turn loose upon the same. Thus, as the machine is moved, and as the wheels B C with their axles are thereby revolved, they will rotate the wheel F.

If both wheels D E turn with equal velocity, they will carry F around with the same speed without revolving the wheel *c* on its own axis; but if one wheel, D or E, turns quicker than the other, its attachment *a* or *b* will also turn with greater rapidity, and will, by turning the wheel *c*, increase the speed of the wheel F in the same ratio beyond the speed given to it by the slower wheel D or E, as the motion of the faster differs from that of the slower wheel D E. The wheel F, therefore, receives always the medium speed and the joint power of both wheels D E.

To the frame A is pivoted a vertical frame, G, in which is hung a pinion, *d*, the axle *e* of which carries a crank, *f*, as shown in Fig. 1. The end of the crank *f* is, by means of a chain, H, connected with the rake. The rake-head I is hung in the frame A, and carries the teeth J, of suitable construction, and also a cross-bar, L, through which the teeth pass loosely. The cross-bar L receives the back end of the chain H, the said chain passing over a segment, *g*, that is mounted upon the rake-head. When, by means of a foot-lever, *h*, attached to its upper end, the frame G is swung so as to carry the pinion *d* in contact with the wheel F, the crank will be revolved so as to pull the chain, which will swing the rake up to dump it. A spring-catch, M, locks over on edge on the frame G, and locks the pinion *d* in gear while the rake is being dumped. But after the said pinion has made about one revolution a cam, *k*, on its side strikes and elevates the catch M, and liberates the frame G. At the same time a large tooth on *d* will throw the pinion out of gear, and will thereby let the whole dumping apparatus out of gear. The chain H contains a rubber or other elastic piece or link, *j*, which causes the action of dumping to be free from all sudden or violent shocks or jars.

The segment *g* is, by means of a rod, *l*, connected with a crank, *m*, on an arbor, *n*, which arbor carries a hand-lever, N, by means of which the rake can be quickly raised whenever desired. The crank *m* has a foot-rest, *o*, at its upper end, and constitutes, together with the rod *l*, a joint, which, when straightened, braces the rake and holds the teeth firmly down on the ground.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. As an improvement in horse hay-rakes, a cam, *h*, and projecting tooth *i*, arranged on pinion *d*, as and for the purpose described.
2. The arrangement of pinion *d*, provided with cam *h* and tooth *i*, the gears F *c a b*, pivoted frame G, and spring-catch M, all being constructed and operating as described.

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