

UNITED STATES PATENT OFFICE.

CORNELIUS S. CLARK, OF NORFOLK, VIRGINIA, ASSIGNOR OF ONE-FOURTH
TO MARCELLUS MILLER, OF SAME PLACE.

BOILER-TUBE STOPPER.

SPECIFICATION forming part of Letters Patent No. 646,804, dated April 3, 1900.

Application filed November 13, 1899. Serial No. 736,894. (No model.)

To all whom it may concern:

Be it known that I, CORNELIUS S. CLARK, a citizen of the United States, residing at Norfolk, in the county of Norfolk and State of Virginia, have invented new and useful Improvements in Means for Sealing Leaks in Boiler-Tubes, of which the following is a specification.

My invention relates to means for sealing leaks in boiler-tubes, my purpose being to provide simple means whereby this result may be obtained without drawing the fires and with the least possible expenditure of time and labor.

It is my object also to provide a device of this character by which a ruptured or leaking tube in a multitubular boiler may be speedily and effectually repaired and the leak completely stopped without preventing the circulation of the products of combustion through said tube.

My invention consists, to these ends, in the novel features of construction and new combinations of parts hereinafter fully described and then particularly pointed out in the claims which terminate this specification.

For the purpose of the following description reference is had to the accompanying drawings, in which—

Figure 1 is a side elevation showing a stopper for boiler-tubes constructed in accordance with my invention. Fig. 2 is a longitudinal section of the same, taken in the line of its axis, the device being shown in place in a boiler-tube. Fig. 3 is a similar view showing a modified construction of the tie bolt or rod whereby circulation through the repaired boiler-tube is continued.

The reference-numeral 1 in said drawings indicates the body portion of the device, which consists of a short tube or cylinder, of metal, having at each end a collar 2, the outside diameter of which is slightly less than the interior of the tube, whereby the collars can move freely within the same. Between said collars the tube has a uniform diameter considerably less than that of the boiler-tube, and from the cylindrical surface project a number of points 3 of such length that when inserted in a boiler-tube they will impinge upon the

inner face of the same, so that by moving the device back and forth with such rotary movement as may be necessary the boiler-tube may be quickly and thoroughly cleaned. When used for this purpose, the device is manipulated by a rod 4 of suitable length, one end of which is threaded and screwed into an interior flange 5, which is provided for this purpose with a female thread.

At each end of the tube 1 is a gland 6, fitting therein loosely and having a collar 7 of the same diameter as the collar 2. One of said glands is provided with a channel 8, which engages a nipple 9, projecting from the inner face of the tube, near one end, whereby said gland is prevented from turning. Each collar 7 has a beveled face 10 adjacent to an oppositely-beveled face 12 on the collar 2, and between said faces lies a rubber gasket or packing-ring 13, which projects slightly beyond the periphery of the collar, fitting the boiler-tube more or less closely. Instead of being formed of rubber the gaskets 13 may consist of hollow lead packing-rings. By drawing the glands inward these gaskets are compressed and caused to expand, thus pressing them forcibly against the inner surface of the boiler-tube. This compression is produced by a bolt 14, having a collar at one end, which lies upon a flange 15 on the inner end of one of the glands. The bolt is threaded from its other end for a suitable distance to engage a threaded flange 16 on the other gland, and it has a squared head 17 to enable it to be turned by a wrench.

When a boiler-tube is found to leak, the tube 1, with its glands and gaskets in place and the latter connected by the bolt, is driven into the boiler-tube until the leak is brought between the two gaskets 13. The bolt is then turned up until the gaskets are expanded against the inner face of the boiler-tube with sufficient force to prevent escape of water or steam. To effect this, a socket-wrench 4^a is provided on the end of the rod 4 to fit the end 17 of the bolt. The cylindrical outer face of the socket-wrench 4^a is provided with a screw-thread, as shown in Fig. 1, to enable it to be used for manipulating the device either as a means for cleaning a tube or to insert it as a

means of closing a leak. The revolution of the tube 1 in the latter case will be prevented by the points 3.

5 In large tubes a tubular bolt 18 may be used, as shown in Fig. 3, so that the circulation through the boiler-tube need not be obstructed.

What I claim, and desire to secure by Letters Patent of the United States, is—

10 1. A leak-stopping device for boiler-tubes, consisting of a tubular portion of reduced diameter, a collar at each end having a beveled face, a gland lying in each end, its collar having an oppositely-beveled face, one of said
15 glands being prevented from turning, gaskets lying between the oppositely-beveled faces, and a bolt having a collar and thread to engage flanges on the glands, substantially as described.

20 2. A leak-stopping device for boiler-tubes, consisting of a tubular portion of reduced diameter, glands entering the ends of said tubular portion and provided with collars having beveled faces lying adjacent to oppositely-
25 beveled faces on collars on the ends of the tubular portion, gaskets between said faces, and a bolt having a collar and a threaded part to engage flanges on the glands one of said flanges being threaded, substantially as
30 described.

3. A leak-stopping device for boiler-tubes consisting of a pair of gaskets lying between

collars on the ends of a short tube and similar collars on glands lying in the ends of said tube, and a tubular bolt having a collar to en- 35
gage one gland and a thread to engage a threaded flange on the other collar, substantially as described.

4. A leak-stopping device for boiler-tubes, consisting of a tube having collars at its ends, 40
glands entering said tube and having collars on their outer ends, one of said glands having a channel engaging a nipple on the tube to prevent rotation, gaskets lying between the collars on the glands and those on the 45
tube, and a hollow bolt having a collar to engage an inwardly-turned flange on one gland and a threaded part to engage a threaded flange on the other gland, substantially as described. 50

5. A leak-stopping device for boiler-tubes, consisting of a tube having beveled ends, glands in the ends of said tubes having beveled collars thereon, gaskets lying between the ends of said tubes and said collars, and a 55
bolt connecting said glands, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CORNELIUS S. CLARK.

Witnesses:

JOHN HAWKINS,
WM. HENDERSON.