K. D. HANKINS.

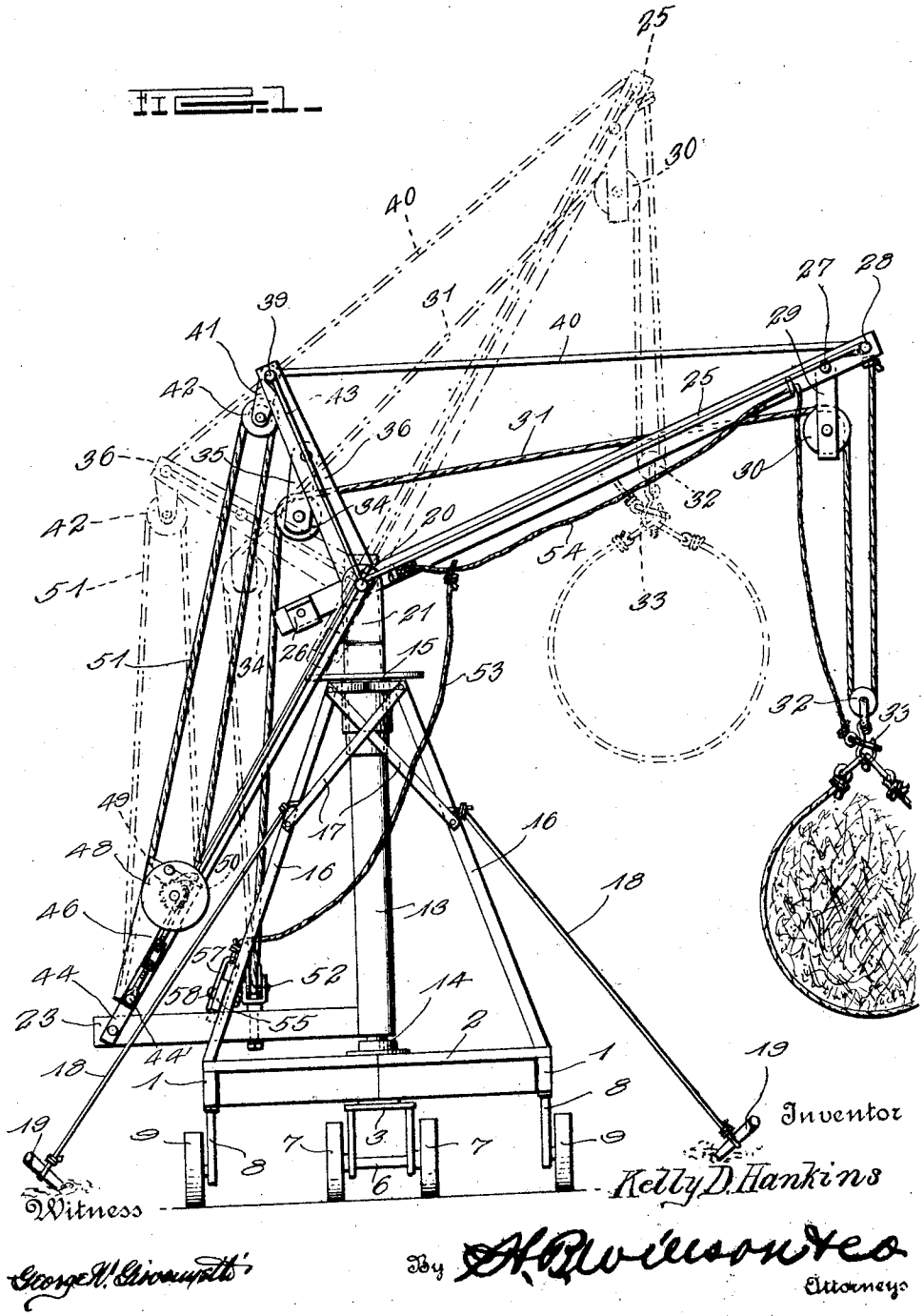
HAYSTACKER.

APPLICATION FILED AUG. 16, 1920.

1,411,090.

Patented Mar. 28, 1922.

3 SHEETS—SHEET 1.



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3 SHEETS—SHEET 2.

