

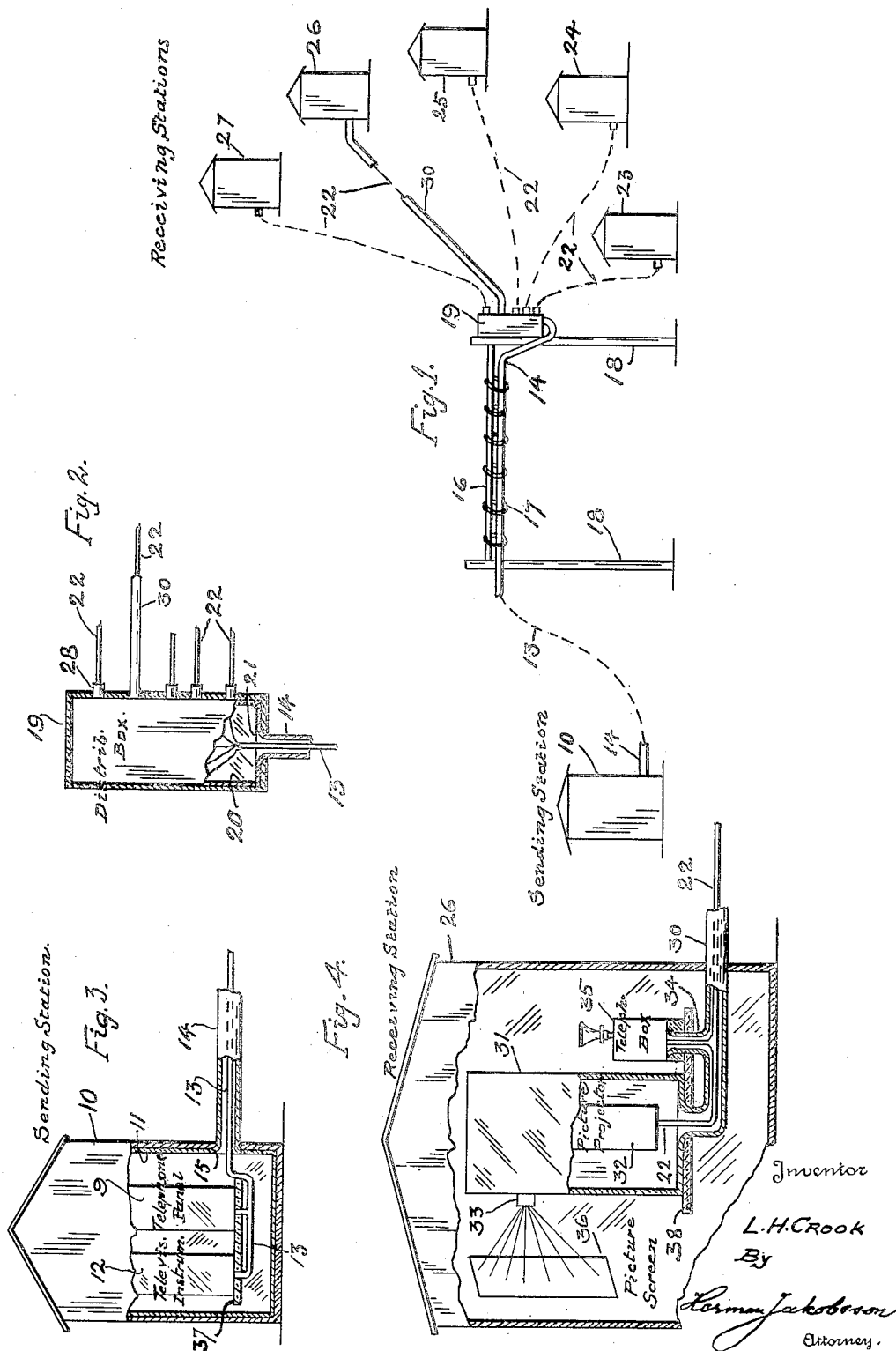
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SYSTEM AND METHOD FOR SENDING PICTURES OVER TELEPHONE LINES

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SYSTEM AND METHOD FOR SENDING PICTURES OVER TELEPHONE LINES

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2 Claims. (Cl. 178—5.6)

My invention relates to television, and more especially to a method or system of sending pictures by wire.

