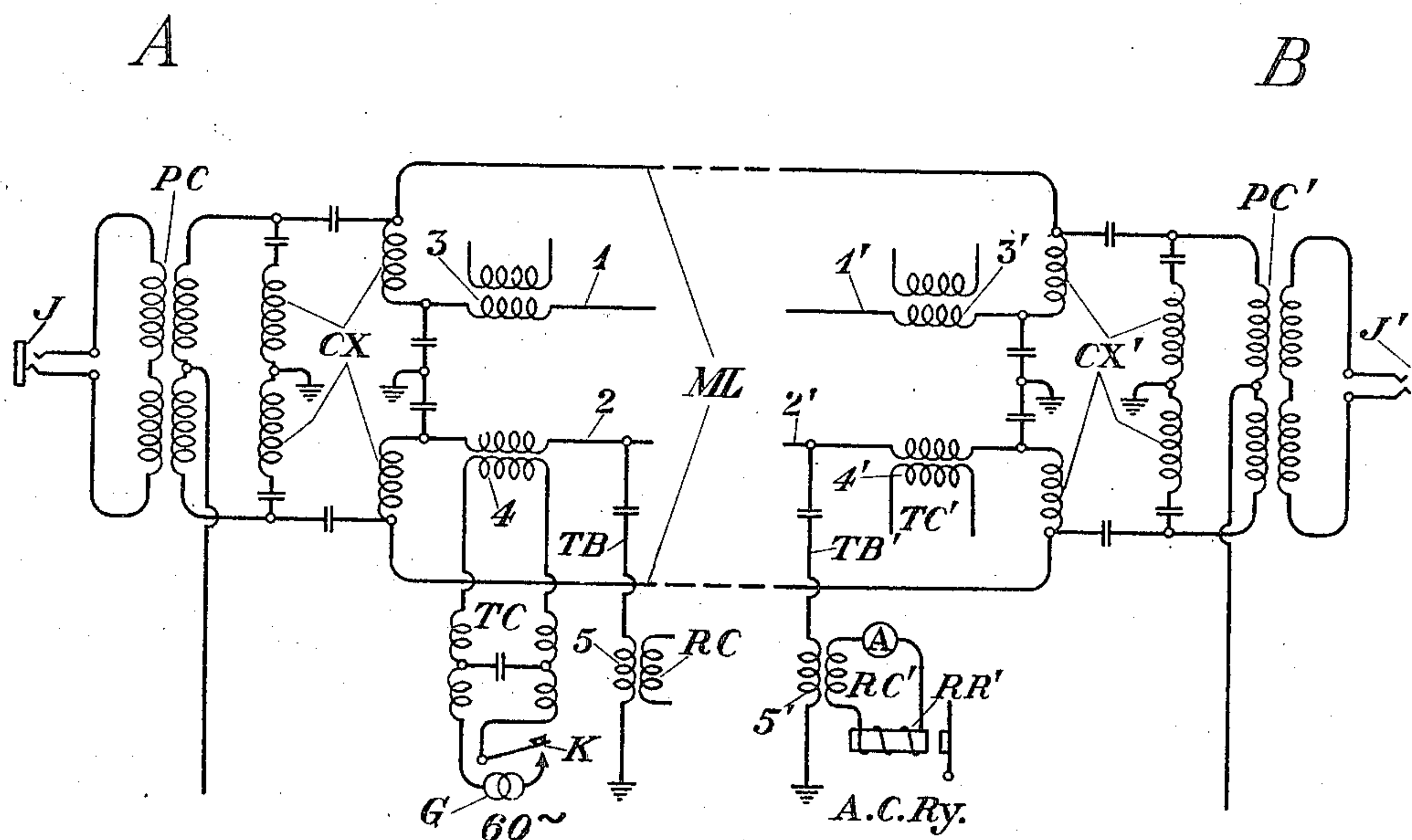


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B. P. HAMILTON
COMPOSITE SIGNALING SYSTEM

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INVENTOR.
B. P. Hamilton
BY *gr 7-2*
ATTORNEY

UNITED STATES PATENT OFFICE.

BAXTER P. HAMILTON, OF BROOKLYN, NEW YORK, ASSIGNOR TO AMERICAN TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK.

COMPOSITE SIGNALING SYSTEM.

Application filed September 23, 1919. Serial No. 325,682.