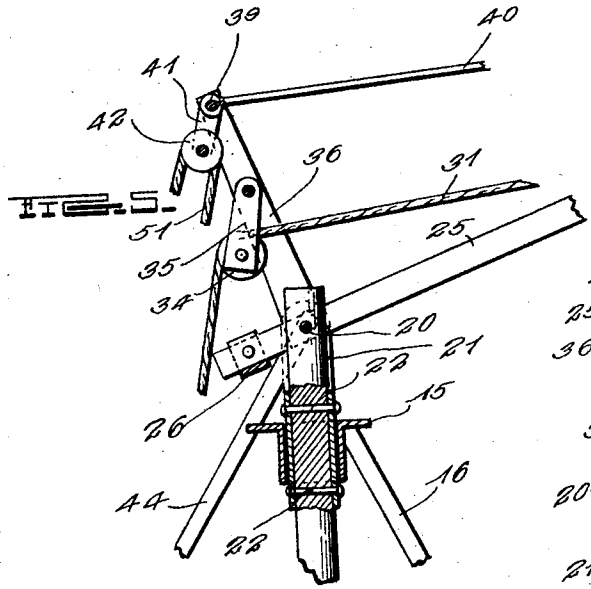


FIG. 5.

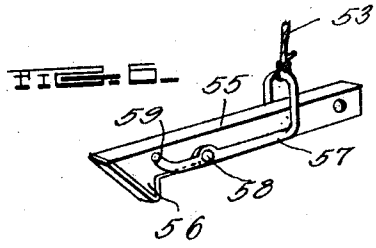


FIG. 6.

FIG. 2.

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3 SHEETS—SHEET 3.

FIG. 3.

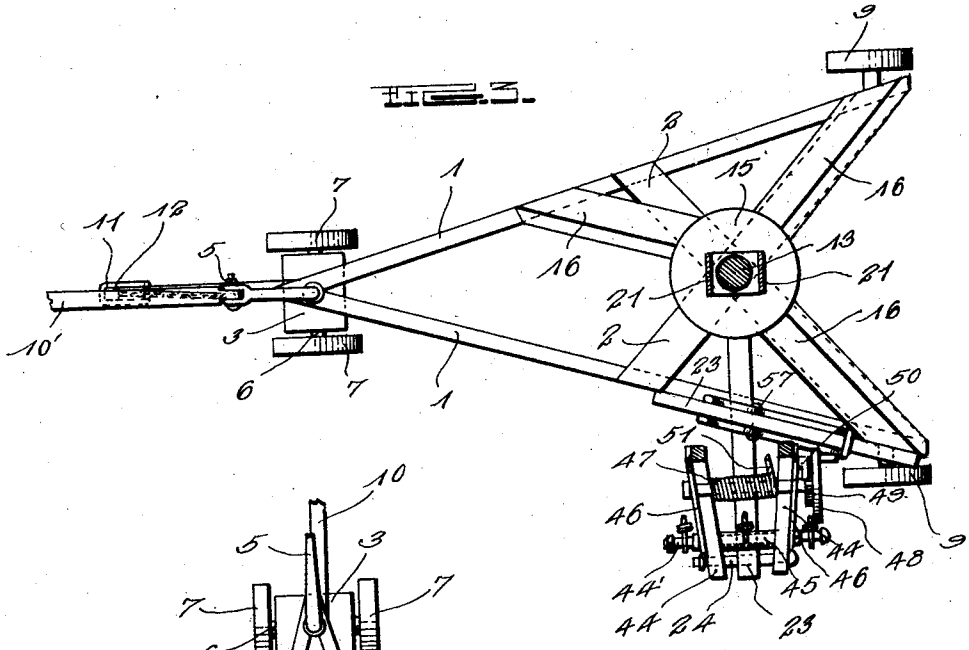
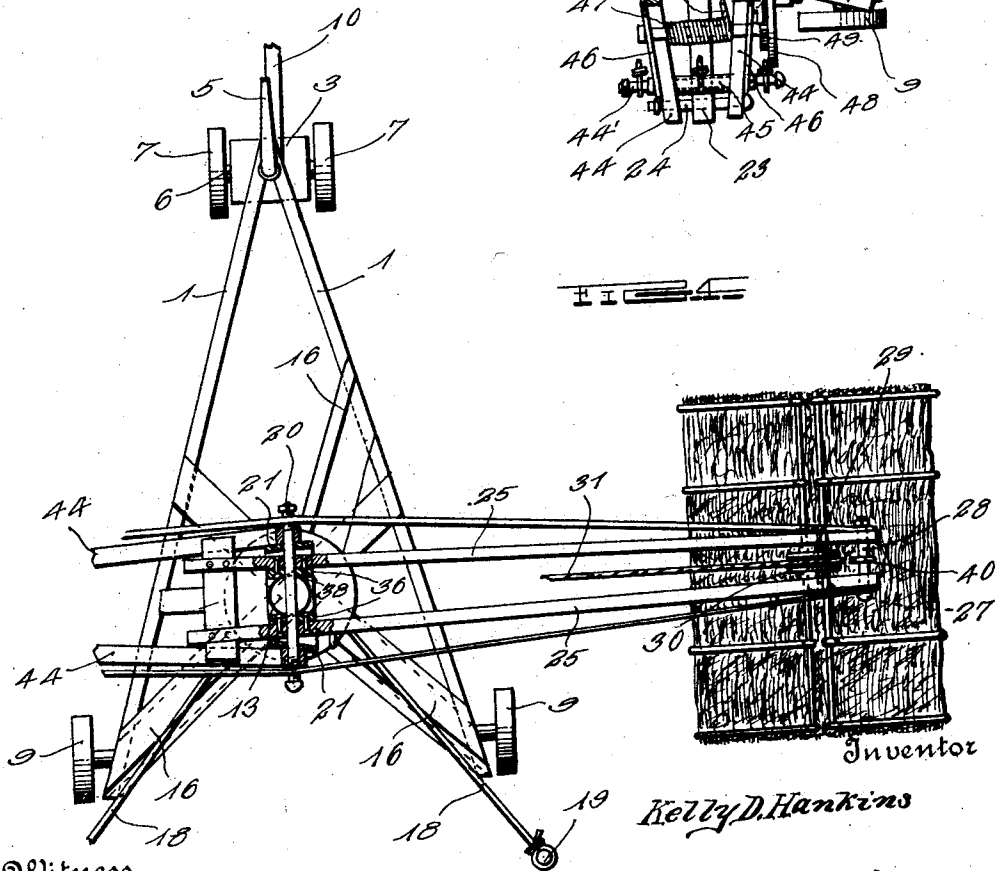


