

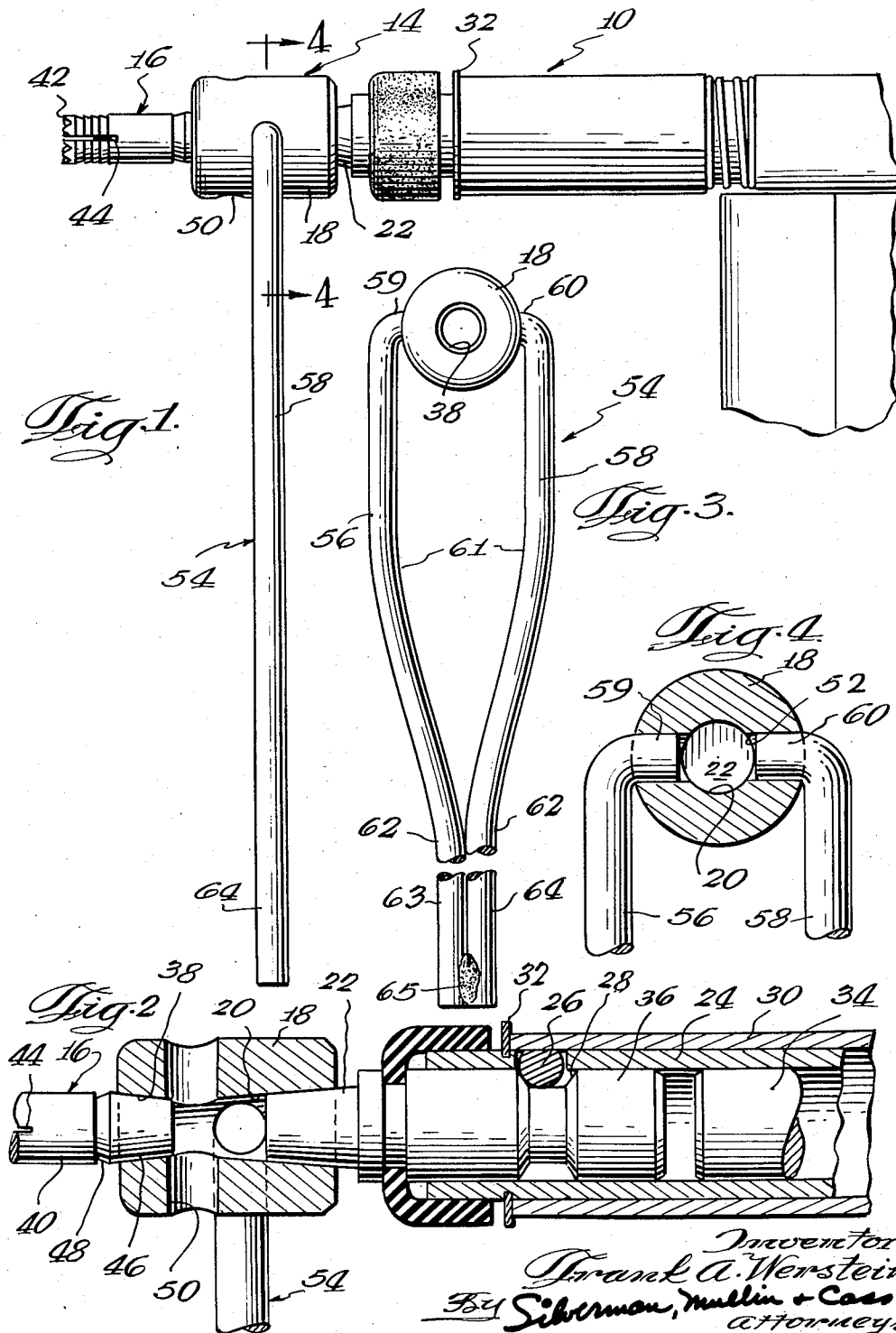
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HANDLE FOR PERCUSSIVE DRILL

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2,936,736

## HANDLE FOR PERCUSSIVE DRILL

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2 Claims. (Cl. 121-36)

This invention relates generally to percussive drills for driving self-drilling shells of the expandible type or the like and more particularly relates to a novel handle adapted to be installed on a percussive drill or mechanical hammer for rocking the chuck during use of the drill or hammer.

In the mounting of self-drilling expandible shells of the general type shown in U.S. Patent No. 1,621,598, use often is made of a percussive drill or mechanical hammer which by repeated blows cause the teeth of the shell to bite into the masonry or concrete in the process of drilling a hole for thereafter anchoring the shell. Such a mechanical hammer is shown in U.S. Patent No. 1,968,055 in which the chuck mounting the shell is provided with a handle pivotally mounted on an axis transverse to the axis of the chuck socket. The workman is enabled thereby to hold the hammer urged against the surface in which the shell is to be anchored and simultaneously rock the chuck by means of the handle as the shell is biting into said surface. This invention is concerned primarily with a novel construction for such a handle.

