

(No Model.)

2 Sheets—Sheet 1.

R. G. MARCY.

MACHINE FOR DRILLING WELLS.

No. 338,539.

Patented Mar. 23, 1886.

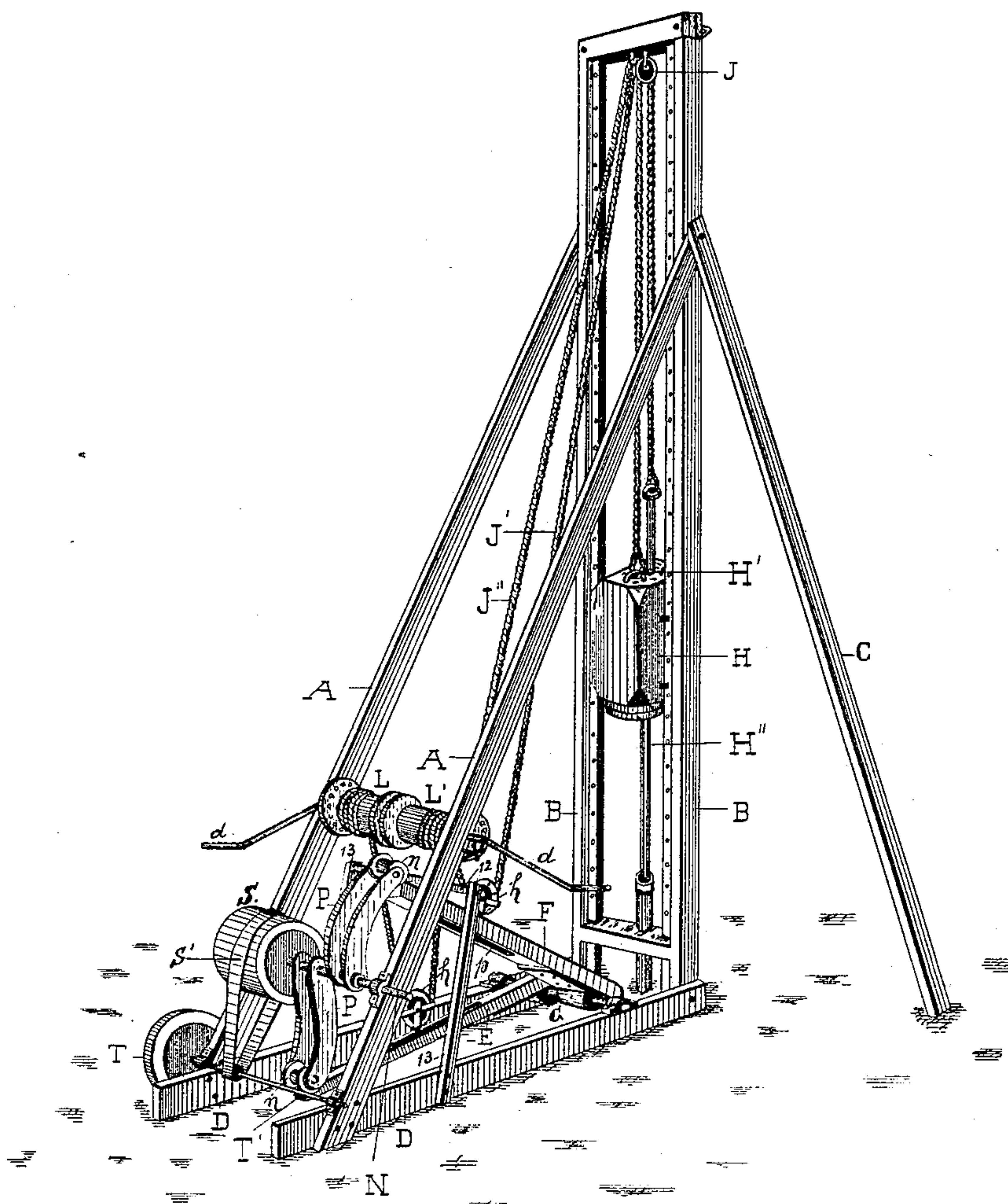


FIG. 1.

WITNESSES:

Charles Weber.

Wm. Van deruse

INVENTOR,

R. G. Marcy

BY

J. C. Higdon

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(No Model.)

