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N. W. CONDICT.

COIL FOR STILLS FOR ABSORPTION REFRIGERATION.

APPLICATION FILED JAN. 26, 1904.

NO MODEL.

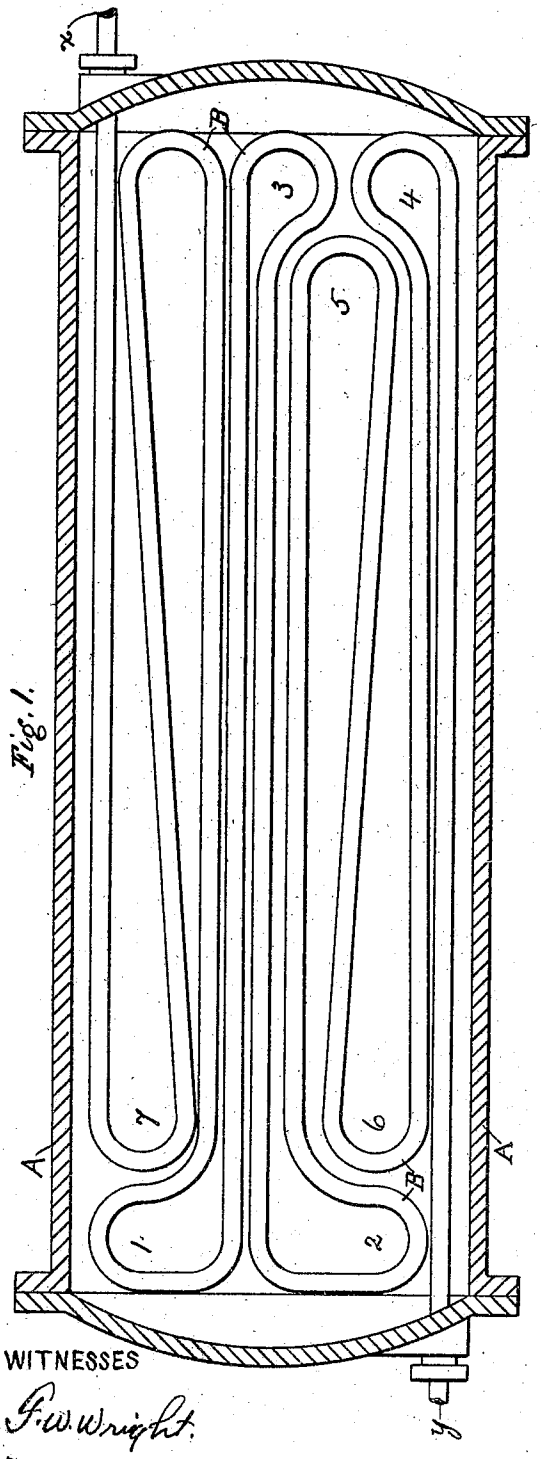


Fig. 1.

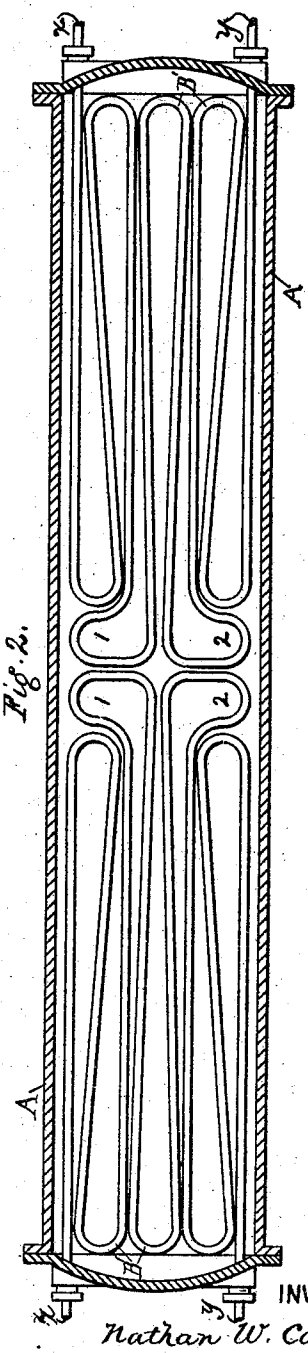


Fig. 2.

