

(No Model.)

J. W. JAIMISON & J. M. EDMUNDS.  
PORTABLE ELECTRIC DRILL.

No. 547,215.

Patented Oct. 1, 1895.

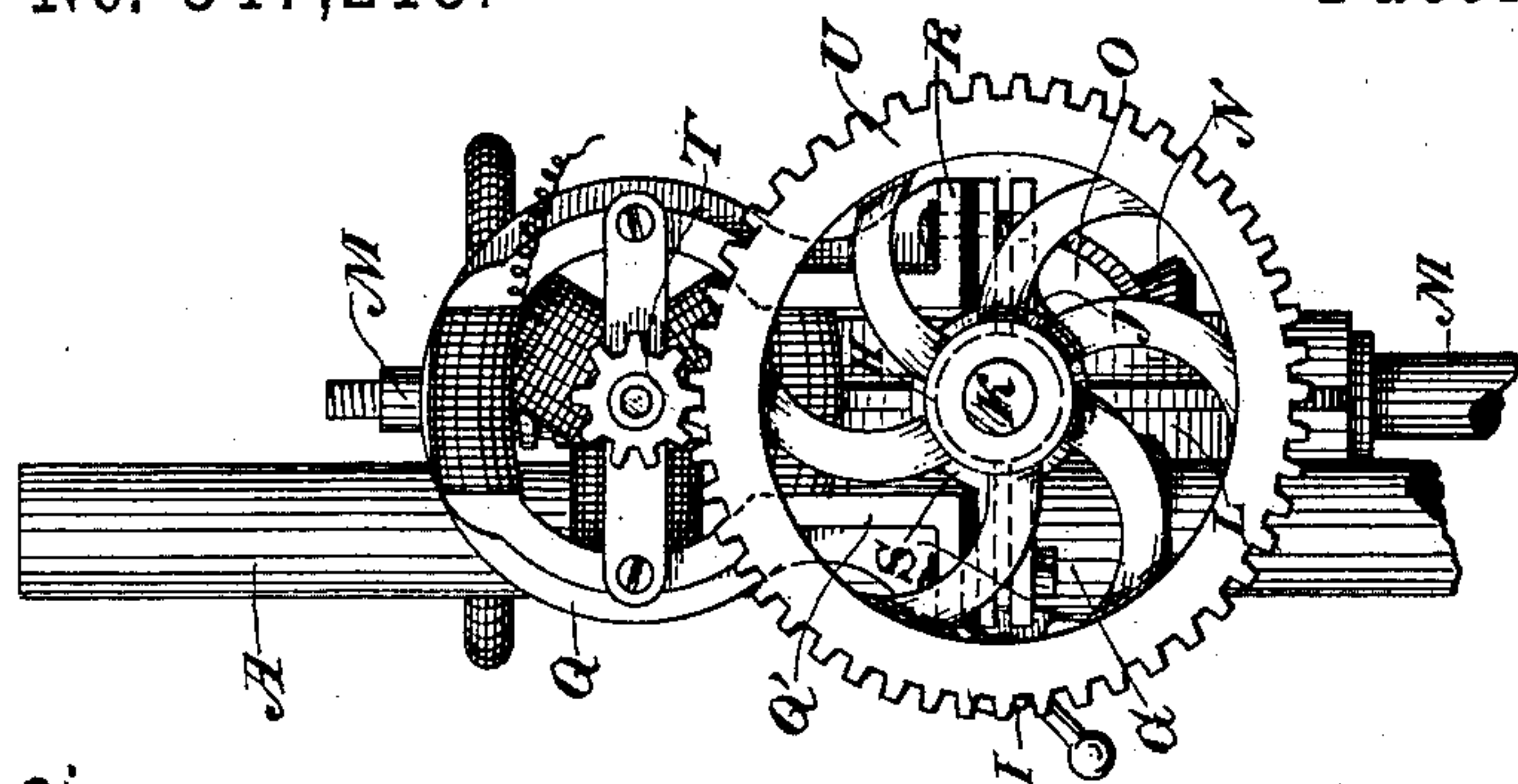


Fig. 2.

