Nov. 14, 1944. J. T. RICHARDS 2,362,929

PRESSURE HANDLE FOR PNEUMATIC AND ELECTRIC PORTABLE DRILLS

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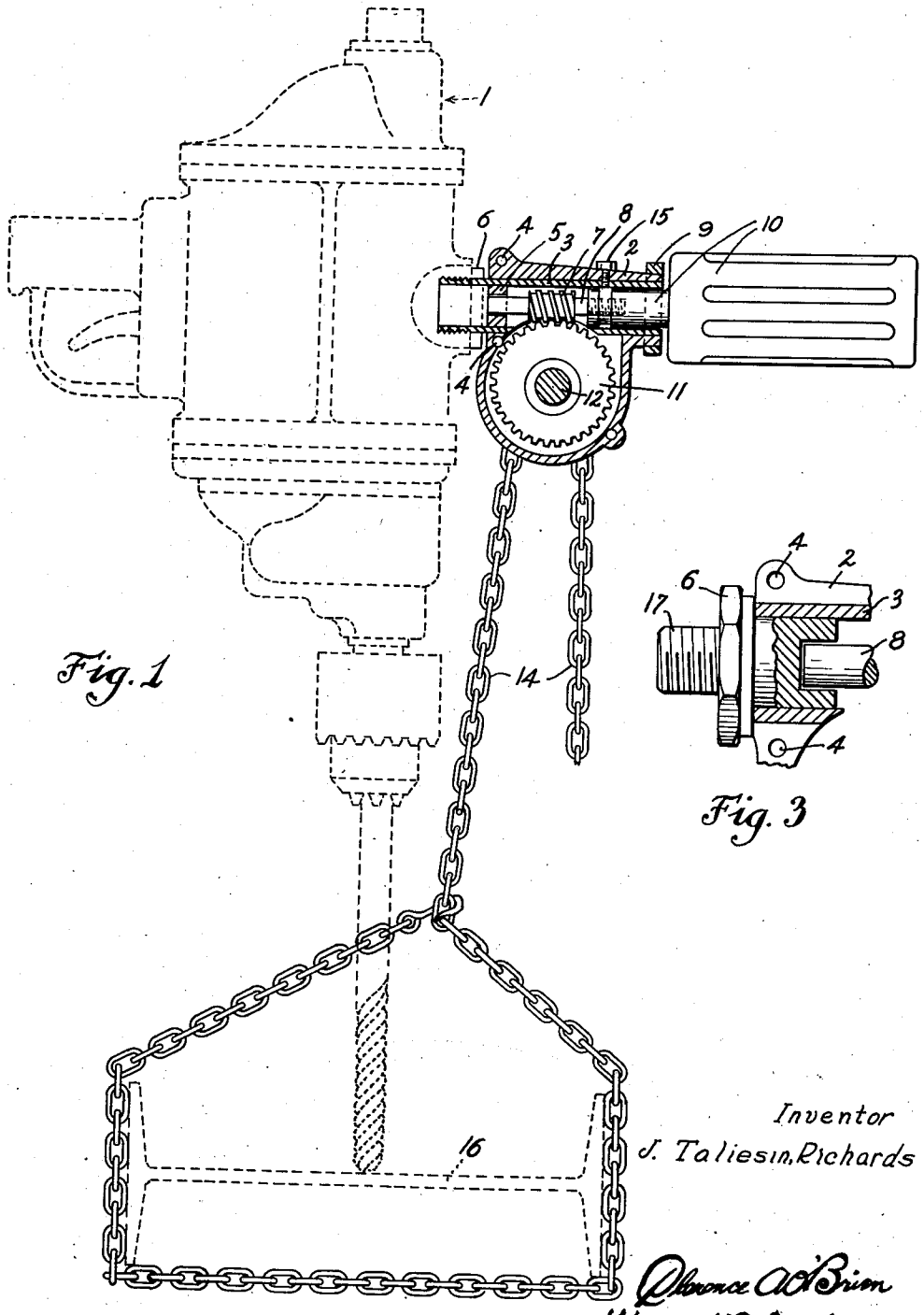