Since the percussive forces required to anchor the shell are considerable, such hammers, of necessity, have been relatively heavy and are required to be carefully and tightly held during their use. Obviously then, the handle by means of which the chuck of the hammer is rocked during hammering is required to withstand bending or other distortion while at the same time permitting adequate purchase thereon by the operator to prevent the hammer from slipping relative the wall in which the shell is being anchored. Heretofore such handles have been manufactured in a manner which contributed to an expensive structure. Such handles have been made from single lengths of heavy gauge metal wire or rod bent into U-shaped configuration. Such prior art structures have been characterized by their requiring special heavy duty bending equipment and the exercise of extreme caution and care in the forming of the handle which necessarily increased the cost of the completed structure. Accordingly, it is a principal object of the invention to provide a novel handle for a mechanical hammer which enables the hereinabove disadvantages to be substantially eliminated.

Another object of the invention is to provide a handle for a percussive drill which is formed of a pair of complementary metal parts secured together to form the completed handle without sacrifice of any strength or rigidity desired for such a structure.

A further object of the invention is to provide a novel method for making a handle for a percussive drill which comprises forming a series of identical, generally L-shaped metal rods and securing together a pair of such rods in complementary relation one to the other to form the handle.

The foregoing and other objects of the invention will become apparent from the ensuing description thereof in which a preferred embodiment has been described in

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detail in the specification and illustrated in the accompanying drawing. It is contemplated that various minor changes in the structure embodying the invention may occur to the skilled artisan without departing from the principles or sacrificing any of the advantages of the invention.

In the drawing:

Fig. 1 is a fragmentary side elevational view of a percussive drill comprising an electric hammer and having the handle embodying the invention installed at the chuck end thereof.

Fig. 2 is a sectional view taken through the barrel end of the hammer and the chuck, the view being on an enlarged scale.

Fig. 3 is a plan view of the handle shown installed on the chuck of a hammer.

Fig. 4 is a sectional view taken through the chuck along the line 4-4 of Fig. 1 and in the direction indicated.

Referring now to the drawing, the percussive drill or hammer is designated generally by the reference character 10. The specific construction of the hammer is not important to this invention except for structural features thereof which enable a workman to hold same by one hand at the handle (not shown) and push same forward during operation thereof. The forward end of the hammer carries a chuck 14 in which is mounted a self-drilling expandible shell 16 designed to be anchored in a masonry or concrete surface.

Referring to Fig. 2, the chuck 14 comprises an integral body or head 18 which may have a tapered axial socket 20 opening to opposite ends of the head. Said head may be provided with a reduced diameter shank 22 engaged in one of said open ends which is accommodated telescopically in the barrel 24 and retained therein by the key 26 engaged in the annular groove 28 formed in said shank. The key 26 is retained in position by means of the elongate sleeve 30. Said sleeve 30 may be mounted on barrel 24 under spring tension maintaining same normally urged against stop 32 in position overlying said key 26. Operation of the percussive drill causes the hammer head 34 to be reciprocated with repeated impact against the chuck end 36.

The chuck head 18 has a tapered socket 38 at its forward end in which the shell 16 is mounted, said shell 16 including a cylindrical hollow body 40 provided with a toothed end 42 and adapted to be expanded along fracture grooves 44. The opposite end of said shell has a tapered extension 46, the length and size of which is designed for telescopic engagement in the tapered socket 38 of the head. Such a shell may have an annular fracture groove 48 at the base of the extension 46 by means of which said extension may be broken off by application of lateral strain against the same after the shell has been anchored. Said chuck head 18 also has a transverse passageway 50 located between the inserted end of the extension 46 and the inner end of the reduced diameter shank 22, the passageway 50 enabling insertion of an ejector tool (not shown) behind the inserted end of extension 46 for ejecting the shell 16 from chuck head 18.

Arranged also transverse of the head but preferably normal to the passageway 50 and axial socket 20 is a transverse passageway 52 in which the handle embodying the invention is intended to be installed. It will be appreciated that the function of such a handle is to permit the chuck head 18 to be rocked about the axis of the head 18 during operation of the hammer or drill 10. Consequently, said handle must be sufficiently rigid to permit such rocking to be initiated during the percussive blows of the hammer head 34.

