

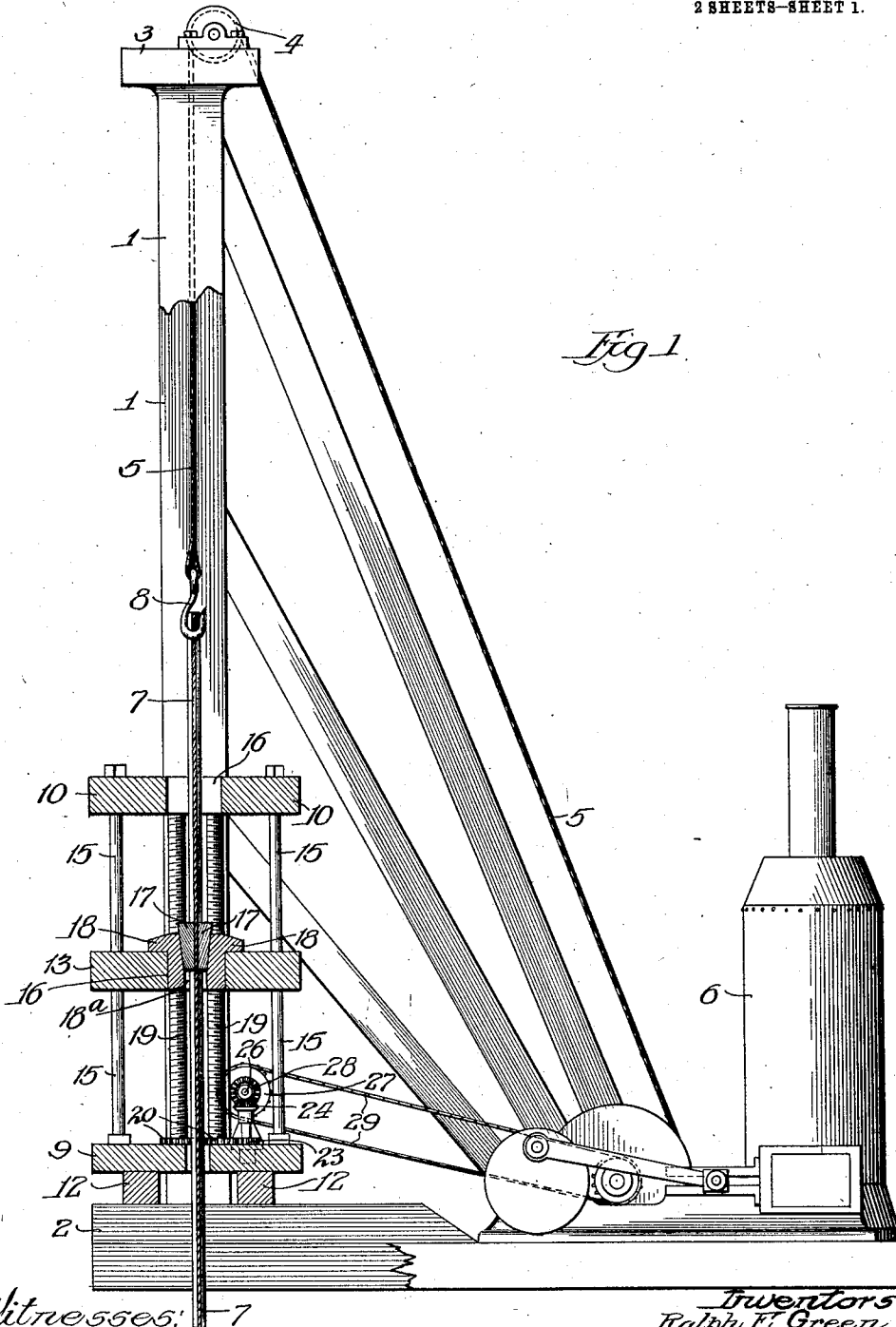
R. E. GREEN, E. COULSON & W. J. CALLAHAN.
PILE PULLER.

APPLICATION FILED AUG. 28, 1911.

1,011,614.

Patented Dec. 12, 1911.

2 SHEETS—SHEET 1.



Witnesses:
For Inventors:
McCllland Young

Inventors:
Ralph E. Green
Ernest Coulson
William J. Callahan.
By Barton & Fols, Attys.

