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R. M. NOBLE
DRILL BIT EXTENSION
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2,816,769

FIG. 1

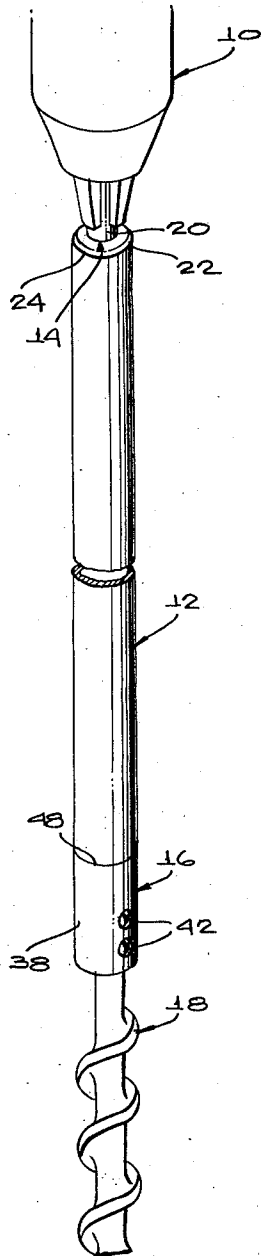


FIG. 2

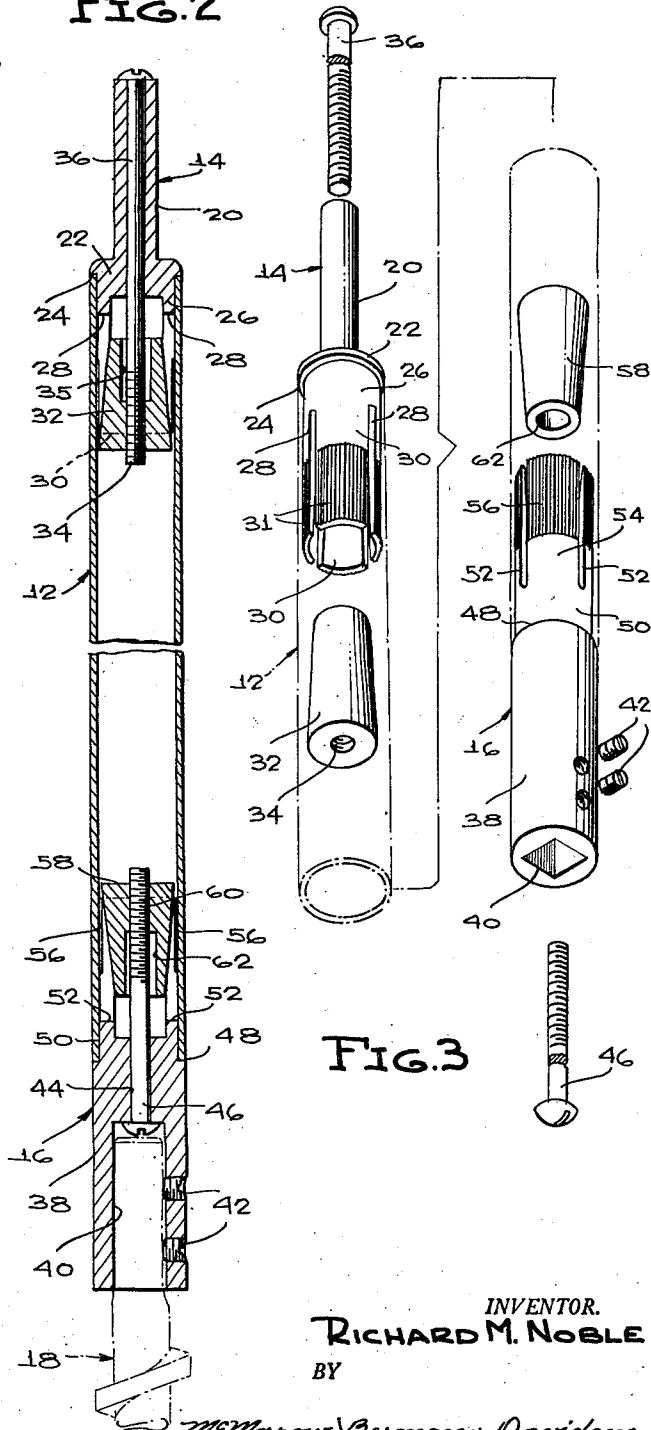
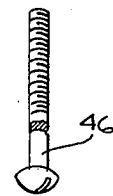


FIG. 3



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DRILL BIT EXTENSION

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3 Claims. (Cl. 279—83)

This invention relates to means connectable between a conventional drill, such as a portable electric drill, and a bit that would normally be engageable in the chuck of the drill, to extend the overall length of the bit.

Electricians, carpenters, television installers, telephone installers, and other workmen often are required to drill holes in walls and other obstructions under conditions in which ready access to the area to be drilled cannot be had. Under these circumstances, the provision of a means to extend the overall length of the bit often represents a solution to the problem.

