

(No Model.)

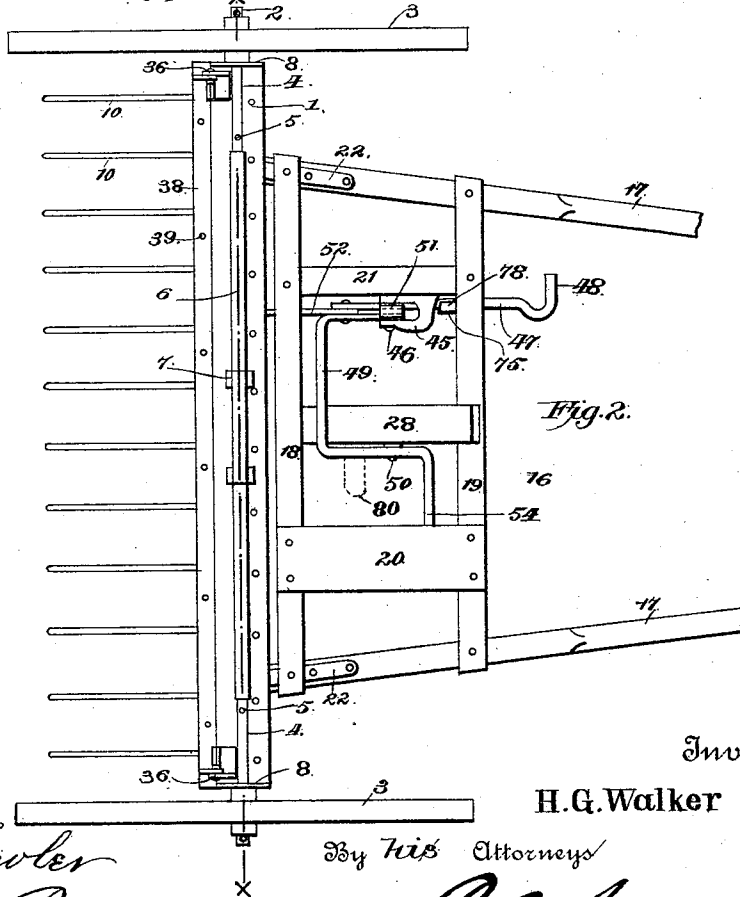
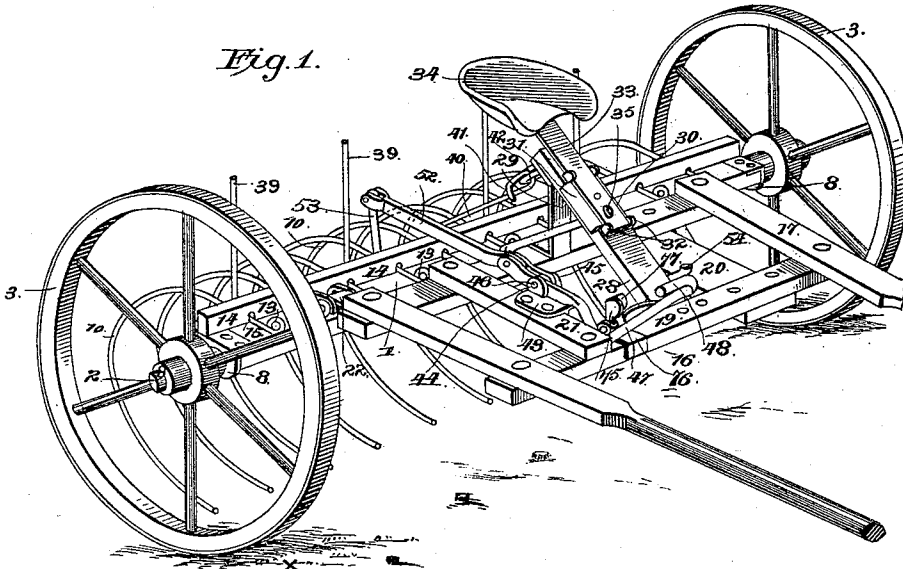
2 Sheets—Sheet 1.

H. G. WALKER.
HORSE HAY RAKE.

No. 459,617.