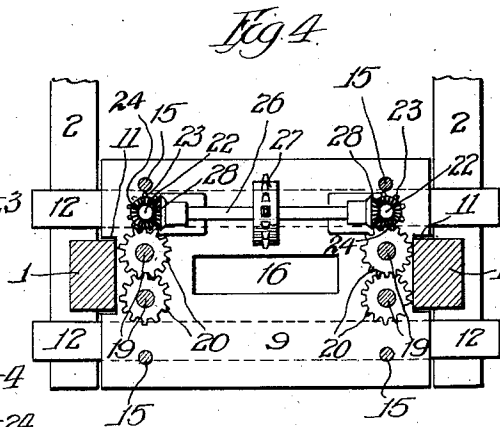
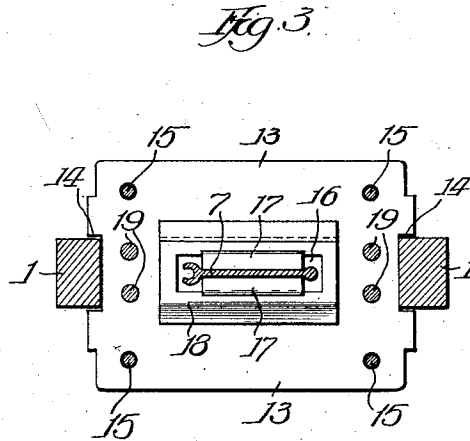
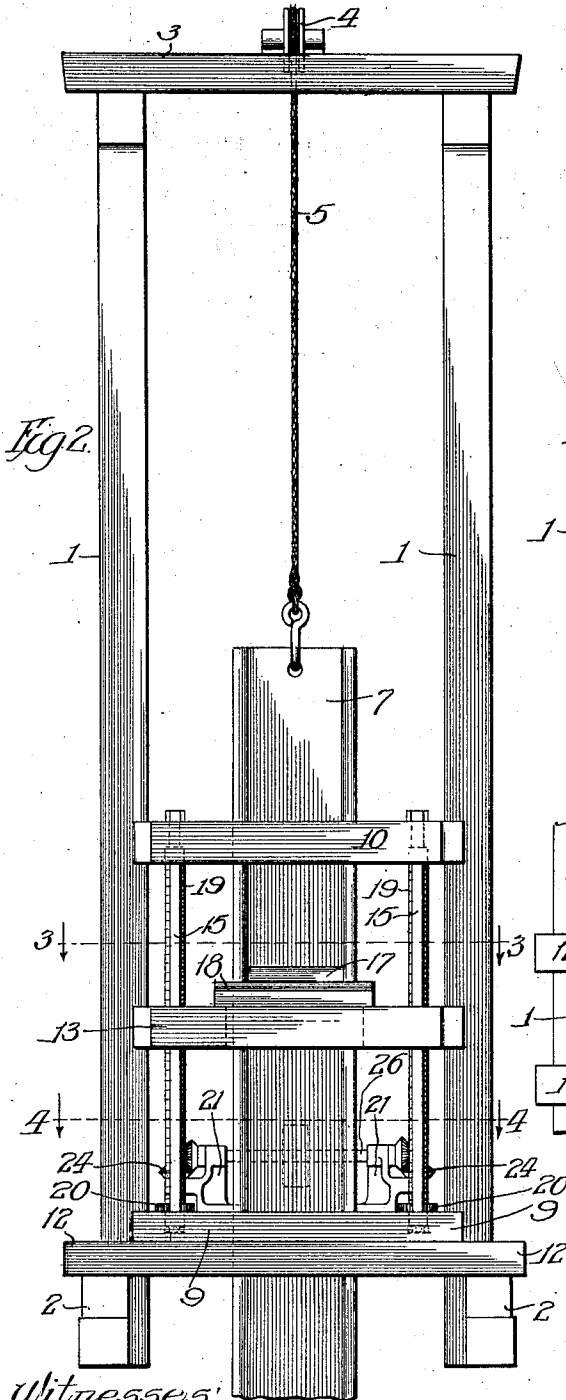
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2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

RALPH E. GREEN AND ERNEST COULSON, OF LACKAWANNA, AND WILLIAM J. CALLAHAN, OF BUFFALO, NEW YORK.

