(Model.)

C. H. PLATT.

DRILL STOCK.

No. 475,949. Patented May 31, 1892.

Fig. 1.

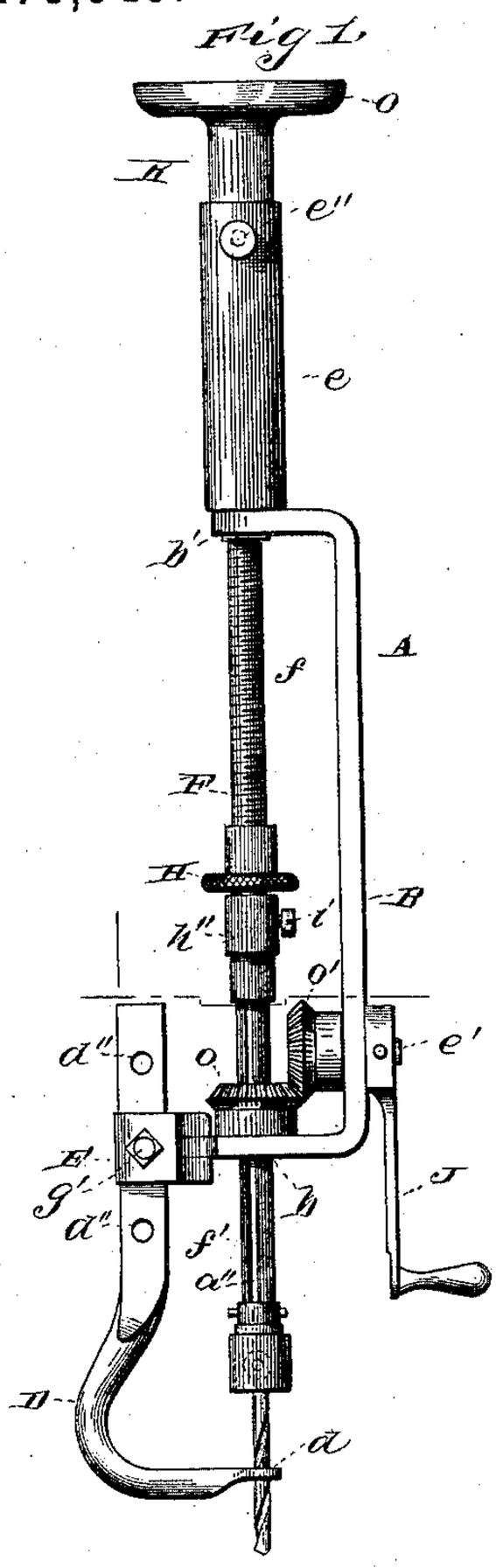


Fig. 2.

