

J. Chambers.
Steam-Heating Apparatus.
Nº 74045 *Patented Feb. 4, 1868.*

Fig. 2.

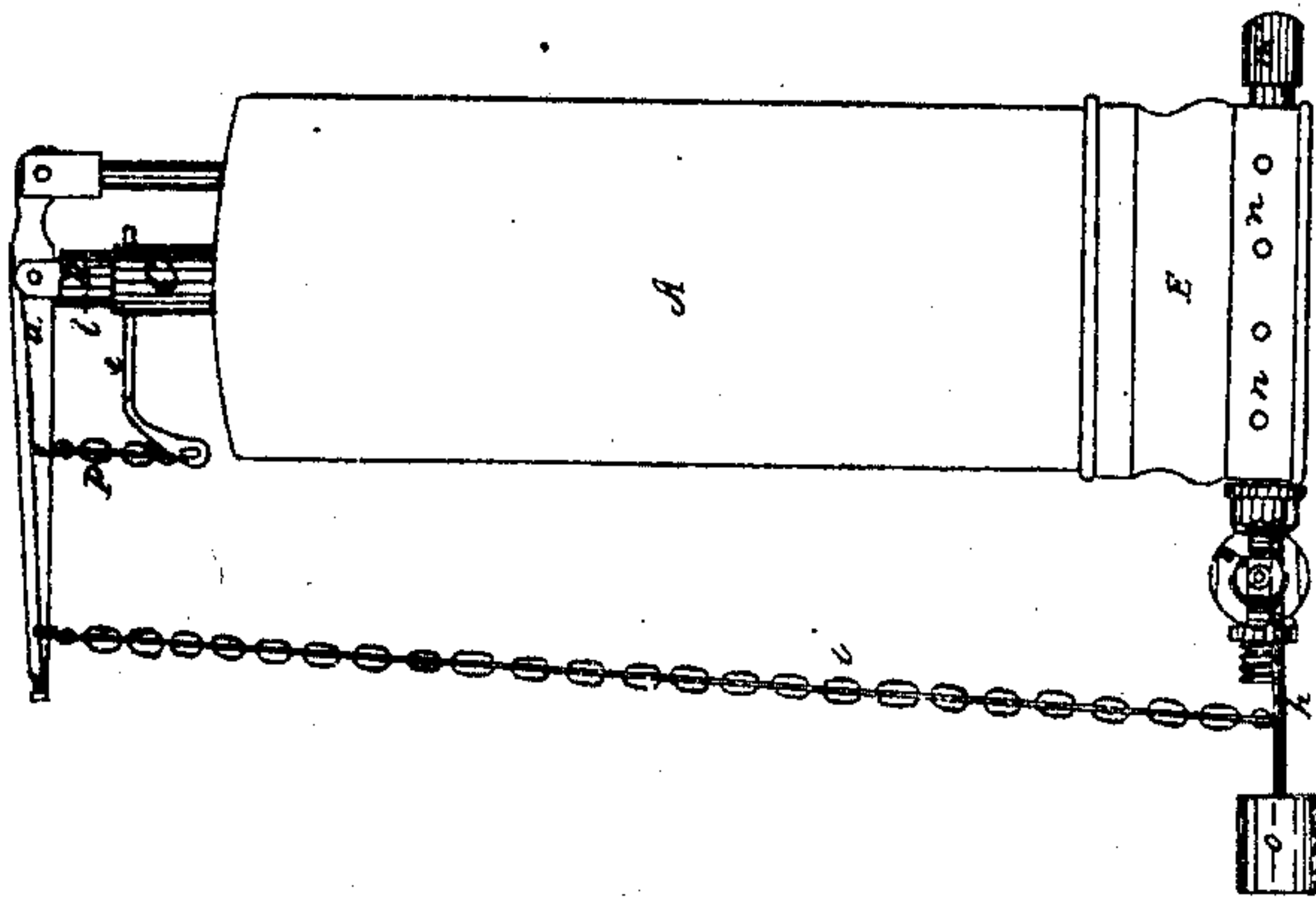


Fig. 4.

