

(No Model.)

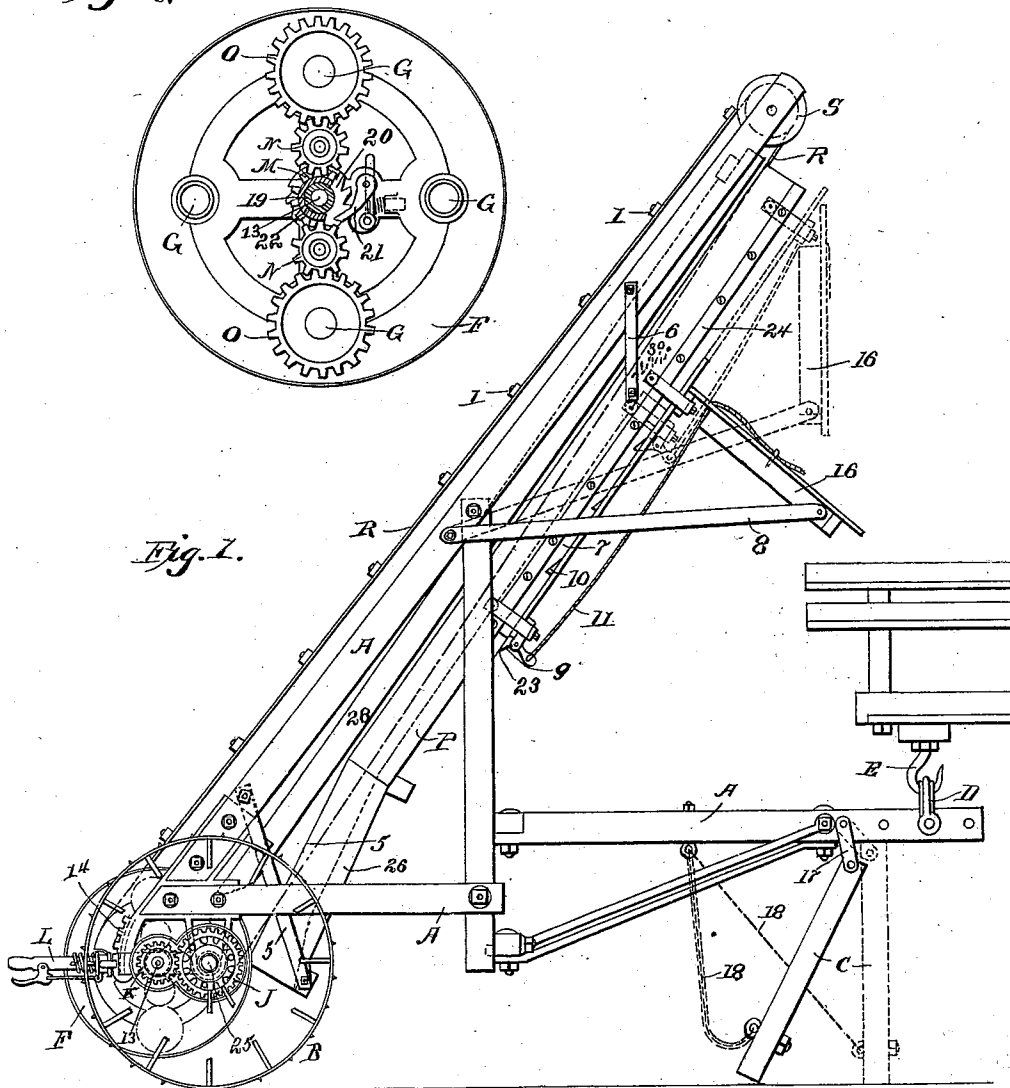
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G. W. PACKER.
HAY LOADER.

No. 554,627.

Patented Feb. 11, 1896.

Fig. 2.



WITNESSES

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Howard W. Orr,
H. S. Shepard.

