A. MEISSNER.

SPARK GAP FOR IMPULSE EXCITATION.

APPLICATION FILED FEB. 24, 1912.

1,051,744. Patented Jan. 28, 1913.

Fig. 1

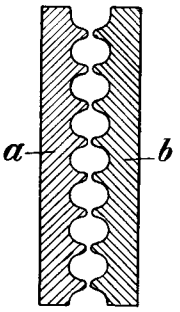


Fig. 2

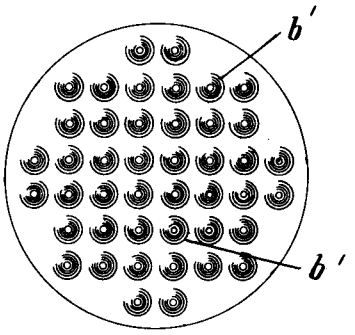


Fig. 3

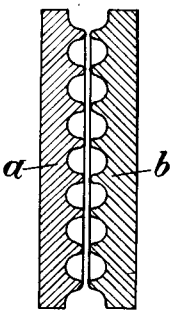
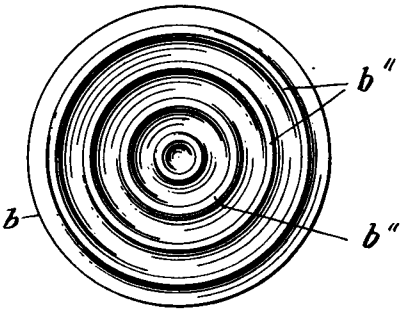


Fig. 4



Witnesses
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UNITED STATES PATENT OFFICE.

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SPARK-GAP FOR IMPULSE EXCITATION.

1,051,744. Specification of Letters Patent. Patented Jan. 28, 1913.

Application filed February 24, 1912. Serial No. 679,774.

To all whom it may concern:

Be it known that I, ALEXANDER MEISSNER, a citizen of the Empire of Austria-Hungary, and residing at Berlin, Germany, have invented certain new and useful Improvements in Spark-Gaps for Impulse Excitation, of which the following is a specification.

My invention relates to spark-gaps for impulse excitation.

In spark-gaps adapted for impulse excitation the form and the material of the electrodes are primarily important for obtaining a rapid quenching action. Good heat-conducting metals, such as copper and silver, have proved satisfactory as electrode material, while plate electrodes have been employed as the most suitable form of the discharge gap, regard being had to the fact that it is necessary for the spark constantly to start at fresh parts of the discharge gap in order to obtain a good quenching effect. Special means have been used with electrodes of the plate form for preventing the spark reaching the edges of the electrodes, because this has been considered detrimental.

Now a primary object of my invention is to provide a quench spark-gap which, in contradistinction to plate spark-gaps employed heretofore, possesses a great many edges or ribs and admits of the spark using only these parts for the discharge. Tests have shown that in such spark-gaps the spark starts at the shortest distance between the electrodes, and then at once spreads out. Now this spreading of the spark and the spreading of the section of current connected therewith is not only not injurious, but exceedingly valuable for obtaining a good quenching action, because a large cooling surface is available for the spark immediately after the discharge.

Two embodiments of my invention are represented as an example in the accompanying drawing, wherein:—

Figure 1 is a transverse section through my improved spark gap. Fig. 2 is a face view of one of the two electrodes shown in Fig. 1, and Figs. 3 and 4 are views corresponding with Figs. 1 and 2 respectively showing a modified form of gap.

Referring to the drawing, the faces of the two electrodes a and b facing one another may be formed either, as shown in Figs. 1 and 2, of individual pointed projections b' of suitable shape or, as shown in Figs. 3 and 4, of a plurality of concentric ribs b''. In such a spark-gap the discharge occurs similarly to the manner in which the discharge in a plurality of parallel connected horn lightning arresters occurs. The discharge here also starts at the shortest gap between the electrodes and then spreads out over a large surface and owing to the rapid cooling effect produced thereby, the quenching effect is brought about rapidly. The size of the area over which the spark spreads depends on the radius of curvature of the individual discharge gaps and, principally, on the selection of the electrode material, the spread of the spark in the case of silver amounting, for example, to 2 mm. in all directions.

I claim:—

1. A spark-gap for impulse excitation, comprising in combination two parallel plate electrodes facing each other, each face having a plurality of tapering projections opposite like projections on the other face, whereby sparks which start at the shortest distance between the electrodes can lengthen and spread out over a large cooling surface.

2. A spark gap of the character described having two parallel plate electrodes facing each other, the face of each electrode having a plurality of tapering projections rising from the face and corresponding in shape with like projections directly opposite on the face of the other electrode, said electrodes being placed a suitable distance apart to form gaps between the apexes of all the correspondingly opposite projections, all of said gaps being of equal length, whereby sparks which bridge said gaps are caused to lengthen and spread over a large cooling surface formed by the contour of said projection.

3. A spark gap of the character described having two parallel plate electrodes facing each other, the face of each electrode having a plurality of concentric ribs of tapering section correspondingly opposite to the ribs of the other electrode, each electrode having the apexes of its ribs located in one

plane, said electrodes being placed a suitable distance apart to form gaps of equal length between the apexes of correspondingly opposite ribs, whereby sparks which bridge said gaps are caused to lengthen and to spread over a large cooling surface formed by the contour of said ribs.

In testimony whereof, I affix my signature in the presence of two witnesses.

ALEXANDER MEISSNER.

Witnesses:
WOLDEMAR HAUPT,
HENRY HASPER.