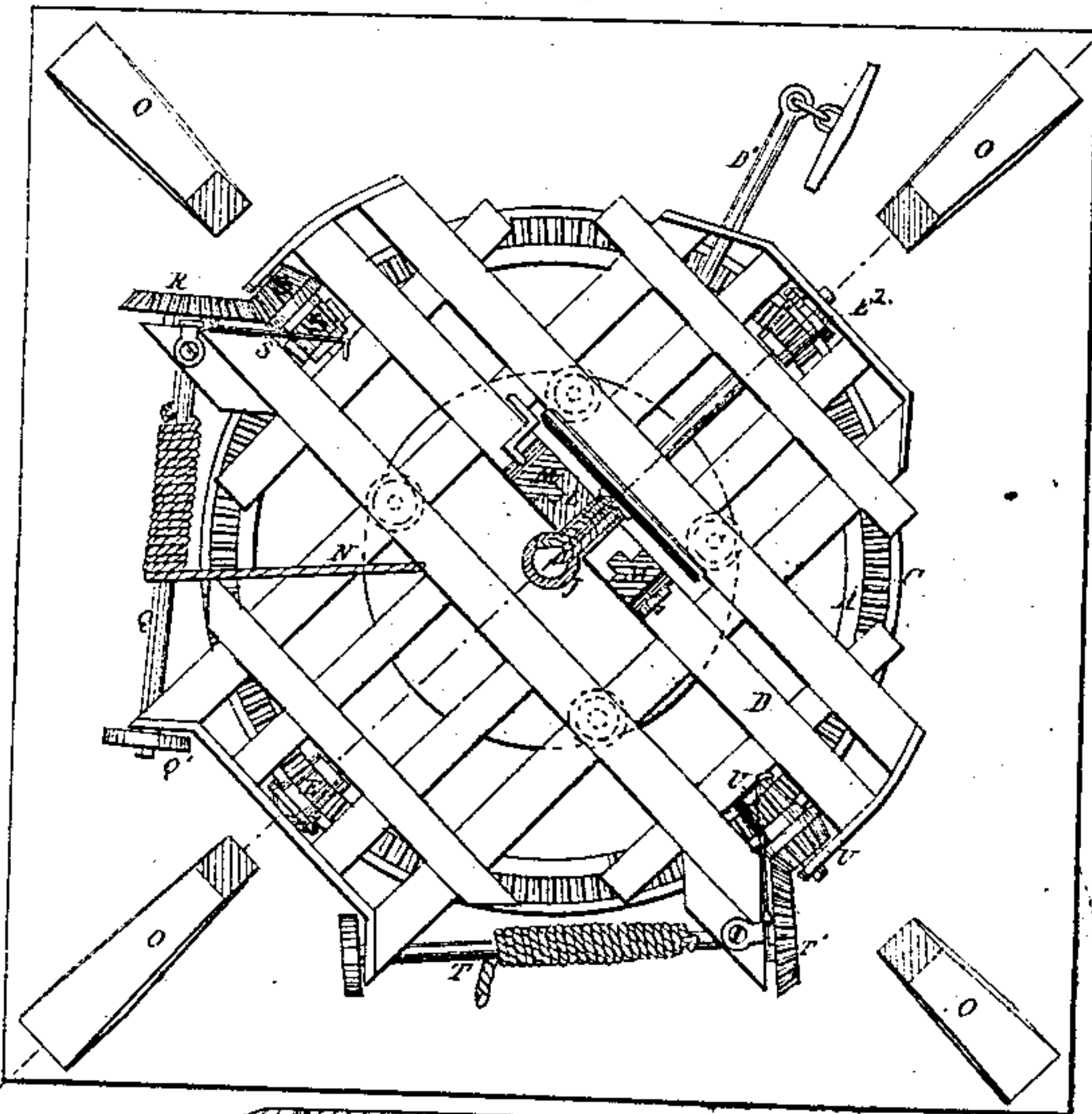


*D. Morris,*  
*Boring Artesian Wells.*

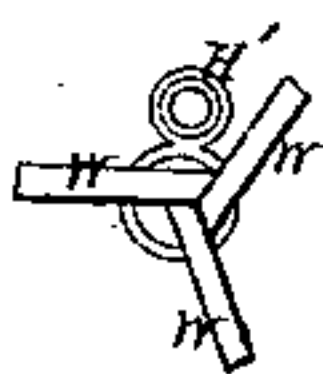
*No 55,884.*

*Patented June 26, 1866.*

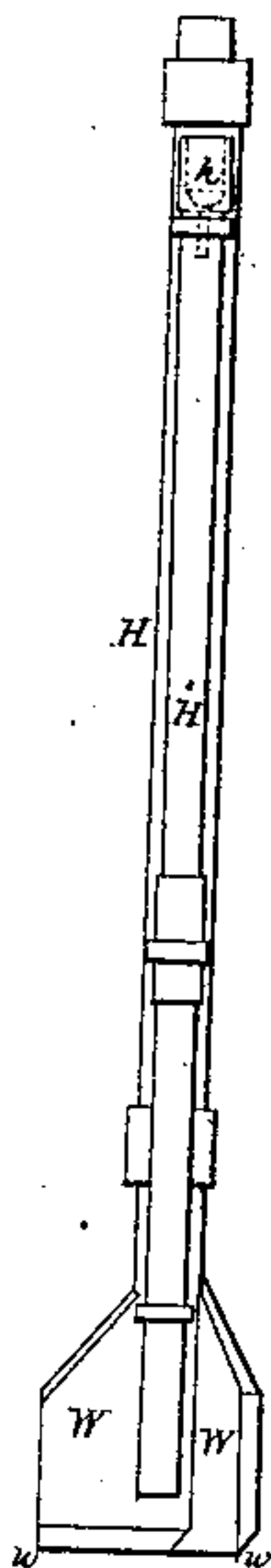
*Fig. 1*



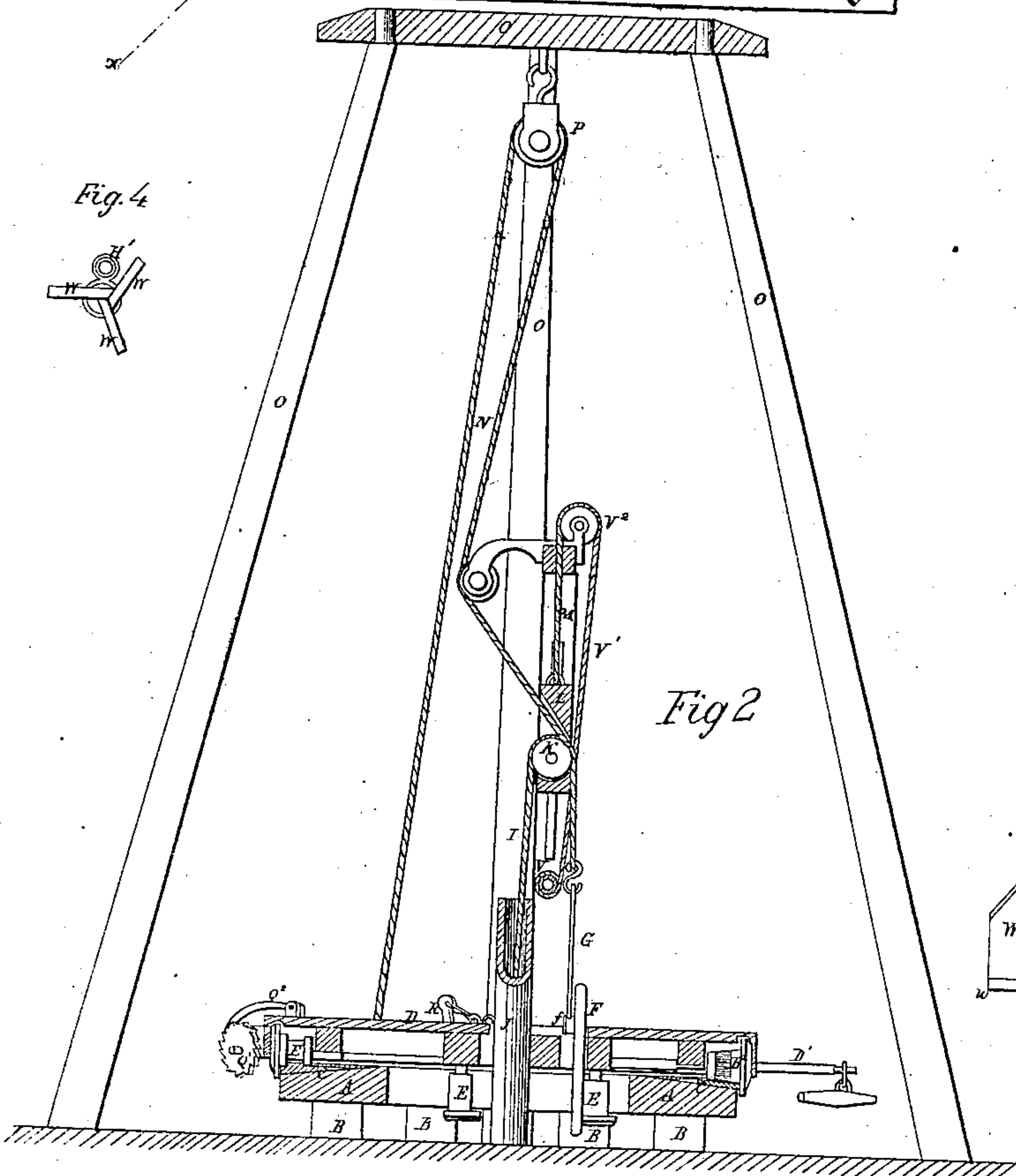
*Fig. 4*



*Fig. 3*



*Fig. 2*



*Witnesses*  
*C. D. Smith*  
*J. L. Green*

*Inventor*  
*D. Morris*  
*By [Signature]*

# UNITED STATES PATENT OFFICE.

DAVID MORRIS, OF BARTLETT, OHIO.

## IMPROVED WELL-BORING APPARATUS.

Specification forming part of Letters Patent No. 55,884, dated June 26, 1866.

*To all whom it may concern:*

Be it known that I, DAVID MORRIS, of Bartlett, in the county of Washington and State of Ohio, have invented a new and Improved Well-Boring Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the nature, construction, and operation of the same, reference being had to the accompanying drawings, which are made part of this specification, and in which—

