No. 833,914. PATENTED OCT. 23, 1906.

A. H. BLACKBURN.

HEADER FOR FUEL ECONOMIZERS.

APPLICATION FILED AUG. 15, 1903.

2 SHEETS—SHEET 1.

Fig. 1.

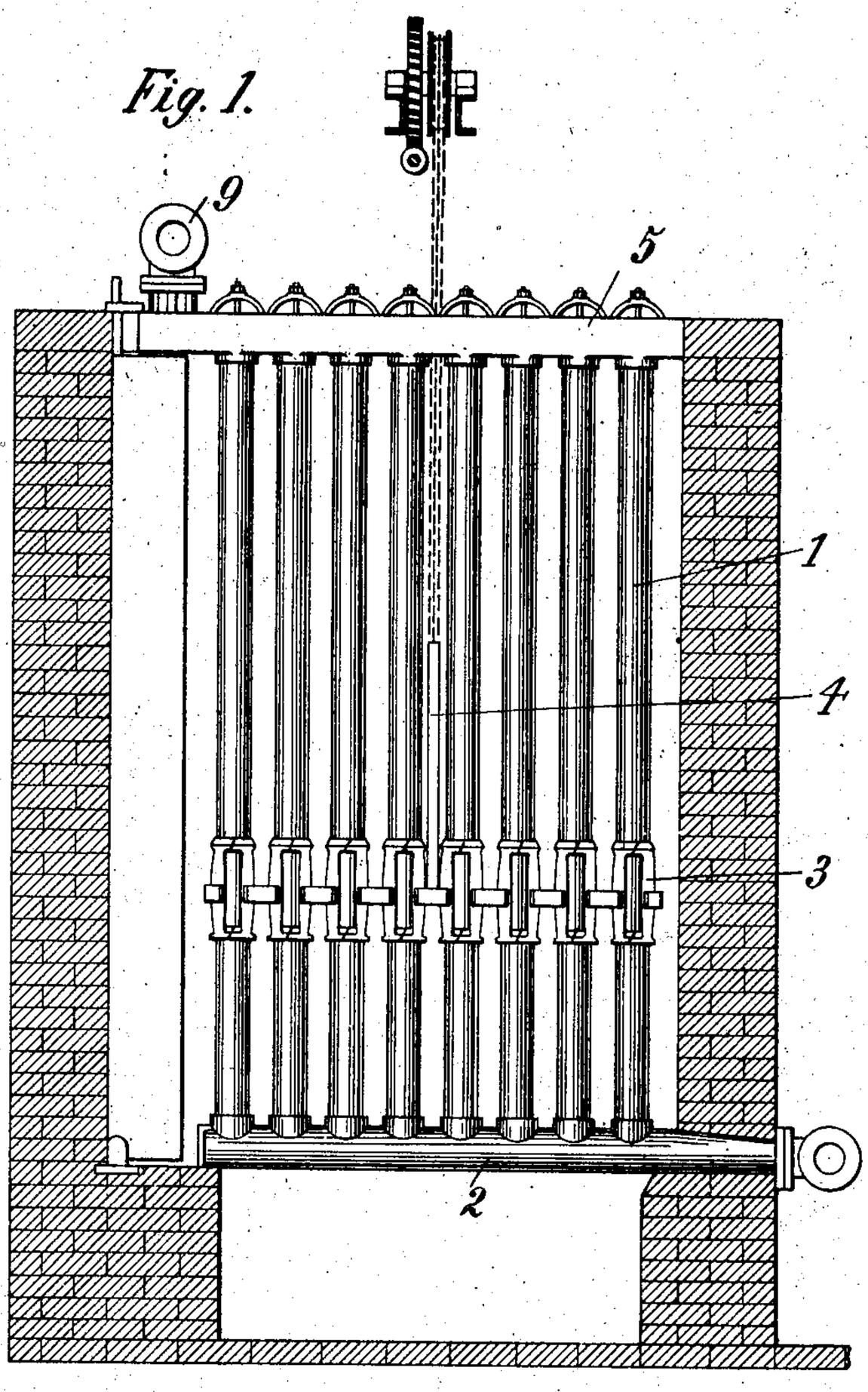

Fig. 2.

