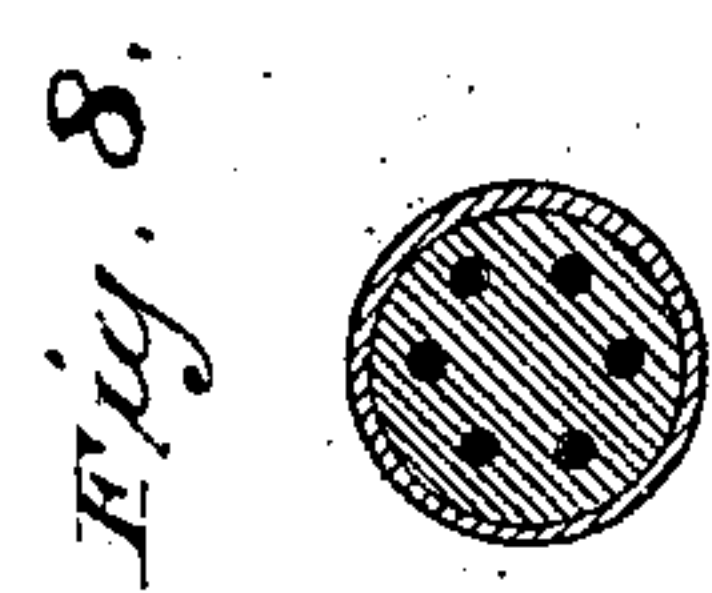
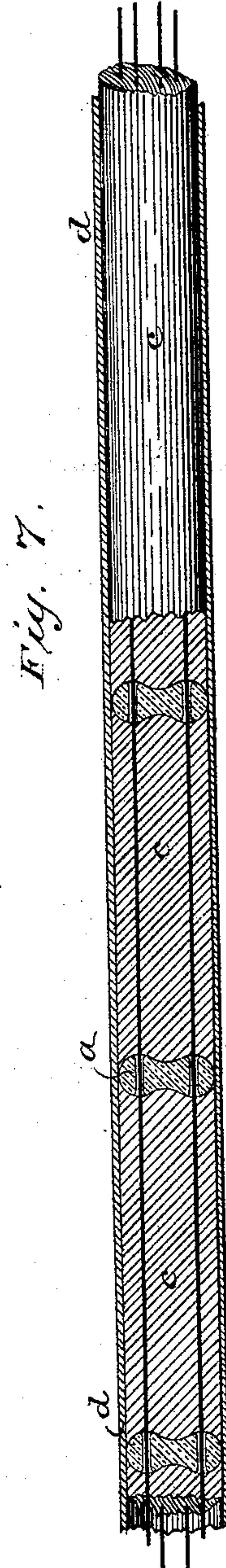
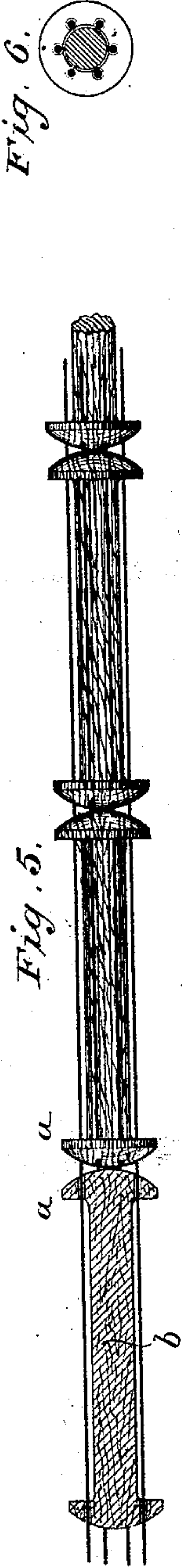
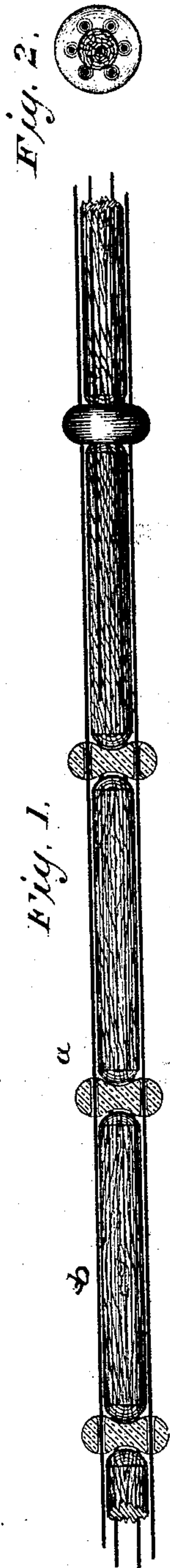
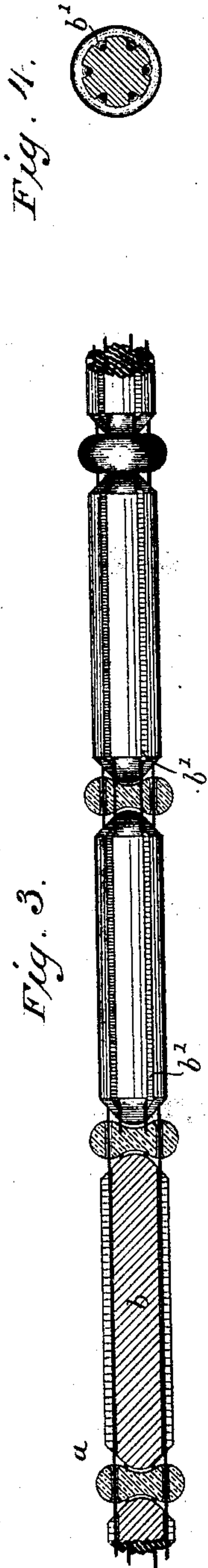


(No Model.)