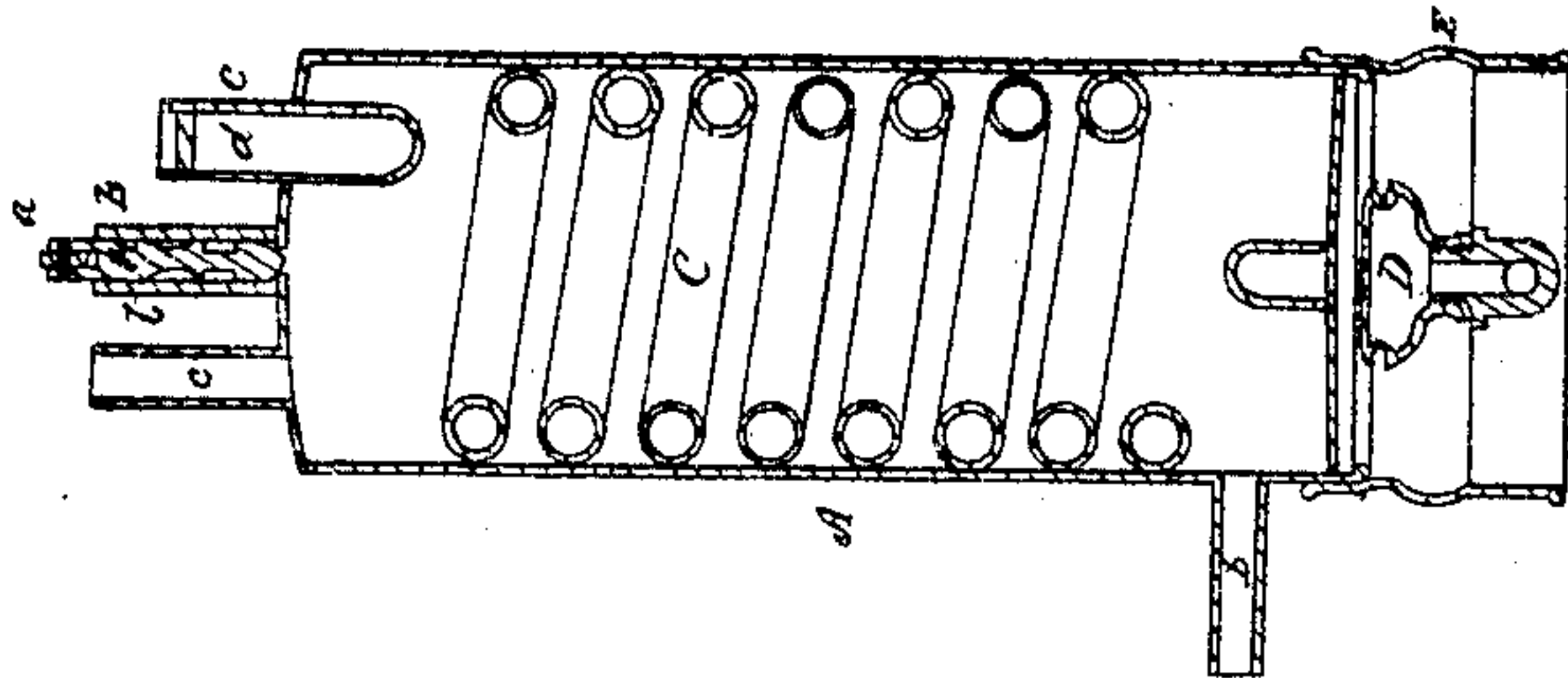


Fig. 8.

