

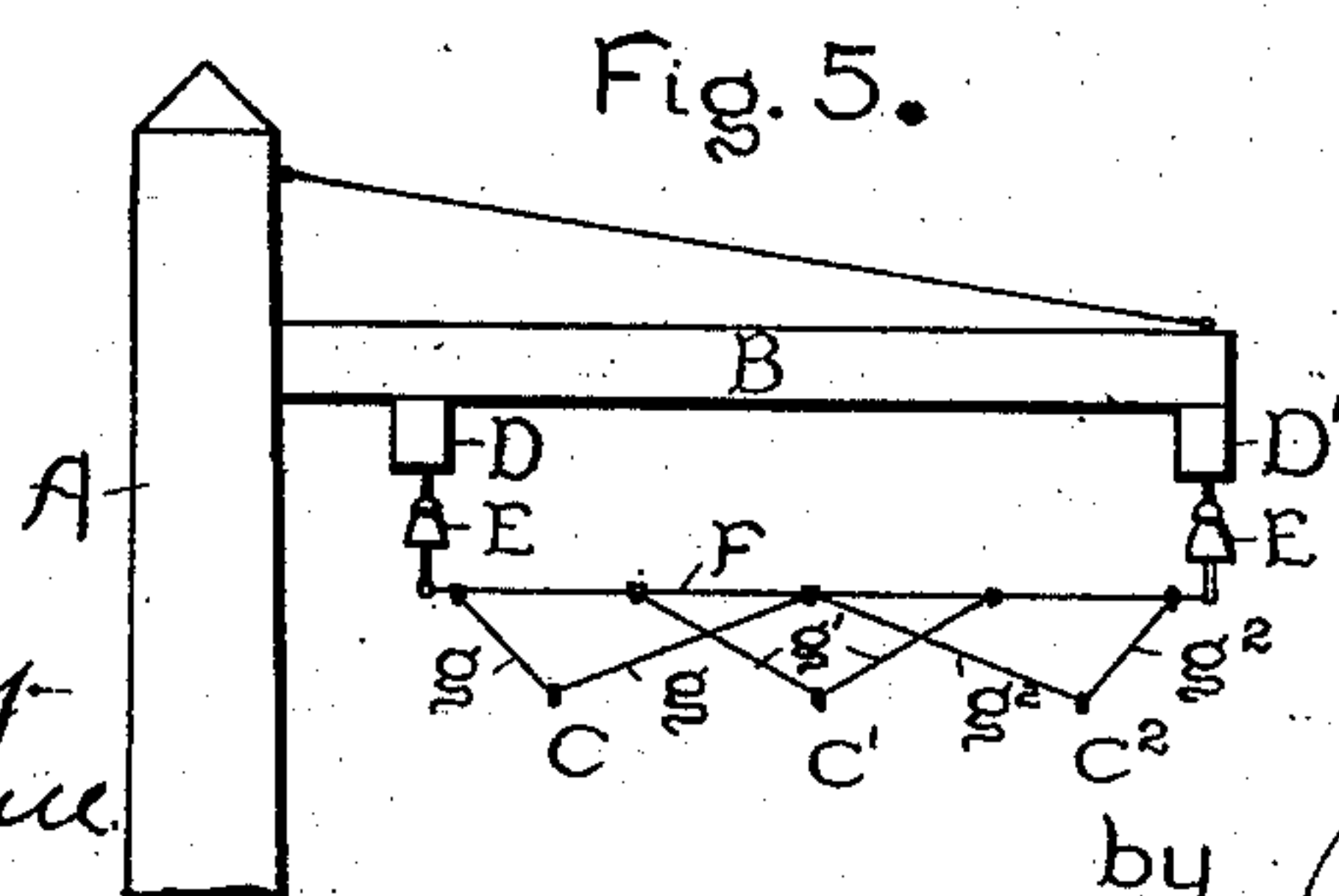
