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Patented Feb. 19, 1901.

J. M. ARMSTRONG.  
POST DRIVER.

(Application filed Mar. 16, 1900.)

(No Model.)

2 Sheets—Sheet 1.

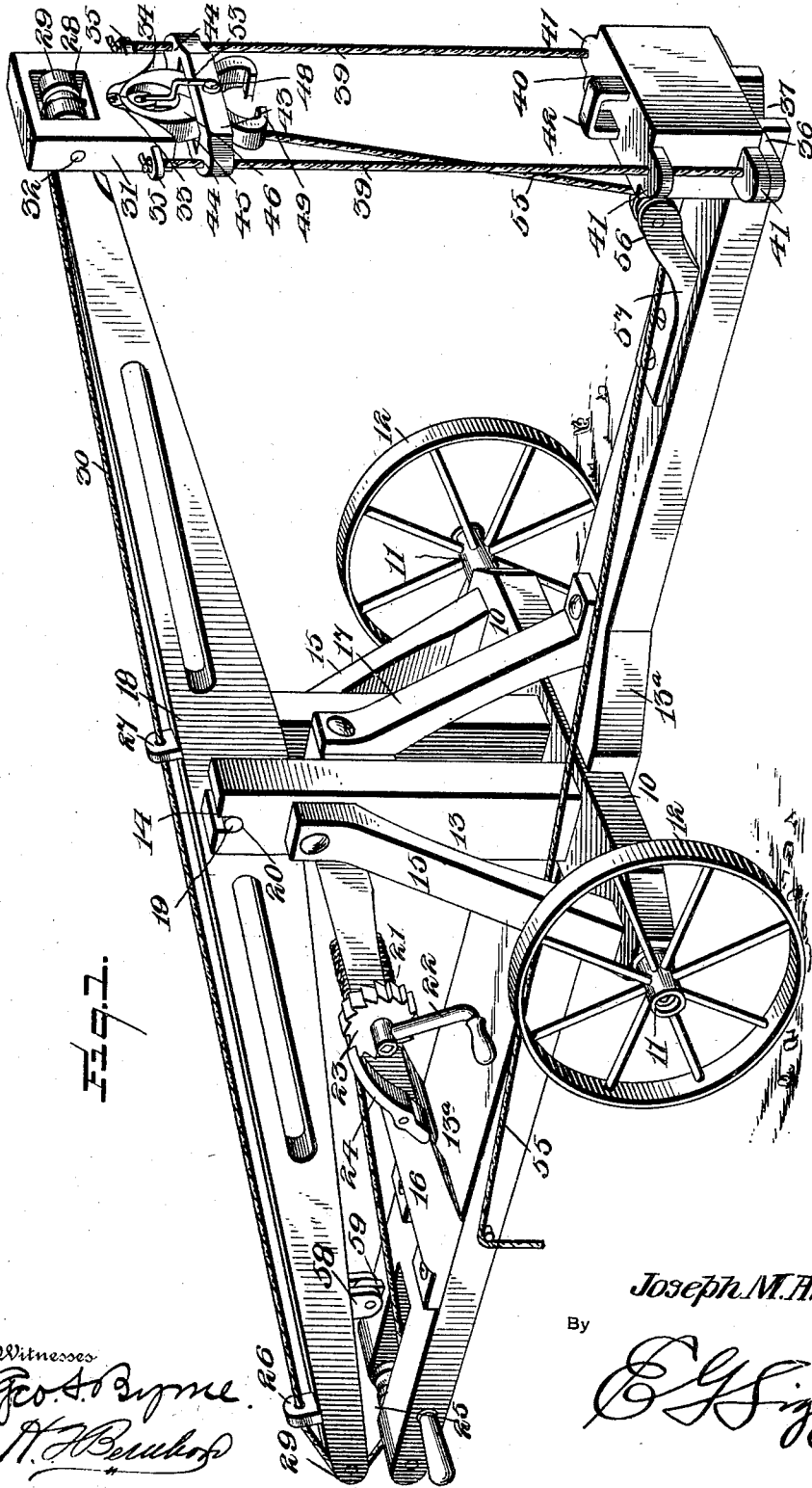


FIG. 1.

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2 Sheets—Sheet 2.

