G. W. BLAKE.

STEAM RADIATOR.

No. 189,017. Patented April 3, 1877.

Fig. 1.

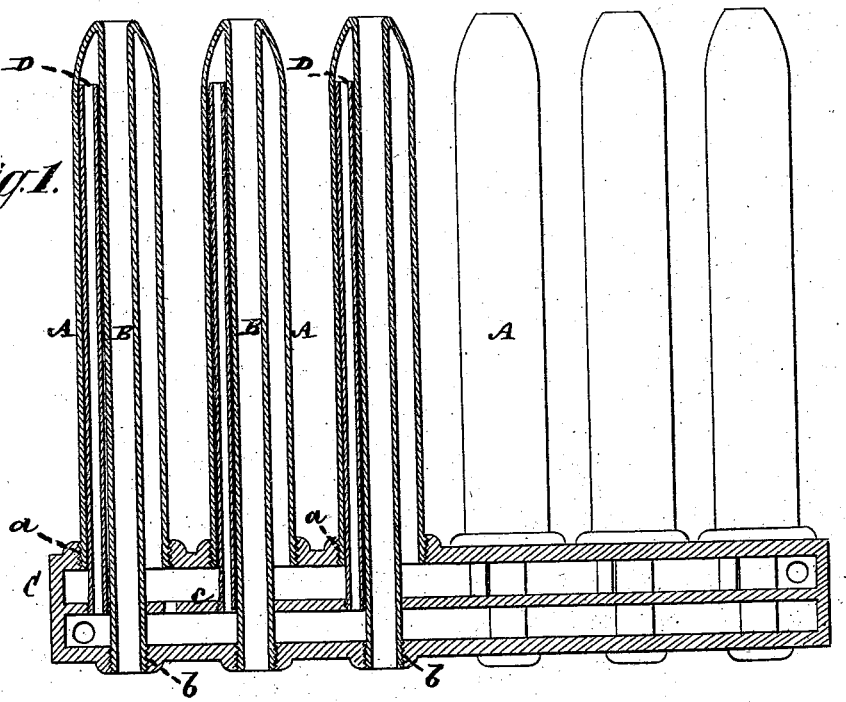
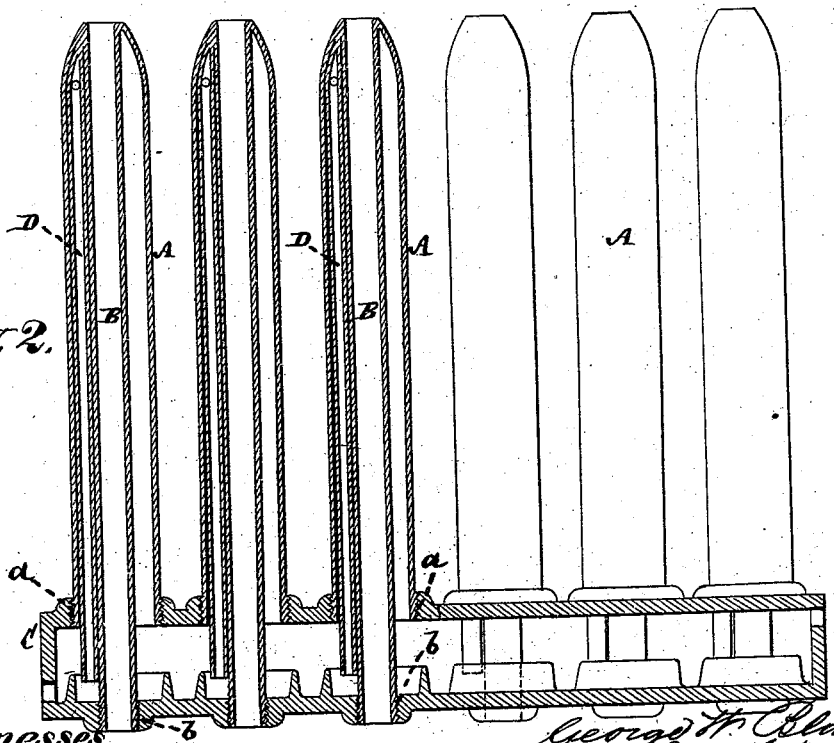


Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE W. BLAKE, OF NEW YORK, N. Y.

