No. 799,944. PATENTED SEPT. 19, 1905.

G. A. SAGER.

DRILL SOCKET.

APPLICATION FILED JULY 21, 1904.

2 SHEETS—SHEET 1.

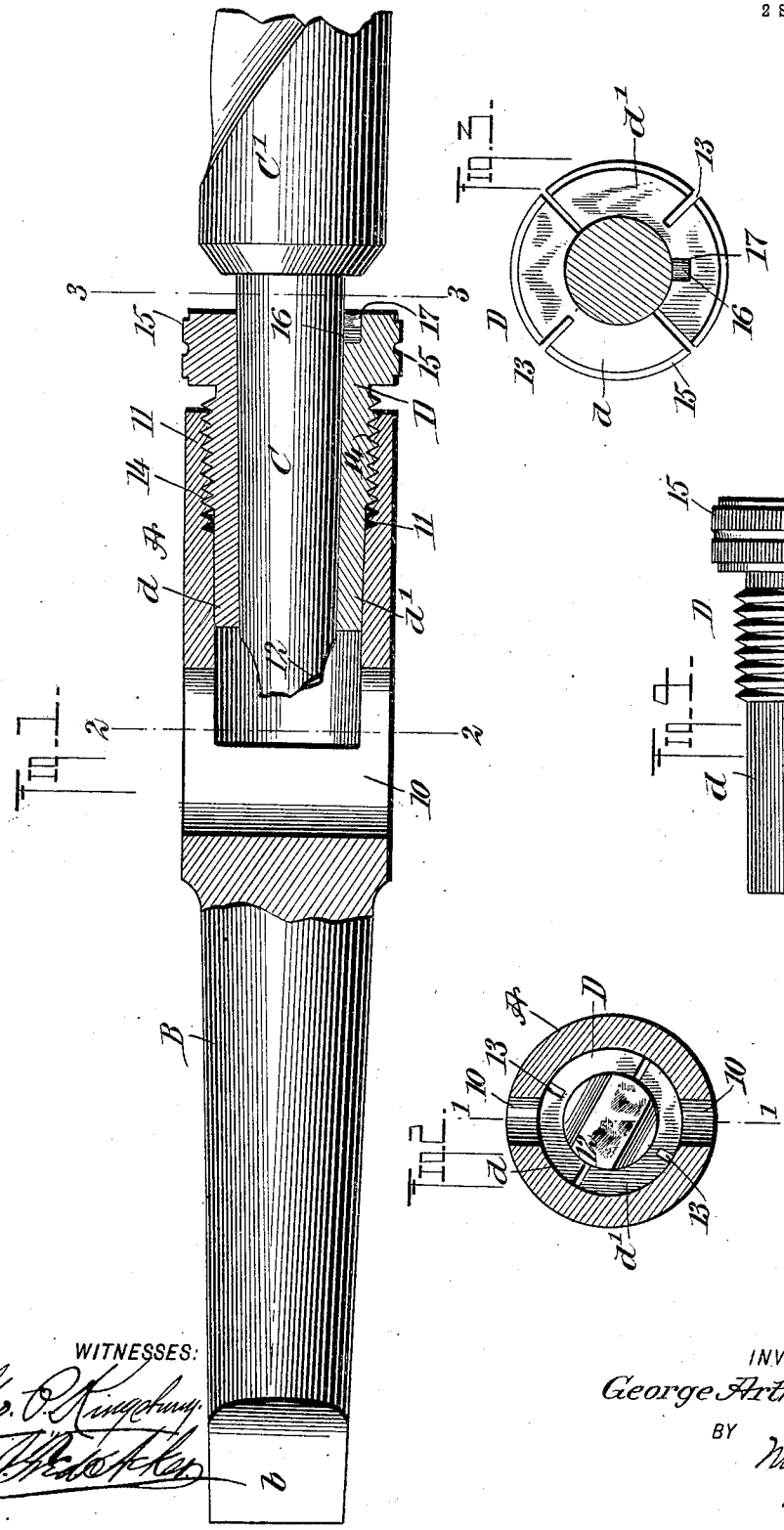


Fig. 2.

Fig. 4.

Fig. 3.