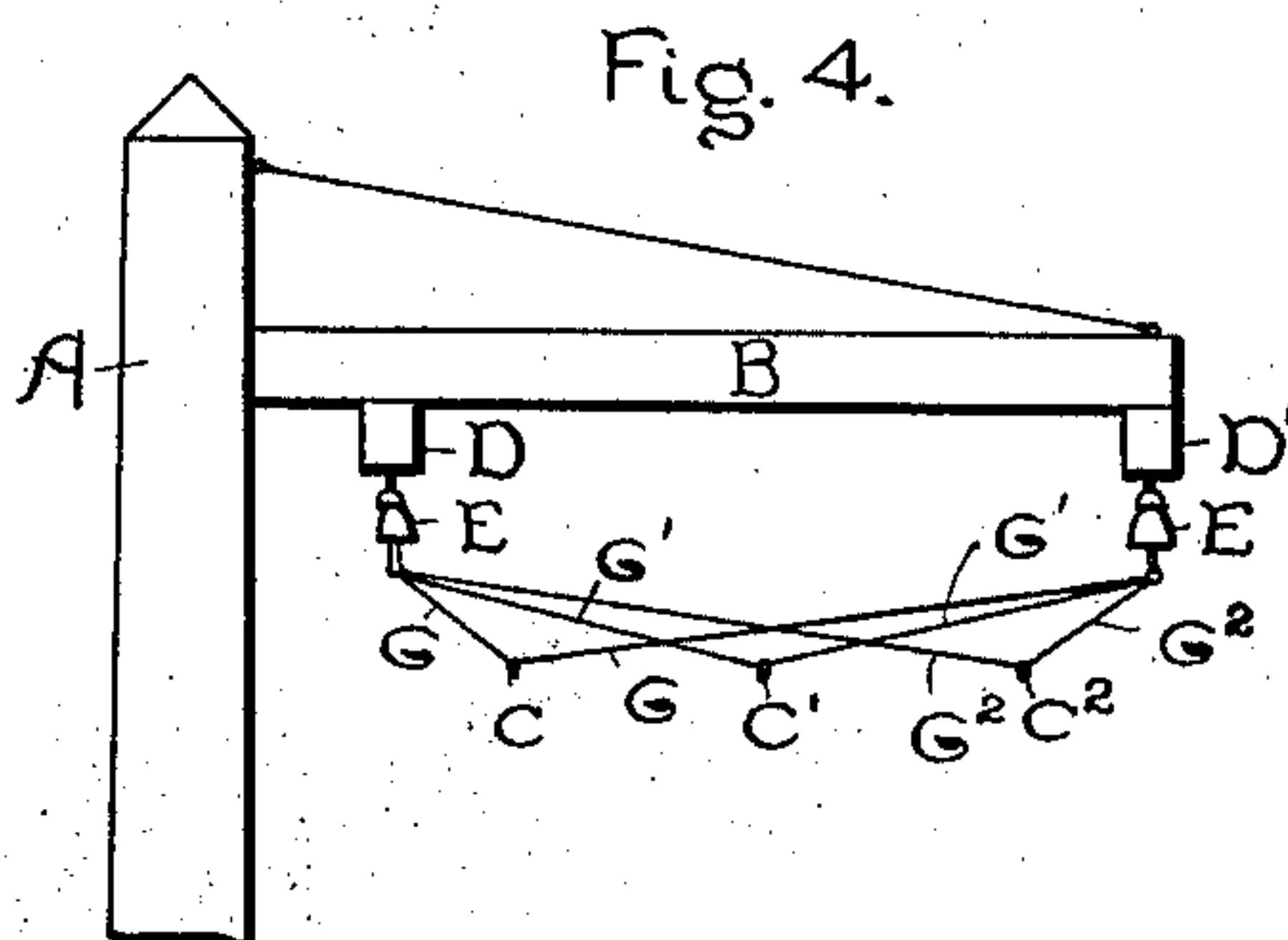
