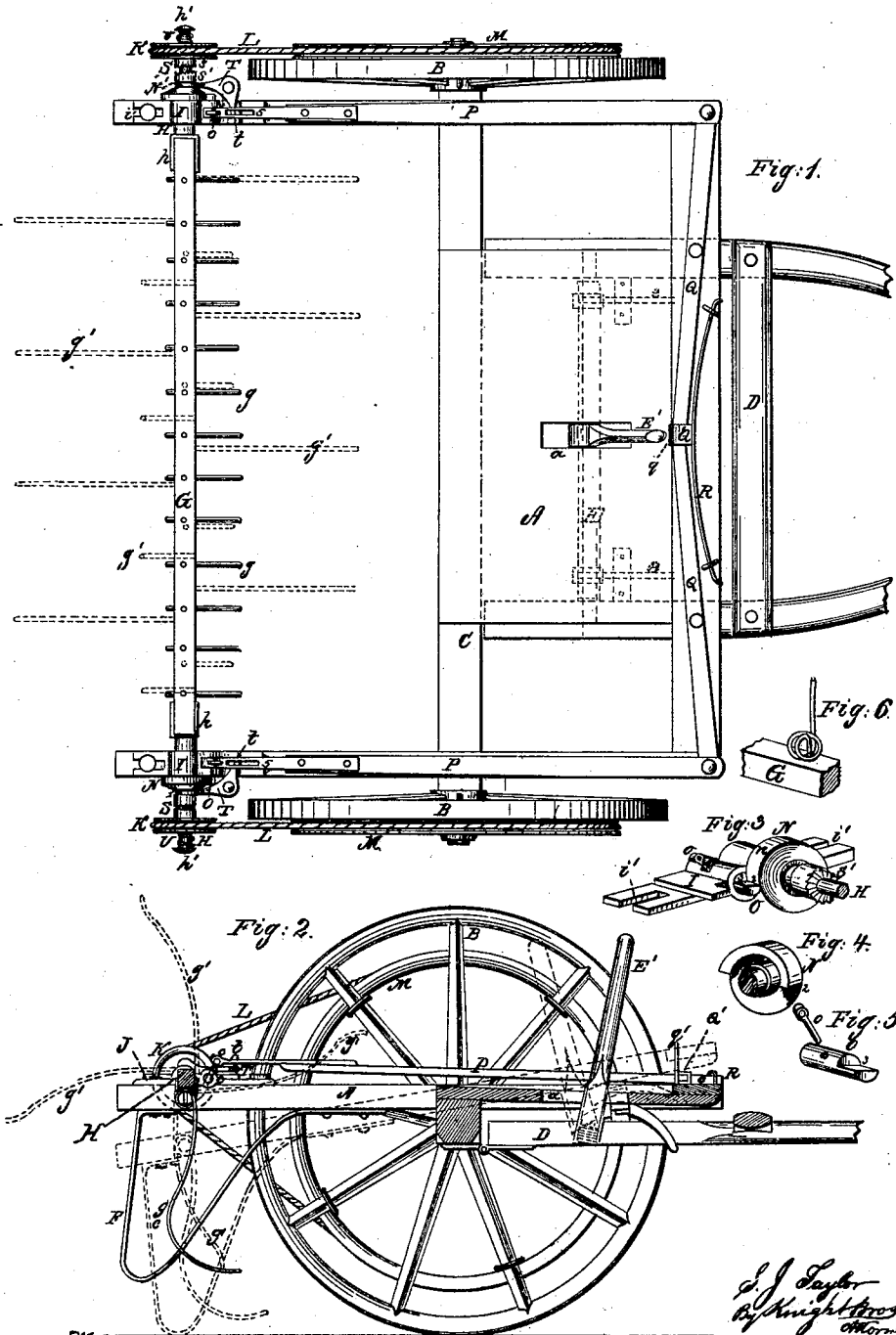


S. J. TAYLOR.
Rake and Tedder.

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IMPROVEMENT IN COMBINED HAY-RAKE AND TEDDER.

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

I, SYLVESTER J. TAYLOR, of Rome, in the county of Oneida and State of New York, have invented a new and useful improved Combined Hay-Rake and Tedder, and do hereby describe the same.

Nature and Objects of the Invention.

My improved combined hay-rake and tedder is a wheel-implement, and of the class which is adapted for different uses by the reception merely of the proper heads, thus saving the expense, &c., of separate implements, or even separate sets of operating devices or frames.