PILE-PULLER.

1,011,614.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed August 28, 1911. Serial No. 646,474.

To all whom it may concern:

Be it known that we, RALPH E. GREEN, a citizen of the United States, and ERNEST COULSON, a subject of the King of Great Britain, residing at Lackawanna, and WILLIAM J. CALLAHAN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a certain new and useful Improvement in Pile-Pullers, of which the following is a full, clear, concise, and exact description.

Our invention relates to a device for pulling sheet-piles which have been driven into the earth by an ordinary pile-driver.

The invention relates more particularly to a removable pile-puller adapted to fit in the leaders of a pile-driver and to take the place of the hammer thereof. It thus appears that the same frame work may be used for guiding the driving device or hammer and the extracting device.

Our device comprises a removable puller adapted to fit between the leaders of a pile-driver and to be supported therein against lateral movement, the weight of the puller and the force exerted therethrough being sustained by the bed sills of the frame work of the pile-driver in which the puller is fitted.

The several features of our invention may be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of the frame work of a pile-driver with parts broken away for the sake of clearness, the pile-puller being shown in vertical section; Fig. 2 is a front elevation of the device shown in Fig. 1; Fig. 3 is a section on the line 3—3 of Fig. 2; and Fig. 4 is a section on the line 4—4 of Fig. 2.

Similar letters of reference refer to similar parts throughout the several views.

The frame work of the pile-driver is preferably of the ordinary construction and comprises the vertical leaders 1, 1 supported upon the usual bed sills 2, 2 and connected at their top by the cross bar 3. Supported on the cross bar 3 is a pulley 4 over which passes a cable 5. As is well known the ordi-

nary pile-driver is commonly provided with a weight or hammer slidably supported in the leaders 1, such hammer being adapted to be raised by the cable 5 and pulley 4 by means of the steam engine 6. The means for raising and lowering the hammer is known and needs no further description.

After the sheet metal piles 7 have been driven by the pile-driver in the usual way and have served their purpose, the extracting of the piles is ordinarily a matter of considerable difficulty. Especially is it difficult to start the pull, such piles frequently requiring a one-hundred ton pull or more to start the pulling operation. It has been found impracticable, therefore, to merely provide a hook 8 on the cable 5 and to start the pull by the steam engine. We have devised a puller which is adapted to be substituted in place of the hammer and which will start the pull, so that the pile, after having been started by the puller, may then be hoisted or lifted by the cable operated by the steam engine.

The pile-puller of our invention is preferably constructed as shown in the accompanying drawings in which it is shown as consisting of a lower block 9 and an upper block 10 spaced apart and held in fixed relation to each other by a series of rods 15, four of such rods being shown, one at each corner of the blocks. The blocks 9 and 10 are provided in their ends with channels 11 for receiving the leaders 1. The blocks 9 and 10 are of a length to fit between the leaders 1, such leaders being received in the channels 11. The pile-pulling device is thus held in place between said leaders. The block 9 is supported upon the bed sills of the pile-driver frame work, preferably upon steel blocks 12 which rest upon said bed sills and in turn form a support for the pile-puller device. Thus the weight of the pile-puller and any downward thrust exerted there-through is carried by the bed sills of the frame work.

Slidably mounted on the rods 15 between the blocks 9 and 10 is an intermediate block 13, which block also preferably is provided

with guide ways 14 for receiving the leaders 1. Each of the blocks 9, 10 and 13 is provided with a central opening 16 for the passage of a sheet-pile therethrough. Moreover the slidable block 13 is provided with means for gripping a sheet-pile. Such means comprises two wedges 17, 17 adapted to be driven upon opposite sides of the pile 7 in the openings 16 of the block 13. However, we preferably first insert in said opening 16 a wear block 18 having flanges which rest upon the upper surface of the block 13. The wear-block is provided with an opening 18^a and wedges 17 are driven into the opening 18^a upon opposite sides of the pile 7.

