No. 771,848. PATENTED OCT. 11, 1904.

E. A. TURNER.

DRILLING TOOL.

APPLICATION FILED AUG. 14, 1902.

NO MODEL.

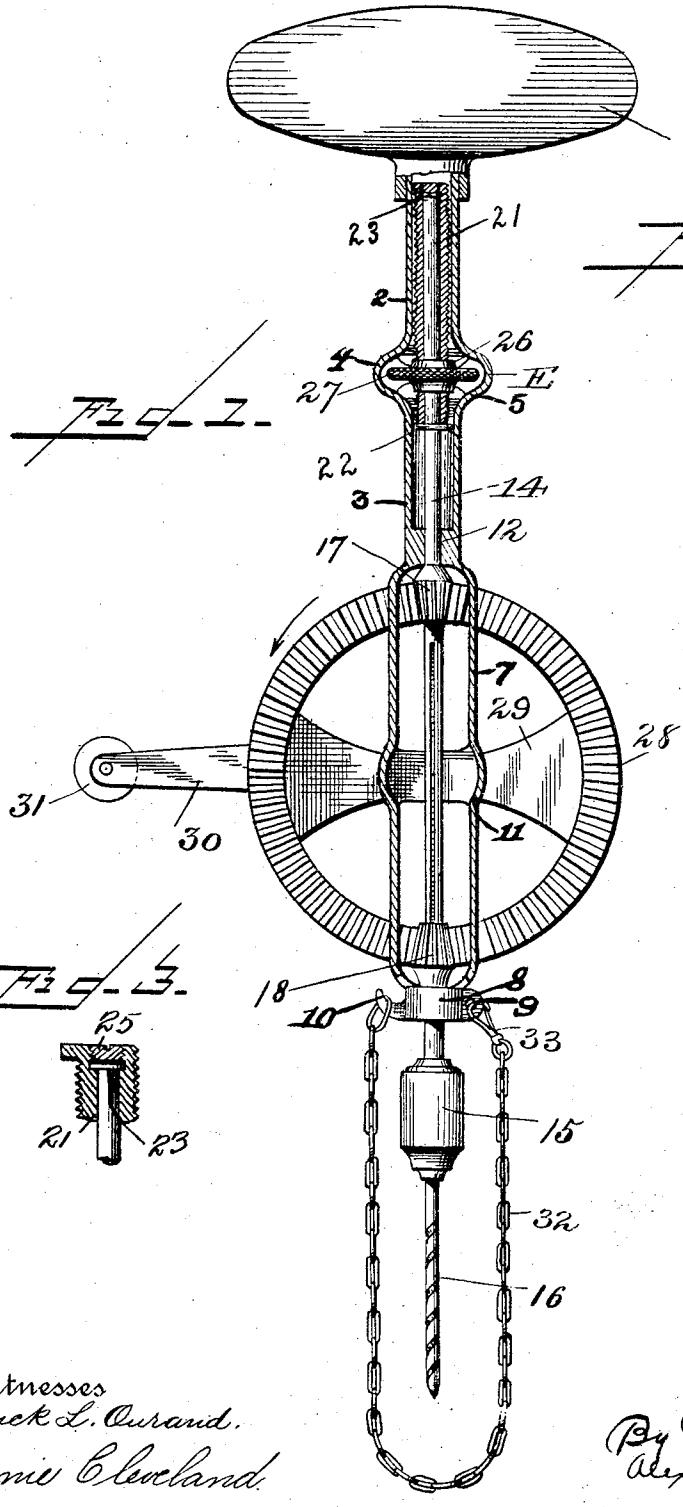


Fig. 1.

Fig. 2.

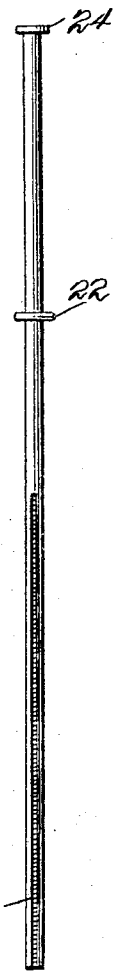


Fig. 3.

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No. 771,848. Patented October 11, 1904.

UNITED STATES PATENT OFFICE.

ELBERT A. TURNER, OF LITTLE ROCK, ARKANSAS.

DRILLING-TOOL.

SPECIFICATION forming part of Letters Patent No. 771,848, dated October 11, 1904.

Application filed August 14, 1902. Serial No. 119,685. (No model.)

To all whom it may concern:

Be it known that I, ELBERT A. TURNER, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented certain new and useful Improvements in Drilling-Tools, of which the following is a specification.

This invention relates to certain new and useful improvements in drilling-tools, and is particularly adapted for drilling wood and is equally useful in metal-drilling.

The object of the invention is to construct a tool for drilling wood and metal combining in itself a breast and chain drill. In the ordinary form of chain-drill now in use it is essential to work the same in connection with a brace or breast drill, thus necessitating the employment of two tools and two loose joints—viz., the drill in the chuck and the stem of the chain-drill in the chuck of the brace—making it liable to wabble and unhandy to operate. The foregoing objections are overcome by the construction of drilling-tool hereinafter described.

A further object of the invention is to construct a tool for drilling wood and metal which shall be extremely simple in its construction, strong, durable, efficient in its operation, comparatively inexpensive to set up; and to this end it consists of the novel combination and arrangement of parts hereinafter more specifically described, illustrated in the accompanying drawings, and particularly pointed out in the claim hereunto appended.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, wherein like numerals of reference indicate corresponding parts throughout the several views, and in which—

Figure 1 is a sectional elevation of my improved drilling-tool. Fig. 2 is a front elevation of the stem; and Fig. 3, a sectional detail of the stem and adjusting-screw, showing the manner of connecting the same together.

