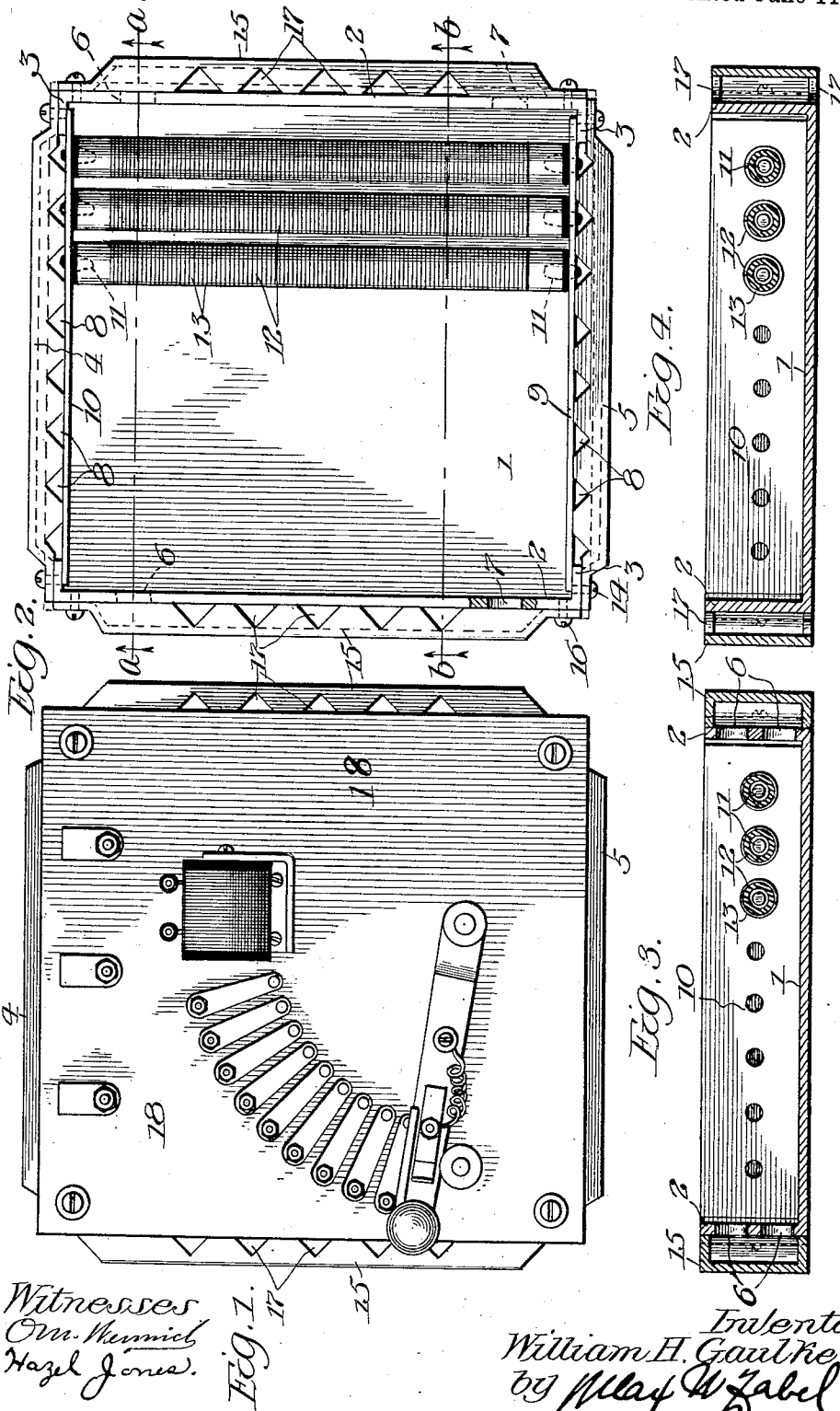


1,029,539.

Patented June 11, 1912.



Witnesses
O. M. Munnich
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Fig. 1.

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UNITED STATES PATENT OFFICE.

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RHEOSTAT.

1,029,539.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed August 8, 1911. Serial No. 642,957.

To all whom it may concern:

Be it known that I, WILLIAM H. GAULKE, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented a certain new and useful Improvement in Rheostats, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to rheostats, and more particularly to air cooled rheostats or resistance boxes, and is designed in its preferred form to provide a new and improved structure of this character which will permit of the proper cooling and ventilation necessary in its ordinary operation.

My invention in its preferred form contemplates a suitable closed structure within which resistance coils or similar devices may be mounted and which at its sides both top and bottom is provided with ventilating apertures so that hot air may escape through the upper apertures and cool air enter the lower apertures. Over these sides with their ventilating apertures means are provided which may serve to cool the heated air and permit it to enter in a cool condition through the lower apertures aforesaid. These means may preferably be in the form of air channels formed by hoods placed around these sides, and apertures may likewise be provided in these hoods to permit egress of hot air and ingress of cold air, the apertures in the form herein shown communicating directly with the atmosphere which is of a lower temperature than the temperature of the air within the resistance box. A steady current of air for cooling purposes may thus find its way through the device and effect the cooling necessary in its operation.

I will explain my invention more particularly by reference to the accompanying drawing illustrating one form which my invention may take, in which:

Figure 1 represents a front view of a rheostat constructed in accordance with my invention; Fig. 2 is a similar view with the front plate removed, some of the resistance coils also being omitted more clearly to reveal features of construction; Fig. 3 is a sectional view on line *a-a* of Fig. 2, and Fig. 4 is a sectional view on line *b-b* of Fig. 2.

