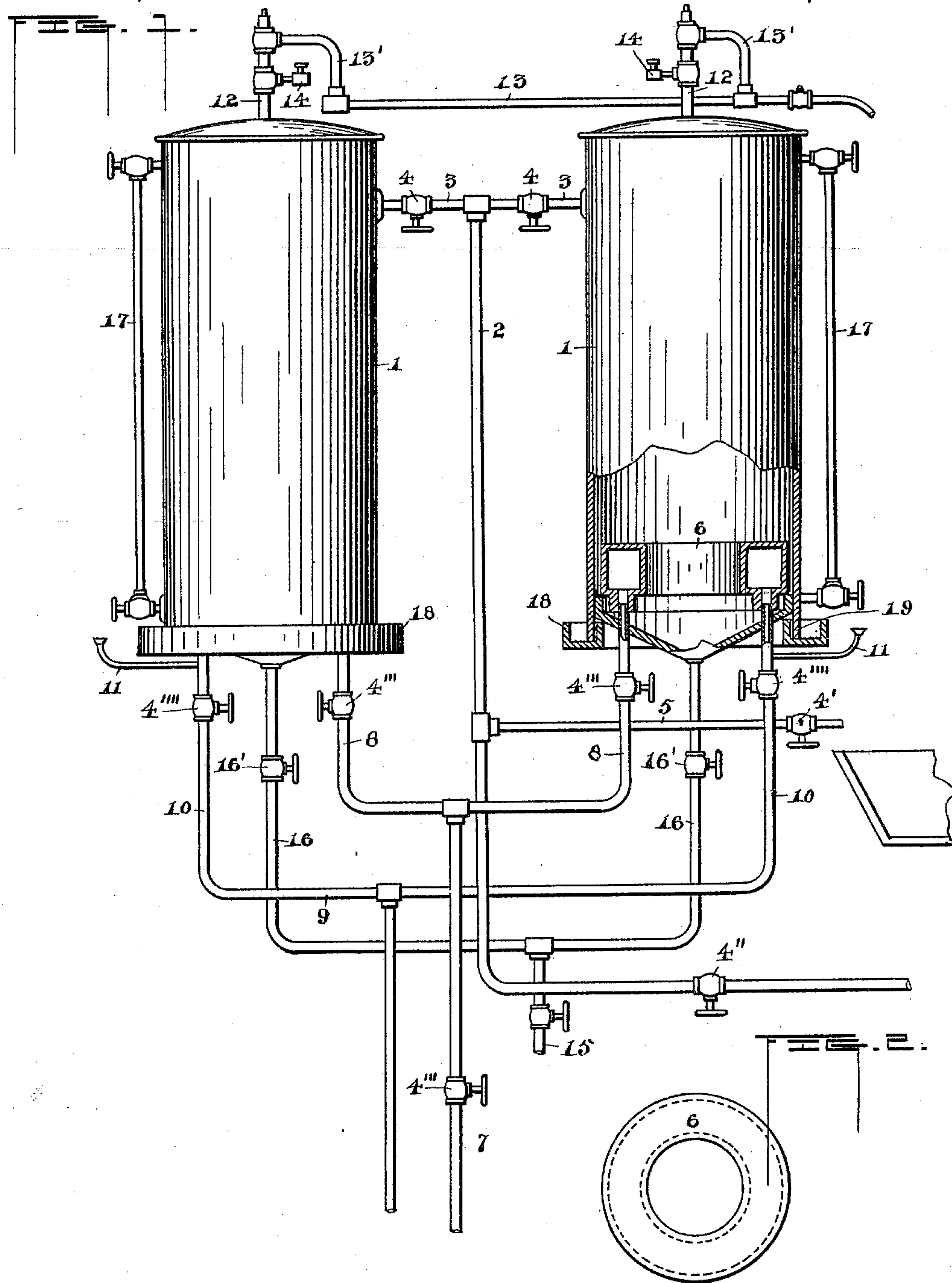


(No Model.)

A. V. M. SPRAGUE.
STERILIZING APPARATUS.

No. 509,560.

Patented Nov. 28, 1893.



Witnesses
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UNITED STATES PATENT OFFICE.

AUSTIN V. M. SPRAGUE, OF ROCHESTER, NEW YORK, ASSIGNOR TO THE
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STERILIZING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 509,560, dated November 28, 1893.

Application filed August 27, 1892. Serial No. 444,273. (No model.)

To all whom it may concern:

Be it known that I, AUSTIN V. M. SPRAGUE, a resident of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Sterilizing Apparatus; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My improvement relates to sterilizing apparatus used in surgery, and consists of a construction hereinafter described and particularly pointed out.

In the accompanying drawings: Figure 1 is an elevation, partially in section showing two tanks and a connecting system of pipes. Fig. 2 is a plan view of an inner heating drum of one of the tanks.

