

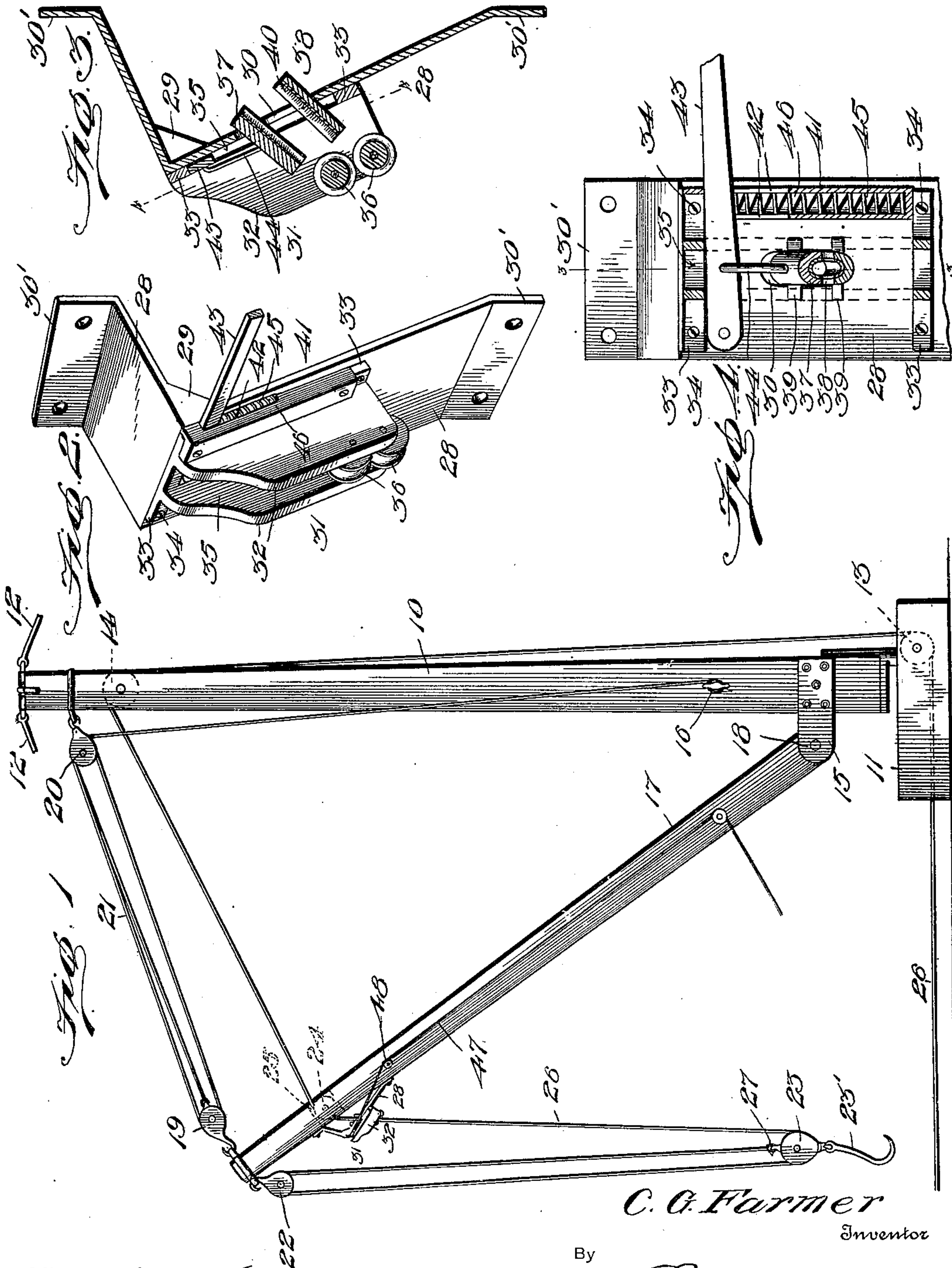
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Patented July 3, 1900.

C. G. FARMER.  
DERRICK.

(Application filed Feb. 21, 1900.)

(No Model.)



C. G. Farmer

Inventor

By

*E. G. Siggers*  
Attorney

Witnesses

*Am. No. 1*  
*W. J. Berukoff*



# UNITED STATES PATENT OFFICE.

CHESTER GRAYSON FARMER, OF PULASKI CITY, VIRGINIA.

## DERRICK.

SPECIFICATION forming part of Letters Patent No. 652,762, dated July 3, 1900.

Application filed February 21, 1900. Serial No. 6,087. (No model.)