The handle embodying the invention is identified by the reference character 54. Same is formed from a pair of

heavy gauge metal wire or rod members 56 and 58 which are of substantially the same configuration and size. Each member is substantially L-shaped and secured together in reversed relationship so that the shorter legs 59 and 60 thereof are aligned facing one another at one end of the handle. Said shorter legs or extensions 59 and 60 are foreshortened with their extremities spaced apart so that when installed in the passageway 52, said extensions are clear of the axial socket 20 of the chuck as seen in Fig. 4. Said members 56 and 58 each have medial bends 61 and 62 therein which are reversed one with respect to the other so as to dispose the elongate straight extensions 63 and 64 at the opposite ends of the members parallel with and engaged adjacent one another. The elongate extensions 63 and 64 are rigidly secured together, preferably by welding as indicated generally at 65 along facing surfaces thereof. The secured extensions 63 and 64 provide a hand grip by means of which handle 54 may be held and rotated during operation of the hammer. A suitable sleeve (not shown) may be employed slipped over the hand grip for obtaining a better purchase on the hand grip, said sleeve being formed of a soft plastic or other suitable material.

It thus will be seen that the handle 54 is made from a pair of substantially identical wire members of generally L-shaped configuration. Each member has the elongate extension at the end thereof opposite the shorter leg of the member offset from the longer leg of the member on the same side as said shorter leg. A pair of members, upon being reversed, may be arranged with the said elongate extensions parallel and juxtaposed one the other to form a hand grip for the handle. Sufficient limited resiliency is provided by the bends 62 of the secured members to enable the short legs 59 and 60 to be spread apart as required for installing or withdrawing the handle. With the joint formed at 65, sufficient rigidity is achieved for the handle members in their unitary assemblage 54 so that the chuck 14 may be rocked without distortion of said members. This handle is distinctive over the prior art in that a pair of identical wire or rod members are secured together in reversed relation thereby eliminating the practice of using a single length of wire or rod to form a generally reverse bent or U-shaped member. This, of course, eliminates the need for special and expensive bending equipment.

This construction can be advantageously made utilizing economical, mass-production techniques, for instance, stamping out of individual lengths of wire or rod to the shape of a leg member 56 or 58, since they are identical. Stamping may be simply accomplished in a forge or die press machine in a single operation as the wire or rod is moved continuously through the machine. The stampings are then secured together in pairs, with the individual stampings thereof reversed one relative the other by welding or other known techniques. The joint preferably is formed adjacent the extremities of extensions 63 and 64 of the handle. It will be appreciated that this simple method eliminates completely any need for complicated bending equipment and the more difficult operation of forming acute angle bends in heavy gauge wire or rod. As a result, the handle 10 may be made at materially reduced cost and with less concern over critical dimensioning. Also short lengths may be used with less resulting waste.

The head 18 and the shank 22 as illustrated herein comprise the subject matter of another patent application,

Serial No. 681,689, filed Sept. 3, 1957, copending herewith. Other forms of tool holder may be used, such as, for example, a known construction illustrated in U.S. Patent No. 2,767,988, in which the head 18 and the shank 22 are integral and no tapered opening is provided at the right hand end of the head 18.

It is believed the invention has been described in sufficient detail to enable the skilled artisan to understand and practice the same. The invention has been pointed out in the appended claims in terms intended to be broadly construed commensurate with the progress in the arts and sciences contributed by the invention.

What it is desired to secure by Letters Patent of the United States is:

1. A handle for use with a power hammer provided with a tool holder having a transverse passageway therethrough adapted to mount the handle for rocking said holder during operation of the hammer for installing self-drilling expansion shells, said handle comprising, a pair of substantially L-shaped rod members secured together in a unitary assemblage, each member comprising a single length of relatively heavy gauge metal of substantially identical size and configuration and secured in reversed relation one relative the other, said handle having a pair of spaced apart and inwardly facing extensions at one end thereof adapted to be telescoped respectively into an end of said passageway and a pair of rigidly conjoined elongate gripping extensions at the opposite end thereof for holding the handle during operation of the hammer, each member having a segment intermediate said extensions thereof arranged at substantially a right angle to the inwardly facing extension and diagonal to the gripping extension thereof.

2. A handle for use with a power hammer mounting a chuck having a transverse passageway therethrough for installing self-drilling expansion shells in masonry, said handle adapted to be installed to permit the chuck to be rocked during operation of the hammer and comprising, a pair of heavy wire members of substantially identical size and configuration secured together in a unitary assemblage with said members reversed one relative the other, each member comprising a single length of uniform diameter wire having a short extension thereof at one end of the handle spaced from and facing the extension on the other member a straight segment substantially at a right angle to said short extension and an elongate extension at the opposite end of the member parallel to and juxtaposed the elongate extension on the other member, said elongate extensions having surfaces thereof engaged one with the other and rigidly welded together along said engaged surfaces to form a handle for said assemblage, said members having limited resiliency adjacent said elongate extensions to permit the short extensions to be spread one relative the other for engaging the short extensions in said passageway to install said handle.

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