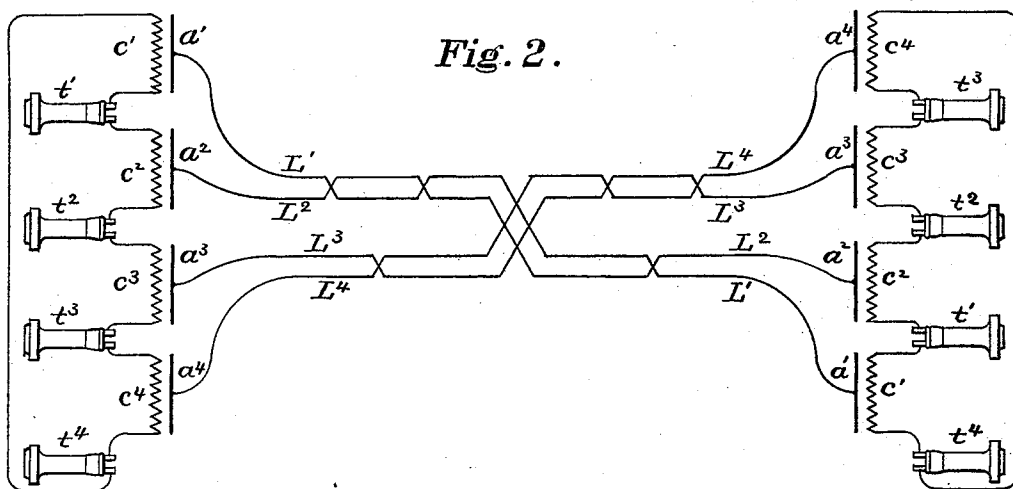
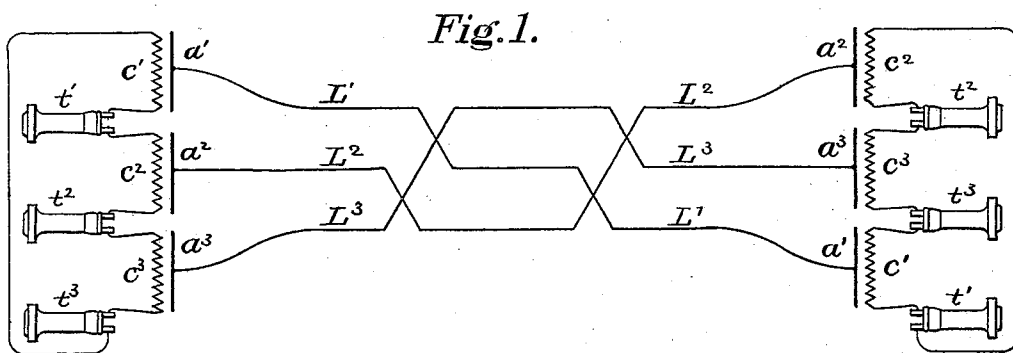


(No Model.)

W. W. JACQUES.
MULTIPLEX TELEPHONY.

No. 449,679.

Patented Apr. 7, 1891.



Witnesses.

Ernest A. Pierce
Frank C. Lockwood

Inventor.

William W. Jacques.

UNITED STATES PATENT OFFICE.

WILLIAM W. JACQUES, OF NEWTON, ASSIGNOR TO THE AMERICAN BELL
TELEPHONE COMPANY, OF BOSTON, MASSACHUSETTS.

MULTIPLEX TELEPHONY.

SPECIFICATION forming part of Letters Patent No. 449,679, dated April 7, 1891.

Application filed December 1, 1890. Serial No. 373,119. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM W. JACQUES, of Newton, in the State of Massachusetts, have invented an Improvement in Multiplex Telephony, of which the following is a specification.

The number of line-wires used corresponds to the number of sets of telephone apparatus at either end of the circuits; but in a group of three or more telephone-lines each line-wire is made to serve as a part of a metallic circuit and each set of telephone apparatus has the advantages of a metallic circuit.

The invention consists in connecting up at each end of the circuits the three, or more line-wires with an equal number of Muirhead condensers and an equal number of telephone-loops, each line-wire making connection with the armature-strip of a separate condenser and each loop making connection with the conducting-strips of two condensers. The resistance and capacity of the condensers are such that the energy of a telephone-current excited in one of the loops and passing into the two conducting-strips directly connected therewith will be transferred to the armature-strip of the said two condensers. I find a resistance of one thousand ohms and forty microfarads to answer the purpose excellently well.

In the drawings, Figure 1 represents a system of three line-wires embodying my invention. Fig. 2 represents a four-wire system embodying the invention.

In Fig. 1, $L^1 L^2 L^3$ are three line-wires.

$a^1 a^2 a^3$ are the three armature-strips of three Muirhead condensers at either end of said line-wires.

$c^1 c^2 c^3$ are the conducting-strips corresponding, respectively, to the said three armature-strips of the said Muirhead condensers at either end of said line-wires, and $t^1 t^2 t^3$ are three telephone-loops at either end of said line-wires, each supposed to contain a set of telephone apparatus. At each end of the circuits the three line-wires $L^1 L^2 L^3$ terminate,

respectively, in the three armature-strips $a^1 a^2 a^3$, and at each end the three loops $t^1 t^2 t^3$ are connected, t^1 with connecting-strips c^1 and c^2 , t^2 with connecting-strips c^2 and c^3 , and t^3 with connecting-strips c^3 and c^1 .

The construction of the four-line system is apparent upon an examination of Fig. 2, corresponding letters representing corresponding parts in the two figures. In both figures the lines are shown as crossed to prevent induction; but the circuits are easily traced. Taking that of loop t^1 in Fig. 1, for example, the circuit is from t^1 to $c^1 a^1 L^1 a^1 c^1 t^1 c^2 a^2 L^2 a^2 c^2$ back to t^1 . A person talking with the telephone apparatus in loop t^1 at one end of the circuit will be heard only at the telephone apparatus in loop t^1 at the other end of the circuit. He will not be heard in the two adjoining loops t^2 and t^3 at his own end of the circuits, since the resistance and capacity of the two condensers with which loop t^1 is connected are so great as to divert conversation into the two armatures $a^1 a^2$ and prevent its passage through the connecting-strips $c^1 c^2$ to the loops t^2 and t^3 , although the loops t^2 and t^3 are conductively connected with conducting-strips c^2 and c^1 . Similarly conversation or the positive and negative telephone-currents arriving at armatures a^1 and a^2 at the other end of the circuit will set up corresponding vibrations in condensers c^1 and c^2 to unite in loop t^1 , rather than unite in loops t^2 and t^3 .

I claim—

The combination, with three or more line-wires of a telephone system at each end thereof, of an equal number of Muirhead condensers and an equal number of telephone-loops, each of said line-wires being connected with a separate armature-strip in said condensers, and each loop being connected with two conducting-strips in said condensers, substantially as described.

WILLIAM W. JACQUES.

Witnesses:

GEO. WILLIS PIERCE,
U. M. BERTHOLD.