No. 672,194. Patented Apr. 16, 1901.

J. W. ROLLINS, JR.

PILE DRIVER.

(Application filed Jan. 19, 1901.)

(No Model.) 2 Sheets—Sheet 1.

FIG. 1.

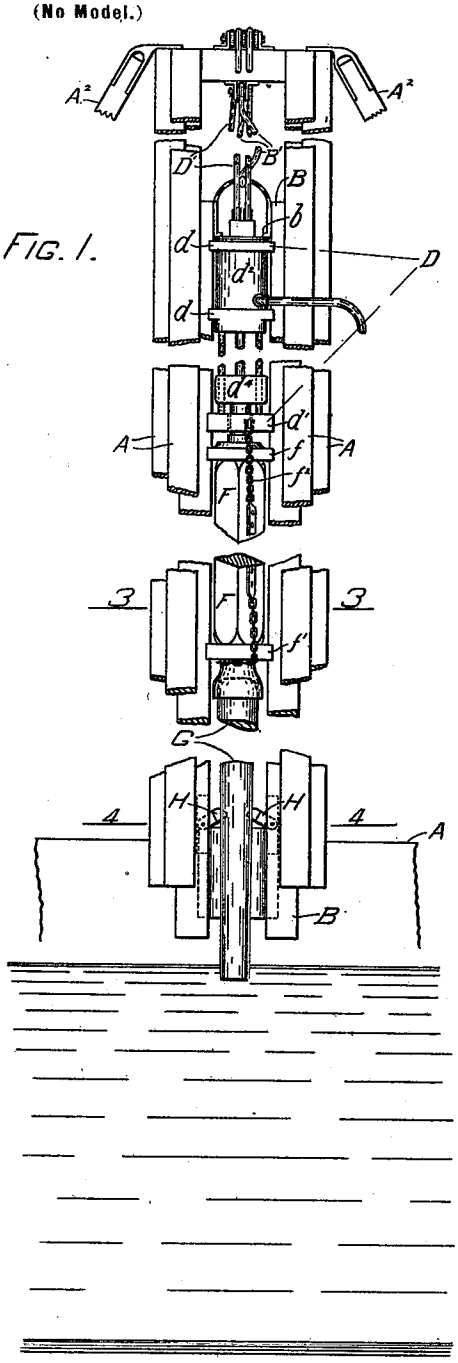
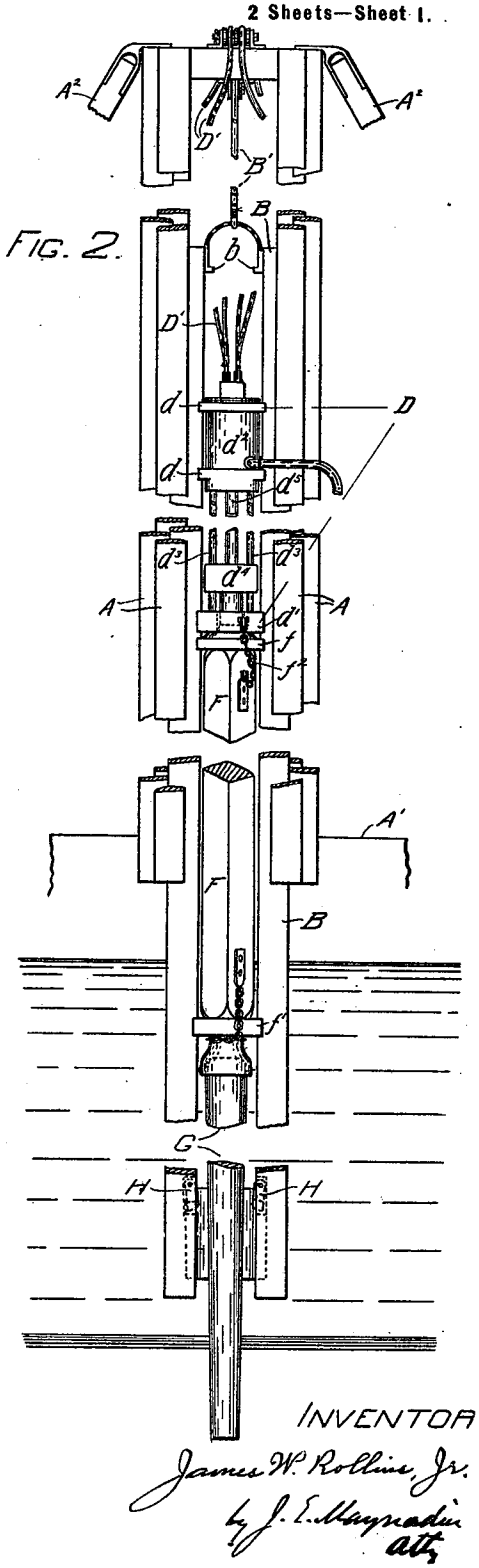


FIG. 2.



