

No. 729,038.

PATENTED MAY 26, 1903.

M. K. BOWMAN.  
FUSIBLE PLUG FOR STEAM BOILERS.  
APPLICATION FILED FEB. 21, 1902.

NO MODEL.

Fig. 1.

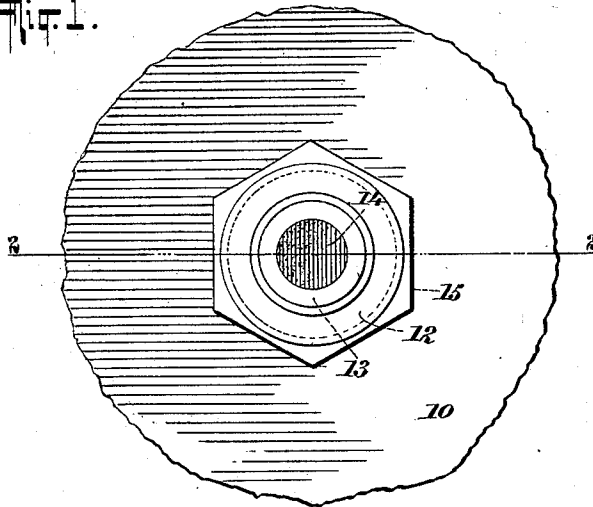


Fig. 4.

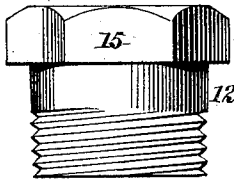


Fig. 2.

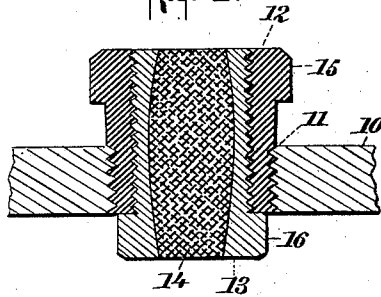


Fig. 5.

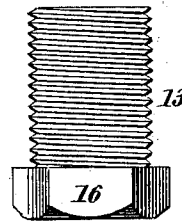
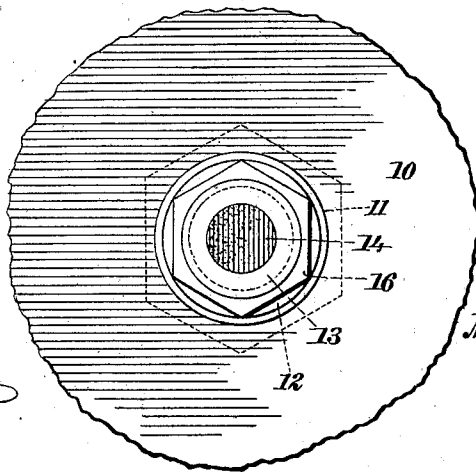


Fig. 3.



WITNESSES:

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INVENTOR

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# UNITED STATES PATENT OFFICE.

MARK K. BOWMAN, OF MONTCLAIR, NEW JERSEY.

## FUSIBLE PLUG FOR STEAM-BOILERS.

SPECIFICATION forming part of Letters Patent No. 729,038, dated May 26, 1903.

Application filed February 21, 1902. Serial No. 95,045. (No model.)

*To all whom it may concern:*

Be it known that I, MARK K. BOWMAN, a citizen of the United States, and a resident of Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Fusible Plugs for Steam-Boilers, of which the following is a specification.

The invention relates to improvements in fusible plugs for steam-boilers; and it consists in the novel features hereinafter described and claimed.

The fusible plug of my invention comprises in its entirety a tube having a threaded bore and adapted to be screwed into a hole tapped in the crown-sheet or other part of a boiler, a second tube having a threaded exterior and adapted to be screwed into the first tube either before or after the latter is connected with the crown-sheet, and a core of fusible metal, such as good Banca tin, filling the bore of said second tube, the said bore being preferably concave, so as to more securely hold said core, and said outer tube having a polygonal head on its end at the water side of said crown-sheet and said inner tube having a polygonal head on its end at the fire side of said sheet.