IMPROVEMENT IN STEAM-RADIATORS.

Specification forming part of Letters Patent No. **189,017**, dated April 3, 1877; application filed September 7, 1876.

To all whom it may concern:

Be it known that I, GEORGE W. BLAKE, of the city, county, and State of New York, have invented certain new and useful Improvements in Radiators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention relates to that description of steam-radiators which are composed for the most part of outer steam-heating pipes or tubes and inner air circulating and heating pipes arranged within the steam-tubes.

The invention consists in a novel construction of said combined tubes or pipes, in which the air circulating and heating pipes are welded, at their upper or outer ends, to the steam-heating pipes or tubes, by which they are inclosed, so as to form an integral or component part of the steam-tubes, whereby increased strength and solidity is obtained, the fitting together of the radiator is facilitated, and leakage at the junction of the steam pipes or tubes with the air-circulating and heating pipes or tubes is avoided.

The invention also consists in a combination, with the steam-base of the radiator, of the outer steam-heating pipes or tubes and inner air circulating and heating pipes or tubes, attached at their upper or outer ends to the steam pipes or tubes, constructed to jointly screw at their lower or inner ends into said base—that is to say, the outer steam-heating pipes or tubes constructed to screw into the upper portion of the base, and the inner air circulating and heating pipes constructed to screw into or through the lower portion of the base, whereby both the outer and inner tubes are fitted to their places and secured, also detached, when required, by simply manipulating or turning the outer tubes.

Figures 1 and 2 represent vertical longitudinal sections of two modifications of steam-radiators having my invention applied.

A A represent a series of outer steam pipes or tubes, closed and united at their upper ends by welding, with a corresponding series of inner air circulating and heating pipes, B B, which thus form a component part of the outer tubes, and which extend down through the outer tubes and below them, and are open top and bottom to provide for the circulation of air through them.

The outer or steam-heating tubes A A are open only at their bottoms, and connect at such parts with the upper portion of the steam-base C of the radiator, while the inner or air circulating and heating pipes pass through said base, so as to admit air through them from below the latter.

To facilitate the joint attachment of these outer and inner tubes A B with the base C, the tubes A are constructed with screw-threads *a* at their lower ends, arranged to fit corresponding threads in the upper portion of the base C, and the lower ends of the tubes B with threads *b*, of a like pitch and direction as the threads *a*, and arranged to fit female threads in the lower portion of the base, through which they form communication with the air outside of the radiator.

By this construction of the attached inner and outer tubes and mode of fitting them to their places, it is only necessary to manipulate or turn the outer tubes to secure or detach, as required, both the inner and outer tubes.

By the welding of the inner and outer tubes together at their upper ends, all leakage at the junction of said parts is avoided, and increased stiffness and solidity secured for the same; also, labor is economized in the fitting of the radiator.

D D are return steam-circulating pipes within the tubes A A. In Fig. 1 these pipes, which have communication through them top and bottom, screw at their lower end into a horizontal partition, *c*, in the base, to provide for the escape of water of condensation into the lower chamber of said divided base, the steam being admitted to the upper chamber of the latter. In Fig. 2 the base C is not horizontally divided, but the return steam-pipes D are each made to connect with a water-pit in the latter, to prevent steam, as it is admitted to the base, blowing through them; and said pipes are welded at their upper ends to form a component part of the outer tubes, and with one or more lateral perforations in them at their upper ends. Such construction and si-

phonic provision at the lower ends of said pipes D forms no part, however, of this invention, but is made the subject of a separate application for Letters Patent.

I claim—

1. The outer steam-heating pipes A and inner air circulating and heating pipes B of the radiator, united at their upper or outer ends by welding, whereby said inner and outer pipes are integral portions of each other, substantially as and for the purposes herein set forth.

2. The outer and inner pipes A and B, united with each other at their upper or outer ends, and constructed with screw-threads *a* and *b*, of like pitch and direction, at their opposite ends, in combination with the radiator-base C, having tapped holes, into which the threaded portions of both pipes A and B are simultaneously screwed, essentially as described.

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