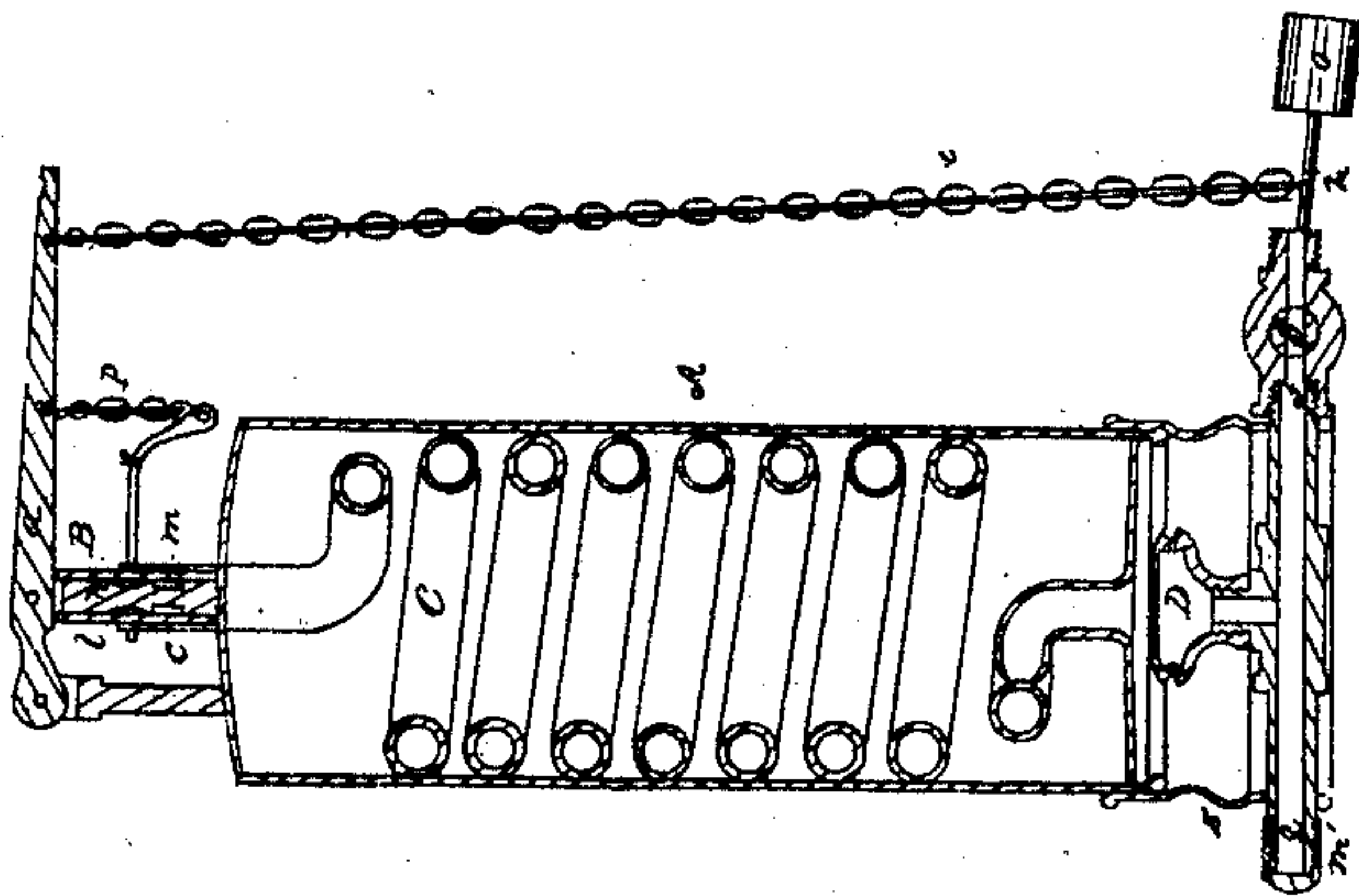
