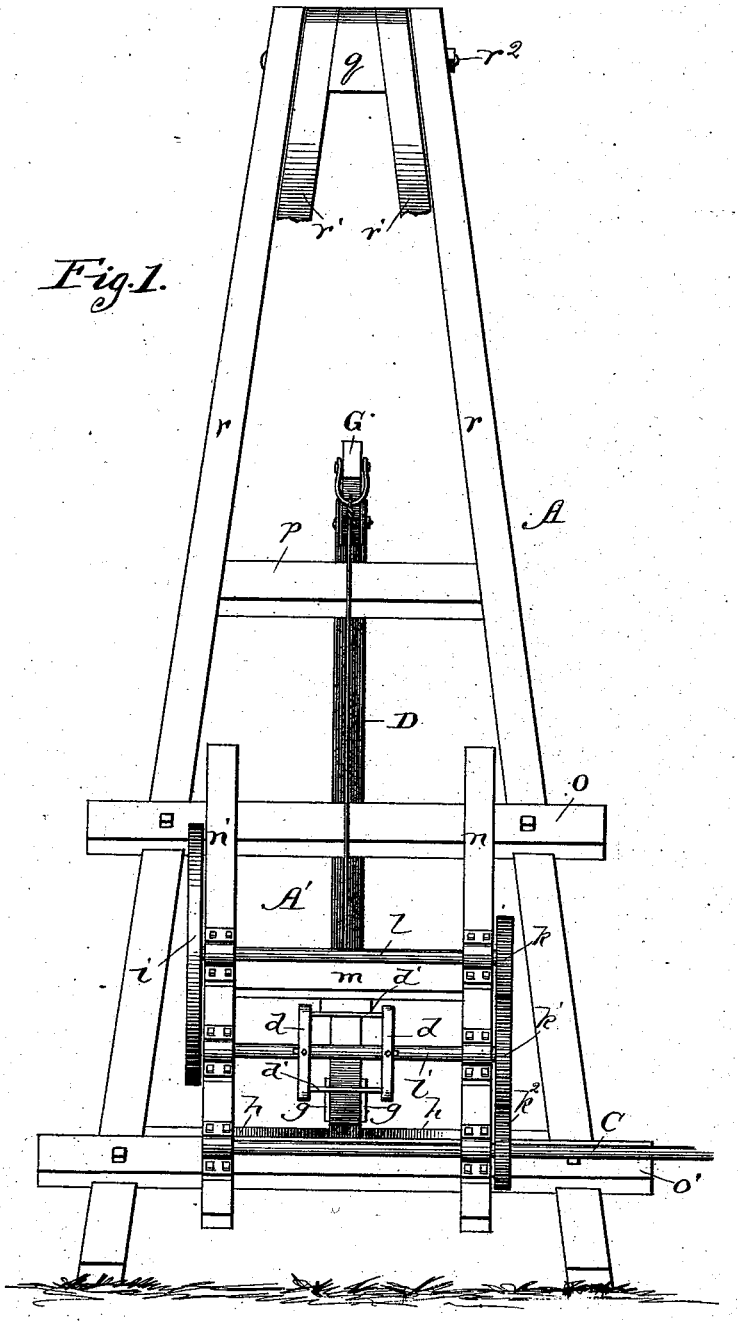
(No Model.) 2 Sheets—Sheet 1.

C. WEBER.

WELL DRILLING MACHINE.

No. 382,500. Patented May 8, 1888.

Fig. 1.



Witnesses,
L. F. Mann.
Chas. E. Gorton.

Inventor,
Christian Weber.
By, Dyrenforth & Dyrenforth.
Atty's.