Patented Sept. 15, 1891.

Fig. 1.



Witnesses

M. E. Fowler
Wm. Baggett

Inventor

H. G. Walker

By *his* Attorneys

C. A. Snow & Co.

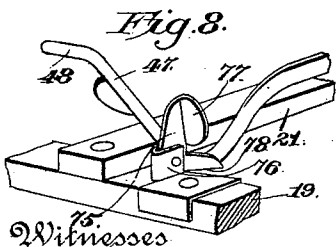
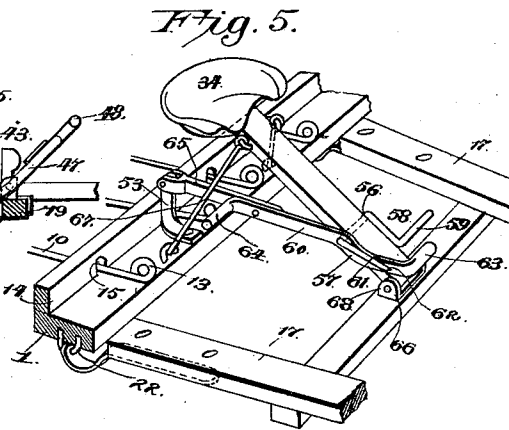
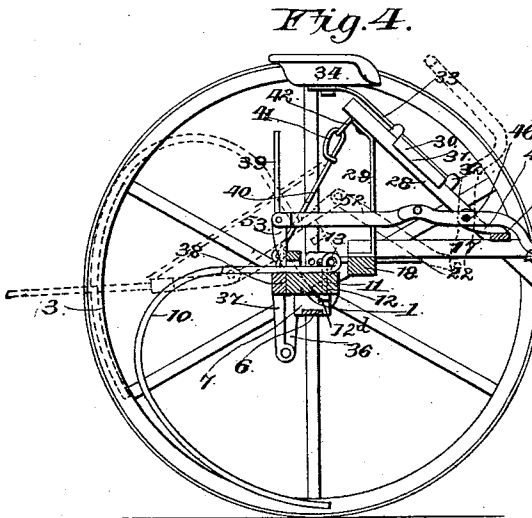
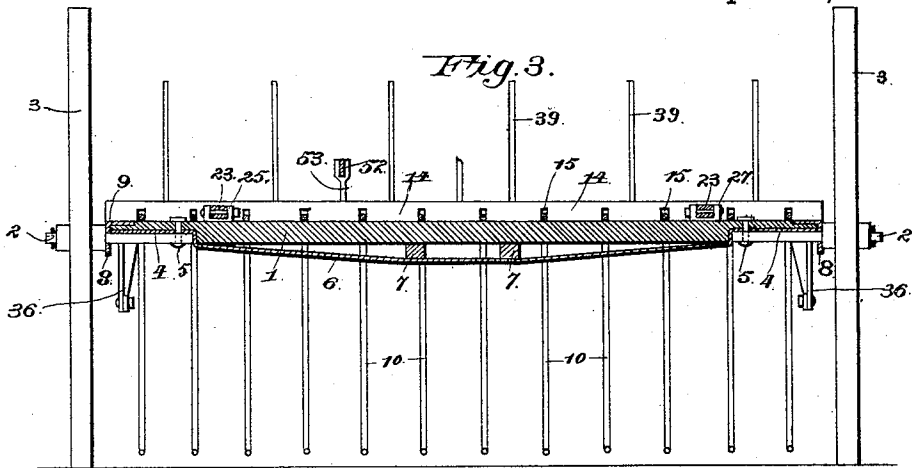
(No Model.)

