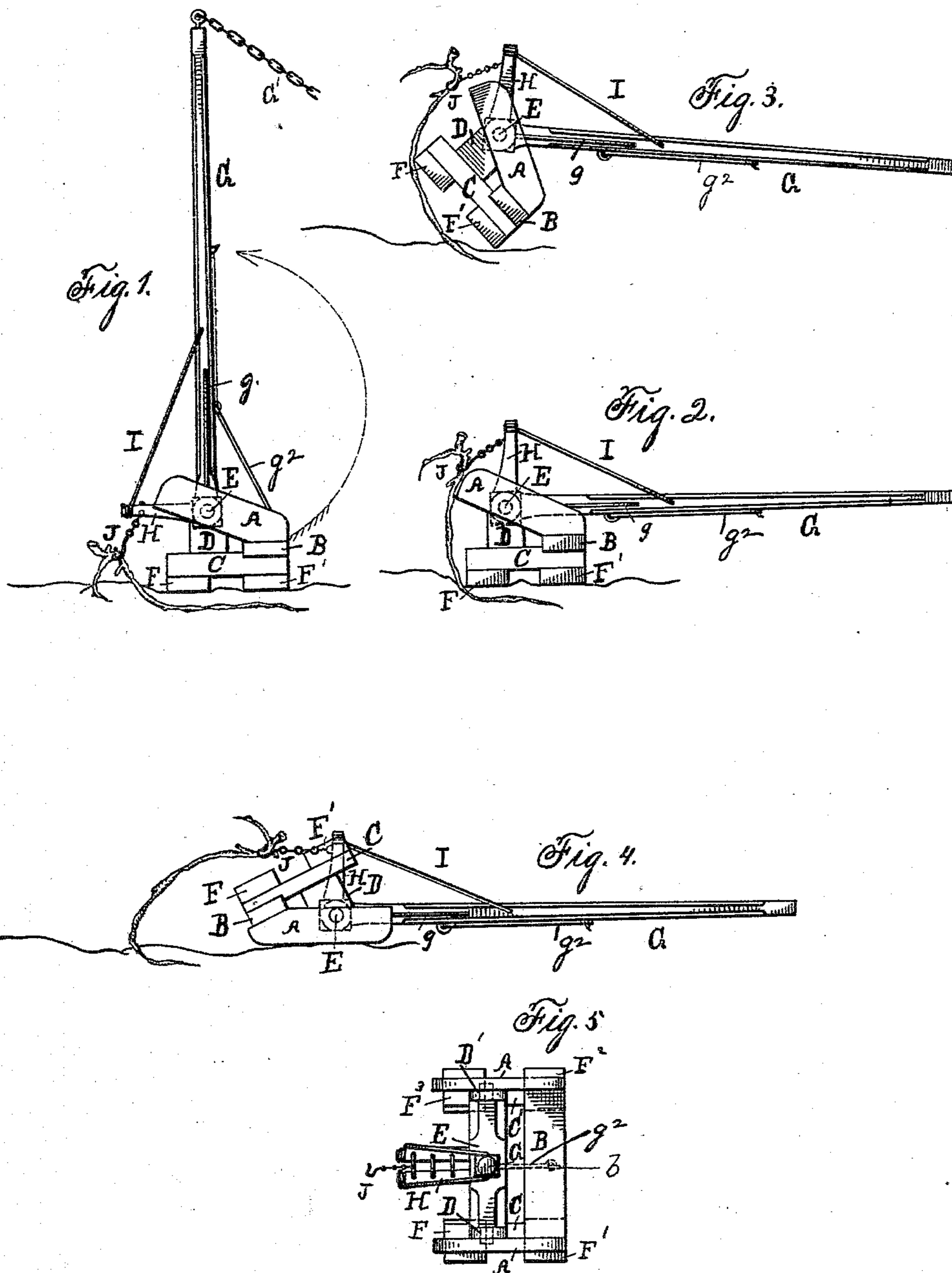


(No Model.)

J. BALL.  
GRUB PULLING MACHINE.

No. 274,550.

Patented Mar. 27, 1883.



WITNESSES  
*Samuel C. Thomas.*  
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# UNITED STATES PATENT OFFICE.

JACOB BALL, OF WATERLOO, ONTARIO, CANADA, ASSIGNOR OF TWO-THIRDS  
TO J. S. CHASE AND C. M. MARTIN, OF GREENVILLE, MICHIGAN.

