

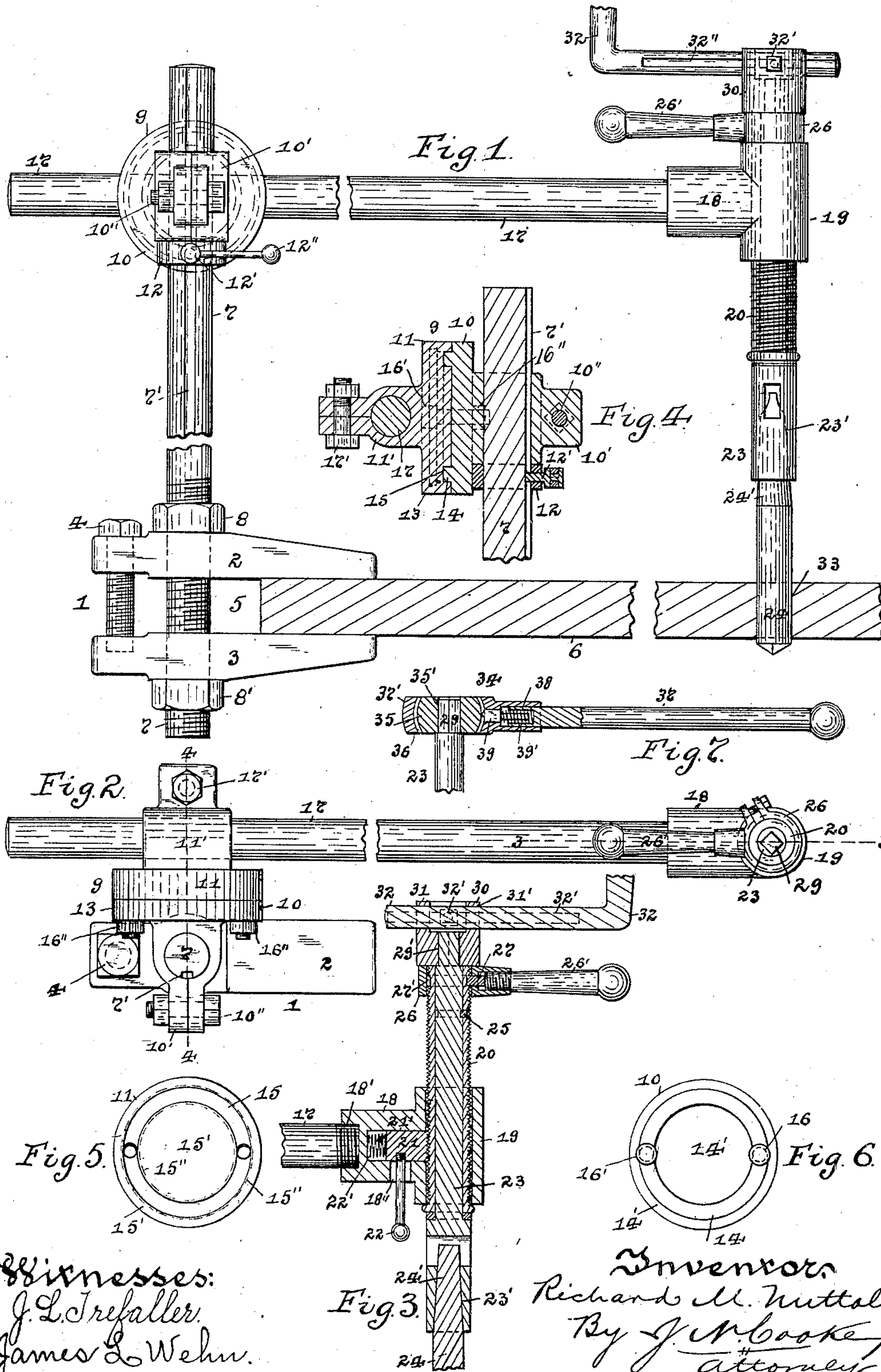
No. 672,284.

Patented Apr. 16, 1901.

R. M. NUTTALL.
PORTABLE HAND DRILL.

(Application filed Mar. 5, 1900.)

(No Model.)



Witnesses:
J. L. Trefaller.
James L. Wehr.

