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2,367,932

HAY STACKER AND LOADER

Filed Jan. 13, 1944

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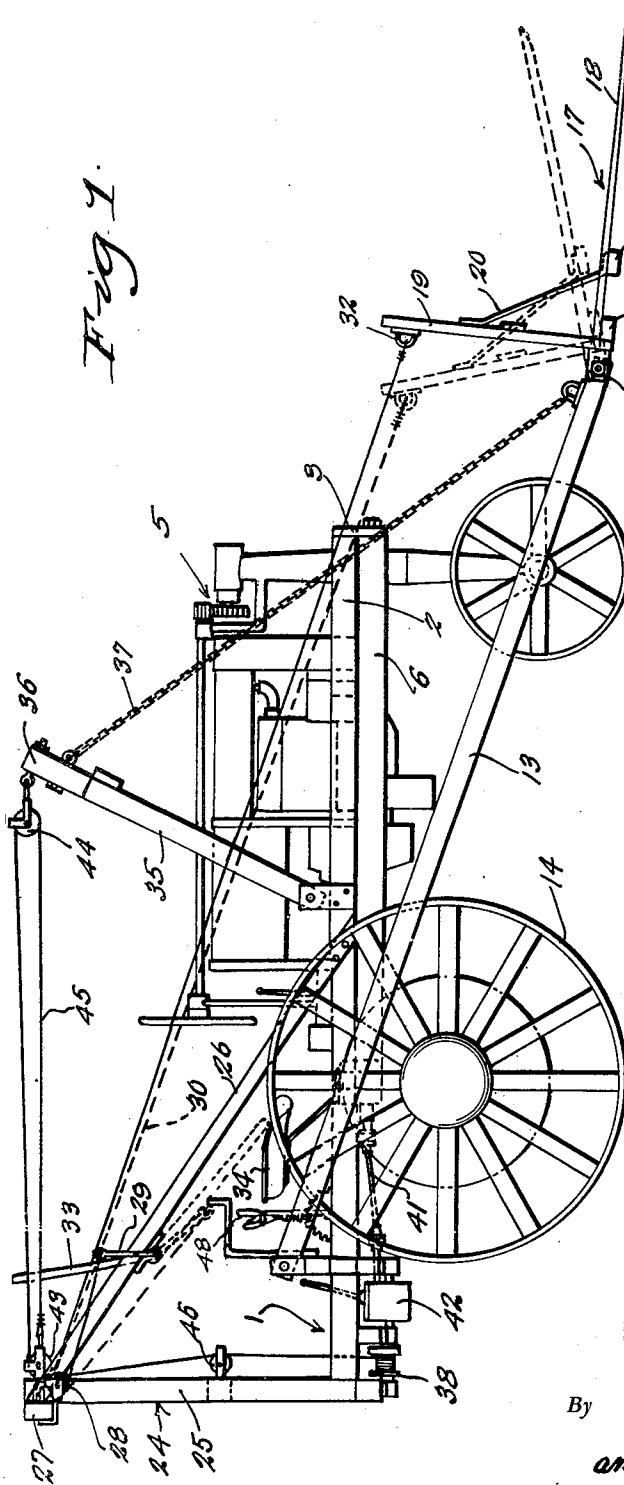
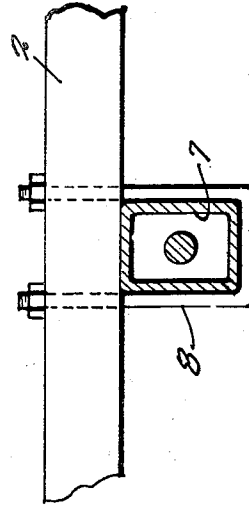
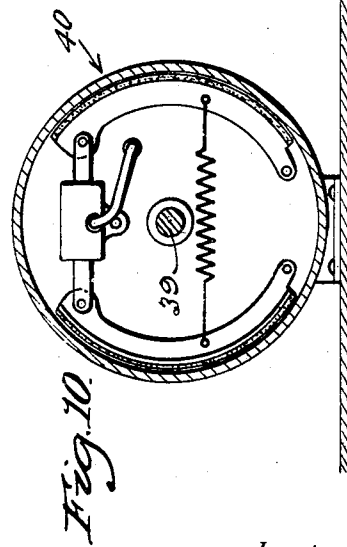


Fig. 6.



