

No. 865,199.

G. MENNESSON.  
RADIATOR.  
APPLICATION FILED NOV. 18, 1905.

PATENTED SEPT. 3, 1907.

Fig. 1.

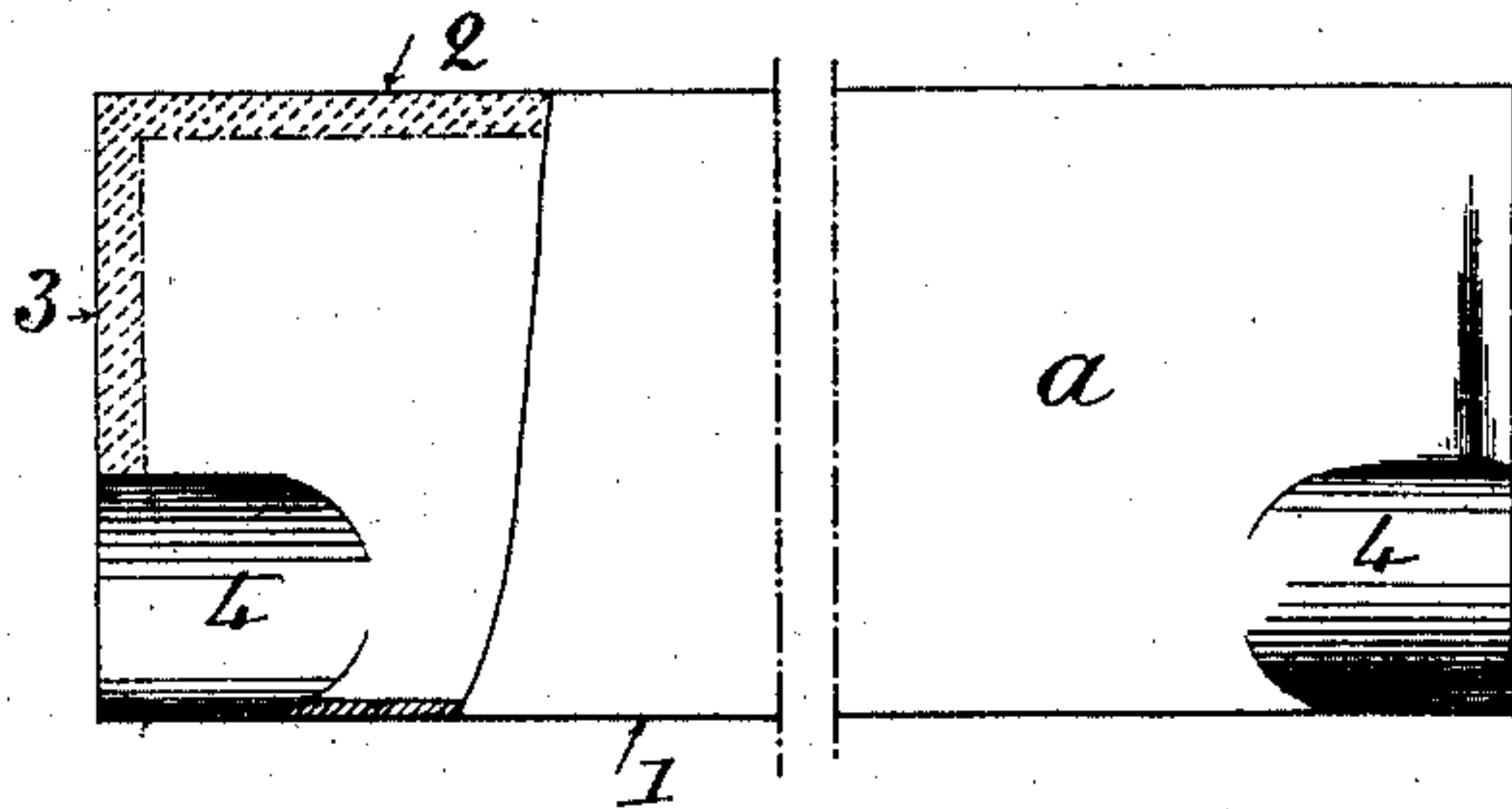


Fig. 2.