Fig. 1

Fig. 3

Inventor
J. Taliesin Richards

Clarence A. Brim
and Harvey B. Jacobson

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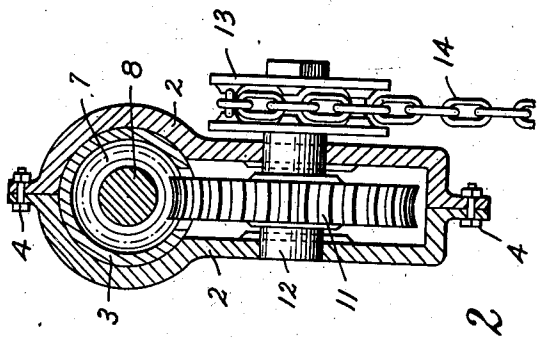


Fig. 2

Fig. 4

Inventor
J. Taliesin, Richards

Clarence A. O'Brien
and Harvey B. Jacobson

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PRESSURE HANDLE FOR PNEUMATIC AND ELECTRIC PORTABLE DRILLS

J. Taliesin Richards, Wilkes-Barre, Pa.

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3 Claims. (Cl. 77—14)

This invention relates to a new type handle which is applicable to various types of portable pneumatic and electric drills, the same being adapted to replace or take the place of the ordinary or so-called pipe handle which is generally used, and embodying self-contained chain winding means, whereby through the medium of said means and the work-embracing chain, constant pressure of the drill is maintained against the work to accomplish the drilling operation with expediency and reliability.

In carrying out the principles of the invention, I have evolved and produced a simple and expedient so-called pressure applying handle which is such in construction that one man can, through the use thereof, drill any size hole with ease and in less time than two or three men pushing or pulling and can, at the same time, steady the drill while drilling holes head-high, overhead, underneath or on a ladder in comparative safety.

Novelty is also predicated upon a type of pressure handle in which the operator has complete control of pressure at all times and on nearing penetration by bit can control the pressure so that it will cut through without any kick-back.

This improved drill handle will enable the user to drill for long periods of time without fatigue, insures constant follow-up pressure of the drill against the work, saves time and money, and is otherwise aptly fitted for the purposes intended.

Other features and advantages of the invention will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings wherein like numerals are employed to designate like parts throughout the same:

Figure 1 is a view showing, in dotted lines, a conventional electric drill with the improved pressure applying manually twistable attachment handle attached to the body of the drill, and showing, further, how the work-embracing chain coacts with the work as well as the slack take-up means embodied in said pressure handle.

Figure 2 is an enlarged view, partly in section and partly in elevation, of the pressure handle as constructed explicitly in accordance with the principles of the instant invention.

Figure 3 is a cross-sectional view taken on the irregular line 3—3 of Figure 2.

Figure 4 is a fragmentary detail sectional and elevational view showing a modification; namely, an adapter which is sometimes used for attaching the pressure handle to the drill.

Briefly, the invention is, as before stated, in the form of a handle attachment and comprises a longitudinally elongated sleeve provided with an internal bushing and having a longitudinal slot at a predetermined point, a turnable hand-grip provided with a fitting telescopically and rotatably fitted in one end portion of said sleeve, a worm having shaft-ends located in said sleeve, one shaft-end being journaled in said fitting, means to maintain the fitting against longitudinal displacement from the sleeve, a casing including a tubular member surrounding said sleeve, said casing also including a gear housing provided with bearings, a worm gear mounted in said housing and provided with stub axles journaled in bearings in said housing, said worm gear having a peripheral portion thereof projecting through the slot in said sleeve, said worm being in mesh with the teeth on said gear, a cog wheel fixedly mounted on one of the stub axles of said worm gear, and a chain cooperable with the teeth of said cog wheel.

The sleeve is denoted by the numeral 3 and the left-hand end thereof is externally screw-threaded to fit into an existing socket in the casing of the drill 1, there being a lock nut 6 to secure the connection between the parts. At the opposite end of the sleeve is a suitably designed turnable hand-grip hiving a reduced extension which projects telescopically and rotatably into the adjacent right-hand end portion of said sleeve 3. On the interior of the sleeve is a bushing 5, there being a shaft 8 between the bushing and the handle extension, one end of the shaft being threaded into said extension and the opposite end mounted for rotation in the bushing 5. The shaft is provided with an integral worm operable through a longitudinal slot in the median portion of the sleeve.

