

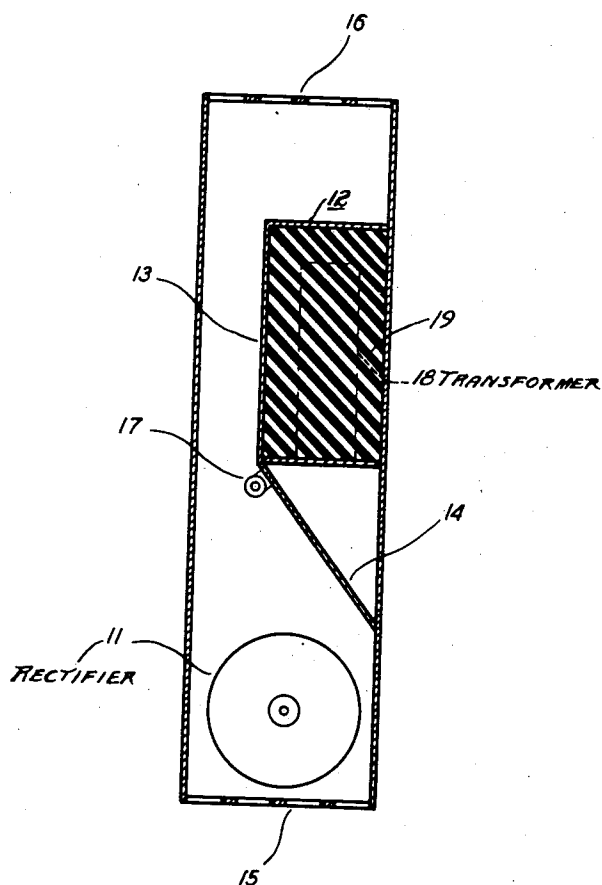
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RECTIFIER MOUNTING ASSEMBLY

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RECTIFIER MOUNTING ASSEMBLY

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This invention relates to rectifier mounting assemblies and in particular to an improved chimney arrangement for producing an induced cooling draft for a rectifier.

It is an object of this invention to cool a rectifier by mounting it in a chimney to induce a draft past the rectifier.

It is another object of this invention to increase the draft in a rectifier cooling chimney by heating the upper portion of the chimney.

Still another object of my invention is to utilize the heat produced by transformers and other apparatus connected with the rectifier for producing a cooling draft for the rectifier.

An additional object of my invention is to mount a rectifier in the lower portion of a chimney and to increase the draft through the chimney by heating the upper portion of a chimney wall.

A still further object is to mount a rectifier in the lower portion of a chimney and to mount associated apparatus in the upper portion of the chimney to utilize the heat from the associated apparatus for producing a cooling draft for the rectifier.

Other objects and a better understanding of my invention may be obtained from the following specification and claims in connection with the accompanying drawing.

The drawing shows a sectional view of one embodiment of my invention in which a chimney-like enclosure is provided with an air inlet grating 15 at the bottom and an air outlet grating 16 at the top. A rectifier stack 11 is mounted in the lower portion of the enclosure, which is preferably proportioned so that most of the air entering the inlet passes directly over or near to the rectifier elements. The container 12 located above the rectifier stack holds the transformer, filter choke, voltage regulator or whatever apparatus may be associated with the rectifier in the particular circuit employed. The auxiliary electrical apparatus, such for example as the transformer, is indicated generally by the dotted block 18 which is surrounded by heat-conducting compound 19 which is shown in section. The container 12 is preferably filled with this heat-conducting compound so that the heat produced by the auxiliary apparatus reaches the one wall, 13, of the upper portion of the chimney.

The chimney wall 13 may be provided with corrugations or radiating fins (not shown), projecting into the chimney to increase the heat conducting area. In any case, the heat from the apparatus in the container 12 serves to heat the

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air which is in the upper portion of the chimney adjacent the wall 13. It is well known that it is preferable to keep the operating temperature of metal disc rectifiers relatively low, preferably at a temperature well below the normal operating temperatures of electrical transformers and resistors. Thus the air in the chimney is heated to some extent by the rectifier stack 11, but the additional heat provided by the auxiliary apparatus raises the air temperature still further and consequently increases the speed of the convection current through the enclosure. The increased rate of air flow draws more cool air in through the bottom grating 15 and thereby keeps the rectifier stack 11 cool.

The lower portion of the chimney may be provided with a baffle plate 14 to direct the air flow into the somewhat narrower upper portion of the chimney as shown.

The auxiliary apparatus may also include one or more resistors which would preferably be mounted outside the container 12. One suitable arrangement is shown in the drawing where the resistor 17 is mounted on the baffle 14 above the rectifier stack. Alternatively, the resistor or resistors might be mounted on an upper portion of one of the chimney walls, but in either location, the heat given off by the resistor tends to increase the air flow and enhance the cooling action of the enclosure.

Numerous modifications of the arrangement shown may be employed without departing from the scope of my invention. For example, the auxiliary transformer or other apparatus may be mounted directly in the upper portion of the chimney, eliminating the container 12 and causing the air through the chimney to flow directly past the apparatus.

There may be several rectifier stacks mounted in the chimney and various mounting arrangements may be employed. It is preferable in any case to have the rectifiers fill a considerable portion of the air passage so the cooling draft must pass in close contact with the rectifier elements.

The assembly shown may be a sub-assembly which is enclosed in a suitable housing. In this case, the enclosure 12 might not have free access to cooling air on all sides and an even greater portion of its heat would be conducted through the chimney wall 13 to heat the air in the chimney.

Although I have described my invention with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in

the details of construction and the combination and arrangement of the parts may be resorted to without departing from the spirit and scope of the invention as hereinafter claimed.

I claim as my invention:

1. A rectifier mounting assembly comprising a chimney structure having at least two sides, a rectifier mounted in the lower portion of the chimney structure, said chimney structure having air inlet aperture means in the lower portion thereof and below the rectifier and having air outlet aperture means in the upper portion thereof to provide for circulation of air through said chimney structure, said rectifier occupying a major part of the space between said two sides whereby the circulated air is directed to pass over the rectifier for cooling same, a transformer mounted in and supported by said chimney structure above said rectifier and below said air outlet aperture means, said transformer and at least one of said sides providing a restricted passageway in which the air is heated by said transformer to produce a convection air flow through said chimney.

2. A rectifier mounting assembly comprising a chimney structure having at least two sides, a rectifier mounted in the lower portion of the chimney structure, said chimney structure having air inlet aperture means in the lower portion thereof and below the rectifier and having air outlet aperture means in the upper portion there-

of to provide for circulation of air through said chimney structure, said rectifier occupying a major part of the space between said two sides whereby the circulated air is directed to pass over the rectifier for cooling same, a transformer mounted in and supported by said chimney structure above said rectifier and below said air outlet aperture means, said transformer and at least one of said sides providing a restricted passageway in which the air is heated by said transformer to produce a convection air flow through said chimney, said transformer having at least a long dimension and a short dimension, said transformer being mounted in said chimney structure with its long dimension extending in the same general direction as said sides and with its short dimension extending laterally of said sides.

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