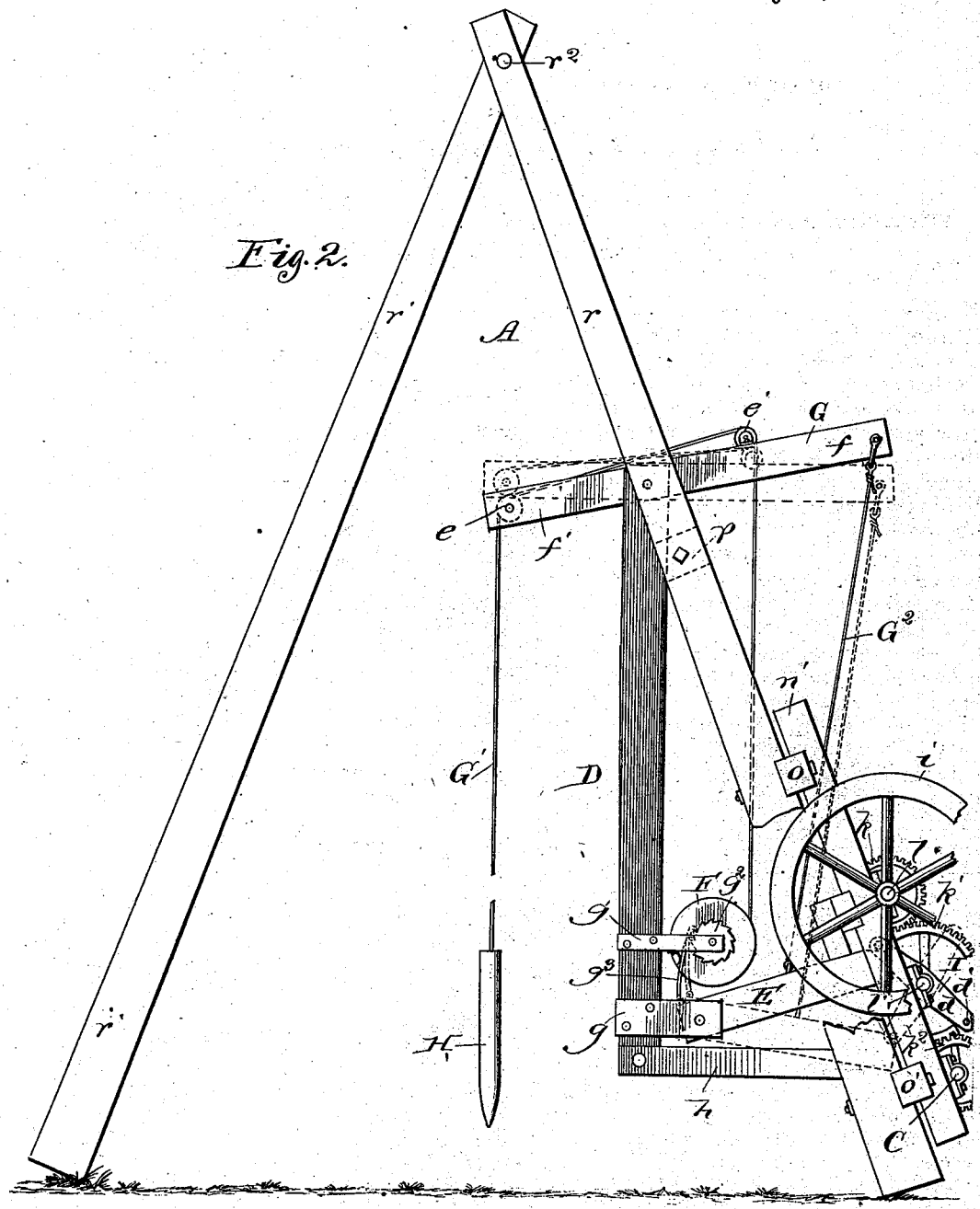
(No Model.) 2 Sheets—Sheet 2.

C. WEBER.

WELL DRILLING MACHINE.

No. 382,500. Patented May 8, 1888.

Fig. 2.



Witnesses,
L. F. Mann,
Chas. E. Gorton.

Inventor,
Christian Weber,
By, Dyrenforth & Dyrenforth.
Atty's.

UNITED STATES PATENT OFFICE.

CHRISTIAN WEBER, OF OAK GLEN, ILLINOIS.

WELL-DRILLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 382,500, dated May 8, 1888.

Application filed September 16, 1887. Serial No. 249,837. (No model.)

To all whom it may concern:

Be it known that I, CHRISTIAN WEBER, a citizen of the United States, residing at Oak Glen, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Well-Drilling Machines, of which the following is a specification.

My invention relates to an improvement in well-drilling apparatus in the form of a drill raised by power and caused to operate, when released, by gravity to penetrate the ground and by repeated strokes sink sufficiently far to form an opening of a depth that will extend to the fluid-bearing stratum.

My object is to provide a highly-effective device for the purpose, of simple construction and easy of operation.

To this end my invention consists in the general construction of my improved device; and it further consists in details of construction and combinations of parts, all as hereinafter more fully set forth.

In the drawings, Figure 1 presents my improved apparatus in broken end elevation, and Fig. 2 is a broken side view of the same.

A is the frame, comprising a pair of uprights, *r*, converging laterally toward their upper ends, and a similarly-converging pair of uprights, *r'*, embraced at their upper ends between those of the uprights *r*, to which they are secured by a transverse bolt, r^2, passed through the converging uprights near their upper extremities, a tapering washer, *q*, through which the bolt also passes, being interposed between the ends of the uprights *r'* to hold them apart. The frame thus formed has a broad base at which it is supported on the ground, afforded by the uprights diverging toward their lower ends. Suitable braces, *p*, *o*, and *o'*, connect and strengthen the uprights *r*, and the frame may be otherwise braced, if desired, though it is preferred that the bolt-connection r^2 shall render the pairs of uprights *r* and *r'* pivotally adjustable with relation to each other, to render the frame folding and permit its height and position to be adjusted with reference to the work.

