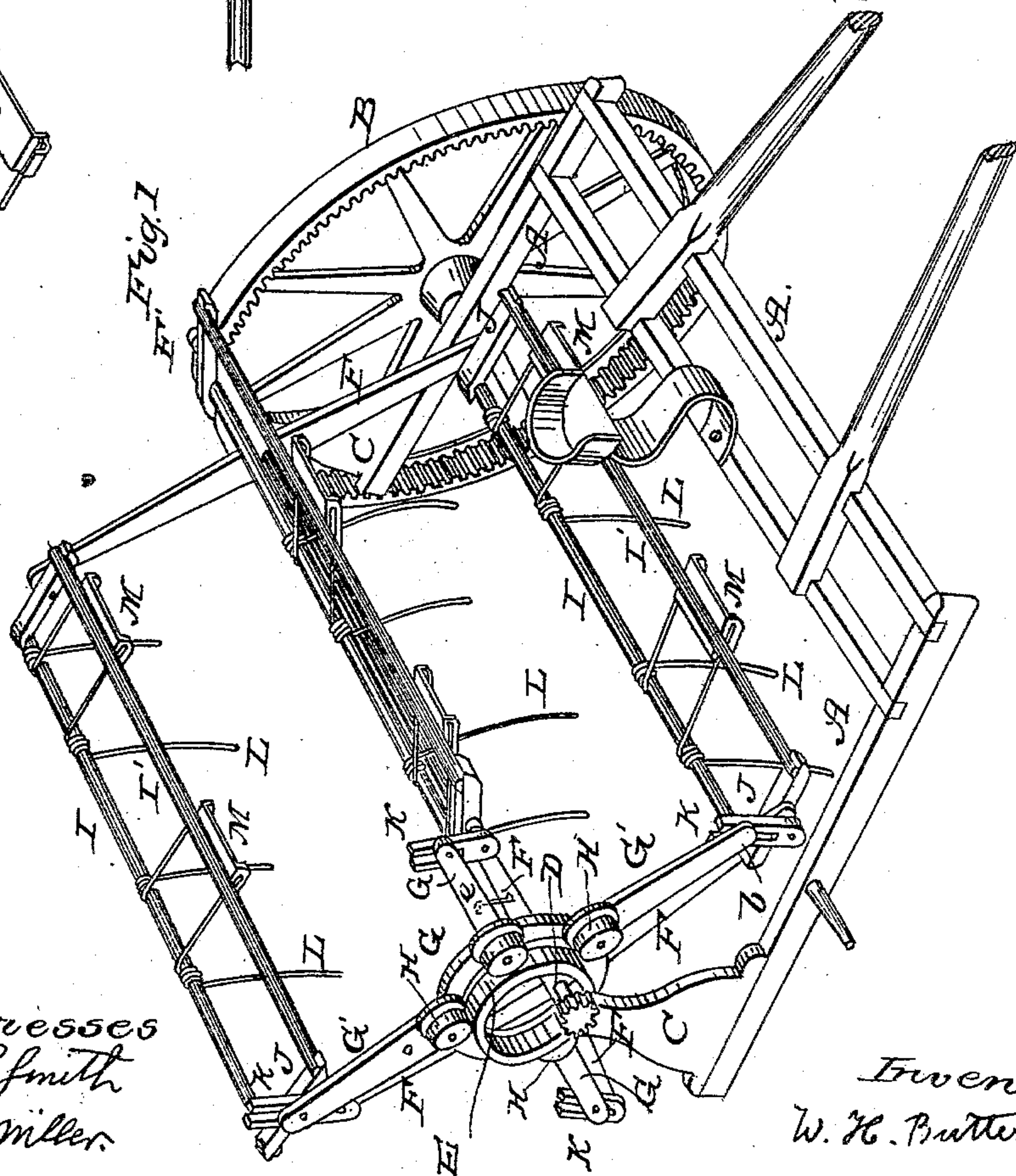
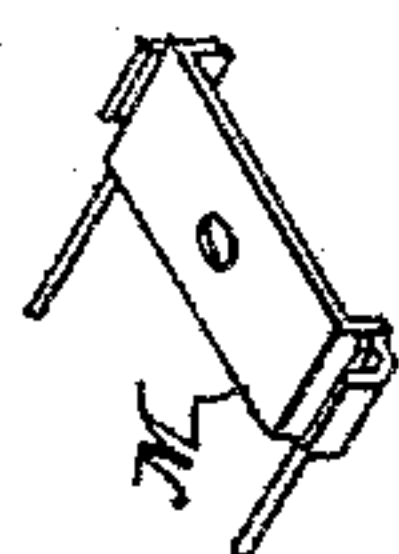


Hay Tedder.

Patented May 18, 1869.



witnesses
G. H. Smith
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Inventor
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UNITED STATES PATENT OFFICE.

WILLIAM H. BUTTERWORTH, OF TRENTON, NEW JERSEY.

