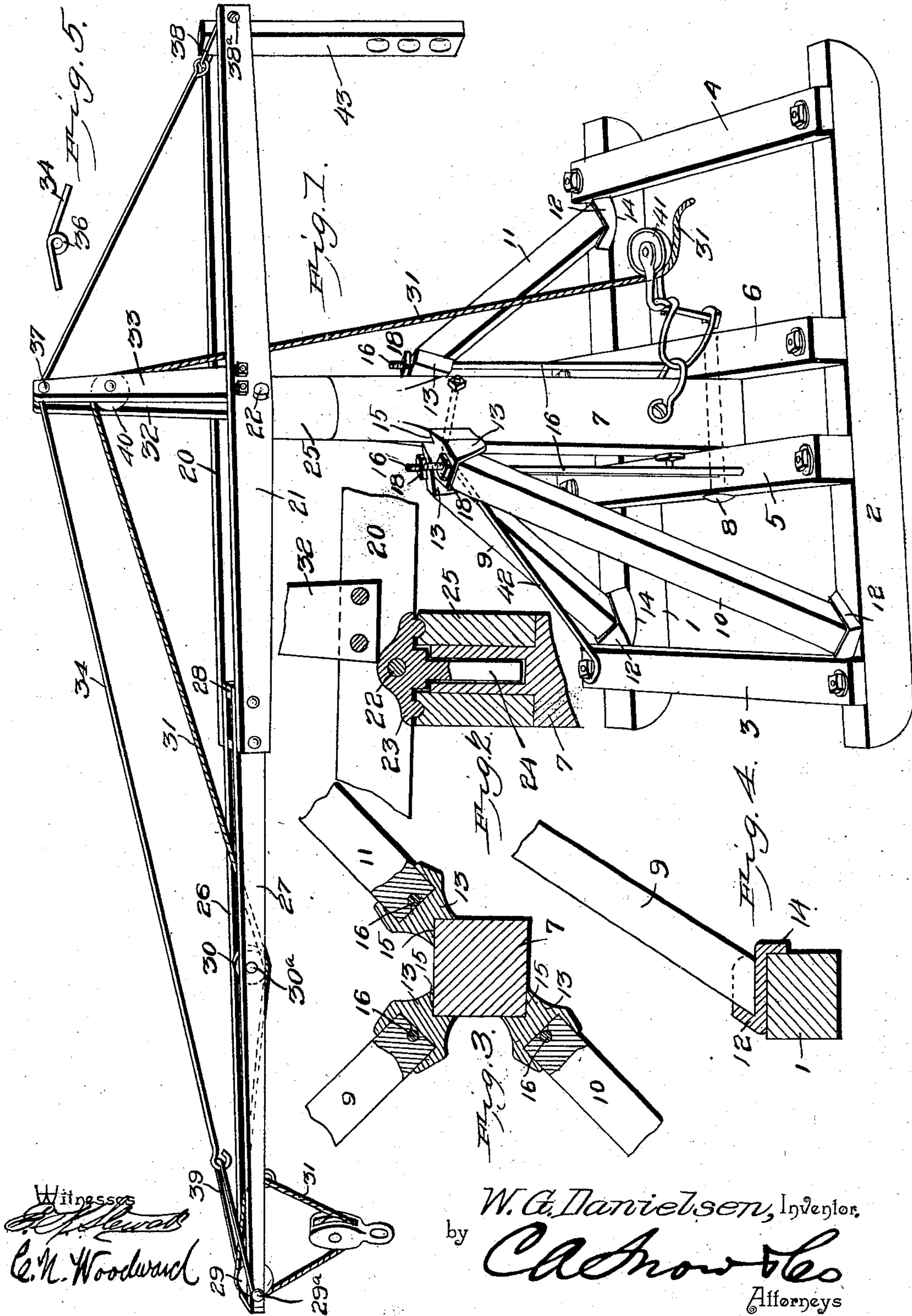


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Patented Sept. 9, 1902.