*To all whom it may concern:*

Be it known that I, CHESTER GRAYSON FARMER, a citizen of the United States, residing at Pulaski City, in the county of Pulaski and State of Virginia, have invented a new and useful Derrick, of which the following is a specification.

My invention relates to improvements in derricks; and the primary object in view is to provide means operable by the load-cable for raising or lowering the pivoted derrick-boom, whereby the services of an attendant to operate the boom may be dispensed with.

A further object is to provide a simple and durable attachment which may be applied to the boom of any derrick to adapt the same for operation, as above indicated, and to arrange the parts of the attachment with a view to securing ease and efficiency in operation. Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty in the construction, arrangement, and combinations of parts will be defined by the claims.

In the drawings, Figure 1 is a side elevation of a derrick equipped with a boom-hoist embodying my invention. Fig. 2 is an enlarged perspective view of the boom-hoist removed from the derrick. Fig. 3 is a longitudinal sectional elevation through the boom-hoist, taken in the plane of the dotted line 3 3 of Fig. 4; and Fig. 4 is a transverse section in the plane of the dotted line 4 4 on Fig. 3.

The same numerals of reference are used to indicate like and corresponding parts in each of the several figures of the drawings.

An ordinary derrick is represented by Fig. 1 of the drawings, in which 10 designates the mast, which is stepped in the foot-block 11 and stayed in place by the guy-ropes 12. On this foot-block is a sheave 13, and another sheave 14 is mounted near the head of the mast. Near its lower end the mast is equipped with a bearing 15, in which the ordinary boom 17 is pivoted at 18. A tackle-block 19 is connected to the upper end of the boom, and a similar block 20 is attached near the upper end of the mast, whereby a cable 21 may be reeved through the tackle-blocks, so as to have one end thereof fastened to the block 19 and its other end engaged with a cleat 16 on the mast, thus making provision for rais-

ing or lowering the boom by hand in the event of breakage of any of the parts comprising my improved boom-hoist to be hereinafter described. The fall for the load includes a tackle-block 22, which is connected to the upper end of the pivoted boom. The load tackle-block 23 is equipped with a grapple 23' of any suitable character. A sheave 24 is loosely journaled within a slot 25 of the pivoted boom, and the load-cable 26 is carried around the sheaves 13 14 through the slot 25 in the boom, so as to fit the sheave 24, thence around the sheave in the tackle-block 23, thence over the sheave and the tackle-block 22, and finally the end of this cable is fastened to the load tackle-block 27. The other end of the load-cable is carried to an engine or other power appliance, which is adapted to draw on the cable for the purpose of raising the load through the described construction of the fall.

The parts hereinbefore described are similar to those of an ordinary derrick. Hence these parts may be modified within wide limits. The improvement which I have made consists of a gripper mechanism which is carried by the boom in position to engage with the load-cable, so as to make the boom and cable fast one with the other, whereby the motion of the cable under the pull or strain exerted thereon by the engine may be utilized to raise the boom, or when the cable is slackened the gravity of the load may be exerted on the cable to lower the boom.

In carrying the invention into practice I provide an attachment which may be readily applied to the boom of an ordinary derrick, thus adapting the latter for service in the manner indicated; but I would have it understood that the boom-hoist which constitutes my improvement may be built as a part of the derrick at the time of manufacture thereof. This boom-hoist or attachment contemplates the employment of an angular or curved plate 28, which is cast in a single piece of metal with the reinforcements 29, said plate being provided at a point intermediate of its length with a longitudinal slot 30. The angular plate is provided at its ends with the bearing-flanges 30', which are applied laterally against the outer face of the boom and are bolted firmly thereto, so that the bracket



