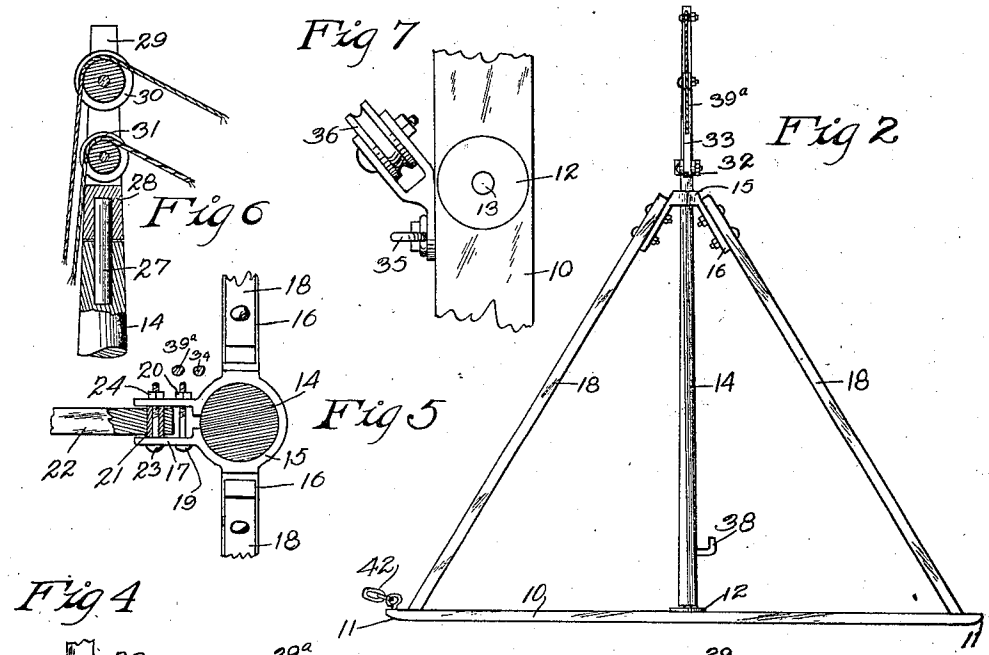
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HAY DERRICK

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HAY DERRICK.

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To all whom it may concern:

Be it known that I, CHARLES A. CHAPMAN, a citizen of the United States, residing at Grinnell, in the county of Poweshiek and State of Iowa, have invented a certain new and useful Hay Derrick, of which the following is a specification.

The object of my invention is to provide a hay derrick of simple, durable and inexpensive construction.

More particularly it is my object to provide such a derrick so constructed that it can be easily raised or lowered.

A further object is to provide such a derrick that can be readily and easily transported from place to place, and taken through narrow gates and the like.

Still a further object is to provide such a derrick so constructed and arranged that hay may be placed on a stack at a great variety of points relative to the distance thereof from the upright member of the derrick.

With these and other objects in view my invention consists in the construction, arrangement and combination of the various parts of my device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claim, and illustrated in the accompanying drawings, in which:

Figure 1 shows a side elevation of a derrick embodying my invention.

Figure 2 shows a front elevation of the same.

Figure 3 shows a side elevation of the derrick with the auxiliary brace placed in position.

Figure 4 is a detailed, sectional view illustrating the method of mounting the auxiliary brace on the derrick.

Figure 5 is a detailed, sectional view taken on the line 5—5 of Figure 1.

Figure 6 is a detailed, sectional view illustrating the structure at the top of the upright member of the derrick.

Figure 7 is a top or plan view of the center portion of the sill; and

Figure 8 shows a detailed, sectional view of the sill and the lower end of the upright member.

In the drawings herewith I have used the reference numeral 10 to indicate generally a sill which may be a 4x8 having its under surface beveled somewhat as at 11 so that the sill may serve as a runner in transporting the derrick from place to place.

On the sill 10 midway between its ends is a plate 12.

A pin 13 is mounted in the sill 10 and projects upwardly through the plate 12 into the lower end of an upright mast 14.

It will be, of course, understood that the runner and the mast may be of various sizes. I preferably use them each thirty-two feet long.

On the mast 14 I mount a bracket 15 which, in the ordinary sizes referred to, is about twenty-one feet above the sill 10.

The bracket 15 consists of a broken ring having, on opposite sides, projecting arms 16 on the broken side pair of ears 17.

Secured to the arms 16 are the upper ends of downwardly and laterally extending braces 18, which are extended to and secured to the outer ends of the sill 10.

The ears 17 may be drawn together by means of a bolt 19 and a nut 20 for causing the bracket 15 to hold the mast 14 and permit it to rotate freely.

Between the outer ends of the ears 17 is a sleeve 21 on which is pivotally mounted the upper end of a brace 22, which extends downwardly in a plane substantially at right angles to that which the braces 18 lie.

A bolt 23 extended through the ears 17 and the sleeve 21 has a nut 24 thereon and holds the parts properly together.

Pivoted to the lower end of the brace 22 is a yoke 25 through which a stake 26 may be driven for anchoring said brace and the derrick.