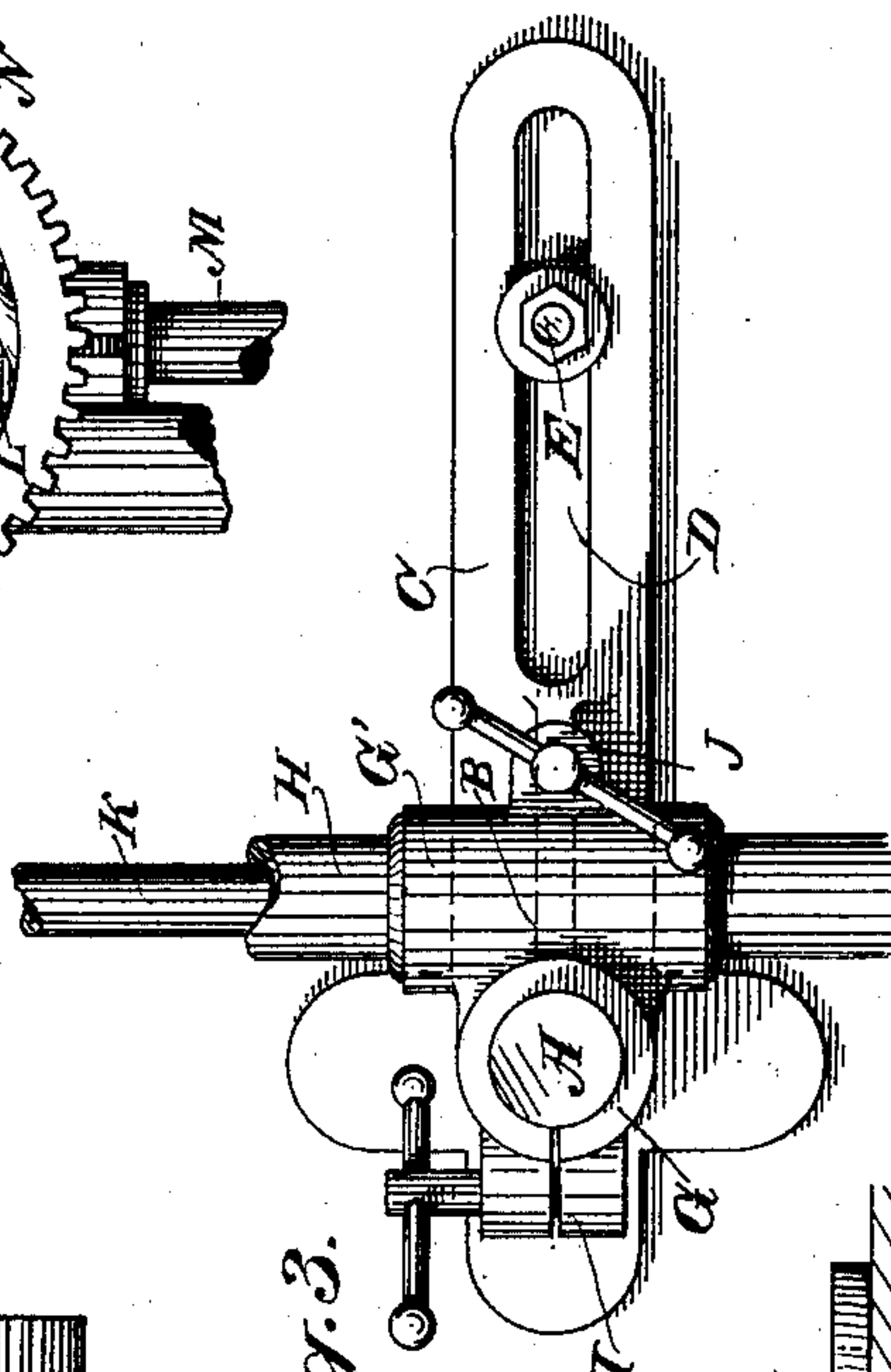


Fig. 3.

