G. W. BLAKE.

STEAM-RADIATOR.

No. 189,018. Patented April 3, 1877.

Fig. 1.

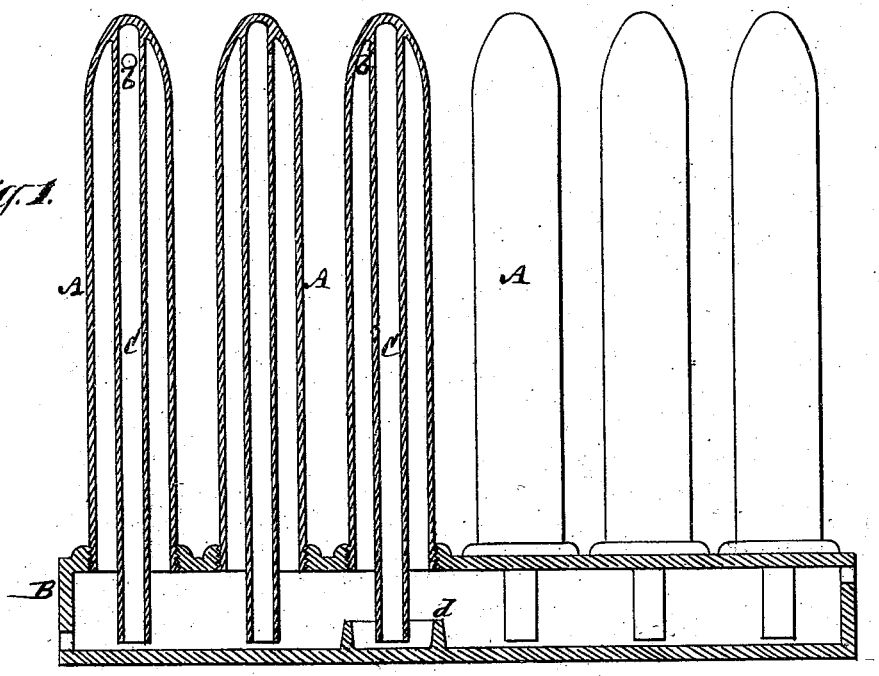
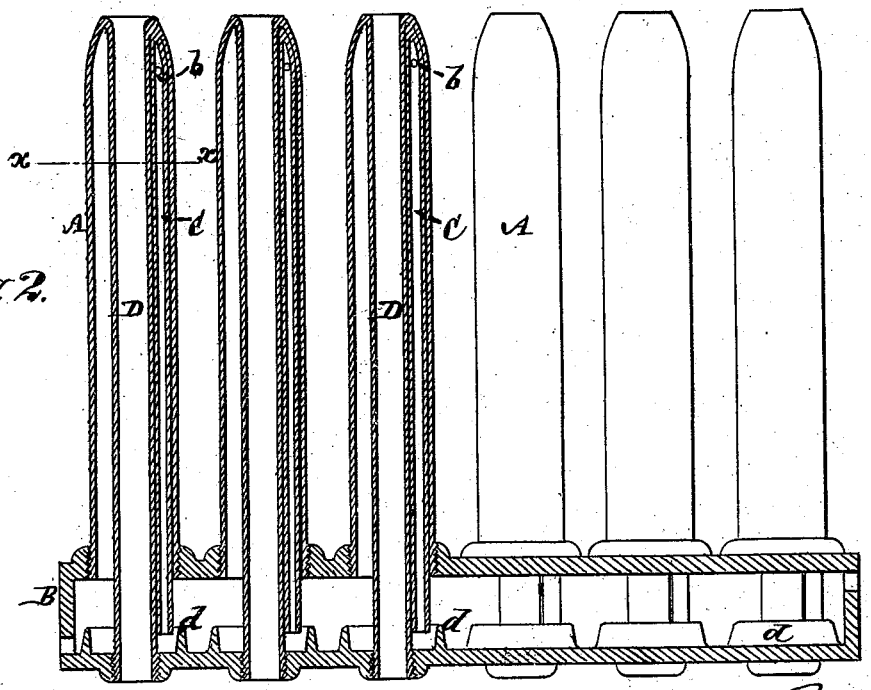


Fig. 2.



Witnesses
John Becker
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Fig. 3.

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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. **189,018**, 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 steam-radiators which are composed, for the most part, of independent steam-heating pipes or tubes, mounted on a steam box or base, and have combined with them steam-return pipes for promoting circulation in the main pipes, and is applicable to that class of such radiators, among others, in which air heating and circulating pipes are also combined with and arranged to pass up within and through the main steam-heating pipes or tubes.

The invention consists in a novel construction of the combined main steam and return pipes, in combination with the base with which the main pipes connect, whereby the return-pipes are made to form integral portions of the main pipes with perfect freedom for their independent expansion and contraction, being attached by welding at their upper or outer ends only to the main pipes, and being left free or loose at their opposite or lower ends, also whereby leakage is avoided and labor reduced in fitting together the radiator.

The invention also consists in a combination, with the main steam-heating pipes or tubes, of inner return-steam pipes, attached at or near their upper ends to the main pipes, but extending down below the latter, and a water-pit formed, either by independent cups or otherwise, in the steam box or base of the radiator, to prevent the blowing of the steam through the return-pipes, and to secure for each return-pipe an independent siphonic action.

Figures 1 and 2 represent vertical longitudinal sections of two modifications of steam-radiators having my invention applied. Fig. 3 is a section on line *x x*.

A A represent a series of outer steam-heating pipes or tubes, independently mounted on a steam box or base, B, in the cover of which they may be screwed to secure them. These pipes A A form the main steam-pipes of the radiator, and are closed at their upper or outer ends, where they have united with them, by welding, a corresponding series of inner steam-return pipes, C, which thus become integral portions of the main tubes without joint at their attachment with the latter, thereby avoiding leakage and facilitating the fitting together of the radiator, by reason of there being no special fitting of the return-pipes necessary.

These return-pipes C have their communication with the main pipes A established at their upper ends by any number of small perforations, *b*, to promote circulation, without detracting from the filling of the main pipes A with the steam. The lower portions of these return-pipes C are left free or loose, so that said pipes may contract and expand independently of the main pipes, and said portions of the pipes C are extended below the main pipes, and their bottom ends, which are open, are arranged to project down within a water-pit, formed either by separate cups *d* in the bottom of the steam-base B, as shown in Fig. 2, or by the lower portion of the steam-base itself, as shown in Fig. 1, and in which the water of condensation is allowed to collect, so as to seal or cover the lower ends of the return-pipe C. The water-trap or siphon thus formed prevents the steam, when admitted to the base, from blowing through the return-pipes without filling or keeping up a proper circulation in the main pipes.

When inner air heating and circulating pipes D are combined with the main steam-pipes, as shown in Fig. 2, then the steam-return pipes C, instead of being concentrically arranged, as in Fig. 1, are disposed to one side of the air heating and circulating pipes, which latter may also be united, by welding, with the upper closed ends of the pipes A, and be fitted to screw at their lower ends into or through the lower portion of the steam-base B.

I claim—

1. The combination, with the steam box or base B, of the outer or main steam-heating

pipes A, attached to said base, and the inner steam-return pipes C, united at their upper or outer ends, by welding, with the main pipes A, but free from or disconnected with the base at their lower or opposite ends, substantially as specified.

2. The combination, with the steam box or base B and outer or main steam-heating pipes A, of inner steam-return pipes C, attached at or near their upper ends to the main pipes, but extending below the latter, and a water-pit in the steam box or base, operating to seal the lower ends of the steam-return pipes, essentially as described.

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Witnesses:
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