Figure 1 is a plan of my improved apparatus with the top of the revolving platform or table removed to expose the parts located beneath. Fig. 2 is a vertical central section in the plane indicated by the line *x x*, Fig. 1. Fig. 3 is a detached view of the drill and the tube which supplies the end of the drill with water to prevent the adherence of any matter which, from its gummy tenacious character, is liable to clog and interfere with the operation of the drill. Fig. 4 is an end elevation of the parts shown in Fig. 3.

Similar letters of reference indicate corresponding parts in the several figures.

The main driving mechanism of this apparatus is somewhat similar to an ordinary horse-power; and the general construction and arrangement of the parts forms one of the features of my invention.

The invention also consists of a tube attached to the drill-rod and provided with a valve which opens when the drill ascends to let water into the tube and closes when the drill descends to force the water down to the working extremity of the drill, and thus keep the same surrounded with comparatively clear water, so as to prevent the accumulation around and upon the drill-head of any tenacious clay or other sticky substance which would interfere with its action.

The invention further consists of a peculiar mode of constructing and disposing the cutting-edges of the drill-head.

The following description, in connection with the accompanying drawings, will enable others skilled in the art to which my invention appertains to fully understand and use the same.

A represents a circular stationary frame, which may be supported upon the short legs B, and which has a central opening to permit the drill-rod to work vertically through it.

On the upper surface of this frame is secured a circular cogged rim, C.

D is a revolving platform mounted upon the frame A, and designed to be rotated by a team, for which purpose it is provided with a shaft, D', to which a whiffletree may be attached. As before stated, the top of this platform, in Fig. 2, is removed to exhibit the operating parts underneath.