## GRUB-PULLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 274,550, dated March 27, 1883.

Application filed February 1, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB BALL, of the town of Waterloo, county of Waterloo, Province of Ontario, Canada, have invented a new and useful Improvement in Grub-Pulling Machines; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists in the combination of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

In the drawings, Figure 1 is a side elevation of the device embodying my invention. Figs. 2, 3, 4 are also side elevations, showing the device in different positions which it assumes in operation. Fig. 5 is a plan view.

The object of my invention is to provide an improved grub-pulling machine which will be economical in construction, and which may be effectually and easily operated. I accomplish this object as follows:

In the drawings, A represents suitable runners, preferably rounded at the rear as well as the front, as shown. B is a bench secured to the rear and connecting said runners. C and C' are bed-pieces secured, preferably at an angle with the runners, to the bench. D and D' are standards connected therewith and with the forward part of the runners, said standards journaled at their lower ends to receive the ends of the roller E.

F F' F<sup>2</sup> F<sup>3</sup> are beams supporting the device when in position for engagement with the grub. These beams may consist of separate blocks, as shown, or of one continuous piece secured to each of the bed-pieces.

G is a lever secured in the roller.

H is a lever-arm secured to said roller at right angles to the lever G. This lever-arm may consist of one or more parts, as shown.

I is a suitable bar or cable connecting the lever G and lever-arm H.

g represents suitable braces for the lever G.

G' is a cable secured to the end of the lever G, by means of which the horse may be attached thereto.

J is a hook or other suitable fastening adapted to be secured to the grub in any proper manner.

The operation of the device is as follows: The machine is set upon the beams, as shown in Fig. 1, with the lever G perpendicular, or nearly so, in which position it may be held by means of a hooked bar, g<sup>2</sup>, adapted to be secured in a staple, b, in the bench B. The hook J is clasped under or around the grub. When so secured the hooked bar g<sup>2</sup> is disconnected from the staple b and secured parallel with the lever, as shown by the dotted lines in Fig. 1. The horse attached to the end of the lever G pulls the end of the lever down, causing the rotation of the roller, its journals being the fulcrum of the lever-arm H. When the end of the lever G is pulled down, it is evident that the outer end of the lever-arm H will be raised, and the grub will also be lifted. When the lever G is brought down to a horizontal position, the machine turns over, as shown in Figs. 2, 3, 4, until the runners are upon the ground. Meanwhile, from the time the end of the lever G commences to be brought down, it will be observed there is a constant leverage exerted by the lever-arm H upon the grub until the runners are squarely upon the ground, and not until then is there a straight pull exerted on the grub, the edge of the beams F and F<sup>2</sup> acting as a secondary fulcrum.

It is evident that the lever-arm H may be so constructed that the hook J may be connected thereto, either at its outer extremity or at any suitable point between it and its connection with the roller, so as to secure different degrees of leverage.

What I claim is—

1. A grub-pulling machine consisting of a pair of runners suitably connected, and provided with supporting-beams, a roller secured thereto, said roller provided with a lever, G, and lever-arm H, secured at right angles to said lever, substantially as described.

2. A grub-pulling machine consisting of a pair of runners suitably connected together, and provided with supporting-beams, a roller secured thereto, said roller provided with a lever, G, and a lever-arm, H, located at right angles

to said lever, and in connection therewith a hook attached to the lever-arm, substantially as described.

3. A grub-pulling machine consisting of a pair of runners and secured upon supporting-beams, a bench connecting said runners, a roller secured thereto, provided with a lever, G, and a lever-arm, H, and suitable braces, the construction being such that when the end of the lever is pulled down the roller will be rotated and the runners inverted, substantially as described.

4. A grub-pulling machine consisting of a pair of runners suitably connected together, and provided with supporting beams and standards D and D', a roller journaled in said standards, and provided with a lever, G, and lever-arm H, located at right angles to said lever and provided with suitable braces, and an adjustable hook, J, connected with said lever-arm, the construction being such that when the end of the lever G is pulled down the journals of

the roller act as the fulcrum of the lever-arm H, substantially as described.

5. A grub-pulling machine consisting of bed-pieces C and C', suitably connected together, and provided with supporting-beams, and in combination therewith a pair of runners secured at an angle thereto, standards D and D', connecting the runners to the bed-pieces, the roller journaled to said standards, the said roller provided with a lever, G, and lever-arm H, located at right angles thereto, and provided with suitable braces, the construction being such that when the end of the lever is pulled down a constant leverage is exerted by the lever-arm until the runners are inverted, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

JACOB BALL.

Witnesses:

FREDK. COLQUHOUN,  
G. H. HUTCHISON.