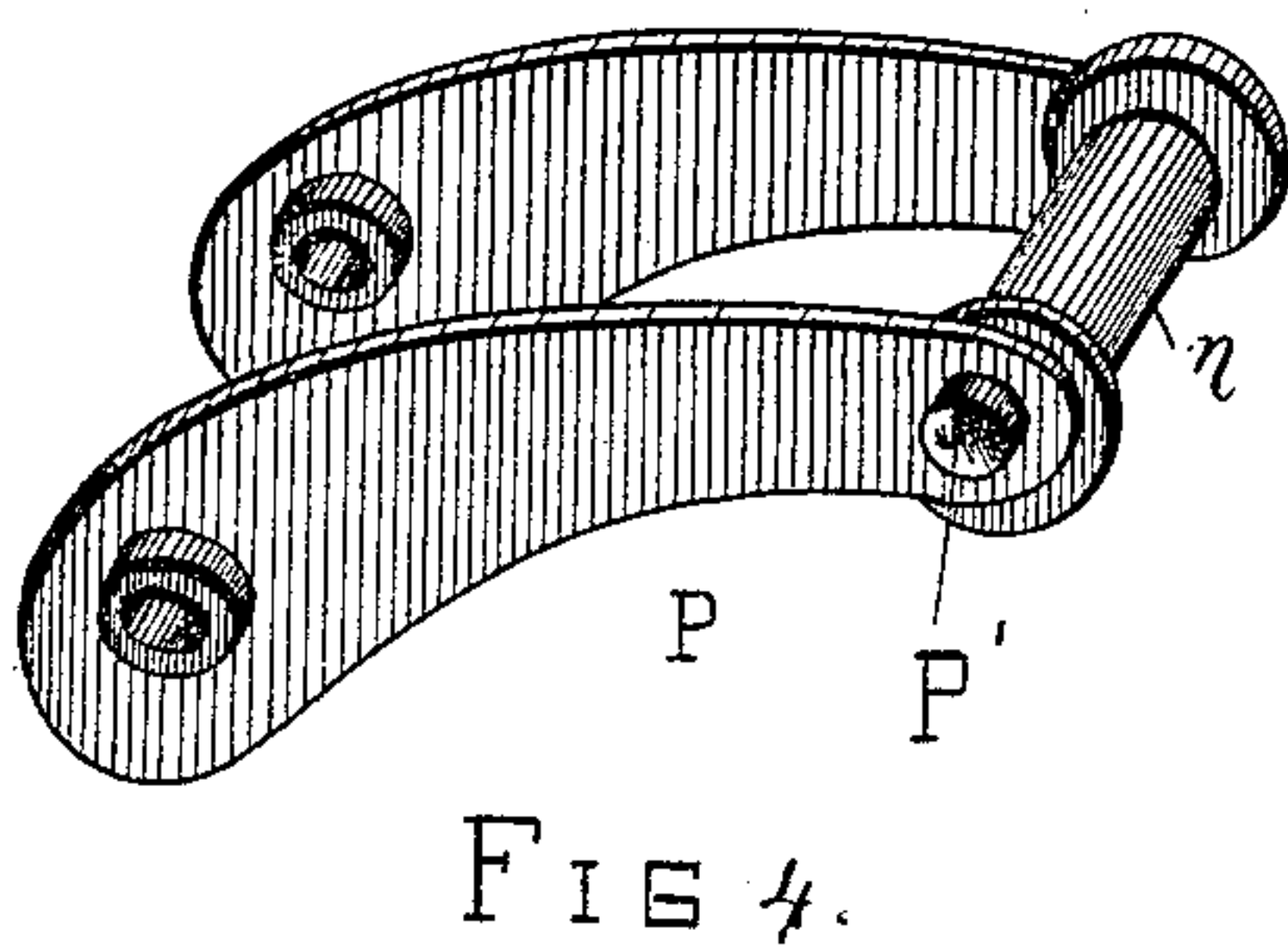
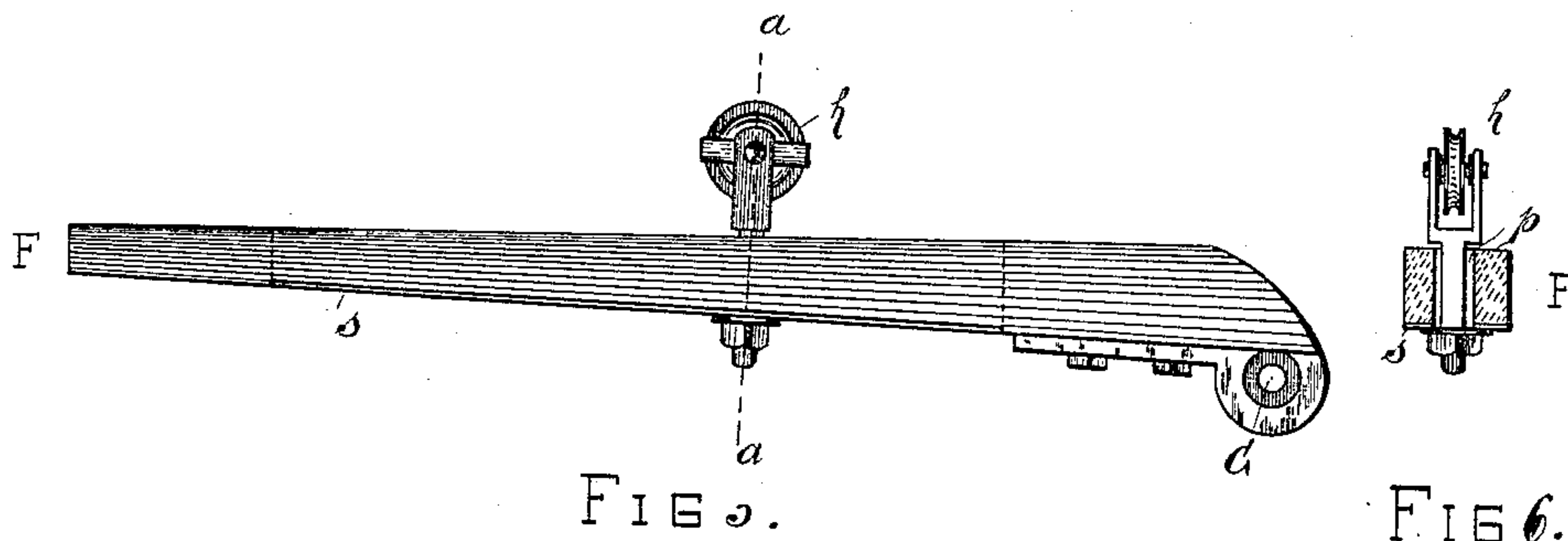