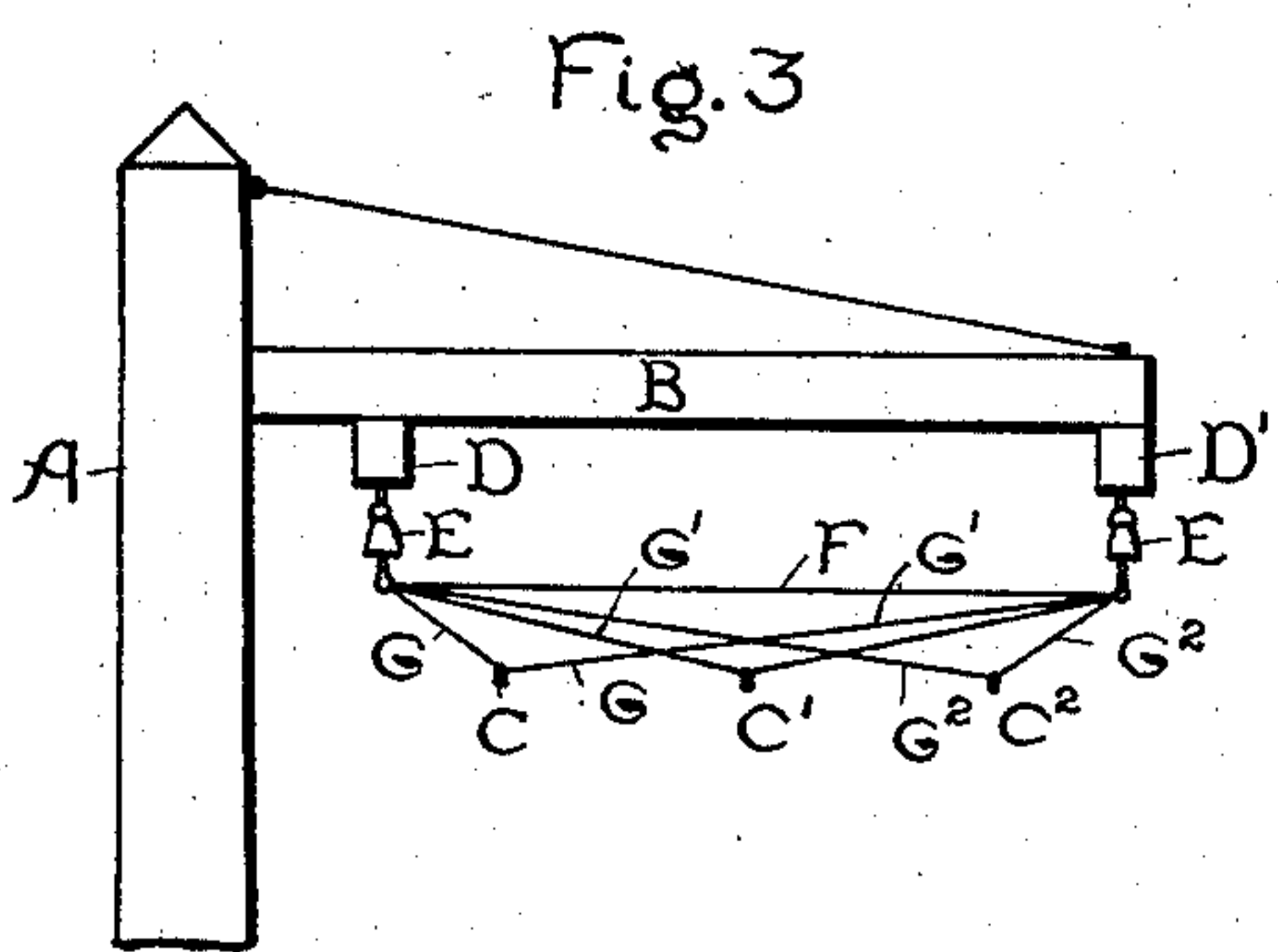