WITNESSES:

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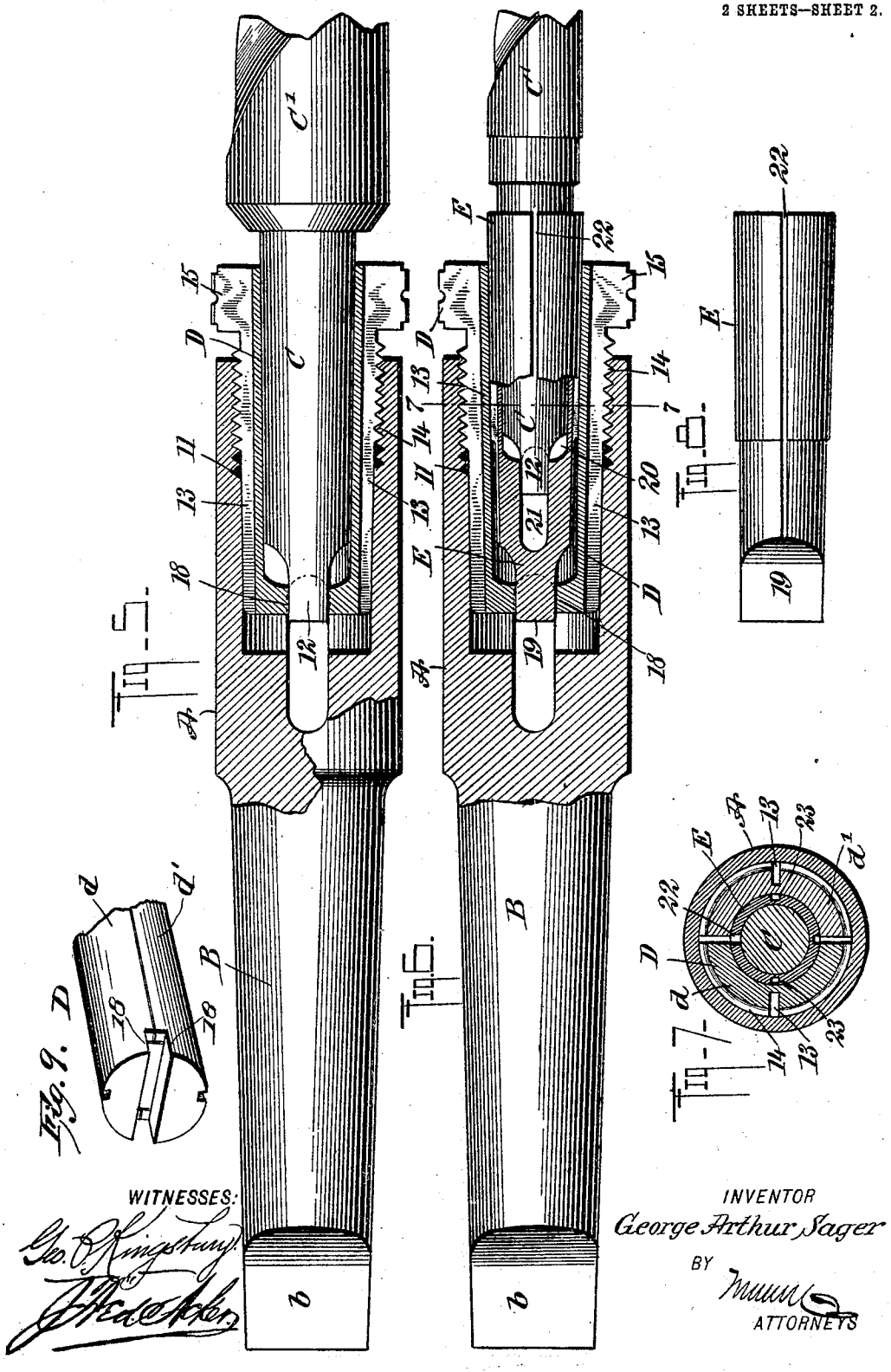


Fig. 9.

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GEORGE A. SAGER, OF ALBANY, NEW YORK, ASSIGNOR OF SIXTY ONE-HUNDREDTHS TO WILLIAM MARX, OF ALBANY, NEW YORK.