Friction-rollers (designated by E, Fig. 2, and represented by dotted lines in Fig. 1) are attached to the revolving platform D and move in contact with the edges of the central opening in the frame A, thereby retaining the said platform in proper position, and friction-rollers E' are interposed between the revolving platform D and cogged rim C.

The shaft D' receives motion from a pinion, D<sup>2</sup>, engaging with the cogged rim C, and carries upon its inner end a crank-wheel, F, which has a wrist-pin, *f*, for the attachment of a rising-and-falling connecting-rod, G, which is attached to the drill-rod H, Fig. 3, by means of the rope I.

The drill-rod works within the central guiding-tube, J, and the rope I works over a pulley, K, fixed within the adjustable block L, which is held between the vertical uprights M M by a tongue-and-groove connection, which admits of the vertical adjustment of the block L, by means of the rope N passing over a pulley, P, swiveled in the top of the high frame O O.

The rope N is operated by a windlass, Q, which is rotated by the revolving platform D through the medium of the gearing R S S, which engages with the cogged rim C.

The bevel cog-wheel R on the end of the windlass Q, can be moved into or out of gear with the constantly-rotating wheels S S by means of the rod S', which is hitched to either of a set of staples on the platform D, according as it is desired to hold the cog-wheel of the windlass into or out of gear. By thus throwing the windlass Q into gear with the revolving table D the block L, which has to sustain the the weight of the drill, may be adjusted and retained at any height to conform to the progress of the work. The windlass Q is furnished with a ratchet and pawl, Q' Q<sup>2</sup>.

Another windlass, T, is employed for operating a sand-pump when such is to be used,



and this windlass T is operated by the revolving table through gearing T' U U, and made adjustable in the same manner as the windlass Q.

A winch, V, with a rope, V', working over a pulley, V<sup>2</sup>, on the uprights M, may be used as an accessory to the windlass Q in elevating the drill-supporting blocks L.

The drill-head is composed of three cutting-wings, W W W, joining each other at an angle of about one hundred twenty degrees, (see Fig. 4,) and each wing has its cutting-edge *w* formed by beveling the wing on one side only, as clearly represented in Fig. 3. The cutting-edges *w* of the drill do not radiate from the axis of the drill-rod, but join or meet each other at a point a little out of line with the axis or longitudinal center of the drill-rod, as seen in Fig. 4. Hence as the drill is rotated (which is effected by the rotation of the platform D, uprights M M, and block L) the cutting-edges make their incisions across the center as well as between the center and circumference of the circle which circumscribes the area of rock upon which the drill is to act. By thus cutting across the center the work is greatly expedited, as a quick reduction of the rock is effected.

In Fig. 3, H' represents the tube which is secured to the drill to keep its cutting end supplied with water to prevent the accumulation thereon of any débris or other substance. It has a valve (represented by dotted lines at *h* in Fig. 3) which opens when the drill ascends and closes when it descends. Thus when the drill rises the tube takes in a supply of water from the well, and when this tube falls the

water is carried down to the end of the drill to keep it clean, as above stated.

I do not claim a drill-head composed of three cutting-wings, each beveled at one side, as I am aware that this has been done before.

My claim upon the drill has reference to the arrangement of the cutting-edges, whereby they are adapted to cut across the center.

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

1. A drill having two or more wings, W, with their cutting-edges constructed and arranged as herein described and represented.
2. The tube H', provided with a valve, *h*, and attached to and moving with the drill-rod H, substantially as and for the purpose explained.
3. The combination of the circular frame A, cogged rim C, rotating and revolving shaft D', pinion D<sup>2</sup>, crank-wheel F, connecting-rod G, rope I, and drill H, the whole being constructed and arranged as herein described and represented.
4. The combination of the cogged rim C and gearing S S with the beveled gear R, windlass Q, shifting-rod S', rope N, and adjustable block L, the whole being arranged to operate in the manner and for the purpose set forth.

To the above specification for an improved well-boring apparatus I have signed my hand this 30th day of January, 1866.

DAVID MORRIS.

Witnesses:

W. F. HALL,  
C. D. SMITH.