IMPROVEMENT IN HAY-SPREADERS.

Specification forming part of Letters Patent No. 90,077, dated May 18, 1863; antedated December 24, 1868.

To all whom it may concern:

Be it known that I, WILLIAM H. BUTTERWORTH, of Trenton, in the county of Mercer and State of New Jersey, have invented a new and useful Improvement in Hay-Spreaders; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view, one of the driving-wheels being removed. Fig. 2 is a rear elevation; Fig. 3, a vertical section taken in the line *xx* of Fig. 2; and Fig. 4, a perspective view of the lock which secures the teeth to the machine.

The nature of my invention consists in the peculiar arrangement of devices for operating the teeth of the spreader, as hereinafter described.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the drawing, A represents the frame, on the sides of which are axles, on which are the driving-wheels B B, the inside of which is an internal gear. At the rear ends of the sides of the frame A are standards C C, on the top of which the shaft D is journaled. On each end of the shaft D is a pinion, *a*, which meshes into the internal gear-wheel inside of the driving-wheels B B.

At one side of the machine, and on the inside of the frame A, is an adjustable eccentric ring or cam, E. On its under side is an arm, *b*, and at the lower end of this is a cross-head, *c*, in which there is a series of holes for the screw *d*. The shaft D passes through the eccentric-ring E at the lower side of the opening, and when the position of the eccentric-ring is changed it turns around the said shaft, or, in other words, the shaft is the axis upon which it moves.

F represents the arms of the reel next to the side of the machine where the adjustable ring E is located, and F' the arms at the other side of the machine. G is a circular rotating head, with arms G' radiating from it, it being located between the eccentric-ring and the arms F of the reel. To each of the arms G' is pivoted a flanged roller, H, which revolves around the said eccentric-ring. Between each

of the arms F and F', and pivoted to them, is a fork head or frame, which is composed of two bars, I I', the ends of which are secured to cross-pieces J J, which are pivoted to the arms F and F', the pivots being fixed in the said cross-pieces J J. On the end of those that pass through the arms F is secured a slotted arm, K, which is at right angles to the cross-piece J. Near the ends of the arms G' are pins *b*, which work in the slots in the arms K. Between two of the arms F and G are cranks *e e*, which connect them together, as seen in Figs. 2 and 3.

L represents the fork-teeth, one end of which (after passing several times around the rod or bar I, thus forming a spring) is secured in the lock M, which is secured to the rod or bar I. Each side of this lock is turned up, leaving a space for the tooth of the fork to pass through before it enters the hole in the side of the lock; and in this manner the fork is held firmly, as seen in Fig. 4.

The arrangement of the forks may be as represented in the drawings, or more used, if necessary.

Its operation is as follows: As the machine moves forward the revolution of the driving-wheels B B gives motion to the pinions *a a*, which are secured to the shaft D, and as it revolves it carries the arms F and F' of the reel. The rotating circular head G, being connected to two of the arms F by the cranks *e e*, is also made to revolve, the friction-rollers H passing around the eccentric ring or cam E.

As the arms G' on the circular head G revolve around a different axis from the arms F, and the radius of the pivots in the arms G' being less than that of the arms of the main reel, the position of the fork-heads is constantly changing by means of the pins in the arms G', which, in their revolution, move in the slotted arms K, which move the fork-heads, thus bringing the teeth of the fork at the front of the machine at an angle of about forty-five degrees as they go down toward the ground, and as they continue on in their revolution they are brought to about a vertical position when they have arrived under the center of the reel, and retain this inclination until after they have passed up over the center, when they again begin to assume their

former angle. This movement of the forks can be varied by changing the position of the eccentric-ring E, which is done by removing the screw *d* and adjusting it, and then securing it by replacing the screw *d*.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination of the eccentric-ring E, or its equivalent, the revolving head G G', and the slotted arms K, or their equivalent, with the reel, when the slotted arms K, or their equivalent, are pivoted to the reel-head at a distance from its center different from the distance of the pins *b* from the center of the revolving head G G', and arranged to operate in the manner described, and for the purpose set forth.

2. Operating the forks L L by mechanism so constructed as to cause the tines of the forks to constantly project downward while being carried around a common center, and

to assume a nearly vertical position while passing under and over the center of the reel, and to have a constantly-varying outward inclination while passing from top to bottom and from bottom to top of the reel, thereby gathering and discharging the hay, substantially in the manner set forth.

3. The fork-head constructed of the bars I I' and cross-pieces J, with the slotted arms K, as herein shown and described.

4. Fastening the teeth of a hay-tedder by a metallic clasp, combined and arranged as herein set forth.

5. The arrangement of the revolving head G G', the cranks *e e*, and the slotted arms K, when used to operate the forks of a hay tedder or rake, substantially as described.

WILLIAM H. BUTTERWORTH.

Witnesses:

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R. BUTTERWORTH.