DRILL-SOCKET.

No. 799,944. Specification of Letters Patent. Patented Sept. 19, 1905.

Application filed July 21, 1904. Serial No. 217,576.

To all whom it may concern:

Be it known that I, GEORGE ARTHUR SAGER, a citizen of the United States, and a resident of Albany, in the county of Albany and State of New York, have invented a new and Improved Drill-Socket, of which the following is a full, clear, and exact description.

The purpose of the invention is to provide a drill-socket in which a drill may be expeditiously and conveniently clamped and securely held whether the tang of the drill be intact or broken and to provide means whereby any size of drill may be positively held in the socket without danger of displacement even under the most severe strain.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth, and pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a longitudinal section through the socket and a side elevation of a drill, the drill fitted to the socket being mutilated. Fig. 2 is a section taken transversely on the line 2 2 of Fig. 1. Fig. 3 is a transverse section taken practically on the line 3 3 of Fig. 1. Fig. 4 is a side elevation of a member of the locking-sleeve employed in connection with the shank of the drill and adapted to be fitted in the socket shown in Fig. 1. Fig. 5 is a partial side elevation and partial sectional view of a drill and socket, illustrating the manner in which the drill is held in the socket. Fig. 6 is a view similar to Fig. 5, illustrating a slight modification in construction, whereby the socket is adapted to receive a comparatively small sized drill. Fig. 7 is a transverse section taken practically on the line 7 7 of Fig. 6. Fig. 8 is a plan view of the inner clamping-sleeve of the form of the device shown in Fig. 6, and Fig. 9 is a detail perspective view of the sleeve.

In Figs. 1, 2, 5, 6, and 7, A represents the shell of a drill-socket, B the shank of the same, and *b* the tang of the shank. The shell A is interiorly tapering, the taper diminishing in direction of the shank. The shell A is provided with the usual slot 10, adapted to receive the releasing key or wedge for the drill, and in the further construction of the shell it is provided at its outer or entrance end with an interior thread 11 of any desired pitch and any desired length.

With reference to the construction shown in Figs. 1 and 2 I have illustrated means for holding the shank C of a drill C′ in the socket when the tang 12 of the drill-shank has been twisted off or accidentally broken, which construction enables a drill that under ordinary conditions would be comparatively useless to be as firmly held and as conveniently fitted in a socket as if it were a perfect drill. Such result is brought about by employing a sleeve D, made in two sections *d* and *d*′, adapted to fit closely together, and each section is provided with an exteriorly-located longitudinal groove 13 between its side edges. The sleeve D is exteriorly tapered to meet the taper of the shell A and is likewise correspondingly interiorly tapered. It is provided with an exterior thread 14, which engages with the interior thread 11 of the shell when the sleeve is screwed to position. In order that such action may be quickly and conveniently performed, the outer portions 15 of the sections of the sleeve D are enlarged and are milled or otherwise roughened. Since the shank C of the drill C′ could not be reliably held in the usual manner by a mutilated tang 12, I fix a pin 16 in the drill-shank near its connection with the body of the drill and provide a recess 17 in the outer end portion of one section of the sleeve D, which recess when the drill-shank is in place in the sleeve receives the said pin 16, thus preventing the drill-shank from turning in the sleeve. In operation the sleeve is slacked up one or more turns and the drill-shank is introduced into the sleeve and twisted up just sufficiently to hold its own weight, and when the tool is brought into contact with the work it automatically tightens itself. The recess 17 is preferably made in all clamping-sleeves employed in order that a drill having a mutilated tang can be instantly fitted to and held in the socket after a pin 16 has been added, thus obviating loss of time and the expense necessitated in remodeling a mutilated tang, which when remodeled may fail to serve the end intended.

In the construction of the sleeve D each section has its concavity terminating short of its inner end and the inner ends of the sections are provided with mating recesses 18, (see Fig. 4,) forming a polygonal opening, (see Fig. 9,) through which the tang of the drill-

shank when fitted in a sleeve extends, and as the side walls of the opening formed by the said recesses are, as shown, flat and the sides of the tang are also flat when the tang passes out through such opening, as shown in Fig. 5, the tang is firmly held in the sleeve and cannot turn.