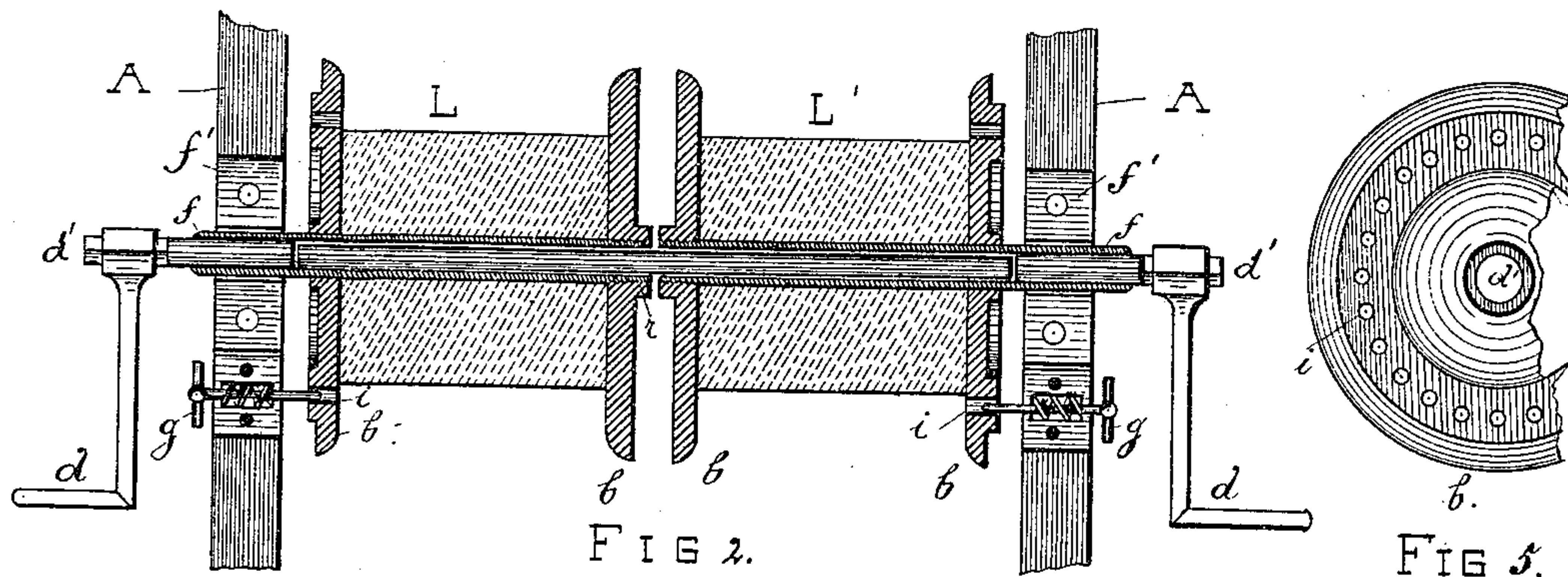
2 Sheets—Sheet 2.

