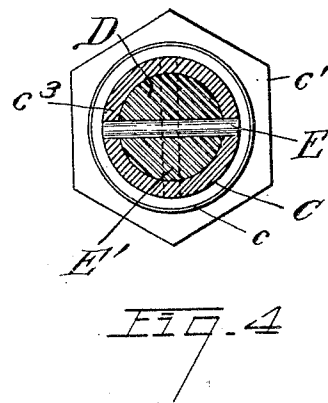
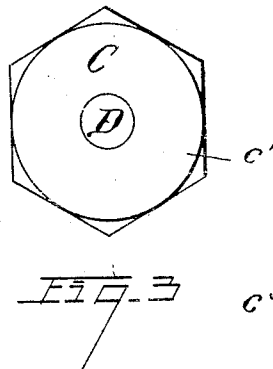
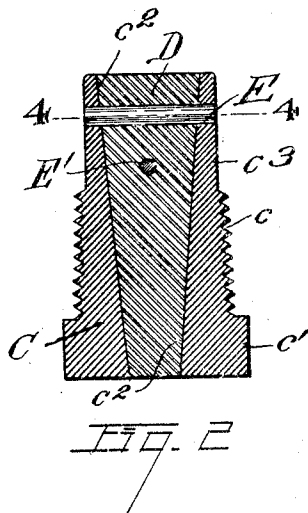
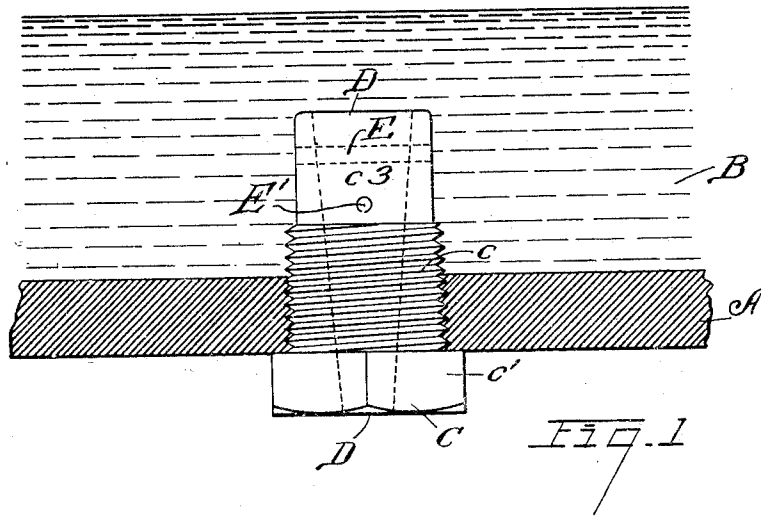


W. F. DUCKWITZ.
FUSE PLUG.
APPLICATION FILED NOV. 22, 1909.

959,208.

Patented May 24, 1910.



Witnesses =

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UNITED STATES PATENT OFFICE.

WILLIAM F. DUCKWITZ, OF CLEVELAND, OHIO.

FUSE-PLUG.

959,208.

Specification of Letters Patent.

Patented May 24, 1910.

Application filed November 22, 1909. Serial No. 529,250.

To all whom it may concern:

Be it known that I, WILLIAM F. DUCKWITZ, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Fuse-Plugs, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

It has been found very desirable to equip steam boilers with plugs of readily fusible metal so that when the water in the boiler becomes unduly low the consequent heating of the plug will melt it sufficiently to allow the escape of steam, thereby advising the fireman or engineer of the conditions, and automatically relieving the pressure in the boiler, and, as such devices are frequently installed, operating to a greater or less extent to put out the fire by discharging steam and water thereon. Such plugs as described have commonly been made of a readily fusible substance carried in a sleeve which is screwed into an opening in the boiler. In order that such plug may normally carry the pressure on it, it has been customary to taper the plug toward a point outside of the boiler, the sleeve being correspondingly reduced as the bore therein progresses outwardly. Now, with such plugs, the fusing of the plug proper results from the sleeve being heated due to the heat of the fire and the absence of sufficient water to keep the sleeve cool. Consequently, the melting of the fusible plug takes place at its periphery where it contacts with the stationary sleeve, and the result is that as the plug melts it simply slides down into the tapered bore continuing to plug it and not accomplishing the objects desired until there has been very considerable melting of the plug.

