C. L. TRAVIS.

Machine for Perforating Tubes for Tube-Wells.

No. 162,435. Patented April 20, 1875.

Fig. 1.

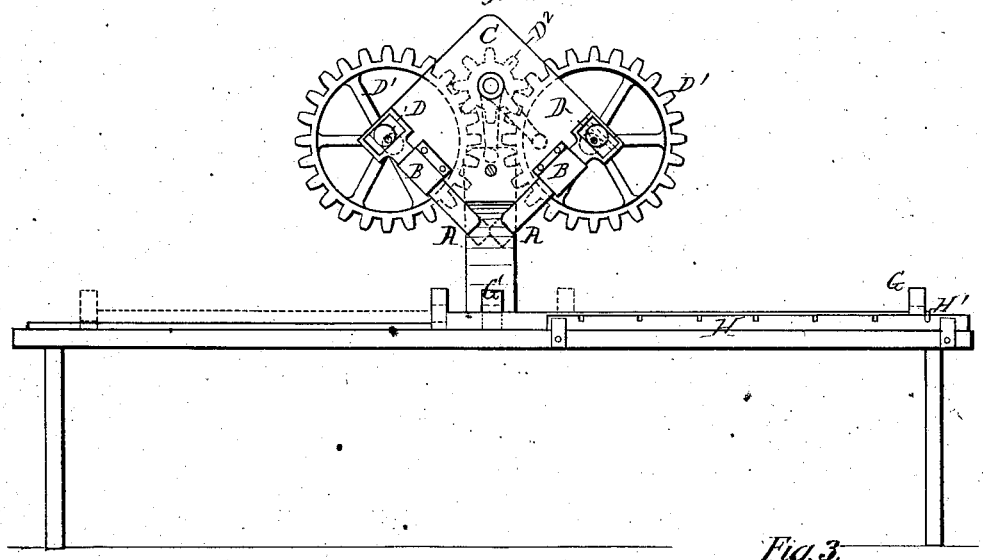
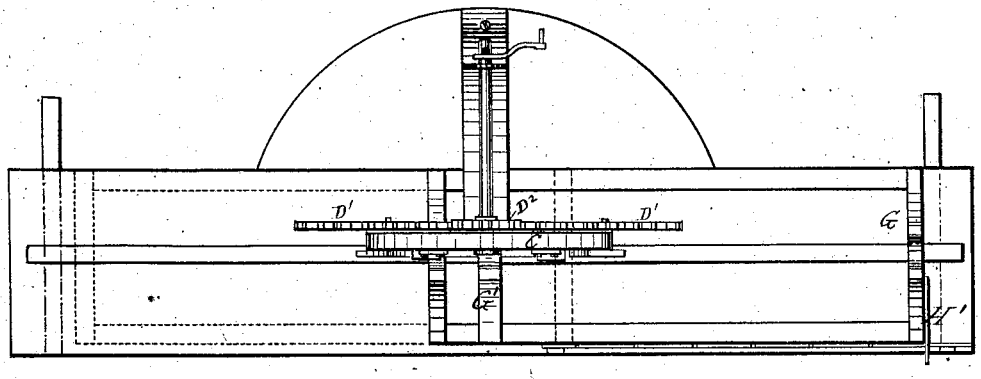


Fig. 3.

Fig. 2.



Witnesses
Alex Mahon
N B Smith

Inventor
Charles L. Travis
by A. M. Smith
Attorney.

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

CHARLES L. TRAVIS, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR TO THE STAR MANUFACTURING COMPANY, OF SAME PLACE.

IMPROVEMENT IN MACHINES FOR PERFORATING TUBES FOR TUBE-WELLS.

Specification forming part of Letters Patent No. **162,435**, dated April 20, 1875; application filed May 18, 1874.

To all whom it may concern:

Be it known that I, CHARLES L. TRAVIS, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Machines for Perforating Well-Tubes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, making part of this specification, in which—

Figure 1 is a front view of my improved machine, showing the angle at which the punches are set, and also showing, in dotted and full lines, the position of the cutters at each end of the throw. Fig. 2 is a plan or top view of the machine. Fig. 3 is a transverse vertical section through the center block, upon which the tube rests while the holes are being punched.

My invention consists in the combination, with a bed-plate or support for automatically centering the tube operated upon, of a punch or punches set at such an angle to the bed-plate as to cause them to pass through the side or wall of the tube with a shearing cut, as hereinafter explained. My invention further consists in the combination, with the punches and self-centering bed-plate, arranged as above described, of a carriage for moving the tube longitudinally, and devices for regulating the extent of its movement, and the distance apart of the perforations in the tubes, as hereinafter explained.

In the preparation of tubes for tube-wells it is necessary to perforate them for several feet in length at their lower ends with oblong holes, for the admission of water to the tube, these holes, in practice, being covered with wire-gauze to prevent the admission of sand. An ordinary well-tube requires from fifty to one hundred of these holes, and heretofore it has been found impracticable to make them except by the slow and expensive process of milling or cutting them out with rotary cutters.

The object of the present invention is the construction of a machine by which these holes may be readily and quickly punched in the tube at a greatly-reduced cost, compared with the expense of milling, and at the same time to retain the requisite taper of the perforation from the outer to the inner surface of the tube, giving the desired extent of surface at the outer face, where the wire-gauze is applied, with the increased strength of metal at the inner end of the perforation, where there is no wire gauze to obstruct the admission of the water.

The means by which these ends are attained will be understood from the following description, with reference to the drawings, in which—

A A are the punches, arranged at right angles, or nearly so, to each other. These punches move in suitable ways, B, formed with or attached to the frame C. The punches are each provided with an enlarged head or yoke, in which a rectangular slot is cut for receiving a cam or eccentric mounted upon one end of a shaft hereinafter described, by means of which said punches are driven. Upon the frame, and about midway between the upper ends of the punches, is mounted a stub-axle or shaft, upon the end of which a spur-wheel, D^2, is mounted, which gears into two spur-wheels, D^1, mounted upon the opposite ends of the shafts D, bearing the eccentrics which drive the punches or cutters. G is a carriage mounted upon and moving on tracks or ways upon the table or frame, and G′ is a stationary bed-piece secured to the frame underneath the points of the punches, and upon which and the carriage G the tube rests when being punched. The carriage G is grooved out at its end to conform to the shape of the tube, as is also the bed-piece G′; the table being designed to feed the tube to the punches, and the bed-piece to center the tube, and to hold it firmly up to and prevent the deflection of the tube under the action of the punches. H is a notched gage spaced to the distance for the holes in the tube, and mounted upon the frame, and H′ is a pivoted latch mounted upon the carriage, and which, in connection with the gage H, serves to hold the carriage at any desired point. It will be seen that the holes may be made with a single punch by cutting first one side of the hole, and then reversing the tube and cutting from the other side; but the construction above described is preferred, as with the two punches arranged

as described the end thrust of one punch in one direction is counteracted by that of the other in the opposite direction.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The concave bed-plate or support G′, for automatically centering the tubes, in combination with the obliquely-acting punch cutter or cutters A, for perforating said tubes, substantially as and for the purpose set forth.

2. The combination, with the self-centering bed-plate or support G′ and the obliquely-acting punches A, of the carriage G, for adjusting the tubes, as described.

In testimony whereof I have hereunto set my hand this 30th day of April, A. D. 1874.

CHARLES L. TRAVIS.

Witnesses:

GEORGE R. ROBINSON,

M. G. HUBBARD.