

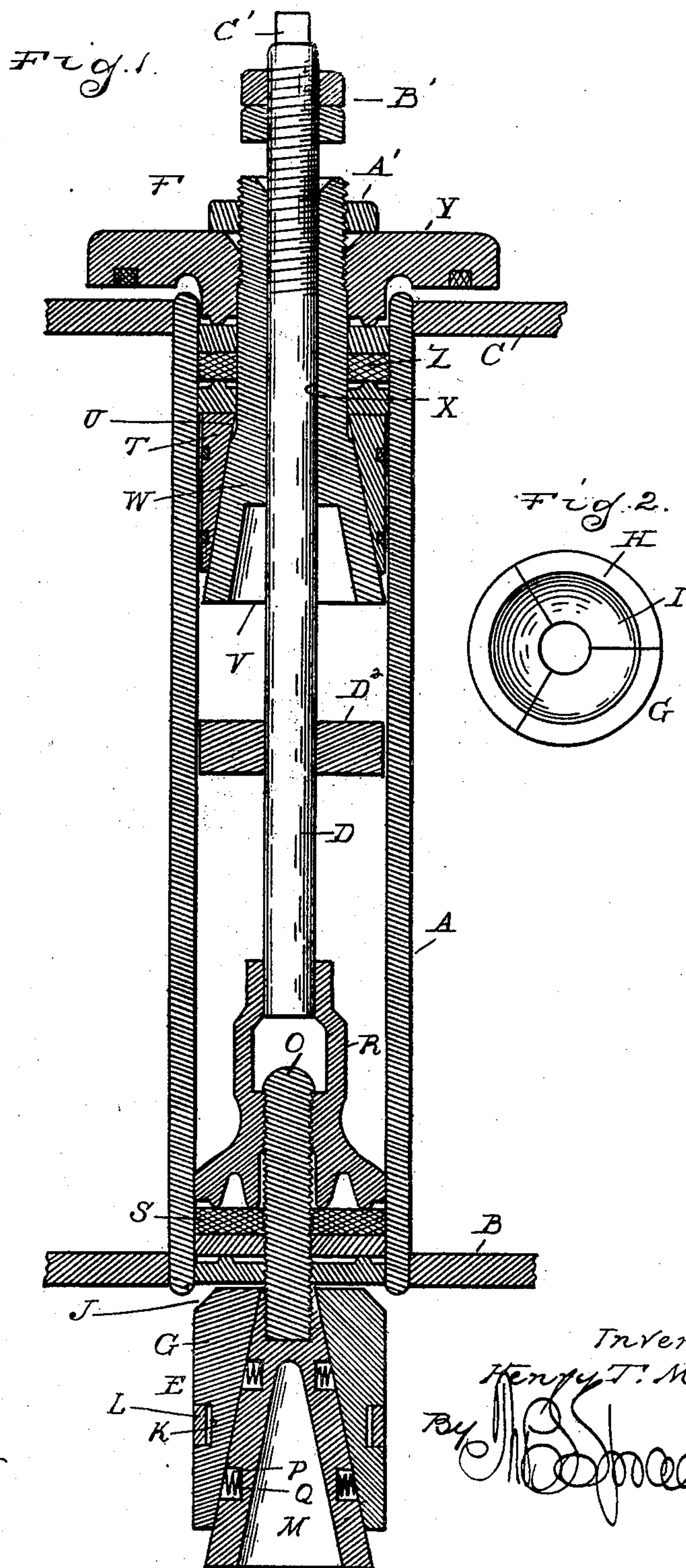
No. 724,595.

PATENTED APR. 7, 1903.

H. T. MASON.
STOPPER FOR BOILER TUBES.

APPLICATION FILED MAY 31, 1902.

NO MODEL.



Witnesses
H. C. Smith
P. M. Gallagher

Inventor
Henry T. Mason
By *[Signature]*
Attys.

UNITED STATES PATENT OFFICE.

HENRY T. MASON, OF SOUTH CHICAGO, ILLINOIS.

STOPPER FOR BOILER-TUBES.

SPECIFICATION forming part of Letters Patent No. 724,595, dated April 7, 1903.

Application filed May 31, 1902. Serial No. 109,750. (No model.)

To all whom it may concern:

Be it known that I, HENRY T. MASON, a citizen of the United States, residing at South Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stoppers for Boiler-Tubes, of which the following is a specification, reference being had therein to the accompanying drawings.

It is the object of the invention to provide simple and inexpensive means for rapidly and effectively stopping up leaking or bursted boiler-tubes without the necessity of drawing the fires or interrupting the use of the boiler.

With this object in view my invention consists, essentially, in the novel and peculiar construction of a boiler-tube stopper adapted to be applied to and seal the opposite ends of the tube and in the peculiar arrangement and combination of the various parts of the stopper, as will be hereinafter described.

