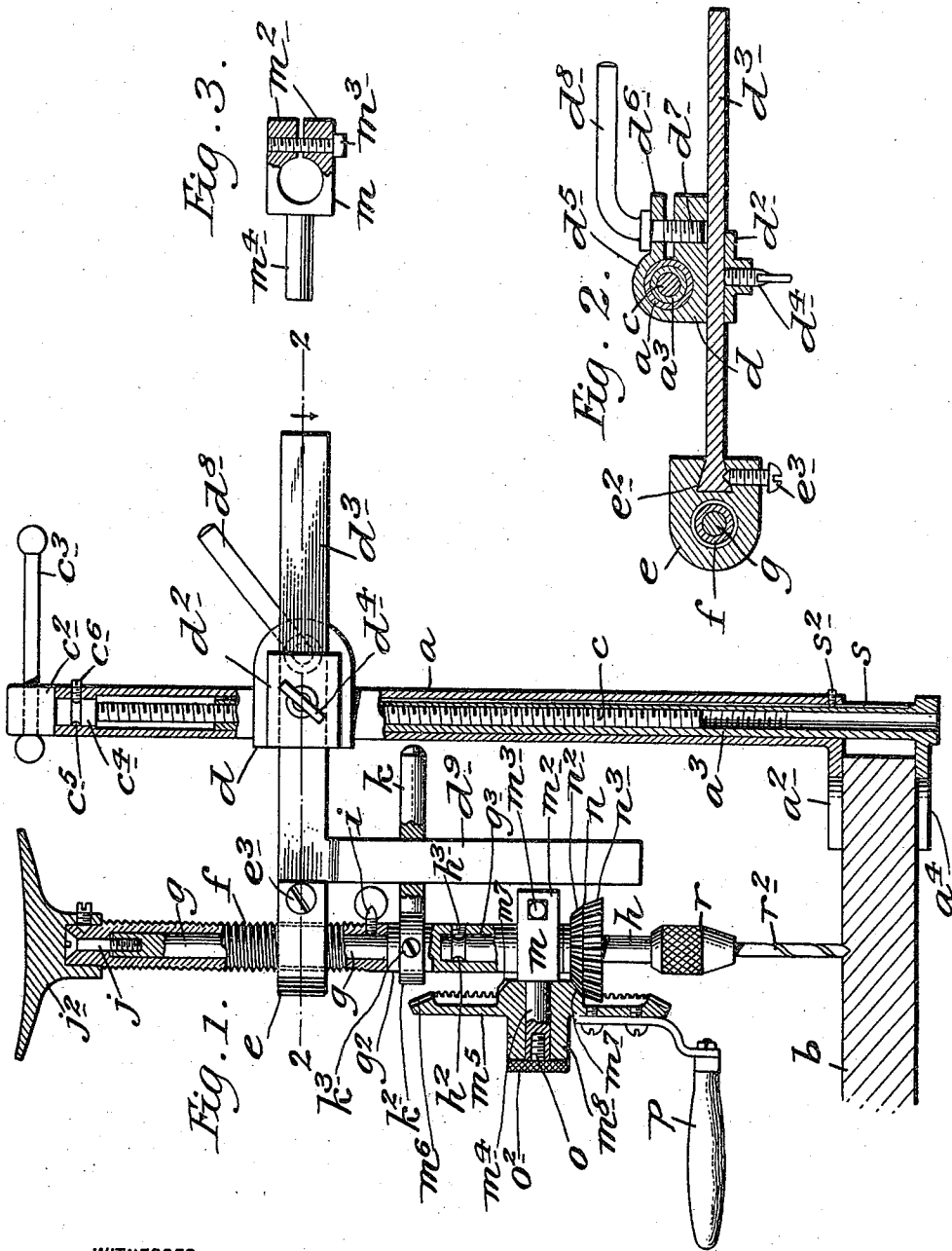


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HAND DRILL.

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965,337.

Patented July 26, 1910.



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HAND-DRILL.

965,337.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK P. SHEK, a citizen of the United States, and residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Hand-Drills, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to hand drills, and the object thereof is to provide an improved device of this class which may be used as an ordinary breast drill, or mounted on and operated in connection with a support of any kind or class; and with this and other objects in view the invention consists in a tool of the class specified constructed as hereinafter described and claimed.

This invention is an improvement on that described and claimed in U. S. Letters Patent No. 766,976 granted to me Aug. 9, 1904, and said invention is fully disclosed in the following specification of which the accompanying drawing forms a part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which;—

Figure 1 is a sectional side elevation showing my improved tool connected with a work piece or other support; Fig. 2 a section on the line 2—2 of Fig. 1, and;—Fig. 3 a sectional plan view of a detail of the construction shown in Fig. 1.