2 Sheets—Sheet 2.

H. G. WALKER.
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No. 459,617.

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Witnesses

M. Fowler
Wm. Baggett

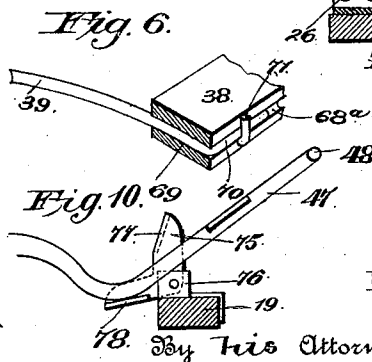
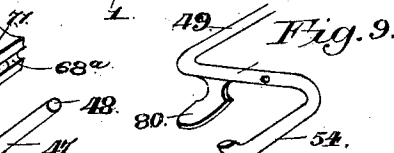
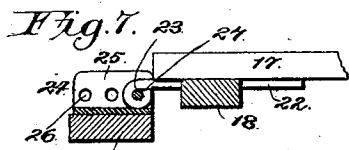


Fig. 10.



Inventor
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UNITED STATES PATENT OFFICE.

HORACE G. WALKER, OF SOMERSET, PENNSYLVANIA.

HORSE HAY-RAKE.

SPECIFICATION forming part of Letters Patent No. 459,617, dated September 15, 1891.

Application filed December 7, 1889. Serial No. 332,900. (No model.)

To all whom it may concern:

Be it known that I, HORACE G. WALKER, a citizen of the United States, residing at Somerset, in the county of Somerset and State of Pennsylvania, have invented a new and useful Horse Hay-Rake, of which the following is a specification.

This invention relates to horse hay-rakes; and it has for its object to provide a machine of this class which shall possess superior advantages in point of simplicity, durability, and general efficiency.

With these ends in view the invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings hereto annexed, Figure 1 is a perspective view of my improved horse hay-rake. Fig. 2 is a bottom plan view of the same. Fig. 3 is a transverse sectional view taken through the rake-head on the line xx in Fig. 2. Fig. 4 is a longitudinal sectional view. Fig. 5 is a perspective view showing a modification in the construction of the operating-lever and showing the seat-support hinged to the thill-frame. Fig. 6 is a detailed view showing a modification in the construction of the clearers. Fig. 7 is a detail view showing the preferred method of connecting the thill-frame with the rake-head. Fig. 8 is a detail view, on a larger scale, of the lever 47 and the supplementary lever or treadle. Fig. 9 is a detail view of the U-shaped bail and treadle to show the supplemental treadle indicated in dotted lines in Fig. 2. Fig. 10 is a detail view showing in elevation the lever 47 and the supplementary treadle and in section the cross-bar 19, to which the latter is attached.

Like numerals of reference indicate like parts in all the figures of the drawings.

The rake-head 1 is provided at its ends with spindles or stud-axles 2 for the wheels 3, which latter may be of any suitable construction. The spindles are fitted in grooves or channels 4, formed in the under side of the rake-head at the ends of the latter, and they are rigidly secured in said grooves by means of bolts 5 at their inner ends.

6 designates a truss the ends of which are arranged in the grooves or channels 4 and

secured by means of the bolts 5, which hold the inner ends of the spindles. Tension-blocks 7 are arranged between the truss and the under side of the rake-head. Cap-plates 8 are arranged upon the ends of the rake-head and are provided with perforations 9, through which the spindles 2 extend, said spindles being thereby held very securely and rigidly in position.

10 designates the rake-teeth, which are constructed of steel wire, and which consist of the straight vertical shanks 11, the upper ends of which are bent forwardly, downwardly, and rearwardly to form the eyes or spring-coils 13, from which the rearwardly, downwardly, and forwardly curved bodies of the teeth extend. The shanks 11 of the rake-teeth extend vertically through perforations 12 in the rake-head, and the teeth are secured in position in the rake-head by means of a cross-bar 14, bolted or otherwise attached to the upper side of the rake-head and provided on its under side with grooves 15, in which the individual rake-teeth are seated and by which they are prevented from being displaced laterally. In this manner the rake-teeth may be very inexpensively constructed, while at the same time they will be held very securely in the most efficient position for operation and in such a manner as to be capable of yielding vertically within the confines of the slots 15. The shanks 11 of the rake-teeth, which extend through the perforations 12, are screw-threaded to receive the nuts 12^a, by means of which the rake-teeth are secured. It will also be seen that by tightening these nuts the tension of the eyes of spring-coils 13 may be regulated, thus regulating the stiffness or rigidity of the teeth.