FIG. 4.



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HAYSTACKER.

1,411,090. Specification of Letters Patent. Patented Mar. 28, 1922.

Application filed August 16, 1920. Serial No. 403,897.

To all whom it may concern:

Be it known that I, KELLY D. HANKINS, a citizen of the United States, residing at Ravenna, in the county of Buffalo and State of Nebraska, have invented certain new and useful Improvements in Haystackers; 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.

This invention relates to an improved hay stacker or derrick and one object of the invention is to provide a derrick so constructed that it may be used for lifting a load of hay from a wagon and the mast of the derrick then rotated to swing the crane arm and permit the load of hay to be deposited upon the stack.

Another object of the invention is to so construct this device that the mast may be prevented from rotating while the load is being lifted, the securing means being then released so as to permit the mast and crane arm to be turned.

Another object of the invention is to provide an improved cam device for causing the latch to swing to an inoperative position when it is desired to permit the mast and crane arm to be turned.

Another object of the invention is to so construct this derrick that the bracing bars for the mast may carry the means for drawing the crane arm upwardly and to further so mount the crane arm and bracing bars that the bracing bars may be released and permitted to swing upwardly when the crane arm swings downwardly if so desired.

Another object of the invention is to so construct this derrick that it may be portable thus permitting it to be easily moved from one place to another.

This invention is illustrated in the accompanying drawings, wherein:

Figure 1 is a view showing the improved derrick in side elevation, the crane being indicated in a raised position by dotted lines,

Figure 2 is a side elevation of the improved hay stacker taken at right angles to the showing in Fig. 1,

Figure 3 is a transverse sectional view taken along the line 3—3 of Fig. 2,

Figure 4 is a transverse sectional view taken along the line 4—4 of Fig. 2,

Figure 5 is a fragmentary view of the upper portion of the hay stacker shown partially in elevation and partially in section,

Figure 6 is a perspective view of the latch which releasably holds the mast and crane against turning.