W. G. DANIELSEN.
HAY DERRICK OR STACKER.
(Application filed Mar. 5, 1902.)

(No Model.)



UNITED STATES PATENT OFFICE.

WILHELM G. DANIELSEN, OF LOGAN, UTAH.

HAY DERRICK OR STACKER.

SPECIFICATION forming part of Letters Patent No. 708,625, dated September 9, 1902.

Application filed March 5, 1902. Serial No. 96,808. (No model.)

To all whom it may concern:

Be it known that I, WILHELM G. DANIELSEN, a citizen of the United States, residing at Logan, in the county of Cache and State of Utah, have invented a new and useful Hay Derrick or Stacker, of which the following is a specification.

This invention relates to derricks, and more particularly to portable derricks employed for handling hay and similar products, either in stacking or loading upon or unloading from wagons or cars, but which may be employed in handling material of various kinds and in various locations.

The principal object of the invention is to produce a device that may be readily adjusted to any irregularity of the ground on which it may be necessary to place it, so as to maintain the central supporting-post in a vertical position.

The invention further consists in certain novel features of the construction, which will appear in the description and will be pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the apparatus complete. Fig. 2 is an enlarged sectional detail of the turn-table portion of the apparatus. Fig. 3 is a transverse section taken on a plane intersecting the mast, the upper ends of the braces, and the caps thereon. Fig. 4 is a sectional detail illustrating the construction of the brace-step. Fig. 5 is a detached detail of the tie-rod loop.

The apparatus comprises a supporting platform or base, a vertically-supported post or mast, and a swinging transverse boom adapted to not only swing around the mast as a center, but also to be adjusted vertically, as required. The base or platform consists of main sill-timbers 1 2, having their ends rounded upward, as shown, to form runners or skids to assist in the transportation of the apparatus, transverse tie-timbers 3 4, bolted to the sills near their ends, and transverse timbers 5 and 6, spaced apart and bolted across the sills centrally and affording a support for the mast 7, which is pivotally supported by its lower end between these timbers by a bolt 8. The mast is thus free to swing in one direction upon the bolt 8 as a center or step. A series of diagonal braces 9, 10,

and 11 are arranged at three of the corners of the base-frame and inclined inward and upward to the mast intermediate of its height and each brace stepped by its lower end in a metal base-plate 12 and each brace supported by its upper end in a metal cap 13. The steps 12 are each formed with a rib 14, engaging the inner upper edge of the sill-timbers 1 and 2 and are disposed to rest by their outer surfaces against the inner sides of the tie-timbers 3 4, so that all the outward thrusts will be borne by the sills and tie-timbers. The upper surfaces of the steps 12 are formed with sockets, into which the lower ends of the braces fit, as shown. The caps 13 are formed with sockets to receive the upper ends of the braces and will each also be formed with angular recesses 15, engaging the corners of the mast 7, upon which they are adapted to move vertically. Each of the caps 13 is also provided with a tie-rod 16, passing downward through the cap and extended through the transverse timbers 5 6 and provided with nuts or heads beneath the timbers and likewise provided with nuts or heads 18 on their upper ends above the caps. By this means the caps 13 and the braces engaged by them may be adjusted vertically upon the mast and the inclination of the mast with relation to the base-frame correspondingly adjusted, it being understood that the tie-rods 16 will bend somewhat to admit of the adjustment of the caps and braces with reference to the mast.

It is very essential to the proper operation of devices of this character that the mast 13 be maintained in a vertical position, no matter how uneven the ground may be on which the base-frame may rest. When using the apparatus on uneven ground, therefore, a few turns of the adjusting-nuts on the tie-rods 16 will quickly adjust the mast to its requisite vertical position and maintain it rigidly wherever required.

