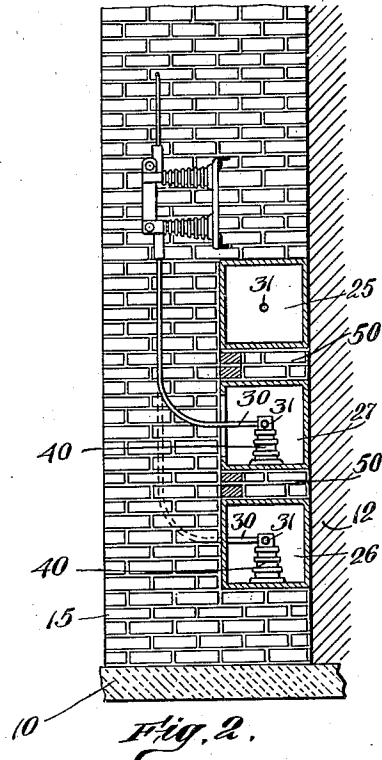


1,055,642.

Fig. 1.



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EDWARD N. LAKE, OF WINTHROP, MASSACHUSETTS.

ELECTRIC DISTRIBUTION SYSTEM.

1,055,642.

Specification of Letters Patent.

Patented Mar. 11, 1913.

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To all whom it may concern:

Be it known that I, EDWARD N. LAKE, a citizen of the United States, residing at Winthrop, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Electric Distribution Systems, of which the following is a specification.

In high tension electric systems where large amounts of power are generated and distributed, it is important that the greatest care be exercised and provision adopted for safety, convenience and flexibility, so as to guard against serious interruptions in the service, and special attention has been given to the problem of grouping, protecting and isolating the electric elements, so as to minimize the possibility of breakdowns and to limit their effects when they do occur to the smallest possible element or group.

In power-stations and sub-stations compartments have been provided for the high tension bus-bars, said compartments having outlets for the wires, and isolating barriers have been arranged between the wires which serve as supports for the bus-compartments. So far as I am aware, the bus-compartments have comprised sections composed of slabs of insulating material, such as soap-stone or concrete, said slabs being arranged in the form of a square with their edges abutted together, and the sections thus formed are arranged in alinement and their ends abutted together. Compartments of this construction are expensive, particularly on account of the necessity of making the edges and also the ends of the slabs sufficiently true to form a tight joint when abutted together. Furthermore, the isolating barriers have usually been composed of concrete and considerable time has been required for the concrete to set and mature, which time greatly impedes the work of the electricians who are installing the electrical equipment, and, as a result, such equipment cannot be installed until after a considerable period of time has elapsed, and the delay necessitated by the employment of concrete barriers is very objectionable as well as expensive. Furthermore, the bus-compartments have been arranged one directly above the other, so that the top wall of one compartment serves as the bottom wall of the compartment above it, and the securing-means

for the insulators arranged in the compartments, extends through said wall and hence is exposed in the adjacent compartment, which is objectionable.

In accordance with this invention, the high tension bus-compartments are formed of pipe-sections made quadrangular or other form in cross-section, and composed of vitrified clay, tile or other insulating refractory material, each section being integrally formed, and the sections comprising each compartment are arranged in alinement, and some of them have an opening in their side wall. Said sections, when molded, will have holes or recesses formed therein for the securing-means for the insulators, thereby avoiding the necessity of subsequently making such holes. The isolating barriers are or may be composed of bricks formed with holes through them or recesses to receive the ends of the pipe-sections to conceal and thereby seal and protect the joints, so that each compartment is tightly closed throughout its length, except for the openings which are especially provided. The holes or recesses in said barriers are widely separated from each other, so that the several bus-compartments are widely separated from each other, and between the compartments the barriers are formed with air spaces, which is the preferable construction, although said spaces may be filled in. Said insulating barriers, however, may be composed of concrete and the ends of the pipe-sections embedded therein, and in such case the advantages of tightly closed and widely separated compartments for the high tension bus-bars are obtained, although considerable time is required to elapse before the electrical equipment can be installed.

