

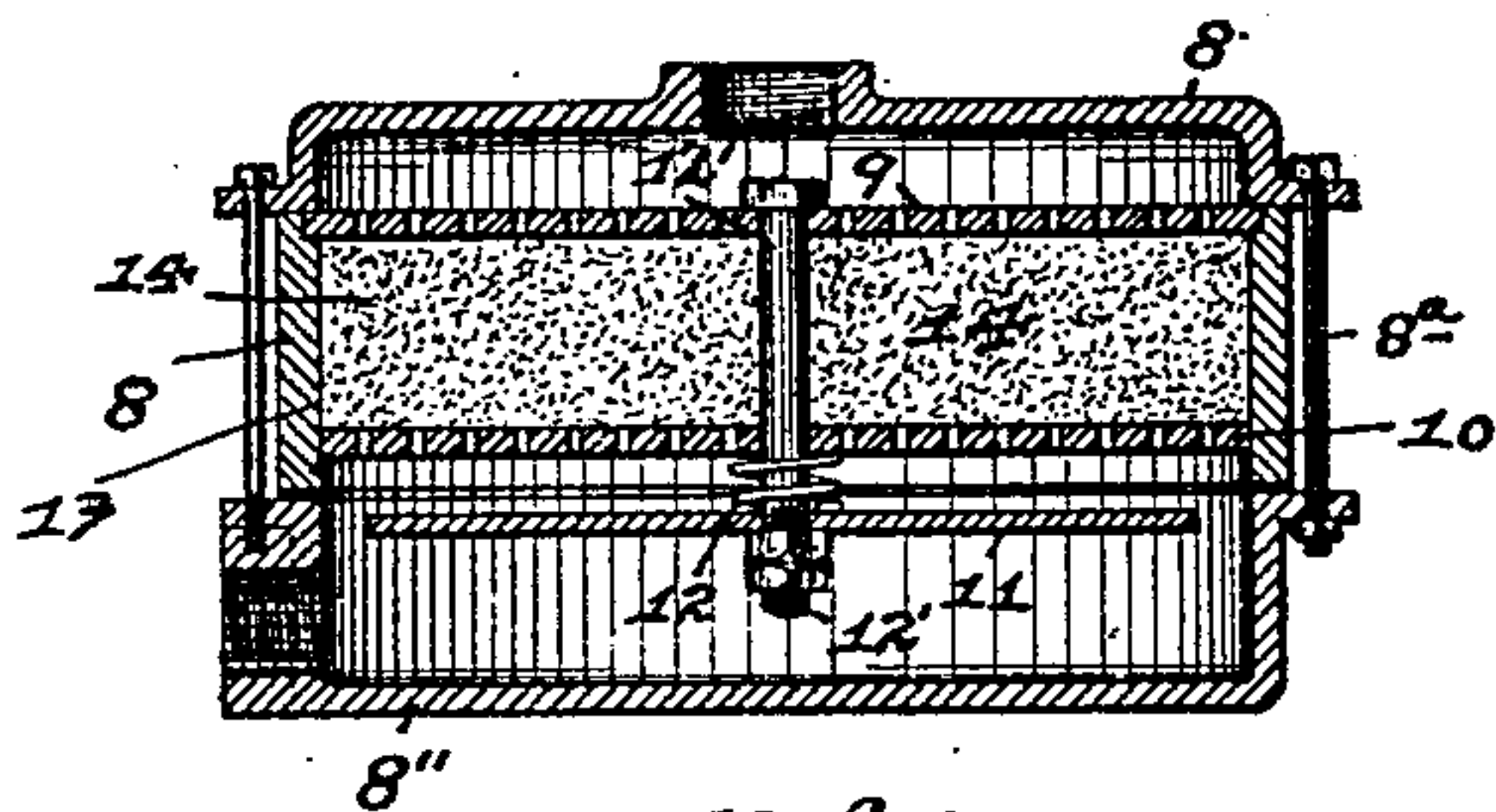