INVENTOR

George M. Packer
per John G. Mahan
His Attorney

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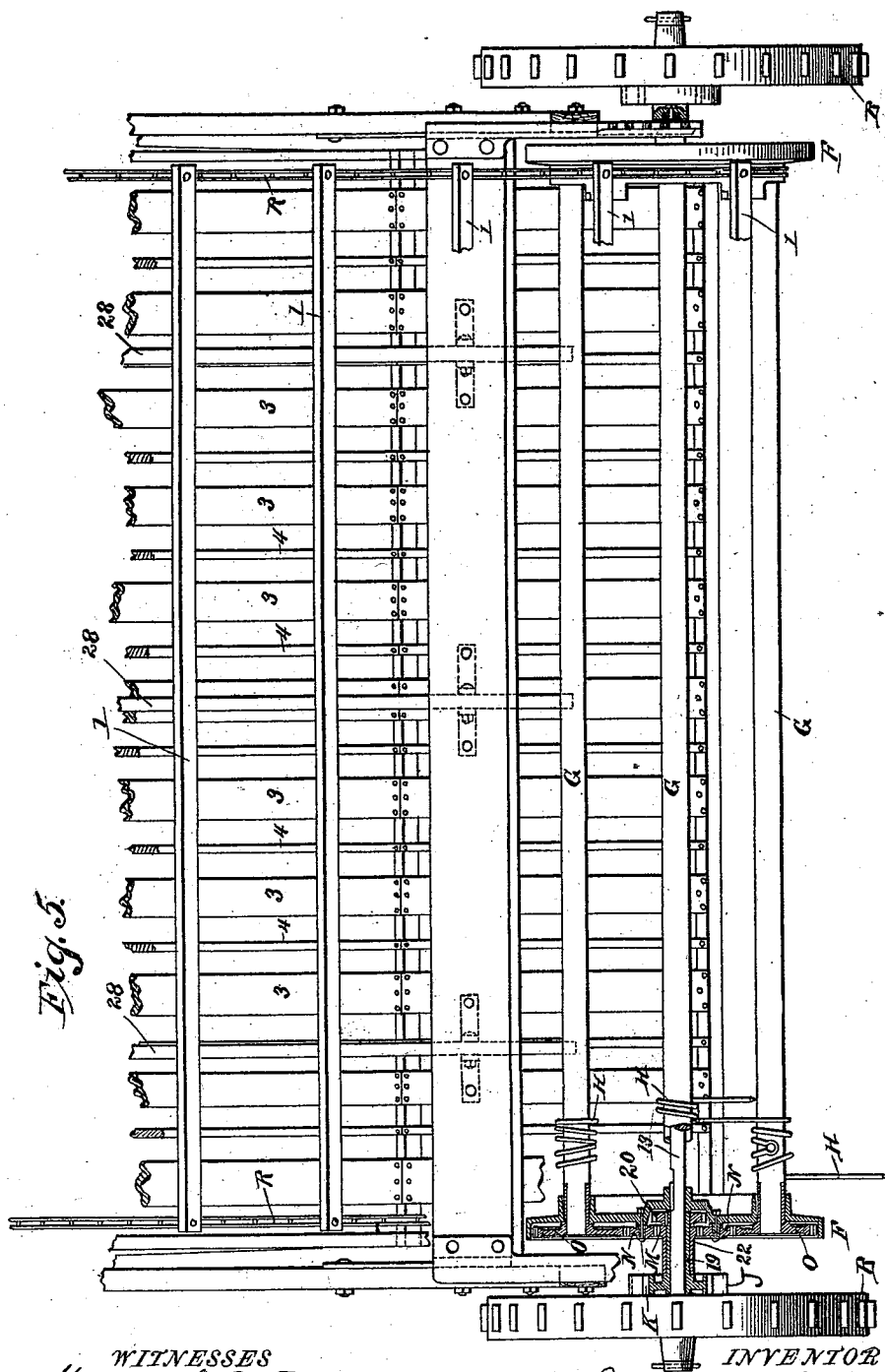


Fig. 5.

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INVENTOR

George W. Packer
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UNITED STATES PATENT OFFICE.

GEORGE W. PACKER, OF ROCK FALLS, ASSIGNOR TO THE KEYSTONE
MANUFACTURING COMPANY, OF STERLING, ILLINOIS.

HAY-LOADER.

SPECIFICATION forming part of Letters Patent No. 554,627, dated February 11, 1896.

Application filed June 3, 1895. Serial No. 551,571. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. PACKER, a citizen of the United States, residing at Rock Falls, in the county of Whiteside and State of Illinois, have invented certain new and useful Improvements in Hay-Loaders; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention has reference to that class of hay-loaders in which the hay is picked or taken from the stubble by rotating tooth-bars and transferred from such bars to the wagon by means of transverse slats arranged upon endless chains to sweep up an inclined platform; and my invention consists in the construction and arrangement of parts of the same, as will be hereinafter more particularly set forth.