Figure 1 is a front elevation of the bus-compartments and insulating barriers. Fig. 2 is a transverse vertical section taken on the dotted line 2-2, Fig. 1.

10 represents the floor of a station and 12 an upright wall which may or may not be employed.

15 represents one of the isolating barriers, here shown as composed of brick, although it may be composed of other insulating refractory material such as concrete. Said barrier is made as an upright wall, and has holes through it for the high tension bus-compartments. A plurality of barriers are employed, they being arranged at each side

of the outlets leading from the bus-compartments, thereby to isolate the wires by walls of a substantial thickness. As here shown, three high tension bus-compartments are provided, arranged one above another, as at 20, 21 and 22, and each bus-compartment is composed of a plurality of pipe-sections made of vitrified clay, tile or other insulating refractory material, said sections being represented at 25, 26 and 27. Vitrified clay is especially well suited for the purpose of making the sections on account of its highly refractory property. Each section is integrally formed, and when molded, holes or recesses may be formed for the bolts or other securing means for the insulators 40, which support the bus-bars, which is an advantage of using vitrified clay or equivalent material. The sections are here shown as square in cross-section but they may be made of any other suitable shape to correspond with the shape of the holes in or through the barriers. Some of the sections of each bus-compartment have openings in their side walls, and, as here shown, the sections 27 are formed with a side opening 28 for the outlet of the wires 30, which are connected with the high tension bus-bars 31. The several sections are or may be made of substantially the same length but longer than the distance between the barriers, so that the ends of the sections will enter the holes in the barriers, to be embedded therein in order that the joints shall be concealed and thereby protected, and resulting in the joint being sealed.

When building the isolating barriers of brick, which is a very economical construction, and hence is preferred, several courses are laid at the bottom, then the pipe-sections of the lowermost bus-compartment are laid on top of said course, then courses of brick are laid in front of said sections and also above the sections, and then the pipe-sections of the next bus-compartment are laid, and so on, so that all of the sections are supported by their ends engaging or becoming embedded in the masonry. The bus-compartments thus produced are closed tightly with the exception of the openings especially provided. The sections composing the bus-compartments are short and hence can be conveniently handled, and the work can proceed rapidly to immediate completion in order that the electricians may immediately install the electrical equipment.

The several bus-compartments while arranged one above the other are widely separated from each other, so that wide spaces

are produced between them, herein represented at 50, as air spaces although said spaces may be filled in if desired, and yet serve to widely separate the bus-compartments from each other. Widely separating the several bus-compartments from each other is an important feature, particularly as contrasted with the usual method of arranging the said compartments in such manner that they adjoin.

I claim:—

1. In an electrical distribution system, a bus-compartment composed of a plurality of pipe-sections arranged in alinement for the high tension bus-bars, each section being integrally formed of refractory material, and the side wall of some of the sections having an opening, and isolating barriers of insulating refractory material supporting said sections having holes to receive the ends of the sections, substantially as described.

2. In an electrical distribution system, a bus-compartment composed of a plurality of pipe-sections arranged in alinement for the high tension bus-bars, each section being integrally formed of refractory material and the side wall of some of the sections having an opening, and isolating barriers composed of bricks, said barriers having holes through them to receive the ends of the sections, substantially as described.

3. In an electrical distribution system, a plurality of high tension bus-compartments, each composed of a plurality of pipe-sections of refractory material, and isolated barriers of refractory material having widely separated holes to receive the ends of the sections of the several bus-compartments, whereby said compartments are widely separated from each other, substantially as described.

4. In an electrical distribution system, a plurality of bus-compartments each composed of a plurality of pipe-sections of refractory material, and isolated barriers of refractory material for said sections arranged with widely separated supports for the sections of the several bus-compartments and having air spaces arranged between the several bus-compartments, substantially as described.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EDWARD N. LAKE.

Witnesses:

B. J. NOYES,
H. B. DAVIS.