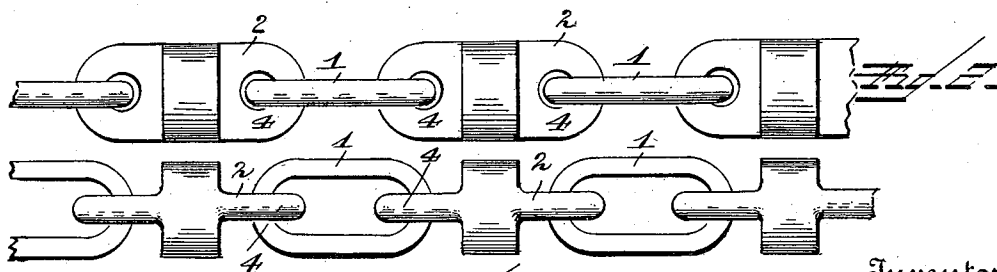
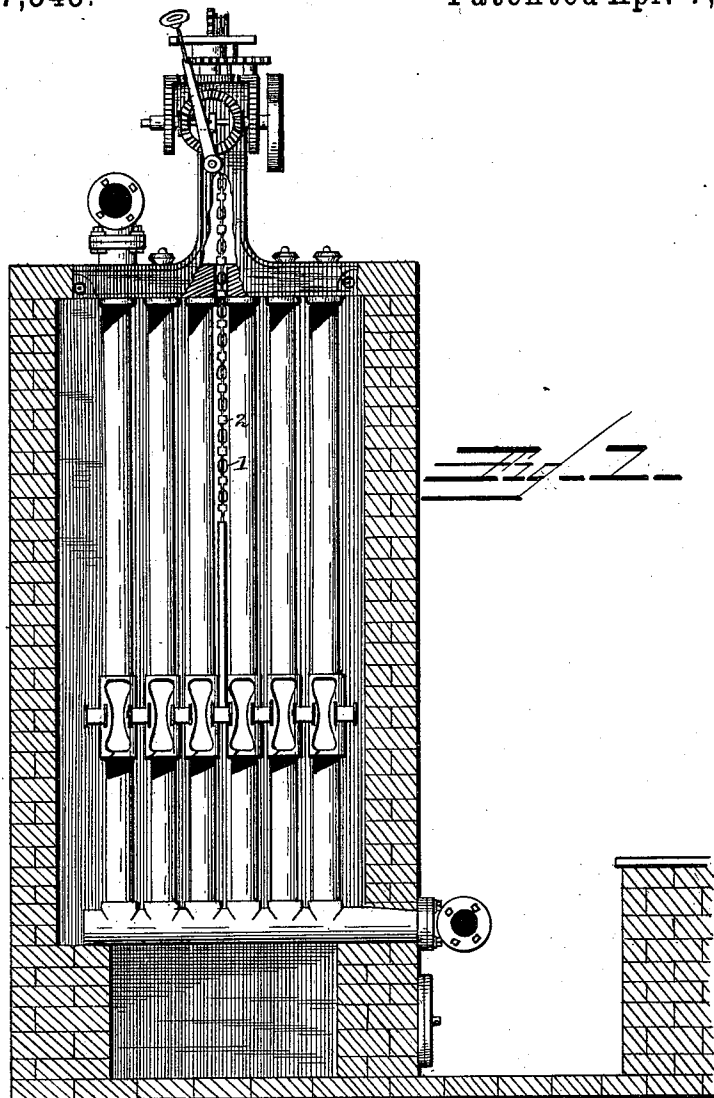


(No Model.)

A. H. BLACKBURN.
TUBE CLEANER FOR FEED WATER HEATERS.

No. 557,545.

Patented Apr. 7, 1896.



Witnesses
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UNITED STATES PATENT OFFICE.

ARTHUR HENRY BLACKBURN, OF MATTEAWAN, NEW YORK.

TUBE-CLEANER FOR FEED-WATER HEATERS.

SPECIFICATION forming part of Letters Patent No. 557,545, dated April 7, 1896.

Application filed October 18, 1895. Serial No. 566,121. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR HENRY BLACKBURN, a citizen of the United States, residing at Matteawan, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Tube-Cleaners for Feed-Water Heaters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to chains, and more particularly to an improved chain to be used in connection with fuel-economizers.

The object of the invention is to provide a chain which will prevent cold air from being drawn into the casing of the economizer.

With this object in view the invention consists of certain features of construction and combination of parts, which will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a cross-sectional view of a fuel-economizer known to the trade as "Green's Patent Fuel Economizer," showing the application of my invention thereto. Fig. 2 is a plan view of the chain, and Fig. 3 is a side view.

The chain consists of the links 1 and 2, the links 2 comprising a solid cylindrical plug having flat perforated ears 4, which are linked together by the links 1, which are of ordinary construction. As these chains are adapted to be raised up from the top of the casing of the economizer and wound upon the several drums, it is evident that cold air would be drawn into the economizer were not some provision made for closing the holes through

which the chain is moved. By the employment of my improved chain one of the plugs is always within the passage in the top of the casing and completely fills the same, and thereby prevents the escape of hot air from or the admission of cold air to the economizer.

From the foregoing description, taken in connection with the accompanying drawings, the advantages of the present invention will be readily understood without requiring further explanation.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination with a fuel-economizer having a passage through the top of the same, of a chain composed of alternating sets of links, one set of which is composed of ordinary elongated oval-shaped links, the alternating links being provided with cylindrical integral plugs intermediate their ends, located at intervals on the chain shorter than the link of the passage through the top of the fuel-economizer and perforated ears in each end to engage the elongated oval-shaped links, for closing the passage in the top of the casing and thereby preventing the escape of hot air from the fuel-economizer and preventing the admission of cold air to the fuel-economizer through the passage or opening in the top of the fuel-economizer, as set forth.

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

ARTHUR HENRY BLACKBURN.

Witnesses:

PAULL JEWELL CHALLEN,
JOHN J. HAMAN.