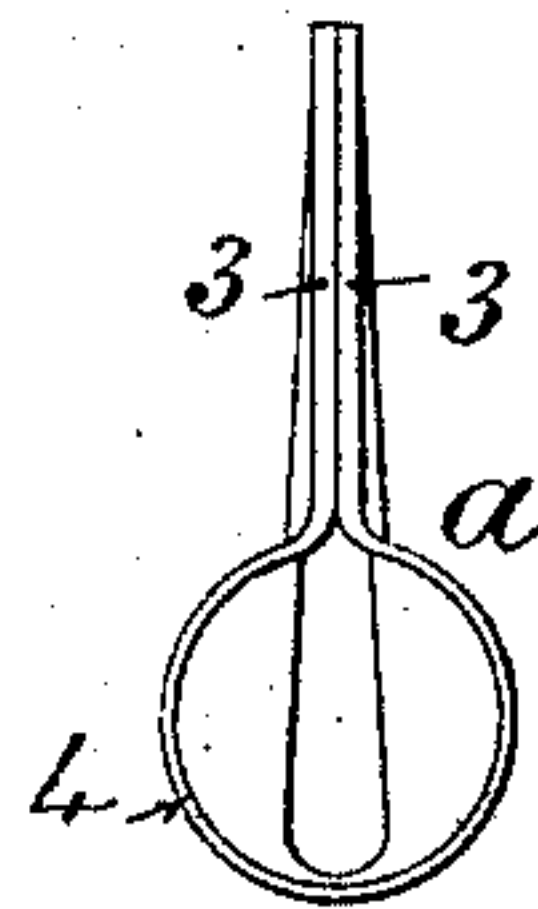


Fig. 3.

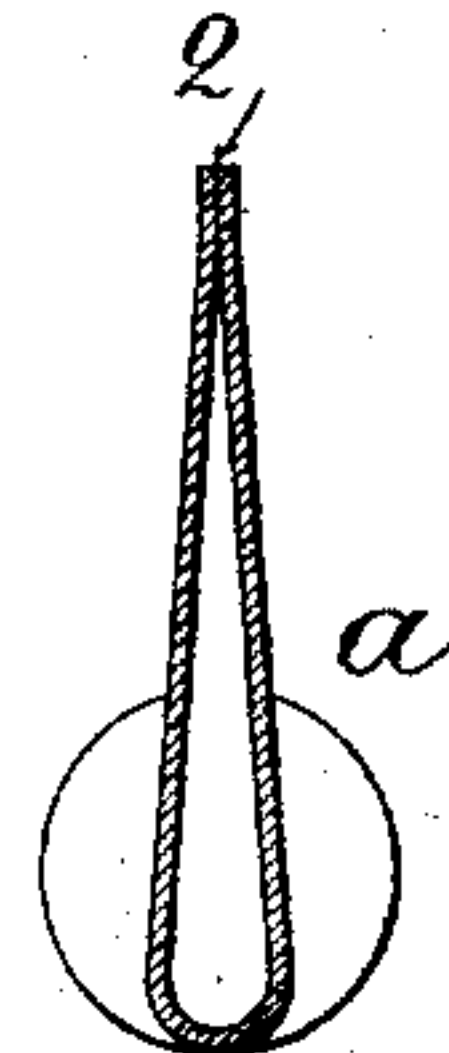


Fig. 4.