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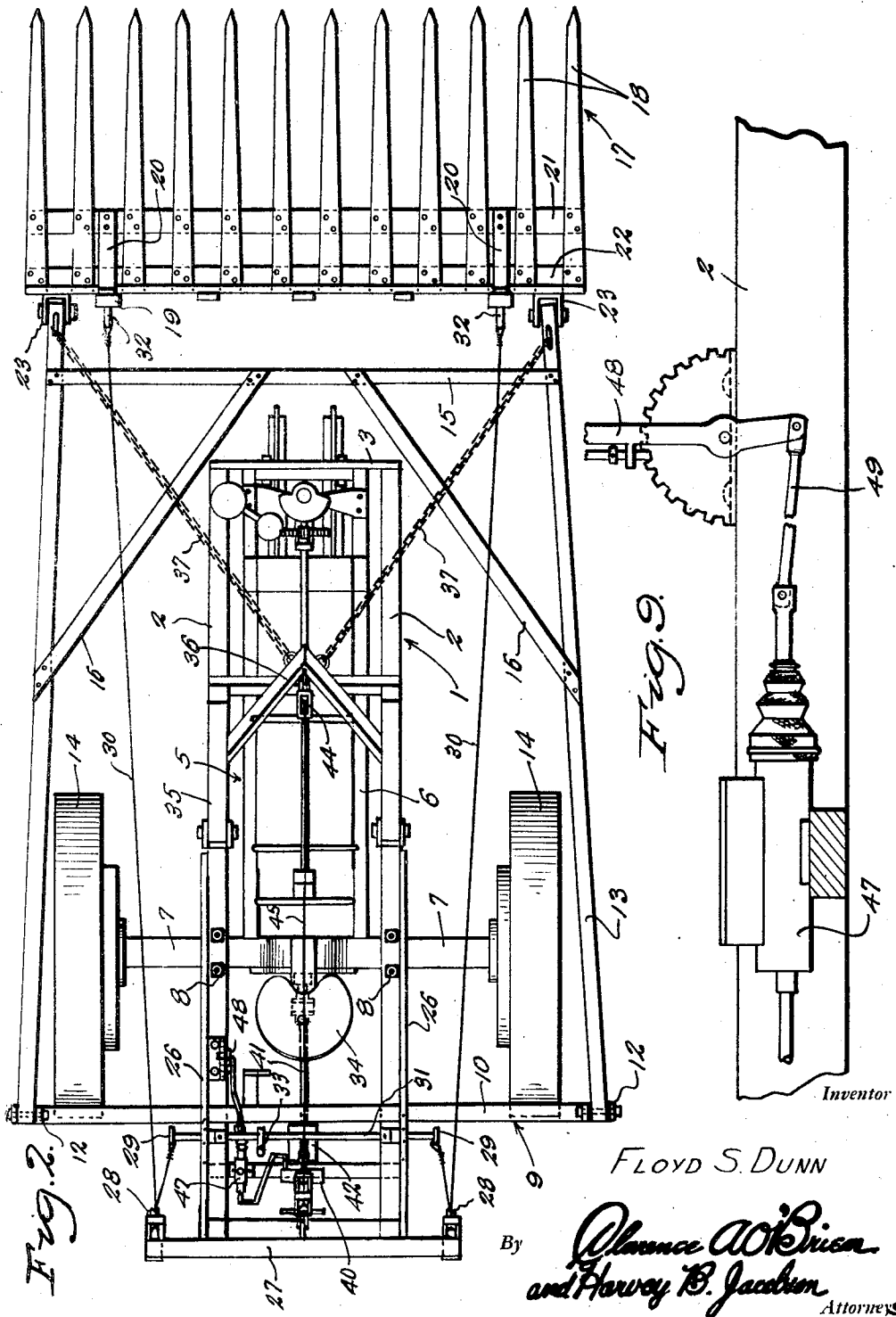