16 designates the thill-frame, which comprises the thills 17, connected at their rear ends by a cross-bar 18 and at some distance in advance of said cross-bar by another cross-bar 19. The cross-bars 18 and 19 are connected, respectively, on their under and upper sides by longitudinal frame-bars 20 and 21. The thills are provided at their rear ends with the thill-irons 22, having transverse eyes or perforations 23, by means of which they may be connected adjustably with the coupling-plates 24, which are bolted or otherwise secured upon the upper side of the rake-head.

Said coupling-plates preferably consist of U-shaped plates, the flanges of which 25 are each provided with a series of perforations 26 to receive the bolt 27, by means of which they are connected with the thill-iron. It will thus be seen that the point of attachment of the thill-frame to the rake-head may be varied with relation to the pivoting-point of the latter, which is formed by the spindles working in the supporting-wheels. Thus by attaching the draft slightly in rear of the pivoting-point the draft will assist in tilting the rake-head when the load is to be discharged. By attaching the draft slightly in front of the pivoting-frame the weight of the driver will have the same effect in assisting the tilting of the rake-head, as will be presently more fully described.

28 designates an inclined support, the lower end of which is attached to the cross-bar 19 of the thill-frame and the upper rear end of which is connected by a brace 29 with the cross-bar 18 of said frame.

30 designates the plate, the sides of which are provided with downwardly-extending flanges 31, fitting on either side of the support 28, and with upwardly-extending lugs 32, between which is fitted the spring-bar 33, the upper end of which carries the driver's seat 34. The seat-bar 33 is attached securely to the support 28 by means of a bolt 35, passing through said support and through the plate 30 and spring-bar 33, and several perforations may be formed in the latter to admit of the adjustment of the driver's seat. It will be seen that the weight of the driver rests upon the brace 29, which is attached to the cross-bar 18 at the rear end of the thill-frame. Hence when the thill-frame is connected to the rake-head in front of the pivoting-point of the latter the weight of the driver will materially assist in tilting the rake-head for the discharge of the load.

The rear side of the rake-head is provided at its ends with downwardly-extending brackets 36, to the lower end of which are pivotally connected the lower ends of the arms 37, which extend downwardly from the clearer-head 38, which is provided with tines 39, which extend upwardly between the rake-teeth and which may be of any suitable construction.

Suitably connected to the upper side of the clearer-head is a rod 40, the upper end of which has a loop 41, which is connected with a staple 42 upon the under side of the seat-support 28. It will be seen that by this construction the clearer-tines will remain in an upright position while the load is accumulated by the rake. When the rake-head is tilted in the act of dumping the load, the connecting-rod 40 will force the clearer-head in a rearward direction along the curve of the rake-teeth, thus effectually disengaging the load from the latter and enabling them to be quickly restored to their operative position. At the same time it will be seen that while

the operation of dumping the load is being performed the clearer-head will be free to move vertically within the limit of the length of the slot or loop 41 at the upper end of the connecting-rod 40. Danger of breakage will thus be avoided and the operation be rendered more certain and satisfactory. By this construction of the clearer my improved horse-rake is also enabled to work satisfactorily in heavy and bunchy hay, which it has been difficult, if not impossible, to manipulate with a hay-rake of ordinary construction.

Suitably mounted upon the longitudinal top bar 21 of the thill-frame is a plate or casting 43, having a perforated lug 44 and a perforated bracket 45, the perforations in which are in alignment with each other and adapted to receive a bolt 46, upon which is pivoted a lever 47, the forward end of which is bent so as to form a crank or pedal 48.