Numerals 1, 1 indicate two tanks placed side by side. These tanks, either or both, can be filled with liquids through pipe 2, which extends nearly to the top of the tanks and connects with them by branch pipes 3, 3 provided with cocks 4. The pipe 2 has a discharge pipe 5 located below the tanks and provided with a cock 4'. After the tanks have been filled, and before the liquid is heated, it is desirable to draw off the standing water in the supply pipe 2, so that after the liquid in the tanks has been sterilized no more shall be admitted. As the water in the feed pipe is under pressure from the main, there is danger at all times that water if allowed to remain in pipe 2 and branches 3 will be forced around or past the cocks 4. By closing the cocks 4, 4, and opening the cock 4' after the tanks are filled, all the water in the feed pipe and branches above the discharge pipe 5 and between it and the cocks 4 will be drawn off and such portions of the pipe and its branches will remain empty. To effect this the cock 4'' in the main feed pipe below the discharge pipe 5 must also be closed. By the above named means when the tanks are once filled the water in pipe 2 is all drawn off below the tanks, and the water in the tanks can then be heated to such a degree as to destroy germs, without danger of the entrance of unsterilized water which would be likely to occur if the pipe still re-

mained filled and under pressure at the point of entrance. This device is applicable to a single tank, but in such case only one of the branch pipes 3 is used.

Each tank is provided with a steam heating drum 6, consisting of an annular shell which stands on the bottom of the tank, as shown at the right in Fig. 1.

7 is a main steam pipe and 8, 8 are branches which connect with the drums 6 of the tanks. The main steam pipe and each of its branches are provided with a cock or cut off 4''. By this means the admission of steam to each tank can be regulated independently of the other.

9 is the main discharge pipe for the waters of condensation, and 10, 10 are branches of the same passing through the bottoms of the tanks and connecting with the steam drums 6. Each of these branch pipes is provided with a vent 11 to admit air to fill the vacuum when the steam is cut off and also with a cock 4'''.

12, 12 are over-flow nozzles at the top of the tanks and 13 a common discharge pipe for the same, connected with the nozzles by branches 13'. These nozzles are provided with safety valves and with vents 14 which admit air to fill the vacuum when the water from the tanks is withdrawn. The liquid from the tanks is drawn off for use through a tube 15 having branches 16 having cocks 15' and 16' respectively. These vents or air inlet valves 14 are necessary to the suitable discharge of water from the tanks. They also obviate to a large extent the draft which would otherwise be caused on the inlet pipe 3 by opening a discharge pipe in a tank. And were the pipes 3 and 2 filled with water the withdrawal of water from a tank would tend to suck a portion around cock 4 which effect would be aggravated by pressure from the main were it not for the means provided for excluding water from contact with the cock.

The advantage of the use of two tanks provided with two separate discharges, is that waters of different degrees of heat can be used, either separately or together, thereby greatly enhancing the value of the apparatus. It also enables the water in one tank to be sterilized and cut off from the other and thus

made ready for use while the last named tank is being filled and heated. The tanks are placed at such elevation that the liquid will flow by its own gravity with sufficient force
5 around the operating table.

17 are ordinary water gages connected with the tanks for indicating the height of the water.

The tanks have preferably a conical bottom
10 which is situated within an annular receptacle 18. A flange 19 on the tank embraces the inner wall of the chamber as indicated. The discharge pipes 16 connect with the lowest point of the tanks for the purpose of entirely
15 discharging the contents when desired or for drawing off sediment.

The particular means of admitting air to the tank and of heating said tank and the particular relative arrangement of parts illustrated are not essential and may be varied by
20 mechanical skill provided substantially the same principles of construction and operation are employed.

Having thus described my invention, what
25 I claim, and desire to secure by Letters Patent, is—

1. In a sterilizing apparatus, the combination with a tank 1 and with a heater therefor of means for admitting air, a water supply
30 pipe 2, a discharge pipe 5 connecting with the said supply pipe, cocks in said supply pipe, one on each side of said discharge pipe 5, that part of the supply pipe situated between the upper cock and the discharge pipe
35 being adapted to be entirely drained by said discharge pipe, and a draw-off cock, whereby the tank may be charged with water and the water sterilized by heat and the subsequent entrance of unsterilized water into the tank
40 when a part of its contents are drawn off effectually obviated; substantially as set forth.

2. In a sterilizing apparatus the combination of the tanks 1 provided each with an air-inlet valve normally closed, the steam
45 heating drums, one in each tank, a water supply pipe having branches with cocks whereby

one or both tanks may be charged with water, said pipes communicating with the upper part of the respective tanks, a steam pipe with branches and cocks whereby one or both
50 drums may be charged with steam, an exhaust pipe with branches provided with air-inlet valves and cocks whereby exhaust steam may be conveyed from either or both drums, draw-off cocks whereby the tanks may be one
55 or both emptied at will and devices to obviate the introduction of unsterilized water, all substantially as set forth, whereby the tanks and heaters may be used to sterilize water
60 either alternately or simultaneously and whereby such water may be drawn off in like manner.

3. In combination a tank for sterilizing water having a conical bottom surrounded by a flange tightly secured to the tank wall above
65 its lower end, an outlet at its lowest point, an annular supporting receptacle to receive said lower end of the tank wall, the supporting receptacle having a vertical wall within the tank wall and immediately below the flange
70 of the conical bottom whereby the bottom is directly supported, a steam drum situated in the tank and steam supply and exhaust pipes passing through said bottom within the annular support and communicating with the
75 drum; substantially as set forth.

4. In a sterilizing apparatus, the combination with the tanks 1, 1, of the over-flow nozzles 12 each provided with a safety valve, the discharge pipe 13 connected with both of said
80 nozzles by branches 13' and the vents 14 for admitting air to the tank to supply the vacuum when the water is drawn off; substantially as set forth.

In testimony whereof I have signed this
85 specification in the presence of two subscribing witnesses.

AUSTIN V. M. SPRAGUE.

Witnesses:

BENJ. R. CATLIN,
O. H. KEAN.