Feb. 19, 1929. 1,702,413

E. PFIFFNER

CONDENSER TERMINAL OR CLAMP

Filed Aug. 14, 1923

Fig. 1

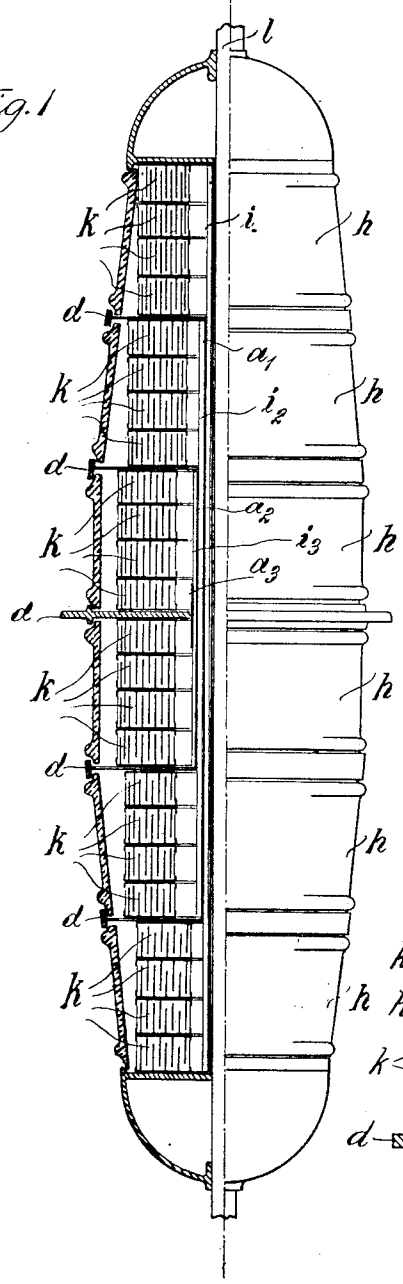
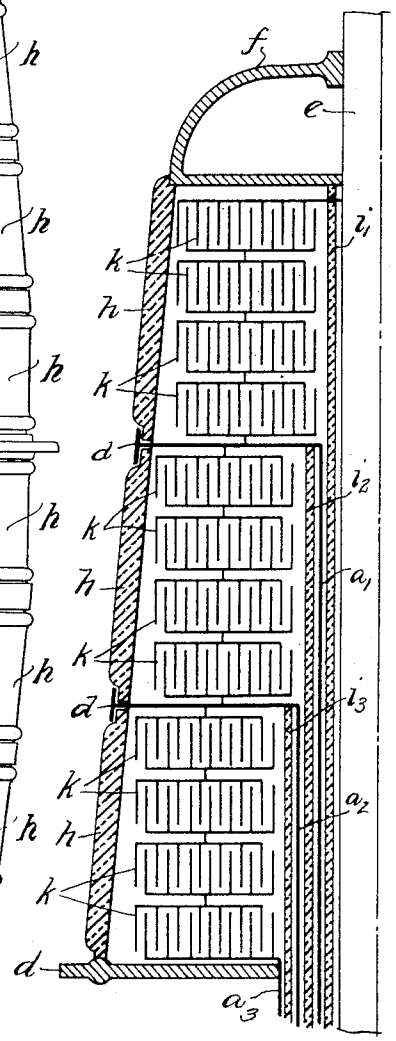


Fig. 2



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UNITED STATES PATENT OFFICE.

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CONDENSER TERMINAL OR CLAMP.

Application filed August 14, 1923, Serial No. 657,388, and in Germany August 15, 1922.

For the protection of the insulation of the windings of electric machines and apparatus, more particularly of electrical high voltage transformers, against over-loading or over-stressing and puncture by the excessive voltages of steep waves more particularly of atmospheric origin, so called "protective condensers" are often connected to the leading-in terminals.