WITNESSES

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No. 772,339. Patented October 18, 1904.

UNITED STATES PATENT OFFICE.

NATHAN W. CONDICT, OF JERSEY CITY, NEW JERSEY.

COIL FOR STILLS FOR ABSORPTION REFRIGERATION.

SPECIFICATION forming part of Letters Patent No. 772,339, dated October 18, 1904.

Application filed January 26, 1904. Serial No. 190,721. (No model.)

To all whom it may concern:

Be it known that I, NATHAN W. CONDICT, a citizen of the United States, residing at Jersey City, in the county of Hudson, State of New Jersey, have invented Improved Coils for Stills for Absorption Refrigeration, of which the following is a specification.

In refrigerating apparatus working on the ammonia-absorption principle the heating of the ammonia in the generator or still by exhaust-steam instead of live steam is very desirable for reasons of economy. In employing such low temperatures as are afforded by exhaust-steam it is necessary to get the largest possible superficial heating-surface for a given body of liquor. Hence, as I have described in my reissued Patent No. 12,089, dated March 3, 1903, it is important to devise ways and means for getting the greatest possible lengths of steam pipes or coils in the still.

My present invention consists of an improved feature of construction whereby the lengths of pipe in a given layer or coil may be increased.

In the accompanying drawings, Figure 1 is a sectional plan view of an ammonia-still illustrating my improvement, and Fig. 2 is a similar view of a modification.

According to my present invention I arrange the steam-coils for heating the ammoniacal liquor in the horizontal cylinder A in a series of independent horizontal layers, as described in my above-mentioned patent. I make each layer or coil of a continuous length of pipe bent to the desired shape instead of using separate cast elbows at the bends, because in these ammonia-stills for refrigerating purposes it is important to reduce the number of joints to a minimum. On the other hand, every bend throughout the pipe length has to have a certain diameter, because if bent on too small a radius a split or crack or other damage may result in a defect at that point, leading to leakage. In making my serpentine coils, therefore, as shown in my above-mentioned patent, I believed I had got the largest number of lengths of pipe possible in each layer; but I have now discovered a way in which the number of lengths of pipe in a given layer may be increased.

In the construction shown in Fig. 1 I have shown the serpentine layer as arranged to have its inlet *x* and outlet *y* at opposite ends and at opposite sides of the still. Between the inlet and outlet ends I have shown how there may be arranged nine lengths of the pipe B with four bends at each end as compared with seven lengths in the still of my above-mentioned patent, and this without reducing the radius of the bends. This result I have accomplished by making the bends of full size or radius; but in the case of four of the bends I have made them of the shape of the letter **P**, as shown at 1, 2, 3, and 4. Such enlarged or bulbous bend thus made overhangs and partially embraces the next adjacent bend, as at 5 6 7, which has been set back a little for the purpose. By this means I bring the adjacent lengths of coils much closer together without reducing the radius of the bends, and I therefore increase the number of lengths possible to be got in each layer within a given diameter of still, and so I produce the desired increase of heating-surface.

In very long stills a single length of pipe in each layer might give too long a traverse for the steam and a harmful difference in temperature between the inlet and outlet. In such case I use two of the described bent pipe lengths B and B′ in each layer in the manner illustrated in Fig. 2. In that case the inlet *x* and outlet *y* of each pipe length B are arranged at the same end of the still, but at opposite sides thereof, with eight lengths of pipe in each layer. The coils have the overhanging **P**-shaped bends at 1 and 2, as before. The inner ends of the two coils in each layer nearly meet at the center of the length of the still.

I claim as my invention—

1. In an ammonia-still for refrigerating purposes, the combination of the still-cylinder with steam-pipes in serpentine layers, certain of the bends in each layer being **P**-shaped and overhanging adjacent bends, which are set back, to increase the number of pipe lengths in the layer.

2. In an ammonia-still for refrigerating purposes, the combination of the horizontal still-cylinder with coils in layers, two coils in

each layer, one coil having its inlet and outlet at one end of the cylinder and the other coil having its inlet and outlet at the other end of the cylinder, and the inner ends of the two coils in each layer nearly meeting near the center of the length of the cylinder.

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

NATHAN W. CONDICT.

Witnesses:
EDNA W. COLLINS,
F. WARREN WRIGHT.