March 14, 1939. C. E. BENNETT 2,150,201

ELECTRIC CABLE SYSTEM

Original Filed Dec. 7, 1935

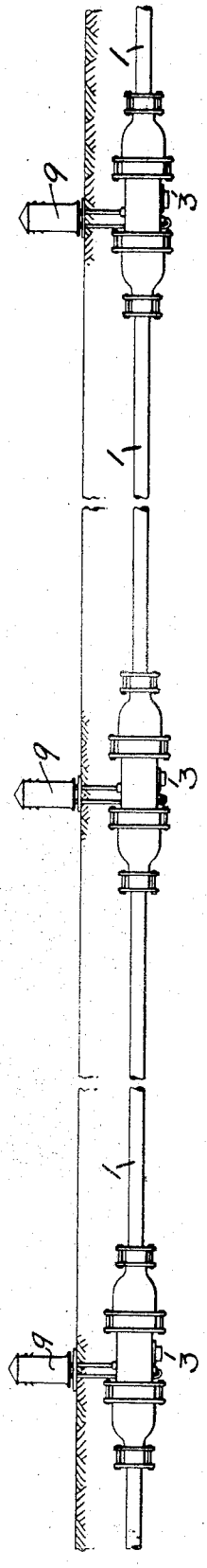


Fig. 1

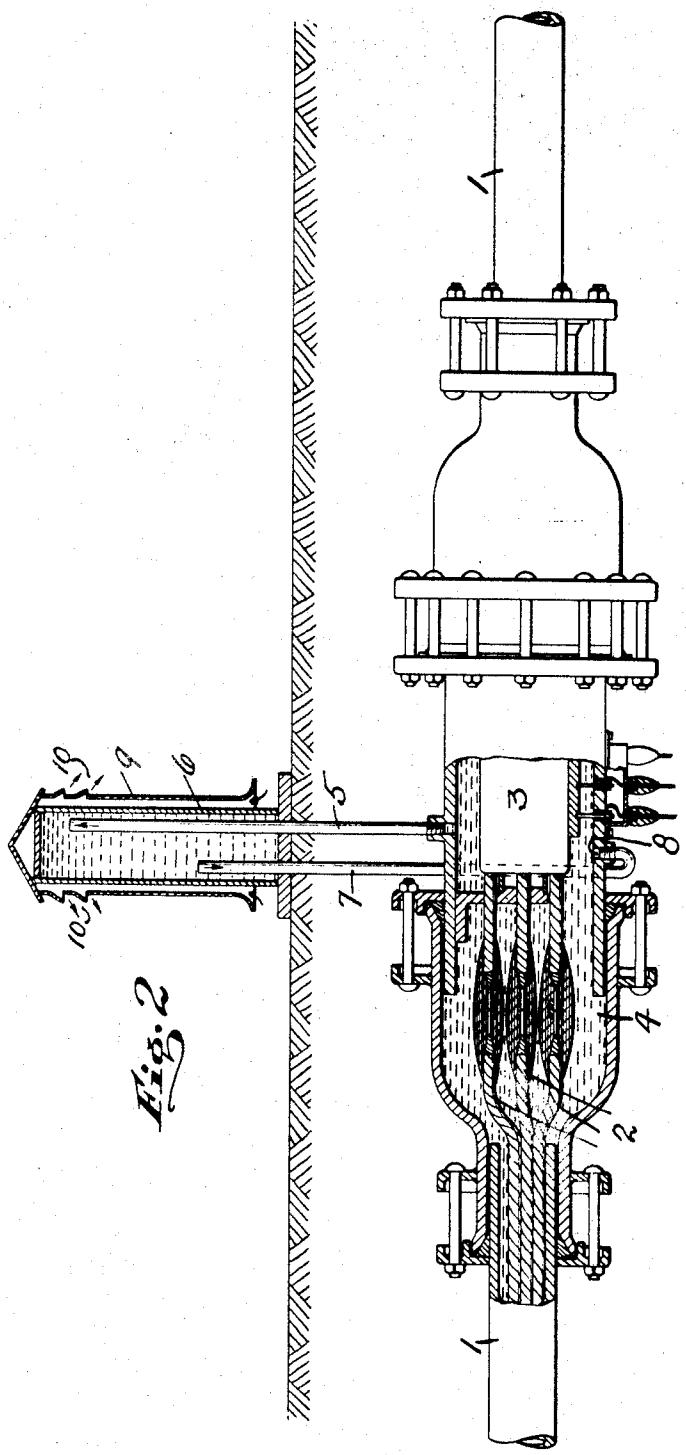


Fig. 2

INVENTOR
Charles E. Bennett
BY
Kiddle Bechtel and Montgomery.
ATTORNEYS

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# UNITED STATES PATENT OFFICE

