

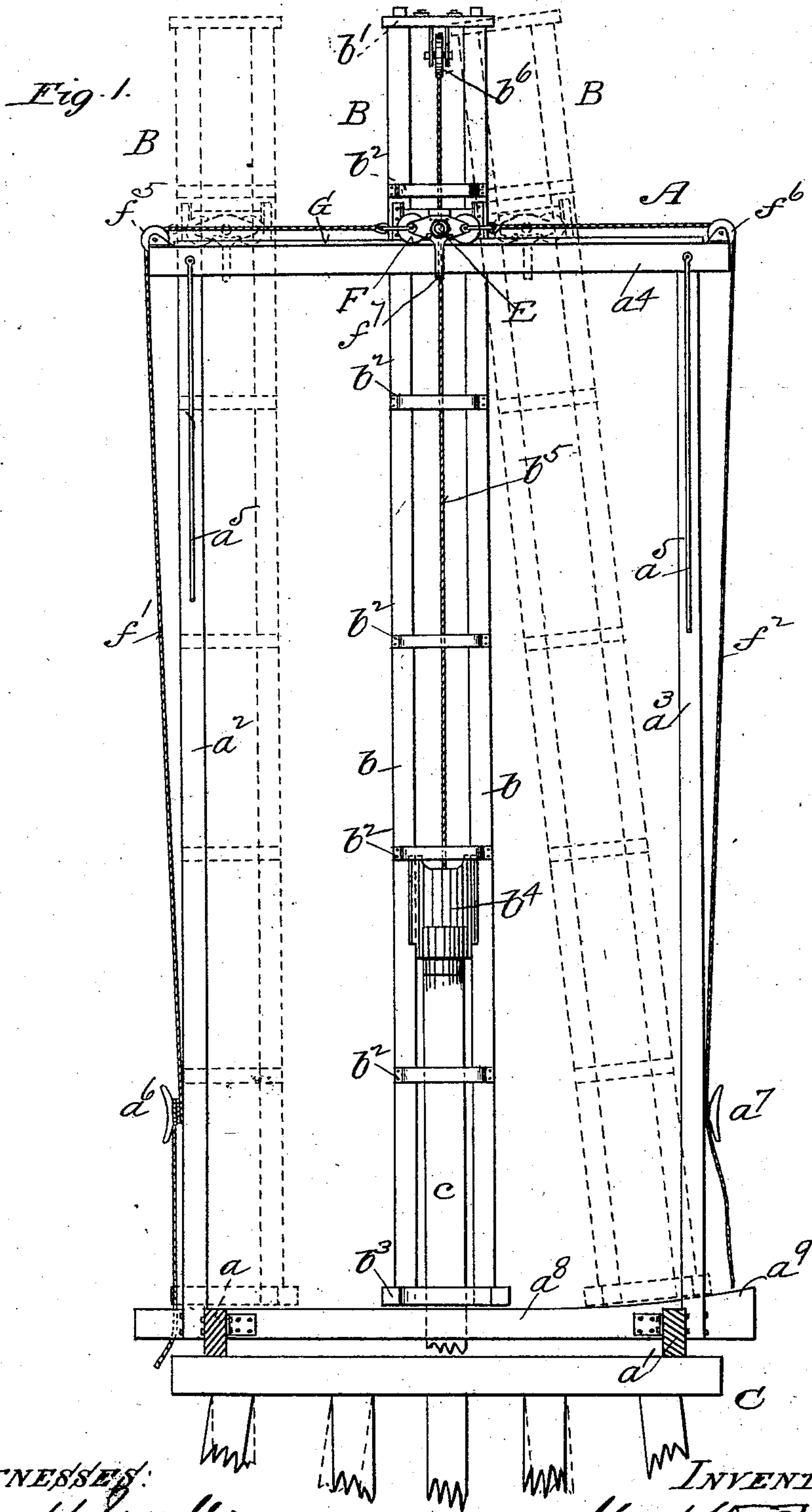
(No Model.)

3 Sheets—Sheet 1.

A. W. HUBBARD.  
PILE DRIVER.

No. 506,637.

Patented Oct. 10, 1893.