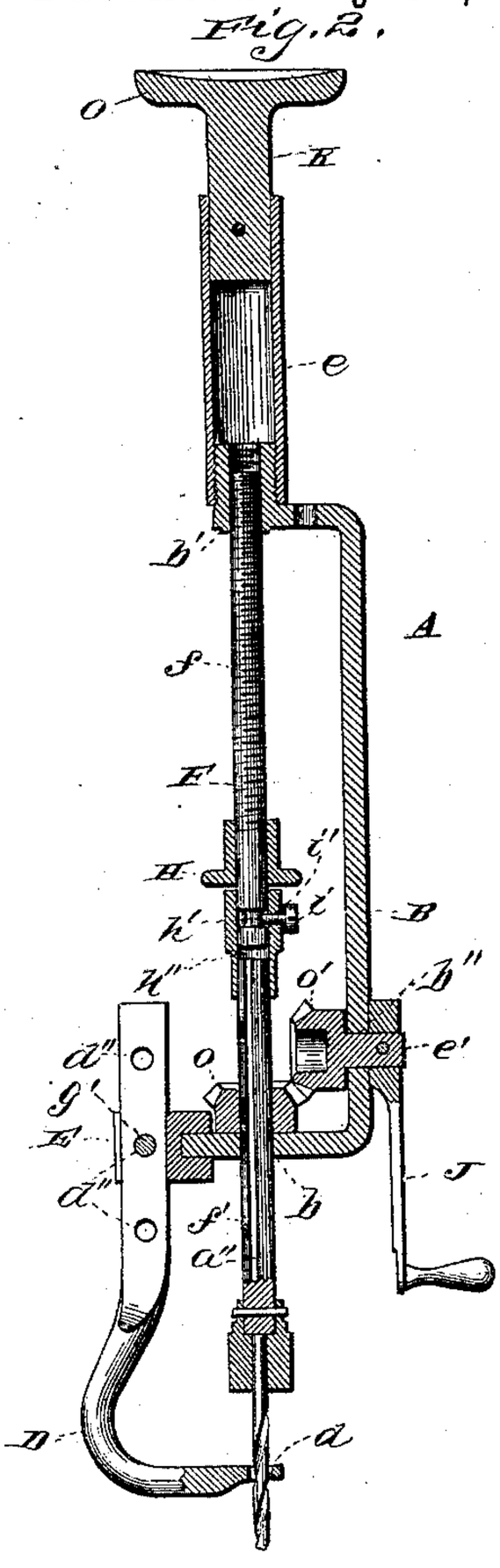
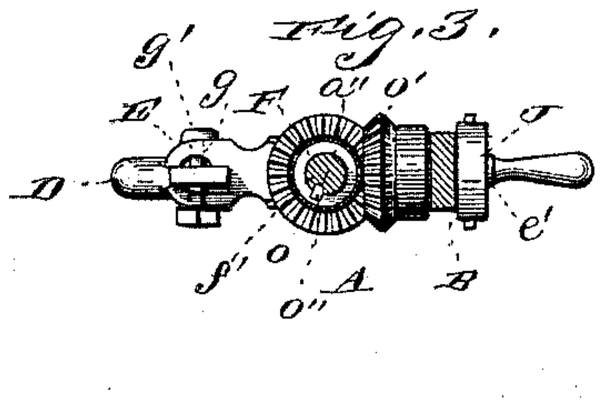


Fig. 3.



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UNITED STATES PATENT OFFICE.

CORWIN H. PLATT, OF CLEVELAND, OHIO.

DRILL-STOCK.

SPECIFICATION forming part of Letters Patent No. 475,949, dated May 31, 1892.

Application filed October 29, 1891. Serial No. 410,386. (Model.)

To all whom it may concern:

Be it known that I, CORWIN H. PLATT, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Drill-Stock, of which the following is a specification.

My invention relates to improvements in "drill-stocks;" and it consists of a compound "shaft," curved "arm," frame, pinions, and breast-block.

The objects of my invention are, first, to remove the pressure from the breast; second, to make the "drill" cut faster by means of an even pressure on the drill. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevated view of the entire drill. Fig. 2 is a sectional view of frame and parts. Fig. 3 is a detached view of beveled pinions, crank, fork, and detachable curved arm.

Similar letters refer to similar parts throughout the several views.

The drill A is composed of the frame B, the detachable curved arm D, compound shaft F, wheel H, tube *e*, breast-block O, beveled pinions *o o'*, and crank J, with crank-shaft *e'*.

The frame B, Figs. 1 and 2, is formed of metal, the ends being turned at right angles in the same direction to support the compound shaft F. The angles on the frame B are provided with the bearings *b b'*, through which the compound shaft F passes. The upper bearing *b'*, Figs. 1 and 2, is threaded and forms a nut for the threaded shaft *f*. The lower bearing *b*, Figs. 1 and 2, is made plain to allow the slotted shaft *f'* to revolve, and also to slide through it at the same time. The upper threaded bearing *b'* has attached to its upper portion the tube *e*, Figs. 1 and 2, which is secured to the upper portion of the bearing *b'* by means of a thread cut on the outer surface of the upper portion of the bearing *b'* and a similar thread cut on the inner surface of the tube *e*, the tube *e* being turned onto the upper portion of the bearing *b'* by means of the thread, thereby securing it firmly to the frame B.

