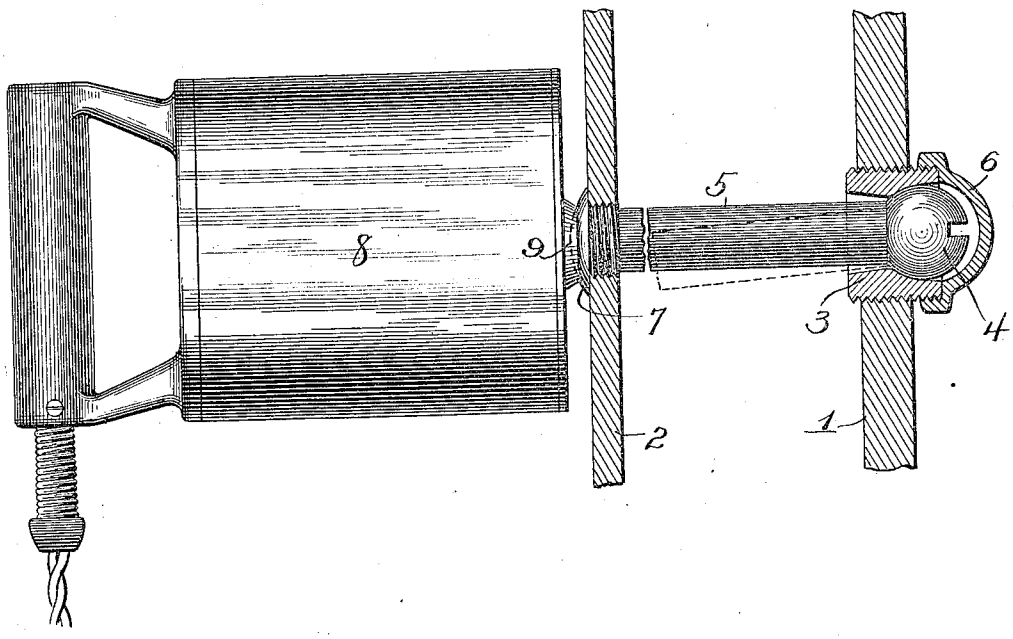
E. I. DODDS.

METHOD OF TESTING THE STAY BOLTS OF BOILERS.

APPLICATION FILED JULY 26, 1916.

1,236,067.

Patented Aug. 7, 1917.



WITNESSES

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ETHAN I. DODDS, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO FLANNERY BOLT COMPANY, OF PITTSBURGH, PENNSYLVANIA.

METHOD OF TESTING THE STAY-BOLTS OF BOILERS.

1,236,067. Specification of Letters Patent. Patented Aug. 7, 1917.

Application filed July 26, 1916. Serial No. 111,514.

To all whom it may concern:

Be it known that I, ETHAN I. DODDS, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Methods of Testing the Stay-Bolts of Boilers; 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.

This invention relates to an improved method of testing the stay bolts of boilers, the object of the invention being to provide a simple and efficient method whereby the existence of a broken bolt in a boiler structure may be readily determined.

A further object is to provide a method of testing stay bolts in a boiler structure which will cause a flexible stay bolt to vibrate if broken at a point near the inside sheet of the boiler structure, and thus cause a sound which will indicate the broken condition of the bolt.

With these objects in view, the invention consists in certain steps in the method of testing stay bolts in a boiler structure as hereinafter set forth and pointed out in the claims.

The accompanying drawing is a sectional view of a portion of a boiler structure, and illustrating an embodiment of my improved method.

1 represents an outer boiler sheet and 2 an inner boiler sheet. A sleeve 3 passes through the outer boiler sheet and is formed to provide a bearing for the rounded head 4 of a stay bolt 5. A cap 6 is screwed onto the sleeve 5 so as to inclose the head of the bolt but to be spaced somewhat therefrom. The other end of the stay bolt passes through the inner boiler sheet 2 and may be upset as indicated at 7.

An electro-magnet is indicated at 8 with its pole 9 in contact with the upset end of the stay bolt. This electro-magnet may be of a construction such as indicated in my application for patent filed July 25th, 1916 Serial No. 111,309 and its coil is included in a circuit of alternating electric current, in any approved or convenient manner, which circuit may be provided with suitable switch devices (not shown) as will be readily understood.

When the electro-magnet is applied to the end of the bolt, and the coil connected with a source of alternating electric current, lines of force will pass through the bolt end alternately in opposite directions, and hence if the bolt be broken near its inner end as indicated in the drawing, the short end section will constitute in effect an extension of the magnet. If the bolt be broken as indicated in the drawing, its longer section will tend to drop by gravity, as indicated in dotted lines, so that when the shorter bolt section in the inner boiler sheet is magnetized so that its polarity will alternate rapidly, the larger bolt section will be caused to oscillate against the shorter broken section and thus produce a sound which would indicate the fact that the bolt is broken. The headed end of the bolt will also oscillate in the bearing sleeve and the sound thus caused will indicate that the bolt is broken, in the event that the broken sections should have become too widely separated to grate one against the other.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. The herein described method of testing staybolts in boiler structures, consisting in magnetizing the bolt with a flux of alternating polarity, and noting whether there is resulting relative shifting of the two end portions.

2. The herein described method of testing stay bolts in boiler structures, consisting in applying an electro-magnet to one end of the bolt, the coil of said magnet being in a circuit of a source of alternating electric current, and noting whether there is resulting relative shifting of the two end portions.

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

ETHAN I. DODDS.

Witnesses:
F. H. ALLISON,
EDWIN SPENCER RYCE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."