One object of my invention is to prevent the distortion, by static interferences, of images, whether still or in motion, sent over wires.

Another object is to provide a practicable and successful means for sending pictures over telephone or telegraph wires without interruption of sound messages when sent simultaneously with the pictures.

Attempts have heretofore been made to use telephone wires for the transmission of picture signals, but they have not been successful, principally because of the distortion of the images due to interference from external earth static. By means of my invention such interferences are absolutely prevented, and the transmission of perfect pictures assured regardless of external electrical conditions.

In order now to prevent such interference, causing distortion of the pictures and interruption of the sound messages, I provide a complete shielding, not only of the wires and the instrumentalities employed for sending and receiving sound messages and pictures, but also of the ends of the wires where they are joined to said instrumentalities. In other words I make use of insulated, electric transmission lines, complete in themselves for sending telephone or telegraph messages, or delivering light or electric energy, as one conductor for picture transmission, while the complete metallic shielding or covering constitutes the second conductor for the picture transmission.

One embodiment of my invention is illustrated in the accompanying drawing, wherein:

Fig. 1 is a diagrammatic view of a telephone line between a sending station and a number of receiving stations;

Fig. 2 is a vertical section of a distributor box as used for heavy cables with many wires;

Fig. 3 is an elevation and partial section of the sending station equipped both with telephone and television apparatus; and

Fig. 4 is a vertical view showing the lead-in from the distributor box to the receiving station for transmission of both pictures and verbal messages.

In the drawing the same reference characters represent the same parts in the different figures. Referring now more particularly to Figs. 1, 2 and 3, numeral 10 represents a central telephone station or substation of the usual construction but also equipped for transmitting television. The

operation room or rooms in this station are metallically lined as at 11 so that all instrumentalities are completely metallically shielded. Within the metallic lining or casing 11 is located a conventional telephone panel indicated generally at 9 and a television sending instrument indicated generally by the numeral 12. A conventional television instrument connected to a transmission system is shown in Tanimoto Patent 1,769,608 of July 1, 1930, and no claims are directed herein to the television apparatus per se. From the telephone sending panel 9 a bundle 13 of the telephone wires, individually insulated, is taken out and collected in the cable 14. This comprises a metal shielding or lead pipe completely surrounding the telephone wires. This metal pipe is tightly joined as at 15 to the metallic lining 11 of the station house so that no leakage of electric current is possible around the end of the cable 14 or elsewhere along the line, as long as a complete shielding, is provided in accordance with the present invention, and without grounding.

The cable, unless an underground connection, is taken along telephone poles, in the usual manner, and hung under a suspension wire 16 by loops 17. One such pole 18 is seen in Fig. 1, and on the same is secured a control or distributor or switching box 19, shown in larger scale in Fig. 2. This box is completely lined by copper or other metallic plate 20, and to this lining the other end of the lead cable 14 is tightly joined as at 21 to prevent all possibility of current leakage between the cable and the lining 20 of the box. The telephone wires in the bundle 13 are now carried from the telephone panel 9 at the sending station 10 through the lead or metal cable 14 and into the metal lined box 19 on the pole 18. From there the individual conductors 22 connect with the several receiving stations in the houses 23 to 27, which the distributor box 19 is intended to serve. Preferably all of the insulated conductors pass out from the metal lined distributor box 19 through metal pipes 28, soldered or otherwise firmly attached to the metal lining 20 of the distributor box 19. All of these telephone conductors 22 are of the ordinary, insulated kind.

Supposing now that one of the houses, 26 for instance, desires to have television transmission installed, all that is then necessary is to provide the arrangement indicated in Fig. 4, where the telephone conductors 22 are enclosed in a metal tube 30, one end of which is soldered or tightly secured to the metal lining 20 of the distributor box 19. The other end of this metal tube 30 is

similarly tightly secured to the metallic casing 31, containing a conventional television receiving instrument indicated generally at 32 which is properly insulated at one pole from the casing and with which pole the end of an insulated telephone conductor 22 is connected. The television instrument itself, one pole of which has wire connection 39 with the casing 31, may be of any suitable kind. Through aperture 33 in the wall of the casing the television rays are then permitted to emanate, so that a picture is projected on a screen 36 in the receiving station 26.