The object of the invention is to provide a safe and convenient fusible plug and one which may be renewed as often as required without disturbing the exterior tube or removing it from the crown-sheet.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which—

Figure 1 is a top view of a fusible plug constructed in accordance with and embodying my invention, the same being shown as applied to a crown-sheet, a portion of the latter being illustrated. Fig. 2 is a central vertical section of same on the dotted line 2 2 of Fig. 1. Fig. 3 is a bottom view of same. Fig. 4 is a detached side elevation of the outer tube of the plug, and Fig. 5 is a like view of the inner tube of same.

In the drawings, 10 designates the crown-sheet; 11, the hole tapped therein; 12, the exterior tube screwed into said hole; 13, the inner tube screwed into said outer tube, and 14

the core of fusible metal filling the bore of said inner tube.

The tube 12 has a customary form of polygonal head 15 on its upper end, an exterior threaded surface, and a threaded bore, the thread of the latter being a left-handed thread, while the exterior thread is a right-handed thread, or vice versa. The inner tube 13 is externally threaded to engage the interior thread of the tube 12, and said tube 13 has at its lower end a head 16 of polygonal outline, as shown, said head being by preference slightly less in diameter than the diameter of the hole 11 in the crown-sheet. The bore of the inner tube 13 is preferably made concave, the diameter of said bore being greatest at its transverse center, and thence gradually becoming less toward its ends, and said bore is completely filled by the fusible-metal core 14, as shown.

Upon the first application of the plug to the crown-sheet the parts 12, 13, and 14 will be assembled—that is, the inner tube containing the core 14 will be screwed into the outer tube 12—and thereupon the plug in its entirety will be secured within the hole 11 in a well-known manner. Upon the undue lowering of the water in the boiler and the generation of a predetermined degree of heat the core 14 will fuse and leave the tube 13, thereby opening a passage through the latter for the steam.

The exterior of the outer tube 12 will, as is very common in respect of boiler-fittings, be slightly tapered, so that it may be very firmly screwed into the hole 11 of the metal plate 10 by means of a wrench applied to the polygonal head 15. The head 16 on the end of the inner tube 13 permits of the use of a wrench in applying said tube to and removing it from the outer tube 12, and in addition the head 16 prevents the tube 13 from being screwed too far into the tube 12. The inner tube 13 extends to the full height of the outer tube 12, and hence furnishes a substantial bore for retaining the core 14.

Upon the exercise of due care in the management of the boiler the core may never fuse; but it is desirable that the fusible portion of the plug be removed and renewed from time to time—say once a year in the case

of marine boilers—and that in thus removing and renewing the fusible part of the plug the connection of the exterior tube with the crown-sheet be not disturbed. In accordance  
 5 with my invention the exterior tube when once applied to the crown-sheet is not thereafter disturbed, and the renewal of the fusible cores will be accomplished from within the furnace, the coals being withdrawn from  
 10 the latter and a man then entering the furnace to unscrew the tube 13 from the tube 12 and substitute a new inner tube and core for the parts removed. The reason for having the oppositely-running threads at the inner  
 15 and outer sides of the tube 12 is to avoid any danger of said tube being loosened from the crown-sheet during the renewal of the inner tube and core from within the furnace.

What I claim as my invention, and desire  
 20 to secure by Letters Patent, is—

1. The fusible plug comprising the outer

threaded tube 12 having a threaded bore and a polygonal head 15, the inner tube 13 threaded to engage the walls of said bore and having the polygonal head 16, and the fusible  
 25 core filling the interior of said inner tube, the said inner tube having a bore of varying diameter so as to securely hold said core; substantially as set forth.

2. The fusible plug comprising the threaded  
 30 outer tube having a threaded bore, the inner tube threaded oppositely to the exterior thread on said outer tube, and the fusible core within said inner tube; substantially  
 35 as set forth.

Signed at New York, in the county of New York and State of New York, this 19th day of February, A. D. 1902.

MARK K. BOWMAN.

Witnesses:

CHAS. C. GILL,  
 ARTHUR MARION.