WITNESSES:  
*Edward C. Currell*  
*A. Bonville*

INVENTOR:  
*Albert W. Hubbard*  
*by C. D. Moody*  
*his atty*

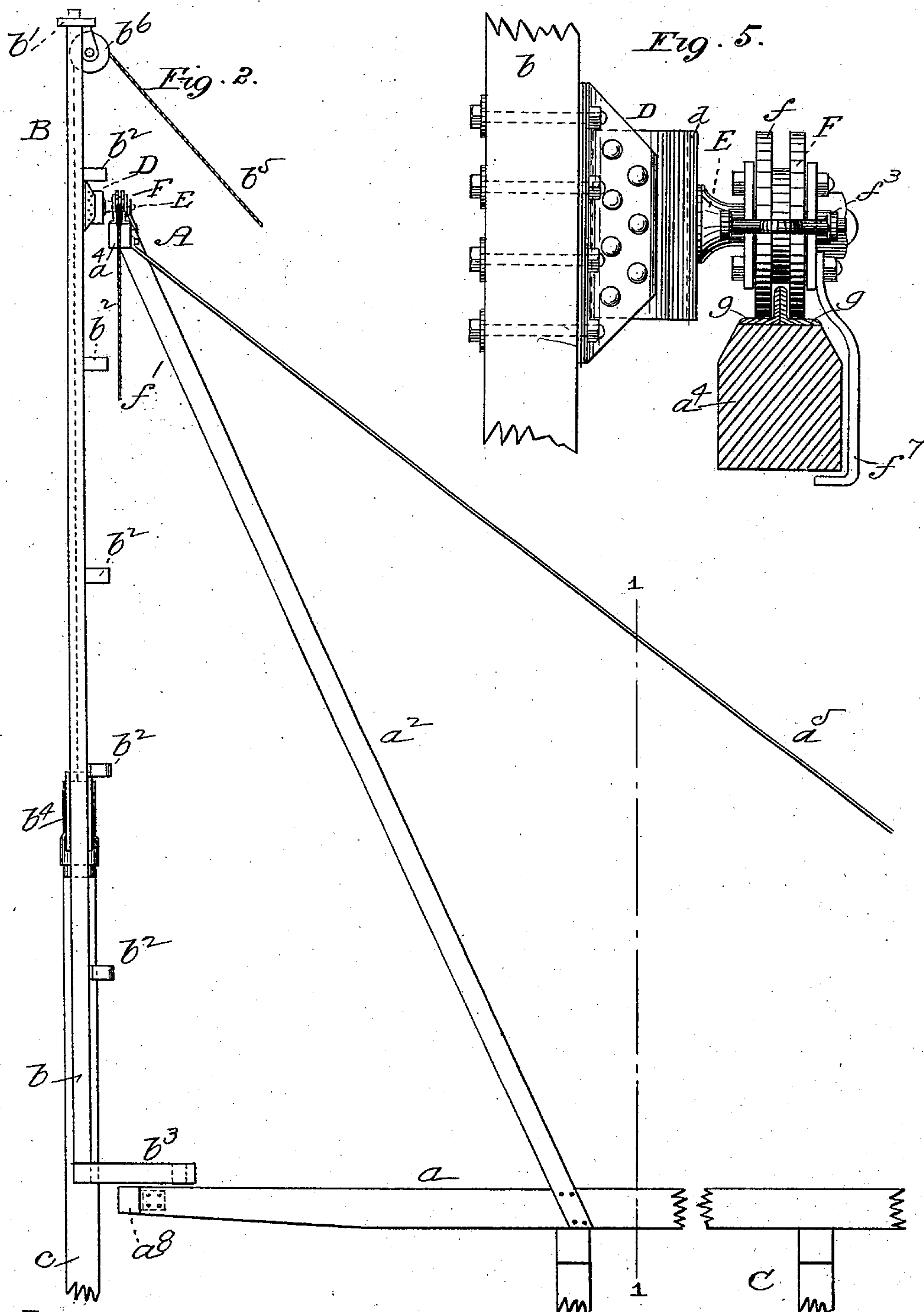
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A. W. HUBBARD.  
PILE DRIVER.

3 Sheets—Sheet 2.

No. 506,637.

Patented Oct. 10, 1893.



WITNESSES:  
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3 Sheets—Sheet 3.

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Fig. 3.