WITNESSES
C. B. Maynadier
S. A. Rockwell

INVENTOR
James W. Rollins, Jr.
by J. E. Maynadier
Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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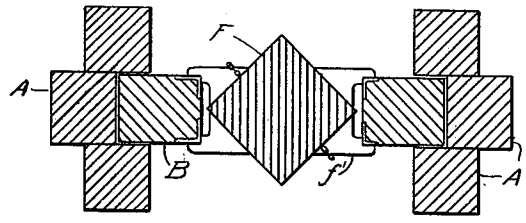
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No Model.) 2 Sheets—Sheet 2.

FIG. 3.



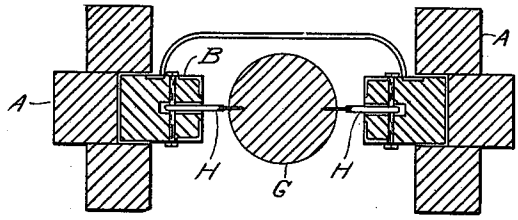


FIG. 4.

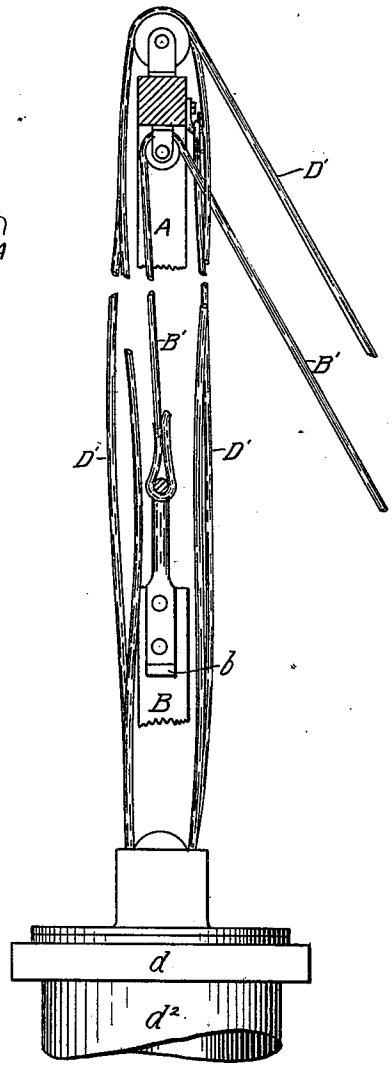


FIG. 5.

WITNESSES
C. B. Maynadier.
G. A. Rockwell.

INVENTOR
James W. Rollins, Jr.
by J. E. Maynadier
Atty

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JAMES W. ROLLINS, JR., OF BOSTON, MASSACHUSETTS.

PILE-DRIVER.

SPECIFICATION forming part of Letters Patent No. 672,194, dated April 16, 1901.

Application filed January 19, 1901. Serial No. 43,882. (No model.)

To all whom it may concern:

Be it known that I, JAMES W. ROLLINS, Jr., of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Pile-Driver, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of those parts of my improved pile-driver which embody my invention, the movable parts being shown in their raised position. Fig. 2 is a like elevation, but with the parts lowered to position for driving the pile and with the pile partly driven. Fig. 3 is a section on line 3 3, and Fig. 4 a section on line 4 4, of Fig. 1. Fig. 5 is a diagram illustrating one fall controlling the movable ways directly and another fall controlling those ways indirectly through the hammer.

In my invention the pile is placed and held between ways, and the ways, with the pile held in place between them, are lowered until the point of the pile reaches the mud into which the pile is to be driven, when the pile is driven and the ways raised ready to receive a new pile. This is a principle wholly new with me, and I will now explain, by reference to the drawings, the best mode in which I have contemplated applying that principle.

The stationary ways or leads or gins A are as usual, and I have indicated them as on a scow A′, with usual supports A^2 to hold them in proper position on scow A′, as will be fully understood without further details of drawings or description.