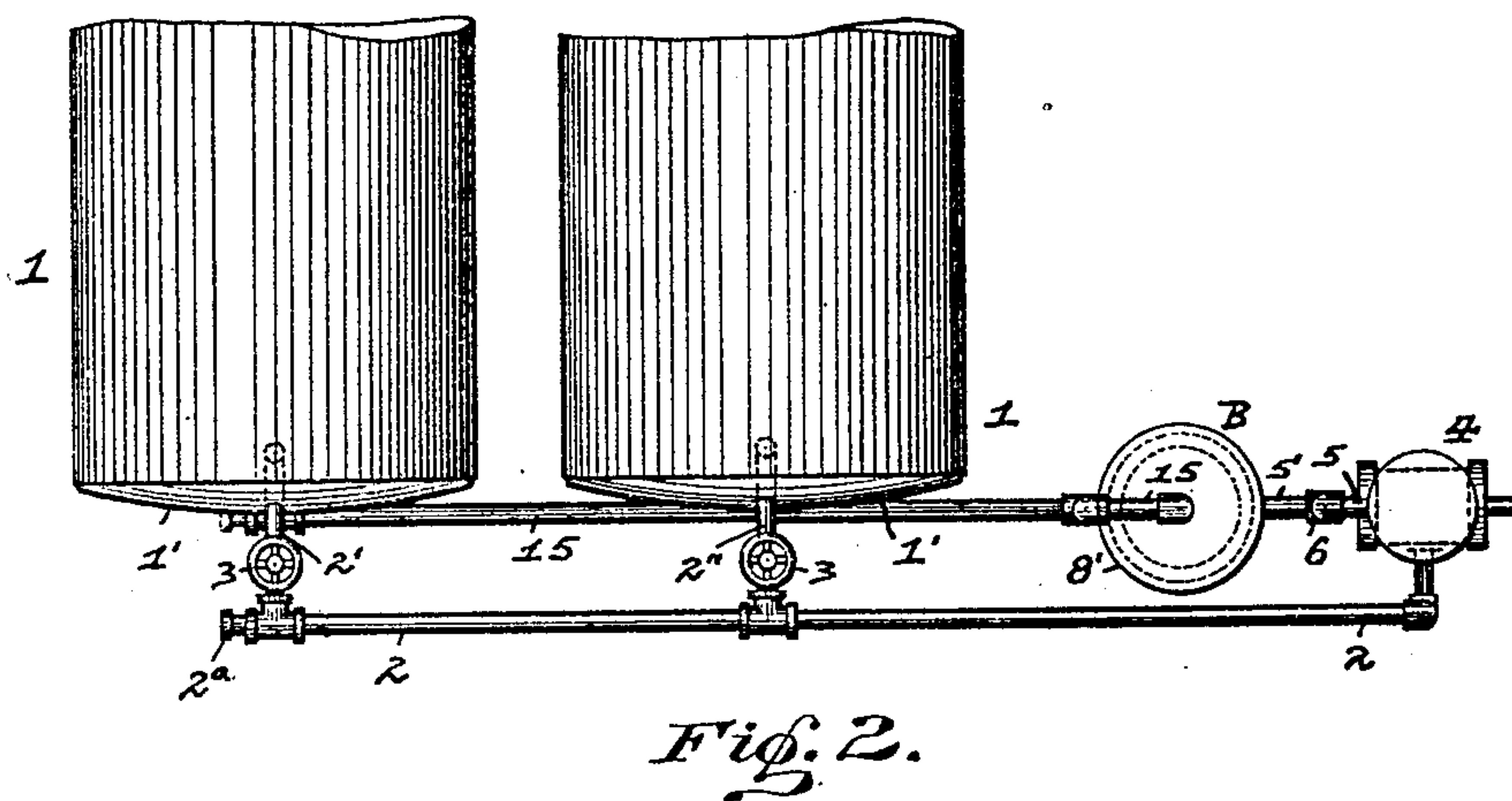