In the accompanying drawings, Figure 1 is a side elevation of a machine embodying my invention. Fig. 2 is a detail of a portion of the rake-head. Fig. 3 is a partial vertical longitudinal section taken through about the center of the machine. Fig. 4 is a detail of the lever and its connections for regulating the height of the rake-head. Fig. 5 is a partial top view of the machine with a portion of the rake-head and its connection to the carrying-wheel in section.

Similar letters and figures refer to similar parts throughout the several views.

Referring to Fig. 1, A is the frame of the machine, suitably supported at its rear end upon two carrying-wheels B B, and at its forward end, when not in operation, upon a pivoted leg C, and when in use attached by means of the clevis D to the hook E, the latter being seated at any suitable locality on the under side of the rear of the wagon. The wheels B B serve also as traction-wheels to rotate the circular rake-head F. In the ends of the rake-head F are suitably journaled the annular series of rake-bars G (see Fig. 5) adapted to rotate axially in said rake-heads. The rake-bars G are each provided at suit-

able intervals with the rake-teeth H projected in opposite directions from the opposite sides of said rake-bars.

J is a gear-wheel bolted to the inside of the carrying-wheels B and rotated thereby. The wheel J engages and actuates a pinion K seated on the lever L in the line of the center axle 13 of the circular rake-head F, to which axle said head is keyed. The pinion K is rigidly seated on a sleeve 19, (see Fig. 5,) which extends through casting 22 on the intermediate portion of lever L and slightly within the rake-head F, and has keyed on its inner end a ratchet 20. The sleeve 19 rotates in casting 22 and receives and carries axle 13; but a pawl 21, Fig. 2, seated on the head F engages ratchet 20 when the adjacent carrying-wheel moves forward and compels the rake-head F to rotate with sleeve 19. These devices are used at each end of the rake-head F, so that the movement of each carrying-wheel B is independent.

A stationary gear M, seated centrally around sleeve 19, integral with casting 22, engages and actuates pinions N N, which latter are seated on and carried by the rake-head F, intermediate its center and the rake-bars G and on opposite sides of the gear M. The rotation of the head F around stationary gear M gives the pinions N N their axial rotation.

The devices just described are used in duplicate, one set at each end of the rake-head F. Two opposite rake-bars are driven from one end and the other two opposite rake-bars driven from their opposite ends.

The pinions N respectively engage and actuate larger pinions O seated on the rake-bars G, each pinion N actuating one rake-bar and two of such pinions being located at each end of rake-head F. The cogs of pinion O are twice the number of the cogs of stationary pinion M. Therefore pinion O makes a one-half reverse axial rotation with each full rotation of the head F, thus causing said rake-teeth to move slower than the progress of the machine and the rake-teeth to have a longer sweep on the ground than if they had simply an orbital movement with the periphery of the rake-head F. The rake-teeth H of course change their position in their axial rotation, and are so arranged that when they first strike the

hay they project forward in position to take up the hay. By reason of their backward rotation they are about twice as long on the stubble than if they had simply an orbital movement. Again, as said teeth leave the hay on platform P they project backward in proper position to be withdrawn.

In Fig. 3 the several rake-teeth are shown in the positions which they assume at different points of the rotation of the rake-head F.

P is the elevator-platform, on the lower end of which hay is delivered by the rake-teeth H in succession. In Fig. 3 the rear rake-tooth is shown as just coming into action, the lower one at about the lower limit of the sweep of said teeth in the act of raking the hay from the stubble, the forward rake-tooth as delivering the hay upon the lower end of the elevator-spout, being carried forward by the rotation of the rake-head, but receding in its axial rotation. The upper rake-bar exhibits the tooth last in use as withdrawn within the rake-head and the opposite tooth of the same bar as moving outward to be next in use.

R R are two parallel endless chains suitably carried at their upper ends on pulleys S and at their lower ends on the rake-head F. Transverse slats 1, attached at suitable intervals to the chains R, are engaged by lugs 2 formed on the rake-head F, and by this means the chains R, with their superimposed slats 1, are constantly driven. The elevator platform or spout, Fig. 5, in its lower portion consists of longitudinal wide flat slats, 3, and narrow and raised slats, 4, alternated so that the hay is held up in irregular shape to be engaged and carried up said platform by the slats 1. The platform P is suspended at each side of that part of the frame A which projects upward and carries the chains and slats aforesaid by dependent arms 5 and 6 pivoted respectively at their upper ends to the frame A and at their lower ends to the sides of the platform P near the respective ends of the latter.

