W. PRELLWITZ.

TOOL STEEL RETAINER FOR PERCUSSIVE TOOLS.

APPLICATION FILED JAN. 7, 1911.

1,000,036.

Patented Aug. 8, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

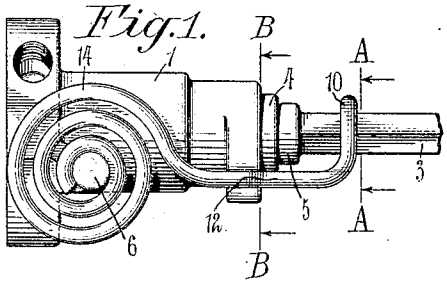



Fig. 3.

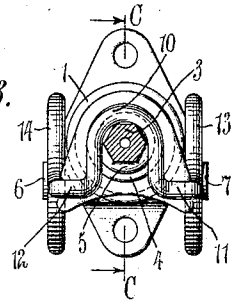



Fig. 2.

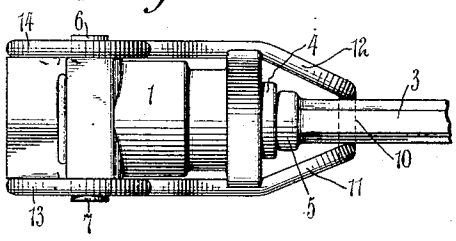



Fig. 4.

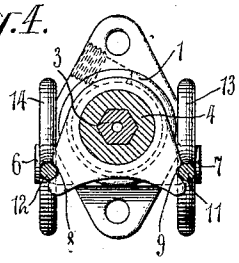



Fig. 5.

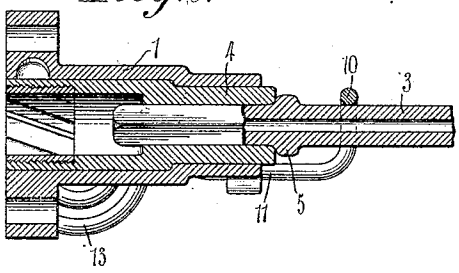
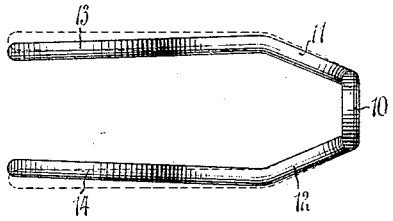



Fig. 6.

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2 SHEETS—SHEET 2.

Fig. 7.

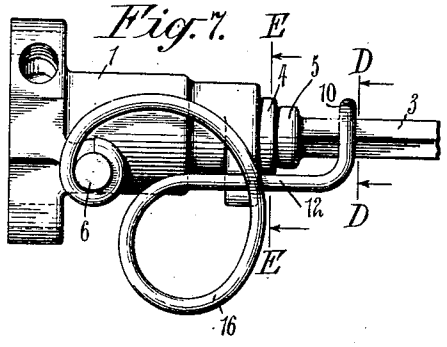



Fig. 9.

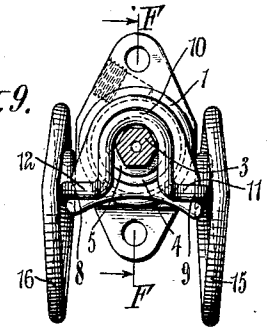



Fig. 8.

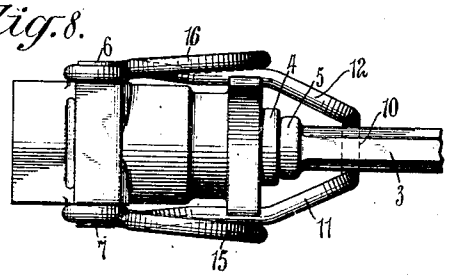



Fig. 10.

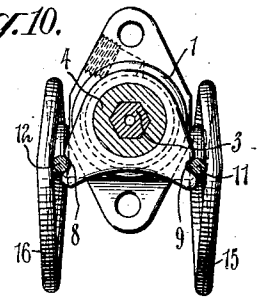



Fig. 11.

