No. 715,177. Patented Dec. 2, 1902.

J. M. THOMAS.

PILE DRIVER.

Application filed Apr. 23, 1902.

(No Model.) 2 Sheets—Sheet 1.

Fig. 3.

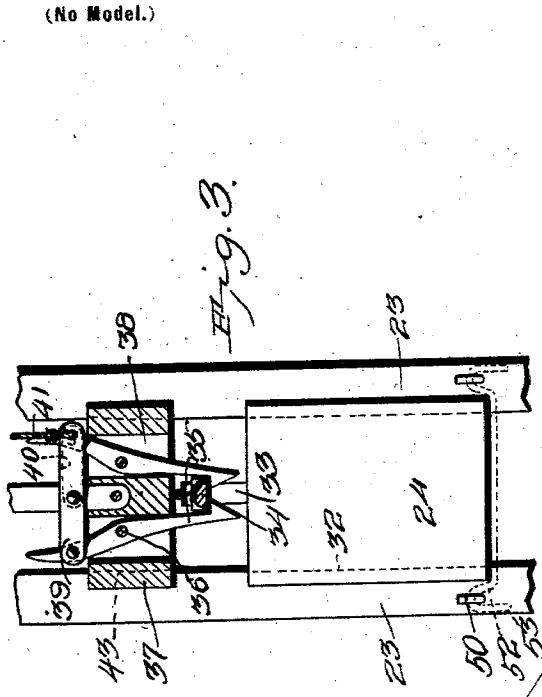

Fig. 1.

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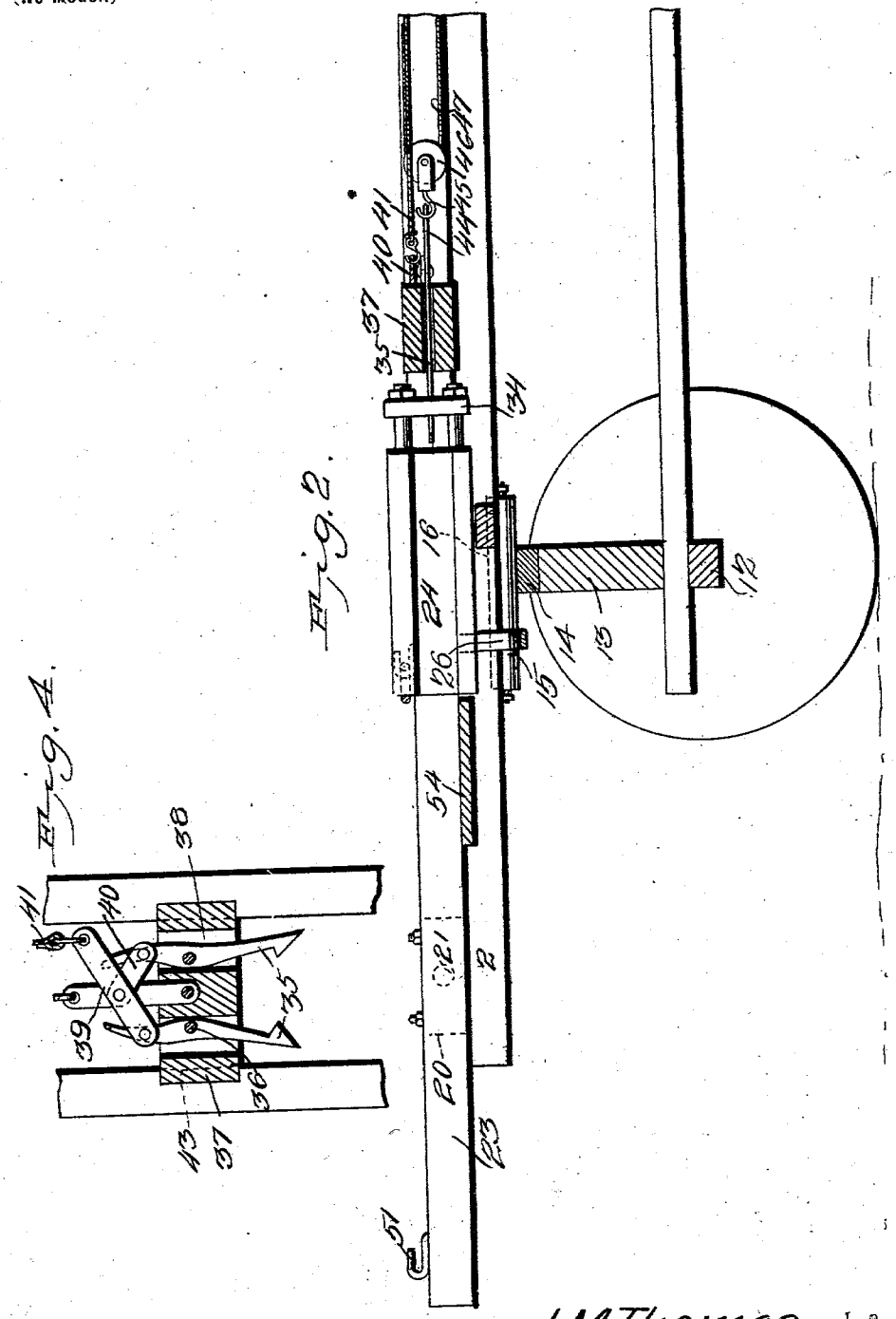