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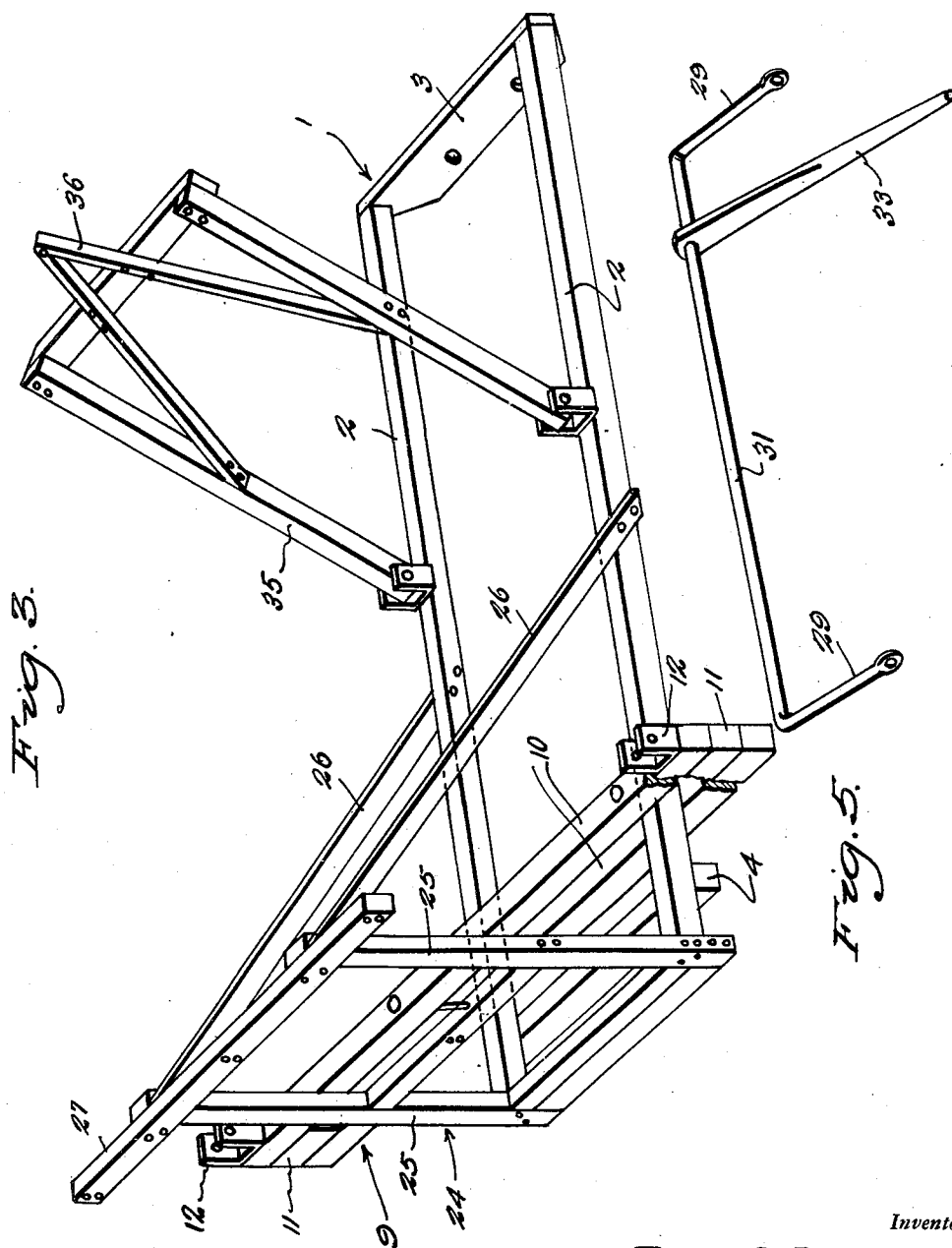


