

No. 614,887.

Patented Nov. 29, 1898.

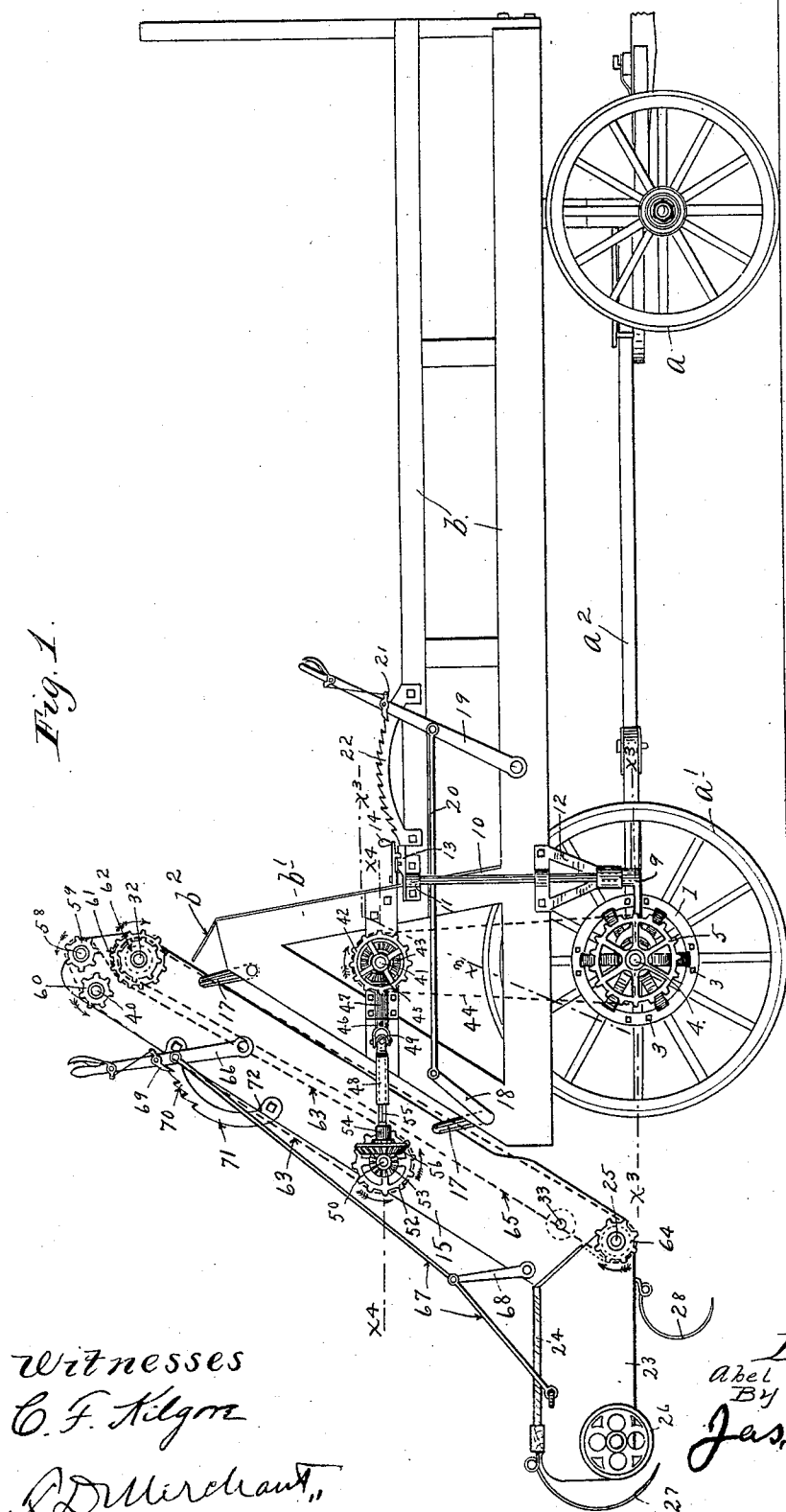
A. PINOLEHTO.

HAY LOADING ATTACHMENT FOR WAGONS.

(Application filed Feb. 7, 1898.)

(No Model.)