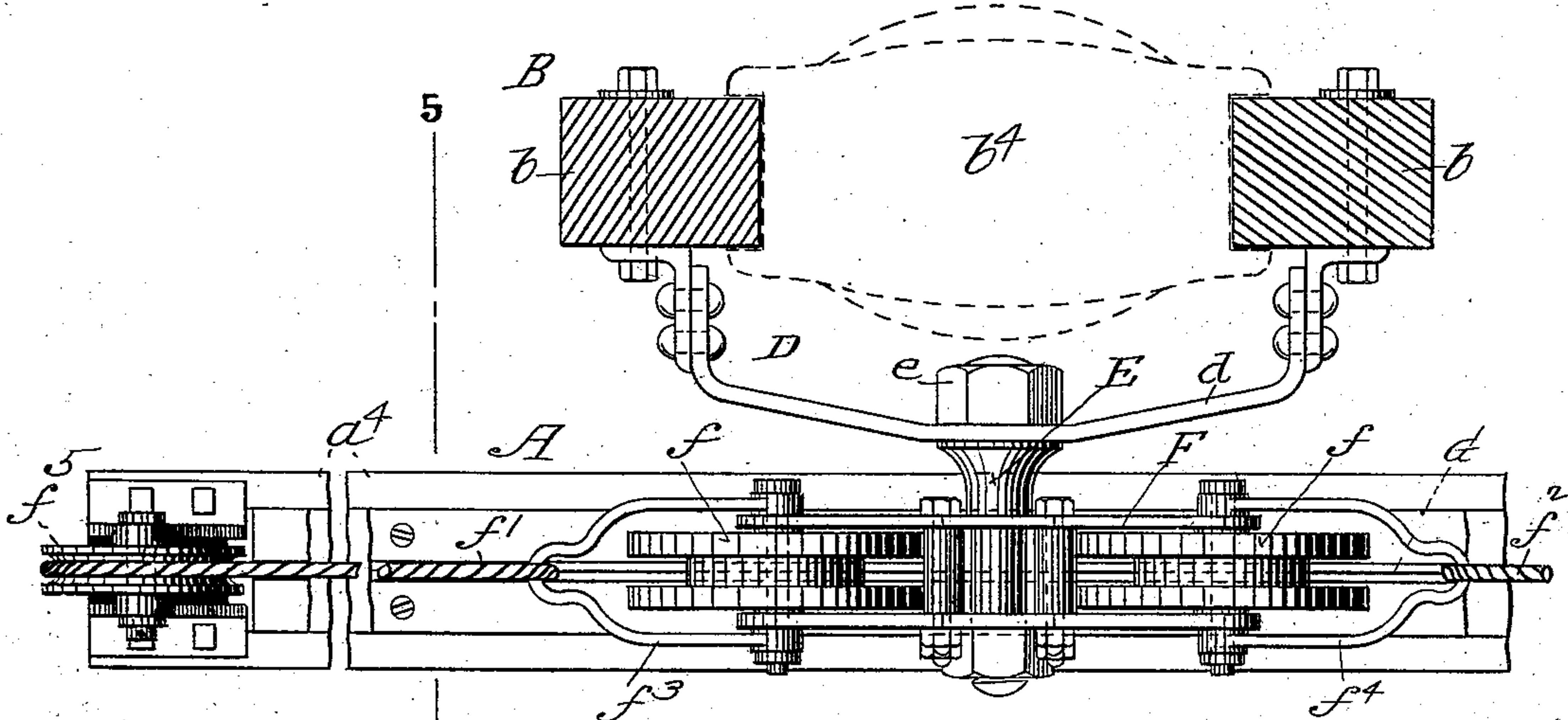
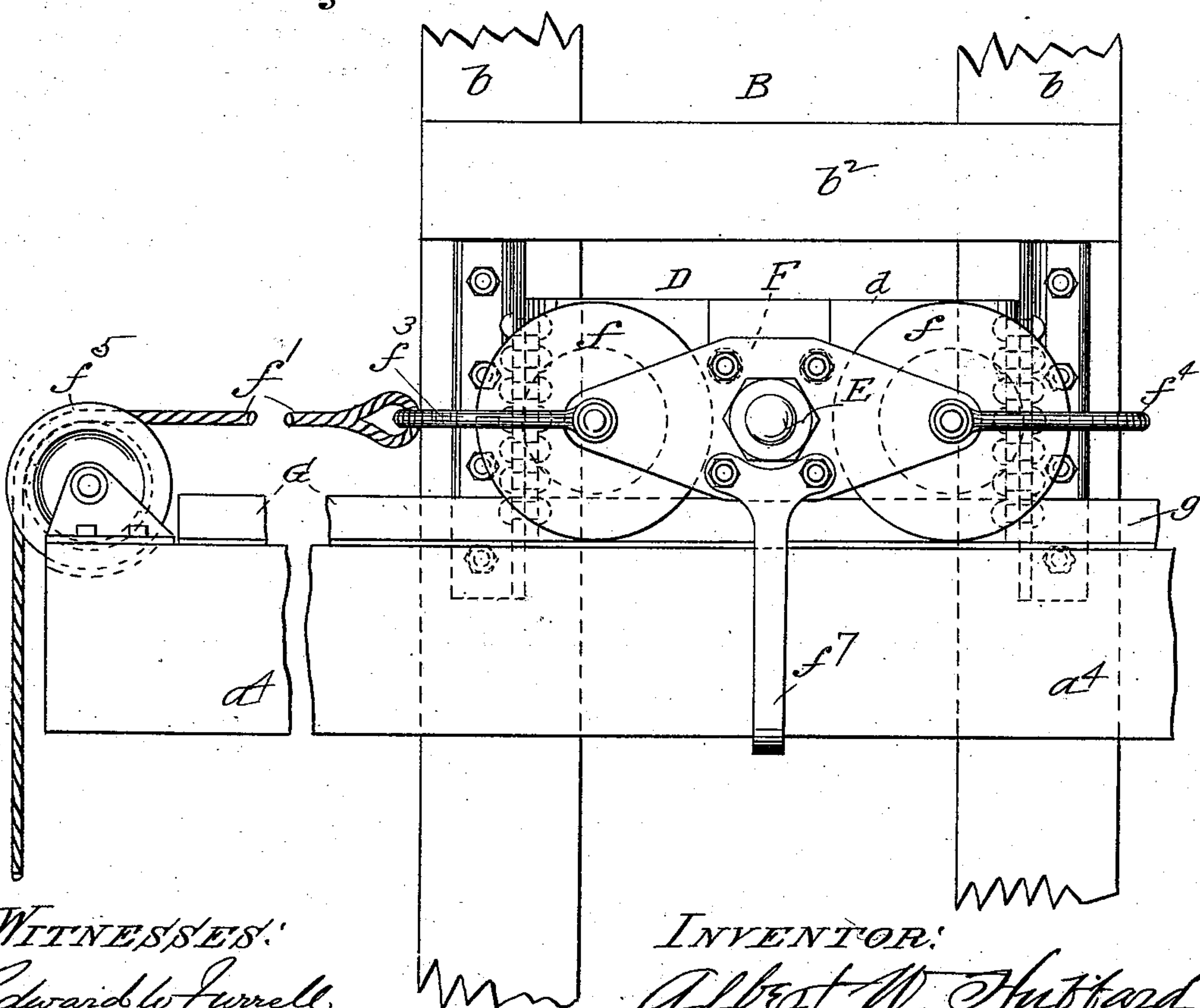