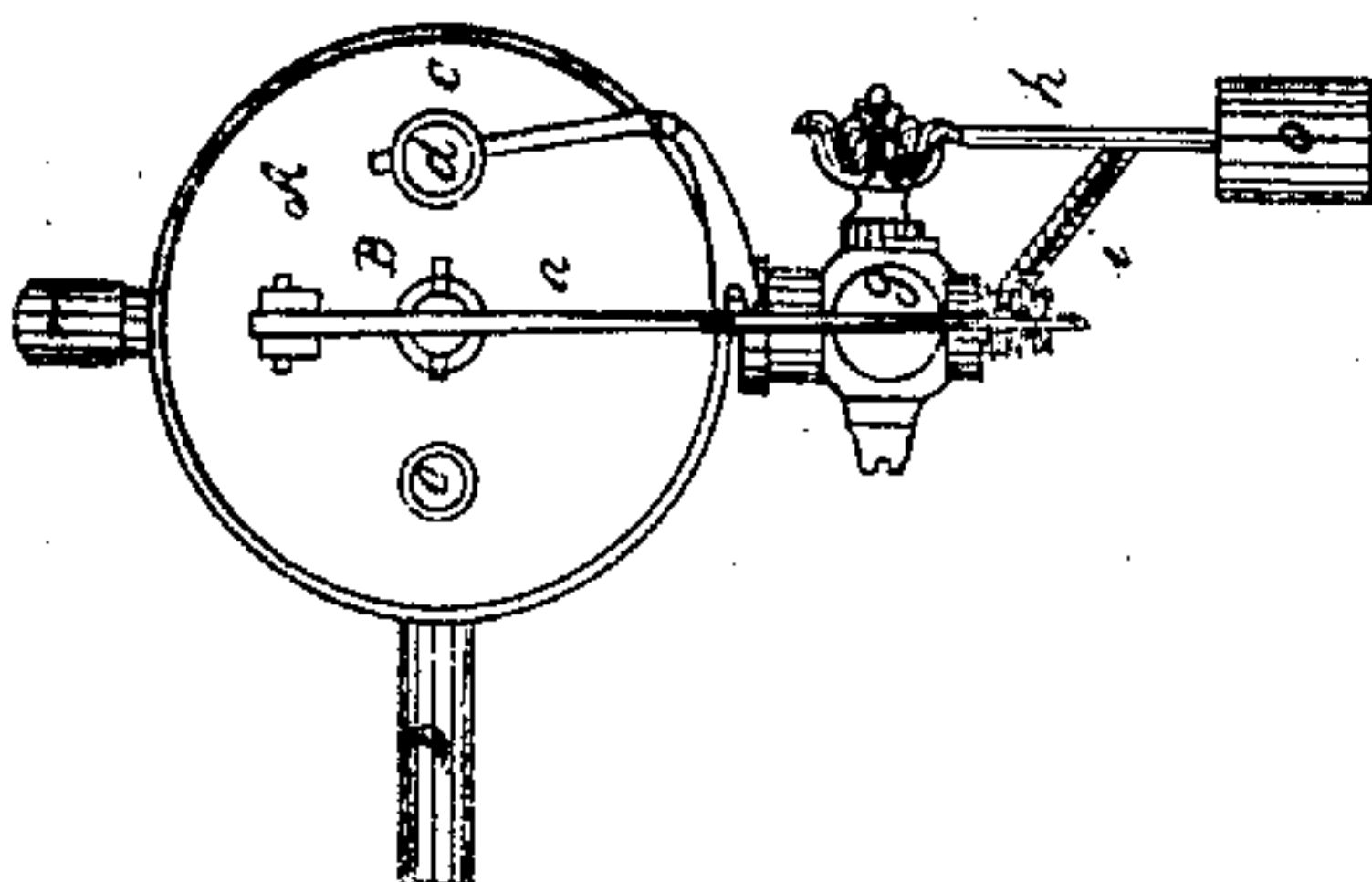