Fig. 3.

Fig. 5.

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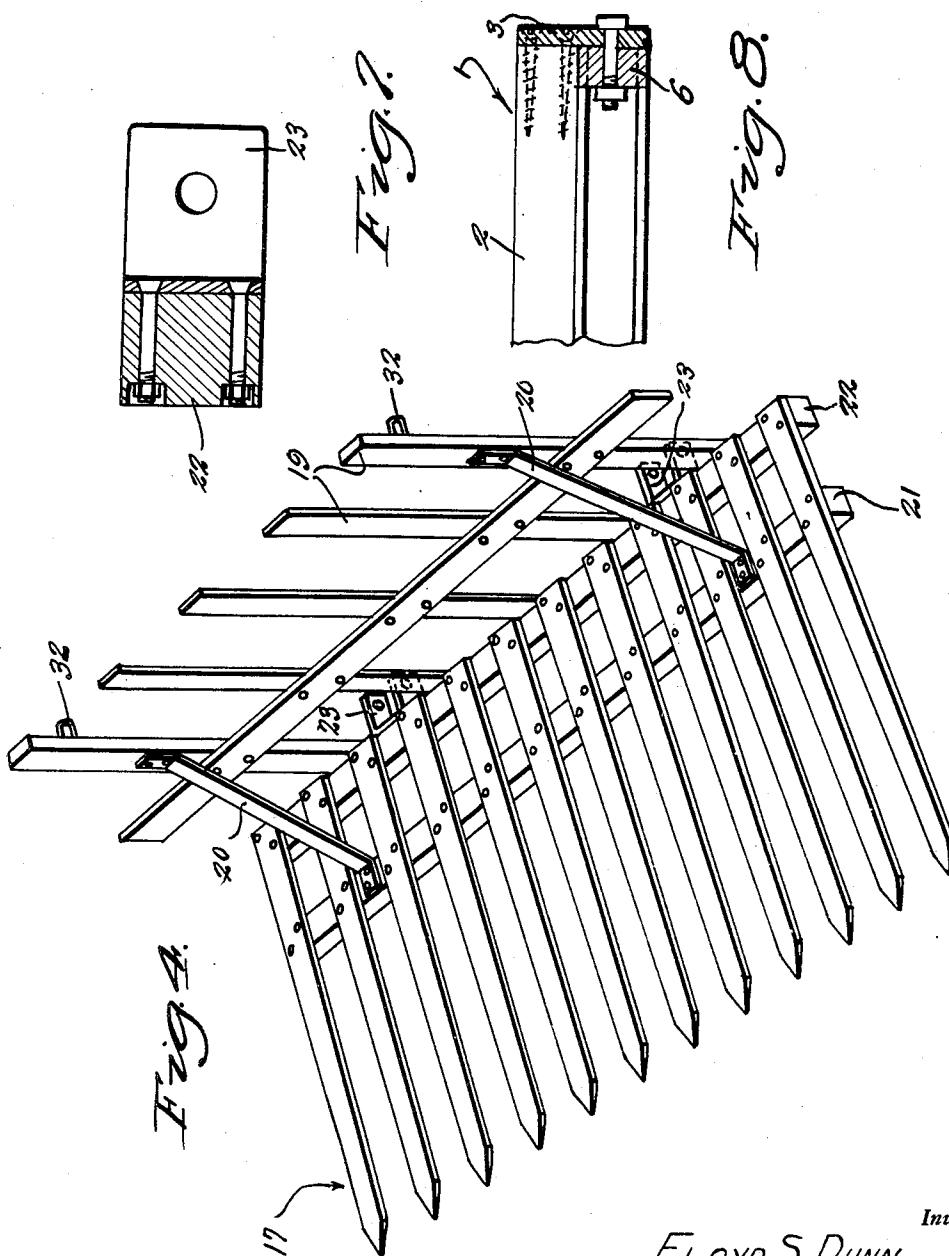
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HAY STACKER AND LOADER

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UNITED STATES PATENT OFFICE

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HAY STACKER AND LOADER

Floyd S. Dunn, Greensburg, Mo.

Application January 13, 1944, Serial No. 518,138

2 Claims. (Cl. 214-140)

The present invention relates to new and useful improvements in hay stackers and loaders, and has for its primary object to provide, in a manner as hereinafter set forth, an apparatus of this character which is adapted to be expeditiously mounted for operation on a conventional farm tractor and driven from the usual power take-off thereof without the necessity of making material structural alterations in said tractor.

Another very important object of the invention is to provide a stacker and loader of the aforementioned character which is adapted to lift the load and hold said load at any desired elevation while it is being transported to the point of discharge.