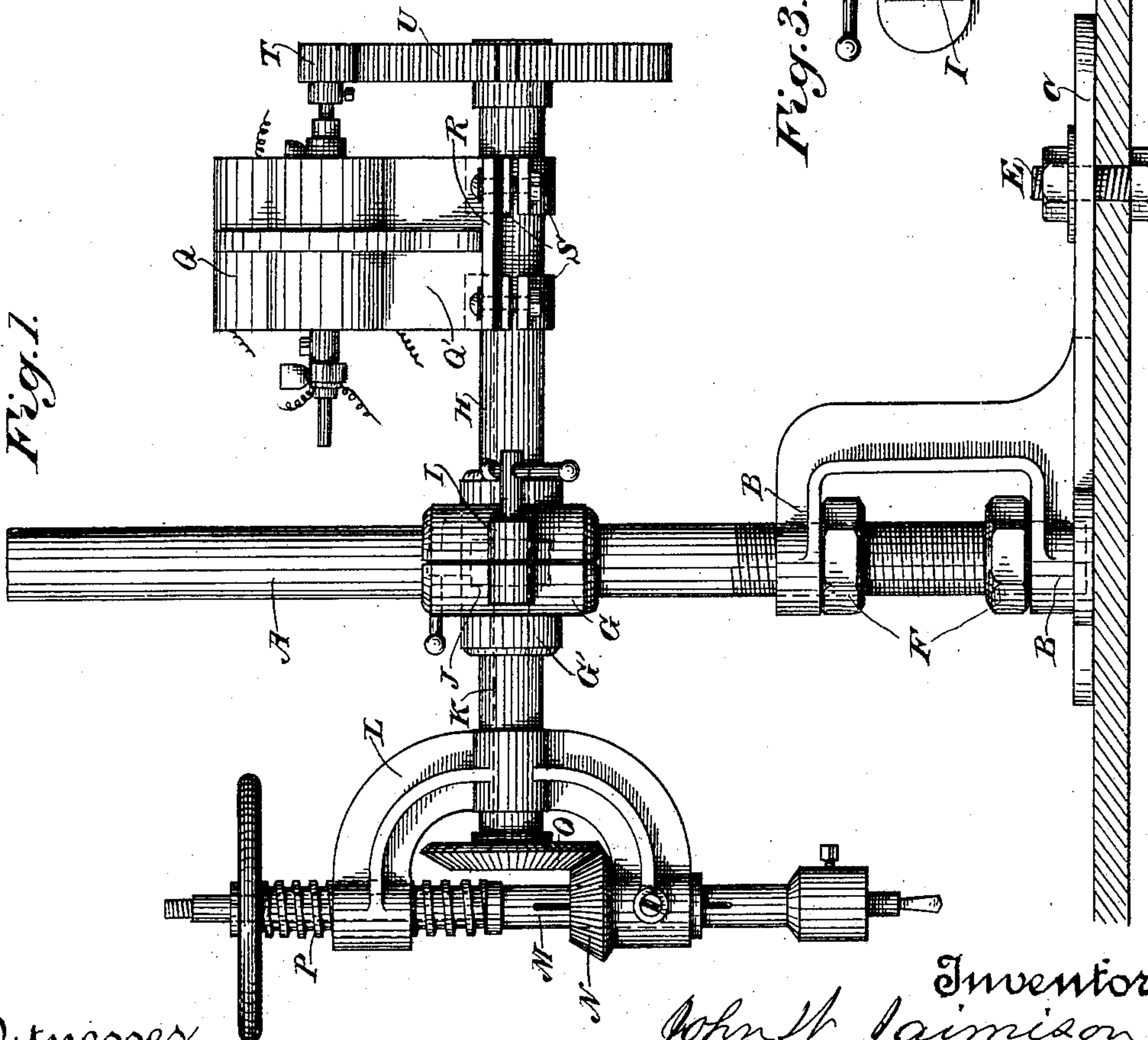


Fig. 1.

