

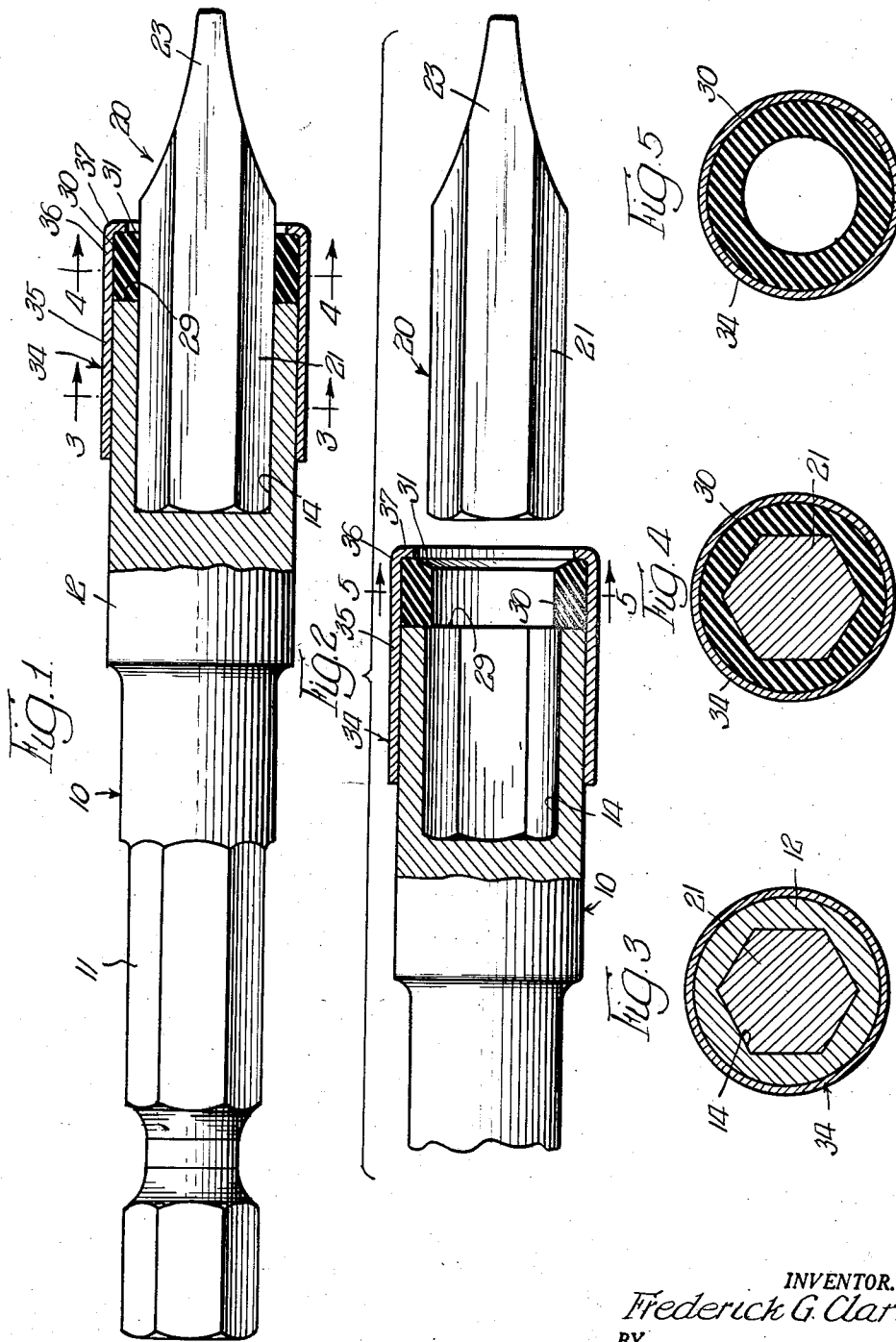
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IMPLEMENT DRIVING DEVICE

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2,833,548

IMPLEMENT DRIVING DEVICE

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4 Claims. (Cl. 279-102)

This invention relates to an implement driving device such as is used with power driven drivers and hand braces.

