

J. M. GOODWIN.
 DRILL AND SOCKET.
 APPLICATION FILED NOV. 9, 1908.

928,749.

Patented July 20, 1909.

Fig. 1.

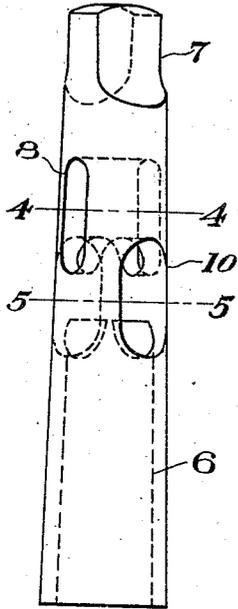


Fig. 2.

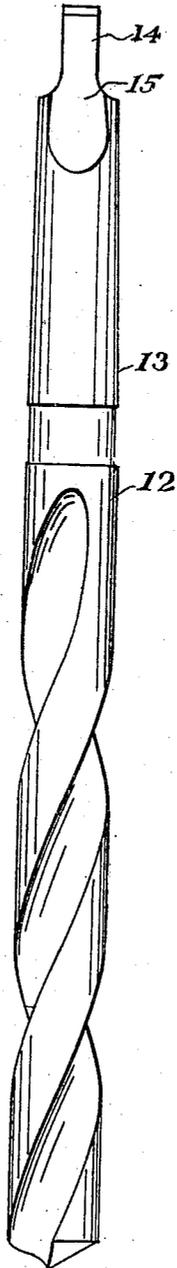


Fig. 3.

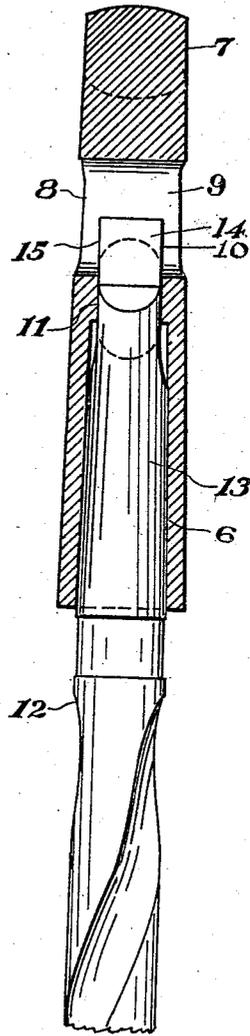


Fig. 4.

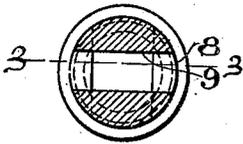
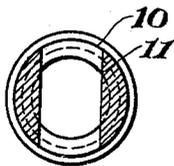


Fig. 5.



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UNITED STATES PATENT OFFICE.

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DRILL AND SOCKET.

No. 928,749.

Specification of Letters Patent.

Patented July 20, 1909.

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To all whom it may concern:

Be it known that I, JOHN M. GOODWIN, of Taunton, in the county of Bristol and State of Massachusetts, have invented certain new and useful Improvements in Drills and Sockets; and I hereby declare that the following is a full, clear, and exact specification of the same, reference being had to the accompanying drawings, forming part thereof.

10 This invention has reference to improvements in drills and holding sockets therefor and relates particularly to twist drills, so called, and their sockets.

15 One object of the invention is to so construct a drill, adapted for use with sockets of well known construction that the shank of the drill shall be so reinforced that when used in combination with a socket of peculiar construction torsional strains may be resisted.

20 Another object of the invention is to so construct a drill socket adapted to be used with interchangeable drills having shanks of various shapes that said socket shall be strong and durable in practical use.

25 The invention consists in the peculiar construction of the shank of the drill.

30 The invention also consists in the peculiar construction of the drill socket having the novel duplex series of shank holding shoulders.

35 The invention also consists in such other novel features of construction and combination of parts as shall hereinafter be more fully described and pointed out in the claims.

40 Figure 1, represents an isometrical view of the improved socket. Fig. 2, represents a view of the drill removed from the socket. Fig. 3, represents a sectional view of the socket, taken on line 3—3 Fig. 4, with the shank portion of the drill shown in full lines. Fig. 4, represents a cross sectional view of the socket taken on line 4—4 Fig. 1. Fig. 5, represents a similar view taken on line 5—5 Fig. 1.

45 Similar numbers of reference designate corresponding parts throughout.

50 Drills and particularly twist drills, so called, used in drilling metal when mounted in machines operated by power should be so constructed, with relation to the holding device, that they may be readily engaged with said device and held rigidly thereby to resist torsional strain and to prevent the chattering of the drill or the wearing of the opposed holding parts of said device and of the drill.

The holding device referred to is preferably a socket having a tapering bore to receive the similarly shaped shank of the drill and furnished with a transverse slot, forming a pair 60 of shoulders between which the flattened tang of the drill shank is engaged, and providing a passage into which a tool may be introduced to force outward the drill from its seat in the socket. As the ends of such 65 slot or passage should be accessible for the introduction of such drill releasing tool that portion of the socket having said slot and extending outward from said slot to the end of the socket should preferably be unob- 70 structed and, therefore, unsupported. For this reason it is important that said socket should be rigid in order to resist torsional strain exerted on the drill and prevent chattering of the same under torsional vibration 75 of the socket. As the strength of the socket is mainly in its wall and such strength is diminished by the cutting away of said wall it is important that said slot, above referred to should not extend, longitudinally of the 80 socket, sufficiently to increase the elasticity of the socket or to reduce its strength to resist torsional strains.

In carrying this invention into practice I construct a cylindrical socket having the 85 tapering bore 6 and the tang 7 designed to be secured in any well known device capable of holding said tang and preferably rotatable. Through the material of the socket I cut the transverse slot 8, which intersects the inner 90 end of the bore 6, whereby metal is cut away adjacent said bore to form the parallel shoulders 9. I now cut through the material of the socket at right angles to the slot 8 and at 95 points intermediate the ends of said slot to form the slot 10 which intersects the bore 6 and the slot 8 and provides the parallel shoulders 11—11.

100 The improved drill 12 designed to be used with this socket, or interchangeably with any ordinary socket having the shoulders 9—9 or similar holding means, is furnished with the tapering shank 13 having the flattened tang 14 furnished with the flat sides 15 which are rectangular to the faces of said 105 tang and, preferably, extend on to the shank 13. The thickness of the tang 14 is such that it may readily be entered and engaged between the shoulders 9—9 while the dimensions of the tang 14 between the sides 15—15 110 is such that this portion may be engaged and held between the shoulders 11—11 the dis-

tance between which is preferably, but not necessarily, greater than the distance between the shoulders 9—9.

By reference to Fig. 1 of the drawings it will be seen that torsional strain exerted on the socket will be resisted not only by the material between the ends of the slot 10 but also in a large degree by the material between the ends of the slot 8 while the slot 10 is so placed and so reinforced by the material in which it is located that the elasticity of the socket is not materially increased by its presence.

It is evident that drills having a shank of any diameter less than the distance between shoulders 11—11, without reference to its shape, and having a tang as 14 may be used with this socket.

Having thus described my invention I claim as new and desire to secure by Letters Patent:

1. A drill socket having a tapering bore and furnished with a pair of transverse slots extending at right angles, one of said slots intersecting said bore, the sides of said slots forming flat shoulders adapted to engage flat portions of a drill shank inserted therebetween.

2. A drill having a cylindrical tapering shank terminating in a rectangular tang two parallel flat faces whereof are extended on to said shank.

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Witnesses:

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