In these drawings and in this description, I set forth one specific form which my invention may take, but it is of course understood that while I am specifically describing and showing herein one form, that the invention is capable of use in many forms and in many different ways. In the specific structure herein shown however, I utilize a back plate 1 having two sides 2, 2 bent at right angles thereto, and also having upwardly projecting ears 3, 3, integrally formed with the sides 2, 2 and at right angles thereto. Top and bottom closure members 4 and 5 respectively are adapted to close the upper and lower sides of the box so that the back plate together with its sides 2, 2 and the plates 4 and 5 form a complete box closed on five sides, open on one side which in this case represents the front of the box. This box while being substantially closed is provided with apertures 6, 6 formed near or at the top of the sides 2, 2 respectively and apertures 7, 7 formed at or near the bottom in the sides 2, 2. But for the apertures 6 and 7 the elements mentioned form a closed box on five of its sides. The closure members 4 and 5 have triangular grooves 8, 8 which are for the purpose of accommodating the protruding ends of resistance unit holders that will presently appear.

Two plates 9 and 10 adapted to carry the resistances are arranged to be slid into the box as will be apparent. These plates 9 and 10 are provided with resistance unit holders 11 having protruding ends, allowance for which is made by reason of the channels 8. These resistance unit holders carry insulating tubes 12 about which the resistance wire 13 is placed as is well understood. The plates together with the resistances may be withdrawn or reinserted by sliding in and out as will be clear. Screws 14 fasten the members 4 and 5 to the ears 3. Suitable cover plates 15, 15 are provided which are screwed to the sides 2 by means of the screws 16 and which form an inclosing chamber with said sides 2, into which inclosing chamber the apertures 6 and 7 open. These cover plates 15 are preferably pan shaped so as to provide a channel between the said plates and the sides 2, which channel preferably communicates with the apertures 6 and 7 associated therewith. It will thus be seen that hot air which has been heated in the

rheostat can leave the boxlike structure through the aperture 6, become cooled between the plates 15 and 2 and reënter the resistance box through the apertures 7. The cooling thus effected may not always be sufficient and for this reason openings 17 are provided in the front wall of the pan shaped member 15 so that the channel between the members 2 and 15 is open to the atmosphere, permitting entrance of cool air and permitting the egress of hot air.

The front face of the box is closed by means of the insulating plate 18 which covers the front face of the entire box with the exception of the openings 17 so that these openings may communicate with the atmosphere as before stated. This front insulating plate carries the ordinary devices used in rheostats of this character.

The advantages of thus providing a continuous circulation of air which throughout a portion of its path is cooled and may be mixed with cooler air is apparent and may be easily understood by those skilled in the art.

In the claims I specify the apertures as being near the top or the lower portion of the structure in which these apertures are located. I of course wish it understood that when thus using the word "near," it contemplates that these apertures are at or near the respective upper or lower portions.

I have thus set forth one form of carrying out my invention, and while as before stated I do not limit myself to the precise construction and arrangement as herein set forth, what I claim as new and desire to secure by Letters Patent is:

1. A device of the character described comprising a closed structure, resistance units therein, ventilating apertures near the top of the structure, ventilating apertures near the lower portion of said structure, and a passage for uniting the upper with the lower apertures.

2. A device of the character described having a closed resistance box, apertures near the top thereof, apertures near the bottom thereof, and a member secured to said box over said apertures to form a channel for uniting said apertures.

3. A device of the character described having a closed resistance box, apertures near the top thereof, apertures near the bottom thereof, and a member secured to said box over said apertures to form a channel for uniting said apertures, said member having openings whereby said channel communicates with the atmosphere.

4. A device of the character described having a resistance box, ventilating apertures near the top thereof, ventilating apertures at or near the bottom thereof, and means for providing a cooling path for heated air emitted through the upper apertures toward the lower apertures.

5. A device of the character described having a resistance box, ventilating apertures near the top thereof, ventilating apertures at or near the bottom thereof, means for providing a cooling path for heated air emitted through the upper apertures toward the lower apertures, and means whereby said path communicates with the atmosphere.

6. A device of the character described comprising a box like structure having grooved members forming the top and bottom sides thereof, and plates carrying resistance units and protruding resistance unit holders adapted to be slid into said box like structure, said grooves accommodating said protruding resistance unit holders.

7. A device of the character described comprising a closed box like structure, apertures at or near the top thereof, apertures near the bottom thereof, resistance members within the structure, and channeled members secured to said structure to provide a communicating passage between the upper and lower apertures.

8. A device of the character described comprising a box like structure, apertures at or near the top thereof, apertures near the bottom thereof, resistance members within the structure, and channeled members secured to said structure to provide a communicating passage between the upper and lower apertures, the interior of said channeled members communicating with the atmosphere.

9. A device of the character described comprising a closed box like structure having top, bottom, and side walls, apertures in the side walls near the top thereof, apertures in the side walls near the bottom thereof, resistance members within the structure, and channeled members secured to said structure to provide communicating passages between the upper and lower apertures.

In witness whereof, I hereunto subscribe my name this 30th day of June A. D. 1911.

WILLIAM H. GAULKE.

Witnesses:

CARL A. ZINN,
GEORGE KOCH.