In the drawings, Figure 1 is a vertical central section through a boiler-tube with my improved stopper applied thereto, and Fig. 2 is an end elevation of the stopper looking at the outer end thereof.

In the drawings thus briefly described the reference-letter A designates the boiler-tube, fitted within the tube-plates B and C at the back and front of the boiler, respectively.

D is an operating-rod for my improved stopper, having connected thereto at its outer end an expansible stopper E and having preferably sleeved thereon at its inner end a similar stopper F. In construction the outer stopper F comprises an expansible head G, composed of a plurality of sections, such as H. The head, as shown, has a tapering opening I formed therein and at the end adjacent to the tube is beveled to produce a reduced portion J thereon, adapted to be fitted within the tube end. An annular recess K is also formed within the head, which is adapted to receive a loose metallic band L, the band serving to retain the head-sections in place and to lock the end portions of said sections during the expansion of the head.

Fitting within the tapering opening I described is a conical wedge M, carrying a threaded shank O. The wedge, as shown, is

provided with oppositely-extending vertical recesses P, within which are arranged spiral springs Q, the function of which is to raise the head-sections automatically a slight distance, so that an engagement may be effected between the head and the boiler-tube end.

Mounted upon the outer end of the operating-shaft D is a clamping-head R, which is centrally apertured and internally screw-threaded, so as to engage the threaded shank O. Interposed between the clamping-head and the expansible head is a packing serving to cover the openings between the head-sections and adapted to be expanded by the rotary movement of the operating-bar D against the interior of the tube. I have preferably shown the packing as composed of a plurality of washers, such as S, the washers being formed of suitable compressible material.

The expansible stopper at the inner end of the rod D is of nearly the same construction as the one just described, comprising an expansible head T, formed in sections and having a tapering opening U, and the wedge V, engaging within the opening and carrying the externally-screw-threaded shank W. In this particular case, however, the shank has a tubular opening X extending therethrough to receive the operating-rod D.

Y designates a clamping-plate sleeved upon the shank W and adapted to be clamped against the inner end of the tube, and Z is a packing composed of washers interposed between said clamping-plate and the inner expansible head.

A' is a jam-nut threaded upon the shank W and having a bearing against the clamping member Y. B' designates similar jam-nuts having a threaded engagement with the inner end of the operating-rod D and adapted to bear against the extreme end of the shank W.

C' is a suitable wench-hold formed upon the inner end of the operating-rod, whereby the latter may be rotated for the purpose hereinafter set forth.

In applying my improved stopper to a tube the outer expansible stopper is first inserted within the tube and projected therethrough, when the spiral springs previously described will automatically raise the sections, so as to engage upon the expansion of the head with

the end of the tube in the plate B. The inner expansible stopper is then inserted within the inner end of the tube, with its clamping member contacting with the tube end in the plate C, and the head and the packing are expanded within the tube by the rotary movement of the jam-nut A'. After the inner end of the tube has been sealed in the manner described the outer head is expanded through the agency of the jam-nuts B', the latter being turned into engagement with the end of the shank W and rotated until the head-sections are expanded against the outer tube end. The packing adjoining the outer stopper is then expanded by rotating the rod D, a suitable wrench being applied to the wrench-hold and the nuts B' being held from revolving during the rotation of the rod. This rotary movement of the rod causes the clamping-head R to engage the packing S and expand the same in the desired manner within the tube.

I may and preferably do place upon the operating-rod D a collar D², the collar being arranged midway between the rod ends. This is for the purpose of preventing the bending or sagging of the rod and permits the latter to be more readily operated. It is not essential that this collar should be employed, although I obtain better results by its use.

What I claim as my invention is—

1. In a boiler-tube stopper, the combination with an operating-rod, of stoppers at opposite ends thereof, each comprising an expansible head formed of radial sections, and a packing covering the openings between the sections,

and means at the inner end of said rod for expanding both stoppers.

2. A boiler-tube stopper comprising an operating-rod, a stopper at one end thereof comprising an expansible head formed in sections and a packing covering the openings between the sections, means for automatically projecting said sections, and means at the opposite end of the rod for expanding the head.

3. In a boiler-tube stopper, the combination with a revoluble operating-rod, of stoppers carried at the outer and inner ends thereof, each comprising an expansible head formed in radial sections and a packing covering the openings between the sections, means carried by the rod for expanding the outer head, mechanism actuated by the rotary movement of said rod for expanding the outer-head packing, and means for independently expanding the inner head and the packing therefor.

4. In a boiler-tube stopper, the combination with an operating-rod, of a stopper at the outer end thereof, comprising a wedge, a plurality of radial spring-pressed sections inclosing the wedge, and a packing covering the openings between adjoining sections, an expansible stopper at the inner end of the rod, and means operable at the inner end of said rod for expanding both stoppers.

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

HENRY T. MASON.

Witnesses:

JOHN LARALE,

ALEXANDER McNICHOL.