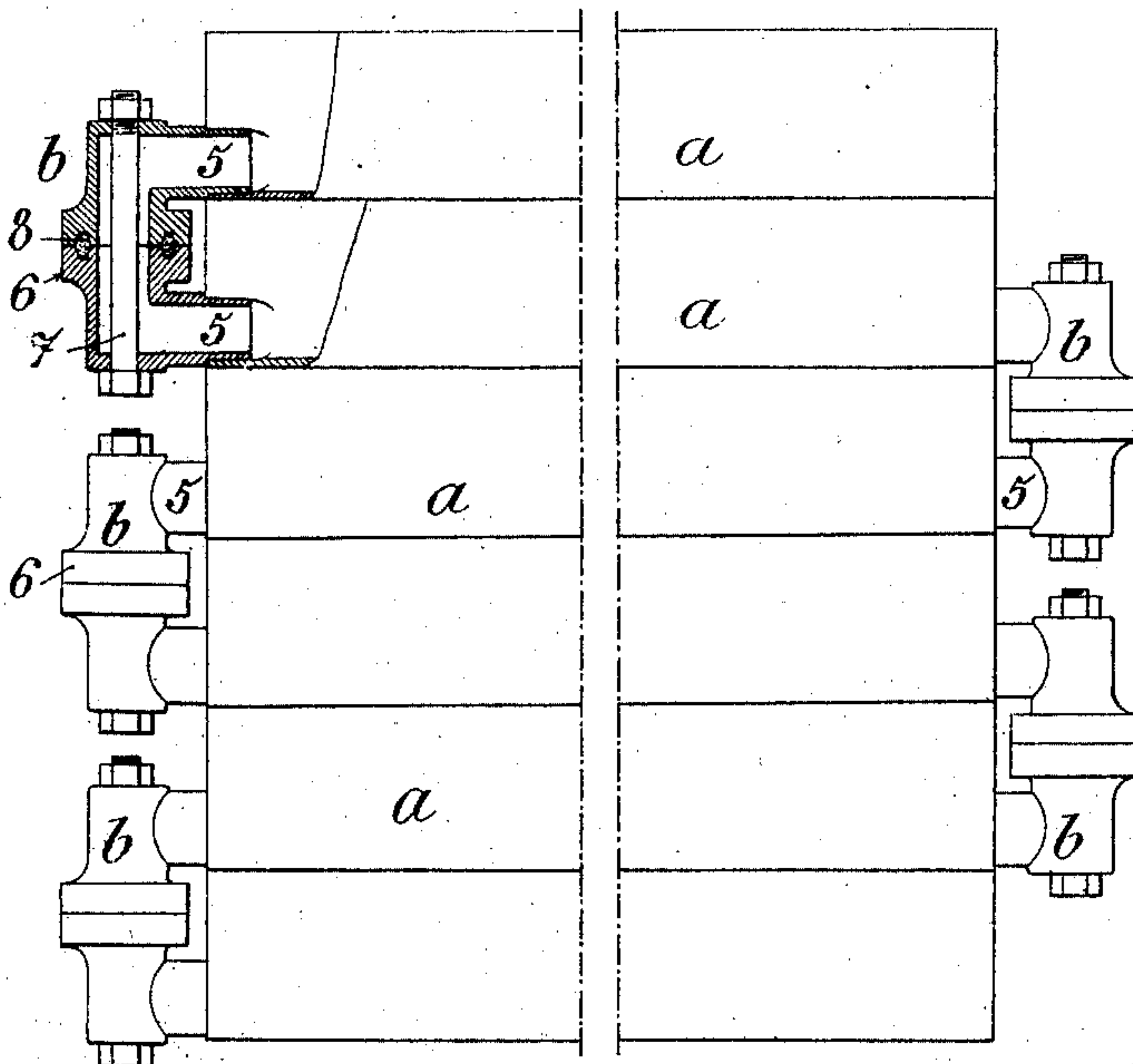
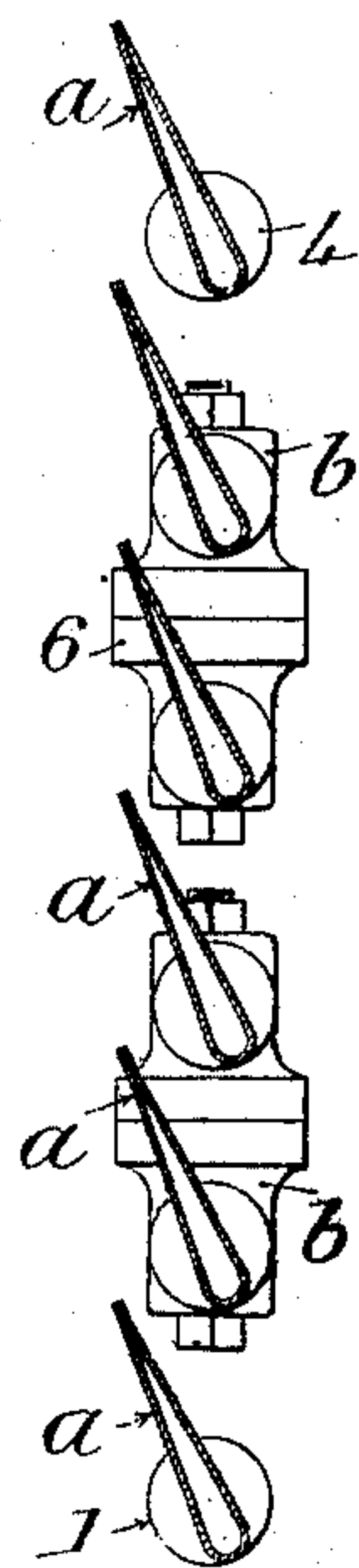


Fig. 5.



