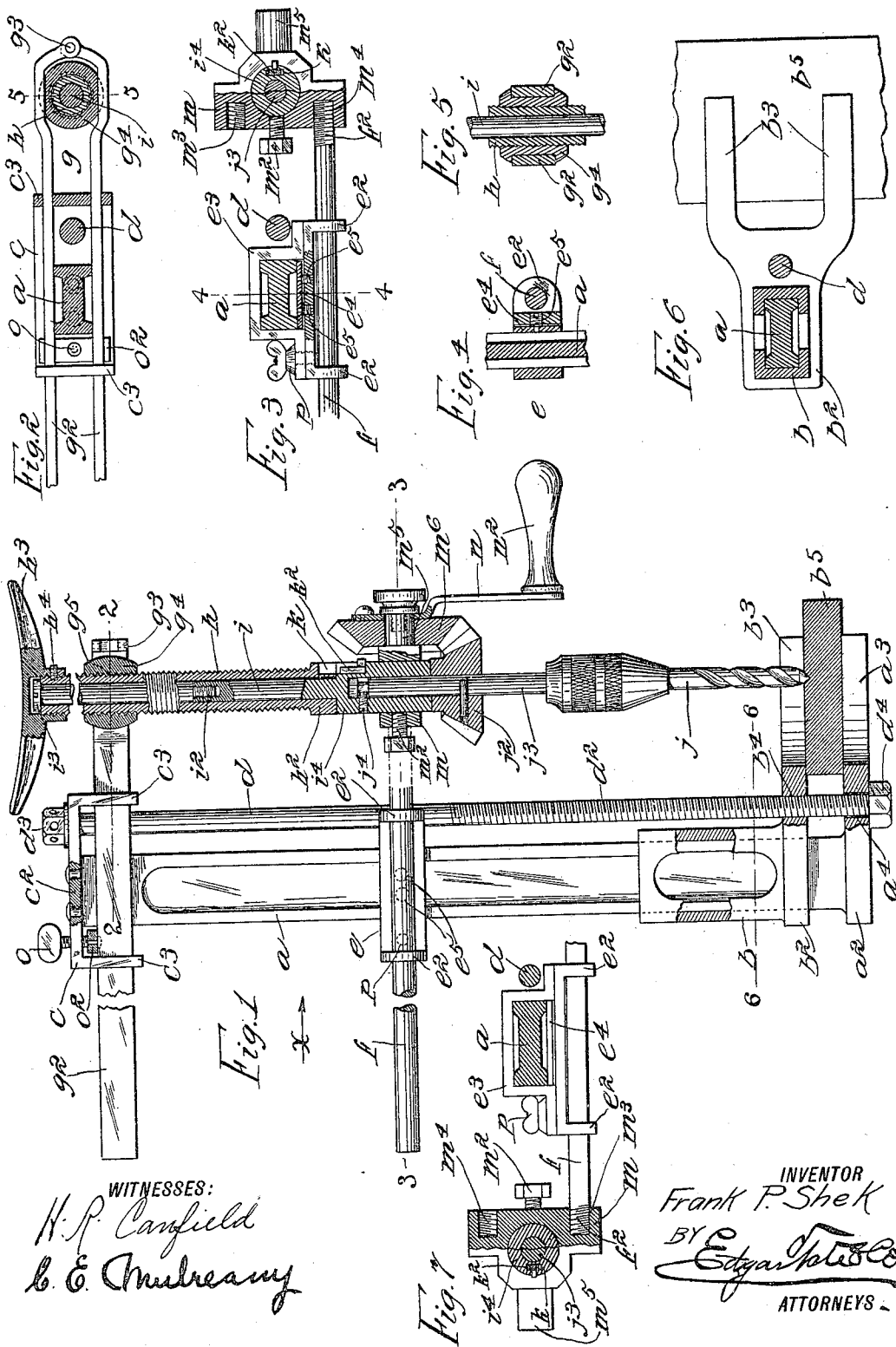


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 HAND DRILL.  
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949,965.

Patented Feb. 22, 1910.



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## HAND-DRILL.

949,965.

Specification of Letters Patent. Patented Feb. 22, 1910.