2 Sheets—Sheet 1.



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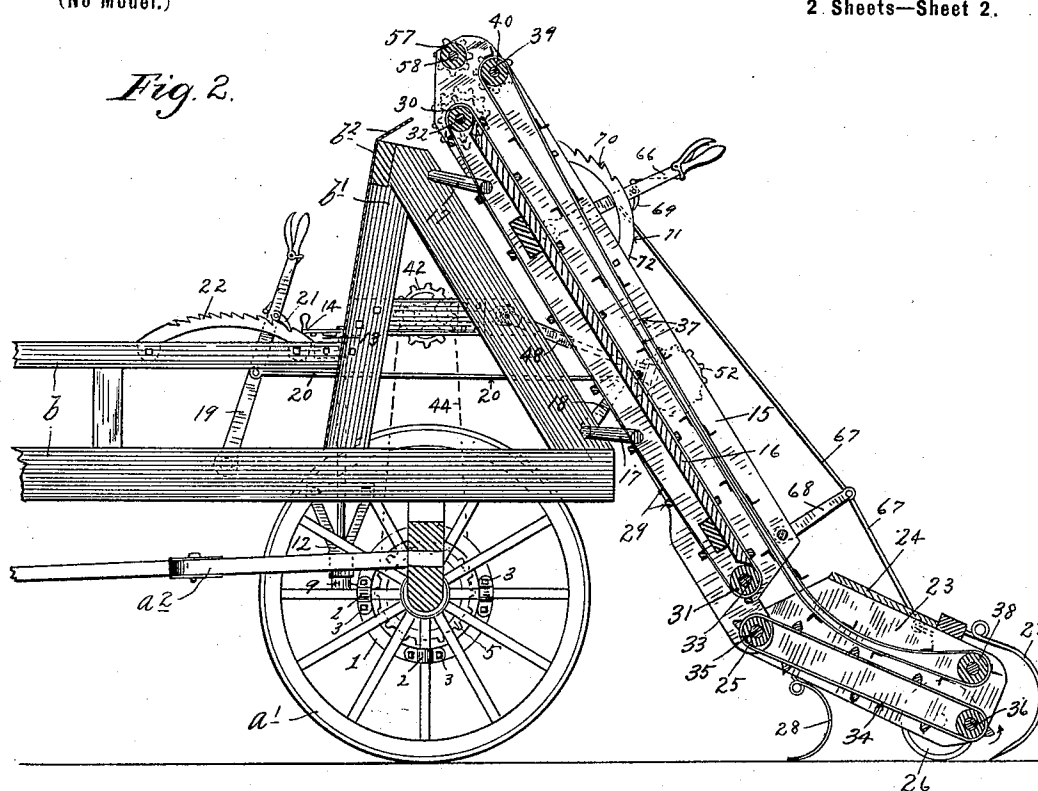


Fig. 3.

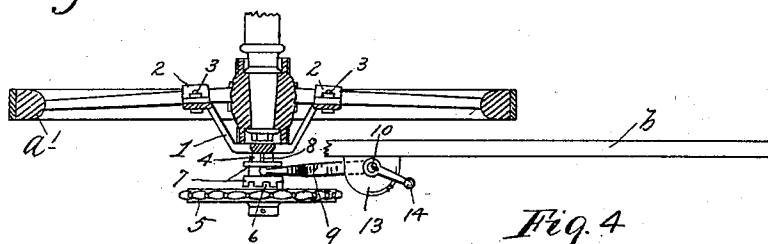
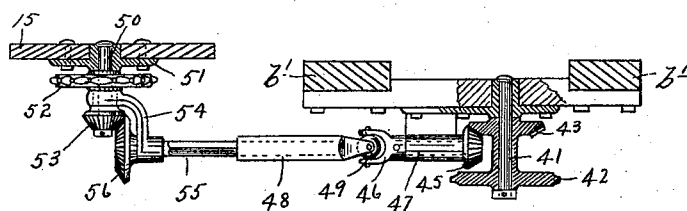


Fig. 4



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UNITED STATES PATENT OFFICE.

ABEL PINOLEHTO, OF SANDSTONE, MINNESOTA.

HAY-LOADING ATTACHMENT FOR WAGONS.

SPECIFICATION forming part of Letters Patent No. 614,887, dated November 29, 1898.

Application filed February 7, 1898. Serial No. 669,474. (No model.)

To all whom it may concern:

Be it known that I, ABEL PINOLEHTO, a citizen of the United States, residing at Sandstone, in the county of Pine and State of Minnesota, have invented certain new and useful Improvements in Hay-Loading Attachments for Wagons; and I do hereby 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.

My invention has for its object to provide an improved hay-loading attachment for wagons.