49 designates a U-shaped frame, one arm of which is pivoted upon the bolt 46 and the other arm of which is connected pivotally, by means of a bolt 50, to the side of the support 28, the bolts 46 and 50 being in a line with each other. The arm of the frame 49, adjacent to the lever 47, is connected with said lever by means of a grooved or channeled clamping-plate 51, and between the rear ends of the lever 47 and the U-shaped frame 49 is pivoted a rearwardly-extending arm or lever 52, which is in turn connected pivotally with an arm or bracket 53, extending upwardly from the rake-head. When the forwardly-extending arm of the lever 47 is depressed to its utmost extent and is in contact with the bracket 45 of the plate or casting 43, the point at which the arm or lever 52 is pivoted between the frame 49 and the lever 47 is in a higher plane than the fulcrum of said lever 47 and frame 49, and a lock-joint is thereby formed, which retains the rake-head in position for gathering the load. When it shall be desired to discharge the load, the lock-joint may be broken by a slight pressure of the foot of the driver upon the rear part of the U-shaped frame 49, and the rake-head will thus be instantly and automatically tilted. By the tilting of the rake-head the forward arm of the lever 47 will be thrown in an upward direction until the crank or handle 48 is within convenient reach of the driver, who may thus, by manipulating the lever 47 as a hand-lever, complete the tilting of the rake-head and effectually discharge the load. To restore the rake-head to operative position the driver merely presses with his left foot upon an arm or crank 54, which is formed at the front end of that arm of the U-shaped frame 49 which is pivoted to the side of the seat-support. The operation is thereby reversed and the several parts restored to their normal operative position.

In Fig. 5 of the drawings I have shown a modification in the construction of the operating-lever which may be described as follows: 56 is a rod extending transversely

through and journaled in the seat-support and provided at its ends with forwardly-extending arms 57 and 58, the latter of which has its front end bent outwardly, so as to form a crank 59. Upon the opposite end of the rod 56, which is provided with the arm 57, is mounted a lever 60, which is rigidly connected with the front end of the arm 57, so as to work in unison therewith, by the front end of said arm 57 being bent, as shown at 61, and extended through a perforation 62 in the lever 60. The front and rear ends of the lever 60 are bent so as to form cranks 63 64, and the rear end of said lever is connected by the pivoted rod 65 with the arm or bracket 53, extending upwardly from the rake-head. It will be observed that this construction is practically identical with that already described, the crank 59 being the equivalent of the crank 54, the crank 63 the equivalent of the handle 48, and the crank 64 being a substitute for the treadle formed by the rear part of the U-shaped frame 49. The operation of these devices will be readily understood from the foregoing description. This modified form of operating-lever has, in the drawings hereto annexed, been shown as applied to a seat-support, which, instead of being rigidly secured to the thill-frame, is hinged between the flanges 65 of a U-shaped plate 66, secured upon the cross-bar 19 of said thill-frame, while the rear end of said seat-support is connected by a hinged or pivoted brace 67 with the rake-head at a point in front of the fulcrum of the latter, in order that the weight of the driver may assist in tilting the rake-head to discharge the load.

In Fig. 5 I have also shown the thill-frame connected with the rake-head by means of thill-irons hinged in staples upon the under side of the latter, and I would have it understood that this or any other convenient method of connecting the thill-frame with the rake-head may be employed when desired, so long as it does not depart from my invention.

If preferred, there may be adopted a slight change in structure, as illustrated in Fig. 6 of the drawings, which relates to the method of connecting the tines 39 with the clearer-head 38. By this method the rear or under side of the clearer-head is provided with a groove 68^a, and transverse perforations 69 are formed in the clearer-head to receive the shanks of the tines, the lower or rear ends of which are bent laterally, as shown at 70, so as to fit in the groove 68, where they are confined by means of hooks or staples 71, driven into the clearer-head. By this method of construction the tines are secured very firmly in the clearer-head and are prevented from turning therein. The tines may be straight, as shown in Figs. 1 and 4, or they may be curved, as shown in Fig. 6. The said tines may also be arranged to occupy either a vertical or a horizontal position.