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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 of the class shown and described in U. S. Letters Patent No. 693,166, granted to me Feb. 11, 1902, and No. 766,976 granted to me Aug. 9, 1904; and the object of the invention is to simplify the construction of drills of this class and to adapt the same for use either in connection with a support or as a "breast" drill; and with this and other objects in view the invention consists in the construction, combination and arrangement of parts hereinafter described and claimed.

The 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 side view partly in section of my improved drill, Fig. 2 a partial section on the line 2—2 of Fig. 1, Fig. 3 a partial section on the line 3—3 of Fig. 1, Fig. 4 a section on the line 4—4 of Fig. 3, Fig. 5 a section on the line 5—5 of Fig. 2, Fig. 6 a section on the line 6—6 of Fig. 1, and;— Fig. 7 a view similar to Fig. 3 but showing the parts in a different position.

In the practice of my invention, I provide a standard  $a$  having a base or foot member  $a^2$  which projects therefrom and is preferably provided with a fork  $a^3$ , and mounted on the bottom portion of the standard  $a$  is a vertically movable sleeve  $b$  having a base or foot member  $b^2$  which projects in the same direction as the base or foot member  $a^2$  and is provided with a similar fork  $b^3$ .

Secured to the top of the standard  $a$  is a bracket  $c$  comprising a horizontal top plate  $c^2$  and depending end arms or members  $c^3$ , and passing vertically through the bracket or support  $c$  at the right hand side thereof, and through the base or foot members  $a^2$  and  $b^2$  of the sleeve  $b$  is a shaft  $d$  the lower end portion of which is screw threaded as shown at  $d^2$ .

The aperture  $a^4$  in the base or foot mem-

ber  $a^3$  through which the shaft  $d$  passes is larger than said shaft, but the aperture  $b^4$  in the foot member  $b^2$  through which the shaft  $d$  passes is threaded to correspond with the thread on said shaft, and by turning said shaft the sleeve  $b$  with its foot member  $b^2$  may be raised or lowered according to the direction in which the shaft is turned, and the foot members  $a^2$  and  $b^2$  are thus made to serve as clamps by which the device may be secured to a plate, board or other support  $b^5$  or between which a work piece to be drilled may be placed, or said work piece may be placed on or over the foot member  $b^2$  if desired. The shaft  $d$  is provided at the top thereof with a nut-shaped head  $d^3$ , and at the bottom thereof with a nut  $d^4$ .

Mounted on and vertically adjustable on the standard  $a$  is a supplemental bracket or support  $e$  provided at one side with parallel projecting ears or members  $e^2$  and at the opposite side with a yoke-shaped portion  $e^3$  through which the standard  $a$  passes, and within the bracket  $e$  is a friction plate  $e^4$  and screws  $e^5$  are passed through one side portion of said bracket and adapted to bear on said plate and to increase or decrease the friction between the bracket and the standard  $a$  as may be desired, and in practice I provide a rod  $f$  which is adapted to be passed loosely through the ears or members  $e^2$  and one end of which is screw threaded as shown at  $f^2$ . I also provide a clamp device  $g$  consisting of two arms  $g^2$  hinged together at  $g^3$ , and the hinged ends of which are adapted to clamp and securely hold a nut member  $g^4$ .

The construction hereinbefore described with the exception of the nut member  $g^4$  relates to the support of the drill only, and I will now proceed to describe the construction of the drill. Passing vertically through the nut member  $g^4$  which is interiorly threaded as shown at  $g^5$  in Fig. 1, is a sleeve  $h$  which is threaded to correspond with the thread of said nut, and the lower end of which is provided with a head  $h^2$ , and the upper end of which is provided with a breast piece  $h^3$  which is secured thereto by a set screw  $h^4$ , and passing vertically through the sleeve  $h$  is a shaft  $i$  which is preferably composed of two parts connected as shown at  $i^2$ , and the upper end portion of which is provided with a head  $i^3$ . The shaft  $i$  is provided at its lower end with a cylindrical head  $i^4$  which corresponds with the head  $h^2$  of the sleeve  $h$ . I also provide a tool  $j$  to which is