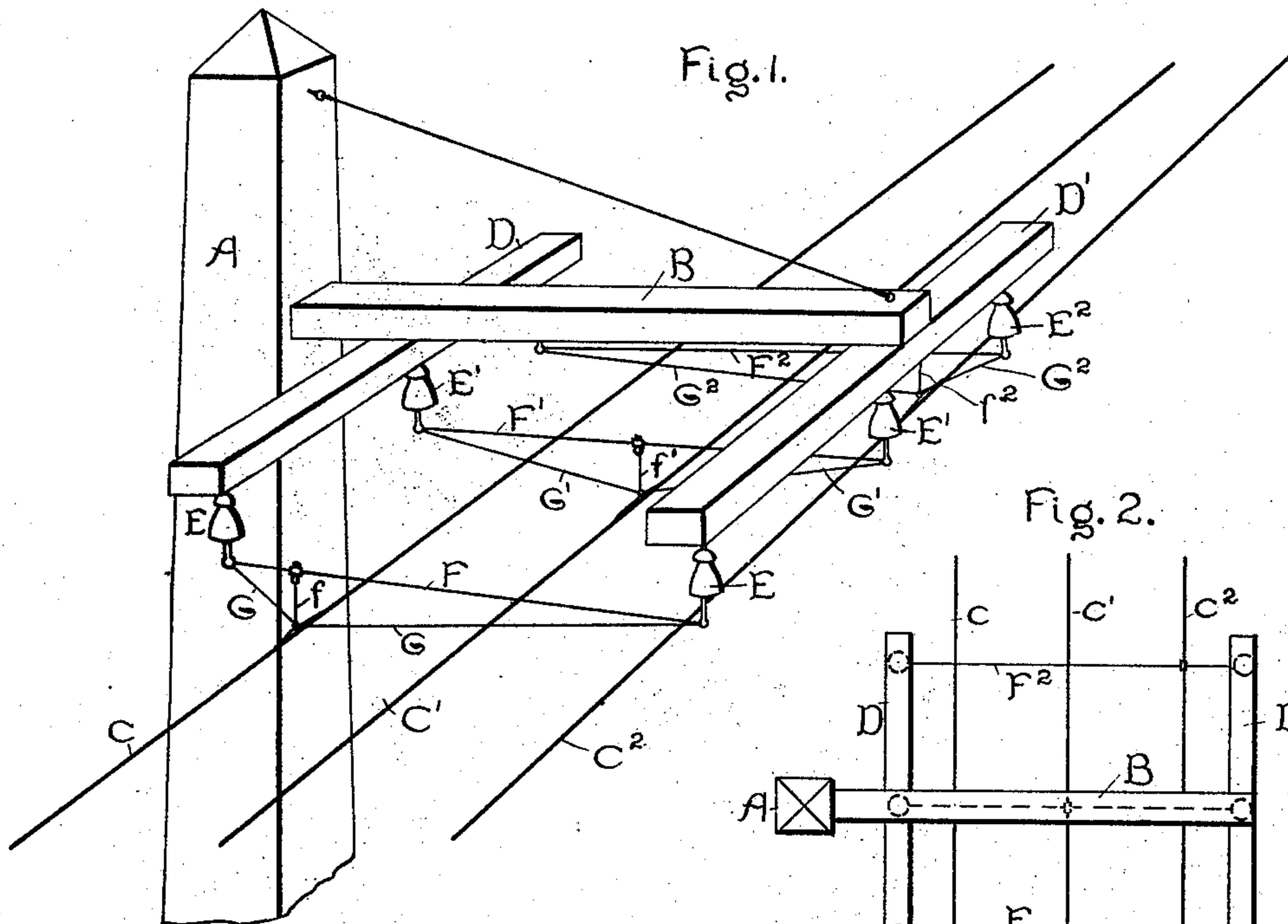
No. 717,324.

