

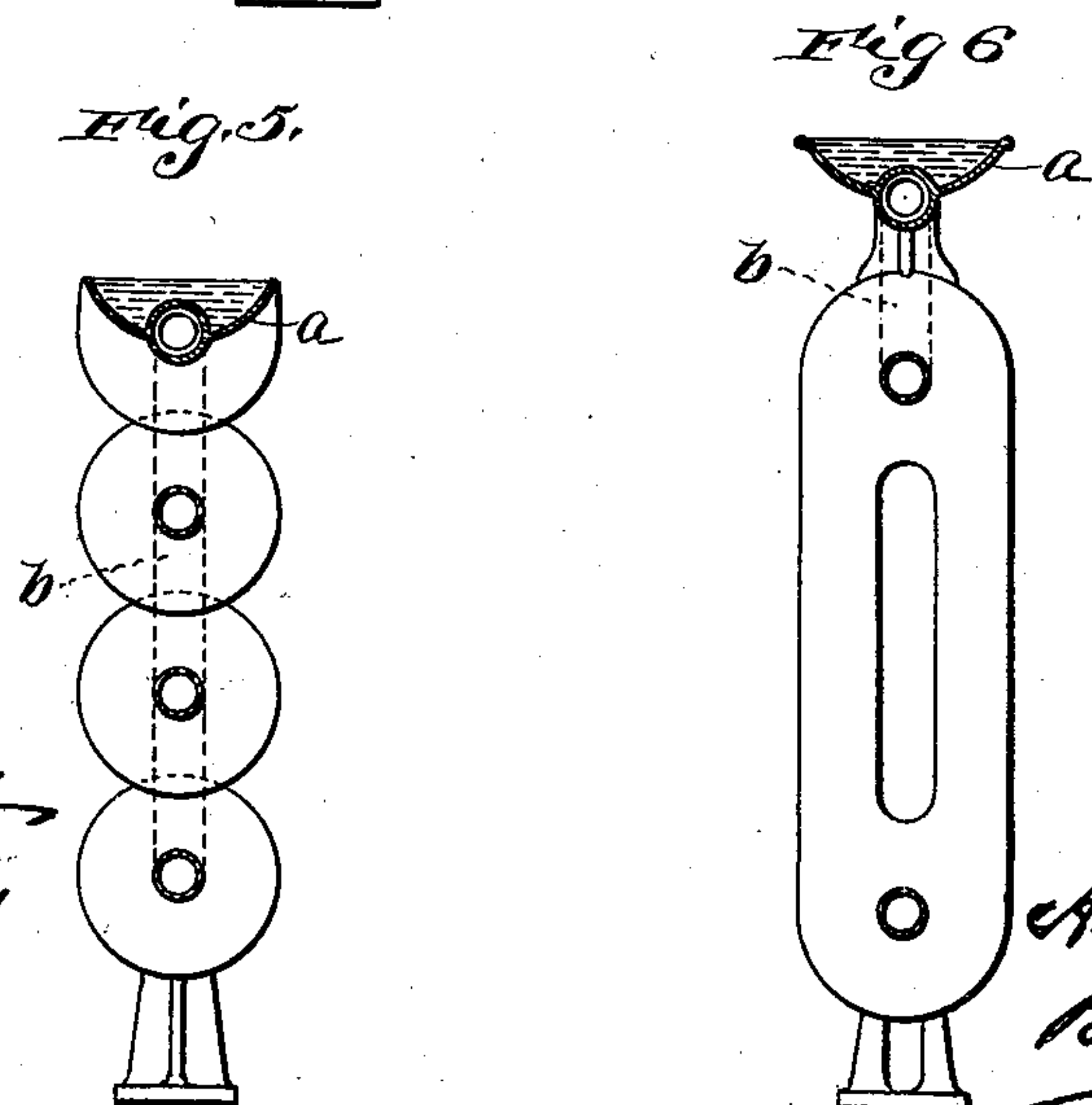