secured a beveled gear  $j^2$  through which the shank  $j^3$  of the tool  $j$  passes, and the shank  $j^3$  of the tool  $j$  passes into the head  $i^4$  of the shaft  $i$  and is provided with an annular groove, and passed through the head  $i^4$  of the shaft  $i$  is a set screw or similar device  $j^4$  the inner end of which enters said groove, and this construction permits of the free rotation of the tool  $j$  and the gear  $j^2$  and prevents the longitudinal movement of the shank  $j^3$  of the tool  $j$  in the head  $i^4$  of the shaft  $i$ . The adjacent parts of the head  $h^2$  of the sleeve  $h$  and the head  $i^4$  of the shaft  $i$  are provided with a longitudinal groove  $h$  in which is mounted a sliding lock  $h^2$  by means of which the parts  $h$  and  $i$  may be locked together, this feature of the construction being particularly designed for use when the device is used as a hand or breast drill independent of the support consisting of the standard  $a$  and the parts connected therewith. I also provide a bracket support  $m$  which is mounted on the head  $i^4$  of the shaft  $i$  and adapted to be secured thereto by a set screw  $m^2$ , and said bracket support is oblong in form and the inner side thereof is provided with screw threaded sockets  $m^3$  and  $m^4$  adapted to receive the threaded end  $f^2$  of the rod  $f$ , and the other side of said bracket support is provided with a stud  $m^5$  on which is mounted a beveled gear  $m^6$  which meshes with the gear  $j^2$ , and mounted on the stud  $m^5$  and secured to the gear  $m^6$  in any desired manner is a crank  $n$  having a handle  $n^2$ . The use of this device as shown in Fig. 1 will be similar to that of other devices of this class, or of the devices shown and described in the patents hereinbefore referred to.

By turning the shaft  $d$ , the foot member  $b^2$  of the sleeve  $b$  which forms one part of a clamp, the other part or member of said clamp consisting of the foot member  $a^2$  may be manipulated as desired for securing the device to any support or for securing a work piece between the clamp members, and in the operation of the device, when the drill is connected with a support, one hand is placed on the breast piece  $h^3$  and the crank  $n$  is operated by the other hand.

The rod  $f$  and the clamp device  $g$  constitute a simple and effective means for connecting the drill proper with the support, and it will be apparent that with the brackets or supports  $c$  and  $e$  constructed as described, the drill may be mounted on the side of the standard  $a$  opposite that shown in Fig. 1 by simply passing the rod  $f$  through the bracket or support  $e$  and the arms  $g^2$  of the clamp  $g$  through the bracket or support  $c$  in the direction of the arrow  $x$  of Fig. 1 without changing the position of said brackets or supports on the standard  $a$ , but in order to do this the bracket support  $m$  must be provided with the two screw threaded

sockets  $m^3$  and  $m^4$ , and this position of said parts is shown in Fig. 7.

The bracket or support  $c$  through which the arms of the clamp member  $g$  are passed is provided with a set screw  $o$  with which is connected a transverse plate  $o^2$  which is adapted to bear on the arms  $g^2$  of said clamp and by means of this construction the said clamp may be locked in any desired position in said bracket or support, and the bracket or support  $e$  is provided with a screw  $p$  which is adapted to bear on the rod  $f$  and to lock said rod in any desired position.

When this device is used with the parts thereof in the position shown in Fig. 1 the drill or tool  $j$  is fed forward by turning the head or handle  $h^3$  with one hand while the crank  $n$  is turned by the other, and in using this device as an ordinary breast drill without the support, the clamp  $g$  is detached from the bracket or support  $c$  and from the nut  $g^4$  and the rod  $f$  is detached from the bracket or support  $m$ . The nut  $g^4$  is then run down adjacent to the head  $h^2$  of the sleeve  $h$  and serves as a handle which is grasped by one hand while the head  $h^3$  is pressed against the breast and the crank  $n$  is turned by the other hand. In this use of the device after the rod  $f$  has been detached from the bracket or support  $m$  a handle may be connected with said bracket or support if desired, but the nut  $g^4$  when manipulated as above set out will serve as a convenient handle for the drill when used in this manner.

From the foregoing description, it will be seen, that the nut  $g^4$  and support  $m$  are a part of the support of the drill, and while the nut  $g^4$  is described herein as being mounted on the sleeve  $h$  and the support  $m$  as on the head of the shaft  $i$ , it will be understood that these parts form in connection with the clamp  $g$  and the rod  $f$  supports for the drill proper. It will also be understood that the head  $h^3$  forms a handle for turning the drill in its supports, and by turning said handle the drill may be adjusted vertically into any desired position as will be readily understood, the direction of said adjustment depending on the direction in which the handle  $h^3$  is turned, but when the parts are in position for use this adjustment can only be accomplished by moving the bracket or support  $e$  vertically at the same time.

