(No Model.)

J. LEE.

TAP SCREW PLUG.

No. 551,354. Patented Dec. 10, 1895.

Fig. 1.

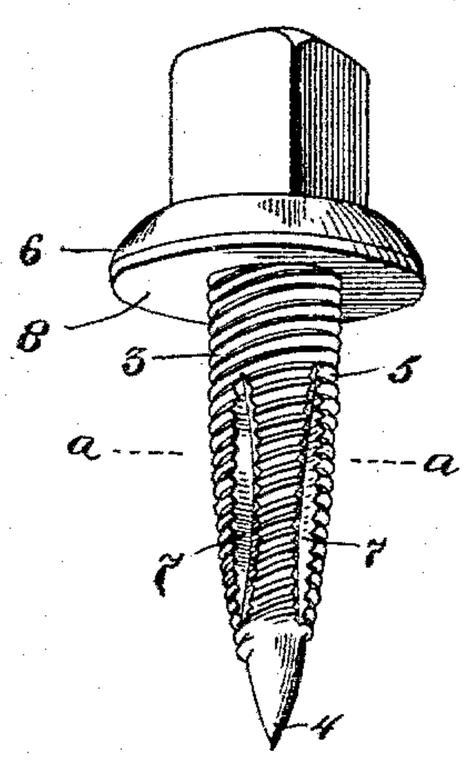


Fig. 2.

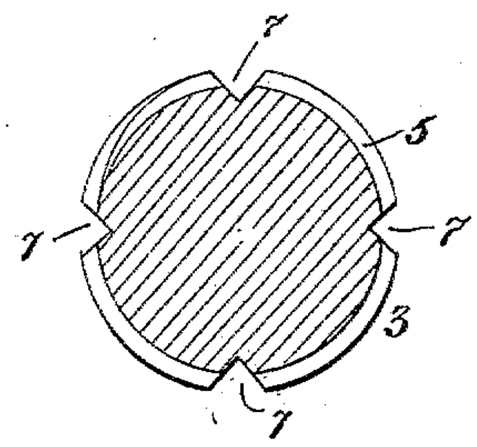
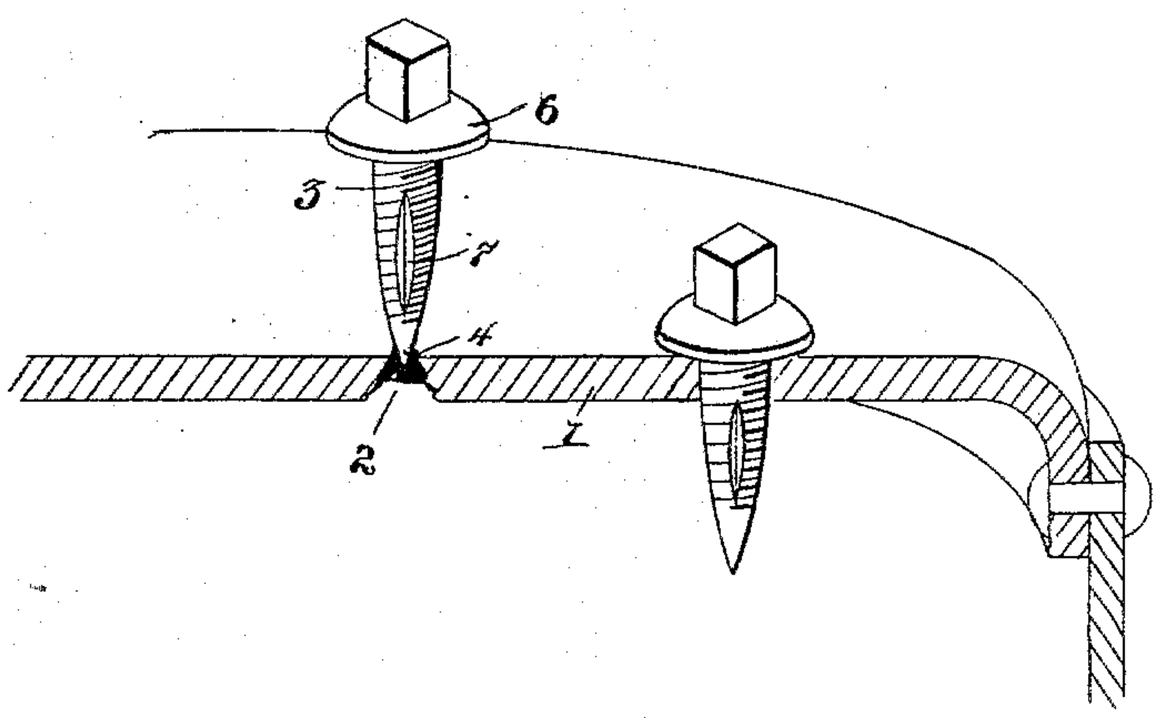


Fig. 3.



WITNESSES
Howard D. Orr.
L. E. Jones

INVENTOR
James Lee.
By Chas J. Gooch
Attorney

UNITED STATES PATENT OFFICE.