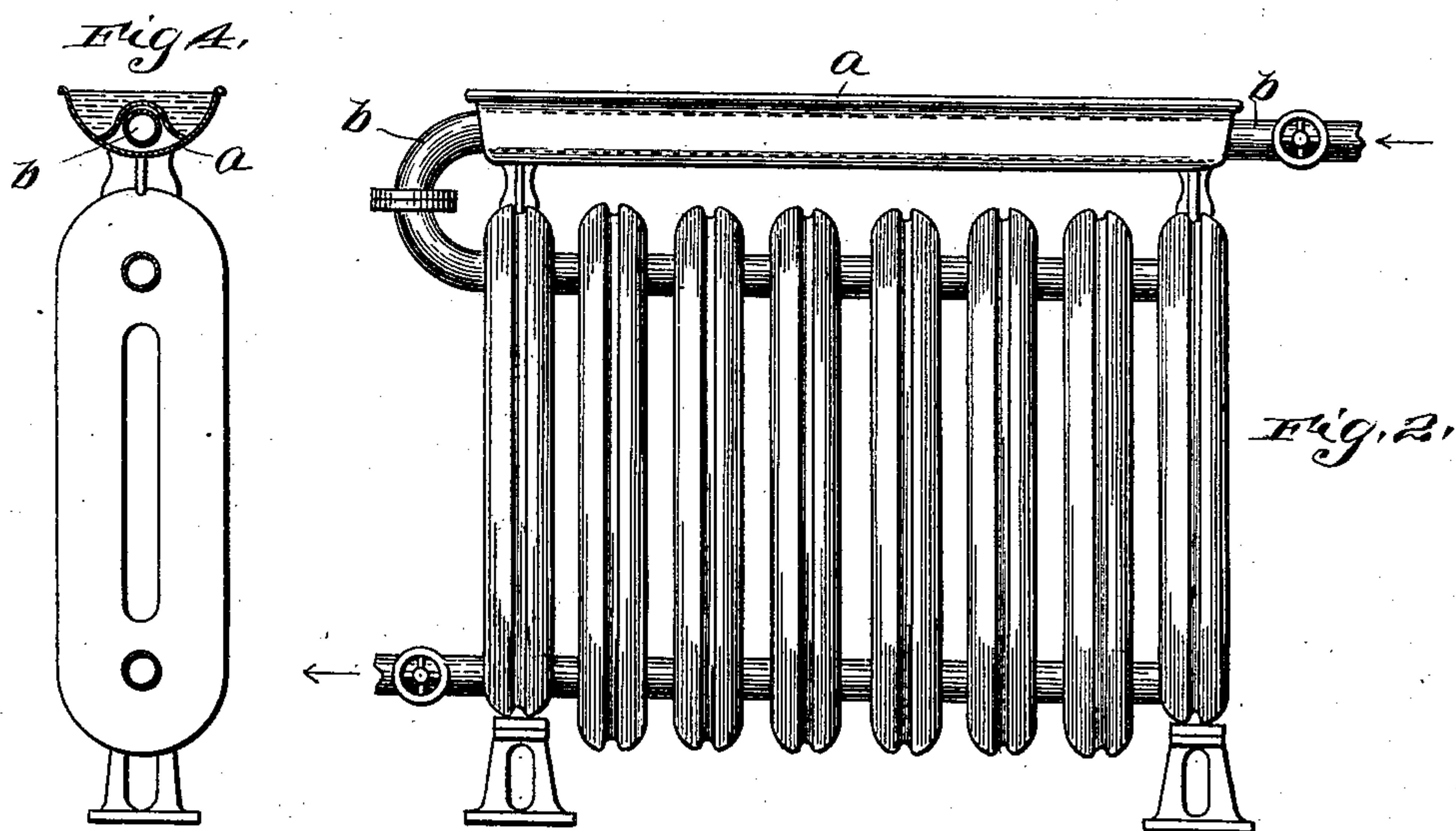