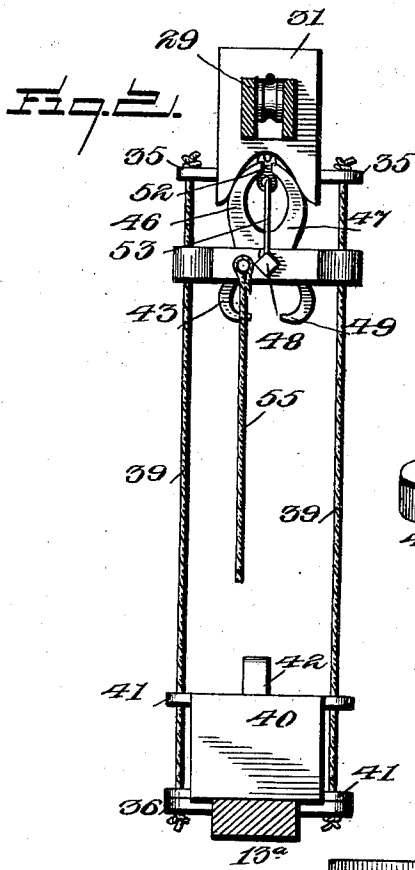


FIG. 3.

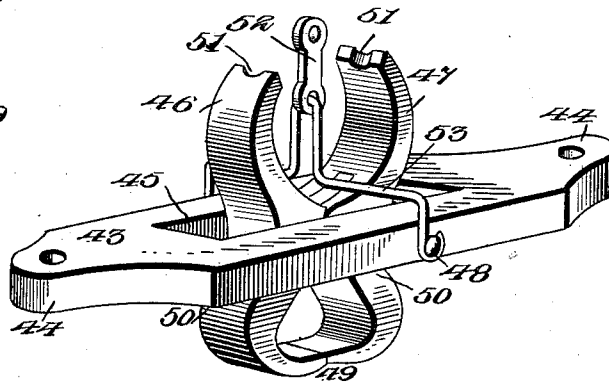


FIG. 5.

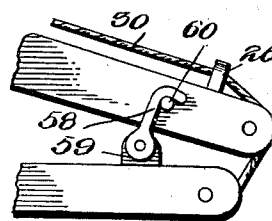
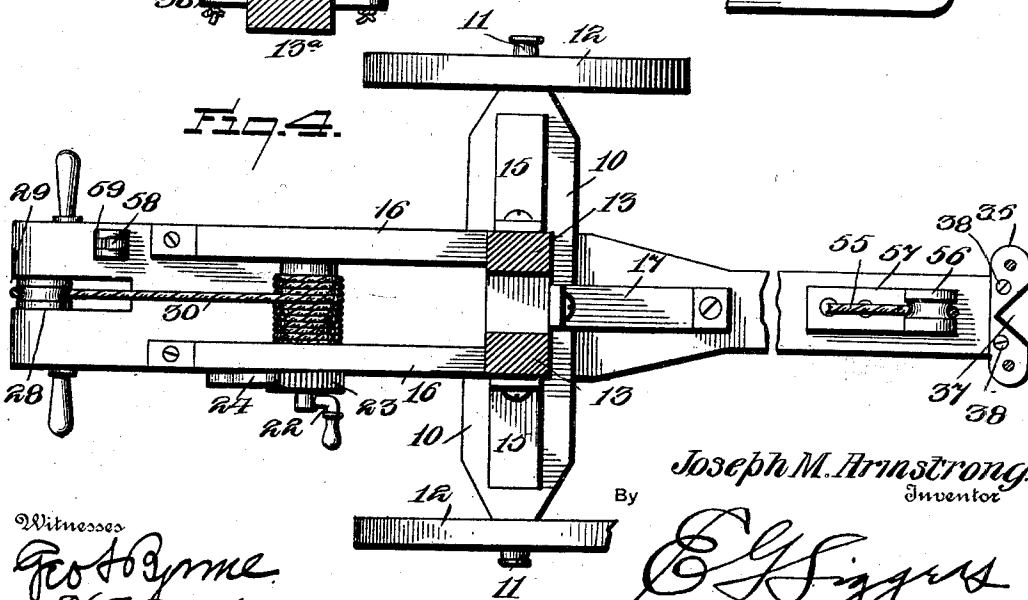


FIG. 4.



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# UNITED STATES PATENT OFFICE.

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## POST-DRIVER.

SPECIFICATION forming part of Letters Patent No. 668,276, dated February 19, 1901.

Application filed March 16, 1900. Serial No. 8,931. (No model.)

### *To all whom it may concern:*

Be it known that I, JOSEPH MILTON ARMSTRONG, a citizen of the United States, residing at Bonham, in the county of Fannin and State of Texas, have invented a new and useful Post-Driver, of which the following is a specification.