In the body or straight portion of the frame B is the bearing *b''*, Figs. 1 and 2, provided to support the crank-shaft *e'*, Figs. 1 and 2. This bearing is placed at such a height above the bearing *b*, Figs. 1 and 2, in the lower angle that it will allow the beveled pinions *o o'* to mesh together and revolve freely when in position on their respective shafts.

The detachable curved arm D, Figs. 1 and 2, is formed of metal in its lower or curved end. It is provided with the hole *d*, through which the drill can pass to drill below the curved arm D for the purpose of drilling into larger bodies than can be placed inside the curved arm D. The upper end of the curved arm D is provided with a series of holes *d''*, by means of which the curved arm D is secured to the fork E. The series of holes *d''* in the upper end of the curved arm D are also for the purpose of raising or lowering the curved arm D to or from the point of the drill, thereby allowing the same drill to work above or below the curved arm D.

The detachable curved arm D, Figs. 1 and 2, is formed for the purpose of making a fixed or stationary point against which the "screw-power" on the compound shaft F may act when operated by means of the wheel H. This point may be fixed either above or below the object to be drilled, as follows: When the object to be drilled is placed inside the curved arm D, the fixed point is "below" the object to be drilled. In drilling larger objects than will go inside the curved arm D secure a chain or non-elastic band around the object, hook the curved arm D under the chain or band, and operate the drill through the hole *d* in the curved arm D. The fixed point of the curved arm D in this case is above the object to be drilled. By using the curved arm D the pressure is removed from the breast of the operator, the operator being required to merely hold the drill in position by means of the breast-block O on the drill A.

The fork E is formed on the lower angle of the frame B for the purpose of supporting the curved arm D and attaching the curved arm D securely to the frame B. The fork E is provided with the hole *g* to receive the bolt *g'*.

The curved arm D is attached to the frame B by placing the arm D in the fork E and passing the bolt *g'* through the hole *g* in the fork E and through one of the series of holes *d''* in the arm D. The nut is then turned securely on the bolt *g'*. To raise or lower the

arm D from the point of the drill, remove the bolt g' from the fork E, raise or lower the arm D by sliding the arm D through the fork E to the point desired, and again insert the bolt g', securing the nut firmly.

The breast-block O, Figs. 1 and 2, can be formed of wood or metal. The breast-surface is concaved. On the lower side is a round projection K, formed to enter the tube e. The breast-block is secured to the tube e by means of a screw passing through the hole e'' in the tube e, Figs. 1 and 2, into the projection on the breast-block O.

The compound shaft F, Figs. 1 and 2, is composed of the threaded upper shaft f, Figs. 1 and 2, the lower slotted shaft f', Figs. 1 and 2, and the socket h'', Figs. 1 and 2. The lower end of the upper threaded shaft f has the groove h', Fig. 2, turned in it to engage the set-screw i, Figs. 1 and 2. The upper end of the lower shaft f' has a tubular socket h'' secured to it. This socket is the same size inside as the shaft f. There is a threaded set-screw hole i', Fig. 2, formed in the side of the socket h'' to receive the set-screw i, Fig. 1. By placing the shaft f in the socket h'' on the shaft f' and turning the set-screw i into the groove h' of the shaft f the two shafts f and f' are united and held firmly together, allowing the shafts f and f' to revolve separately and form the compound shaft F, Fig. 2. The lower shaft f' has the key-slot a'', Fig. 2, formed in it for the purpose of revolving the shaft f'. The key-slot a'' is formed to receive the key o'' in the pinion o, Figs. 1 and 2. When the pinion o is revolved, it carries the shaft f' with it by means of the fixed key o'' in the pinion o, engaging with the key-slot a'' of the shaft f'. The key-slot a'' in the shaft f' is also formed for the purpose of allowing the shaft f' to move back and forth freely through the pinion o for the purpose of raising and lowering the shaft F in the frame B. The lower end of the compound shaft F, Figs. 1 and 2, is provided with a chuck for holding drills.