Inventor
Richard M. Nuttall
By J. M. Cooke
attorney

UNITED STATES PATENT OFFICE.

RICHARD M. NUTTALL, OF PITTSBURG, PENNSYLVANIA.

PORTABLE HAND-DRILL.

SPECIFICATION forming part of Letters Patent No. 672,284, dated April 16, 1901.

Application filed March 5, 1900. Serial No. 7,278. (No model.)

To all whom it may concern:

Be it known that I, RICHARD M. NUTTALL, a resident of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Drill-Presses; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to drill-presses, having special reference to hand drill-presses for drilling holes in metals, &c.; and the main object of my invention is to provide such a simple and effective form of a hand drill-press that the drill can be used in any position in the drilling of holes, and a further object is to provide such a form of press that the holes can be drilled at any angle.

My invention consists, generally stated, in the novel arrangement, construction, and combination of parts, as hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use the press, I will describe the same more fully, referring to the accompanying drawings, in which—

Figure 1 is a side view of my improved hand drill-press, showing the same used in drilling a hole in a piece of metal. Fig. 2 is a top or plan view of the same. Fig. 3 is a longitudinal central section through the parts for operating the drill. Fig. 4 is a like view through the parts for revolving or tilting the drill. Figs. 5 and 6 are plan views looking at the faces of the disks; and Fig. 7 is a detail view, partly in section, of the ratchet connection for use in large or heavy drilling.

Like numerals herein indicate like parts in each of the figures of the drawings.

As illustrated in the drawings, 1 represents the clamp, which is composed of the two jaws 2 3, which are held together by the screw-bolt 4 to form the space 5 for the holding of the article or metal 6 therein to be drilled. An upright or supporting spindle 7 passes through and is secured within the two jaws 2 3 and is held in place therein by means of the nuts 8 8' engaging therewith and fitting against said jaws 2 3. A revolving joint 9, formed of the two disks 10 and 11, is adapted to be supported around the upper end of the

spindle 7 by means of a split bracket 10' on said disk 10, fitting around said spindle 7 and being held thereto by a screw-bolt 10". The joint 9 is held in place by means of a collar 12, fitting loosely around the spindle 7, under the bracket 10', and a set-screw 12' passes through the collar 12 and engages with a groove 7' in the spindle 7, said set-screw 12' being operated by means of a handle 12", connected to the same. The disk 10 of the revolving joint 9 can, if desired, be provided with a graduated face on its outer edge 13', and an annular flange 14 is formed on its inner face 14', which is adapted to fit within an annular groove 15, formed in the inner face 15' of the disk 11, and the groove 15 is countersunk, as at 15", to permit the insertion of the bolt-heads 16' on the bolts 16, which are inserted through holes in the disk 11, pass through the disk 10 and flange 14 thereon, and are held in place by means of the nuts 16" engaging with bolts 16 and fitting against the disk 10, and so hold the disks 10 and 11 of the revolving joint 9 together, as well as prevent the same from turning. A horizontal spindle 17 is secured to the revolving joint 9 by means of a split bracket 11', formed on the disk 11 and fitting around the rear end of the spindle 17 and held thereto by a bolt 17', and the opposite end of the spindle 17 fits within a threaded seat 18', formed in a projection 18 on a sleeve 19, which carries within the same an exteriorly-threaded tube or sleeve 20. A seat 21' is formed in the projection 18 on the sleeve 19 for the reception of a threaded bolt or bar 21, which is adapted to engage with the threaded sleeve 20 and be held against the same by means of a spiral spring 22', located within said seat 21' in the rear of the bar 21, and a handle 22 is secured to said piece 21 and passes through a slot 18" in the projection 18. The threaded sleeve 20 has a spindle 23 therein, which is provided with a tapered opening 23' at its lower end for the reception of the tapered end 24' of a drill 24, and a set-screw or plug 25 passes through the sleeve 20 and into an annular groove in the spindle 23 to prevent the spindle 23 from slipping out of the sleeve 20 when said spindle 23 is not bearing upon the metal and at the same time to allow independent rotary motion to the sleeve 20 and spin-

dle 23. A collar 26, having a handle 26' secured therein, fits loosely around the upper end of the sleeve 20, and a pin 27, having a fibrous end, is located within said collar for
 5 engaging by friction with an annular slot or groove 27', formed in the threaded sleeve 20, and is adapted to bear against the end of the handle 26', screwing within the collar 26. The upper end of the spindle 23 beyond the collar
 10 26 has a square portion 29 thereon, which is adapted to fit within a square hole 29', formed in a collar 30, which fits around the portion 29 and has an annular flange 31 thereon, provided with openings 31' therein for the recep-
 15 tion of a handle 32, which is held in said flange 31 by means of a set-screw 32', passing through said flange 31 and engaging with a groove 32'' in said handle 32.