JAMES LEE, OF PLYMOUTH, PENNSYLVANIA.

TAP-SCREW PLUG.

SPECIFICATION forming part of Letters Patent No. 551,354, dated December 10, 1895.

Application filed May 31, 1895. Serial No. 551,288. (No model.)

To all whom it may concern:

Be it known that I, JAMES LEE, a citizen of the United States, residing at Plymouth, in the county of Luzerne and State of Pennsylvania, have invented certain new and useful Improvements in Tap-Screw Plugs; 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, as hereinafter set forth, to a novel tap-screw plug for repairing and stopping leaks in boilers and the like.

In the drawings, Figure 1 represents, in perspective, one of my novel tap-screw plugs. Fig. 2 represents a cross-section on the line *a a* of Fig. 1. Fig. 3 represents a diagrammatic view illustrating the application of my improved plug to a section of a boiler in stopping a leak therein.

It is well known that steam and hot-water boilers and articles of kindred character frequently spring a leak through the corrosion of parts thereof before the receptacle is sufficiently worn to necessitate its replacement by a new one. The most common method of repairing a boiler so affected is to "plug" it, which is accomplished by first preparing the aperture with a reamer or drill and then using a "tap" to cut a thread in the sides of said aperture. A suitable plug is then inserted and screwed into place with a wrench. While the result of such an operation is satisfactory when properly done, the process or method of doing it is tedious and often quite difficult by reason, as frequently happens, of the cramped position and location of the leak and the consquent lack of sufficient space in which to operate the tools. Various other methods have been suggested necessitating the employment of an amount of skill and labor in excess of that required by my invention.

The object of my invention is to provide a means whereby the method of plugging a leak may be simplified and facilitated.

1 represents a section of a boiler, and 2 may represent a hole therein caused by corrosion or otherwise and through which the contents of the boiler will leak unless plugged.

My improved tap-screw plug, by means of which leaks of varying size can be speedily and readily plugged by an unskilled person wherever the leak may be located and without interfering with the use of the boiler, is of simple construction, can be readily and cheaply made, and, as has been demonstrated in practice, is completely effective in every instance, consists of a rounded stem 3, gradually tapering at its body portion toward the point 4, which is of abrupt or sharp taper and may, as shown, be plane-faced. This stem is circumferentially threaded, as shown at 5, from near the point to the base at the shoulder 6, a series of longitudinal slots or grooves 7 of angular formation being formed in the threaded portion so as to divide the threaded portion mediately of the shoulder 6 and point 4 into a series of sections, said slots or grooves 7 terminating, as shown, inwardly of the base portion 8 of the stem so as to leave the threaded and thick base portion uncut, whereby said base portion will be adapted to hermetically close the leak opening in the boiler and prevent the passage of the contents of the boiler, which would be apt to result were said grooves extended to and through the base 8. By forming angular slots or grooves, as 7, in the tapering portion of the body of the plug there is imparted to each thread through which they pass a cutting profile, by means of which the material of the boiler will be speedily and easily cut as the tap is inserted in position and, also, a series of clearances are formed through which the chips of metal automatically discharge as the plug is turned.

The application of my improved tap-screw for closing leaks in boilers and the like is very simple. All that is necessary is to insert the pointed end in the leak-orifice; then with a light stroke of a wrench or other device start the plug in the proper direction and then apply the wrench to the square head 9 and screw the plug in until the shoulder rests against the outer face of the boiler. As the cutting profiles of the threads, or tap portion of the plug, turn in the shell of the boiler, the edge of the fracture is shaped to snugly fit around the thicker ungrooved base portion of the plug.

A mixture of lead and oil may, if desired, be placed under the shoulder before screwing home to form, with said shoulder, a hermetically-tight joint. By the employment of this tap-plug a perfect closure of the leak-fracture is readily secured in a very easy and simple

manner and at slight cost, the thicker base portion securely closing the fracture and combining with the prepared edge thereof while the shoulder-cap covers, braces and strengthens the surrounding portion of the fractured part, thereby strengthening the boiler at that portion.

Having thus described my invention, what I claim is—

1. A tap screw plug for closing fractures, or leaks, in boilers, consisting of a circumferentially-threaded inwardly-tapering body portion, a series of longitudinal, angular, grooves dividing said threaded body into a series of cutting edges, a plane-faced pointed inner end, a circumferential cap near its outer end having a flat under face and a convex upper surface and a square head adapted to receive a wrench, substantially as and for the purpose set forth.

2. A tap screw plug for closing fractures, or leaks, in boilers, consisting of a circumferentially-threaded inwardly-tapering body portion, a series of longitudinal, angular, grooves dividing said threaded body into a series of cutting edges, a plane-faced pointed inner end, and a circumferential cap at its outer portion, substantially as and for the purpose set forth.

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

JAMES LEE.

Witnesses:
JOHN SEDLUK,
JOHN GOLIGHTLY.