Fig. 1.



Witnesses
Samuel W. Piper
Geo. H. Andrews.

Inventor
James Chambers.
by his attorney,
R. H. Eddy

United States Patent Office.

JAMES CHAMBERS, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 74,045, dated February 4, 1868; antedated January 31, 1868.

STEAM-HEATING APPARATUS.

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

TO ALL PERSONS TO WHOM THESE PRESENTS SHALL COME:

Be it known that I, JAMES CHAMBERS, of Boston, in the county of Suffolk, and State of Massachusetts, have invented a new and useful Apparatus for Heating, either by gas or gas and air, or the equivalent thereof, water under pressure; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view,

Figure 2 a side elevation, and

Figures 3 and 4 are vertical sections of it.

Generally speaking, the apparatus, when set up for use, is to be arranged in a closet, underneath a wash-basin, and is to be employed for heating water therefor. It, however, may be otherwise disposed, and employed for heating water for other purposes than washing.

It consists, first, of a cylindrical or other proper-shaped vessel or boiler, A, provided with a peculiar safety-valve, B, such valve being applied at the top of the boiler, and having a lever, *a*, connected with its stem, or projecting therefrom, in manner as represented. An induction-pipe, *b*, leads into the lower part of such boiler, and there is also an eduction-pipe, *c*, extending from the upper part of the boiler. The pipe *b* is to lead water, under pressure, into the boiler, and the pipe *c* is to discharge it therefrom, as occasion may require, the latter pipe being extended over a basin, and there provided with a faucet or stop-cock. Within the boiler is a serpentine coil or pipe, C, whose lower end opens through the bottom of the boiler, and directly over a gas-burner, D. The upper part of the coil or pipe C extends out of and above the boiler, and has a damper or throttle-valve, *d*, arranged within it, the rod or stem *e* of the said damper being bent at or about at a right angle, as represented in fig. 1. The outer end of the rod is connected with the safety-valve lever by a chain. The gas-burner D receives its gas from a conduit, *f*, provided with a stop-cock, *g*, from the key of which a weighted arm, *h*, projects, such arm being connected with the lever of the safety-valve by means of a chain, *i*. The said safety-valve is composed of a piston, *k*, and a cylinder, *l*, the latter extending up from the boiler and opening out of it. Through the side of the cylinder *l* is a hole, *m*, which, when the safety-valve or piston is raised above it in the cylinder, serves to discharge steam from the boiler. The gas-conduit, *f*, extends beyond the boiler, as shown at *q*, and has a cap or thimble, *m'*, screwed upon it at its extremity. When this thimble is off the extension *q*, air may be forced or caused to pass into the gas-conduit, through its open end, so as to mingle with the gas passing through the burner, and be burned therewith. In order to concentrate the heat of the gas-burner upon the bottom of the boiler, and cause it to pass from thence up into and through the coil C, the gas-burner is surrounded by a casing, E, whose sides are perforated with holes *n n*, for the passage of air into such casing. When water is within the boiler, and the gas in the burner is inflamed, such water will be heated. As steam may form in the boiler, it, by acting against the safety-valve, will raise it. The elevation of the safety-valve will cause the gas-cock and the damper, by means of the lever and chains, to be revolved, so as to nearly cut off the flowage of gas to the burner, and bring the damper into a vertical or inclined position, in order to allow the heat to flow out of the coil. In this way the boiler will be prevented from bursting, and the flowage of gas to the burner, for heating the water, will be regulated, as occasion may require; for whenever any water may be drawn from the boiler, and colder water may rush therein to supply the place of the water extracted, the safety-valve will fall, and the weight of the arm of the gas-cock will turn the key of such cock, so as to let on more gas to the burner, and thereby increase the flow thereof.

The damper and its operative-apparatus, that is, its bent stem and chain, I consider an auxiliary to my main invention.

What I claim as of my invention, in the above-described apparatus, is as follows:

I claim the combination of the boiler A, the gas-burner D, its conduit *f*, and cock *g*, the safety-valve B, the lever *a* thereof, the chain *i*, and the arm *h*, and its weight *o*, or their equivalents.

And I also claim the combination of the same and the coil C, and the damper *d*, and its bent arm *e*, and the chain *p*, connecting such arm with the safety-valve lever.

I also claim the combination of the circulation or induction and eduction-pipes *b c*, with the boiler, the gas-

conduit and burner, the safety-valve, the lever-chain, and weighted arm, connecting the safety-valve and gas-cock key, as set forth.

I also claim the combination of the gas-burner and its conduit with an extension, *q*, of the conduit beyond the burner, and with a screw-cap or thimble, *m'*, screwed upon such extension, as set forth, such being to enable atmospheric air to be supplied to the gas-conduit, as circumstances may require, when such gas-conduit and its burner are combined with a boiler, as set forth.

JAMES CHAMBERS.

Witnesses:

R. H. EDDY,

GEO. H. ANDREWS.