Patented Dec. 30, 1902.

A. F. BATCHELDER.  
SUPPORT FOR HIGH TENSION TROLLEY WIRES.

(Application filed July 24, 1901.)

(No Model.)



Witnesses.

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# UNITED STATES PATENT OFFICE.

ASA F. BATCHELDER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

## SUPPORT FOR HIGH-TENSION TROLLEY-WIRES.

SPECIFICATION forming part of Letters Patent No. 717,324, dated December 30, 1902.

Application filed July 24, 1901. Serial No. 69,488. (No model.)

*To all whom it may concern:*

Be it known that I, ASA F. BATCHELDER, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Supports for High-Tension Trolley-Wires, (Case No. 2,167,) of which the following is a specification.

This invention relates to devices for suspending trolley-wires, and especially those conveying currents of high tension, such as are used in three-phase alternating systems.

The object of the invention is to so suspend the three conductors that each shall be independently supported and have a certain degree of flexibility in a vertical plane without running any risk of its coming in contact with the span-wires supporting the other conductors.

In the accompanying drawings, Figure 1 is a perspective view of one mode of carrying out my invention. Fig. 2 is a top plan view thereof. Figs. 3, 4, and 5 are end elevations of modified constructions accomplishing the same purpose.

The invention may be used in connection with any suitable form of trolley-wire support, but when applied to a single-arm trolley-pole A the pole is provided with an arm B, extending out across the two or more line conductors C C' C<sup>2</sup> and having two cross-bars D D' secured to it at points outside of the outer conductors C C<sup>2</sup>. Each cross-bar has a row of insulators E E' E<sup>2</sup> secured to its under side, preferably of the petticoat type, as shown, and corresponding in number with the conductors. The insulators are arranged opposite each other and each pair supports its respective line conductor.

In Figs. 1 and 2 each pair of insulators is connected by a span-wire F F' F<sup>2</sup>, to which at a point immediately over its respective conductor is fastened a hanger *ff'* f<sup>2</sup>, carrying at its lower end a clip or ear, to which the conductor is attached. Guy-wires G G' G<sup>2</sup> run from each clip to the corresponding insulators.

In Fig. 3 the hangers *ff'* f<sup>2</sup> are omitted, and

in Fig. 4 the span-wires also are omitted, the conductors being suspended by the guy-wires only. In Fig. 5 the hangers are omitted and the guy-wires *g g' g<sup>2</sup>* are attached to points on the span-wire instead of to the insulators. In all these modifications it is apparent that each conductor can lift a considerable distance without coming in contact with the guy-wires supporting the other conductors, so that as the conductors are raised by the upward pressure of the trolley they are not liable to become short-circuited.

This invention enables me to use large insulators placed a safe distance apart and to maintain the proper spacing between the line conductors, each having its own span-wire or guy-wires and being thereby maintained constantly in a given position and preferably in the same horizontal plane.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with two or more high-tension line conductors, of a frame carrying two or more pairs of insulators, and suspending-wires between each pair of insulators and their respective conductor.

2. The combination with two or more high-tension line conductors lying in substantially the same plane, of a frame carrying two rows of insulators arranged outside of the line conductors and on opposite sides thereof, and wires connecting each pair of opposite insulators with one of said line conductors.

3. The combination with two or more high-tension line conductors, of two or more insulated span-wires and corresponding guy-wires above said conductors, and connections between each span-wire and its respective conductor.

4. The combination with two or more high-tension line conductors, of a frame supporting two or more pairs of insulators above said conductors, and guy-wires attached to each conductor and supported by the corresponding pair of insulators.

5. The combination with two or more high-tension line conductors, of a trolley-pole, an arm thereon transverse to said conductors,



cross-bars near each end of said arm, insulators depending from said arm, and span-wires and guy-wires connecting each pair of opposite insulators with one of said conductors.

5 6. The combination with two or more high-tension line conductors lying in the same plane, of transverse guy-wires for each conductor disposed considerably above the ad-

jacent conductors, and maintaining a predetermined spacing of said conductors.

In witness whereof I have hereunto set my hand this 22d day of July, 1901.

ASA F. BATCHELDER.

Witnesses:

BENJAMIN B. HULL,  
FRED RUFF.