

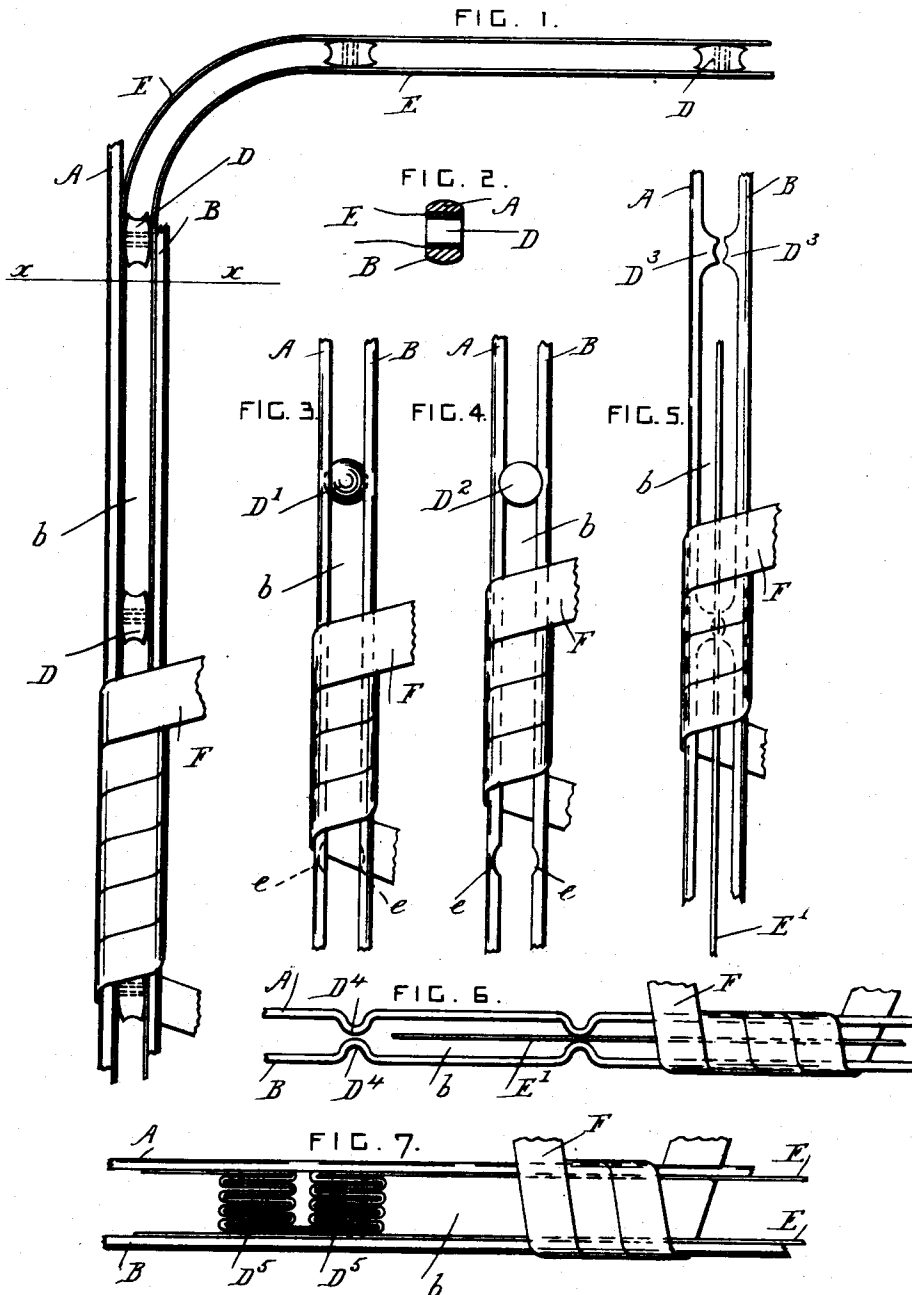
No. 682,893.