In Fig. 6 I have illustrated the adaptation of the device to a drill of small diameter, showing the manner in which a socket adapted to receive a drill of a large size may be utilized with equally good results to receive a drill of a small size. This is accomplished by employing what I term an "auxiliary clamping-sleeve" E. This auxiliary clamping-sleeve E (shown in detail in Fig. 8 and in section in Fig. 7) is provided with a chamber 20, adapted to receive the shank of the drill, and at its inner end the said sleeve terminates in a tang 19, adapted to be passed through the aforesaid opening made by the combined recesses 18 in the main clamping-sleeve D, and in the further construction of the auxiliary sleeve E the chamber 20 is reduced and made polygonal adjacent to the tang 19, and this polygonal section 21 of the chamber 20 receives the tang 12 of the small drill which is fitted into the auxiliary sleeve E. It may be here remarked that this auxiliary sleeve E has an exterior taper corresponding to the interior taper of the main sleeve D, which it is adapted to enter, and has an interior taper corresponding to the taper of the shank of the drill.

In order that the clamping action which takes place when a drill-shank is forced into an auxiliary sleeve E shall be as great as possible, I preferably more or less decidedly reduce the contracted end of the auxiliary sleeve E, or that portion of the sleeve which is adjacent to the tang, so that when the outer or wider portion of the auxiliary sleeve is forced into the main sleeve D the tendency of the auxiliary sleeve will be to firmly grip the tang of the shank of the drill and prevent it from having rotary movement. This auxiliary sleeve E is provided with a longitudinal slot 22, extending through from the outside to the inside, and with a series of other longitudinal grooves 23, which extend from the outside but not to the inside of the sleeve, so that when an auxiliary sleeve with the shank of the drill inserted is introduced into a main sleeve and the main sleeve is screwed to place in the shell of the socket the contraction of the main sleeve at such time will cause a corresponding contraction of the auxiliary sleeve.

This socket is exceedingly simple and enables a person to quickly apply a drill, whether it be perfect or imperfect, at the shank and to expeditiously and conveniently fasten the shank of the drill in place in the socket.

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

1. A drill-socket, the receiving-chamber whereof is tapered inwardly and is provided at its outer end with an interior thread, and a sleeve interiorly tapered, the sleeve being in sections and the sections longitudinally slitted and provided with exterior threads, the sleeve having at one end inwardly-extending portions spaced apart a distance less than the internal diameter of the sleeve and forming an opening into which the tang of the drill is adapted to project.

2. A drill-socket having a tapering and threaded receiving-chamber, and a tapering sleeve formed in sections and provided with an exterior thread whereby to screw into the receiving-chamber of the socket, the said sleeve having at its inner end a polygonal opening leading out through the same and through which the tang of the drill is adapted to extend to prevent it from turning in the sleeve.

3. A drill-socket having a tapering and threaded receiving-chamber, and a sleeve tapered exteriorly and interiorly, the exterior taper conforming to the interior taper of the receiving-chamber of the drill-socket, the interior taper of the sleeve corresponding to the taper of the drill-shank, the said sleeve being provided with an exterior thread whereby to screw it into the receiving-chamber of the socket, and with an exterior head, said sleeve being furthermore constructed in sections, the sections having longitudinal grooves therein, the head of the sleeve having a recess therein adapted to engage a projection on the shank of the drill.

4. A drill-socket having a tapering receiving-chamber, a sectional compressible tapering sleeve adapted to be fitted in the said chamber, the inner surface of the said sleeve being tapered, the sleeve having an opening at its inner end, partly in one section and partly in the other, an auxiliary tapering sleeve having a chamber to receive the shank of a drill, and a contracted extension from the chamber, adapted to receive and hold the tang of a drill-shank, the said auxiliary sleeve being compressible and fitted to enter the main sleeve, externally reduced at its inner end and being slotted longitudinally, the auxiliary sleeve being likewise provided with a tang which passes through and is held in the inner end opening in the main sleeve.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE A. SAGER

Witnesses:
J. FRED. ACKER,
JNO. M. RITTER.