The boom is represented in position upon the upper end of the mast 7 and consists of two main timbers 20 21, spaced apart and pivoted centrally upon a transverse bolt 22, the latter being secured in turn through a metal head-block 23, which projects between the timbers 20 21, as shown. Depending from the head-block 23 is a stud 24, which is seated

in a cap 25 upon the upper end of the mast. The adjacent surfaces of the two parts 23 and 25 are formed to closely engage, the whole forming a centrally-pivoted turn-table, on which the boom will swing vertically and also turn horizontally, as may be required.

Bolted between the timbers 20 and 21 at one end are two extension-timbers 26 27, spaced apart and bolted together, with spacing-chocks 28 between them at suitable intervals to keep them in their proper spaced position. Between the outer end of the extension-boom formed by the timbers 26 27 a cable-sheave 29 is secured revolvably upon a transverse bolt 29^a, and at an intermediate point another sheave 30 is similarly secured upon a bolt 30^a to afford means for the guidance of the draft-cable 31, as shown.

Rising centrally from the main-boom timbers 20 21 is a strut formed of two parts 32 33, secured, as by bolts, to the boom-timbers and forming the central upwardly-extending support to a brace-rod 34, the latter secured by one end to the free end of the main-boom timbers 20 21 and at the other end to the outer or free end of the extension-boom timbers 26 27, as shown. The brace-rod 34 at the point where it passes between the strut members 32 33 is formed into an eye 36 to receive a bolt 37, passing transversely through the strut members and also through the eye in the brace-rod, by which means the brace-rod is secured to the strut. At the ends the brace-rod is coupled to the boom ends by links 38 39, respectively, as shown, the link 39 being large enough to permit the draft-cable 31 to pass through it without coming in contact therewith. The link 39 is preferably secured to the ends of the bolt 29^a, which forms the journal of the sheave 29, while the link 38 is secured by a transverse bolt 38^a, as shown.

Between the two parts 32 33 of the brace-rod strut, preferably near their upper ends, is a cable-sheave 40, over which the draft-cable 31 passes, as shown, and thence downward through a guide-sheave 41, secured to the mast 7 near its lower end and from which it leads to the source of power at any convenient point.

A diagonal brace-rod 42 is shown connecting the mast 7 near the point where the slidably-adjustable recessed caps 13 engage the mast with one corner of the base-frame to give additional support to the mast and resist the strains exerted by the draft-cable.

Secured by the bolts 38^a between the members 20 21 of the boom is a bar 43, depending below the boom, and to which a counterweight may be connected to balance the weight of the load on the operative end of the boom.

The mast may be of any desired length, and the boom may also be of any required length, and all the parts may be made of any sized timber or material, as may be required to prop-

erly resist the strains to which they will be subjected or the purposes for which the apparatus may be employed. I do not, therefore, wish to be limited to any particular form of construction or to any specific size or quality of material, as the apparatus may be adapted to many uses and employed in many locations.

The apparatus is cheaply and strongly constructed and, as before stated, is well adapted to the purposes for which such apparatus is designed. Its ready adaptability to the unevenness of the ground, as before described, is of great utility and renders it very convenient to use in localities in which ordinary structures of this class are not available. All the parts are put together with bolts, so that they can be easily disconnected for shipment or transportation, and being so extremely simple can be erected by unskilled labor, which is a great advantage in apparatus of this character, where it is frequently used where skilled labor is often unavailable. The boom extension members 26 27 being easily attachable and detachable, longer or shorter sections may be connected to the main-boom members when required.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a support and a mast, the one movable angularly with reference to the other, braces disposed radially with reference to the mast, having their lower ends secured on the support against radial movement and their upper ends slidably connected to the mast, and flexible adjustable ties, connecting the support and the upper portions of said braces, whereby the latter may be adjusted on the mast to move the latter angularly, substantially as described.