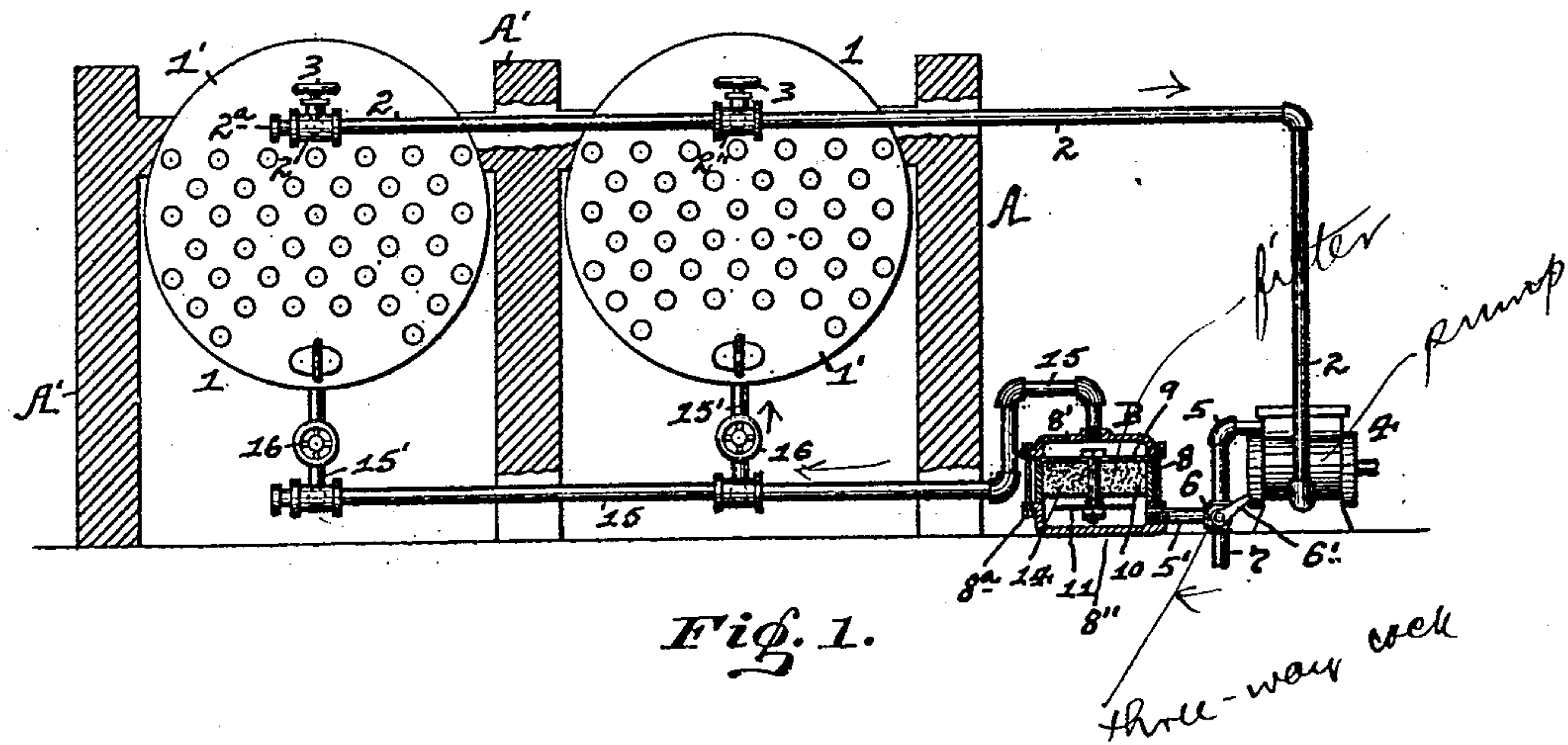
No. 826,811.