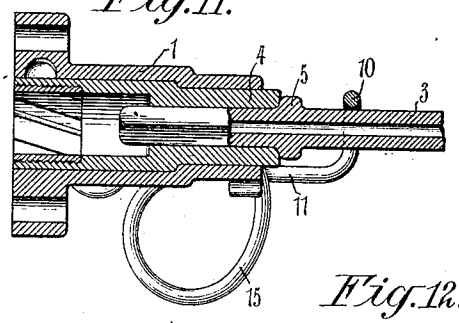
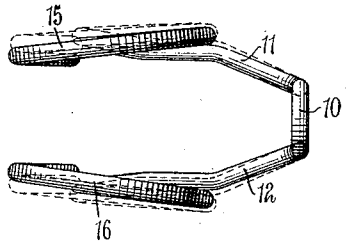



Fig. 12.




Witnesses:

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F. George Barry

Inventor:

William Prellwitz

by his attorneys

Brown & Sumner

# UNITED STATES PATENT OFFICE.

WILLIAM PRELLWITZ, OF EASTON, PENNSYLVANIA, ASSIGNOR TO INGERSOLL-RAND COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

## TOOL-STEEL RETAINER FOR PERCUSSIVE TOOLS.

1,000,036. Specification of Letters Patent. **Patented Aug. 8, 1911.**

Application filed January 7, 1911. Serial No. 601,436.

*To all whom it may concern:*

Be it known that I, WILLIAM PRELLWITZ, a citizen of the United States, and resident of Easton, in the county of Northampton and State of Pennsylvania, have invented a new and useful Improvement in Tool-Steel Retainers for Percussive Tools, of which the following is a specification.

This invention relates to tool steel retainers for percussive tools, such, for instance, as hammer drills, and has for its principal object to provide a tool steel retainer which may be readily brought into and out of its operative position for limiting the outward movement of the tool steel when it is not striking its work.

A further object is to provide a tool steel retainer of the above character which will have a considerable elastic yielding movement longitudinally so as to obviate the tendency of the retainer to break under the blows of the tool steel.

A further object is to provide such a relationship between the retainer and the tool steel holder that the tendency of the retainer when in use, will be to stay in engagement with the tool steel rather than to be thrown out of engagement therewith when subjected to the blows of the tool steel.

In the accompanying drawings, Figure 1 represents the front portion of a hammer drill in side elevation with one form of my improved tool steel retainer applied thereto, the retainer being shown in its operative position. Fig. 2 is a top plan view of the parts shown in Fig. 1. Fig. 3 is a transverse section taken in the plane of the line A—A of Fig. 1. Fig. 4 is a transverse section taken in the plane of the line B—B of Fig. 1. Fig. 5 is a longitudinal central section taken in the plane of the line C—C of Fig. 3. Fig. 6 is a plan view of the tool steel retainer showing the arms in their normally contracted position in full lines and in their spread position in dotted lines. Fig. 7 represents the front portion of a hammer drill in side elevation with a modified form of my improved tool steel retainer applied thereto. Fig. 8 is a top plan view of the same. Fig. 9 is a transverse section taken in the plane of the line D D of Fig. 7. Fig. 10 is a transverse section taken in the plane of the line E—E of Fig. 7. Fig. 11 is a longitudinal central section taken in the plane of the line F—F of Fig. 9, and Fig. 12 is a plan view of the retainer, the arms being shown in their normally contracted position in full lines and in their spread position in dotted lines.