When the rake is passing over rough and uneven ground, or when bowlders or other ob-

structions are to be passed, it is sometimes desirable that the lock-joint of the operating-levers should be broken, in order to enable the tines of the rake to yield sufficiently to pass over such obstructions as may be encountered and which they would not readily be able to clear by their natural resiliency without digging into the ground. At the same time it is desirable that the driver should have perfect control over the said operating-levers in order to prevent the rake-head from swinging sufficiently to dump or discharge the load. To accomplish this purpose I avail myself of a mechanism, which has been shown in Fig. 1 and on a larger scale in Fig. 8 of the drawings, and which consists of a supplementary lever or treadle 75, which is mounted pivotally upon a bracket 76, secured upon the front cross-bar 19 of the thill-frame, directly under the lever 47 and in front of the fulcrum of the latter. The lever or treadle 75 has a foot-piece 77 and a flange 78, extending under the lever 47. It will be seen that by means of the said supplementary lever or treadle the front end of the lever 47 may be thrown in an upward direction sufficiently to break the lock-joint of the operating-levers. This operation the driver may perform with the heel of one foot, while he keeps the ball of the foot upon the treadle 48, whereby he retains perfect control over the operating-lever.

It is obvious that the operation performed by the supplementary lever or treadle 75 is identical with that which the driver might perform by depressing the rear end of the U-shaped bail 49. By operating the said U-shaped bail, however, there would always be danger of throwing the levers too far, in which event the driver would be unable to retain control of the levers and the load would be discharged. The supplementary lever 75, on the other hand, is so arranged as to merely break the lock-joint, it being impossible for the said supplementary lever to operate the lever 47 to such an extent as to cause the driver to lose control of the treadle 48.

The construction of the device for breaking the lock-joints might be modified in numerous ways, and in dotted lines in Fig. 2 of the drawings and full lines, Fig. 9, I have illustrated one such modification, which consists in providing the arm of the pivoted U-shaped bail, in rear of the fulcrum 50, with a supplemental treadle 80, upon which the driver may place the heel of his foot, while the ball of his foot rests upon the treadle 54. It will thus be seen that the driver is enabled, by pressure of his heel upon the treadle 80, to break the lock-joint without danger of losing control of the treadle 48, upon which his other foot constantly rests. Other modifications might be devised and adopted, but I consider the foregoing sufficient to serve as an illustration. It is important, however, whatever construction may be adopted, that the driver shall retain control of the operating-lever 47 without at any time removing his foot from the treadle

48 of said lever and without resorting to the use of hand-levers for the purpose of restraining the tilting of the rake-head, and this purpose is retained by any of the constructions herein described.

The operation of my invention and its advantages will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed, by those skilled in the art to which it appertains. I would have it understood, however, that I do not desire to limit myself to the particular forms of construction herein shown and described, inasmuch as various changes may be made without affecting the general combination of parts or the construction of the device as a whole. I therefore reserve the right to make any such changes and alterations as may be resorted to without departing from the spirit of my invention.

Having thus described my invention, I claim—

1. The combination of the rake-head having grooves or channels in its under side, the spindles mounted in said grooves, and a truss having its ends inserted into said grooves and secured by means of the bolts which secure the inner ends of the spindles, substantially as set forth.

2. The rake-head having a groove or channel in its underside, in combination with the spindles mounted in said grooves, the cap-plates secured upon the ends of the rake-head and having perforations for the said spindles, and the truss having its ends inserted in the said groove under the inner ends of the spindles and secured by means of the bolts passing vertically through the inner ends of said spindles, substantially as specified.

3. The combination of the rake-head having downwardly-extending brackets, the clearer-head arranged in front of the rake-teeth and having downwardly-extending arms hinged to said brackets and tines extending rearwardly between the rake-teeth, the thill-frame having the inclined seat-support extending over the rake-head, and a rod connecting the clearer-head with the upper rear end of said seat-support, substantially as and for the purpose set forth.

4. The combination of the rake-head having downwardly-extending brackets, the clearer-head having downwardly-extending arms hinged to said brackets and tines extending rearwardly between the rake-teeth, the thill-frame hinged to the rake-head and having the seat-support, and a rod connected slidingly to the latter and having its lower end connected with the clearer-head, substantially as set forth.

5. The combination, with the tilting rake-head having downwardly-extending brackets, of the clearer-head having downwardly-extending arms hinged to said brackets, the hinged thill-frame having the seat-support, and a connecting-rod attached to the clearer-head and provided at its upper end with a

loop or slot connected with a staple upon the under side of the seat-support, substantially as set forth.