To all whom it may concern:

Be it known that I, BAXTER P. HAMILTON, residing at Brooklyn, in the county of Kings and State of New York, have invented certain Improvements in Composite Signaling Systems, of which the following is a specification.

This invention relates to composite signaling circuits and more particularly to circuits in which carrier signals are superposed upon telephone lines composited for Morse operation.

One of the features of this invention resides in an arrangement whereby a carrier channel may be superposed upon each Morse leg of a composited telephone line.

Another feature of the invention resides in an arrangement whereby a telephone line composited for Morse operation may have two signaling channels of the same carrier frequency adapted for signaling in either direction, superposed thereon.

The above features, as well as other characteristics of the invention more fully hereinafter appearing, are realized in the arrangement disclosed in the accompanying drawing, the figure of which illustrates one embodiment of the invention.

Referring to the drawing, ML designates a telephone transmission line of the usual type, terminating in jacks J and J', at stations A and B respectively, whereby the line may be associated with terminal telephone apparatus. The line may be phantomized in the usual manner, by providing phantom coils PC and PC', as indicated. In order to utilize the two conductors of the line ML for the transmission of Morse signals, composite apparatus CX and CX' of the usual type is provided at each terminal of the line. As this composite apparatus is old in the art and is well understood, it need not be described in detail. Morse signals may be transmitted from the Morse leg 1 over the upper side of the line ML to the Morse leg 1', or vice versa. In a similar manner Morse signals may be at the same time transmitted in either direction over the circuit including the Morse leg 2, the lower conductor of the line ML and the Morse leg 2'. In order that an alternating carrier current channel may be superposed on the Morse connections, a transmitting circuit TC is associated through a transformer 4 with Morse leg 2, similar

transmitting circuits (not shown) being associated with Morse legs 1, 1' and 2', through transformers 3, 3' and 4'. For receiving the carrier signals tuned branches TB and TB' are connected to the Morse legs 2 and 2', as shown, it being understood that similar receiving branches will be associated with Morse legs 1 and 1'. The transmitting circuit TC includes transmitting apparatus schematically indicated as an alternating current generator G and a transmitting key K. A receiving circuit is, of course, associated with each tuned branch, such as TB', the receiving circuit RC' associated with this particular branch being illustrated as including an alternating current receiving relay RR'.

By actuating the key K alternating currents from the generator G may be impressed from the transmitting circuit TC through the transformer 4 upon the Morse leg 2 and transmitted over the lower conductor of the main line ML to the Morse leg 2'. The tuned branch TB' selects the carrier frequency thus transmitted and impresses it through transformer 5' upon the receiving circuit RC' to actuate the receiving relay RR'. The carrier transmission at the same frequency may also take place either in the same or in the opposite direction over a path, including Morse leg 1', upper conductor of ML and Morse leg 1.

It will be obvious that the general principles herein disclosed may be embodied in many other organizations widely different from those illustrated, without departing from the spirit of the invention as defined in the following claims:

What is claimed is:

1. In a signaling system, a telephone transmission line, composite apparatus including Morse legs for transmitting Morse signals over one side of said telephone line, similar apparatus including Morse legs for transmitting Morse signals over the other side of said line, and carrier apparatus associated with said Morse legs for transmitting alternating carrier currents modulated by signals through said Morse legs and over said line.

2. In a signaling system, a telephone transmission line, composite apparatus associated therewith including Morse legs for transmitting Morse signals over one side of said telephone circuit, similar apparatus

including Morse legs for transmitting Morse signals over the other side of said line, and carrier apparatus associated with each of said Morse legs, whereby alternating carrier currents modulated by signals may be transmitted through each of said Morse legs and over each side of the telephone line.

3. In a signaling system, a telephone transmission line, composite apparatus including Morse legs associated therewith for superposing Morse signals upon one side of said telephone line, similar apparatus including Morse legs for transmitting Morse signals over the other side of said line, tuned branches associated with said Morse legs, and carrier apparatus associated with said tuned branches.

4. In a signaling system, a telephone transmission line, composite apparatus including Morse legs associated with said line for transmitting Morse signals over one side of said telephone line, similar apparatus including Morse legs for transmitting Morse signals over the other side of said line, tuned branches connected with said Morse legs, carrier transmitting apparatus associated with each of said Morse legs, and carrier receiving apparatus associated with each of said tuned branches.

In testimony whereof, I have signed my name to this specification this 20th day of September, 1919.

BAXTER P. HAMILTON.