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## ELECTRIC CABLE SYSTEM

Charles E. Bennett, Ridgewood, N. J., assignor to The Okonite-Callender Cable Company, Incorporated, Paterson, N. J., a corporation of New Jersey

Original application December 7, 1935, Serial No. 53,344, now Patent No. 2,066,322, dated January 5, 1937. Divided and this application August 13, 1936, Serial No. 95,822

1 Claim. (Cl. 174—15)

This invention relates to electric distribution systems particularly well adapted for use in connection with the distribution of power for street lighting, house lighting and other domestic or commercial loads. In accordance with my invention the cable conductors and the transformers for the system are installed in a pipe line adapted to be buried in the ground, the pipe line being filled with an insulating fluid such as oil in which the insulated conductors and transformers are immersed at all times, the transformers being immersed in the same oil as the conductors. Improved means are provided for dissipating the heat generated in the system, having particular reference to the heat generated by electric losses in the transformers. This insures best operating conditions at all times.

This application is a division of my copending application Serial No. 53,344, filed December 7, 1935, (Patent No. 2,066,322, dated January 5, 1937).

In the accompanying drawing:

Fig. 1 is an elevational view, more or less diagrammatic, of my improved system; and

Fig. 2 is a part sectional elevational view of part of Fig. 1.

Referring to the drawing in detail, the cable conductors 2 and transformers 3 of my improved system are mounted within the pipe line 1 and are immersed in a suitable fluid, such as oil 4, with which the pipe line is filled, the transformers being immersed in the same fluid as the cable conductors. This fluid is maintained under superatmospheric static pressure sufficiently high to increase its dielectric strength, for example, a pressure of five atmospheres minimum.

Extending vertically from the upper side of the pipe line at each transformer 3 is a pipe 5, the lower end of the pipe being in communication with the interior of the pipe line. This pipe extends above the ground in which a cooling tower 6 which may be mounted, for example, on the surface of the ground, a pipe 7 the upper end of which terminates short of the upper end of the pipe 5 extending from the tower downwardly to the underside of the pipe line where it enters the pipe line as shown at 8. This construction, as will be appreciated, provides for a thermal siphon movement of the fluid 4 upwardly in the pipe 5 to spill over into the tower 6, the relatively cooled fluid returning to the pipe at 8 through the pipe 7.

To facilitate cooling of the fluid in the tower 6, the tower is provided with an outer tube 9 which loosely surrounds the tower and is provided adjacent its top with air outlets 10. As will be appreciated this provides for a circulation of air past and in contact with the tower, as indicated by the arrows on the drawing.

From all of the foregoing it will be seen that the present invention provides a distribution system in which the conductors and transformers of the system are enclosed in a pipe line containing oil or other suitable insulating fluid in which the cable conductors and transformers are immersed, the transformers being immersed in the same fluid as the conductors, means being provided for permitting of movement of the insulating fluid away from the transformers so as to dissipate the heat generated by the electric losses in the transformers.

What I claim is:—

A buried electric distribution system comprising in combination a pipe line, insulated cable conductors in the pipe line, a transformer in the pipe line electrically connected to said conductors, an insulating fluid in the pipe line in which said conductors and transformer are immersed, a pipe communicating with the pipe line at a point above the transformer and extending upwardly therefrom, an above-ground tower with which said pipe communicates, a sleeve about said tower and spaced therefrom to provide for forced circulation of air about the tower, and a pipe leading from said tower to the pipe line below the transformer, thereby to provide for the circulation of the insulating fluid from the pipe line adjacent the transformer through said tower for cooling and back to the pipe line adjacent the transformer.

CHARLES E. BENNETT.