My improvements relate to the adaptation of the operating devices, without complication of parts, to impart to the head an intermittent or continuous rotary movement, as required, and to the more perfect adaptation of the heads for their work, the said improvements consisting in certain novel and improved constructions, combinations, and arrangements hereinafter specifically set forth.

Description of the Drawing.

In the accompanying drawing, made a part of this specification—

Figure 1 represents a plan view, and

Figure 2, a vertical longitudinal section, of an illustrative form, of my improved combined hay-rake and tedder, with certain parts omitted, the full lines representing it as adapted for employment as a rake, and the head in its elevated position.

The tedder-head is shown in dotted lines in both figures, and the working position of the head also thus indicated in fig. 2.

Figures 3, 4, and 5 are sectional perspective views of parts of the operating mechanism, detached.

Figure 6 is a sectional perspective view of a portion of the rake-head, illustrating the construction of its teeth.

Similar marks of reference indicate like parts in the several figures.

General Description.

The frame A of the machine is mounted on a pair of ground-wheels, B B, the axle C of which forms a part of it. It is thus pivoted.

The shafts or thills D, or their equivalent, are hinged, d, to the axle C, and are utilized besides, for the attachment of draft, to provide bearings for a transverse rock-shaft, E, for adjusting, by means of cams e thereon, the position of the frame.

Said rock-shaft is actuated by means of a lever, E', projecting through a slot, a, in the floor of the frame A, (when such floor exists.)

Its cams e, which may be two in number, are in the form of tangential curved arms, and work in staples or brackets a', on the under side of the frame A.

Runners F, at the rear end of the frame, support the same at the proper working height, when depressed, and automatically elevate and depress it, to accommodate it to irregularities in the surface.

The head G (tedder or rake) is mounted at the rear end of the frame, being supported by a pair of shafts, H, mounted in line transversely of the side bars of the frame, in suitable boxes, I, and provided, at their inner ends, with sockets, h, for the reception of the ends of the heads.

Said shafts, one or both, are further provided, at their outer ends, with pulleys, K, for the reception of motion, through bands L, (preferably chains,) from pulleys, M, formed on or attached to the sides of the ground-wheels, to revolve the head, and intermediately with locking-disks or collars, N, by which to hold the head from rotation when desired, as while raking, being engaged by rolling tumblers or stops O, for this purpose.

The pulleys K are preferably (as shown) mounted loosely on the shafts H, being supported laterally by heads h', and connected to the shafts by ratchet couplings S, the respective members, s s', of which may be formed on them and on the disks or collars N, as shown, the latter being connected to the shafts by spine or similar joints, and engaged by the shifting-forks T, being for their engagement provided with circumferential grooves 1.

Springs U, which may be interposed between the heads h' of the shafts and the pulleys, afford the requisite yielding support to enable the couplings to automatically disengage on any obstruction being met in a backward movement.

The locking-disks or collars N may each support one of the parts of the couplings S, as above described, or may be solid with the shafts or rigidly attached thereto, the couplings being separate. The proposed construction of said collars is clearly shown in figs. 3 and 4 of the drawing.

Shoulders, 2, are presented on their inner surfaces for the engagement of the stops O, and sufficient space in front of said shoulders is provided to permit the bolts to be thrown into position during the rotation of the shafts.

The flanges n, which provide the shoulders 2 and occupy the space not required to permit the engagement of the stops, serve to prevent such engagement of the stops as would result in the premature uncoupling of the driving-pulleys when the implement is being used as a rake, said stops being adapted to govern the operation of the pulley-couplings, as hereinafter set forth.

Bearings for the stops O are provided in the boxes I of the shafts.

Said stops are provided with arms o, by which to oscillate them, which arms, working in slots, i, in their

bearings, serve also to support them longitudinally therein, said slots serving further as stops to regulate *c* determine their movement. They are arranged about half way within the circumference of the locking-collars N, and their engaging faces, 3, being in about the planes of their axes, they are adapted to present the necessary abutments for engagement, as represented in fig. 3, and, by being given about a one-fourth revolution to withdraw said abutting surfaces, and permit the rotation of the head.

The forks T, in the form of horizontal bell-cranks, are pivoted to brackets projecting laterally from the boxes I, and projecting over the same, are provided, at their free ends, with wrists *t*, about in line with the arms *o* of the stops O, by which to operate them.