The operation of my improved hand drill-
 20 press is as follows: The parts being assembled together, as shown in Fig. 1, and it being desired to drill a hole in the piece of metal 6, all that is necessary is to insert the metal within the space 5 of the two jaws 2 and 3
 25 and clamp the same together by the screw-bolt 4. The upright spindle 7 is then set within the jaws 2 3 of the clamp 1 at the proper height by the nuts 8 8' and the revolving joint 9 moved to the desired height
 30 on the spindle 7 and held there by the set-screw 12' in the collar 12 engaging with the groove 7' in the spindle 7 in order to arrange the drill 24 at the proper height for drilling. The horizontal spindle 17, carrying the drill
 35 24, can then be set to the proper position from the end of the plate 6 for drilling by moving said spindle 17 through the split bracket 11' on the disk 11 of the revolving joint 9 and securing the same therein by the bolt 17'. After
 40 this is accomplished the drill parts are arranged as shown in Fig. 3, which may be accomplished by pulling out the handle 22, connected to the piece 21, meshing with the sleeve 20, and thus allowing the said sleeve 20 and
 45 spindle 23 to slip through the sleeve 19, and by regulating the drill by the handle 26' to the desired height with the drill 24 set against the metal, the plug or screw 25 preventing the spindle 23 from slipping out of the sleeve
 50 20 during this operation. After the threaded sleeve 20 and spindle 23, carrying the drill 24, are thus raised to the desired position the drill 24, being revolved by the handle 32, will cut into the metal 6 a sufficient distance, and
 55 in order to feed said drill 24 during its cutting through the metal the operator with his other hand can grasp the handle 26' on the loose collar 26 and give such handle 26' a slight turn, so that the pin or fibrous piece
 60 27 in the collar 26 bearing against the annular seat or groove 27' in the threaded sleeve 20 will turn said sleeve 20 and spindle 23 sufficiently to feed the drill 24 in said spindle 23 into the metal 6 for continuous cutting or
 65 drilling. The drill 24 is thus fed by the handle 26' and revolved by the handle 32 until the hole 33 is drilled through the metal, as

shown in Fig. 1, and when it is desired to withdraw the drill 24 through the hole 33 of the metal 6 for the purpose of resuming oper- 70
 ations at another point in the metal or for any other purpose desired all that is necessary is for the operator to grasp the handle 22, connected to the threaded piece 21, and move
 the same backward in the slot 18'' of the pro- 75
 jection 18, which will cause said piece 21 to move backward within the seat 21' and free itself from the exteriorly-threaded sleeve 20, after which the operator can grasp the handle 26' and raise the sleeve 20 and spindle 23, car- 80
 rying the drill 24, to the position shown in Fig. 3. After this is done the operator can remove his hand from the handle 22, which will cause the threaded bolt or piece 21 to engage
 itself with the threaded sleeve 20 through the 85
 medium of the spring 22' and the operation of drilling another hole continued as above described.

When it is desired to use the drill-press for heavy drilling or in the drilling of large holes, 90
 the collar 30, with its handle 32, is removed from the square portion 29 of the spindle 23 and a ratchet device 34 is connected to said spindle 23 by means of a ratchet-ring 35, hav-
 ing a square hole 35' therein fitting over the 95
 square end 29 of the spindle 23 and provided with threads or notches 36 on its other face. The ring 35 fits within a collar 37', which has a handle or lever 37 screwing into a seat 38, formed in the same, and a pawl 39 is adapted 100
 to fit within said seat 38 and engage with the notches 36 on the ratchet-ring 35, said pawl 39 being held in engagement by means of a spiral spring 39', interposed between the pawl 39 and the handle or lever 37, and, if desired, 105
 a ratchet device can be used in place of the frictional handle 26'.

