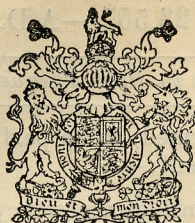


N° 23,557



A.D. 1913

Date of Application, 17th Oct., 1913

Complete Specification Left, 18th May, 1914—Accepted, 15th Oct., 1914

PROVISIONAL SPECIFICATION.

Improvements in High Frequency Alternators.

We, MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED, and CHARLES SAMUEL FRANKLIN, Electrical Engineers, both of Marconi House, Strand, London, W.C., do hereby declare the nature of this invention to be as follows:—

It is well known that the limit of frequency for which an alternator can be designed depends upon the smallest width of pole face practicable and upon the peripheral speed of the rotor allowable.

This invention enables an alternator to be constructed which will give a frequency of several times the frequency of a simple alternator without increasing the pole width or the peripheral speed of the rotor.

According to this invention the stator has a number of poles separated from each other and arranged in a line and the rotor has a long pole making a small angle to this line so that it passes in succession across the poles of the stator.

In practice the stator is in the form of a hollow cylinder having inside it a number of such lines of poles each line being parallel to its axis whilst the rotor is in the form of a drum co-axial with the cylinder and having upon it a number of poles inclined to the axis. Generally the number of the latter poles is half that of the lines of poles in the stator.

The poles of the stator are laminated, the laminations being parallel to the axis.

The machine is preferably made double, the magnetising winding being in the middle of the rotor.

Dated this 15th day of October, 1913.

MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED.

The common seal of Marconi's Wireless

Telegraph Company, Limited, was hereto affixed in the presence of

HENRY S. SAUNDERS,
ALFONSO MARCONI,

Directors.

HENRY W. ALLEN,

Secretary.

C. S. FRANKLIN.

COMPLETE SPECIFICATION.

Improvements in High Frequency Alternators.

We, MARCONI'S WIRELESS TELEGRAPH COMPANY, LIMITED, and CHARLES SAMUEL FRANKLIN, Electrical Engineers, both of Marconi House, Strand, London, W.C., do hereby declare the nature of this invention and in what

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Improvements in High Frequency Alternators.

manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

It is well known that the limit of frequency for which an alternator can be designed depends upon the smallest width of pole face practicable and upon the peripheral speed of the rotor allowable.

This invention enables an alternator to be constructed which will give a frequency of several times the frequency of a simple alternator without increasing the pole width or the peripheral speed of the rotor.

According to this invention the stator has a number of poles separated from each other and arranged in a line and the rotor has a long pole making a small angle to this line so that it passes in succession across the poles of the stator.

Our invention is illustrated in the accompanying drawing.

Figure 1 is a diagram illustrating an ordinary type of inductor alternator. *a* is an armature moving in the direction of the arrow over poles *b* with a winding *c*. The frequency given by such a machine is v/y , *v* being the velocity of *a* in feet per second, and *y* the distance in feet between the centres of two like poles.

Figure 2 is a diagram illustrating an inductor alternator constructed in accordance with our invention, *a* being the long pole of the armature moving in the direction of the arrow across the poles of the stator. In this case the frequency is $\frac{v}{x} = \frac{v}{y} \tan \alpha$, α being the angle between the long pole and the line of poles *b*.

Assuming therefore that the velocity of the armature is the same in both cases the frequency of an alternator constructed according to diagram 2 is considerably greater than that of one constructed according to diagram 1.

By decreasing the width of the poles *b* it is possible to reduce the angle α and still further to increase the frequency.

In practice the stator of the alternator may conveniently consist of a cylinder having a number of lines of poles *b* each line being parallel to its axis, whilst the rotor is in the form of a drum co-axial with the cylinder and having upon it a number of poles *a* inclined to the axis.

Figure 3 shows diagrammatically an inductor having a double drum *d* each half of which carries poles *a* while a magnetizing winding *e* is arranged between the two halves. *f* is the stator part of which is shown in the developed view, Figure 4. In this machine all the poles *a* on one half of the drum will be N and those on the other S. The poles *b* should be laminated, the laminations being parallel to the axis.

Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

1. A high frequency alternator in which the stator has a number of poles separated from each other and arranged in a line and the rotor has a long pole making a small angle to this line so that it passes in succession across the poles of the stator.

2. High frequency alternators constructed substantially as described with reference to the drawings.

Dated the 18th day of May, 1914.

CARPMAEL & Co.,
Agents for Applicants,
24, Southampton Buildings, London, W.C.

Fig. 1.

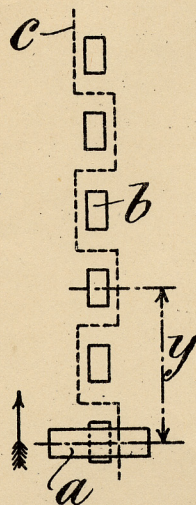


Fig. 2.

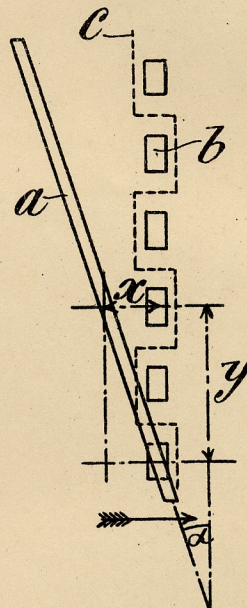


Fig. 3.

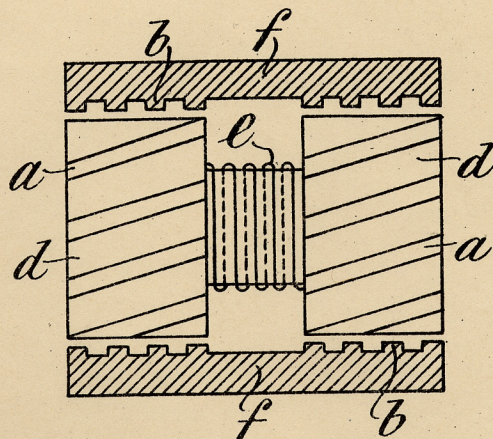
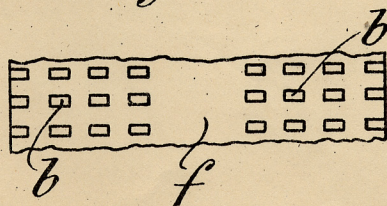


Fig. 4.



[This Drawing is a reproduction of the Original on a reduced scale.]