PATENTED JULY 24, 1906.

W. P. WIEMANN.

WATER PURIFYING DEVICE FOR STEAM BOILERS.

APPLICATION FILED OCT. 21, 1905.



WITNESSES

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WILLIAM P. WIEMANN, OF ALLEGHENY, PENNSYLVANIA.

WATER-PURIFYING DEVICE FOR STEAM-BOILERS.

No. 826,811.

Specification of Letters Patent.

Patented July 24, 1906.

Application filed October 21, 1905. Serial No. 283,780.

To all whom it may concern:

Be it known that I, WILLIAM P. WIEMANN, a resident of Allegheny, in the county of Allegheny and State of Pennsylvania, have
5 invented a new and useful Improvement in Water-Purifying Devices for Steam-Boilers, &c.; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an improvement in
10 water-purifying devices for steam-boilers, and has for its object to provide such devices whereby the hot water in a series of boilers may be cleaned, purified, or filtered by a cheap, simple, and efficient arrange-
15 ment and by a single filter and a single pump.

My invention consists, generally stated, in the novel arrangement, construction, and combination of parts, as hereinafter more specifically set forth and described, and particularly pointed out in the claims.

To enable others skilled in the art to which my invention appertains to construct and use my improved water-purifying devices for steam-boilers, I will describe the same more
25 fully, referring to the accompanying drawings, in which—

Figure 1 is an end view of a battery of two steam-boilers, showing my invention applied thereto. Fig. 2 is a top plan view of one end
30 of said boilers. Fig. 3 is an enlarged sectional view of the filter employed in connection therewith.

Like symbols of reference herein indicate like parts in each of the figures of the draw-
35 ings.

As illustrated in the drawings, A represents a battery of two horizontal steam-boilers 1, which are set side by side and incased by the walls A' in the usual manner. Lead-
40 ing exteriorly along the ends 1' of said boilers is the main pipe 2, which has branch pipes 2' 2'' extending inwardly therefrom and communicating with each of said boilers under the water-level therein. A valve or cock
45 3 is located on each of the branch pipes 2' 2'', and the pipe 2 is closed at one end beyond the pipe 2' by means of the cap 2^a, while the opposite end of the same is connected to the suction end of a pump 4, lo-
50 cated adjacent to said boilers 1. The discharge end of the pump 4 has a pipe 5 connected thereto which leads to a three-way cock or valve 6, having a blow-off pipe 7, and from said valve a pipe 5' leads into the lower
55 end of a filter B, located adjacent to the boilers.

The filter B is preferably of the construction shown in Fig. 3 and composed of a shell or casing 8 and top and bottom plates 8' 8'' on the same, which are held together by
60 means of the bolts 8^a. Within the casing 8 is a stationary perforated plate 9, which is located at the top of the same, and below said plate and above the pipe 5 is the perforated
65 plate 10. The plates 9 and 10 are connected together by means of a bolt 12', which extends through the lower plate 10 and has a spiral spring 12 interposed around the same
70 between said plate 10 and a baffle-plate 11 above the bottom plate 8''. The perforated plate 10 is supported by and movable on the bolt 12, and between this plate and the upper stationary perforated plate 9 a space 13
75 is formed for the reception of a filtering medium 14, composed of a packing of loose mineral wool which is adapted to be compressed between said plates 9 and 10 by the
spring 12.

Leading from the upper end of the filter B above the plate 9 and through the top plate
80 8' of said filter is the pipe 15, which connects with the blow-off pipes 15' of said boilers 1, and each of said pipes 15' has a valve or cock 16 thereon.

The use and operation of my improved wa-
85 ter-purifying device for steam-boilers are as follows: When the hot-water is to be purified in the boilers 1, it is pumped from the pump 4 into the lower part of the filter B, through the
90 pipe 5, and under the baffle-plate 11. Thence it passes around the edge of said plate 11 and is distributed to the lower perforated plate 10. The water then passes through the perforations in said plate 10, through the mineral
95 wool 14, and thence through the perforations in the plate 9, after which it passes through the pipe 15 and blow-off pipes 15' back to the boilers 1. The spring 12 will have the proper tension, so that when the
100 water is thus pumped through the filter B at the proper speed the filtering medium 14 will have a proper density to filter the suspended matter from the water. The mineral wool
105 14 is compressible, and in case the speed of the water increases the pressure of the water on the lower perforated plate 10 will act to raise the same to compress the mineral wool
110 14, and thus prevent the suspended matter from passing through the filter B through the increased pressure and velocity of the water. After the water has been thus running
115 through the filter B for some time an accu-

mulation of scaling matter in the shape of slush or sediment will rest against the lower perforated plate 10 and sometimes in places on said plate, which matter becomes too heavy to be held there by the movement of the water, so that it drops down through the perforations in such plate on top of the baffle-plate 11, where it will accumulate until the same is blown out.