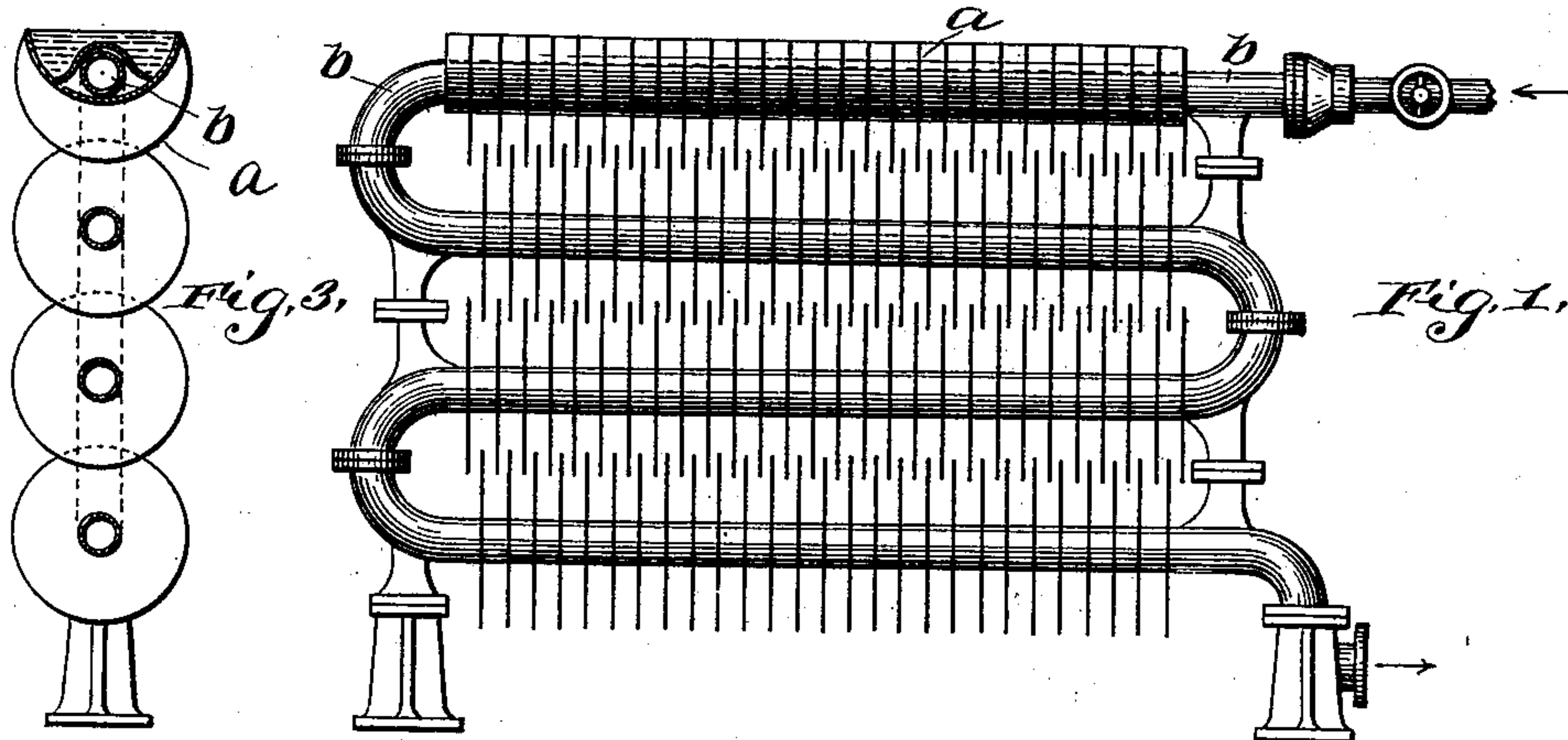
No. 689,842.