The arms 5 and 6 are placed diagonally in reference to the platform P and the adjacent portion of the frame A; but when said frame and platform are in their position for use—that is, projected diagonally forward and upward—the arms 5 and 6 if unrestricted would hang vertically from their upper pivotal supports, respectively; but one of more stops 23 hold said elevator slightly forward of the vertical, so that its reaction may be more quick and forcible, and, if desired, such reaction may be reinforced by suitable springs 30, one of which is shown in dotted lines in Fig. 1. The upper arm 6 is shorter and forms a more acute angle with the platform P and the arm 5, so as to create in the forward oscillation of the elevator a wider space between the slats and the elevator at the upper end of the latter and insure the discharge of the hay. This holds the platform P toward the slats 1 simply by the gravity of said platform and the supplemental action of said spring, if the lat-

ter be employed. Said platform is swung from said slats by any unusual amount of hay carried upon said platform by said slats, and there is thus provided sufficient room for the passage of such excess. The arms 5 and 6 may be so located as to bring the platform P in its normal position as near to said slats as may be desired, and thereafter the automatic oscillation aforesaid of said platform will adjust the opening between it and said slats as the varying necessity accompanying its use may require. The upper portion 7 of the platform P is suitably carried on ways 24, so as to be susceptible of longitudinal movement on the frame A.

In Fig. 1 the chute 16 is shown as hinged in any suitable mode to the upper end of said sliding portion 7, and in full lines the parts are there shown in position for the beginning of the loading and when the required elevation is comparatively less. The chute 16 is shown at right angles with the portion 7 and therefore extends diagonally down toward the wagon-rack and is supported in place by an arm 8 pivoted at its rear end to the frame A and at its other end to the free end of said chute. As the hay on the wagon increases in height the part 7 is gradually moved upward on the frame A, a dog 9 successively engaging the ascending series of recesses 10 on frame A and thereby holding the part 7 at any desired elevation. When the part 7 is elevated so as to become practically the prolongation of the lower part of the elevator P, the arm 8 gradually withdraws the chute 16 from use as a spout, as shown in Fig. 1 in dotted lines, and said chute becomes a backing against which the end of the load of hay may be built as against a perpendicular wall. A rope 11 attached at its lower end to the rear of the dog 9 is held at its upper end within convenient reach of the operator that he may disengage the dog 9 and lower part 7 when the load is completed.

The hand-lever L, Fig. 4, is pivoted at its inner end, 12, on the spindle 25 of the carrying-wheels B just within said wheels and intermediately supports the center axle 13 of the rake-head F. The lever L is adjustable vertically by means of the rack 14 formed on the frame A and an engaging spring-pawl 15 carried on said lever. One lever L is located at each end of the rake-head F, and thus the uniform vertical adjustment of the latter is accomplished.

Leg C is attached by a link 17, Fig. 1, to the front and horizontal portion of the frame A. When said leg is in a vertical position, it supports the clevis D at such height that it can be thrown into the hook E on the wagon-frame without the usual labor of lifting a heavy loader. In the forward movement of the machine the lower end of the leg C will drag on the ground. A rope 18, extending from the lower end of leg C backward and upward to the frame A, prevents the lower end of leg C from swinging forward beyond the vertical,

and when the hay is loaded a slight backward movement of the wagon will push the leg C into a vertical position and thereby raise clevis D sufficiently to disengage hook E, when said clevis will fall over and the load can be driven away from the rake.

It will be noticed that the lower end, 26, of elevator P is bent away from the slats 1, so as to form a chamber 27, within which the hay is accumulated by the rake-teeth H before it is elevated by the slats 1. This brings the hay upon the wagon like pitching—less effected by the wind than where the hay is dribbled from the head of the elevator and more convenient for building the load. Three horizontal guide-strips 28 hold the slats 1 down to their work.

It will be noticed that the operating locality of the rake-teeth H is near between the centers of the carrying-wheels B. This gives said carrying-wheels constant control of said rake-head and enables them to support the rake-teeth out of actual contact with the surface of the ground and thus avoid the raking of clods, earth, old grass, and other débris into the hay.