This improved hay stacker or derrick is so constructed that it may be used for lifting hay from a wagon and depositing the hay upon a stack but is intended for general use where heavy loads are to be lifted and transported from one position to another. It may be used as a portable device or it could be built upon a stationary platform and used for unloading cars at a railway station or at any other suitable place. In the present illustration, the device is shown as portable and is provided with a base which is triangular in shape and provided with side beams 1 which are braced by cross beams 2. A truck 3 is positioned beneath the forward end portion of the base and provided with a shaft 4 which extends upwardly through the base and carries a tiller or turning handle 5 so that the truck may be turned in order to guide the device when it is being moved from one place to another. This truck is provided with an axle 6 which carries wheels 7. Hangers 8 are positioned beneath the rear ends of the side beams 1 and supporting wheels 9 are rotatably connected with these hangers 8 so that the rear portion of the base will be supported and easy movement of the hay stacker permitted. A tongue 10 extends from the forward end of the base and is provided at its free end with a clevis 11 through which a stake 12 may be driven in order to anchor the stacker when in use. A tongue 10′ is removably carried by the tiller 5 for engagement by a draft equalizer when the device is being moved from one place to another by draft animals. Of course, it is understood that if a tractor is used for drawing the stacker from one place to another, a connecting chain leading from the tractor would be secured in the clevis.

The mast 13 has its lower end resting in a socket plate 14 so that the mast may rotate and the upper portion of the mast extends through a collar 15 which is carried by bars 16. These bars 16 are carried by the side beams 1 and are braced by the bracing strips 17. Guy wires 18 are connected with the supporting bars 16 and these guy wires 18 carry pegs 19 which will be driven into the

ground to hold the hay stacker stationary. This mast has its upper end provided with a transversely extending opening through which extends a pivot shaft 20, the pivot shaft being braced by the supporting strips 21 which are secured to the mast by fasteners 22. A bar or arm 23 extends radially from the lower end portion of the mast and has its free end portion provided with a transversely extending opening for receiving a removable fastening pin 24. It will thus be seen that there has been provided a base which includes means for rotatably mounting the mast, the collar 15 and supporting bars 16 serving to brace the mast and retain it in a vertical position.

The crane is provided with side bars 25 which are loosely mounted upon the pivot shaft 20 and have their inner end portions connected by the yoke 26 and their outer end portions connected by bolts 27 and 28. The bolt 27 carries a pulley housing 29 having the usual pulley wheels 30 and the cable or rope 31 will be connected with the bolt 28 between the side bars 25 and will then be passed through the pulley wheels 32 which carry the load engaging hook 33. The rope will then be passed around the pulley wheel 30 and extended inwardly over a pulley wheel 34 which is mounted in a pulley housing 35. This pulley housing 35 is supported between the side bars 36 of a vertically extending brace by means of a pole 37. The side bars of this brace are loosely mounted upon the pivot shaft 20 and secured to the side bars 25 of the crane by rivets 38 as shown in Fig. 4. The upper ends of these side bars 36 of the brace are connected by a bolt 39 and this bolt 39 is engaged by a bracing rod 40 the outer end of which is connected with the bolt 28. This bolt 39 also serves as securing means for the mounting 41 which carries the pulley wheel 42. Guy wires 43 are connected with the outer end portions of the bolt 39 and with the pivot rod 20 and serve to hold the brace formed by the bars 36 so that this brace will be prevented from having transverse movement which would tend to work it loose or break it. In addition to carrying the crane and brace for the crane, the pivot bar 20 carries an arm which is composed of side bars 44 mounted upon the pivot bar and having their opposite end portions connected by a bolt 44′ upon which will be positioned a spacing sleeve 45. The free end portions of these side bars 44 are provided with openings for receiving the pin 24 and it will thus be seen that the arm formed by these side bars may be releasably connected with the arm 23. This arm which may be termed a counter-balancing arm for the crane has its side bars provided with bearing plates 46 which form bearings for a drum 47, the shaft of which carries a turning wheel 48. This turning wheel or disk 48 carries ratchet teeth 49 engaged by a pawl 50 so that when the drum is rotated to wind the cable 51 upon the drum, the drum may be held against rotation to unwind the cable. This cable 51 has one end connected with the drum and is carried upwardly and passed about the pulley wheel 42 and then carried downwardly and connected with the sleeve 45 mounted upon the bolt 44. Therefore, when the cable is wound upon the drum, the crane will be swung upwardly from the position shown in full lines in Fig. 1 towards that indicated by dotted lines in this figure. It will thus be seen that the crane may be positioned at the desired angle. A pulley 52 is mounted upon the arm 23 and the cable 31 is passed about this pulley which will have a swivel connection with the arm 23 and is then carried outwardly so that it may be connected with a draft appliance. Therefore, a team of draft animals may draw the line to lift the load which is engaged by the hook 33 and at the same time, the crane may be swung upwardly if necessary. After the load has been drawn to the raised position, the mast and crane may be turned to swing the crane to a position above the hay stack and the load will be released. In order to release the load, the line 53 which is connected with the releasing line 54 will be drawn upon and the line 54 will be moved to release the hook and permit the load of hay to drop upon the stack. In order to prevent the mast from turning and permitting the crane to swing while the load is being drawn upwardly, there has been provided a latch 55 which is pivotally connected with one of the supporting bars 16 and when in an operative position will rest upon the arm 23. Therefore, the hooked end portions 56 of the latch will prevent the arm 23 from moving and permitting the mast to rotate and swing the crane. After the crane has been swung upwardly and it is desired to swing the crane to a position above the hay stack, the line 53 will be drawn upon to swing the U-shaped cam element 57 upon its pivot 58 and thus cause the curved end portions 59 of the arms of this cam element to be moved downwardly for engagement by the arm 23. It will thus be seen that when the arm engages the curved end portions of the cam element, the latch will be moved upwardly and the latch will ride over the arm 23 thus permitting the crane to be swung to the desired position. The line 53 can then be released and when the crane is returned to the position above the wagon, it will strike the beveled free end portion of the latch and cause the latch to move upwardly to its original position above the arm as shown in Fig. 2. It will thus be seen that the team of draft animals after drawing the cable 31 to raise the load, may