Other objects of the invention are to provide a hay stacker and loader of the character described which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, light in weight and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in side elevation of a hay stacker and loader constructed in accordance with the present invention, showing the device mounted on a tractor.

Figure 2 is a top plan view thereof.

Figure 3 is a perspective view of the base structure.

Figure 4 is a perspective view of the head.

Figure 5 is a perspective view of the rockable shaft which tilts or rocks the head.

Figure 6 is a cross sectional view through one of the rear axle housings of the tractor, showing the mounting of the base structure thereon.

Figure 7 is a vertical sectional view through the back portion of the head and one of the U-shaped brackets thereon.

Figure 8 is a vertical sectional view through the front portion of the base structure, showing the mounting of said base structure on the tractor frame.

Figure 9 is a view in side elevation of the hydraulic brake-operating means.

Figure 10 is a vertical sectional view through the hydraulic brake.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention

which has been illustrated comprises an elongated base structure of suitable material which is designated generally by reference character 1. The base structure 1 includes side members 2 and front and rear cross members 3 and 4, respectively.

The base structure 1 is adapted to be mounted longitudinally on a tractor 5. Toward this end, the cross member 3 is in the form of an apertured plate which is bolted or otherwise firmly secured to the front end of the frame 6 of the tractor 5. The side members 2 of the base structure 1 rest at an intermediate point on the rear axle housings 7 of the tractor 5 and are secured thereon by U-bolts 8.

Mounted transversely on the base structure 1 rearwardly of the tractor 5 is a beam which is designated generally by reference character 9. The beam 9 includes spaced upper and lower bars 10 with spacing blocks 11 between the end portions thereof, between which bars the side members 2 of the base structure 1 pass. Substantially U-shaped brackets 12 are mounted on the end portions of the upper bar 10.

Arms 13 are pivotally mounted for vertical swinging movement on the brackets 12 and extend forwardly therefrom adjacent the rear wheels 14 of the tractor 5. A cross member 15 extends between the forward end portions of the arms 13. Braces 16 are provided between the arms 13 and the cross member 15. A head 17 is mounted for rocking adjustment on the forward end portions of the arms 13. The head 17 includes rake teeth 18, a back frame 19, braces 20, et cetera. The teeth 18 are fixed, at their rear end portions, on spaced, parallel bars 21 and 22. Substantially U-shaped brackets 23 on the bar 22 are pivotally mounted on the forward end portions of the arms 13 for vertical swinging movement.

Mounted on the rear ends of the members 2 is a vertical frame structure 24 comprising uprights 25 and inclined braces 26 extending between said uprights and said members 2. A cross bar 27 is mounted transversely on the upper end portions of the uprights 25. Pulleys 28 are mounted on the end portions of the cross bar 27.

Rockably mounted on the braces 26 is a transverse shaft 31 which terminates in right angularly extending arms 29. Suitable cables or the like 30 are trained over the pulleys 28 and connected at one end to the arms 29. The cables 30 are connected at 32 to the upper portion of the back frame 19 of the head 17. A hand

lever 33 is fixed on the shaft 31, said hand lever being operable from the driver's seat 34 of the tractor 5. Any suitable means may be provided for releasably securing the hand lever 33 in adjusted position.

Mounted for vertical swinging movement at an intermediate point on the side members 2 of the base structure 1 is a yoke 35 which straddles the tractor 5. The yoke 35 has mounted thereon an inverted V 36. Forwardly diverging chains 37 connect the V 36 to the forward end portions of the arms 13 for raising and lowering said arms with the head 17 thereon.

Journaled longitudinally beneath the rear end portion of the base structure 1 is a drum 38. The drum 38 is fixed on a shaft 39. A hydraulic brake 40 is provided for the drum 38. The shaft 39 is driven from the usual power take-off of the tractor 5 by means including a shaft 41 comprising a plurality of sections with suitable universal joints therebetween. The transmission 42 is provided between the shaft 39 and the shaft 41, said transmission being operable from the seat 34 of the tractor 5.