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# UNITED STATES PATENT OFFICE.

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## PORTABLE ELECTRIC DRILL.

SPECIFICATION forming part of Letters Patent No. 547,215, dated October 1, 1895.

Application filed December 26, 1894. Serial No. 532,986. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN W. JAIMISON, residing at Vallejo, county of Solano, and JOHN M. EDMUNDS, residing at Napa, county of Napa, State of California, citizens of the United States, have invented an Improvement in Portable Electric Drills; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to an improved drill.

It consists in certain details of construction, including means for adjusting it to work in any possible direction from its point of support, and means for securing and driving it.

Referring to the accompanying drawings for a more complete explanation of our invention, Figure 1 is a side elevation. Fig. 2 is a front elevation. Fig. 3 is a plan view of the standard and connections.

The object of our invention is to provide a drill and supporting and driving mechanism so connected that the drill may be adjusted to operate in any desired position and in any desired direction within the radius of its operation from the support and without interfering with the operation of the motor by which it is driven.

This drill is especially adapted for work upon the inside of boilers or fire-boxes and upon various parts of ships which are otherwise inaccessible to anything except ratchet-drills operated by hand and upon work which it would be impossible to do without such drills.

The drill is supported upon a standard A, the lower end of which is screw-threaded and passes through the two arms B B of a holding-clamp. The bottom of this clamp has an extension C, slotted longitudinally, as shown at E, and adapted to receive a securing bolt or bolts E, and may also have other extensions in different directions, which serve to extend the base and provide a firm foundation. The bolt E is passed through a hole made in the plate or part to be drilled and is secured by a screw or nut, so that the holder is firmly fixed in place. The shaft A has nuts F fixed upon the screw-threaded portion between the arms B B, through which the shaft passes. One of these nuts is turned down against the inner face of one of the arms B

and the other against the inner face of the other arm B, and when screwed tightly against these faces they lock the standard solidly in place.

Any adjustment of the drill longitudinally may be made by loosening the bolt E and sliding the supporting-frame along the bolt by means of the slot D, which is made of any suitable or desired length for the purpose.

Upon the standard A is fixed a double clamp G G', one portion G of which is bored to revolvably fit the standard A, and the other portion G' is adapted to receive a sleeve H. The two parts G G' are in the present case shown fixed at right angles with each other. The part G may be clamped upon the standard A at any desired point by any suitable or usual clamping device, (shown at I,) and the sleeve H may be clamped within the part G', within which it is revoluble by means of a similar clamp J.

By means of the clamp G the device may be rotated around the standard A to any point within the circle, and by means of the clamp G' the sleeve H may be turned to any point in a circle at right angles with the standard A. A combination of either of these adjustments will place the sleeve in any desired position with relation to the work to be done. Through the sleeve H passes a shaft K, and this projects through a yoke L, which is fixed to one end of the sleeve, as shown. Through the ends of this yoke and transversely across the line of the axis of the shaft K extends the drill-shank M, the lower end of which is provided with a drill-holder of any suitable description, preferably a universal chuck, which will admit drills of any size.

Upon the drill-shaft is a pinion N, which is engaged by a gear O, fixed upon the end of the shaft K, so that when the shaft K is rotated it will drive the pinion, and the drill-shaft is movable through the pinion by means of a feather, so that the drill-shaft may be advanced without changing the position of the pinion and will be rotated by the action of the gear and pinion, whatever may be its position or rate of advance. The drill-shaft passes through a hollow sleeve P, which is screw-threaded upon the outside and fits a corresponding screw-threaded nut formed in



one of the ends of the yoke L, and this screw-threaded sleeve has a hand-wheel by which it may be advanced, carrying with it the drill-shaft by means of collars above and below the screw-threaded sleeve, so that while the drill-shaft rotates freely within the sleeve it may be gradually advanced as the drill perforates the part through which the hole is to be made.