The sleeve 3 is embraced in the horizontal tubular portion of a casing structure 2. The casing structure has companion half-sections bolted or otherwise secured together at 4. The lower portion of the casing embodies an integral substantially circular gear housing, that is, a housing for a worm gear 11. This gear 11 is provided with central outstanding stub-axles journaled for rotation in opposed bearings formed in the side walls of said gear housing. One stub-axle extends out sufficiently far beyond the gear housing as shown in Figure 3 to accommodate a cog wheel 13 which is fixedly mounted thereon for rotation therewith. The cog wheel obviously serves to accommodate the work-embracing and pressure-maintaining chain 14. The slot in the

aforementioned sleeve 3 admits the toothed edge of the worm gear into said sleeve whereby to permit the worm 7 on the shaft 8 to mesh with said teeth.

For stability an embracing or collar 9 surrounds the inner end portions of the casing section 2, this being adjacent the hand-grip 10. Also a set-screw 15 is mounted in the casing and also in the sleeve 3, the inner end thereof projecting into a groove formed in the handle extension, that is, the part which projects into the sleeve 3 as shown in Figure 2. The set-screw permits free rotation of the rotatable part within the sleeve but prevents endwise displacement thereof.

In practice the hooked end of the chain is wrapped around the work 16 (in this instance the I-beam), the opposite slack take-up end of the chain being connected with the cog-wheel 13 as shown in Figures 2 and 3. Thus, by twisting the drill handle or grip 10 as the drilling operation is carried on, the chain is maintained taut and the drill is pressed tightly against the work with progressive constancy.

As brought out in Figure 1, the attachment or connection between the pressure handle and drill is secured by the threaded extension on the sleeve end 3 and the lock nut 6. In other instances it is desirable, perhaps, to also provide an alternative coupling connection. This is shown in Figure 4 which it will be seen that the adapter embodies a socketed plug which fits telescopically into the end of the sleeve 3, this serving, under the circumstances, as a bearing for the adjacent end of the shaft 8. The plug includes a solid threaded extension 17 to accommodate the aforementioned lock nut 6. Different sizes of adapters can be used to accommodate drills having variously sized accommodation side sockets.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in the shape, size and arrangement of the details coming within the field of invention claimed may be resorted to in actual practice, if desired.

I claim:

1. As a new product of manufacture, an alternatively usable handle structure for a portable drill of the class described, the same being in the form of an attachment and comprising an elongated tubular member constituting a bearing, said bearing also forming an adapter and having at its inner end means for detachable connection with the standard socket on one side of the portable drill, said tubular member being formed with a worm gear casing, said casing being provided with bearings, a worm gear mounted in said casing, said worm gear having stub axles journaled for rotation in the bearings in said casing, an anti-slipping chain winding drum fixedly mounted on one end of the stub axles, a sleeve mounted in said tubular bearing, a hand grip including a worm, said worm being mounted for rotation in said sleeve and being in mesh with said worm gear.

2. A pressure handle attachment for portable pneumatic and electric drills comprising a longitudinally elongated sleeve provided with an internal bushing and having a longitudinal slot at a predetermined point, a turnable hand grip provided with a fitting telescopically and rotatably fitted in one end portion of said sleeve, a worm having shaft-ends located in said sleeve, one shaft-end being journaled in said bushing, the other shaft-end being connected with said hand grip fitting, means to maintain the fitting against longitudinal displacement from the sleeve, a casing including a tubular member surrounding said sleeve, said casing also including a gear housing provided with bearings, a worm gear mounted in said housing and provided with stub axles journaled in bearings in said housing, said worm gear having a peripheral portion thereof projecting through the slot in said sleeve, said worm being in mesh with the teeth on said gear, a cog wheel fixedly mounted on one of the stub axles of said worm gear, and a chain cooperable with the teeth of said cog wheel.

3. As a new product of manufacture, a handle structure for portable drills of the class described, said handle structure being in the form of an attachment for said drill and comprising a casing embodying an elongated tubular member constituting an adapter and having at its inner attachable end means for detachable connection with the standard socket usually provided on one side of the drill, said tubular member being formed with a gear casing, said casing being provided with bearings, a gear mounted in said casing, said gear having axles journaled for rotation in the bearings in said casing, a work embracing and holding chain, a chain winding drum fixedly mounted on one of said axles, bushing means mounted in said tubular member, and a handgrip having a gear equipped portion mounted for rotation in said bushing means, the gear thereon being in mesh with said first named gear.

J. TALIESIN RICHARDS.