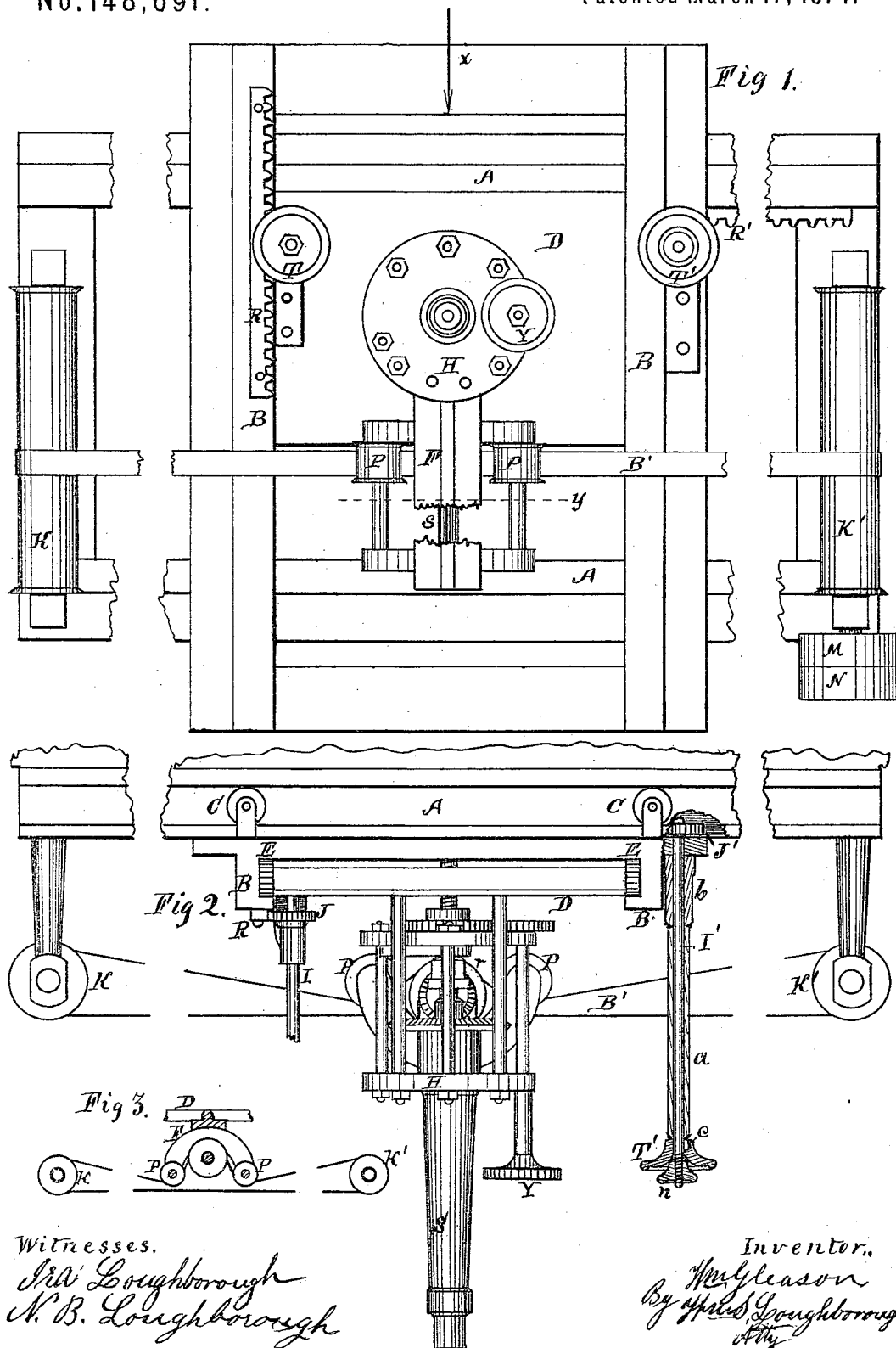


W. GLEASON.
Metal Drilling-Machines.

No. 148,691.

Patented March 17, 1874.



Witnesses.
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UNITED STATES PATENT OFFICE.

WILLIAM GLEASON, OF ROCHESTER, NEW YORK, ASSIGNOR OF ONE-HALF
HIS RIGHT TO KIDD IRON-WORKS COMPANY, OF SAME PLACE.

IMPROVEMENT IN METAL-DRILLING MACHINES.

Specification forming part of Letters Patent No. 148,691, dated March 17, 1874; application filed
October 25, 1873.