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UNITED STATES PATENT OFFICE.

JAMES M. THOMAS, OF McKENZIE, TENNESSEE.

PILE-DRIVER.

SPECIFICATION forming part of Letters Patent No. 715,177, dated December 2, 1902.

Application filed April 23, 1902. Serial No. 104,347. (No model.)

To all whom it may concern:

Be it known that I, JAMES M. THOMAS, a citizen of the United States, residing at McKenzie, in the county of Carroll and State of Tennessee, have invented a new and useful Pile-Driver, of which the following is a specification.

The invention relates to improvements in pile-drivers.

The object of the present invention is to improve the construction of pile-drivers and to provide an exceedingly simple and inexpensive one designed primarily for driving piles for constructing bridges over small streams and adapted to be readily conveyed from one point to another and capable of being conveniently and compactly folded for such transportation.

A further object of the invention is to provide a pile-driver of this construction which will be capable of lateral movement on a running-gear to enable a row of piles to be driven at opposite sides of the machine without shifting the running-gear laterally to arrange the pile-driver for driving the said rows of piles.

Another object of the invention is to provide a pile-driver of this character adapted when it is to be transferred from one place to another to be used in connection with an ordinary running-gear and which may be conveniently constructed for driving fence-posts and the like.

The invention consists in the construction and novel combination and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended.

In the drawings, Figure 1 is a perspective view of a pile-driver constructed in accordance with this invention. Fig. 2 is a longitudinal sectional view of the rear portion of the pile-driver, the pivoted frame being lowered. Fig. 3 is a detail view illustrating the construction of the hammer-engaging nippers. Fig. 4 is a detail view of the follower-block and the nippers, illustrating the arrangement of the parts when the latter are open.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

1 designates a horizontal oblong frame composed of parallel side beams 2 and suitable connecting-bars 3 and 4 and supported by transverse bracing-rods 5 and 6, arranged adjacent to the connecting cross-pieces 3 and 4 and preferably provided with suitable heads and nuts. The horizontal supporting-frame is designed to be pivotally mounted on a running-gear, and it is provided at its front portion with a transverse bar or bolster 7, having a central perforation for the reception of a king-bolt 8 for connecting the front portion of the horizontal frame with a front axle 9 of a running-gear, whereby the said horizontal frame is capable of being shifted laterally for driving a row of piles at each side of a bridge or road without shifting the running-gear laterally for this purpose.