The wheel H, Fig. 1, is secured to the shaft f, near its lower end, by being brazed firmly to the shaft f, Fig. 1, for the purpose of revolving the shaft f, thereby raising or lowering the compound shaft F in the frame B.

The beveled pinion o, Figs. 1 and 2, is provided with the key c', Fig. 3, which enters the slot in the shaft f', Figs. 1 and 2, when the beveled pinion o is placed on the shaft f'. The shaft f' is revolved by means of this key when it is in position on the shaft f', also allowing the shaft f' to move freely back and forth through the pinion o.

The crank-shaft e' is a short shaft made of metal, carrying the beveled pinion o' and the crank J, and revolves in the bearing b'' of the frame B. The pinion o' is secured to the end of the crank-shaft c' by means of a set-screw or pin. The crank end of the shaft c', Figs. 1 and 2, is flattened on opposite sides and forms a shoulder to receive the crank J. The shouldered end of the shaft c' is provided with a threaded hole to receive the screw c'' for securing the crank J to the shaft c'.

The crank J is provided with an elongated hole c''' to receive the crank-shaft c', and is secured to the crank-shaft c' by means of the screw c'' and washer n.

A small and very effective "upright drill-press" can be formed from this drill-stock by securing it firmly in an upright position, which can be done by removing the breast-block and inserting an iron rod in the end of the tube, securing the rod to a frame. Secure a clamp over the curved arm to a solid base and the drill-stock is an upright drill-press. When the curved arm is removed from the frame, the drill-stock can be used the same as the ordinary breast-drill. By operating these various changes this drill-stock combines three drills in one—namely, the upright drill-press, the pressure-drill, and the ordinary breast-drill.

To operate the drill-stock, place the curved arm under the object to be drilled, turn the drill into position with the hand-wheel, and place the breast against the breast-block of the drill-stock, (using no more pressure on the breast-block than is required to hold the drill-stock in position, as the pressure for the drill is supplied by turning the hand-wheel.) The drill-stock is now in position to be operated, which is done by revolving the crank. To drill into large objects, like boilers, columns, pulleys, &c., first fasten around the object to be drilled a non-elastic band or chain, and turn the drill down through the hole in the curved arm by means of the hand-wheel. The curved arm may have to be raised in the fork before the drill will work low enough. The drill will now work below the curved arm into the object to be drilled.

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

1. In drill-stocks, the combination of the compound shaft F, composed of the threaded shaft f, provided with the groove h', the shaft f', provided with the key-slot a'', socket h'', provided with the set-screw i, with the frame B, provided with the bearings b b' b'', tube e, curved arm D, and arm-supporting fork E, all substantially in the manner and for the purpose herein described.

2. The combination of the wheel H with the shaft f, compound shaft F, frame B, curved arm D, arm-supporting fork E, beveled pinions o o', and crank-shaft c', provided with the crank J, for the purpose described and set forth.

3. The combination of the curved arm D, provided with the hole d and holes d'', with the frame B, compound shaft F, breast-block O, beveled pinions o o', crank-shaft c', provided with crank J, and arm-supporting fork E, all substantially as set forth.

4. The combination of the breast-block O with the frame B, compound shaft F, curved

arm D, arm-supporting fork E, tube *e*, beveled pinions *o o'*, and crank-shaft *c'*, provided with the crank J, all substantially as described and set forth.

5. The combination of the compound shaft F, frame B, beveled pinions *o o'*, breast-block O, curved arm D, arm-supporting fork E, tube *e*, and crank-shaft *c'*, provided with the crank J to form the drill-stock A, all substantially as set forth.

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