Referring to the drawings by reference-numerals, 1 denotes the frame of the tool, which consists of a pair of hollow cylindrical sections 2 3, suitably spaced apart and connected together by a pair of curvilinear arms 4 5, which curve in opposite directions and away from the sections 2 3. Connected to or formed integral with the lower end of the hollow section 3 is a pair of depending arms 6 7, forming hangers and which terminate at their lower end in a collar 8. The latter is provided at one side with an integral eye 9 and at its opposite side with an integral hook 10. The arms or hangers 6 7 are braced apart by means of the apertured cross-piece 11, which is arranged approximately centrally of the hangers 6 7 and preferably formed integral therewith at one side thereof. Within the section 3, at the lower end thereof, is formed a bushing 12, acting as a guide, as hereinafter set forth. The inner face of the section 2 is provided with a vertical groove 13, the function of which will be hereinafter referred to.

The reference-numeral 14 denotes the stem of the tool, is adapted to be arranged within the frame 1, extends from end to end thereof, as well as projecting therefrom, and carrying on its extended or lower end the chuck 15, to which the drill 16 is attached or secured in any suitable manner. Mounted upon the stem 14 is a bevel or idler pinion 17, the function of which will be hereinafter referred to. The bevel-pinion 17 is loosely mounted upon the stem 14, and its upward movement is arrested by the bushing 12 within the section 3 and its downward movement arrested in a manner hereinafter referred to. Mounted upon the stem 14, a suitable distance below the pinion 17, is the bevel power-pinion 18. The latter is feathered upon the stem 14 to permit of a rotary as well as a vertical movement. To permit of such movements of the pinion 18, it is provided with a feather adapted to engage in the vertically-extending groove 20, formed in the stem 14.

The reference-numeral 21 denotes an adjusting-sleeve which is mounted upon the upper end of the stem 14, is exteriorly screw-threaded, and has its lower end engage the stop or support 22, carried by the stem 14. The upper end of the sleeve is formed with a countersunk shoulder 23 for supporting the head 24 of the stem 14. The recess formed by the shoulder 23 in the upper end of the sleeve 21 is closed by the screw 25, which also retains

the upper end of the stem within the sleeve 21. On the downward movement of the sleeve 21 when adjusted in such a direction the stem 14 is caused to move therewith, owing to the fact that the lower end of the sleeve 21 engages with the stop or support 22, and when the sleeve is adjusted upwardly the shoulder 23 carries the stem 14 therewith. The sleeve 21 is adjusted vertically by means of the screw-threaded nut 26 mounted thereon and operated by means of the wheel 27 or other suitable device connected to the said nut 26. The latter and the wheel 27 are arranged within the arms 4 5 between the sections 2 3 of the frame 1 and so that the operator can readily grasp the wheel.

The reference-numeral 28 denotes a concentric rack having its teeth meshing with the pinions 17 and 18, the pinion 17 being incapable of downward displacement from the rack 28 by reason of the bevel of the teeth on said gear 17 and rack 28. The rack 28 is provided with a web 29, which is adapted to be rotatorily supported in the opening of the cross-piece 11 in any suitable manner. The rack 28 is arranged at the side of the frame 1 adjacent to the stem 14 or in such a manner that the cross-piece 11 is interposed between the web 29 of the rack 28 and the stem 14. Connected to the rack 28 in any desirable manner is a crank-arm 30, provided with a grip 31.

The reference-numeral 32 denotes the chain, which is connected to the eye 9 of the collar 8 by means of the snap 33 and is adapted to be removably attached to the hook 10 by the mounting of one of the links thereof thereon. The chain 32 is adapted to surround the work to be operated upon and hold the tool in position when operating. Owing to the manner of connecting the chain to the frame 1, the chain can be easily detached therefrom and the tool used as a breast-drill.

The reference-numeral 34 denotes a handle or grip secured to the upper end of the section 2.

The tool is operated as follows: The chain 32 having been passed around the work to be drilled or bored, the rack 28 is rotated by means of the crank 30, the motion of the rack 28 imparting movement to the pinion 18, which carries the stem 14 therewith, operating the drill 16. The rack in the meanwhile operates the idler or guide pinion 17. The direction of movement of the rack and pinion is indicated by the arrow, Fig. 1. The stem is vertically adjustable for imparting a like movement to the drill 16 through the medium of the adjusting-nut 26, its operation causing the vertical movement of the sleeve 21, carrying the stem 14 therewith. The stem during its rotary as well as its vertical movement is guided by the bushing 12 and collar 8.

It is thought that the many advantages obtained by constructing a tool for drilling wood and metal combining in itself a chain and a breast drilling-tool or drill can be readily understood from the foregoing description, taken in connection with the accompanying drawings, and it will also be noted that minor changes may be made in the details of construction without departing from the general spirit of my invention.

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

In a tool of the type set forth, a frame comprising two cylindrical sections, oppositely-curved arms connected with the same, oppositely-disposed depending arms formed integral with the lower edge of the lower of said sections, a collar connected to the lower end of said last-named arms, said last-named arms at an intermediate point being formed with a cross-piece, a tool-stem arranged in said frame and projecting through the collar thereof, an externally-screw-threaded sleeve encircling the upper portion of said stem and being secured thereto, a pulley-wheel threaded on said sleeve and being arranged within the first-named pair of arms, a beveled pinion fixed on said stem, a concentric rack journaled in the cross-bar of said frame and engaging the said pinion, a loose beveled pinion engaging said rack at a diametrically opposite point, a handle secured to said rack, and means carried by said frame for securing the work to be operated upon in position.

In testimony whereof I affix my signature in presence of two witnesses.

ELBERT A. TURNER.

Witnesses:
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