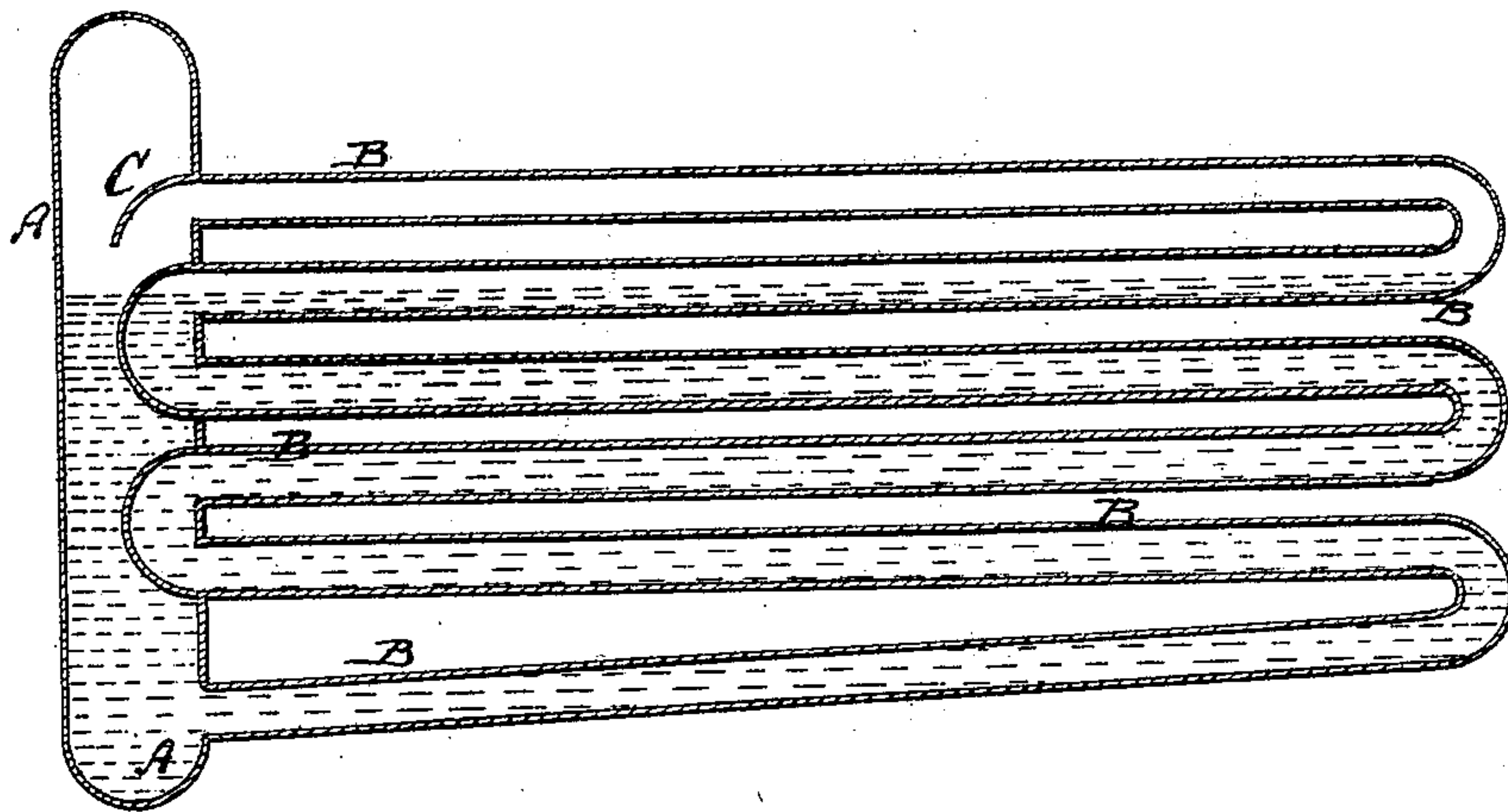


J. A. Miller,

Steam Generator.

No. 10,9645.

Patented Nov. 29. 1870.



Witnesses:

S. S. Mabin
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JOSEPH A. MILLER, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 109,645, dated November 29, 1870.

IMPROVEMENT IN STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOSEPH A. MILLER, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and improved Steam-Generator; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

The drawing represents a vertical longitudinal section of my improved steam-generator.

My invention relates to steam-generators; and consists in certain improvements, which will be first described in connection with all that is necessary to a full understanding thereof, and then clearly specified in the summary or claim.

A in the drawing represents a vertical and inclined water-and-steam chamber, set up at one end of the generator to receive the ends of a series of circulating pipes, B, which enter the same. In the drawing but one pipe B is shown. Any suitable number of similar pipes may, however, be used alongside of each other.

The entire apparatus is set up within a suitable chamber or structure, which has the necessary doors, grate, &c.

Each pipe B enters the lower part of the chamber A at its lower end, and is there bent back and forth in several horizontal or inclined courses, as is clearly shown in the drawing. The upper end of the pipe enters the upper part of the chamber.

The several courses of the pipe are connected by suitable knees or bent portions, of which those in front enter and rest within the chamber A, to afford an additional support for the entire pipe.

The chamber A, being partly filled with water, causes the water to enter the lower part of the pipe

B, and to ascend in the same and circulate therein to be thoroughly heated and evaporated. Steam is finally discharged from the upper end of the pipe into the upper part of the chamber.

In order to facilitate the ascent of the water in the pipe, I prefer to incline the lower course or courses upward from the chamber, as shown.

The water-level in the chamber and pipes is regulated at will. For producing dry superheated steam, I prefer to leave a number of courses of pipe above the water-line.

The discharge-pipe from the generator is smaller in area than the pipes B, and can therefore never cause a very rapid outflow of steam. The circulation in the pipes will consequently remain perfect and steady.

C is a downward-projecting or inclined or curved shield arranged within the chamber B, above and in front of each discharge-opening of the pipes B. It serves to deflect the steam downward, and to thereby enable all water held by it to drop by its own gravity into the chamber. The steam will thus be freed from all water.

Having thus described my invention,

I claim as new and desire to secure by Letters Patent—

1. The pipe B, arranged in courses, which are connected at the ends as set forth, the front connections entering and being supported by the chamber A, as set forth.

2. The deflector shield C, applied to the upper end of each pipe B within the chamber A, substantially as and for the purposes herein shown and described.

JOSEPH A. MILLER.

Witnesses:

BENJ. H. CURRIER,
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