

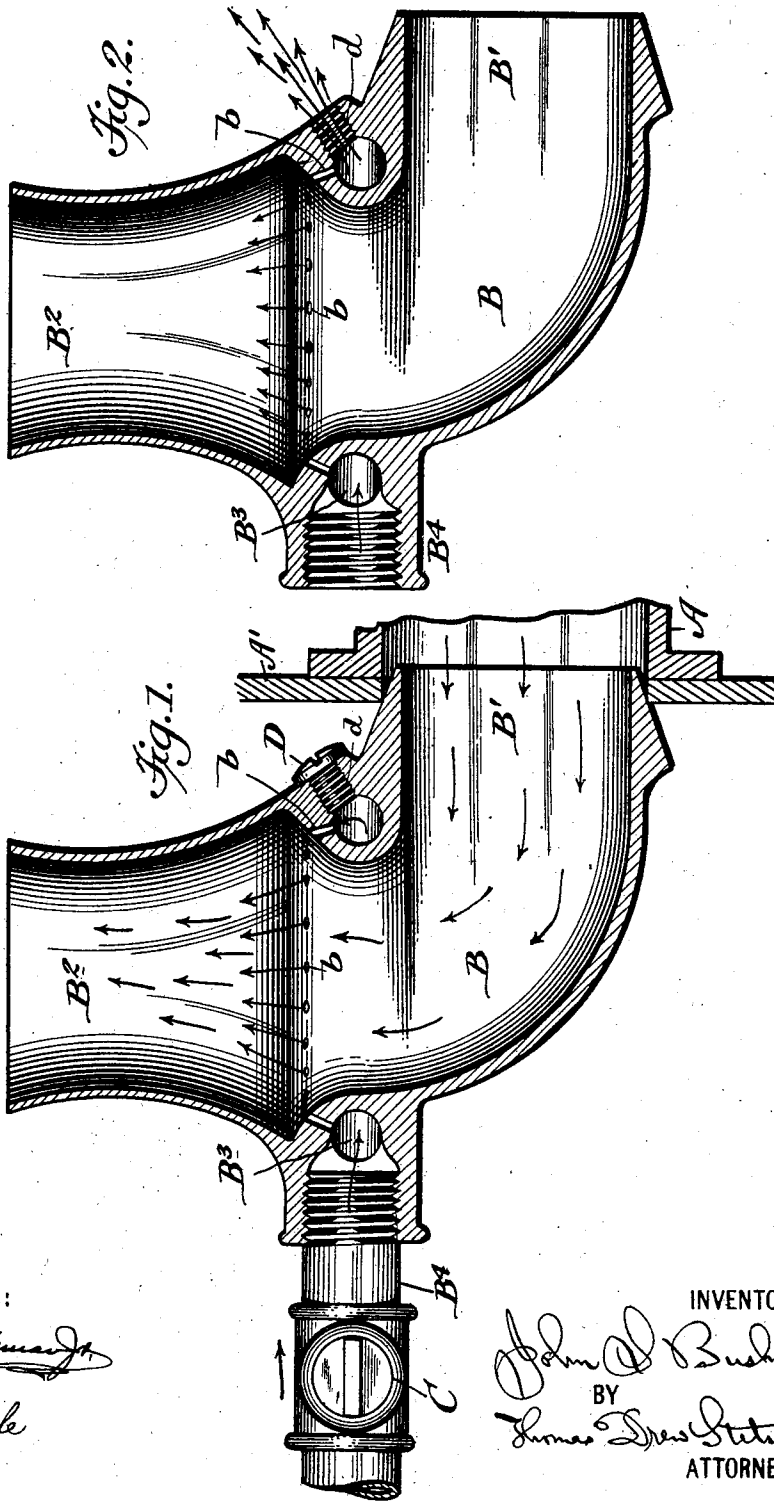
No. 708,200.

Patented Sept. 2, 1902.

J. S. BUSHNELL.
TUBE CLEANING DEVICE.

(Application filed Dec. 20, 1901.)

(No Model.)



WITNESSES:

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JOHN S. BUSHNELL, OF BROOKLYN, NEW YORK.

TUBE-CLEANING DEVICE.

SPECIFICATION forming part of Letters Patent No. 708,200, dated September 2, 1902.

Application filed December 20, 1901. Serial No. 86,625. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. BUSHNELL, a citizen of the United States, residing in the borough of Brooklyn, in the city and State of New York, have invented a certain new and useful improvement in the tube-cleaning devices sometimes known as "soot-suckers" for removing the ashes and soot which tend to accumulate in the interiors of the tubes of steam-boilers by inducing a strong current of air to flow through the tube, of which the following is a specification.

The invention is an improvement on that set forth in the patent to Richard Thompson, dated August 15, 1893, No. 503,559.

The present invention affords a very efficient and convenient method of removing the fragments of rubber and other solid material which are blown into the steam ring or belt which are of such size that they cannot be driven through the fine perforations. I provide for sending at intervals a very strong blast of steam through the steam-belt.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a central longitudinal section through my device and through the adjacent portion of a tubular steam-boiler with which it is serving. Fig. 2 shows the same removed from the boiler and conditioned for cleaning by blowing steam through it.

Similar letters of reference indicate corresponding parts in the figures where they appear.

A is a tube, and A' the tube-sheet.

B is the body of my device, B' a tapering nozzle adapted to match into the end of the tube, and B² the opposite nozzle.

B³ is the belt, which is filled with steam through a hollow handle B⁴ and from which it escapes with great force through a number of small perforations *b*, drilled or otherwise produced in the positions to discharge the steam-jets inclined inward and upward. The jets draw the air along with it and induce the discharge of a current of air loaded with

soot and mingled with steam when the device is in use by inducing a strong flow of air through the tube.

D is a removable plug tapped through a hole *d* in a sufficient boss to give it a firm support.

When it is in place, as shown in Fig. 1, my soot-sucker is used with the same effect as in the Thompson patent above referred to; but when through any cause, as the inevitable gradual disintegration of the interior of the hose, allowing fragments of rubber and fiber to be carried along with the steam through the handle into the belt, and the inner ends of some of the small perforations *b* are stopped, then the steam is shut off by the attendant by the aid of a cock C in the handle, and the plug D is removed by unscrewing. Then the steam-cock C being again opened a strong blast of steam is sent through the device either in its position against the boiler or in any other position, carrying with it all the solid matter which has previously obstructed the holes, ejecting it through the aperture *d*. After a few seconds of this treatment the steam may be again shut off, the plug D restored, and the device is ready to serve again.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. Instead of a removable screw a cock may be used at the point D.

I claim as my invention—

In a tube-cleaner having the perforated belt B³, *b*, and provisions B⁴ for supplying steam under pressure thereto, a liberal orifice *d* in such belt and means for controlling it adapted to allow the blowing of steam forcibly through such belt past the smaller orifices *b* at intervals to clean the belt, all substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

JOHN S. BUSHNELL.

Witnesses:

M. F. BOYLE,
J. B. CLAUTICE.