Patented Sept. 17, 1901.

**F. TREMAIN.
CONDUCTOR.**

(Application filed Jan. 25, 1901.)

(No Model.)



WITNESSES
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UNITED STATES PATENT OFFICE.

FRANCIS TREMAIN, OF HIGHGATE, ENGLAND.

CONDUCTOR.

SPECIFICATION forming part of Letters Patent No. 682,893, dated September 17, 1901.

Application filed January 25, 1901. Serial No. 44,874. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS TREMAIN, a British subject, residing at Highgate, in the county of Middlesex, England, have invented certain new and useful Improvements in Conductors, of which the following is a specification.

This invention relates to conductors used in telephonic and other similar circuits; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a side view of a pair of conductors constructed according to this invention. Fig. 2 is a cross-section taken on the line $x-x$ in Fig. 1. Figs. 3, 4, 5, and 6 are all side views showing modifications in the arrangement of the conductors. Fig. 7 is a side view showing a modification of the insulating material which separates the conductors.

A and B are two conductors arranged parallel with each other and forming a pair in an electric circuit, such as used in connection with telephones. These two conductors are arranged at a prearranged distance apart, with an air-space b between them. The space b is made as wide as practicable, and the two conductors are secured together, so that they cannot move relative to each other. Distance-pieces D are arranged at prearranged intervals between the two conductors, and these distance-pieces in the form of the device shown in Fig. 1 consist of disks or bobbins formed of rigid insulating material, such as wood, vulcanite, vulcanized fiber, or paper.

E shows continuous strips of insulating material arranged between the distance-pieces D and the conductors. In the form of the device shown in Fig. 1 two strips E are used, and these strips are formed of flexible insulating material, such as paper, silk, or cotton.

F is an outer covering wound around the two conductors and their distance-pieces and holding the whole firmly connected together. This outer covering preferably consists of flexible insulating material wound spirally on the pair of conductors. The pair of conductors thus coupled together may be bent

in any direction and may also be twisted spirally without changing the relative positions of the two conductors.

In the modification shown in Figs. 3 and 4 the distance-pieces consist, respectively, of balls D' and cylinders D'' , of rigid insulating material, and the conductors A and B are provided with notches or depressions c for holding the said balls or cylinders in position. The continuous strips of insulating material are here dispensed with; but the said strips may be used, if desired.

In the modification shown in Fig. 5 the conductors A and B have distance-pieces D^3 , consisting of projections arranged at intervals and projecting from the adjacent surfaces of the conductors. E' is a single continuous strip of insulating material interposed between the said projections on the conductors.

In the modification shown in Fig. 6 the conductors A and B have distance-pieces D^4 , consisting of projections formed by bending or cranking the conductors themselves. These cranked projections are also separated by a single flexible strip of insulating material.

In the modification shown in Fig. 7 one of the two continuous flexible strips of insulating material E is provided with pleats D^5 , which operate as rigid distance-pieces and hold the strips E and the conductors at the prearranged distance apart.

What I claim is—

1. The combination, with a pair of conductors arranged parallel with each other and having an open space between them, of distance-pieces arranged at intervals between the said conductors, and means for holding the said distance-pieces and conductors in their relative positions, substantially as set forth.

2. The combination, with a pair of conductors arranged parallel with each other and having an open space between them, of distance-pieces arranged at intervals between the said conductors, and a strip of flexible insulating material wound spirally around the said conductors and holding them and their distance-pieces in their relative positions, substantially as set forth.

3. The combination, with a pair of conductors arranged parallel with each other and having an open space between them, of continuous and flexible strips of insulating material arranged next to the adjacent surfaces
5 of the said conductors, distance-pieces of rigid insulating material arranged at intervals between the said conductors, and means for holding the said conductors, strips and dis-

tance-pieces in their relative positions, substantially as set forth.

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

FRANCIS TREMAIN.

Witnesses:

FREDERICK STORKEY,
ANDREW LIONEL JOHN SKINNER.