To this end it consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The preferred form of my invention is illustrated in the accompanying drawings, wherein, like characters indicating like parts throughout the several views—

Figure 1 is a right-side elevation of a wagon and hay-rack with my improved hay-loading attachment applied thereto. Fig. 2 is a vertical longitudinal section taken centrally through the parts shown in Fig. 1, some parts being broken away. Fig. 3 is a horizontal section taken on the line $x^3 x^3$ of Fig. 1, and Fig. 4 is a horizontal section taken on the line $x^4 x^4$ of Fig. 1.

a indicates the front wheels, a' the rear wheels, and a^2 the body, of an ordinary wagon-truck, such as would be used in connection with a hay-rack for hauling hay.

b indicates the body of a hay-rack, which is suitably supported from the truck of the wagon just described. At its rear end the rack b is provided with a laterally-spaced pair of inverted-V-shaped brackets b' , the forward edges of which are connected by a metallic apron b^2 , which prevents the hay which is loaded onto the rack from falling rearward.

To one of the rear wheels of the wagon (as shown, to the right-hand member) I detachably secure a bracket 1, comprising an annular portion, securable to the spokes of the wheel by means of clamps 2 and nutted bolts 3, and a hub-embracing portion with outwardly-projecting stud 4. A sprocket-wheel 5 is loosely mounted on the stud 4, said wheel being provided with a half-clutch 6 on its inner face. A sliding half-clutch 7, secured on

the stud 4 by means of a key 8, is adapted to be thrown into and out of engagement with the half-clutch 6 of a sprocket 5 by means of a shipper-lever 9, rigid on the lower end of a shaft 10, which shaft is mounted in brackets 11 and 12, secured on the hay-rack b . The bracket 11 is provided with a notched lock-segment 13, and the shaft 10 is provided at its extreme upper end with a spring-acting lever 14, which is adapted for engagement with the notches of the segment 13 to lock the sliding half-clutch 7 either into or out of engagement with the half-clutch 6 of the sprocket 5.

The frame of the loading attachment or elevator is made up of two sections, which are hinged or pivotally connected together, preferably as hereinafter described. The upper frame-section is made up principally of parallel side-boards 15, which are connected together by a transversely-extended apron 16. This frame-section is mounted and held in an inclined position from the rack-brackets b' by means of a pair of parallel acting-cranks 17, which cranks are pivoted to said brackets b' and to the under edges of the side-boards 15. One end of the lower member of the crank-shafts 17 is provided with an arm 18, which is connected to a lifting-lever 19, pivoted to the side of the rack b by means of a link or rod 20. The lever 19 is provided with a hand-released dog 21, which coöperates with the teeth of a lock-segment 22, that is rigidly secured to the side of the rack b . By means of this latch-lever 19 and connections just described the frame-section 15-16 may be raised and lowered into different vertical positions and there securely held wherever set.

The lower frame-section is made up of side-boards 23, which are tied together at their upper edges by means of the transverse hood or top board 24. The upper and lower frame-sections above described are shown as hinged or pivotally connected by means of a transverse shaft 25, which is passed through the overlapped portions of the side-boards 15 and 23. The free end of the hinged frame-section 23-24 is provided with a pair of ground-wheels 26, which are adapted to sustain the weight of said hinged section and permit the same to rise and fall to adapt itself to all irregularities in the surface of the ground

over which it is passed. At its rear free end the pivot or floating frame-section 23 24 is provided with a series of spring-fingers or rake-teeth 27, and some little distance forward of these teeth it is provided with a single spring rake-tooth 28, which is located at one side of the same. The single tooth 28 serves to form a furrow or dividing-line between the main body of the cut hay and the strip which is to be picked up by the rake-teeth 27.

29 indicates an endless belt-and-slat conveyor or elevator which runs over the apron 16 and over upper and lower rollers 30 and 31, located at the ends of said apron 16, with their shafts or trunnions 32 and 33, respectively, loosely mounted in the side-boards 15.

34 indicates another and shorter belt-and-slat conveyor which is mounted to run over a roller 35 on the transverse hinge-shaft 25 and over a roller 36, loosely mounted in the side-boards 23 of the hinged or floating frame-section.

37 indicates an endless belt-and-slat conveyor which runs over a roller 38, loosely mounted in the free ends of the side-boards 23 and over a driving-roller 39, the shaft 40 of which is loosely journaled in the upper ends of the side-boards 15. This carrier 37 works above the carriers 29 and 34 and cooperates therewith to elevate the hay which is gathered by the rake-teeth 27.

The endless conveyers or elevators above described are driven from the sprocket-wheel 5, which is carried by one of the rear wagon-wheels *a*, through the following driving connections.

41 indicates a fixed stud which projects from a suitable bracket secured on the right-hand member of the rack-brackets *b'*.

42 indicates a sprocket-wheel, and 43 a bevel-wheel, which are secured to a common sleeve and both loosely mounted on the stud 41. A sprocket-chain 44 runs over the sprocket-wheels 5 and 42.