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# UNITED STATES PATENT OFFICE.

GEORGES MENNESSON, OF TROYES, FRANCE.

## RADIATOR.

No. 865,199.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed November 18, 1906. Serial No. 287,995.

To all whom it may concern:

Be it known that I, GEORGES MENNESSON, a citizen of the Republic of France, residing at Troyes, (18 Rive Droite du Canal, Aube Department,) in the Republic of France, engineer, have invented certain new and useful Improvements in Radiators, of which the following is a specification.

The invention relates to radiators, and consists in certain novel constructions and combinations of parts hereinafter described and claimed. The said radiator constructed according to the present invention is composed of tubes or elements each of which is formed of a single piece of sheet metal bent down on itself in two parts and welded at its edges. At each end of each element is formed a circular opening by stamping or beating out to receive a pipe connection. The said elements, in being thus manufactured by bending and welding, receive a flat and pointed shape, in cross section, which offers several advantages, especially in that the capacity of the element is very small when compared with its surface, that on account of its very small thickness it can be applied along walls without giving rise to inconvenient protuberances, that the triangular form of the element in cross section is favorable to the use of steam and to the draining off of water of condensation, and so on.

One embodiment of this invention is shown in the accompanying drawing in which:

Figure 1 is an elevation of one of the said elements of the apparatus, one end of the said element being in vertical section. Fig. 2 is an end elevation and Fig. 3 a cross section of the said element. Fig. 4 is a front elevation partly in section and Fig. 5 a vertical section of the radiator, the said radiator being composed of several of the said elements.

Each element is formed of a single piece of thin sheet metal of any suitable kind, of rectangular shape, bent onto itself in two parts in such a manner that the bend 1 shall be semi-circular and of very small diameter, while the edges 2 are applied one against the other. The ends of the sheet of metal are so stamped or pressed as to have flat edges 3 applied the one against the other and shall form a tubular part 4 as an extension or enlargement of the bend 1, as clearly shown in the draw-

ing. The edges 2 and 3 are welded together by electricity, by means of a blow-pipe, or the like so that the element has no opening save those of the conduits 4.

To build up a radiator comprising elements such as *a* (Figs. 4 and 5), a certain number of elements are placed horizontally one above another, the round bend 1 being at the bottom and the edge 2 at the top, and the tubular parts 4 are connected together by pipes *b*, so that the divers elements communicate successively with each other in the same manner as a serpentine-pipe. The elements may be inclined and arranged in the same manner as the blades of a Venetian blind, as shown in Fig. 5, in order to reduce the height of the radiator and to bring the metal surfaces which transmit the heat more in contact with the vertical currents of air. In the embodiment shown in the drawing the said connecting pipes are bent at right angles and are each provided with a reduced cylindrical end fitting into the opening 4 of the element and with an enlarged flange like end 6, designed to be applied onto the corresponding end of the adjacent connecting pipe *b*; the two connecting pipes are bolted together at 7, and a packing of soft metal 8 may be placed between the flanges 6, to make a steam-tight joint.

### Claims

1. A radiator composed of a series of parallel sheet metal radiating elements, and pipe connections connecting said elements in series, each element comprising a wedge-shaped body portion having a rounded base and enlarged cylindrical end portions, the ends of the pipe connections entering said cylindrical end portions and said elements being arranged with their longitudinal axes in one plane and with their body portions inclined at an oblique angle to said plane.

2. A steam radiator composed of a series of parallel tubes, and pipe connections connecting said tubes in series, each tube comprising a wedge-shaped body portion having a rounded base, and enlarged cylindrical end portions, and each pipe connection comprising two pipe elbows having abutting ends secured together and their other ends entering the ends of the corresponding tubes.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

GEORGES MENNESSON.

Witnesses:

ALFRED OLIVIER,  
L. REY.