2. In an apparatus of the character described, a base-platform, a mast supported movably in said platform, braces engaging diametrically opposite points of said platform by their lower ends and loosely engaging diametrically opposite parts of said mast by their upper ends, and adjustable tie-rods connecting the said upper ends of said braces with said platform, whereby the upper ends of said braces may be forcefully adjusted vertically upon said mast, substantially as described.

3. In an apparatus of the character described, a base-platform, a mast supported movably in said platform, braces engaging diametrically opposite points of said platform by their lower ends, cap-blocks upon the upper ends of said braces and adapted to loosely engage diametrically opposite parts of said mast, and means whereby said cap-blocks may be forcefully adjusted vertically upon said mast, substantially as described.

4. In an apparatus of the character described, a base-platform having transverse timbers centrally disposed and spaced apart, a mast pivotally supported by its lower end

between said timbers, braces engaging diametrically opposite points of said platform by their lower ends and loosely engaging diametrically opposite parts of said mast by their upper ends, and means whereby the said upper ends of said braces may be forcefully adjusted vertically upon said mast, substantially as described.

5. In an apparatus of the character described, a base-platform having transverse centrally-disposed timbers spaced apart, a mast pivotally connected by its lower end between said timbers, braces engaging diametrically opposite points of said platform by their lower ends and loosely engaging diametrically opposite parts of said mast by their upper ends, adjustable tie-rods connecting said upper ends of said braces and said transverse timbers, whereby the upper ends of said braces may be forcefully adjusted vertically upon said mast, substantially as described.

6. In an apparatus of the character described, the combination of a base-platform having transverse timbers spaced apart and centrally disposed, a mast pivotally supported between said transverse timbers, braces engaging diametrically opposite points of said platform by their lower ends, cap-blocks upon the upper ends of said braces and engaging diametrically opposite parts of said mast loosely, and tie-rods engaging said cap-blocks at one end and said transverse timbers at their other ends, and means for adjusting said tie-rods, whereby said cap-blocks and the braces engaged by them may be adjusted vertically upon said mast, substantially as described.

7. In a device of the character described, a base-platform, a mast supported movably in said platform, braces engaging diametrically opposite points of said platform by their lower ends and engaging diametrically opposite parts of said mast loosely by their upper ends, means for forcefully adjusting the upper ends of said braces vertically upon said mast, a derrick supported upon said mast, a draft-line leading from said derrick to a guide-pulley near the lower end of said mast, and an adjustable stay-rod connecting said mast to said platform in a direction diametrically

opposite to the point of attachment of said guide-pulley, substantially as described.

8. In an apparatus of the character described, a base-platform, a mast supported upon said platform, a socket upon the upper end of said mast, a swivel-block revolubly engaged by said socket, a boom formed of spaced side members and pivotally engaging said swivel-block, a hoisting means supported by the forward end of said boom, a strut supported upon said boom at a point in the rear of said swivel means and of said mast, a brace-rod connected to the ends of said boom and supported by said strut, and a draft-cable sheave carried by said strut and adapted to guide said draft-cable clear of said mast and swivel means, substantially as described.

9. In an apparatus of the character described, a mast vertically supported, a socket upon the upper end of said mast, a swivel-block revolubly engaged by said socket, a boom formed of spaced side members and pivotally engaging said swivel-block, a hoisting means supported from the forward end of said boom, a bar pivotally secured by its upper end between the rear ends of said boom members, and depending therefrom and forming a support for a counterweight, substantially as described.

10. In an apparatus of the character described, a mast vertically supported, a socket upon the upper end of said mast, a swivel-block revolubly engaged by said socket, a main boom formed of spaced side members and pivotally engaging said swivel-block, an extension-boom formed of spaced side members and connected removably to the forward end of said main boom, a strut connected to said main boom and rising therefrom, a brace-rod connected by its ends to the rear end of said main boom and the forward or free end of said extension-boom, and supported by said strut, substantially as described.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILHELM G. DANIELSEN.

Witnesses:

C. E. LLOYD,
GEO. C. RIGBY.