To all whom it may concern:

Be it known that I, WILLIAM GLEASON, of Rochester, in the county of Monroe and State of New York, have invented certain Improvements in Suspension Traverse-Drilling Apparatus, of which the following is a specification:

The object of this invention is to provide a power-drill which may be made to traverse from point to point over large heavy work, and drill the necessary holes in such work without moving or disturbing the latter for that purpose; and it consists, essentially, in suspending the drilling apparatus upon suitable longitudinal and transverse ways, whereon such drilling apparatus is driven by a peculiar system of compensating-pulleys.

Figure 1 is an inverted plan view of my invention. Fig. 2 is a sectional elevation, looking in the direction of the arrow in Fig. 1. Fig. 3 is an elevation, reduced, showing the relative arrangement of the driving and the compensating-pulleys.

More or less drilling has to be done on large heavy castings, and, on account of the great inconvenience, if not impracticability, of moving and adjusting such castings to the drills heretofore furnished in ordinary machine-shops, this class of drilling has been done by hand, with the "ratchet-drill" or otherwise, which is a slow, tedious, and often laborious process. All this drilling may be done by power, by means of my suspension traverse-drill, with the greatest rapidity and exactness. The ways A may be made of any desired length, according to the length of the castings or work to be drilled, and are bolted to the ceiling or other support. The transverse ways B may be formed in one casting and also of any desired length. These ways B are carried upon the ways A by two rollers, C, Fig. 2, on each side. The plate D is carried, transversely, in the frame of ways B, by four rollers, E. The drill-stock S and the feeding apparatus are fixed to this plate. The hanger-frame F, which sustains the compensating rollers P, is bolted to the head H of the drill-stock. The shaft I of the hand-wheel T is hung to the plate D and carries the pinion J, which gears into the rack R, fixed on the way B. By turning this wheel T the drill-stock is moved laterally as far as

may be desired, in either direction. A similar wheel, T', is made to turn the shaft I', to which is hung the pinion J'. This pinion gears into the rack R'. By means of these latter devices, the shaft I' being hung in the way B, the drill is moved transversely to the former movement, more or less, as may be desired. The draft of the driving-belt B' has a tendency to move the drill in that direction. To prevent such a result, I provide the shaft I' with a suitable friction-clamp. This may consist of a loose sleeve, a. The hand-wheel T' is splined to the shaft, as shown at c, Fig. 2. By this means it will be seen that when the clamping-nut is screwed down firmly upon the wheel the latter is forced down upon the tube a, which rests upon the hanger-sleeve b, and the hub of the pinion J' is made to impinge upon the under surface of the way B with sufficient friction to prevent it from turning.

A similar clamp might be provided for the shaft I, if desired, but there is scarcely any necessity for it. The drill-stock S and the shafts of the hand-wheels T and T' may be made any desired length.

It will be seen that the drums or pulleys K and K' must be of sufficient length to permit of any desired lateral travel to the drill-stock. A fixed and a loose pulley, M and N, are provided on the shaft of the driving-drum K'. When any considerable change in the position of the drill-stock or movement of the plate D is required, it is better, if not absolutely necessary, to put the belt B' in motion, and thus permit it to traverse the long pulleys or drums K and K' until the necessary change is effected.

Any desired drill-feeding apparatus may be employed. Ordinary compensating pulleys P are employed to form the necessary longitudinal or transverse movements or adjustments of the drill-stock, but long traverse-pulleys K and K' are required to afford the lateral movements or adjustments of it.

The work to be drilled is properly leveled up under and within the range of the traverse-drill. Either or both of the hand-wheels T and T' are then turned until the point of the drill shall register to the prick-mark of the hole to be drilled. The drill is then fed down by the hand-wheel Y.

When the hanger-frame F is made as long as shown in Fig. 1, the pulley *r* may be splined upon the shaft *s*, and the pulleys P allowed to traverse the shafts *s'*, which dispense with the necessity of the long pulleys K and K'; but I prefer to use the latter, in which case the frame F may be shortened up to the dotted line *y* in Fig. 1.

What I claim as my invention is—

1. The suspension drilling apparatus, arranged and movable laterally and longitudinally upon ways, and provided with shafts I and I' and pinions J and J' and racks R and

R', for effecting the lateral and longitudinal adjustments of the drill-stock, as shown and described.

2. In combination with a suspension traverse-drilling apparatus, the compensating pulleys P and the traverse-pulleys K and K', substantially in the manner and for the purposes set forth.

WILLIAM GLEASON.

Witnesses:

WM. S. LOUGHBOROUGH,
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