The front head of the hammer drill cylinder is denoted by 1, the drill steel by 3 and the drill steel chuck by 4. The drill steel is provided with an abutment for co-acting with the drill steel retainer to limit the outward movement of the drill steel when it is not striking its work, which abutment in the present instance, is shown as an annular shoulder 5, formed integral with the steel, which shoulder also serves to limit the distance which the steel may be inserted into its chuck. The front head 1 of the drill cylinder is provided with a pair of lugs 6, 7, projecting from the opposite sides of the head at points offset from its longitudinal axis. To the front of these lugs 6 and 7, the front head 1 of the cylinder is provided with shallow recesses 8, 9, upon opposite sides of the front head, which recesses serve as seats for receiving the arms of the tool steel retainer and holding the retainer in its operative position against unintentional displacement as will hereinafter appear. These recesses 8 and 9 may be offset from the longitudinal axis of the front head, as shown.

The drill steel retainer shown in Figs. 1 to 6 inclusive, is formed from a single length of wire bent to form a yoke 10 at the outer ends of side arms 11, 12, the inner ends of which side arms are secured to the front head 1 by engaging the oppositely arranged lugs 6 and 7 thereon. To permit a sufficient elasticity to the retainer in a longitudinal direction, whereby the retainer will yield under the impact of the drill, steel due to the abutment 4 striking the yoke 10, the side arms 11 and 12 are developed into coiled springs 13, 14, the inner coils of which snugly embrace the lugs 6 and 7. These side arms 11 and 12 are normally contracted toward each other, as shown clearly in Fig. 6, so that the retainer may be applied to the lugs 6 and 7 by spreading the arms out of their normal position over the ends of the lugs 6 and 7. The retainer is held normally in its operative position by forcing the arms 11 and 12 into the seats formed by the recesses 8 and 9.

In the form of drill steel retainer shown in Figs. 7 to 12 inclusive, the coils 15, 16 formed in the side arms of the retainer for permitting a substantially longitudinally yielding movement of the retainer, are provided at points intermediate the inner and outer ends of the arms instead of at the inner ends of the arms as shown in the forms represented in Figs. 1 to 6 inclusive. In other respects the retainer shown in Figs. 7 to 12 inclusive is quite similar to the one shown in Figs. 1 to 6 inclusive.

In the forms of drill steel retainer herein shown, it will be seen that a retainer is provided which may be readily removed from and replaced on the drill. It will also be seen that the retainer may be very readily swung into and out of its operative position, and when in its operative position, is held against unintentional displacement both by the seating of its side arms in the recesses 8 and 9, and also by securing the retainer at points offset from the longitudinal axis of the drill. It will also be seen that by the provision of the coils in the side arms of the retainer, the retainer may have a sufficient longitudinal yielding movement to obviate any tendency of the retainer to be broken by the impact of the drill steel when the drill steel is not striking its work.

While I have shown and described this retainer in connection with a hammer drill, it is to be understood that it could be used equally well in connection with tools of various other types without departing from the spirit and scope of my invention, the gist of which is to provide a novel, simple and inexpensive retainer for retaining a tool steel in position with respect to its holder when the steel is not striking its work.

What I claim is:

1. A tool steel, its holder and a tool steel retainer comprising a wire bent to form a yoke for embracing the steel and longitudinally yielding side arms secured to the holder.

2. A tool steel, its holder and a tool steel retainer comprising a wire bent to form a yoke for embracing the steel and side arms secured to the holder at points offset from its longitudinal axis.

3. A tool steel, its holder having pairs of oppositely arranged lugs and recesses and a tool steel retainer comprising a wire bent to form a yoke for embracing the steel and side arms secured to said lugs and arranged to enter said recesses when the retainer is in its operative position.

4. A tool steel, its holder and a tool steel retainer comprising a wire bent to form a yoke for embracing the steel and side arms secured to the holder, said side arms being provided with coils for permitting a substantially longitudinally yielding movement of the retainer.

5. A tool steel, its holder and a tool steel retainer comprising a wire bent to form a yoke for embracing the steel and side arms having their inner ends coiled and secured to the holder and means for holding the retainer in its operative position against unintentional displacement.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two witnesses, this fourth day of January 1911.

WILLIAM PRELLWITZ.

Witnesses:

F. GEORGE BARRY,

HENRY C. THIEME.