The stops O and forks T are actuated through rods P, attached to the arms *o* of the former positively at 4, and provided with elongated slots, 5, for the reception of the wrists *t* of the forks, the said slots being so graduated as that their respective ends shall come in contact with said wrists, and actuate the couplings on the completion of the movements of the stops.

The rods P extend from the outer ends of a pair of levers, Q, at the front of the frame, the inner ends of which are connected by a sleeve or socket, Q', and are forced backward to lock the head and uncouple the driving mechanism by a suitably-applied spring, R, an extension, *g*, of the socket Q', forming a treadle by which to force said socket forward to reverse the condition of said parts.

Slots *z*, in the ends of the boxes I, for the reception of their attaching-screws, enable their adjustment to bring them in line, &c.

The heads G, of which separate ones are employed, are provided, respectively, with rake-teeth *g* and tedder-teeth *g'*. They are otherwise of similar construction. They may be secured in the sockets *h* of their operating shafts by transverse screws or other suitable means.

The teeth *g* of the rake-head G *g* are provided with the customary coils at their upper ends, to impart the necessary springiness. Their "stubs," 6, however, are carried up between the coils, as represented most clearly in fig. 6 of the drawings, instead of on one side, as is usual, and thus combine the spring of the double coil with the lateral support of the single coil.

The teeth *g* of the tedder-head G *g'* are secured in the head proper, which is a single shaft, and project tangentially therefrom. They are so bent that their ends are radial to the head or project behind such radial lines. Above they have a compound reverse curve, which serves to throw the hay outward to the ends, by which it is discharged at an angle determined by the degree of rearward projection of the said point.

A driver's seat and suitable means for holding the lever E' and treadle Q' *g* may be provided on the frame in suitable position.

The form and arrangement of the several parts, except where function depends on them, are variable. Other modifications may also be made, for instance, one set of driving and holding devices, or of one or the other, might be dispensed with in some machines.

Operation.

In use, the proper head being applied, and, if necessary, brought into line by adjusting the boxes I of its shafts, the machine is run into the field with its frame in the position represented in full lines in fig. 2 of the

drawing, and has the same then adjusted to the position indicated in dotted lines in said figure, by the lever E' and media E *e* *a'*, or their equivalent, the runners F resting on the ground, and the head supported thereby at proper working height, when the operation may commence.

For teddering, the head G *g'* being attached through the medium of the devices Q' *g'* R Q P 4 5 T *t* S 1 *o*, the stops O are withdrawn and the pulleys K connected to the shafts of the head, when, the machine being started, the requisite rapid continuous rotary motion will be imparted to the head through said pulleys and the bands I, from the pulleys M on the ground-wheels.

For raking, the head G *g* being attached, the machine is started with the couplings and stops in their normal condition. On the teeth being filled, the treadle Q' is pressed on with the foot, actuating successively the stop O and the coupling S, releasing the head and causing it to receive a rotation to discharge its load. The treadle, having been meanwhile released, the parts are projected by the spring R to their normal condition. The assumption of this, however, is deferred until the necessary portion of the rotation has been positively imparted to insure its completion by the flanges *n* of the locking-collars N, arresting the movement of the stops, and, consequently, (owing to the positive connection of said stops with the operating devices,) of the actuation of the forks T, governing the couplings of the operating pulleys. On the completion of the rotation the head is again locked by the shoulders 2 of the locking collars N on its shafts coming in contact with the stops O, and the uncoupling of the operating pulley.

Thus the operation continues:

In both uses the runners, F serve to support the head at the proper height and to accommodate it to irregularities in the surface of the ground. In running back, the couplings of the operating pulleys are automatically uncoupled, owing to the ratchet-form of the engaging-teeth of said coupling, and the yielding support afforded by the springs U.

Claims.

I claim as my invention—

1. The combination, with the couplings S and locking-tumblers or stops O *o*, of the forks T *t* and rods P 4 5, constructed and arranged to operate as described, for the purpose set forth.

2. The rolling-tumblers or stops O 3, as constructed and operating in the manner described, for the purpose set forth.

3. The combination, with the head-supporting and operating shafts H, of the pulleys M K, band L, couplings S, forks T *t*, springs U, locking-disks N 2, rolling-tumblers or stops O 3 *o*, rods P 4 5, levers Q, treadle Q' *g*, and spring R, as represented and described, for driving and governing the operation of the heads.

4. The rake-head G *g*, as constructed with teeth, having their attaching "stubs" 6 carried up between the coils, in order to support them laterally, as described.

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Witnesses:

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