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WITNESSES:
Charles Weber
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UNITED STATES PATENT OFFICE.

RUFUS G. MARCY, OF KANSAS CITY, MISSOURI.

MACHINE FOR DRILLING WELLS.

SPECIFICATION forming part of Letters Patent No. 338,539, dated March 23, 1886.

Application filed November 6, 1885. Serial No. 182,052. (No model.)

To all whom it may concern:

Be it known that I, RUFUS G. MARCY, of Kansas City, Jackson county, Missouri, have invented certain new and useful Improvements in Machines for Drilling Wells, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

This invention relates to certain improvements in machinery for drilling holes in rock or other hard substance, sand-pumping, or driving pipe or tubing in the earth, or for any purpose where two or more automatic vertical motions may be desired; and the machinery embracing these improvements is especially intended for use in constructing tubular or driven wells.

My invention may be said to consist in the devices and combination of devices herein-after set forth, and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of a well-drilling machine embodying my improvements. Fig. 2 is a longitudinal section through a pair of drums used in making up the machine. Fig. 3 is a side view of a drop-lever detached and enlarged. Fig. 4 is a perspective view of a lifting-crank removed from its shaft. Fig. 5 is an end view of one of the before-mentioned drums; and Fig. 6 is a transverse section on line *a a*, Fig. 3.

Letters A, B, and C represent the main and brace legs of a common tubular well-derrick that has been in public use for many years.

Letters D D are two sills or bed-plates, to which the derrick-legs A and B are bolted, and extend upwardly a sufficient height for drilling and driving. Two lifting-levers, E and F, are attached to the sills D by means of a transverse shaft, G. These levers, I may say, form an important part of this invention, and they are each provided with a longitudinal slot, *p*. Said slot extends to within a short distance of each end of the levers, and its purpose is to allow the pulleys *h* to be moved nearer to or farther from the shaft G, to vary the automatic lifting motion.

The letter H represents a heavy driving block, of wood or other suitable material. Said block is made with a hollow center, or with a passage, H', to allow the drilling or pumping rods to pass up and down through the same, as may be required.

The letter J represents a double sheave-pulley attached to the head-block of the derrick, through which the ropes J' and J'' play in operating the driving-block and drilling-rods.

Drums L and L' are for the purpose of handling the tools attached to the ropes by adjusting more or less slack, and changing the vertical motion or drop of the tools, at the will of the operator, without stopping the motion of the machine. These drums may be constructed of wood, iron, or any suitable material, with a raised flange, *b*, at each end to prevent the rope from running off. The flange on the outer end is provided with an annular series of holes or notches, *i*, to admit the entrance of a pin, *g*. The pin *g* is preferably arranged in a socket in the bearing-boxes of the drum-shaft *f*, and a spiral spring, also located in the same socket and encircling the pin, holds it in engagement with any desired aperture of the series, and thus prevents the drums from turning, except at the will of the operator. The drums L and L' are provided with a hollow center, in which is inserted a piece of tubing, *f*. Thus they can both be slipped onto a solid shaft of round iron, such as *r*, and in this way be allowed to act independently of each other without a central bearing. It will be noticed that the two pieces of tubing *f* extend far enough at the outer end of the drums to engage the bearing-boxes *f'*, located on the legs A of the derrick.

