April 8, 1930. W. R. PAIGE ET AL 1,753,471

TOOL HOLDING SOCKET

Filed Oct. 12, 1925

FIG. 1

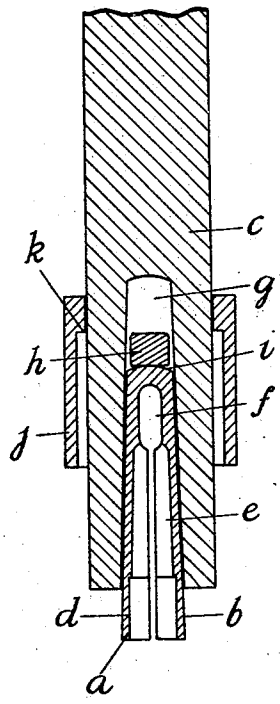


FIG. 2

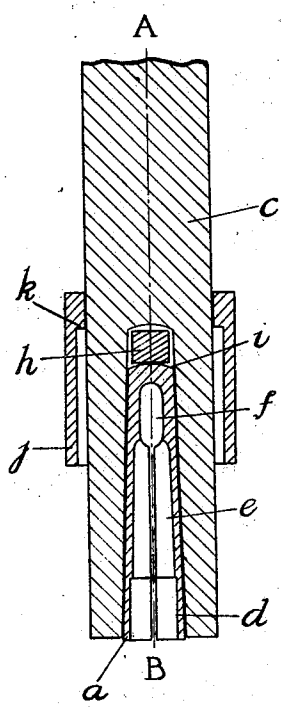
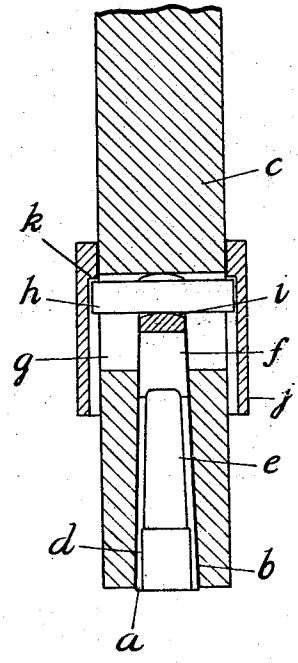


FIG. 3



Inventors

WILLIAM ROBERT PAIGE,

JOHN HENRY HANSON,

By Faulkner & Faulkner,

Attorneys.

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UNITED STATES PATENT OFFICE

WILLIAM ROBERT PAIGE, OF BROOMHILL, AND JOHN HENRY HANSON, OF HOLMLEA, ENGLAND

TOOL-HOLDING SOCKET

Application filed October 12, 1925, Serial No. 62,179, and in Great Britain October 16, 1924.

This invention relates to tool holding sockets or sleeves of the kind wherein an inner socket carrying the tool is capable of rotation within an outer socket and yet will rotate with the outer socket by the frictional engagement of their adjacent surfaces, and said inner socket being split whereby closure of its walls on to the tool for holding it is effected by said engagement.

This invention is also directed to that type of holder in which means are provided for readily ejecting the tool, said means comprising a cylindrical sleeve slidably mounted on the outer socket and adapted to strike a key disposed in a transverse slot in said socket.

The object of this invention is to provide an improved means for readily ejecting the tool and in some cases the inner socket also.

The socket has the whole of its exterior conical portion slit for a portion of its length, said slits terminating in a transverse aperture, a cylindrical lower interior to said socket and a tapered upper interior at least of as great length as the said lower interior and said socket being capable of rotation in an interiorly tapered holder.

Referring to the drawings filed herewith:—

Fig. 1 is a sectional elevation of one form of tool-holding socket made in accordance with this invention;

Fig. 2 is a similar view showing the socket tightly gripped within the holder; and

Fig. 3 is a vertical section on the line A—B, Fig. 2.

a is the socket which may be constituted by a drilling machine spindle and has a conical exterior *b* for the whole of its length and is shown loosely assembled in the holder *c*, said socket having a cylindrical interior *d* from the mouth upwards for a portion of its length and tapering for the remainder *e* where it merges into the transverse slot *f* usually provided in tool-holding sockets and as will be seen the socket *a* is rotatable within the holder *c*. In the holder is also provided the usual transverse slot *g* and in this slot is loosely disposed a key *h* which normally rests on the anvil head *i* of the socket *a*, said key being adapted to release the socket from the grip of the holder when caused to make hard contact with said anvil head *i*, and this contact may be effected by means of a hollow cylindrical member or sleeve *j* surrounding the holder *c*, and the key *h*, which sleeve is provided with an interior annular flange *k* at the upper end whereby on slidably raising the sleeve *j* and bringing it down with force, the flange *k* acts on the projecting ends of the key *h*, which in turn acts on the anvil head *i* of the socket *a*, thus releasing the socket from the grip of the holder *c*.

Owing to the sleeve *j* being loosely supported by the key *h* around the holder *c*, said sleeve can be held by the hand against rotation and manipulated to act on the key *h* whilst the holder and socket and tool are rotating.

In use, when a tool is inserted in the socket *a* and upward pressure applied to the tool, which in turn transmits a likewise pressure to the socket *a*, a fairly tight grip is effected by the walls of the socket being caused to close on to the tool by the holder *c* and when the tool, as for example a twist drill, is applied to work on the holder being rotated, the socket and tool, owing to frictional grip, rotate with the holder, but the frictional resistance of the work on the tool causes said tool to momentarily resist rotation, whereby, in conjunction with the pressure of the tool against the work, this resistance causes a climbing tendency to be imparted to the tool with respect to the socket and similarly to the socket *a* with respect to its holder *c*, thereby resulting in a more intense frictional grip between the socket and the holder and the socket and the tool which causes the socket and the tool to again rotate with the holder. For releasing the socket and tool, the sleeve is held and manipulated by hand by slidably lowering it with force so as to act on the key which in turn acts on the anvil head *i* of the socket *a*, thereby releasing said socket from the grip of the holder, leaving the tool free to fall out or be readily withdrawn from the socket.

What we claim and desire to secure by Letters Patent is:—

A tool holding socket member having the whole of its exterior conical, said conical por-

tion being slitted for a portion of its length, said slits terminating in a transverse aperture, a cylindrical lower interior to said socket member and a tapered upper interior at least of as great length as the said lower interior and said socket member being capable of rotation in an interiorly tapered holder.

In testimony whereof, we affix our signatures.

WILLIAM ROBERT PAIGE.
JOHN HENRY HANSON.