In recent years the use of recessed head screws and bolts has grown. The great number of instances and large quantities of recessed head screws and bolts which are used has led to the widespread use of electric power drivers as well as to the use of these bits with hand screw drivers and braces. One bit of the type referred to is the well known Phillips bit. The Phillips bit, in the past, has been made of a single piece of a special shock resisting steel treated to have a high degree of toughness and hardness. Despite the use of these bits of very carefully selected and treated alloys, they tend to wear out rapidly under normal conditions. Their initial cost is substantial, because of the special alloys and the machine operations necessary in their manufacture. In order to avoid the expense of reconditioning or replacement of the entire assembly, there has been developed a small bit for use with a separate driving part or bit holder. In the two-part construction the actual bit is readily removable so that insertion of bits of a desired size and configuration will give flexibility between the drive or holder and bit part, in addition to affording economy in replacing the bit when worn.

One of the inherent problems in the two-part bit construction is retaining the bit in the drive part with reasonable security so that it will not be removed in ordinary operations, but which is removable for replacement. One way this has been accomplished in the past is illustrated in the patent to Fischer No. 2,522,217. As illustrated in the Fischer patent the drive part or bit holder is provided with a socket recess having a snap ring therein adapted to engage grooves formed in the shank of a bit.

Use of a snap ring provides the difficulty of maintaining a uniform spring tension. In some cases the ring is so tight that it is difficult to insert the bit and difficult to remove it, and in other instances it has just about the right grip on the ring to start the operation, but after a short period of use fails to retain the bit. Also, where a snap ring is employed in the socket of a bit holder, the bit holder is larger in diameter than is necessary if it is eliminated, which, in some instances, results in problems of clearance.

It is, therefore, an object of the invention to provide an implement driving device of such design and construction that the above difficulties are substantially overcome.

It is a further object of the invention to provide a two-part construction in which the actual bit portion may be readily removed and replaced.

It is yet a further object of the invention to provide an implement driving device in which not all the parts need to be replaced when a new bit is substituted.

It is another object of the invention to provide a bit holder which is inexpensively manufactured.

Further objects and advantages of this invention will become evident as the description proceeds and from an examination of the accompanying drawing which illustrates one embodiment of the invention and in which

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similar numerals refer to similar parts throughout the several views.

In the drawings:

Figure 1 is an enlarged view in elevation partly broken away to illustrate the implement driving device embodying the invention.

Fig. 2 is a fragmentary view of the device shown in Fig. 1 with the bit removed from the bit holder.

Fig. 3 is a view in section taken substantially along line 3-3 of Fig. 1.

Fig. 4 is a view in section taken substantially along line 4-4 of Fig. 1.

Fig. 5 is a view in section taken substantially along line 5-5 of Fig. 2.

Referring now to the drawings, the driving implement of the present invention has a bit holder 10 provided with a polygonal driven portion 11 at one end adapted to fit in the chuck of a driving tool such as a brace or power driven machine. An annular portion 12 at the other end is provided with a socket 14 to receive a bit 20.

The socket 14 in the bit holder is of a polygonal shape in cross section, such as hexagonal, in order to receive the shank 21 of bit 20. As shown, the hexagonal shank 21 is removably received in the socket 14 of the bit holder 10. The bit is provided with driving wings 23 that are tapered and grooved to the dimensions and inclinations to fit the recess of the particular screw or bolt with which it is intended to be used.

The end 29 of bit holder 10 has in tandem arrangement a frictional sleeve 30 encompassing the mouth of the socket 14. The friction sleeve is formed with an opening coincident to the longitudinal axis of socket 14, the inside dimensions of which are somewhat smaller than the socket when the bit is removed. However, the friction sleeve is capable of being deformed to approximately the same dimensions as the shank of the bit when the latter is inserted in the socket. The friction sleeve may have one end engage the end 29 of holder 10. The friction sleeve may be chamfered at 31 to receive the shank of the bit.