By the adjustment of the horizontal spindle 17 within the revolving joint 9 the drill 24 can be used at any position for drilling by 110
 revolving the drill around the upright spindle 7 as the point 9 rides around on the collar 12, and when it is desired to drill a hole in a piece of metal at an angle all that is re- 115
 quired is to set the revolving joint 9 on the spindle 7 at the desired height by the collar 12 and set-screw 12', when the operator can unscrew the nuts 16'' on the bolts 16 of the revolving joint 9 and turn the disk 11, and with it the horizontal spindle 17 and connect- 120
 ing drill parts, to the position or angle required and indicated by the graduated face 13 on the outer edge 13' of the disk 10, after which the nuts 16'' on the bolts 16 can be tightened up and the disks 10 and 11 of the 125
 joint 9 prevented from turning. The spindle 17, carrying the drill 24 and operating parts, can then be moved within the split bracket 11' to the position required and set or held in place by the screw-bolt 17' and the 130
 operations of drilling a hole through the metal carried out as above described.

It will thus be seen that my improved drill-press is cheap and simple in its construction

and operation and can be applied quickly and conveniently to the article to be drilled, and after once applied the device can be used to drill holes at any particular point in the article in a rapid and easy manner. By its use holes can be drilled at any angle in the article or object by a slight adjusting and moving of a few of the parts of the device, and the drill when so used is positive and easy in its operation.

Various modifications in the construction and operation of the various parts of the device may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a drill-press, the combination with a supporting-spindle, of a revoluble joint removably connected to said supporting-spindle, a second spindle removably connected to said revoluble joint and adapted to carry a sleeve, a threaded tube fitting within said sleeve, a spindle secured within said threaded tube and adapted to carry a drill, means connected to said threaded tube and drill-spindle respectively for feeding and revolving the same, and a threaded bar adapted to be connected to and disconnected from said threaded tube.

2. In a drill-press, the combination with a supporting-spindle, of a revoluble joint removably connected to said supporting-spindle, a second spindle removably connected to said revoluble joint and adapted to carry a sleeve, a threaded tube fitting within said sleeve and adapted to carry a drill-spindle, means connected to said threaded tube for feeding the same, means connected to said drill-spindle for revolving the same, a threaded bar fitting within a seat in said sleeve and adapted to engage with said threaded tube, and a spring within said seat for holding said bar in engagement with the threaded tube.

3. In a drill-press, the combination with a supporting-spindle, of a revoluble joint removably connected to said supporting-spindle, a second spindle removably connected to

said revoluble joint and adapted to carry a sleeve, a threaded tube fitting within said sleeve and adapted to carry a drill-spindle, means connected to said threaded tube for feeding the same, means connected to said drill-spindle for revolving the same, a threaded bar fitting within a seat in said sleeve and adapted to engage with said threaded tube, a spring within said seat for holding said bar in engagement with the threaded tube, and a handle connected to said bar and extending through an elongated slot in said sleeve for disengaging said bar from the threaded tube.

4. In a drill-press, the combination with a supporting-spindle, of a revoluble joint removably connected to said supporting-spindle, a second spindle connected to said revoluble joint and adapted to carry a sleeve, a threaded tube fitting within said sleeve, a spindle secured within said threaded tube and adapted to carry a drill, a handle connected to said drill for revolving the same, and a handle loosely connected to said threaded tube having a pin therein adapted to engage with an annular seat in said tube for feeding the same.

5. In a drill-press, the combination with a supporting-spindle, of a revoluble joint removably connected to said supporting-spindle, a second spindle connected to said revoluble joint and adapted to carry a sleeve, a threaded tube fitting within said sleeve, a spindle secured within said threaded tube and adapted to carry a drill, a threaded bar adapted to be connected and disconnected from said threaded tube, a handle connected to said drill for revolving the same, and a handle connected to said threaded tube having a pin therein adapted to engage with an annular seat in said tube for feeding the same.

In testimony whereof I, the said RICHARD M. NUTTALL, have hereunto set my hand.

RICHARD M. NUTTALL.

Witnesses:

J. N. COOKE,
M. E. CONNER.