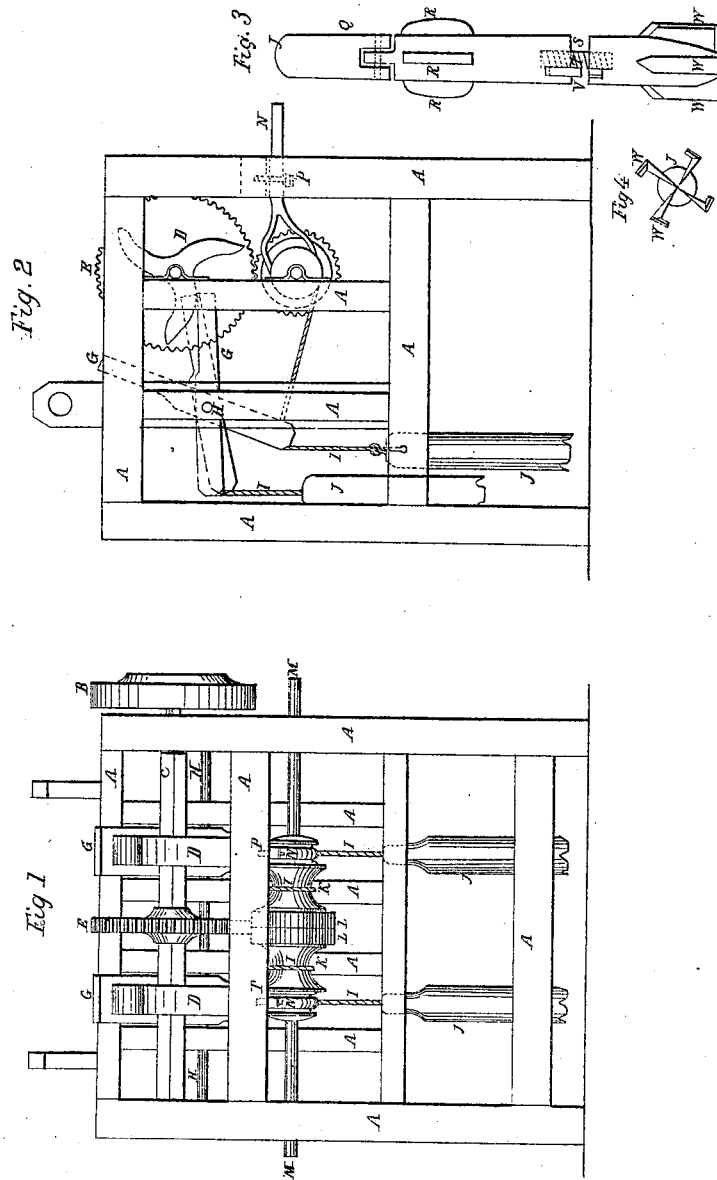


L. G. Marshall,
Boring Artesian Wells.

N^o 48,872.

Patented July 18, 1865.



UNITED STATES PATENT OFFICE.

LOOMIS G. MARSHAL, OF MOKENA, ILLINOIS, ASSIGNOR TO HIMSELF AND
F. W. HUGHES, OF POTTSVILLE, PENNSYLVANIA.

IMPROVED DRILL.

Specification forming part of Letters Patent No. 48,872, dated July 18, 1865.

To all whom it may concern.

Be it known that I, LOOMIS G. MARSHAL, of Mokena, Will county, State of Illinois, have invented new and useful Improvements in Drilling-Machines; and I do hereby declare the following to be a clear and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature of my invention consists in the arrangement and combination of the levers, reel, mode of throwing the reel in and out of gear, and the shape and construction of the drill.

The object and advantages are speed and accuracy in the operating devices and drilling in a perfectly perpendicular line.

Figure 1 represents a front elevation of the machine. Fig. 2 represents a side elevation of the machine. Fig. 3 represents the shape and construction of the drill, and Fig. 4 the double-Z cutters beneath.

A represents the upright frame-work; B, the driving-wheel at the upper part of the frame, whose shaft C extends across the frame and operates two curved levers, D D, and a cog-wheel, E, in the center, the curved levers D operating upon the ends of the levers G G, that are located on a shaft, H, across the frame, so as to be moved up and down to raise and lower the chain I, to which the drills J J are suspended, the chain I being coiled around a reel, K, so as to be raised and lowered by the reel, when required, the reel having two cog-wheels, L L, at the center to gear into the toothed wheel E to wind or unwind the chain or rope I when a drill is to be drawn up to be replaced by another; but when the drills are boring, the reel that di-

vides at its center and slides upon its shaft M is ungeared from the cog-wheel E by being shifted to each side by the levers N, working on a pivot, P, attached to a cross-bar of the frame A.

The construction of the drill J is shown at Fig. 3, the top part, Q, being pivot-jointed, and below the joint are four wings or flanges, R, for the purpose of guiding the drill perpendicularly and prevent its cutting a slanting hole or boring to the side. The lower part of the drill is divided at S and held by a screw, T, in the center, and permanently fastened by a key, V, that is driven into a groove at the side. The lower part or cutters, W, is thus easily unkeyed and unscrewed at any time, when required to be sharpened or replaced by another. It has four flanges or cutters, W, with sharp slanting edges at top for cutting upward, and grooved on one side and plain on the other, and beveled below to a chisel-edge, with sharply-beveled ends like a double Z, as shown at Fig. 4, and the body of the drill extending down to a point at the center, so that the dirt and borings work upward between the flanges W and make the drill operate freer and easier.

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

1. The arrangement and combination of the devices D, E, G, J, and K of the machine, as herein described, and for the purposes set forth.

2. The arrangement and combination of the devices Q, R, T, V, and W of the drill J, when constructed and combined as herein described, and for the purposes set forth.

LOOMIS G. MARSHAL.

Witnesses:

GUY E. FARQUHAR,
IVANHOE S. HUBER.