45 is a bevel-pinion in mesh with the bevel-wheel 43 and secured on a common shaft with a pronged head 46, which shaft is mounted in a bearing-bracket 47, rigid on the right-hand bracket *b'*. This pronged head 46 is secured to the pronged end of a sleeve 48 by means of a ball-and-pin connection 49, which, in connection with the pronged portions, constitute a knuckle-joint.

50 indicates a stud which projects outward from and is rigidly secured to a suitable bracket 51, which in turn is rigidly secured to the right-hand member of the side-boards 15.

52 indicates a sprocket-wheel, and 53 a bevel-pinion, which are rigidly secured to a common sleeve and are both loosely mounted on the stud 50.

54 indicates an elbow-bracket, one end of which is loosely mounted on the sleeve or hub which connects the pinion 53 and sprocket 52.

55 indicates a shaft the forward end of which is angular in cross-section and tele-

scopes into an angular seat formed in the sleeve 48. The rounded forward end of this shaft 55 is mounted in the outer end of the elbow-bracket 54 and is provided with a beveled wheel 56, which is held in mesh with the pinion 53. As is evident, the engagement of the angular shaft 55 with the sleeve 48 serves to impart the rotary driving motion to the connected parts, but permits the vertical movements of the loading attachment under the action of the crank-shafts 17, under which action the knuckle-joint movement is also necessary.

57 indicates a delivery-roller the shaft or trunnions 58 of which are mounted in the extreme upper ends of the side-boards 15.

59 indicates a small sprocket-wheel rigid on the right end of the shaft 58. 60 indicates a similar sprocket-wheel rigid on the outer end of the shaft 40, and 61 62 indicate a pair of sprocket-wheels rigid on the projecting end of the shaft 32.

63 indicates a sprocket-chain which runs over the sprocket-wheels 52, 59, 61, and 60.

64 indicates a sprocket-wheel which is rigid on the right-hand end of the hinge-shaft 25, and 65 indicates a sprocket-chain which runs over the sprocket-wheels 62 and 64.

As is obvious through the connections above described under the advancing movement of the wagon motion will be imparted from one of the rear wheels *a* to the endless conveyers 29, 34, and 37 and to the delivery-roller 57. The movements of the conveyers under the advance movement of the wagon will be in the directions indicated by the arrows marked in the drawings, and this movement will elevate the hay caught by the rake-teeth 27 and will discharge the same onto the hay-rack *b* at or near its rear portion.

The floating section 23 24 is adapted to be thrown into an inoperative position some little distance above the ground by means of a latch-lever 66, which is pivoted to one of the side-boards 15 and is connected to the free end of said hinge-section by means of a jointed rod 67, the joint of which, as shown, is pivoted to the upper end of an arm 68, the lower end of which in turn is pivoted to the said side-board 15. The latch-lever 66 is provided with a hand-released retaining-pawl 69, which is adapted to work in teeth 70 and over a smooth segmental portion 71 of a latch-arch 72, which is secured on the side-board 15, to which said lever 66 is pivoted. When the pawl 69 is engaged with the teeth 70, the hinged or floating frame-section will be securely held in an inoperative position; but when said pawl 69 works over the smooth surface 71 said floating section will freely rise and fall at its free end to adapt itself to the irregular surface of the ground, as previously stated.

The use of one of the wagon-wheels as a traction-wheel or prime mover to drive the hay-elevating devices greatly simplifies the construction of this class of mechanism, and,

furthermore, it adapts the device for use in connection with a wagon-truck of any construction and reduces the total weight of the load which must be hauled by the horses.

- 5 The device for raising and lowering the elevator attachment bodily is also thought to be novel and is certainly very simple and efficient. Other novel features in the driving device also contribute to make the attachment a decided improvement on similar devices heretofore in use.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

- 15 1. A hay-loading device, comprising a main frame-section, a hinged or floating lower or ground section, an endless carrier extending approximately from end to end of said main section, another endless carrier extending approximately from end to end of said float-

ing section, and an overhead endless carrier 20 extending approximately from the lower end of said floating section to the upper end of said main section, substantially as described.

2. A hay-loading device, comprising an elevator with a hinged or floating lower or ground 25 end, in combination with a latch-arch on the main elevator-section, and a cooperating latch-lever with connections to said folding section, which latch-arch is provided with the toothed section 70 and smooth segmental section 71, 30 substantially as and for the purposes set forth.

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

ABEL PINOLEHTO.

Witnesses:

BESSER B. NELSON,
F. D. MERCHANT.