The running-gear is provided with a reach 10 of the ordinary construction, which is adapted to receive a rear truck 11, having an elongated rear axle 12, supporting an elongated bolster 13 and permitting the necessary lateral movement of the horizontal supporting-frame, and the said reach is also adapted to receive a rear truck or rear portion of a running-gear having a rear axle and bolster of the usual length and construction, so that after the pile-driver has been folded, as hereinafter explained, it may be conveniently transported from one point to another. The rear bolster has mounted upon it a metal bar or plate 14, receiving a pair of longitudinal rolls 15 of the laterally-movable horizontal frame, and these rolls form antifriction devices for enabling the horizontal frame to be easily moved from one side of the running-gear to the other. The rolls are mounted within suitable recesses 16 of the side beams of the horizontal frame and are suitably secured to the same, their ends being preferably provided with reduced portions or journals.

The frame 1 is held at the center of the running-gear, as shown in Fig. 1 of the drawings, by means of a pair of rods 17, hinged to the rear bolster and provided at their outer ends with hooks for engaging eyes 18 of the frame 1, and the latter may also be provided with suitable eyes 19, adapted to be engaged by the rods to enable the frame to be locked at either side of the running-gear.

The side beams 2 of the frame 1 are extended in rear of the running-gear and are provided at opposite sides with suitable bearings 20 for the reception of pivots 21 of a guide-frame 22, which is adapted to be arranged in a perpendicular position, as illustrated in Fig. 1, and which is also capable of being folded down flat against the horizontal frame when the pile-driver is not in use. The pivots 21 are located at points between the ends of the sides of the guide-frame to form a pair of depending arms 23, adapted to receive the weight or hammer 24 of the pile-driver, whereby the weight of the upper portion of the guide-frame is counterbalanced to enable the guide-frame to be easily lowered from a perpendicular to a horizontal position and readily swung upward from its folded position to a perpendicular position. The sides of the guide-frame are connected at the top by a suitable cross bar or head 25, and the lower portion of the frame is supported by a transverse brace 26, bowed outward, as indicated in Fig. 2, to arrange it out of the path of the weight or hammer. The pivoted guide-frame is supported in a perpendicular position by a pair of inclined braces 27, pivoted at their upper ends by bolts 28 or other suitable fastening devices to the side bars of the guide-frame and having their lower ends adjustably secured to the side beams 2, which are provided with longitudinal slots 29 for the reception of bolts 30 or other suitable fastening devices. The bolts at the ends of the inclined braces are adapted to be removed to permit the braces to be used in lowering the pivoted frame, and the slot-and-bolt adjustment also enables the pivoted frame to be secured in a perpendicular position when the running-gear is arranged at an inclination by reason of a grade in the road. When the guide-frame is arranged in a horizontal position, the inclined braces are detached. The top cross piece or head of the guide-frame is provided with suitable eyes 31 for enabling guy-ropes to be connected to it for steadying the pile-driver.

The hammer or weight, which may be of any heft to adapt the pile-driver for the character of work for which it is to be employed, is provided at opposite sides with grooves 32 to receive the sides of the pivoted guide-frame. The said hammer or weight is provided at its top with a pair of arms 33, to which is secured a cross bar or piece 34, beveled or rounded at the upper side edges and presenting a flat horizontal lower face adapted to be engaged by a pair of nippers composed of levers or members 35, pivoted between their ends by pins 36 or other suitable fastening devices to a follower-block 37 and arranged in suitable slots 38 thereof and extending above and below the same. The nippers are provided at the lower ends of the bars or members 35 with engaging portions forming shoulders to engage the cross bar or piece 34 and provided below the shoulders with beveled edges adapted to engage the beveled or rounded upper portion of the cross bar or piece 34 and capable of being readily spread by the same. The upper arms of the bars or members of the nippers are connected by a lever 39 and a link 40. The lever is pivoted at one end to one of the bars or members and is centrally connected to the inner end of the link 40, which is pivoted at its outer end to the upper arm of the other bar or member of the nippers. The other end of the lever is connected to one end of a trip-rope 41, which extends over a suitable guide-pulley 42 of the top of the guide-frame and which is adapted to be pulled upon by the operator to swing the lever 39 upward from the horizontal position shown in Fig. 3 to the position shown in Fig. 4. The lever and the link form a lock for holding the nippers in engagement with the hammer, and they are supported in a horizontal position by the block upon which the nippers are mounted. When the lever is swung upward, the upper arms of the bars or members of the nippers are swung inward, thereby opening the jaws or engaging portions and allowing the hammer or weight to drop.