then be turned and driven to one side to draw upon the arm 23 and swing the crane to the dumping position. When it is desired to move the machine from one place to another, it is simply necessary to remove the securing pegs 12 and 19 and connect the draft animals with the clevis 11. If it is necessary to pass beneath telephone wires or some other similar obstruction, and the crane is in the elevated position indicated in dotted lines in Fig. 1, the pin 24 can be withdrawn and the crane then swung downwardly a sufficient distance to pass beneath the wire with the bracing bars 44 swinging upwardly. It is, therefore, not necessary to release the cable 51 and swing the crane downwardly. This saves time and labor on the part of the operator of the derrick. After the obstruction has been passed, the bar 44 will be drawn downwardly to return the crane to the original position and the securing pin replaced. As previously explained, this device may be built upon a stationary platform if so desired instead of employing the carriage which includes the side beams 1, cross bars 2 and supporting truck.

What is claimed is:

1. A derrick comprising a base, a mast rotatably carried by said base, a horizontal pivot shaft carried by said mast, a crane arm pivotally mounted on said shaft, a brace structure including side bars pivotally mounted on said shaft, a rigid rod connecting the free end portions of the crane arm and brace structure, a horizontal bar extending from the lower portion of the mast, bracing and counter-balancing arms pivotally mounted on said shaft and releasably connected with the outer end portion of said bar, a drum rotatably connected with the bracing arms, a guide carried by said brace structure, and a cable connected with the bracing arms and passing about the guide and wound upon said drum.

2. A derrick comprising a base, a mast rotatably carried by said base, a bar extending from the mast, a bearing collar for the mast, supports for the bearing collar, a latch pivotally carried by one of the supports for the collar engaging the bar to hold the bar against swinging movement, a U-shaped cam element carried by the latch and having its arm provided with curved end portions for engaging the bar and lifting the latch out of engagement with the bar to release the bar and permit turning of the mast, and a crane arm carried by the mast.

3. A derrick comprising a base, a mast rotatably carried by the base, a bar extending from the mast, a crane arm pivotally connected with the mast, a movable latch for engaging the bar and holding said mast against turning, a cam movably carried by the latch for engaging the bar when in an operative position and moving the latch out of engagement with the bar, and load engaging means including a cable passing about a guide carried by the bar.

4. A derrick comprising a base, a mast rotatably carried by said base, a crane arm pivotally connected with the mast, a counter-balancing arm for the crane arm pivotally connected with the mast, a brace arm pivotally connected with the mast, a truss rod connecting the brace with the crane arm, a bar extending from the mast and having the counter-balancing arm releasably connected therewith, a latch releasably engaging said bar, cam means carried by the latch for engaging the bar and moving the latch to a releasing position, elevating means carried by the counter-balancing arm and engaging the lever, and load hoisting means including a cable engaging a guide carried by the bar.

5. A latch for the purpose described comprising a shank having a head at one end, and a U-shaped cam element straddling the shank of the latch and pivotally connected therewith and having its arms provided with curved end portions.

In testimony whereof I have hereunto set my hand.

KELLY D. HANKINS.