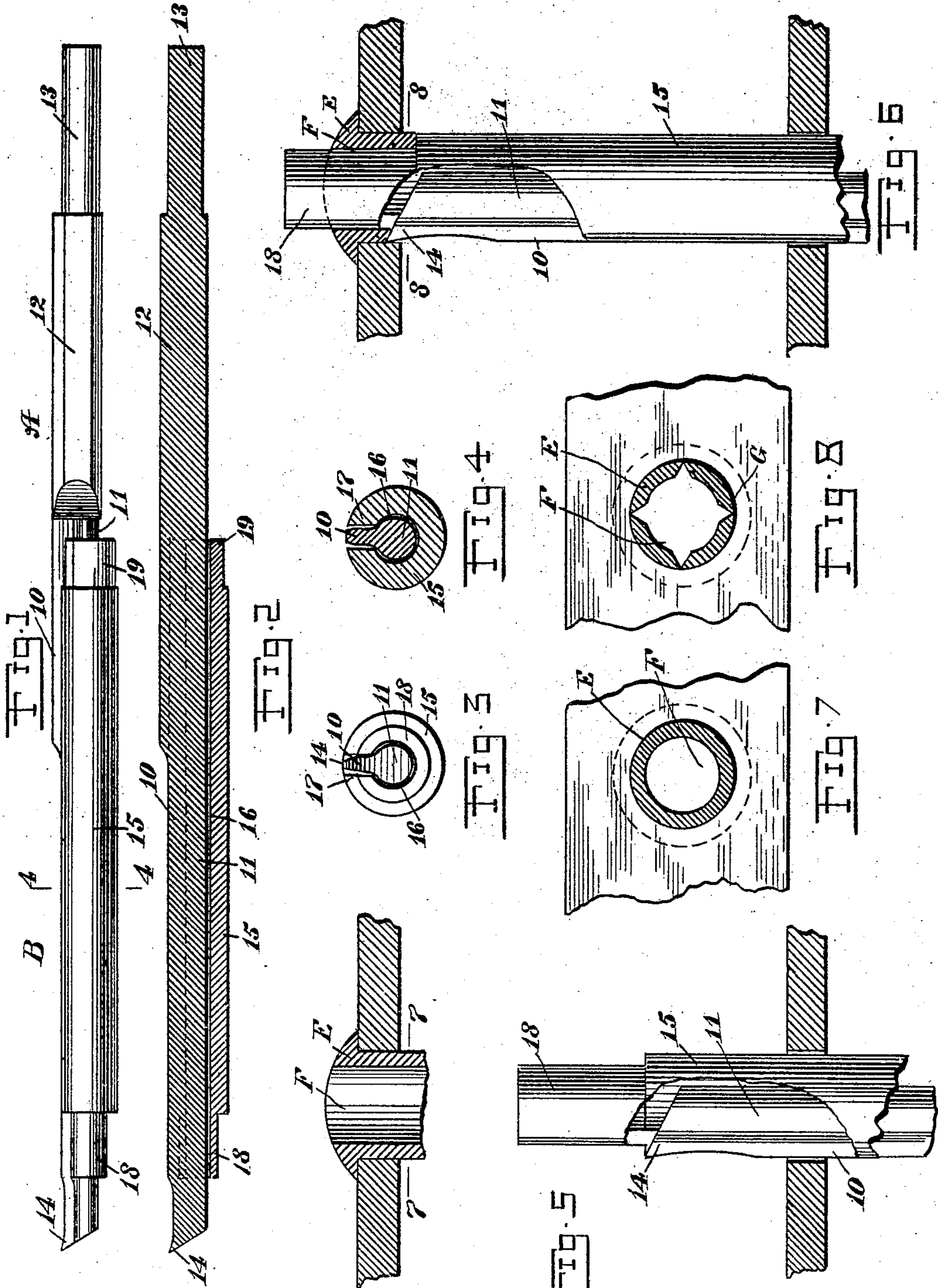


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CUTTING TOOL.  
APPLICATION FILED MAY 3, 1909.

945,627.

Patented Jan. 4, 1910.



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# UNITED STATES PATENT OFFICE.

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## CUTTING-TOOL.

945,627.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed May 3, 1909. Serial No. 493,656.

*To all whom it may concern:*

Be it known that I, WILLIAM SMITH, a citizen of the United States, and a resident of Peshtigo, in the county of Marinette and State of Wisconsin, have invented a new and Improved Cutting-Tool, of which the following is a full, clear, and exact description.

This invention relates to cutting tools and more particularly to a tool for removing the ends of broken stay bolts in locomotive boilers, consisting of a cutter member arranged to move in a guide member or sheath which has an end formed so that it can be inserted in an opening drilled in the broken end of the stay bolt, whereby the cutter can be operated to cut out the broken end of the stay bolt.

The object of the invention is to provide a simple, strong and efficient cutting tool, by means of which the ends of broken stay bolts can be removed from locomotive boilers, expeditiously, and at the expense of little time and labor, and by means of which this operation can be effected when it is possible to operate at one side only of the boiler sheet in which the broken end is located.