The follower-block, which supports the nippers, may be of any desired construction, and it is provided at its ends with grooves or recesses 43 to receive the sides of the guide-frame, and it has a central upwardly-extending arm or hanger 44, adapted to be engaged by a hook 45 of a pulley-block 46. The pulley-block 46 has a pulley which is arranged on a loop of a hoisting-rope 47, secured at one end to the top of the guide-frame and extending downward therefrom to the pulley-block 46 and thence upward to a pulley 48, located at the top of the guide-frame. The hoisting rope or cable is then extended downward to a lower guide-pulley 49, detachably mounted on the frame 1 at the cross-bar 4 and adapted to be removed when the pile-driver is folded. The pulley 49 is mounted in a bracket or block having a shank which is secured in a perforation of the cross-piece 4 by means of a nut or other suitable fastening device, as clearly shown in Fig. 2. The rope or cable is adapted to be operated by a team, by steam-power, or any other suitable means, and the hoisting rope or cable may be arranged in any other desired manner to enable the weight or hammer to be readily lifted by the power.

The guide-frame is provided with upper and lower supporting-hooks 50 and 51, arranged above and below the pivots of the frame and adapted to receive a transverse rod or bar 52, having hooks or arms 53 at its ends for engaging the supporting-hooks, as indicated in Fig. 3 of the drawings, to enable the hammer or weight to be supported in an elevated position above the pivots of the frame while the hoisting rope or cable is being used for handling a pile and placing the same in position to be operated on by the pile-driver.

The weight or hammer is adapted to be supported at the bottom of the pivoted frame to counterbalance the upper portion thereof for enabling the pivoted frame to be readily folded, as before explained. The horizontal frame is provided with a suitable platform 54, arranged in advance of the pivoted frame when the latter is in a perpendicular position.

It will be seen that the pile-driver is simple and comparatively inexpensive in construction, that it is adapted to be readily handled and transferred from one place to another, and that when arranging it for transportation the elongated rear axle, with its bolster and rear hounds, may be readily removed and replaced by a rear truck of the ordinary construction to enable the pile-driver to be conveniently hauled along a narrow roadway. It will also be apparent that the horizontal frame is capable of being swung laterally to arrange the pivoted frame at either side of the pile-driver, whereby a row of piles may be driven at each side of the same without shifting the running-gear laterally. Also it will be clear that the weight or hammer is adapted to be employed for counterbalancing the pivoted frame to enable the latter to be conveniently lowered and that after the same has been lowered the weight may be transferred to any other portion of the running-gear.

What I claim is—

1. A pile-driver comprising a running-gear having a rear axle extended laterally a considerable distance beyond the ends of the front axle, a supporting-frame disposed longitudinally of the running-gear and pivoted at its front portion to swing laterally to enable its rear portion to be arranged centrally of the running-gear or at either side of the same, locking mechanism for holding the horizontally-movable frame at the center or at either side of the running-gear, a guide-frame, a hammer or weight, and hoisting mechanism, substantially as described.

2. A pile-driver comprising a running-gear having an elongated rear axle extending laterally a considerable distance beyond the ends of the front axle, a supporting-frame extending longitudinally of the running-gear and pivoted at its front end to the same by the king-bolt thereof and adapted to swing laterally, a guide-frame carried by the supporting-frame, means for securing the supporting-frame at the center and at either side of the running-gear, a hammer or weight, and means for hoisting and tripping the same, substantially as described.

3. In a pile-driver, the combination with a hammer or weight, and a block, of a pair of nippers composed of bars or members pivoted between their ends and provided at their lower ends with engaging portions, a lever pivoted at one end to one of the bars or members of the nippers at the upper portion thereof, and a link pivoted at its outer end to the upper portion of the other bar or member and connected at its inner end to the lever at a point between the ends thereof, said lever being adapted to be swung upward and downward to lock the nippers in engagement with the weight and to release the latter, 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.

JAMES M. THOMAS.

Witnesses:

W. E. McADOO,

J. D. HERRON.