will be offset from the face of the boom. This angular plate carries or supports a bracket 31, the latter consisting of parallel plates 32 and base-flanges 33, all cast in a single piece of metal. This bracket is adjusted for its base-flanges to rest against one length of the angular plate, so as to be fastened thereto by means of the bolts 34. The bracket is arranged for the parallel plates thereof to lie on opposite sides of the slot 30 in the angular plate, and by providing the bracket with the base-flanges it may be applied to the angular plate to form the intermediate space 35. A pair of sheaves 36 is mounted in the bracket between the parallel plates 32 thereof, and this bracket and the angular plate serve to confine between themselves a pair of gripper-jaws 37 38, the latter arranged to lie at right angles, substantially, to the plane of the sheave-arbors, so that one end of the gripper-jaws will be confined in the slot 30 of the angular plate. These gripper-jaws are provided with the laterally-extended lugs 39, which are loosely fitted in the spaces 35, provided between the bracket and the angular plate, whereby the gripper-jaws are loosely confined in operative relation to the slot 30 and the sheaves 36. The gripper-jaws have the rubber, fibrous, or other friction linings 40 set into the working opposing faces thereof in order to secure a firm frictional engagement of the jaws with the load-cable, the latter passing between the jaws and between the sheaves 36 on its way from the sheave 24 to the load tackle-block 23. A keeper 41 is secured firmly to the angular plate at one side of the bracket, and this keeper is provided with a recess in one edge thereof, which recess is adapted to be closed by the angular plate, so as to form a slot 42, in which is loosely fitted a gripper-operating lever 43. This lever extends through the keeper and beneath the plates of the bracket 31, so as to extend across the slot 30, and said lever is connected at a point intermediate of its length with one of the gripper-jaws by a link 44. A spring 45 is actively disposed with relation to the lever for the purpose of forcing the latter and the jaw 37 in a direction away from the other jaw 38, thus normally holding the gripper in an open position and permitting the load-cable to pass freely therethrough. This spring is preferably of the coiled variety, having one end fitted in a housing 46, which is formed by and between a part of the angular plate 28 and a part of the keeper 41, the other end of said spring being extended beyond the housing for proper engagement with the lever. An adjusting-line 47 is connected with the free protruding end of this lever and is led around a guide 48 on the boom, said line being carried to a point within convenient reach of the attendant stationed at the engine which is provided for the operation of the derrick.

It is to be observed that on slackening the adjusting-line 47 the spring 45 becomes active to hold the lever and the gripper-jaw 37

in a raised position, thus permitting the load-cable 26 to pass freely through the gripper and the sheaves 36, whereby the derrick may be operated in the ordinary way. To raise the boom by the motion of the load-cable, which is operated from the engine, the attendant pulls on the line 47 sufficiently to overcome the tension of the spring and to move the lever toward one end of the slot in the keeper, thereby actuating the gripper-jaw 37, so as to coact with the other gripper-jaw in making the boom and the cable fast one with the other. It is now evident that the draft on the load-cable will operate to raise the boom to a desired position, and by slackening the adjusting-line 27 the gripper is released from the cable. With the gripper engaged with the cable and the boom occupying a raised position the draft on the load-cable may be slackened and the gravity of the load which is engaged by the grapple may be utilized to lower the boom.

Changes within the scope of the appended claims may be made in the form and proportion of some of the parts, while their essential features are retained and the spirit of the invention is embodied. Hence I do not desire to be limited to the precise form of all the parts as shown, reserving the right to vary therefrom.

Having thus described the invention, what I claim is—

1. In a derrick, the combination with a mast and pivoted boom, of a load-cable depending from the outer end of the boom, and a gripper carried by the boom in angular relation thereto and arranged to engage the load-cable disposed at an angle to the boom.

2. In a derrick, the combination with a mast and pivoted boom, of a load-cable depending from the outer end of the boom, an angular plate carried by the boom, and a gripper carried by the angular plate and arranged to engage the load-cable disposed at an angle to the boom.

3. In a derrick, the combination with a mast and pivoted boom, of a load-cable depending from and passed through the boom, a supporting-plate carried by the boom and located substantially transverse to the load-cable, a gripper carried by said plate and disposed at an angle to the boom for engagement with that portion of the load-cable disposed at an angle to the boom, and means for manually operating the gripper.

4. In a derrick, the combination with a mast and pivoted boom, of an angular plate secured to the boom, a gripper carried by said plate, guide-sheaves mounted in advance of the gripper, and means for actuating the gripper from a point removed therefrom.

5. In a derrick, the combination with a boom, and a load-cable, of an angular plate secured to the boom, a bracket fast with the plate, guide-sheaves mounted in the bracket, a gripper having its members confined in the plate and bracket, a lever connected with



one gripper member, and an adjusting-line connected to the lever, as and for the purpose described.

5 6. In a derrick, the combination with a mast and pivoted boom, of a load-cable, a gripper carried by the boom in angular relation thereto for engagement with the load-cable when said cable is disposed in angular relation to the boom, and means actuating the gripper  
10 from a point removed therefrom.

7. An attachment for derricks comprising a plate, a bracket fast therewith and carrying a cable-guide, a two-part gripper mounted

in the bracket and the plate, a keeper on said bracket, a lever fitted to the keeper and connected with a gripper member, and a retracting-spring operating against the lever, substantially as described. 15

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

CHESTER GRAYSON FARMER.

Witnesses:

N. T. HENDRIX,  
W. F. LOCKER.