In the practice of my invention as shown in the drawing I provide a standard a which is tubular in form and provided at its lower end with a jaw a^2 , and through which is passed a supplemental tube a^3 provided at its lower end with a jaw a^4 which is a counterpart of the jaw a^2 , and by means of these jaws a^2 and a^4 , operated as hereinafter described the tool may be secured to a work-piece b or any other support. The tube a^3 is somewhat shorter than the tube a and is provided with an interior thread and passing downwardly thereinto is a rod or shaft c which is also threaded to correspond with the thread in the tube a^3 , and the upper end of the rod c passes out through the top of the tube a and is provided with a head c^2 , with which is connected a handle c^3 , and the rod c adjacent to the head c^2 is cylindrical in form as shown at c^4 and provided with an annular groove c^5 , and passed through the tube a is a set screw c^6 , the inner end of

which fits in said groove, and by turning the rod c by means of the handle c^3 the tube a^1 will be raised or lowered according to the direction in which said handle is turned, and the jaw a^4 may be manipulated as will be readily understood.

Mounted on the tube a is a block d having a keeper d^2 through which is passed a bar d^3 , and passed through one side of said keeper is a set screw d^4 by means of which the bar d^3 , which is movable through the keeper d^2 may be secured at any desired point of adjustment.

The block d is provided with a spring jaw d^5 having an extension d^6 through which is passed a screw d^7 provided with a handle d^8 , and by manipulating the screw d^7 the jaw d^5 may be loosened or tightened on the tube a , and the block d may thus be vertically adjusted on said tube to any desired extent.

The bar d^3 is provided adjacent to one end with a downwardly directed arm d^9 which ranges parallel with the tube a , and said bar is also provided at the end thereof with which the arm d^9 is connected with a block or head e detachably connected with said end of said arm by means of a tongue and groove connection as shown at e^2 in Fig. 2, and a set screw e^3 is passed through said block or head so as to secure the same to the bar d^3 . Passing vertically through the block or head e is a threaded tube f , and the aperture in the block or head e through which the threaded tube f passes is provided with a thread which corresponds with the thread on said tube.

The tube f is open at its lower end and closed at its upper end, and passed upwardly thereinto is a rod or shaft g provided at its lower end with a cylindrical extension g^2 , the lower end portion of which is tubular in form as shown at g^3 and the drill or bit shaft h is passed thereinto, and the upper end portion of the drill shaft is provided with an annular groove h^2 , and in one side of the cylindrical extension g^2 of the rod g is a screw h^3 , the inner end of which fits in the groove h^2 , and the head of the screw h^3 is flush with the outer side or surface of the cylindrical extension g^2 of the rod or shaft g .

A screw i is passed through the lower end portion of the tube f and adapted to bear on the rod g , and passing into the upper end of the tube f is a screw j which enters

the corresponding end of the rod or shaft g , and the head of which is counter-sunk in the end of the tube f , and mounted on the end of said tube f is a suitably formed head j^2 adapted to serve as a breast plate when the tool is operated as a hand drill and as means for feeding the tool or bit of the drill when the said drill is operated as a bench tool.

A vertically movable handle member k is mounted on the arm d^3 of the bar d and provided with a head k^2 , through which the cylindrical extension g^2 of the rod or shaft g passes, and the head k^2 is movable on said cylindrical extension g^2 and may be secured thereto at any desired part of the adjustment by a set screw k^3 .

Mounted on the lower end portion of the cylindrical extension g^2 of the rod or shaft g is a block m provided with projecting jaws m^2 through which is passed a screw m^3 by means of which said block may be securely clamped to said cylindrical extension g^2 of the rod or shaft g , and said block m is provided with a spindle m^4 on which is mounted a large gear wheel m^5 provided with an outer gear m^6 and an inner gear m^7 , and the drill or bit shaft h is provided with a double beveled gear wheel n , the upper part n^2 of which is smaller than the lower part n^3 , and the part n^2 of the gear wheel n operates in connection with the gear m^7 of the gear wheel m^5 , while the part n^3 of the gear wheel n is adapted to operate in connection with the part m^6 of the gear wheel m^5 . The gear wheel m^5 is also provided with a hub m^8 and is movable longitudinally on the spindle m^4 , and in the outer end of the spindle m^4 is a screw o having a head o^2 by which it may be conveniently manipulated and by loosening the screw m^3 in the block or head m , the said block or head may be vertically adjusted on the cylindrical extension g^2 of the rod or shaft g , and by loosening or removing the screw o the gear wheel m^5 may be moved outwardly on the spindle m^4 , and in this way the said parts may be manipulated so as to throw the gear n^2 into engagement with the gear m^7 , or the gear n^3 into engagement with the gear m^6 , and in this way the speed at which the tool or bit shaft h is rotated may be decreased or increased as may be desired. The gear wheel m^5 is also provided with a crank handle p by which it may be manipulated and the operation of the device will be readily understood from the foregoing description when taken in connection with the accompanying drawing and the following statement thereof. The tool may be secured to the work piece b or any other support by manipulating the jaws a^2 and a^4 , as hereinbefore described, and the shaft h is provided with the usual clutch head or