In Figure 6 I have shown in detail the structure at the upper end of the mast. In the upper end of the mast 14 and projecting upwardly therefrom, is a pin 27 which projects into an upright supporting bracket 28, having a bifurcated arm 29.

It will be noted that the bracket 28 is thus rotatably mounted on the mast.

The pulleys 30 and 31 are mounted between the arms 29 of the bracket 28.

A clamp or bracket 32 is mounted on the mast 14 above the bracket 15. A swinging arm 33 has its inner end pivoted to the bracket 32.

Connected to the outer end of the member

33 is a flexible member such as the rope 34. The rope 34 is extended over the lower pulley 31 and thence downwardly adjacent to the mast 14 to the lower end of the mast where the rope 34 is anchored to the hook 35.

Mounted on the sill 10 adjacent to the mast 14 is a pulley 36. Supported at the outer end of the swinging arm 33 is a pulley 37.

With my derrick, I use some suitable load carrier such for instance as a hay fork 38. Connected with the load carrier is a flexible device, such as the rope 39ª. The rope 39ª is extended over the pulley 37, thence over the pulley 30, thence downwardly around the pulley 36.

It will be understood that the rope 39ª may be wound on a drum where a power hoist is used, or that it may be pulled for raising and lowering the fork 38 by means of draft animals.

On the brace 22 and the mast 14 are suitable brace holding members which may in each instance consist of a horizontal rod 37ª mounted in the mast or brace and having an upright extension 38ª (Fig. 4).

I provide an auxiliary brace 39 having holes 41 to receive the extensions 38ª, thereby connectiong the mast with the brace 39 against rotation and providing a more or less rigid frame for the derrick for convenience in transporting and setting the derrick.

In raising the derrick the parts are arranged with the mast 14 lying flat with the brace 22 extending on the upper portion of the mast 14.

The stake 26 and the brace 22 are used to hold the mast in any adjusted position. After the mast has been raised as high as is convenient, by hand, a team may be hitched onto the arm by means of a rope and the mast pulled to upright position. When the mast has been raised to the desired position, the brace 22 is anchored.

It will be noted that, as shown, the mast 14 in Figure 1 is in a position inclined slightly forward. This position is slightly exaggerated in the drawing, but ordinarily, in setting the derrick the mast is inclined slightly forward, so as to cause the arm 33 to normally swing forward by gravity. When the mast has been properly inclined the brace 22 anchored, and the derrick is ready for use.

When the derrick is used for stacking hay, a load of hay is driven preferably between the mast 14 and the brace 22. The fork 28 is forced into the load and is then pulled upwardly by a horse or otherwise, by pulling on the rope 39ª.

It will be obvious that as the load is raised the anchorage of the mast 14 will cause the arm 33 to swing by gravity toward its position shown in Figure 1.

It will be noted that if it is desired to discharge the load from the fork at the maximum distance from the mast, the load should be discharged before the fork strikes the arm 33.

If it is desired to discharge the load closer to the mast, the draft on the rope 39 may be continued till the arm 43 is raised above the position in which it is normally supported by the rope 34, to position where the fork 38 swings closer to the mast.

On account of the fact that the arm 33 has vertical pivotal movement, as well as horizontal swinging movement with the mast, the derrick can be readily used for discharging the fork load at a great variety of points.

The range of work of which the derrick is capable can also be varied somewhat by adjusting the bracket 42 vertically on the mast.

When it is desired to move the derrick from place to place the anchored end of the brace 22 is released and the auxiliary brace 39 is connected with the brace 22 and the mast.

A team or horse may be then hitched to the link or the like 42 at one end of the sill 10 which will then serve as a runner for permitting the easy transportation of the derrick from place to place.

When the mast is nearly upright it is easy for a man to hold it upright when the derrick is being moved from one plate to another by holding the brace 22 in such position as to balance the derrick on the sill.

If it is necessary to pass through the narrow gate, the auxiliary brace 39 is removed, and a man can lift the free end of the brace 22 over the fence without difficulty, and with it can still steady the mast in its travel through the gate.

My improved derrick is a very simple and inexpensive construction. It is easy to raise and lower, to assemble and to disassemble, and to transport from place to place without difficulty, and its range of use is wide.

It will, of course, be understood that the derrick can be used for other purposes than that of stacking hay but that is the primary purpose for which it was devised.

Some changes may be made in the construction and arrangement of the various parts of my derrick without departing from the essential features and purposes of my invention, and it is my intention to cover by my claim any modified form of derrick or use of mechanical equivalents which may be reasonably included within its scope.

I claim as my invention:

A derrick comprising a sill adapted to serve as a runner, a mast rotatably mounted on said sill, a pair of braces connected with the mast to permit rotation thereof and inclined from the mast downwardly and laterally to the sill and connected therewith,

a third brace pivotally mounted on the mast to permit rotation thereof and inclined downwardly and away from the mast substantially midway between the first two sills, whereby said third brace may be swung pivotally in a vertical plane to a variety of positions and may be used for swinging the mast on the sill as an axis, and a hoisting mechanism supported on said mast above said braces, a detachable brace, and means for fixing said brace to said mast and said third brace.

Des Moines, Iowa, March 4, 1922.

CHARLES A. CHAPMAN.