According to the present invention the arrangement is substantially cheapened and simplified by the leading-in terminal which already possesses a certain although very small self-capacity, being combined with the protective condenser into a single device. In any known construction of protective condenser it is sufficient to build the individual condensers to a high hollow cylinder and to pass the insulated conductor through it. In this arrangement the insulating tubes may be subdivided in a known manner into a plurality of concentric tubes and be provided with metal coatings which are led to the subdivisions of the high tension condenser, whereby the radial drops of potential are uniformly distributed on the concentric insulating tubes. In contradistinction to the known arrangement in which the capacities of the insulating tubes arranged in series with one another are graded, in the present arrangement such graduation is superfluous, since the capacity of the protective condenser is many times larger than that of the insulating tubes and therefore it is only the distribution of the capacity first referred to that determines the distribution of the potential.

As compared with the separate arrangement of terminal and protective condenser, the arrangement hereinbefore referred to possesses the great advantage that the constructional parts and the outer casing which is common to the terminal and to the protective condenser have to be constructed only once, being used for the joint purposes of the leading-in terminal and protective condenser.

The invention mainly consists in a leading-in terminal which is combined in a single constructon with a protective condenser, the capacity of which is substantially larger than the self-capacity of the said leading-in terminal, in such a manner that a uniform drop of potential is produced both in the axial and in the radial direction.

The invention is clearly illustrated in the accompanying drawings, in which:—

Fig. 1 is a sectional elevational view of the condenser terminal or clamp, and

Fig. 2 is an enlarged fragmentary sectional detail showing the electrical connections between the separate groups of condensers and the separate connections between a single annular row of condensers with the external casing and the plate of the condensers surrounding the electrical conductor.

l is the current conductor which is covered by the insulating tubes i_1, i_2, i_3 of decreasing lengths, separated from one another by electrically conducting coatings a_1, a_2, a_3 also of decreasing lengths, thereby forming condensers which are connected in series with one another. The coatings a_1, a_2, a_3 are conductively connected with corresponding members d of which the middle one, connected to the coating a_3, is made stronger as it serves for attaching the whole of the device to the wall or other support through which the high tension conductor is passed. At the ends of the device, the conductor l makes electric contact with holders f. The individual condensers k are accommodated in the spaces between the insulating tubes i and the casings h. In each of these spaces a plurality of condensers (four in the form of construction shown) are connected in series with one another, and through the members d, d or d, f in parallel with one of the condensers between a_3 and l which are connected in series with one another.

The much larger capacity of the individual condensers k as compared with that of the leading-in terminal necessarily produces a uniform drop of potential both in the axial direction along the casings h and transversely thereto.

The invention is not limited to the use of any special form of condenser or to any special dielectric.

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

1. A condenser-terminal comprising in combination a leading-in terminal insulating tubes covering the leading-in-terminal

and provided with conducting coatings and a protective condenser of a considerably larger capacity than the natural capacity of the leading-in terminal arranged around the latter and forming a unit with the same, the said condenser comprising an outer casing composed of a plurality of sections, armatures interposed between the sections and connected with the said coatings and annular partial condensers connected in series and disposed in the space provided between the insulating tubes and the casing.

2. A condenser terminal comprising in a combination a leading-in terminal, a sectional protective condenser having a considerably larger capacity than the natural capacity of the leading-in terminal and arranged about the leading-in terminal and including a plurality of casing sections and annular partial condensers arranged in the casing sections, and combined insulating and conducting means arranged about the leading-in terminal within the sectional protective condenser.

3. A condenser terminal or clamp comprising in combination with a leading-in terminal, of a protective condenser of a considerably larger capacity than the natural capacity of the leading-in terminal, including tubular condenser elements arranged concentrically about the leading-in terminal, and annular partial condenser elements connected in series and arranged transversely about the concentric tubular elements and in parallel connection with said tubular elements.

4. A condenser terminal or clamp comprising in combination with a leading-in terminal, of a protective condenser of a considerably larger capacity than the natural capacity of the leading-in terminal, a plurality of concentrically arranged tubular condenser elements arranged concentrically about the leading-in terminal and of varying lengths, a plurality of groups of annular partial condenser elements connected in series with each other and arranged transversely about the tubular elements, and means extending radially of the insulator for conductively connecting the ends of the tubular elements with certain of the groups of annular partial elements, substantially as and for the purposes set forth.

In testimony whereof I hereunto affix my signature.

EMIL PFIFFNER.