similar device r with which the bit r^2 may be connected in the usual manner, and by turning the gear wheel m^5 the bit or tool may be operated as will be readily understood, and by turning the tube or tubular shaft f to the right by means of the head j^2 the said part or tool r^2 will be fed downwardly as will also be readily understood. In this last operation the handle k slides on the arm d^3 and the screw i is loosened so that the rod or shaft g and the cylindrical extension g^2 thereof will not turn with the tube f .

Whenever it is desired to use the device as a breast drill the block or head e is detached from the bar d^3 , the handle member k is grasped with one hand in order to support the tool or drill and the gear wheel m^5 is operated by the other hand. In this operation the bit or tool is fed by pressure applied to the head j^2 of the tube f .

The tube a^3 is provided on the side thereof opposite the jaw a^2 with a longitudinal groove s and passing through the lower end portion of the tube a is a screw s^2 , the inner end of which is movable in said groove, and by means of this construction the jaw a^4 is kept in proper position with reference to the jaw a^2 . The tubes a and a^3 and the rod or shaft c constitute or form a standard or support for the drill or tool as a whole, and by means of which said drill or tool may be secured to a work piece or to any other support and it will be apparent that the block d is free to turn on said standard and may be adjusted thereon into any desired position and the block or head m is also free to turn on the cylindrical extension g^2 of the rod or shaft g and by reason of this fact the gear wheel m^5 may be turned into any desired position on said cylindrical extension and these features of the construction enable my improved drill to be manipulated so as to facilitate the operation or use thereof in various or different positions.

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

1. A drill of the class described, a tube, a rod or shaft passing into one end thereof and provided with a cylindrical extension, the opposite end of said tube being provided with a breast plate and said cylindrical extension being also provided with a handle member, a bit shaft passing into said cylindrical extension and rotatable therein and provided with a double gear, an adjustable block or head mounted on the cylindrical extension of said rod or shaft and adjustable longitudinally thereon and provided with a spindle and a double gear wheel mounted on said spindle and the separate parts of which are adapted to operate in connection with the separate part of the double gear on the bit or tool shaft.

2. In a tool of the class described, a standard, a block or head adjustably mounted on said standard and provided with a keeper, a bar passed horizontally through said keeper and adjustable therein at right angles to said standard, said bar being provided at one end with a downwardly directed arm and with a detachable block or head, a rotatable tube passing vertically through said block or head and provided at its upper end with a handle, a rod or shaft passing upwardly into said tube and provided at its lower end with a cylindrical extension, a handle device connected with said extension and through which the arm of said bar passes, a bit shaft rotatable in the cylindrical extension of said rod or shaft and provided with a double gear, a block or head mounted on said cylindrical extension and movable thereon and adjustable vertically thereon and provided with a spindle and a double gear wheel mounted on said spindle and the separate parts of which are adapted to operate in connection with the separate parts of the double gear on the bit shaft.

3. In a tool of the class described, a standard, a block or head mounted on said standard and provided with a keeper, a bar pass-

ing through said keeper at right angles to said standard and provided at one end with a downwardly directed arm and with a detachable block or head, a threaded tube passing vertically through said second named block or head, a shaft passing into the lower end of said threaded tube and provided with a cylindrical extension, a handle member connected with said cylindrical extension and through which said arm passes, a bit or tool shaft rotatable in the lower end portion of said cylindrical extension and provided with a double gear, a double gear wheel mounted in connection with said cylindrical extension of said shaft and adjustable thereon, and means whereby the separate parts of the gears of said gear wheel may be thrown into connection with the separate parts of the double gear on the bit or tool shaft.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 22nd day of January 1910.

FRANK P. SHEK.

Witnesses:

C. E. MULREANY,
B. M. RYERSON.