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

1. In a drill device of the class described, a standard provided at the bottom thereof with a foot, a sleeve mounted on said standard and provided with a corresponding foot, said feet forming clamp members, a support secured to the top of said standard and provided with parallel arms, a shaft passed downwardly through said support and through said clamp members and adapted

when turned to operate one of said clamp members, a clamp device consisting of parallel members passed through the arms of said support, a supplemental support vertically adjustable on said standard and provided with parallel ears or projections, a rod passed through said ears or projections, and a drill supported by said clamp and said rod.

2. In a drill device of the class described, a standard provided at the bottom thereof with a foot, a sleeve mounted on said standard and provided with a corresponding foot, said feet forming clamp members, a support secured to the top of said standard and provided with parallel arms, a shaft passed downwardly through said support and through said clamp members and adapted when turned to operate one of said clamp members, a clamp device consisting of parallel members passed through the arms of said support, a supplemental support vertically adjustable on said standard and provided with parallel ears or projections, a rod passed through said ears or projections, and a nut device adapted to be held in said clamp, and a support adapted to be connected with said rod, said nut device and said support being adapted to support a drill in an upright position.

3. In a drill device of the class described, a standard provided at the bottom thereof with a foot, a sleeve mounted on said standard and provided with a corresponding foot, said feet forming clamp members, a support secured to the top of said standard and provided with parallel arms, a shaft passed downwardly through said support and through said clamp members and adapted when turned to operate one of said clamp members, a clamp device consisting of parallel members passed through the arms of said support, a supplemental support vertically adjustable on said standard and provided with parallel ears or projections, a rod passed through said ears or projections, and a nut device adapted to be held in said clamp, and a support adapted to be connected with said rod, said nut device and said support being adapted to support a drill in an upright position, said rod being provided with a thread at one end, and said supplemental support being provided in its opposite side portions with correspondingly threaded sockets.

4. In a drill device of the class described, a threaded sleeve provided at one end with a handle and breast piece and at the opposite end with a head, a nut mounted on said sleeve, a shaft passing through said sleeve and rotatable therein and provided with a head which corresponds with the head of said sleeve, a bracket support mounted on

the head of said shaft and provided with a stud, a tool the shank of which is carried within the head of said shaft and adapted to rotate therein, a beveled gear connected with the shank of the tool, a beveled gear mounted on the stud connected with the bracket support and adapted to operate in connection with the first named beveled gear, and a crank mounted on said stud and connected with the beveled gear thereon and adapted to rotate the same.

5. In a drill device of the class described, a threaded sleeve provided at one end with a handle and breast piece and at the opposite end with a head, a nut mounted on said sleeve, a shaft passing through said sleeve and rotatable therein and provided with a head which corresponds with the head of said sleeve, a bracket support mounted on the head of said shaft and provided with a stud, a tool the shank of which is carried within the head of said shaft and adapted to rotate therein, a beveled gear connected with the shank of the tool, a beveled gear mounted on the stud connected with the bracket support and adapted to operate in connection with the first named beveled gear, and a crank mounted on said stud and connected with the beveled gear thereon and adapted to rotate the same, a clamp device adapted to be connected with said nut, and a rod adapted to be connected with said bracket support, and means for connecting said clamp and rod with a support.

6. In a drill of the class described, a threaded sleeve provided at one end with a breast piece and at the opposite end with a head, a shaft passed through said sleeve and rotatable therein and provided with a head which corresponds with the head of said sleeve, a bracket support mounted on the head of said shaft and provided with a stud, a tool the shank of which is carried within the head of said shaft and adapted to rotate therein, a beveled gear connected with the shank of the tool, a beveled gear mounted on the stud connected with the bracket support and adapted to operate in connection with the first named beveled gear, a crank mounted on said stud and connected with the beveled gear thereon and adapted to rotate the same, and means for locking the head of the sleeve to the head of said shaft.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 15th day of June 1909.

FRANK P. SHEK.

Witnesses:

H. R. CANFIELD,  
C. E. MULREANY.