Fig. 4.



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# UNITED STATES PATENT OFFICE.

ALBERT W. HUBBARD, OF ST. LOUIS, MISSOURI, ASSIGNOR TO M. S. CARTTER & CO., OF SAME PLACE.

## PILE-DRIVER.

SPECIFICATION forming part of Letters Patent No. 506,637, dated October 10, 1893.

Application filed May 10, 1893. Serial No. 473,728. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT W. HUBBARD, of St. Louis, Missouri, have made a new and useful Improvement in Pile-Drivers, of which the following is a full, clear, and exact description.

The improvement relates to what are termed pendulum drivers, and it consists more especially in the provision whereby a pile-driver is adapted for driving piles either vertically or battering at any point throughout the width of a trestle, substantially as is hereinafter set forth and claimed, aided by the annexed drawings, making part of this specification, and exhibiting the most desirable mode of carrying out the improvement, and in which—

Figure 1 is a rear sectional elevation of the improved mechanism, supported upon a trestle, the section being on the line 1—1 of Fig. 2, which in turn is a side elevation of the parts of Fig. 1. Figs. 3, 4 and 5, views, upon an enlarged scale; Fig. 3 being a horizontal section at the level of the driver-pivot, showing the driver in section and the adjacent portion of the sheers in plan; Fig. 4 a rear elevation of the parts of Fig. 3; and Fig. 5 a vertical longitudinal section on the line 5—5 of Fig. 3.

The same letters of reference denote the same parts.