6. The combination of the rake-head having downwardly-extending brackets, the clearer-head arranged in front of the rake-teeth and having downwardly-extending arms hinged to said brackets and the tines extending rearwardly between the rake-teeth, the thill-frame, and a rod connecting the clearer-head with an upright upon the thill-frame, substantially as set forth.

7. The combination of the rake-head, the thill-frame hinged thereto and having the seat-support, a pair of rigidly-connected levers mounted pivotally on opposite sides of the seat-support, both having treadles extending in front of their fulera and one of said levers having an additional treadle in rear of its fulcrum, and a connecting-rod connected pivotally with one of said levers in rear of its fulcrum and with the upper end of a bracket extending upwardly from the rake-head, all arranged and operating substantially as and for the purpose set forth.

8. The combination of the rake-head, the thill-frame having the seat-support, a plate or casting secured to said thill-frame and having a perforated lug and a perforated bracket, a U-shaped frame having its arms pivoted, respectively, between said lug or bracket and to the seat-support and provided with a forwardly-extending crank-arm or treadle, a lever pivoted between the perforated lug and the perforated bracket and having the forwardly-extending crank-arm or handle, a channel-plate connecting said lever rigidly with the adjacent arm of the U-shaped frame, an arm or bracket extending upwardly from the rake-head, and a rod pivoted to the upper end of the said bracket and having its rear end mounted pivotally between the rear end of the lever and the adjacent arm of the U-shaped frame, substantially as and for the purpose set forth.

9. In a hay-rake of the class described, the combination, with the thill-frame and the tilting rake-head, of the operating-levers connected rigidly with each other and arranged on opposite sides of the seat-support, a pivoted rod connecting one of said levers with an arm or bracket extending upwardly from the rake-head, a treadle extending from one of the levers in rear of the fulcrum and serving to tilt the rake-head, and additional treadles extending from the two levers in front of and at different distances from the fulcrum and serving, respectively, to restrain the tilting movement of the rake-head and to restore the latter to operative position, substantially as set forth.

10. The combination, with the thill-frame having the seat-support, of the plate having downwardly-extending flanges clamping the said seat-support and upwardly-extending lugs, and the seat-spring pivoted between said lugs and secured by means of a bolt extend-

ing through said spring, plate, and seat-support, substantially as and for the purpose set forth.

11. The combination of the rake-head, the 5
thill-frame hinged thereto and having the seat-support, a pair of levers pivoted in the same axial line and having forwardly-extending crank-arms, a treadle formed in rear of the fulcrum of said levers, an arm or bracket 10
extending upwardly from the rake-head, a pivoted rod connecting the upper end of said bracket with the rear end of one of the levers, and a supplementary lever or treadle arranged under the front end of said lever and 15
having a flange or cam extending under the same and adapted to throw it in a downward direction from the dead-center, so as to break the lock-joints, substantially as set forth.

12. In a hay-rake, the combination, with the 20
operating-lever connected by a pivoted rod with the rake-head and arranged to form a lock-joint with said connecting-rod when the rake-head is in operative position, of a treadle pivoted independently of said operating-lever 25
and having a flange adapted to bear against said operating-lever and to actuate the latter to break the lock-joint, substantially as set forth.

13. In a hay-rake, the combination, with the 30
operating-lever connected by a pivoted rod

with the rake-head and arranged to form a lock-joint with the said connecting-rod when the rake-head is in operative position, of an independently-pivoted treadle arranged at the front end of the operating-lever, whereby 35
the lock-joint of the latter may be broken without the removal of the foot of the operator from the crank or treadle of said operating-lever, substantially as and for the purpose set forth. 40

14. In a hay-rake of the class described, the combination, with the thill-frame and the tilting rake-head, of the operating-levers connected rigidly with each other and arranged on opposite sides of the seat-support, a pivoted rod 45
connecting one of said levers with an arm or bracket extending upwardly from the rake-head, and two treadles extending from the two levers in front of and at different distances from the fulcrum and serving, respectively, to tilt the rake-head and to restrain or 50
retard the tilting movement of the latter, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in 55
presence of two witnesses.

HORACE G. WALKER.

Witnesses:

JAMES E. FERNER,
EDWIN C. FERNER.