

(No Model.)

J. T. CONNELLY.
TUBULAR DRILL GUIDE.

No. 386,739.

Patented July 24, 1888.

Fig. 1.

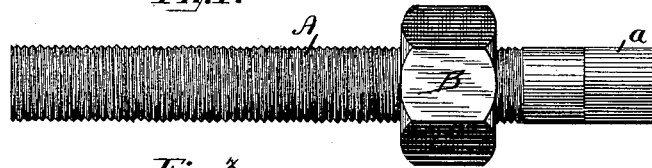


Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.

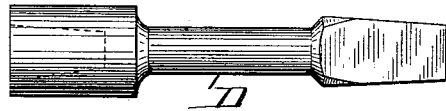
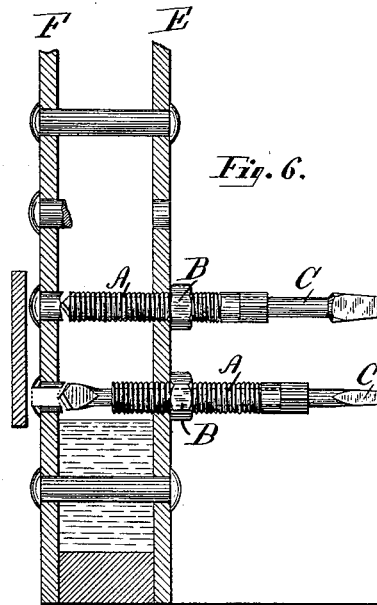


Fig. 6.



Attest:

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by his Atty

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UNITED STATES PATENT OFFICE.

JAMES T. CONNELLY, OF HUNTINGTON, WEST VIRGINIA.

TUBULAR DRILL-GUIDE.

SPECIFICATION forming part of Letters Patent No. 386,739, dated July 24, 1888.

Application filed April 19, 1888. Serial No. 271,121. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. CONNELLY, a citizen of the United States, residing at Huntington, in the county of Cabell and State of West Virginia, have invented certain new and useful Improvements in Tubular Guide-Drills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in drilling out and removing old, worn, or broken stay-bolts from the fire-boxes of locomotives, &c., which may be behind the frame-work, drivers, or other portions of the engine, and to remove which necessitates, in many cases, the removal or displacement of the frame-work, &c., to admit access of the drill to such portions of the bolts as remain in the outer sheet of the fire-box. If the drill is applied from the inside of the fire-box, the workman in many cases works in the dark, and can only determine by sense of touch (and that very imperfectly) whether in drilling out the bolt from the outer sheet he is confining the drilling operation to the bolt or part thereof in said outer sheet. Very often he drills partly in the bolt and partly into the outer fire-box sheet and makes a bad job, it being almost impossible with the appliances and drills heretofore employed to simply drill and remove the old bolt, and nothing more.

The object of my present invention is to provide a guide for the drill, and to so organize it for operation with the drill and from the inside of the fire-box that the old bolts may be removed and accurate drilling insured, without danger of irregular drilling of the outer sheet of the fire-box itself.

I have already patented, as No. 373,815, under date of November 29, 1887, improvements in the rethreading of the old holes of stay-bolts for fire-box sheets and replacing such old bolts with new ones from the inside of the fire-box, and my present improvements relate to accurately and quickly removing or drilling out such old, worn, or broken stay-bolts preparatory to rethreading the holes for the new bolts.

The subject-matter claimed by me will be first described in connection with the accompanying drawings, which illustrate so much of

my invention as is necessary for a full understanding thereof, and will then be particularly recited in the summary at the close of this specification.

In said drawings, Figure 1 is a view in elevation of the improved tubular guide for the drill, and Fig. 2 is an end view thereof from the wrench end. Fig. 3 is a view of a drill with a long stem to be passed through the tubular drill-guide from the wrench end of said tubular guide. Fig. 4 is a view of a drill with an enlarged drill-point fitted to have its stem passed through the tubular drill-guide from its front end, and Fig. 5 is a detachable wrench end for the form of drill-stem shown in Fig. 4. Fig. 6 is a sectional view of a portion of a locomotive fire-box, the inner and outer sheets or shells of which are stayed by the usual stay-bolts, illustrating the application of my improvements.

Suppose some old or worn or broken stay-bolts need replacing, to which access from the outside is prevented by the intervening frame, drivers, &c. Ready access to the part that remains in the inner sheet or shell is had from the inside, and by proper drilling may be removed without injury to the thread in the hole of the fire-box shell, and so that if injured the hole may be readily rethreaded upon the line and pitch of the old stay-bolt; but to accurately drill the part of the bolt that remains in the outer shell is a difficult matter, and accurate drilling is almost impossible in the old way. To accurately drill and remove the portion of the old bolt from the outer sheet without injury to the latter, I make use of an externally-threaded tubular drill-guide, A, which is screwed into the thread of the old stay-bolt hole of the inner shell by the wrench end *a*, and made to approach the part of the bolt in the outer sheet which is to be removed. It does so in a straight line, being guided by the threaded walls of the hole in the inner sheet, through which it is being screwed. (See Fig. 6.) When the tubular guide has been screwed in far enough, or so as to somewhat nearly approach the broken bolt end, it is, or may be, firmly locked in position by the jam-nut B or some other equivalent locking device. The drill C is now passed through the tubular guide and may be readily driven by its operating device to accurately drill out or remove the bolt. In case a drill is needed with a drill point or end larger than

can pass through the tubular guide, the stem may be passed through the guide from its front end and the guide then screwed in place. The small end of the stem may have a detachable wrench end, D, Fig. 5, so as to adapt both drills to one ratchet-drill or other operating device.

Fig. 6 illustrates both forms of drills in operation, E being the inner shell or sheet of the fire-box, and F the outer sheet or shell thereof.

10 I claim as my invention—

1. The tubular drill-guide, substantially as described.

2. The combination of the tubular drill-

guide, having its bore extending its entire length, with a drill having its stem passing therethrough, so as to work and be guided therein, substantially as described. 15

3. The combination of the tubular drill-guide, its jam-nut, and the drill passing through said guide, substantially as described. 20

In testimony whereof I affix my signature in presence of two witnesses.

JAMES T. CONNELLY.

Witnesses:

AUSTIN CHESNUT,
R. ELTING.