Sept. 21, 1937. G. DE VRIES 2,093,750

DOUBLY FOLDED LECHER WIRE SYSTEM

Filed June 15, 1935

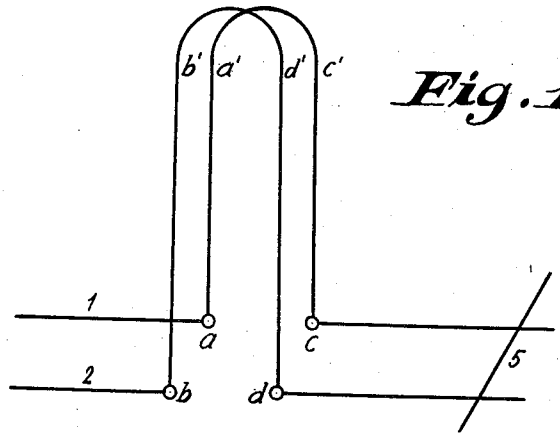

Fig. 1

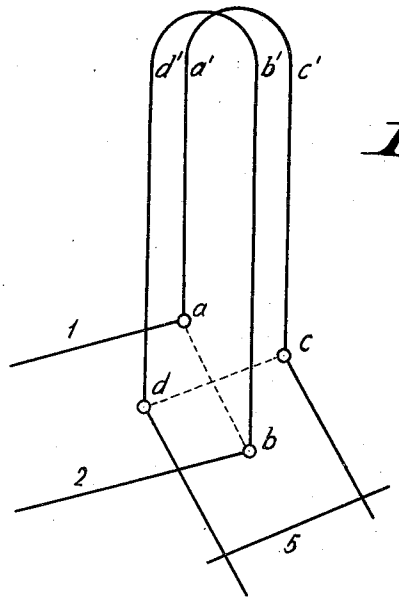

Fig. 2

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Patented Sept. 21, 1937 2,093,750

UNITED STATES PATENT OFFICE

2,093,750

DOUBLY-FOLDED LECHER WIRE SYSTEM

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Application June 15, 1935, Serial No. 26,883
In Germany July 9, 1934

4 Claims. (Cl. 178—44)

This invention relates to a Lecher wire system adapted for use in producing and transmitting electric high frequency oscillations. The natural frequency of such a system is given by the length of the wires. If, therefore, the tuning is to be altered, the length of the wires may be altered. As extension of a Lecher wire system in the direction of the wires is frequently impossible or disadvantageous for lack of space, interchangeable extensions in the form of doubly-folded Lecher wire systems may be provided. Fig. 1 of the accompanying drawing shows a known type of Lecher wire system constituted by wires 1 and 2 furnished with an interchangeable extension formed by a doubly-folded Lecher wire system *aa'*, *bb'*, *c'c*, *d'd*. The natural frequency can be adjusted to the correct value by means of bridge 5.

A disadvantage of such a system is that the two parts of the Lecher wire system *aa'*, *bb'* and *c'c*, *d'd* are coupled to each other both magnetically and electrically. This results in the influence exercised by the extension on the tuning being quite different from that exercised when the Lecher wire system is extended in the direction of the wires, as reflections occur which impair the effect of the extension.

According to the invention, for the purpose of neutralizing the two undesired couplings, doubly-folded Lecher wire systems are used to form the extension, the plane in which the leading wires and that in which the return wires are located being normal to each other and the wires being arranged symmetrically with respect to the line of intersection of said planes.

A better understanding of the invention may be had by referring to the accompanying drawing wherein Fig. 1 illustrates a known type of system, and Fig. 2 an arrangement in accordance with the invention.

Fig. 2 shows one form of construction of a Lecher wire system provided with terminals for the connection of interchangeable extensions according to the invention. Again, as in Fig. 1, the wires are designated by 1 and 2. The extension is designated by *aa'*, *bb'*, *c'c*, *d'd*. The points of connection for the leads, or return wires, respectively, of the extension are diagonally connected to the terminals *a*, *b*, *c*, and *d*, arranged in the apices of a square. The plane in which the two leading wires *aa'* and *bb'*, and the plane in which the two return wires *c'c* and *d'd*, of the doubly-folded Lecher-wire system which constitutes the extension are located, are normal to each other and the wires are arranged symmetrically with respect to the line of intersection of these planes so that the two parts of the Lecher-wire system that constitutes the extension, are magnetically uncoupled. The electric coupling between the wires of the extension connected to the points *a*, *b*, *c*, and *d* is neutralized by the arrangement of each of these wires being perfectly symmetrical with respect to those closest thereto.

What is claimed is:

1. A Lecher wire system comprising two pairs of parallel wires each pair being in the form of a loop, the wires of each pair terminating at the adjacent apices of a quadrangle, whereby diagonally oppositely located wires form legs of different loops.

2. A system in accordance with claim 1, characterized in this that said quadrangle is a square and diagonally oppositely located wires are in the same plane, the planes of the diagonally located wires being substantially perpendicular to each other.

3. A Lecher wire system comprising a first pair of parallel wires and a second pair of parallel wires, the wires of one pair being arranged perpendicular to the wires of the other pair, the wires of each pair extending to diagonally opposite apices of a quadrangle, a U-shaped loop connecting together at said apices one wire of one pair with an adjacent wire of the other pair, another U-shaped loop connecting together at said apices the other adjacent wires of said pairs, whereby said two pairs of parallel wires are substantially devoid of electric and magnetic coupling between them.

4. A Lecher wire system comprising a first pair of parallel wires, a second pair of parallel wires arranged in a plane perpendicular to the plane of said first pair, the wires of said first pair being also arranged perpendicular to the wires of said second pair, the wires of each pair terminating at diagonally opposite apices of a square, whereby said apices are symmetrical with respect to the line of intersection of said planes, a U-shaped loop connecting together at said apices, one wire of said first pair with an adjacent wire of said second pair, another U-shaped loop connecting together at said apices the other adjacent wires of said first and second pairs, the legs of said U-shaped loops which connect with one pair of diagonally opposite apices being in one plane, and the other legs of said U-shaped loops which connect with the remaining pair of diagonally opposite apices being in a plane perpendicular to said last plane, whereby said two pairs of parallel wires are substantially devoid of electric and magnetic coupling between them.

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