The object of this invention is to provide a plug which will be effective immediately upon the water becoming low and will at once allow the escape of steam with the consequent notification to the fireman or engineer and the relief of pressure and the reduction of the fire. I accomplish this object by providing means which are not readily fusible for holding the plug in place after it has begun to fuse, with the result that, instead of sliding outwardly in the tapered bore, the plug holds its position, and accordingly an annular space results between the plug and sleeve.

My preferred method for accomplishing the result desired comprises one or more pins not readily fusible extending through the sleeve and plug so as to hold the plug from moving outwardly for a considerable time after it begins to fuse and until it is nearly melted. I have found it convenient to provide two of these pins at right angles to each other driven through the sleeve and plug in the general vicinity of their inner ends.

My invention comprises broadly, the combination with the sleeve and fusible plug of means for holding the fusible plug in position after it has begun to melt at its periphery.

The invention comprehends also, more specifically, the preferred arrangement referred to.

The invention is clearly illustrated in the drawings, in which—

Figure 1 is a section through the plate of a steam boiler equipped with my plug; Fig. 2 is a longitudinal section of such plug; Fig. 3 is a bottom plan of the plug; Fig. 4 is a horizontal section as indicated by the line 4-4 in Fig. 2.

As shown in the drawings A indicates the boiler shell and B the water therein; C indicates the sleeve of my plug, and D the fusible plug proper.

As shown in the drawings, the sleeve C is provided with the usual external threads c and head c' by which it may be screwed into place in a threaded opening in the shell A. The sleeve has a tapered bore c^2 of gradually reduced diameter toward the outside of the sleeve.

The plug proper D is made of the usual readily fusible metal and is tapered to fit the bore c^2 and preferably terminates at its end flush with the ends of the sleeve.

Extending through the sleeve and plug near the inner end, in the form shown, is a transverse pin E of steel or other material not readily fusible, and some distance below this pin or toward the head of the sleeve is preferably another similar pin E' at right angles to E. These two pins may be very conveniently put in place by drilling through the sleeve and the plug contained therein, thereafter driving the pins in place. The inner portion of the sleeve, it will be noticed, has an unthreaded exterior c^3 which is of less diameter than the threaded portion c , and the pins E and E' are located at this

reduced portion, whereby, if the pins should project slightly, no disadvantage would result.

With the construction described, when the
5 water in the boiler becomes low and the sleeve consequently heats, the plug D begins to melt at its periphery but the pins E and E' prevent it sliding outwardly in the tapered bore and hold it in place, so that
10 there immediately results an annular passageway between the plug D and the bore c^2 , allowing the escape of steam with the advantageous results described. As the heating continues, this annular passageway will
15 increase in size and eventually the plug D will be sufficiently fused to become free from the pins E and E' and blow out through the small end of the bore. In ordinary operation, however, before this latter result
20 takes place, the fireman or engineer will be notified by the noise of the escaping steam and the steam pressure will be safely reduced. Accordingly, my plug has all the advantages of the plugs now in use and the
25 additional advantage that it operates much more quickly, which is of great importance in saving the burning of the boiler shell and the dangers resultant from low water.

Having thus described my invention, what
30 I claim is:

1. In a fuse plug, the combination of a

sleeve, a fusible member therein, and a plurality of pins extending through the sleeve and member at an angle to each other.

2. In a fuse plug, the combination with a 35 sleeve having a tapered bore and having exterior threads, a head on the outer end of the plug and an unthreaded portion near the inner end, a correspondingly tapered fusible member occupying said bore and terminating at its ends substantially flush with the ends of the sleeve, and one or more pins extending transversely through the sleeve and plug at the unthreaded portion of the sleeve. 40

3. In a fuse plug, the combination of a 45 sleeve having a bore tapered outwardly, a fusible member occupying said bore, and one or more pins carried by the sleeve and projecting transversely of the bore to sustain the fusible member therein. 50

4. In a fuse plug, the combination of a sleeve, a fusible member therein, and a pin carried by the sleeve and extending into the bore thereof and into the fusible member. 55

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

WILLIAM F. DUCKWITZ.

Witnesses:

ALBERT H. BATES,

A. J. HUDSON.