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ULTRA HIGH FREQUENCY CABLES

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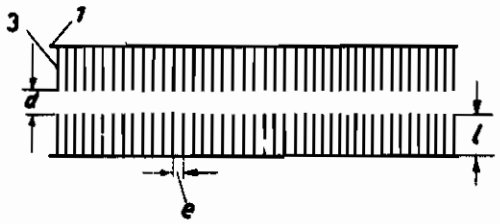

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ALIEN PROPERTY CUSTODIAN

ULTRA HIGH FREQUENCY CABLES

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For transmitting currents of high frequency, so-called Lecher-wires have proved to be advantageous. These consist of wires or concentric lines running parallel with small spacings between the wires. A disadvantage of these lines is their comparatively large mutual capacity as well as the always existing residual radiation and the self attenuation of the lines.

Contrary thereto, the present invention relates to a construction of an ultra high frequency cable distinguished by a particularly small attenuation and, therefore, by a long range. The cable according to the invention is constructed as a hollow conductor for transmitting a free spatial radiation, and there are provided transverse conductors with so small mutual spacings that the transmitted ultra high frequency radiation is prevented by diffraction from entering the spaces between the transverse conductors. The dimensions of the transverse conductors are preferably chosen so that a resonance or an optimum freeness from attenuation is obtained for the wave length transmitted. As transverse conductors there may be used walls of metal or metallized material. Preferably these walls have a circular or annular shape.

A constructional example of the invention is illustrated in the accompanying drawing which shows a hollow cable with conductors **1** and **2**, each being completed by transverse conductors **3**, **4**, facing each other. The free ends of the intermediate conductors approach each other up to the short distance *d*, which is made as small as possible in order to avoid radiation losses. Also the distance *e* between two adjoining transverse conductors is small, at least small enough to avoid a diffraction of the radiation about the free ends of the transverse conductors with the wave length employed. There is an optimum value for the length of the transverse conductor, at which the latter or the whole line is just in resonance and thus posseses the extreme freeness from attenuation for the ultra short waves transmitted.

The transverse conductors may be constructed as walls of metal or metallized material and may have a circular or annular shape. The partitions are connected directly with the concentric longitudinal conductors **1**, **2**.

For the transmission of a free spatial radiation it is advisable to make the free inner diameter *d* equal to $\frac{1}{2}\lambda$ or equal to even or uneven multiples of $\frac{1}{2}\lambda$.

The wave radiated into the free inner space from one end is kept together by the conductive covering with the transverse walls **5**. The entire arrangement acts as a radiation director.

The invention is not restricted to the constructional example illustrated, but is also applicable in the case of cables of other construction, for example in a cable with two conductors.

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