The invention consists in the construction and combination of parts to be more fully described hereinafter and particularly set forth 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 views, and in which—

Figure 1 is a side elevation of an embodiment of my invention; Fig. 2 is a longitudinal section of the device; Fig. 3 is an enlarged end elevation of the tool; Fig. 4 is an enlarged transverse section on the line 4—4 of Fig. 1; Fig. 5 is a cross section of the inner and the outer sheets of a boiler, showing the end of a broken stay bolt, and a broken view of the tool; Fig. 6 is a similar view showing the tool in position to cut; Fig. 7 is a cross section on the line 7—7 of Fig. 5; and Fig. 8 is a similar view on the line 8—8 of Fig. 6, the cutting tool being omitted.

Before proceeding to a more detailed explanation of my invention, it should be clearly understood that while the tool is especially designed for removing the ends of broken stay bolts of locomotive boilers where the ends are so positioned that they are covered at one side by the frame of the locomotive, the tool can also be advanta-

geously employed for other and like purposes, where it is necessary to cut out metal remaining in openings of the sheets, and where it is possible to operate from one side only of the sheet. Stay bolts in locomotive boilers usually fracture near the inner side of the outside boiler sheet. When the broken bolt is positioned behind the frame of the locomotive or other obstructed part of the same, it is necessary to drill the bolt out of the firebox and drop it out of the way, whereupon the stub remaining in the outside sheet is centered with a long center punch and a hole bored therethrough, and the part of the drilled bolt remaining in the sheet is cut out with a round-nosed chisel. This is difficult to do and it sometimes happens that the sheet is grooved in the operation and trouble is caused thereby. My tool is designed to obviate this difficulty and inconvenience.

Referring more particularly to the drawings, I provide a cutter member A consisting of a blade 10 having a back 11 of substantially semicircular cross section. The body 12 of the cutter member is of angular cross section so that it can be easily gripped, and has preferably a constricted end 13. The extremity of the blade 10 is provided with a cutting nose or point 14 which preferably fashions a V-shaped cut. I further provide a sheath or guide member B consisting of a body 15 provided with a longitudinal bore 16 of substantially semicircular form and adapted slidably to receive the back 11 of the blade. The sheath B has further, a slot 17 extending the length thereof and adapted slidably to receive the blade itself, as is shown most clearly in Figs. 3 and 4. One end 18 of the sheath, which is of circular cross-section, is constricted so that the blade projects therebeyond. The other end 19 of the sheath is likewise constricted and is of angular cross-section so that it can be easily gripped by a suitable tool. The cutting edge of the blade does not project beyond the surface of the sheath except at the constricted end 18. Consequently, when the constricted end is inserted in an opening and the cutter forced longitudinally of the sheath, the cutter will become operative at the constricted end only, of the sheath.

The operation of my device is as follows: The stub or remaining end E of the fractured stay bolt has a hole F drilled there-through, which is of the same diameter as the



constricted end 18 of the sheath. This constricted end is then inserted in the hole in the bolt and the cutter member is operated to cut the metal surrounding the hole as is shown in Fig. 4. When one cut has been formed the sheath is turned, the cutter member being retracted, and a second cut is made. In this way the end of the bolt can be severed into a number of parts to permit its being easily knocked out of place.

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

1. A cutting tool, comprising a guide sheath having a longitudinal slot, a removable cutter member freely slidable in said sheath and having a blade projecting into said slot, said sheath having a reduced part whereby said blade can project laterally beyond said part, said cutter member having a portion constituting a grip wherewith it can be manipulated.

2. A cutting tool, comprising a sheath having a constricted end, and extending longitudinally thereof a slot, and a removable cutter member comprising a blade slidable in said slot, and a body affording a grip by means of which said blade can be reciprocated in said slot.

3. A cutting tool, comprising a sheath having a constricted end of circular cross-section, and a constricted end of angular cross-section, said sheath having a slot longitudinally thereof, and a removable cutter member having a blade freely slidable in said slot, and a body affording a grip, said blade having the end provided with a cut-

ting edge, and extending laterally beyond said sheath at said constricted end only.

4. A cutting tool, comprising a body, and a cutting member guidingly carried by said body and freely movable in the direction of the length of said body, said cutter member being operative when actuated in the above-stated direction, to make a cut substantially parallel to the length thereof.

5. A cutting tool, comprising a body, and a cutter member guidingly carried by said body and freely movable longitudinally thereof, said body having a part adapted to be inserted in an opening, said member having a part constituting a manipulating grip, and when actuated, serving to form a cut extending longitudinally of and located laterally with respect to said body.

6. A cutting tool, comprising a sheath having a reduced end of rounded cross section and a reduced end of angular cross section, said sheath having a slot extending longitudinally thereof, and of partly rounded cross section and of partly reduced cross section, and a cutter freely movable in said slot and having a blade corresponding in cross section to the cross section of said slot, said cutter having a body affording a grip, and being provided with a cutting edge at the extremity thereof remote from said body.

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

WILLIAM SMITH.

Witnesses:

SAMUEL YONKOSKY,  
WILLIAM J. MORIARTY.