My invention relates to improvements in portable post-drivers, although it is designed for general use for the performance of different kinds of work on a farm, such as extricating posts from the ground, loading weights on vehicles, &c.

One object of the invention is to provide a simple structure which may be easily moved from one place to another and is equipped with all of the various devices required for lifting weights.

A further object is to provide an improved type of gripper mechanism adapted to raise a hammer-weight to an elevated position and to automatically release the same for the weight to drop upon the subjacent post and by repeated blows drive the latter into the ground.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty in the construction, arrangement, and combination of parts will be defined by the claims.

In the drawings, Figure 1 is a perspective view of a portable post-driver constructed in accordance with the present invention. Fig. 2 is a vertical transverse section through a part of the machine adjacent to the hammer-weight and illustrating the gripper mechanism in a partly raised-position. Fig. 3 is a detached perspective view of the gripper mechanism, with the jaws thereof in an open condition. Fig. 4 is a sectional plan view taken in a plane below the walking-beam and through the forked upper part of the post to illustrate the general arrangement of the parts on the wheeled axle, and Fig. 5 is a detail view illustrating the construction and arrangement of the locking device for holding the beam in a stationary inclined position.

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

The portable post-driver of the present invention has the framework and all of the op-

erating parts carried by a single transverse axle 10, the latter being provided at its ends with the wheel-spindles 11, which are equipped with carrying-wheels 12 of any suitable size or construction. The horizontal frame 13<sup>a</sup> is joined in a suitable way to this axle, and it extends in opposite directions from said axle. Rising from the axle and disposed centrally on the frame is a post or standard 13, the lower end of which is secured firmly to the axle in any suitable way. The upper end of this post or standard is slotted or bifurcated, as at 14, for the reception of a walking-beam 18, and said post is steadied in position by transverse braces 15, the latter being disposed in inclined relation to the post and joined firmly to the axle within the wheeled spindles thereof. A pair of inclined longitudinal braces 16 are arranged on one side of the axle and the post to have their lower ends joined firmly to a part of the horizontal frame 13<sup>a</sup>, the upper ends of said braces 16 being united to the post below the walking-beam. Another longitudinal brace 17 is joined to the post and the other part of the horizontal frame on the opposite side of the axle, whereby the post is firmly steadied in position by a plurality of braces which are disposed longitudinally and transversely of the framework forming a part of the improved machine.

The walking-beam 18 is mounted on the post in any suitable way, but I prefer to provide said beam with the trunnions 19, which find support in suitable bearings 20 at the upper forked extremity of the post or standard.

The pair of inclined longitudinal braces 16 afford the support for a horizontal transverse windlass 21, the latter being equipped with a suitable operating device, such as a hand-crank 22. Any suitable means may be employed to permit a backward rotation of the windlass under the weight or pull of the cable or rope employed for the elevation of the weight, and in one embodiment of the invention I contemplate the attachment of a ratchet 23 on one end of the windlass 21, said ratchet being engaged under normal conditions by a pawl 24, which is shown as pivoted to one of the braces 16. It is evident that the pawl may be thrown back out of engagement with the ratchet for the purpose of permitting back-

ward rotation with the windlass, but normally this pawl engages by gravity with the ratchet.

A direction-sheave 25 is journaled in a slot 5 or forked rear end of the horizontal frame 13<sup>a</sup>. The upper side of the walking-beam is furnished with the eyebolts 26 27, adapted to serve as guides for the haulage-cable, and the end portions of the walking-beam itself 10 are slotted or recessed, as at 28, for the reception of other direction-sheaves 29, the latter being disposed at the end portions of the walking-beam. The haulage-cable 30 15 has one end fastened in any approved way to the windlass 21. From this windlass the cable extends beneath the direction-sheave 25 on the horizontal frame, thence passes upwardly and over a sheave 29 at one end of the walking-beam, thence passes through the 20 eyebolts 26 27, so as to be guided along the length of the walking-beam, and finally this cable passes over the other sheave 29 on the opposite end of the walking-beam. The otherwise free end of the cable is associated with 25 the gripper mechanism, which will be hereinafter described.

One element of the gripper mechanism is a head-block 31, which is slotted to fit upon or embrace one end portion of the walking-beam, said head-block being connected pivotally to the beam by a horizontal bolt 32, 30 which passes through the block and the beam and affords the support for one of the direction-sheaves 29. The head-block depends 35 from the walking-beam for a suitable distance, said depending portion of the block having the recess 33. The opposing side faces of this recess in the head-block are disposed in reversely-inclined positions to form 40 the cam-faces 34, which lie in the path of the movable jaws of the gripper mechanism, whereby on the elevation of the latter the cam-faces 34 impinge the heels of the gripper-jaws for the purpose of opening the latter and 45 releasing the hammer-weight automatically.