The main or broad object of the present invention is to provide such a means, and among more specific objects are the following:

To accommodate the extension device to conventional drills or bits without requiring modification or redesign of the same;

To make use of random lengths of conventional electrical metallic tubing, which are usually in the equipment of any electrician or worker in a related field, as components of the device, thus to permit assembly of the device in a selected length according to the needs of the particular situation;

To permit storage of the components of the tool in a disassembled condition in a relatively small area when not in use, such as in a tool kit;

To permit assembly or disassembly of the device with facility and with a minimum expenditure of time; and

To provide a tool as stated that will be comparatively inexpensive, and yet rugged and efficient.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawing, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a fragmentary perspective view showing the tool connected to a drill and bit;

Figure 2 is an enlarged longitudinal section; and

Figure 3 is an exploded perspective view from which the tubular body has been omitted.

The chuck 10 of a conventional drill has been shown connected to one end of the extension device constituting the invention. The device has three components: a tubular body 12; a male drill attached connector assembly 14; and a female bit attached connector assembly 16. In use, these are connected together, and the resulting extension device is connected between chuck 10 and a drill bit 18.

The male assembly 14 will be the first described. It includes an elongated, straight, axially bored stem 20 integral at one end with a circular, flat head 22 having an external circumferential shoulder 24 intermediate its ends, and a marginal, elongated skirt 26 joined for the greatest part of its length with straight longitudinal slots 28 opening upon the free end of the skirt to define a circumferential series of wide, elongated, spring tongues 30 having splined outer surfaces 31.

A frusto-conical expander or wedge 32, extending into

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the skirt has a threaded axial bore 34 counterbored as at 35 at the smaller end of the expander and receiving an elongated expander shifting screw 36 extending through the bore of stem 20 with its head engaged against that end of the stem remote from head 22.

The female assembly 16 includes an elongated body portion 38 formed at one end with an axial socket 40 into which set screws 42, 42 are threadable radially, inwardly to bind against an inserted drill bit shank. Although the illustrated socket is of square cross section, in a commercial embodiment it might more usually be of circular section, since most bit shanks used in electric drills are of circular section. The square socket would, of course, receive bits either square or round in section.

Extending into communication with socket 40 is an axial bore 44 within which extends a screw 46.

An external shoulder 48 is formed on body portion 38, adjacent a skirt 50 of the body portion having longitudinal slots 52 defining tongues 54 formed with roughened outer surfaces 56. A frusto-conical expander or wedge 58 has an axial bore 60 threaded to engage screw 46 and is counterbored as at 62 for substantially half its length. The expander, seating in the skirt, acts to bias outwardly the tongues 54 when shifted inwardly of the skirt responsive to threading of the screw in one direction.

Ordinarily, when the device is not in use, the male and female assemblies 14, 16 respectively are disconnected from tubular body 12. Assuming that a drill bit extension is needed for a particular task, one selects that one of a plurality of random lengths of electrical metallic tubing that is of a length best suited for the situation. Then, the ends of the selected body portion 12 are engaged with shoulders 24, 48. Screws 36, 46 are now rotated to shift expanders 32, 58 inwardly of their associated skirts, to bias the tongues 30, 54 outwardly. The tongues binding against the wall of body 12, grip the same to fixedly connect the male assembly 14, body 12, and female assembly 16 in end to end relation. Bit 18 is now inserted in socket 40 and fixedly engaged therein, and stem 20 is inserted and gripped in chuck 10.

After use, the parts are disconnected awaiting the next use, and said next use may quite possibly entail employment of a shorter or longer body 12, involving merely the selection of a different random length of tubing.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. In a drill bit extension, a tubular body having opposed ends and a bore opening through said ends, a drill chuck shank having outer and inner ends, a skirt on the inner end of the shank, said skirt having a split side wall having inner and outer sides, said skirt being engaged in one end of the bore of said tubular body and having an inner end, a conical wedge engaged in the inner end of the skirt, said wedge having a threaded bore and said shank having a smooth bore, a screw journaled in said smooth bore and threaded in said threaded wedge bore, said screw having an enlarged head bearing against the outer end of the drill chuck shank, a drill bit socket secured on the other end of the tubular body, and a shoulder on said skirt bearing against the adjacent end of the tubular body.

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2. In a drill bit extension, a tubular body having opposed ends and a bore opening through said ends, a drill chuck shank secured on one end of said tubular body, a drill bit socket assembly on the other end of said tubular body, said drill bit socket assembly comprising a body 5 having an inner end portion engaged in the bore of the tubular body at the other end of the tubular body and an outer end portion, a shoulder between said inner and outer end portions abutting the adjacent end of the tubular body, said inner end portion having an inner end, 10 a split skirt on the inner end of the inner end portion, engaging the bore of the tubular body, a frustro-conical wedge within said skirt, said wedge having a threaded axial bore and said bit socket body having a smooth axial bore, said bit socket body having an outer end provided 15 with a bit socket having an inner end, and a screw traversing said smooth bore and threaded in said threaded bore of the wedge, said screw having an outer end, and an enlarged head on the outer end of the screw bearing against the inner end of the bit socket.

3. In a drill bit extension, a tubular body having an axial boss and opposed ends through which said bore 20

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opens, split skirts engaged in the opposite ends of the bore having smooth axial bores, said skirts having inner and outer ends, conical wedges in the inner ends of the skirts, said wedges having threaded axial bores, and the outer ends of the skirts having smooth axial bores, screws traversing the smooth bores and threaded in the wedge bores, said screws having outer ends, enlarged heads on the outer ends of the screws bearing against the outer ends of the skirts, a drill chuck shank on the outer end of one of said skirts and a drill bit socket on the outer end of the other of said skirts, said skirts having shoulders bearing against the related ends of the tubular body.

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