It will be noticed that the hay-elevating slats 1 move upward at the lower side of the carrier. The hay, therefore, is elevated between the endless carrier and the sub-platform P in position to be actually clamped between said parts and protected from the disturbing effect of the wind, which latter is very objectionable when hay is carried upon the upper portion of the carrier. This construction also renders it feasible to utilize the gravitating platform aforesaid and the chamber 27. As the interval between the elevator-platform P and the slats 1 just above the chamber 27 is comparatively narrow, the hay does not pass through said restricted place until it has accumulated in said chamber. During the first deposit of the hay upon the platform at the lower end of the latter the slats 1, being so far above said platform at that point, do not engage the hay until quite a quantity has accumulated, the hay, in fact, forcing the slats 1 slightly upward. The pressure of the slats upon the hay, being at the upper side of the latter, causes the hay to roll upon itself somewhat before the pressure of the said slats upon the increased accumulation of hay is sufficient to start the hay up said platform. Said pressure at said restricted interval causes the platform P to swing outward, opening more largely above said restricted locality and thereby insuring the through passage of all hay above said restricted point.

The lugs 2 are located on the head F at intervals corresponding to that between the slats 1, so that each slat is engaged at each end by a lug 2, and therefore not only positively driven, but held strictly at right angles with the line of movement of the chains R. The rake-bars G are so located with refer-

ence to the lugs 2, being slightly in advance of the same, respectively, and the axial rotation of said rake-bars is so adjusted that at the point where the rake-teeth H are leaving the hay on the lower end of the platform P the slats 1 sweep down behind and over said teeth and thus insure the discharge of the hay from the latter. (See Fig. 3.)

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In a hay-loader, the combination, with a frame, provided with carrying and driving wheels, of a hand-lever pivotally secured to the spindle of each carrying-wheel, a shaft journaled in said levers, each end of which is provided with a gear and a ratchet wheel, two rake-heads journaled upon said shaft and provided with pairs of rake-bars, each pair of bars being provided at one end with gear-wheels, an idle-wheel between each of said wheels and the gear-wheel upon that end of the shaft, a pawl for each ratchet-wheel, and an endless carrier over said heads, substantially as set forth.

2. In a hay-loader, the combination of suitably-driven endless chains R provided with transverse slats 1, a suitable frame supporting said carrier, arms 5 and 6 pivotally attached at their upper ends to the sides of said frame and a platform P, pivotally suspended beneath said carrier on the lower end of said arms whereby said platform is adapted to swing automatically to and from said carrier as the quantity of hay passing through said parts may vary, substantially as shown and for the purpose described.

3. In a hay-loader, the combination of a suitable frame supported upon carrying-wheels, endless chains R supported on said frame and driven from said wheels in a direction opposite to the rotation of the latter and provided with the hay-engaging cross-slats 1 and a hay-receiving platform suspended beneath said slats and automatically adjustable to and from the latter substantially as shown and for the purpose specified.

4. In a hay-loader, the combination of a suitable frame supported upon carrying-wheels, hay-elevating devices seated on said frame and rotated in a direction opposite to that of said carrying-wheels, a hay-receiving platform suspended beneath said elevating devices in position to form an enlarged interval or chamber between said devices and said platform at the lower portion of the latter substantially as shown and for the purpose described.

5. In a hay-loader, the combination, with a two-part platform, the lower portion of which is provided with shoulders, and the upper portion is movable longitudinally upon the lower portion, of a dog for locking the two parts in any desired position relatively to each other, a cord secured to the dog and extending up to and engaging with the upper

portion of the platform, and a carrier, and means for operating the same, substantially as set forth.

6. In a hay-loader, the combination of a
 5 suitable frame supported upon carrying-
 wheels, a rake-head supported on said wheels
 and rotated oppositely thereto, suitable hay-
 elevating devices carried upon and driven by
 said rake-head a swinging platform sus-
 10 pended beneath said elevating devices and
 suitable stops for normally holding said plat-
 form slightly forward of its normal position
 in the absence of said stops substantially as
 shown and for the purpose specified.

7. In a hay-loader, the combination of a
 15 suitable frame supported upon carrying-
 wheels, a rake-head supported upon said
 frame and rotated by said wheels in a direc-

tion contrary to the rotation of the latter, an
 endless hay-elevating device carried upon 20
 and driven by said rake-head, swinging plat-
 form suspended at two points from said frame
 beneath said elevating devices, by arms 5
 and 6, the lower portion of said forward arm
 6 having normally a more acute angle with 25
 the frame of said loader than said rear arm,
 whereby the forward swing of said platform
 opens it more rapidly at its forward end, sub-
 stantially as shown and for the purpose speci-
 fied. 30

In testimony whereof I affix my signature
 in presence of two witnesses.

GEORGE W. PACKER.

Witnesses:

JOHN G. MANAHAN,
 ISABELLE MANAHAN.