The braces *o* and *o'* form the upper and lower end pieces of a frame, A', having side pieces, *n* and *n'*, provided with a suitable brace, *m*, and affording bearings for shafts *l*, *l'*, and C, the first-named shaft carrying at one projecting end a cog-wheel, *k*, and at its opposite projecting end a fly-wheel, *i*, the second a larger cog-wheel, *k'*, in mesh with the cog-wheel *k*, and the shaft C a cog-wheel, k^2, in mesh with the cog-wheel *k'* and corresponding in size with the cog-wheel *k*.

D is an upright, secured toward its lower end between converging braces *h*, extending backward from the uprights *r*, near the lower ends of the latter, and toward its upper end to the rear side of the brace *p*, which is recessed, as indicated by dotted lines in Fig. 2, to receive it.

E is a lever, pivotally supported near its rear end between brackets *g*, extending forward from the upright D, upon opposite sides of which they are secured, and directly above the brackets *g*, and also extending from the upright D, are brackets *g'*, affording bearings for the journal ends of a rotary drum, F, carrying on one end a ratchet-wheel, g^2, engaged by a dog, g^3, pivotally supported on a bracket, *g*.

G is a walking-beam pivotally supported on the upper end of the upright D, preferably in a manner to produce a long arm, *f*, and a short arm, *f'*, as shown, and carrying pulleys *e* and *e'*, upon which a rope, chain, or cable, G', passes to the drum F, to which it is secured at one end, and carries at its opposite end the drill H. The long arm of the beam G is connected by a rope, chain, or cable, G^2, or any other suitable connecting medium—such as a rod—with the lever E, as shown.

On the shaft *l'*, in line with the lever E, is secured a striker, I, in the form of lateral arms *d*, extending equal distances in opposite directions from the shaft and connected near their extremities by cross-bars *d'*.

The operation of my improved apparatus is as follows: Power is applied to the shaft C to rotate it. The power employed may be that of the hands exerted from a crank, or suitable connection may be made of the shaft with a horse-power, (such as is used for driving thrashing-machines, wood-sawing machines, and the like,) or steam or other power may be employed. As shown, however, my apparatus is designed for operation particularly by horse-power. Each revolution of the shaft C rotates the striker I through the gear-connec-

tion and causes it to engage with the forward end of the lever E, (the number of strokes depending upon the number of cross-bars d', or their equivalents, employed,) whereby it is depressed, thereby lowering the long arm of the walking-beam G through the connection G^2, and raising the short arm carrying the drill, whereby the latter is lifted. When a cross-bar d' clears the end of the lever E, the latter is released, and the drill, which is thus freed, falls by its own weight with considerable force against the ground, which it penetrates, the repeated raising and releasing of the drill by continued turning of the shaft C gradually sinking it to the required depth by the intermittent strokes produced by the rotating striker. The gear-wheel connection and fly-wheel adapt the machine particularly for operation by horse-power by tending to render uniform the strain while the striker I is being resisted by the lever E and after it clears the latter, when, unless the steadying mechanism described or equivalent means were provided, the animals would be liable to fall forward whenever the striker were released from the opposing weight of the drill. As the drill sinks deeper and deeper, it becomes necessary to lengthen the rope G', which is accomplished, whenever required, by disengaging the dog g^3 from the ratchet-wheel g^2, whereby the weight of the drill turns the drum F to unwind the required length of rope, when the drum is secured against further rotation by re-engaging the dog with the ratchet.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a well-drilling machine, the combination of a frame, A, a lever, E, a walking-beam, G, a drill, H, connected through the walking-beam by a chain or cable with the lever, a frame, A', upon the frame A, a driving-shaft, C, and a shaft, l', on the frame A' and geared together, and a striker, I, on the shaft l' and operated thereby to engage with the lever to actuate the drill, substantially as described.

2. In a well-drilling machine, the combination of a frame, A, rotary shafts l' and C, supported on the frame and carrying intermeshing gear-wheels k' and k^2, a striker, I, on the shaft l', a lever, E, extending into the path of the striker, a walking-beam, G, and a drill, H, connected through the walking-beam with the lever, substantially as described.

3. In a well-drilling machine, the combination of a frame, A, rotary shafts l, l', and C, supported on the frame and carrying intermeshing gear-wheels k, k', and k^2, a fly-wheel, i, on the shaft l, a striker, I, on the shaft l', a lever, E, extending into the path of the striker, a walking-beam, G, and a drill, H, connected through the walking-beam with the lever, substantially as described.

4. A well-drilling machine comprising a frame, A, formed of converging uprights r and r', connected together, a frame, A', upon the frame A, an upright, D, carrying a walking-beam, G, a drum, F, a drill, H, connected with the drum through the medium of the walking-beam by a chain or cable, G', a lever, E, pivotally connected with the upright D, near one end, and near its opposite end with the walking-beam, rotary shafts l, l', and C, supported on the frame A' and carrying intermeshing gear-wheels k, k', and k^2, a fly-wheel, i, on the shaft l, and a striker, I, on the shaft C, in line with the lever E, the whole being constructed and arranged to operate substantially as described.

CHRISTIAN WEBER.

In presence of—
J. M. CALMONT,
THOMAS J. MCGRATH.