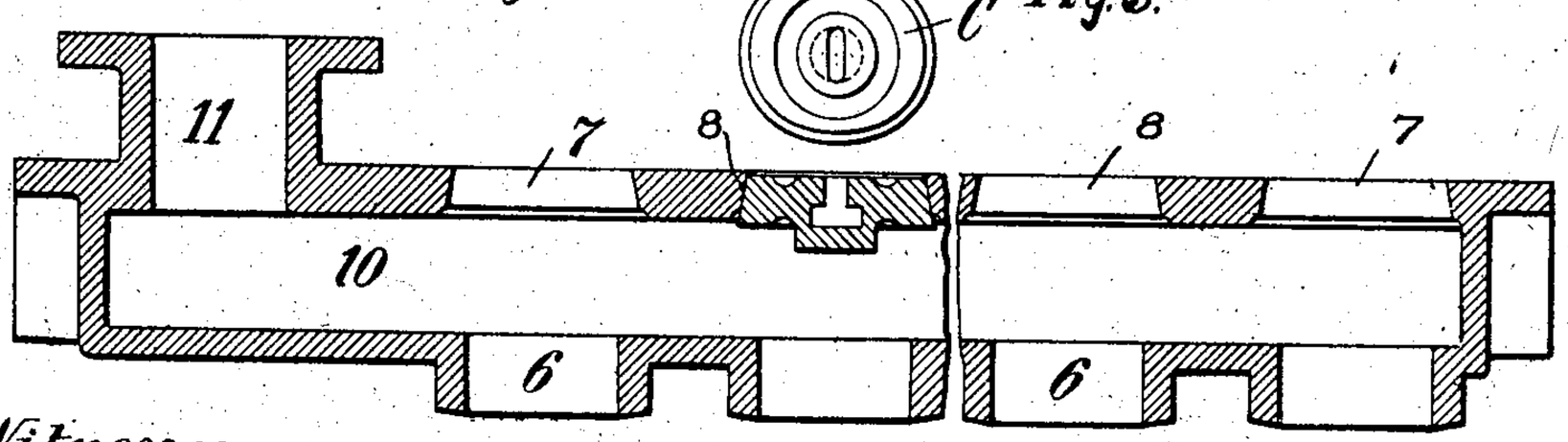

Fig. 3.

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G. B. Lewis.

Arthur H. Blackburn, Inventor:
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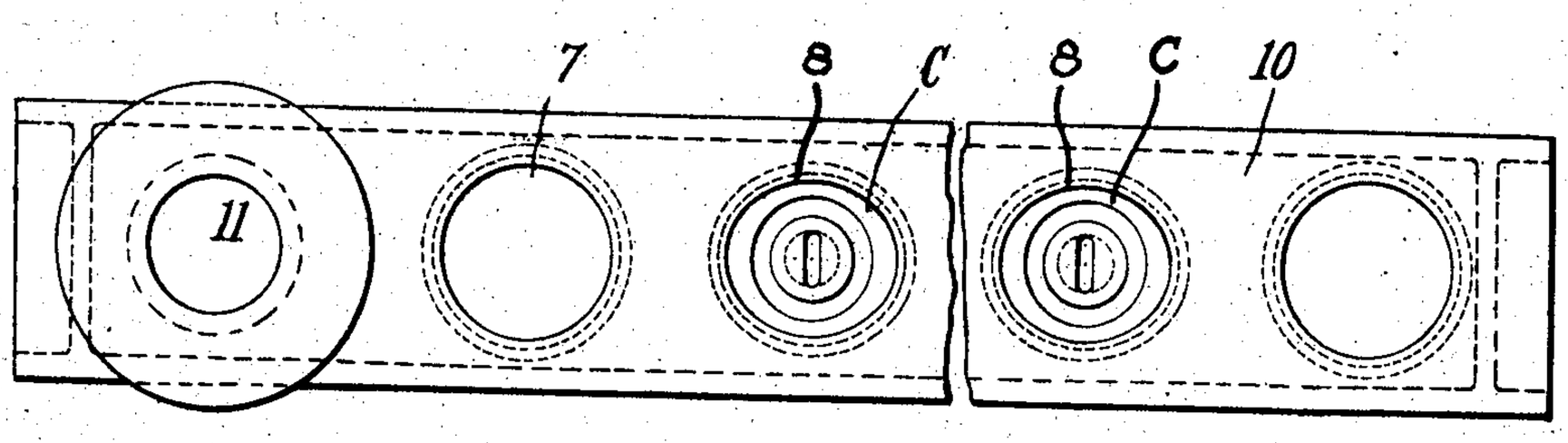
2 SHEETS—SHEET 2.

Fig. 4



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UNITED STATES PATENT OFFICE.

ARTHUR H. BLACKBURN, OF MATTEAWAN, NEW YORK.

HEADER FOR FUEL-ECONOMIZERS.

No. 833,914. Specification of Letters Patent. Patented Oct. 23, 1906.

Application filed August 15, 1903. Serial No. 169,607.