The extension-ways B slide in ways A and are connected to fall B′, so that the ways B may be raised and lowered in ways A as desired independently of the hammer D and follower F, both of which are guided by the ways B. The hammer D is provided with guides *d*, which engage the ways B, and is connected to fall D′, by which the hammer D can be raised and lowered in ways B; but when hammer D is raised toward its upper limit, (see Fig. 1,) while ways B are extended, as shown in Fig. 2, the upper portion of hammer D engages ears *b* on ways B and lifts those ways as hammer D is lifted by fall D′, as will be clear from Figs. 1 and 2. The point here is that ways B are controlled by two falls B′ and D′, the latter fall D′ controlling ways B through the hammer D, while the former controls ways B directly. This is an important feature of my invention, as it greatly simplifies the construction and operation and makes it easy to secure the pile in place under follower F and between ways B when the ways, hammer, and follower are in their upper positions.

I have shown hammer D as a steam-hammer, the part *d′* being the bed, to which steam-cylinder d^2 is connected by the guide-rods d^3, and the part d^4 being the hammer proper, guided by rods d^3 and actuated by piston-rod d^5, as will be well understood without more detailed description.

The follower F is provided with guides *f* *f′*, which engage ways B, and the upper guide *f* takes the blow of the hammer proper, d^4, while the lower guide *f′* is formed with a recess on its under side (dotted in Fig. 2) for the head of the pile G.

The knives H are pinned in ways B and serve to hold the pile until the ways B are lowered with the pile G, and as the pile is driven the knives H drop clear of the pile, as shown in Fig. 2.

The operation is as follows: When the hammer D is raised by its fall D′, both hammer D and follower F (which in this form of my invention are permanently connected by the chains f^2) slide in the ways B until the upper part of hammer D engages ears *b*, ways B being then lifted with hammer D and follower F. When these parts are in this position, Fig. 1, the pile G is pushed and its head brought into the recess in the under side of guide *f′* of follower F and the knives H are driven far enough into the lower portion of part G to keep it from dropping endwise, the piles being then held securely between the ways B by the follower F and knives H. The ways B, hammer D, follower F, and piles G are then lowered by fall D′, fall B′ being then slack, until the point of the pile brings up in the mud into which it is to be driven. Fall B′ then holds ways B, and ways B are of course prevented from farther downward motion, being held by falls B′, while hammer D, follower F, and pile G are farther lowered as the pile is driven into the mud. Steam is let on as soon as the pile is in place to be driven and the hammer proper reciprocated

until the pile is fully driven, the knives H swinging downward with the pile until they drop clear, as shown in Fig. 2. When the pile is fully driven, hammer D is raised by fall D′, carrying with it follower F, and after the hammer engages ears *b* on ways B carrying with it the ways B also—that is, the parts are brought to the position shown in Fig. 1, ready for a new pile to be placed and secured in place to repeat the operation already described.

While I have illustrated my invention as embodied in a pile-driver with a steam-hammer, it is of course applicable to a pile-driver with the ordinary gravity-hammer, the slight alterations necessary being obvious to all skilled in the art.

What I claim as my invention is—

1. In a pile-driver, extension-ways; a follower with guides engaging the extension-ways; means to impart vertical movement to the extension-ways; and means to impart vertical movement to the follower in the extension-ways.

2. In a pile-driver, extension-ways; a follower with guides engaging the extension-ways and with means at its lower end to engage the head of the pile; and pile-holding means at the lower part of the extension-ways organized to act with the recess in the follower to hold the pile between the ways while the extension-ways, the follower, the pile-holding means and the pile are moved endwise simultaneously.

3. In a pile-driver, extension-ways; means to raise and lower the extension-ways; a hammer guided in the extension-ways; a follower also guided in the extension-ways; connections between the hammer and follower; and means to raise and lower the hammer and follower in the extension-ways.

4. In a pile-driver, extension-ways; means to raise and lower the extension-ways; a hammer guided in the extension-ways; means to raise and lower the hammer in the extension-ways; and ears which are fast to the extension-ways and engaged by the hammer when at the proper point in its upward motion.

5. In a pile-driver, two knives each pinned at its outer end to the ways, whose inner ends are adapted to be moved on the pins into contact with and caused to become embedded in the pile, and by the motion of the pile under the blows of the driver to be swung farther downward until they clear the pile.

JAMES W. ROLLINS, JR.

Witnesses:
J. E. MAYNADIER,
C. B. MAYNADIER.