P. B. DELANY.
ELECTRIC CABLE.

No. 283,763.

Patented Aug. 28, 1883.



WITNESSES

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UNITED STATES PATENT OFFICE.

PATRICK B. DELANY, OF NEW YORK, N. Y.

ELECTRIC CABLE.

SPECIFICATION forming part of Letters Patent No. 283,763, dated August 28, 1883.

Application filed May 19, 1883. (No model.)

To all whom it may concern:

Be it known that I, PATRICK B. DELANY, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Electric Cables, of which the following is a specification.

In Letters Patent No. 266,355, granted to me October 24, 1882, I have shown and claimed an electric cable consisting of a series of wires with continuous round-ended, incombustible, perforated, insulating buttons loosely strung thereon.

My present invention, while in part based upon the subject-matter disclosed in that patent, constitutes certain improvements in construction of cables of that character.

In the accompanying drawings, Figure 1 is a side view, partly in section, of a portion of a cable illustrating one form of my invention; Fig. 2, a transverse section therethrough; Fig. 3, a side view of a portion of a cable also partly in section, showing another form of my invention; Fig. 4, a transverse section therethrough; Fig. 5, a side view of a portion of a cable also partly in section, illustrating another form of the invention; Fig. 6, a transverse section therethrough. Fig. 7 is a side sectional view, showing a modified construction, and Fig. 8 a transverse section therethrough.

In my patent above referred to the round-faced insulating buttons are shown as strung on the wires, so as to rest against each other side by side. I have found, however, that the buttons need not necessarily be in contact on both faces or on either face; but that they may be placed upon the wires at intervals—say, from an inch to two inches, more or less apart—and held at regulated distances from each other by some means interposed between the buttons, or the buttons may be arranged in pairs having their adjacent faces in contact, each pair of buttons being held the proper distance from the other by an interposed spacing or separating medium. By such a construction I produce a practical and efficient cable at a very much reduced cost.

The buttons I employ are incombustible and practically indestructible under all the influences to which a telegraph-cable is subjected, and they are preferably made of glass or por-

celain. The diameter of the buttons may be varied to suit the number of wires; but where six wires are used, as shown in the drawings, a button three-fourths of an inch in diameter will be of ample size. They are preferably made circular in cross-section, and are provided with a corresponding series of apertures or perforations through which the wires of the cable pass.

In Fig. 1 the insulating buttons *a* are formed with concave depressions on each face, and are held apart at suitable intervals by interposed spacing blocks or pieces *b*, which are round on the ends, so as to fit into corresponding concaves in the sides of the buttons. The perforations in the buttons are arranged in a circle concentric therewith, so that the spacing-pieces may be placed as cores within the circle of wires. The spacing-pieces are represented as made of wood, but they may obviously be of any insulating material adapted to the purpose.

In Figs. 3 and 4 a cable of identical construction is illustrated, with the exception that the spacing blocks or pieces *b* are formed with longitudinal grooves or wire recesses *b'*, in which the wires lie. With this construction there will be no liability whatever of the wires between the buttons coming in contact.

In Figs. 5 and 6 I have shown still another means of accomplishing the same result. In these figures the buttons through which the wires are strung are either formed in one piece with, or secured on the ends of spacing blocks *b*, so that when such insulators, which resemble elongated spools, are strung upon the wires, the round-faced buttons will be arranged in pairs with their adjacent round faces resting against each other and held at the proper distances apart by the shank or interposed spacing block or piece *b*. Such insulators as last described may be made of wood or other suitable substance. Cables thus formed are preferably covered with a coating of insulating material—such as *c*, illustrated in Fig. 7—and may be provided with a sheath or covering, *d*, of any suitable character, as shown in that figure; or the cable may be laid in a trough and then covered with insulating material. Cables thus constructed are capable of flexing to conform to the various necessary curves and undulations, and the insulation of the wires is complete

without maintaining them under strain, as is the practice in many cases.

In Figs. 7 and 8 the insulating buttons, which are arranged as shown in Figs. 1 and 3, instead of being separated by spacing-blocks, as just described, may be held at the proper distances apart by a filling or coating of sufficiently tenacious insulating material *c*. The distance between the buttons is so short that the wires cannot come in contact, and their complete insulation is insured without maintaining them under any strain.

Referring again to Figs. 5 and 6, the buttons *a*, the adjacent rounded faces of which rest against each other, instead of being formed with or secured on the spacing-blocks, may be formed with concave depressions in which the round ends of the spacing-blocks rest, as fully illustrated in Figs. 1 and 3.

I claim as my invention—

1. The combination, substantially as set forth, of a series of electric conductors, insulating-buttons strung thereon, and spacing-blocks interposed between the pairs of insulating-buttons to hold them at the proper distance from each other.

2. The combination, substantially as set

forth, of a series of electrical conductors, a series of insulating-buttons formed with circular series of perforations through which the electrical conductors pass, and spacing-blocks placed within the circle of wires and interposed between the pairs of insulating-buttons.

3. The combination, substantially as set forth, of a series of electrical conductors, a series of indestructible insulating perforated buttons loosely strung thereon, and means interposed between the pairs of buttons to hold them in place at the desired distance apart.

4. The combination, substantially as set forth, of a series of electrical conductors, a series of insulating-buttons loosely strung thereon, spacing-blocks interposed between the buttons to hold them at the desired distances apart, and longitudinal grooves in the spacing-blocks in which the wires lie.

In testimony whereof I have hereunto subscribed my name this 7th day of May, A. D. 1883.

PATRICK B. DELANY.

Witnesses:

FRANK W. JONES,
FREDK. P. JONES.