The composition of the frictional sleeve is of a suitable material having a high coefficient of friction with the shank of the bit, usually an organic composition such as a plastic, for example, rubber, neoprene, and the like.

A tubular holder sleeve 34 has a portion 35 adapted to be mounted on the annular portion of bit holder 10 with a portion 36 projecting over the end of the bit holder containing the friction sleeve 30. The outside end of the holder sleeve has a stop 37 which may be formed by bending the ends of the holder sleeve inwardly to contain a friction sleeve 30.

The friction sleeve 30 may be cemented in the portion 36 of the holder sleeve. Alternatively it may be molded directly therein.

The friction sleeve is normally maintained only lightly against the end 29 of the holder 10. However, if a greater gripping action is desired on the bit, the only adjustment necessary is to press the sleeve holder slightly farther on the bit holder which will compress the resilient friction sleeve against the end 29 of the holder and tighten the grip on the shank of the bit.

In the drawing and specification there has been set forth a preferred embodiment of the invention, and although specific terms are employed, these are used in a generic and descriptive sense only, and not for purposes of limitation. Changes in form and the proportion of parts, as well as the substitution of equivalents are contemplated, as circumstances may suggest or render expedient, without departing from the spirit or scope of this invention as further defined in the following claims.

I claim:

1. A driving implement comprising a bit holder

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formed at one end for engagement with a driving member and having at the opposite end a socket portion of polygonal cross section, said socket portion adapted to receive a bit member having a shank of polygonal cross section complementary to said socket for removable reception therein, an annular member of a material having a high coefficient of friction with the shank of the bit member at the end of said bit holder adjacent said socket portion for retaining the bit therein, said annular member having an inside dimension smaller than said socket of polygonal cross-section when the bit is removed, capable of being distorted when the bit is inserted in said socket, and a holder member for said annular member removably mounted on said bit holder.

2. A driving implement comprising a bit holder formed at one end for engagement with a driving member and having at the opposite end a socket portion of polygonal cross section, said socket portion adapted to receive a bit member having a shank of polygonal cross section complementary to said socket for removable reception therein, an annular member of a plastic material having a high coefficient of friction with the shank of the bit member at the end of said bit holder adjacent said socket portion for retaining the bit therein, said annular member having an inside dimension smaller than said socket of polygonal cross-section when the bit is removed, capable of being distorted when the bit is inserted in said socket, and a holder member for said annular member removably mounted on said bit holder.

3. A driving implement comprising a bit holder formed at one end for engagement with a driving member and having at the opposite end a socket portion of polygonal cross section, said socket portion adapted to receive a bit member having a shank of polygonal cross section com-

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plementary to said socket for removable reception therein, an annular member of a material having a high coefficient of friction with the shank of said bit member at the end of said bit holder adjacent said socket portion for retaining the bit therein, said annular member having an inside dimension smaller than said socket of polygonal cross-section when the bit is removed, capable of being distorted when the bit is inserted in said socket, and a holder member in the form of a tubular annular member for said sleeve removably mounted on said bit holder.

4. A driving implement comprising a bit holder formed at one end for engagement with a driving member and having at the opposite end a socket portion of polygonal cross section, said socket portion adapted to receive a bit member having a shank of polygonal cross section complementary to said socket for removable reception therein, an annular friction member mounted at the end of said socket portion of polygonal cross section for frictionally engaging the shank of the bit member, said annular member having an inside dimension smaller than said socket when the bit is removed, capable of being distorted when the bit is inserted in said socket, and a holder member removably mounted on said bit holder with a portion extending over the end of said bit holder containing said friction annular member.

References Cited in the file of this patent

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2,522,217	Fischer et al.	Sept. 12, 1950
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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 2,833,548

May 6, 1958

Frederick G. Clark

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 1, line 17, for "recesed" read == recessed ==; column 4, lines 9 and 10, for "annular member" read == sleeve ==; line 10, for "sleeve" read == annular member ==.

Signed and sealed this 21st day of October 1958.

(SEAL)
Attest:

KARL H. AXLINE
Attesting Officer

ROBERT C. WATSON
Commissioner of Patents