The lifting-cranks P are made in two parts and fastened securely upon the main driving-shaft N, by means of set-screws, keys, or other suitable means. The two halves of each crank are connected at the extreme outer end by means of a nicely-fitted pin, P', on which a turned iron spool or roller, *n*, plays freely. The drum S is located on the driving-shaft N, and it can be used in raising tools, or for raising the driving-block; or it may be used for other purposes, as may be desired. A counter-shaft, T', is located on the derrick-legs A, at a suitable distance below the main shaft, and it carries upon one end a fly-wheel, T. This counter-shaft is provided for the purpose of steadying the motion of the machine, and it may be driven either by a belt—such as S'—from the drum S, or it can be driven with a set of gears, or a sprocket-chain, as desired.

The main or crank-shaft of the machine can

be driven by either horse or steam power, as may be the most convenient. With this construction the machine may be operated by attaching a rope—such as J'' —of proper length to the driving-block H , and running it through one of the sheaves J at the top of the derrick, then under one of the pulleys h , and thence to either of the drums L L' , where it should be properly fastened and rolled up until the drop-lever E rises to the stop-bar I^2 , or it may be limited to any desired height. A second rope, J' , is attached to the drilling-rod H'' , and passes thence through one of the sheaves J down under the pulley h , located upon the lever F , and up to the drum L' , as before, and as clearly shown in the accompanying drawings.

The stop-bar I^2 for limiting the recoil of the levers may be held in position by any suitable means, but preferably it is connected to the sills of the machine by means of a pair of vertical bars, such as I^3 . When so arranged and set in motion, the block H and the drill or sand-pump rods H'' rise and fall automatically and alternately to any desired distance from one to several feet. In revolving the cranks P run onto the respective ends of the levers E and F and depress them, thus raising the block and the drill-rod H'' alternately. It is obvious that when the rotary motion of the said cranks is made continuous—that is, turned toward the right hand in Fig. 1—the rollers n at the end of the cranks will alternately run upon and run off the free ends of the levers, first depressing them and then releasing them and causing the tools to be dropped. The rope on either of the drums, L or L' , can be unwound to allow either of the drop-levers to rest upon the ground, and thus stop the motion of either the driving-block H or the sand-pump or drill-rod H'' , as may be desired, at the will of the operator.

The adjustment of the ropes upon the drums L L' is best effected by revolving them by means of the hand-cranks d , which are attached to a short shaft, d' , forming a part of the drum-shaft. Said short shaft is preferably secured within the outer end of the tubular drum-shaft f by means of a pin passing through both, though it may be shrunk in or otherwise secured in place as may be found expedient. The under surface of the levers E and F are covered with a sheet of metal, so

that it will not be disfigured by the pressure of the adjusting-nut of the pulleys h . The letter s represents said metallic covering. Such covering I regard however as a comparatively unimportant detail, and I do not wish to be limited to such exact construction in the use of my invention.

Having thus described the construction and operation of my invention, what I claim is—

1. A well-drilling machine comprising devices for raising and dropping the drill-rods and the driving-block alternately and automatically, substantially as set forth.

2. A well-drilling machine comprising devices for raising the drill or sand-pump rods and releasing the driving-block simultaneously and automatically, said devices being capable of adjustment to vary the drop of the rods or the block, substantially as herein set forth, and for the purpose specified.

3. In a well-drilling machine, the combination, with the framing of the machine comprising a derrick, of the main shaft N , to which power is applied, two or more lifting-cranks, P , rigidly secured upon such shaft, and devices intermediate of the drilling and driving tools, substantially as herein set forth, and for the purpose specified.

4. In a well-drilling machine having two or more automatic vertical motions, the combination of a drum, such as L , the tube f , the shaft r , and crank or cranks d , secured to said tube, the framing of the machine to which said drum is hung, and the spring-actuated pin g , for holding the drum at any desired portion of a revolution, substantially as set forth.

5. In a well-drilling machine having two or more automatic vertical motions, the combination of the drums L L' , the tubes f , the shaft r , the hand-cranks d , secured to the outer end of said tubes, the framing of the machine to which said drums are hung, and the spring-actuated pins g , for holding the drums at any desired portion of a revolution, said drums being arranged to revolve independently of each other, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

RUFUS G. MARCY.

Witnesses:

C. A. KENYON,
N. F. HEITMAN.