Suitable means are provided for raising or lowering the intermediate block 13. Such means preferably comprise a plurality of vertical rotary screws 19 journaled at their opposite ends in the blocks 9 and 10. Four of such screws are shown, two in each of the blocks. The screws 19 are threaded through the block 13, and thus the rotation of said screws raises or lowers said block 13. The lower end of the screws 19 are provided with cog wheels 20, the pair of cog wheels in each end of the block intermeshing with each other. Supported in brackets 21, 21 are short vertical spindles 22 provided at their lower end with cogs 23 meshing with one of the cogs 20 and provided at their upper end with bevel gear wheels 24. Likewise having bearings in the brackets 21 is a horizontal driving shaft 26 which carries a sprocket wheel 27. At its opposite ends the driving shaft 26 is provided with bevel gears 28 which mesh with the similar gears 24. The sprocket wheel 27 is driven in any suitable manner from the engine by means of the sprocket chain or belt 29, it being understood that the sprocket wheel 28 may be driven in a direction to raise or lower the sliding block 13 as may be desired.

In operation the sliding block 13 is brought to its lowermost position, the upper end of the pile 7 extending through the opening 16 of the lower block 9 and through the opening 18^a of the wear-block 18. The wedges 17, 17 are then driven in place, the pile being thus gripped by the pulling device. The screws 19 are then rotated in a direction to raise the block 13 which thus starts the pull of the pile 7. It is obvious that a much greater pull can thus be exerted through the screws 19, 19 than could be exerted by a direct pull through the cable 5.

In the drawings the hook 8 carried by the cable 5 is shown in engagement with a pile 7 which has been started by the pulling device. A pull on said pile by means of the cable 5 will release the wedges 17, (or the wedges may be previously driven out if pre-

ferred) and the subsequent pulling operation may be a direct pull through the cable 5. 65

Having thus described our invention, what we claim is:—

1. In a pile-puller adapted to fit in the leaders of a pile-driver, the combination with a lower and an upper block and means for supporting the same in fixed relation to each other between said leaders, of an intermediate block having guideways fitting said leaders, vertical screws journaled at their upper and lower ends in said upper and lower blocks and having threaded engagement with said intermediate block, means for rotating said screws and thereby raising or lowering said intermediate blocks, and clamping means carried by said intermediate block for gripping a pile, said upper, lower and intermediate blocks being each provided with an opening for the passage of the pile therethrough. 70 75

2. In a pile-puller adapted to fit the leaders of a pile-driver, an upper and a lower block of a length to fit between the opposite leaders of the pile-driver and provided at each end with channels for receiving said leaders, rods extending between said blocks and holding the same in fixed relation to each other, vertical rotatable screws extending between the opposite ends of said blocks, an intermediate block threaded on said screw and adapted to be raised or lowered by the rotation of said screws, and means carried by said intermediate block for gripping a sheet-pile, said blocks being each provided with a central opening for the passage therethrough of a pile. 85 90 95 100

3. In a pile-puller adapted to fit in the leaders of a pile-driver, the combination with a lower and an upper block removably held between the leaders of said pile-driver, of vertical rods extending between said blocks and holding the same in fixed relation to each other, an intermediate block slidably mounted on said vertical rods, means carried by said intermediate block for gripping a pile to pull the same, and means for applying force to said intermediate block to elevate the same and thereby to pull a pile thus gripped. 105 110

4. In a pile-puller, the combination with a frame-work comprising a pair of vertically disposed leaders, bed sills upon which said leaders are supported, and a cross bar connecting said leaders at their upper ends; of a removable pile-puller supported upon said bed sills and fitting between said leaders, said puller comprising an upper and a lower block having channels in their opposite ends for receiving said leaders, rods extending between said blocks and holding the same in fixed relation to each other, vertical rotatable screws extending between the 115 120 125

opposite ends of said blocks, an intermediate
block threaded on said screw and adapted
to be raised or lowered by the rotation of
said screws, and means carried by said in-
5 termediate block for gripping a sheet-pile,
said blocks being each provided with a cen-
tral opening for the passage therethrough
of a pile.

In witness whereof, we hereunto subscribe
our names this 21 day of August A. D., 1911. 10

RALPH E. GREEN.

ERNEST COULSON.

WILLIAM J. CALLAHAN.

Witnesses:

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EDWARD HAGER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