The leading members of the construction are the sheers A and the driver B. The sheers are composed mainly of the gunwales, or runners,  $a$ ,  $a'$ , the legs  $a^2$ ,  $a^3$ , and the top cross-plate  $a^4$ , and  $a^5$ ,  $a^5$ , represent stay rods leading from the upper part of the sheers downward and backward to connect with the gunwales. The usual cross-bracing is omitted from the drawings to enable the more essential parts of the structure to be more distinctly shown. The sheers are suited for supporting the driver in position for driving the piles at any point in the width of the trestle C. To this end the sheers, at the top thereof, are widened to suit the width of the trestle being constructed, and are provided with means, presently described to facilitate the lateral adjustment of the driver. The driver, B, in itself is of the usual construction saving as modified or supplemented by the im-

provement under consideration. The framework of the driver consists principally of the uprights or leads,  $b$ ,  $b$ , the top-plate  $b'$ , the cross-pieces,  $b^2$ ,  $b^2$ , and the foot  $b^3$ , substantially as shown. The ram,  $b^4$ , of the driver is adapted to be hoisted in the customary manner by means of the rope,  $b^5$ , which is carried over the sheave  $b^6$ , that is attached to the top-plate  $b'$ , and thence to the hoisting engine, not shown, and which is operated in the usual manner to drop the ram onto the pile,  $c$ , as desired. The driver can be adjusted in two ways, indicated substantially by the various positions of the driver shown in the full and in the broken lines in Fig. 1. In its full-line position in the figure referred to, the driver is adjusted for driving vertically a pile midway in the width of the trestle; in its broken-line position at the left hand side, in the figure, it is adjusted for driving vertically the pile at the left-hand end of the trestle; and in its broken-line position at the right hand side of the figure the driver is adjusted for driving or battering a pile at the right hand end of the trestle. That is, the driver can be adjusted laterally to be above any point in the width of the trestle, and at any point in said width the driver can be swung to the right or left hand to enable a pile to be driven slantingly, or battering as it is termed, or to be held vertically for driving the pile vertically.

The various positions in which the piles can be driven are substantially indicated in the full and in the broken lines in Fig. 1.

The preferred means for carrying the improvement into effect are shown. The driver is provided with a bracket, D, whose plate,  $d$ , is perforated to receive the end of a pin E, the pin in practice being passed through the plate and secured by the nut  $e$ . The pin in turn is held in a trolley F, which is sustained by the sheers and in such a manner as to enable the trolley to be shifted to the right or left thereupon. For this purpose the trolley is adapted to travel upon a rail G, that is attached to the top-plate,  $a^4$ , of the sheers. The rail is preferably formed of angle irons,  $g$ ,  $g$ , laid together as shown, and the trolley-wheels,  $f$ ,  $f$ , are grooved to fit the rail. By means of ties



$f'$ ,  $f^2$ , leading from the ends respectively of the trolley-carriage, and connected therewith by means of the shackles,  $f^3$ ,  $f^4$ , and passing over sheaves  $f^5$ ,  $f^6$ , at the ends of the plate  $a^4$ , the trolley, carrying the driver, can be shifted to the right or left upon the sheers and at any desired point thereon secured by fastening the ties to the cavils  $a^6$ ,  $a^7$ , or other fixture. The pin, E, thus forms the pivot for sustaining the driver and enabling it to be swung as described.

In practice the driver, after it has been adjusted, is temporarily secured at its lower end, and this is usually done by pinning it (the pin not shown) to the beam,  $a^8$ , usually termed the moon-beam, at the outer end of the gunwales of the sheers. This last named part,  $a^8$ , may be straight, as shown in the left hand part of Fig. 1, or its upper surface may be curved substantially as shown in the right hand part,  $a^9$ , in that figure. To prevent the trolley from being accidentally jostled out of place it is provided with a guard, say in the shape of the hooked arm  $f^7$ , which extends from the trolley carriage downward to bring its point beneath the plate  $a^4$ , substantially as shown. As fast as a bent in the trestle is completed the sheers, carrying the driver, is shifted to project therefrom substantially as

shown in Fig. 2, and in doing this it is the practice to attach snatch-blocks to the just-made bent and lead ropes from the sheers through them and then back to any mechanism for winding the ropes, and by drawing on the rope the sheers and driver are shifted forward into position for constructing another bent in the trestle.

I claim—

1. The combination, in a pile-driving mechanism, of a driver its bracket fixed thereto and its support, said driver being shiftable laterally upon said support and pivoted by means of its bracket and the pin connecting the same with the support to swing, substantially as described.

2. The combination of the swinging driver, the widened support therefor, and the carriage movable upon said support, said driver being sustained by said carriage, by means of the bracket D, fixed to the former and pin E, free to turn in the latter, substantially as described.

Witness my hand this 4th day of May, 1893.

ALBERT W. HUBBARD.

Witnesses:

C. D. MOODY,  
A. BONVILLE.