It will be seen that by means of the clamp G' the sleeve H, through which the shaft K passes, may be rotated to point in any direction at right angles with the shaft K, while by means of the clamp G upon the standard A the clamp and the shaft H may be turned to any point around the standard A, and the two movements provide a universal joint, which will allow the drill to be pointed in any desired direction and at any desired angle with reference to the position of the standard and securing-clamp. The sleeve H is also slidable longitudinally within the clamp G', and by this adjustment, either with or without the added distance obtained by the slotted foot-piece C, holes may be drilled to a considerable distance in a straight line.

In order to communicate power to drive the shaft H and drill connected with it, we employ an electric motor Q. This motor may be of any suitable desired or well-known form and is supported by the extensions Q' from the field-magnets, these extensions having flanges R formed upon them, which are properly insulated from the clamps S, to which they are bolted and secured. The clamps S in turn are secured to the sleeve H, so that when the sleeve H is turned the motor will be turned with it and may occupy any point within the circle which it describes around the axis of the sleeve. Upon the end of the motor-shaft is a pinion T, and this engages a gear-wheel U, the proportion between the gear-wheel and pinion at this point, and the gear-wheel and pinion by which the drill-shaft is driven, being such as to give the proper rate of speed to the drill and reduce the speed derived from the motor. It will be manifest that the wires connecting the motor with its source of electrical energy may be of sufficient length and so disposed that the motor and the sleeve may be, as before stated, turned to any desired position.

This device can be easily and readily adjusted to drill holes at any point within the radius of its reach. It may be made to drill a series of holes in a circle around the axis of the shaft K, or in a circle around the axis of the standard A, or a line of holes in the direction of the slotted foot-piece and holder C, or, in fact, holes in any direction with relation to each other that may be desired. In ships' work, where many holes have to be drilled, either for the placing of plates or other parts that have to be bolted securely, this device may be used with great effect, as

holes can be made with it in corners and angles which would be impossible to reach without the ordinary ratchet-drill, which is a slow process. In the work upon the interior of boilers or fire-boxes it is also especially useful, and its adjustment is so rapid that it will do the work of many men with ordinary hand ratchet-drills, such as are used ordinarily in this class of work, and in places where the belt could not be used because the changes of position would render the belt useless, and a steam-driven mechanism could not be used on account of the escape of exhaust-steam, especially in confined places.

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

1. A driving shaft for drills and other mechanism, a sleeve within which the shaft is revoluble, said sleeve being adjustable around the common axis, an electric motor supported by extensions of the field magnets said extensions having flanges R formed upon them, and clamps insulated from the flanges and secured thereto whereby the motor is insulated from and clamped to the sleeve so as to change position with the sleeve, and an adjustable drill shaft and gearing whereby it is operated.

2. In a drill, a standard, an extended base slotted longitudinally for adjusting the standard longitudinally along the plate, and mechanism by which the standard is adjustably secured thereto, clamping jaws at right angles with each other, one of said jaws being adjustably secured to the standard, a sleeve passing through the other jaw and adjustably secured therein, a yoke fixed to one end of the sleeve carrying a drill shaft and feed mechanism at right angles with the sleeve, a driving shaft extending through the sleeve, bevel-gears by which power from said shaft is transmitted to the drill shaft, an electric motor supported by extensions of the field magnets said extensions having flanges R formed upon them, and clamps S insulated from the flanges, and secured thereto, whereby the motor is insulated from and clamped to the sleeve so as to change position with the sleeve, a pinion fixed upon the motor shaft, and a gear-wheel fixed upon the main driving shaft with which the pinion engages whereby motion is transmitted from the motor to drive the drill, whatever position it may occupy.

In witness whereof we have hereunto set our hands.

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