Pulleys 43 and 44 are mounted, respectively, on the cross bar 27 and the V 36. A cable 45 is anchored at one end to the frame of the pulley 43. The cable 45 extends forwardly around the pulley 44, back over the pulley 43 and is secured at its other end to the drum 38 for winding thereon. A guide pulley 46 is provided for the cable 45 on the frame 24 above the drum 38.

The brake 40 receives fluid from a cylinder 47 (see Figure 9). A hand lever 48, operable from the driver's seat 34 of the tractor 5, is connected by means including a rod 49 to the usual piston in the fluid cylinder 47.

It is thought that the operation of the apparatus will be readily apparent from a consideration of the foregoing. Briefly, to load the device, the arms 13 are swung downwardly and the head 17 is swung to the full line position of Figure 1 of the drawings through the medium of the hand lever 33. Of course, the tractor 5 is driven forwardly for scooping the hay from the ground onto the head 17. When a load has thus been gathered, the lever 33 is swung forwardly for swinging the head 17 upwardly to the dotted line position of Figure 1 of the drawings for retaining the hay on said head. The brake 40 is then released and the transmission 42 is placed in gear for actuating the drum 38 from the power take-off of the tractor 5 in a manner to wind the cable 45 on said drum. Thus, the arms 13 with the head 17 thereon are swung upwardly to elevated position. When the desired elevation has been reached, the transmission is again put in neutral and the brake 40 is applied for securing the drum 38 against rotation thereby retaining the load in raised position. The hay may then be transported to any desired location. When the location at which the hay is to be discharged is reached, the lever 33 is swung rearwardly for permitting the head 17 to swing downwardly, by gravity, thereby dumping the hay.

It is believed that the many advantages of a tractor-mounted hay stacker and loader constructed in accordance with the present invention will be readily understood, and although a preferred embodiment of the apparatus is as illustrated and described, it is to be understood that

changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

1. In a hay loader and stacker, a base structure comprising a horizontal rectangular frame having a front cross-member apertured for rigid bolting to the front end of a tractor frame and side members of a length to extend across and rearwardly beyond the rear axle housings of the tractor at opposite sides of the latter, means to rigidly bolt said side members on said rear axle housings, a transverse beam carried by the rear portion of said base structure and projecting laterally beyond opposite sides of the latter, arms pivoted at their rear ends to the ends of said beam for vertical swinging movement in planes outwardly of the traction wheels of the tractor, said arms extending forwardly beyond the front of said base structure, a buck rake pivoted for vertical tilting movement on the forward ends of said arms, a vertical frame rigid with and rising from the rear end of said base structure, guides carried by the top of said vertical frame, a transverse rock shaft journaled above the base structure directly in front of said vertical frame and having crank arms, a cable attached to the back of the rake and extending rearwardly over said guides and then forwardly and attached to said crank arms, a lever for rocking said rock shaft to tilt the rake relative to said arms, and power-operated means to vertically swing said arms to raise the rake.
2. In a hay loader and stacker, a base structure comprising a horizontal rectangular frame having a front cross-member apertured for rigid bolting to the front end of a tractor frame and side members of a length to extend across and rearwardly beyond the rear axle housings of the tractor at opposite sides of the latter, means to rigidly bolt said side members on said rear axle housings, a transverse beam carried by the rear portion of said base structure and projecting laterally beyond opposite sides of the latter, arms pivoted at their rear ends to the ends of said beam for vertical swinging movement in planes outwardly of the traction wheels of the tractor, said arms extending forwardly beyond the front of said base structure, a buck rake pivoted for vertical tilting movement on the forward ends of said arms, a vertical frame rigid with and rising from the rear end of said base structure, guides carried by said vertical frame, a yoke pivoted on said base structure intermediate the ends of the latter for forward and rearward swinging movement, flexible connections between said yoke and the forward ends of said arms, manually-controlled winding mechanism on the rear of said base structure, means to operatively connect said mechanism to the power take-off of the tractor, guides carried by said vertical frame, a further guide carried by said yoke, a cable extending from said winding mechanism over said first-named guides, then forwardly around said further guide and then rearwardly and connected to the vertical frame whereby said winding mechanism may be utilized to swing the arms upwardly to raise the rake, and manually operable means to tilt the rake relative to said arms.

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