To all whom it may concern:

Be it known that I, ARTHUR H. BLACKBURN, a subject of the King of Great Britain, residing at Matteawan, in the county of Dutchess and State of New York, have invented certain new and useful Improvements in Headers for Fuel-Economizers, of which the following is a specification, reference being had to the drawings accompanying and forming a part of the same.

My invention relates to the chambers or headers to which the pipes of a fuel-economizer are connected, particularly those used at the upper end of the tubes.

The object of my invention is to provide such a header which will produce a more satisfactory circulation of water through the system and which shall possess other features of advantage, as will appear hereinafter.

To these ends the invention consists of the novel features and combinations hereinafter described, and more particularly set forth in the claim.

Referring now to the drawings, Figure 1 is an end view of a fuel-economizer in which my improved header is employed. Fig. 2 is a longitudinal section of the header. Fig. 3 is a plan view of a closure for one of the openings in the top of the header through which the closures for the other opening may be removed. Fig. 4 is a plan view of the header.

In the construction shown in Fig. 1 the pipes 1 are secured at their lower ends to a header 2 and are provided with suitable scraping devices 3, encircling the pipes, the scrapers being reciprocated by the rod and chain 4 or other suitable device to remove accumulations of soot from the pipes. At their upper end the tubes are connected to a top header 5. As made in accordance with my invention this header consists of a long chamber, usually of substantially rectangular cross-section and wide enough to accommodate a single row of pipes, as shown in Fig. 1. The latter are secured to the header in openings 6 in the bottom of the same, usually slightly tapered in contour. The pipes may be made to fit by hydraulic pressure or by expanding them in. The latter method is to be preferred when steel tubes are to be used in a system for feeding air instead of water, while the former is generally employed in the case of cast-iron pipes.

In the upper side of the header, immediately above each of the pipe-holes 6, is an opening, as 7. These openings taper or flare inwardly, as shown. They are closed by internal lids of the kind illustrated in Fig. 3. One (or more) of the holes, as 8, however, is oval instead of round, so that when it is desired to remove the cover of one of the same it is simply driven inward, given a half-turn, and removed through the same opening. The closures for the other holes are introduced into the header through the oval opening and carried along to their proper position inside the header, when they may be readily fitted in place. To remove the same, they are driven inward and taken out through the oval opening. These openings constitute hand-holes by which access may be had to the interior of the header for cleaning or other purposes, and being directly in line with the pipe-holes one or more of the pipes may be removed from the system without disturbing the others by withdrawing it through the registered hand-hole. This feature is of great advantage in making repairs, &c.

In Fig. 1, 9 indicates a pipe extending along the economizer at right angles to the plane of the figure to connect the various sections of the structure. Heretofore this pipe has been connected to the header directly over the first vertical pipe through the hand-hole; but this construction has been found to possess certain disadvantages which the present invention does not possess. In the first place in the old construction just described if it is desired to remove the first pipe it is necessary to remove the pipe 9. This not only entails considerable labor, but also results in frequent breakage of the cast-iron parts. Furthermore, the water in passing up the first pipe, which is, as before explained, directly in line with the inlet to the conduit 9, is liable to take a short cut therethrough instead of circulating through the other tubes also. While the remaining tubes will of course contain a certain amount of water, the circulation through them is not uniform on account of the unbalancing of the same before described at the inlet to the pipe 9. A header made as shown in the drawings, however, obviates these difficulties entirely. For such purpose I extend the chamber beyond the first pipe a suitable distance, and in the extension 10 is located the connection 11 for the pipe 9. This leaves the space on the header immediately above the first pipe free for a hand-hole, the same

as in the case of the other tubes. When the water flowing through the first pipe reaches the upper end of the same, there is not, as in the old construction, a straight passage directly into the conduit 9. On the other hand, the liquid at that point must flow at right angles into the extension 10. It therefore meets the same resistance in discharging from this particular pipe as does the water in the other tubes. This uniformity of flow and the convenience of the other features above described makes my header greatly superior to the old forms.

The construction herein specifically shown and described is of course only one of the many forms which may embody my invention, and I therefore do not consider myself limited to the structure here shown; but

What I claim is—

In a fuel-economizer, a header consisting of an elongated chamber having in one side a longitudinal row of apertures to receive the economizer-pipes, a plurality of inwardly-flaring circular apertures in the opposite wall in register with the pipe-apertures, tapered closures fitting the flaring apertures, one or more inwardly-flaring oval apertures in the same wall as the other flaring apertures, said oval apertures being provided with tapered closures and having their longer diameters greater than the diameter of the circular apertures, whereby the closures for the latter may be introduced into the chamber through the oval apertures, said chamber having at one end an extension beyond the two series of apertures, for connection with another section of the economizer; as set forth.

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Witnesses:

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