10 The cleaning or blowing out of the filter B is accomplished by throwing the handle 6' on the three-way cock 6 to the left, which will shut off the water from the pump 4 to the pipe 5', through the pipe 5, so that the pipe
15 5' will be opened thereby to the sewer through the blow-off pipe 7, which will allow the water from the boilers 1 to flow back through the filter by the pipes 15' and 15 and carry off the matter that has accumulated in
20 the mineral wool 14 and on the baffle-plate 11. In this blowing back of the water the mineral wool 14 becomes loosened as the lower perforated plate 10 moves down against the tension of the spring 12 on ac-
25 count of the pressure of water above the same, which will give the filter B a more thorough cleaning than would be possible if the filtering medium 14 was to remain at the same density it was as when working as a filter.
30 In returning the valve 6 to its normal position by the movement of its handle 6' to the left the filter B is in order to again continue its filtering operations, and a series of boilers can have its hot water cleaned and purified
35 by the connections, as shown, and only the hot water in one boiler can be cleaned and purified at a time by cutting out the same from the other boiler or boilers through the valves 3 and 16, and after its water is cleaned
40 and purified another boiler can be put in and its water cleaned and purified, so that in this way a large number of boilers can be cared for by one filter and one pump.

It will thus be seen that my improved de-
45 vice for purifying water in steam-boilers is such that it can be applied and used with any construction of steam-boiler and used at will, and its use will enable such boiler while in operation to be kept clean and the water
50 therein purified at all times with great speed through forcing the circulation by mechanical means, as by the pump, while the devices are of such a form and nature that they can be kept clean easily and quickly and will
55 not get out of order.

Various modifications and changes in the design and operation of the various parts of

my improved devices for purifying water in steam-boilers may be resorted to without departing from the spirit of the invention or
60 sacrificing any of its advantages.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of a boiler, a filter connected to said boiler, and a pump connected
65 to said boiler and filter for rapidly circulating the boiler-water from and to said boiler through said filter to purify the same.

2. The combination of a boiler, a circulating-pump, and a filter connected to said
70 boiler and pump for extracting the suspended impurities in the water of said boiler.

3. The combination of a boiler, a pump, and a filter connected to said boiler and pump for circulating the water at a high ve-
75 locity through said filter to remove the suspended impurities in the water of said boiler.

4. The combination of a boiler, a filter connected to said boiler, a pump connected to said boiler and filter for rapidly circulating
80 the boiler-water from and to said boiler through said filter to purify the same, pipes connecting said pump and filter and to a blow-off, and a three-way valve or cock on said pipes for closing said blow-off pipe from
85 said filter and opening pipe to filter from pump or vice versa to allow for the purifying of said boiler-water and to clean said filter.

5. The combination of a boiler, a pump, a filter connected to said boiler and pump for
90 extracting the suspended impurities in the water of said boiler, pipes connecting said pump and filter and to a blow-off, and a three-way valve or cock on said pipes for closing said blow-off pipe from said filter and
95 opening pipe to filter from pump or vice versa to allow for the purifying of said boiler-water and to clean said filter.

6. The combination with a series of boilers, of a circulating-pump, a filter, and con-
100 nections between said boilers, pump and filter whereby the water is purified in any one of the boilers.

7. The combination with a series of boilers, of a circulating-pump, a filter, and a se-
105 ries of valve-controlled pipe connections between said boilers, pump and filter whereby the water is purified in any one of the boilers.

In testimony whereof I, the said WILLIAM P. WIEMANN, have hereunto set my hand.
110

WILLIAM P. WIEMANN.

Witnesses:

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