Patented Dec. 24, 1901.

A. KARST.
HEATING APPARATUS.

(Application filed Nov. 18, 1899.)

(No Model.)



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UNITED STATES PATENT OFFICE.

ANTON KARST, OF CASSEL, GERMANY, ASSIGNOR OF ONE-HALF TO I. W. PIEPMAYER, OF CASSEL, GERMANY.

HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 689,842, dated December 24, 1901.

Application filed November 18, 1899. Serial No. 737,478. (No model.)

To all whom it may concern:

Be it known that I, ANTON KARST, a subject of the King of Prussia, Emperor of Germany, and a resident of Cassel, in the Kingdom of Prussia and Empire of Germany, have invented certain new and useful Improvements in Heating Apparatus, of which the following is a specification.

In order to obviate the objectionable drying of the air commonly experienced with radiators for steam or water heating, several suggestions have been made to add water-pans to the radiators, in which the water would evaporate by the heat taken from the radiators. These evaporating devices are independent and separate from the radiator proper, and in consequence the efficiency of the radiators is decreased. In this case there is no new part added to the old device; but one of the elements is simply changed, so that the same, besides its function as a radiator, also acts as an evaporator. The evaporating arrangement is therefore also a heater-radiator. The steam heating or water heating pipe is for this purpose placed wholly or partially in the evaporating-pan.

The accompanying drawings illustrate this new arrangement in two modifications.

Figure 1 is a front elevation of a ribbed radiator. Fig. 2 is a front elevation of a radiator having the pipe carried through the pan. Figs. 3 and 4 are cross-sections of Figs. 1 and 2, respectively. Figs. 5 and 6 are cross-sections of radiators of the same general contour as those shown in Figs. 1 and 2 respectively, having the radiator-pipe itself made hollow to form a water-pan.

In the ribbed radiator, Figs. 1 and 3, the ribs of the upper coil of pipe are cut off on top, and this upper part is shaped into a water-pan *a*, the bottom of which covers the pipe *b*.

In the radiator system, Figs. 2 and 4, the steam-pipe *b*, connected to a steam-supply pipe, is also connected to a radiator *a*, formed or shaped as a water-pan, so that the steam passes through the radiator and heating and water-evaporating take place at the same time.

In the arrangement of Figs. 5 and 6 the radiator itself is hollow.

The radiators are not only in every case provided with water-evaporators, but are shaped or formed as such. A loss of heat, therefore, through this air-moistening arrangement does not take place, as the radiator at the same time acts as the air-moistener.

There is no special care necessary for looking after the air-moistener, as in case there should be no water in the evaporating-pan this pan simply serves the same purpose as the remaining radiators. The device is also not bigger than the older arrangement.

A new effect is accomplished in my arrangement by placing the heating-pipe within and not at the bottom or somewhere else below the evaporating-pan. In consequence thereof the evaporating-pan of the present invention is at all times a radiator, and especially, also, when not filled with water. The steam in this case passes first through the pan-shaped radiator and then into the remaining radiators.

In the present invention the steam passes first the evaporating apparatus and after that only reaches the remaining radiators. Should there be no water in the pan, this would not cause any trouble. The pan would simply act as a radiator, and condensing of water could not take place, and therefore no crackling noise.

The apparatus requires absolutely no special care. There is no loss of heat, and it may be added to any existing system.

In the present arrangement, in which the pipe *b* is within the pan *a*, heat is emitted by the pipe *b* in all directions, and it is immaterial whether the pan *a* is filled with water or not. The pan *a* therefore is heated in all its parts, and this evenly, and the pan *a* will act as a radiator, as its walls are heated, which heat may be emitted by them whether the pan be filled with water or not.

In the present invention the pan does not come in direct contact with the steam; but it receives its heat from the radiating heat of the pipe *b*, and an accident to the pan on account of getting too hot is thus obviated.

The following is claimed as new:

1. In a heat-radiator, the combination of a closed steam-coil having at top a horizontal induction-pipe *b*; and an open water-pan *a* extending substantially from end to end of the coil, surmounting and partially surrounding the induction-pipe *b* so as when empty to constitute a part of the radiating surface of the coil and when supplied with water to serve as an evaporating-pan, as described.

2. In a steam-coil heat-radiator, the combination of the horizontal steam induction-pipe *b*, constituting the upper member of said coil and the open water-pan *a* mounted on the upper part of the coil without connection with the interior thereof, extending substantially from end to end thereof, surmounting

and partially surrounding the induction-pipe *b* and deriving heat therefrom, as and for the purposes described.

3. The combination of the induction steam-pipe *b*, constituting the upper member of a radiator-coil, and the open water-pan *a* extending substantially from end to end of the coil without connection with the interior thereof, surmounting and partially surrounding the induction-pipe *b* and in indirect metallic connection with the coil, substantially as set forth.

ANTON KARST. [L. S.]

In presence of—

GUST. C. KOTHE,
GARSIN ULLRICH.