The head-block 31 is provided with the outwardly-extending lugs 35, to which are fastened the upper ends of the guide ropes or 50 cables 39. The guide for the post which is to be driven is in the form of a horizontal cross-bar 36, provided in one side with a recess 37, adapted for the reception of the post, said cross-bar being firmly secured to one end 55 of the frame 13<sup>a</sup> by suitable bolts 38, which permit the cross-bar to be removed when desired. The ends of the cross-bar extend beyond the sides of the horizontal frame for suitable distances and provide means for the attachment of the lower ends of the guide 60 ropes or cables 39. The hammer-weight 40 is of any suitable form, such as cast metal, and said weight is provided with the laterally-extending lugs 41 and the upwardly-extending catch 42. The lugs 41 of this hammer-weight are provided with openings, which 65 slidably or loosely receive the guide ropes or cables 39, whereby the hammer-weight is slid-

ably confined in place by the ropes or cables which are stretched between the cross-bar 36 and the head-block 31, which is carried by 70 one end of the walking-beam.

The head 43 of the gripper mechanism is in the form of a cast-metal block having the guide perforations or openings 44 and the longitudinal slot 45, and within this slot of the gripper-head are disposed a pair of coacting jaws 75 46 47, said jaws being pivoted together and to the gripper-head by a transverse bolt 48, the jaws being thus mounted in the gripper-head to move therewith and said gripper-head being 80 slidably fitted on the guide ropes or cables 39 by passing the latter through the openings 44 of said gripper-head. The gripper-jaws 46 47 are provided at their lower ends with the inwardly-extending beaks 49, and 85 said gripper-jaws are extended upwardly on curved lines, so as to form the heels 50. The heels of the jaws normally overbalance the lower ends thereof for the purpose of holding the beaks 49 in abutting relation, whereby as 90 the gripper mechanism is lowered the beaks are closed together in positions to engage with the catch 42 on the hammer-weight, so as to effect the engagement of the gripper automatically with said hammer-weight. The heels at 95 the upper ends of the gripper-jaws are notched in their opposing edges, as at 51, for the accommodation of an intermediate link 52, said link being provided at its lower end with a bail 53, which straddles the gripper-head and is 100 attached to the pivot-bolt 48. The link occupies a compact position within the notched heels of the gripper-jaws when the latter are opened by the heels riding against the cam-faces 34 of the head-block 31 on the elevation 105 of the gripper mechanism, and to this link is fastened the otherwise free end of the haulage-cable 30.

A pull-rope 55 is fastened to any suitable part of the gripper mechanism—such, for example, as the gripper-head 43, said pull-rope 110 being led beneath or around a guide-sheave 56, which is mounted in a bracket 57, fast with the horizontal frame 13<sup>a</sup>. The pull-rope may be employed to draw the gripper mechanism 115 downward from its elevated position, so as to effect the engagement of the gripper with the catch on the hammer-weight.

In using the improved machine as a post-driver it is desirable to fasten the walking-beam in a stationary inclined position, as 120 shown by Fig. 1 of the drawings. I have provided a locking device to hold the beam in such a stationary inclined position, said locking device consisting of a latch 58, which is 125 pivoted to a short post 59, secured to the horizontal frame. The free end of this latch engages with an eyebolt 60 on the lower portion of the walking-beam; but the latch may be disengaged from the eyebolt when it is 130 desired to use the walking-beam as a means for raising or lowering weights—as, for example, in loading or unloading a vehicle.