Numeral 35 represents a telephone box, also metallically enclosed and connected with the tube 30 by means of a metal branch pipe 34. Into the telephone box 35 a branch of the conductors 22 is taken, leading to one pole of the telephone, through the pipe into the telephone box, while the other telephone pole connects metallically with its casing 35. It will now be evident that a complete shielding or metallic covering is provided for the telephone conductor from the sending station 10 to the receiving station 26. This shielding, which is continuous without any break that might permit current leakage, consists of the following metallic parts, namely 11, 14, 21, 20, 30, 31, 34 and 35. This means that both the receiving telephone and the television receiving instrument, as well as all the instrumentalities at the sending station in addition to the conductors, are completely shielded.

Instead of the individual metallic casings for the receiving instruments, as at 31 and 35 of Fig. 4, a common metallic lining or casing 11, as in Fig. 3, may be used, and similarly individual casings may be utilized for the sending instruments 9 and 12, Fig. 3.

The telephone messages are transmitted in the ordinary way over the conductors 22 of the bundle 13, without the aid of the metallic tubing, and it should be noted that when sending television frequencies, it makes no difference whether any or all of the telephone wires in the same cable are transmitting telephone messages at the same time as the pictures are being sent over them. As a matter of fact the telephone messages will be considerably improved and be less subject to interference on account of the complete shielding, as the wires are covered, not only the entire length from station to house, by lead pipe, but that the cable ends are also similarly protected where leaving the station and entering the house. This also avoids lightning troubles. In my present invention the television frequencies are transmitted over the telephone wires and over the lead or shielding coverings thereof.

For transmitting television over the line, use is made not only of the telephone conductors 22 of the bundle 13 but also of the enumerated metallic shielding parts for the return circuit.

In the drawing an air line has been indicated, but it is evident that my invention applies equally well to an underground line.

That the invention can also be used on telegraph lines, or on power and electric lines, independent of telephone or telegraph, will be evident from the above description. The invention is also applicable to the sending of still pictures, which may be photographically reproduced for magazines or newspapers. It is to be understood that the invention as here described is not limited to the detail of construction disclosed and shown and that these may be varied widely without departing from the spirit of the invention as defined by the claims.

I claim:

1. In a transmission system for both oral messages and television; in combination, a sending station including a television sending instrument and a telephone sending instrument, a first metallic shield arranged housing said instruments and in insulated relation to one pole of each of said instruments, respectively, a metal tube conductively connected to said first shield, a distributor box having a second metallic shield, said second shield being conductively connected to said tube, an insulated conductor in said tube and having one end thereof connected to the one pole of said instruments and having its other end in said second shield, a receiving station including telephone receiving instrumentalities, a third metallic shield housing said instrumentalities and in insulated relation to one pole thereof, a television receiving instrument at said receiving station, a fourth metallic shield housing said television receiving instrument and in insulated relation to one pole thereof, a metal tube conductively connected to said second, third and fourth shields, respectively, an insulated conductor in said last mentioned tube and arranged connecting the one poles of said receiving instrumentalities and of said television receiving instrument with the one poles of said sending instruments, said tubes being conductively connected with the other poles of said sending and said receiving instruments, respectively.

2. A shielded communication system comprising in combination, a first communication instrument, a first metallic shield shielding communication instrumentalities in said instrument, switching instrumentalities, a second metallic shield shielding said switching instrumentalities, a second communication instrument, a third metallic shield shielding communication instrumentalities in said second instrument, metallic tube means conductively connecting said first, second and third metallic shields, respectively, and insulated conductor means in said tube means conductively connecting said first and said second communication instruments through said switching means, said conductors being adapted to each form one side of a selected one of a plurality of communication circuits of which said tube forms the other side.

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