In the operation of the apparatus as a post-

driver the walking-beam is secured firmly in its inclined position by the locking contrivance just described, and the guide ropes or cables 39 are stretched between the cross-bar 36 and the lugs of the head-block 31 on the elevated end of said walking-beam. To lower the gripping mechanism, the pawl 24 is disengaged from the windlass-ratchet and the windlass is turned in a backward direction, so as to uncoil the cable 30 therefrom, thereby producing a permanent allowance of slack in the cable and permitting the gripper mechanism to descend by gravity or to be drawn in a downward direction by pulling on the rope 55. As the gripper-jaws approach the hammer-weight they are opened by the beveled faces of the catch 42, so that the overbalanced heels of the jaws permit the beaks thereof to engage automatically with the catch of the hammer-weight. The operator now rotates the windlass in a direction to coil the cable 30 thereon, and thereby draw on the cable in a manner to raise the gripper mechanism and the hammer-weight connected therewith. As the gripper mechanism approaches the head-block 31 the heels of the gripper-jaws impinge the cam-faces 34 of the head-block, and by the time that the gripper and the hammer-weight shall have been raised to their highest positions the gripper-jaws are opened by the cam-faces of the head-block in a manner to release the hammer-weight, thus permitting the latter to drop or fall and strike the upper end of the post which is placed in position within the recess of the cross-bar 36. This operation is continued the desired number of times in order to drive the post by a series of blows from the hammer-weight. After the post shall have been driven the machine may be readily moved from one position to another and the operations repeated.

Although my machine is especially adapted for use in driving posts, it is not restricted to this use, because the hammer-weight and its guides may be removed and the walking-beam, together with other parts, utilized as a means for withdrawing a post from the ground or for loading and unloading vehicles and any other heavy work which may be necessary on a farm.

In drawing a post from the ground the locking device for the walking-beam is disconnected, the guide ropes or cables are removed, and the hammer-weight is displaced. The cable and windlass may now be operated to raise and lower the walking-beam on the horizontal axis afforded by the trunnions 19, and the gripper mechanism may be engaged with a chain or rope that is passed around a post which it is desired to withdraw from the ground. As a means for loading heavy stone on a wagon or unloading stone therefrom the machine may be operated to vibrate the walking-beam and to make the gripper mechanism engage with the load, thus saving the at-

tendant the fatigue and labor of placing the load on the vehicle or removing the same therefrom.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art without further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. A machine of the character described comprising a suitable frame, a walking-beam pivotally mounted on the frame, post-driving mechanism supported in part by the frame and detachably connected to the walking-beam, and means for operating the walking-beam and post-driving mechanism as desired.

2. A machine of the class described comprising a frame, a walking-beam pivotally mounted on the frame said beam being provided at one end with a head-block and at its opposite end with a device for attaching the walking-beam to the frame, a gripper mechanism removably supported between the head-block and the frame, a hammer-weight located above the frame for engagement with the gripper mechanism, and means for vibrating the walking-beam or for operating the gripper mechanism to elevate the hammer-weight.

3. A machine of the character described comprising a gripper-head provided with a transverse bolt, gripper-jaws pivoted upon the bolt and having notched heels, a link disposed between the notched heels of the gripper-jaws, a bail having pivotal connection with the link and retained by the ends of the bolt upon which the jaws are pivoted, and a head-block disposed in the path of the heels of the gripper-jaws.

4. In a machine of the class described, a gripper mechanism comprising a slotted gripper-head, the gripper-jaws pivoted within said head and having the curved notched heels and the link disposed within said notched heels of the gripper-jaws and connected with the gripper-head by an intermediate bail, combined with a hammer-weight, suitable guides for said weight and the gripper-head, a head-block having the cam-faces disposed in the path of the heels of the gripper-jaws, and a haulage-cable attached to the link of the gripper mechanism, substantially as described.

5. A machine of the class described comprising a suitable frame, a walking-beam pivotally mounted on said frame, means for locking the walking-beam in a fixed inclined position on the frame, a cable reeved on the walking-beam, a post-driving mechanism detachably mounted on a part of the frame and one end of the beam, and means for driving

the cable to operate the post-driving mechanism, or to vibrate the walking-beam on its horizontal axis, substantially as set forth.

5 6. A machine of the class described comprising a frame having a windlass, a walking-beam pivotally mounted on the frame and provided at opposite ends with the direction-sheaves, a head-block mounted on one end of the walking-beam, a gripper mechanism, a  
10 cable reeved over the direction-sheaves of the walking-beam and attached at its respective ends to the windlass and the gripper mechanism, and a driving-weight having suitable guides detachably connected to the frame and  
15 the head-block, substantially as set forth.

7. In a machine of the class described, a walking-beam pivotally mounted on a frame,

and a locking contrivance between the frame and one end of the walking-beam for holding the latter in a stationary inclined position; 20 combined with a post-driving mechanism detachably related to the frame and the beam, and a power-windlass having a cable which is reeved on the walking-beam and is operatively connected with an element of the post- 25 driving mechanism, substantially as set forth.

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

JOSEPH MILTON ARMSTRONG.

Witnesses:

N. C. BRADFORD,

WM. A. BRAMLETTE.