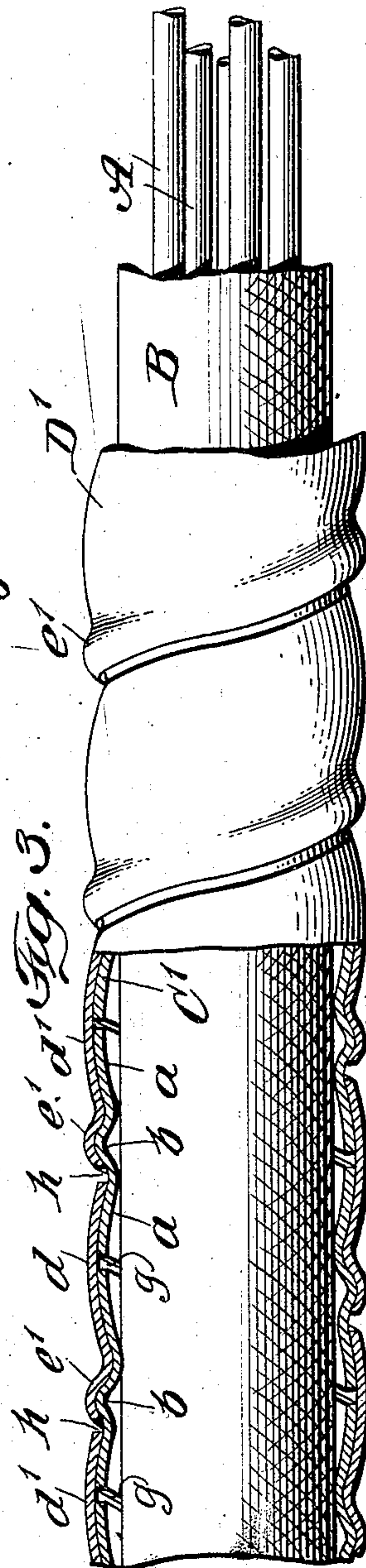
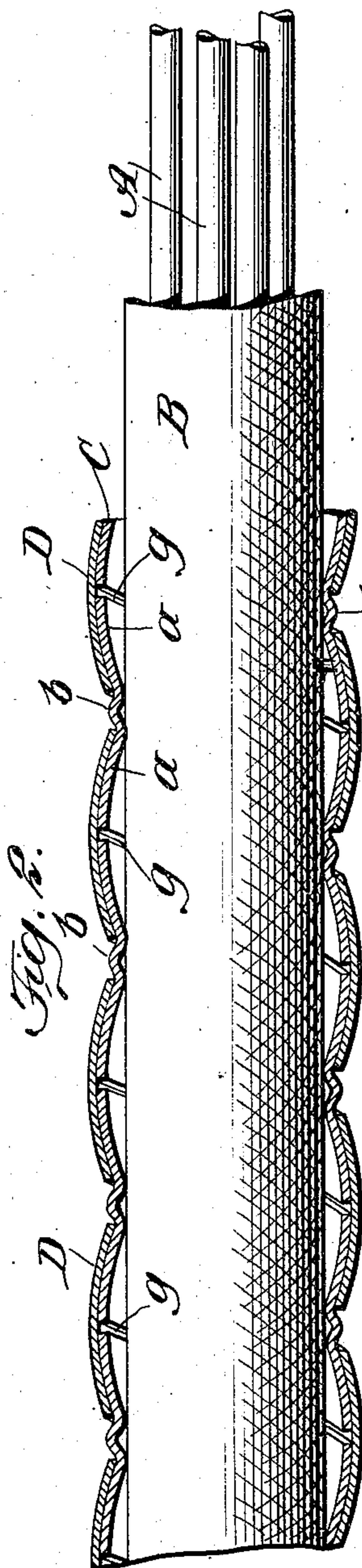
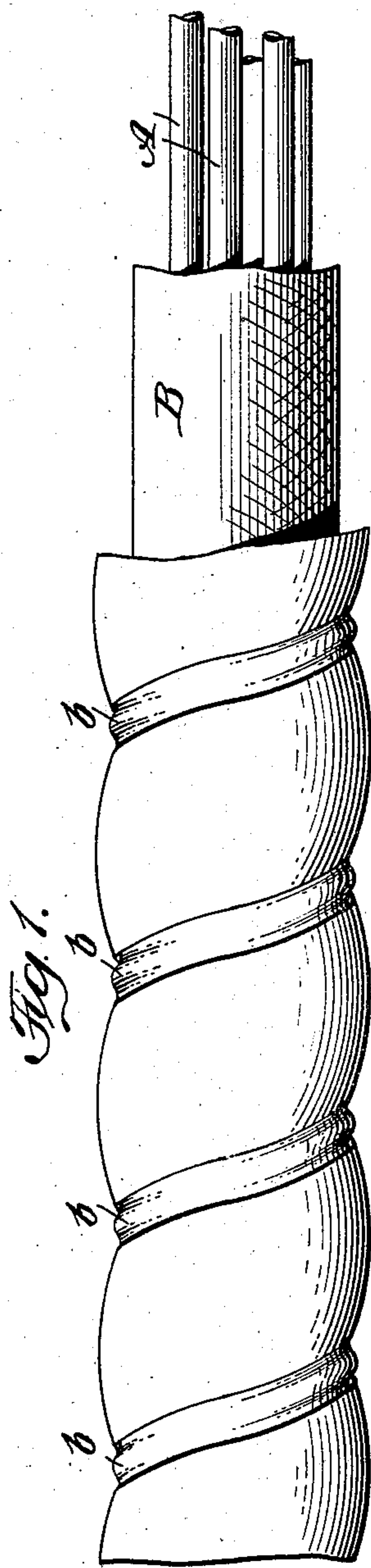


E. D. SPEER.
ARMORED CONDUCTOR.
APPLICATION FILED JUNE 27, 1908.

930,896.

Patented Aug. 10, 1909.



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ARMORED CONDUCTOR.

No. 930,896.

Specification of Letters Patent.

Patented Aug. 10, 1909.

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To all whom it may concern:

Be it known that I, EDWARD D. SPEER, a citizen of the United States of America, and a resident of the city of New York, State and county of New York, have invented certain new and useful Improvements in Armored Conductors, of which the following is a specification.

This invention relates to improvements in armored conductors, by which term is meant properly insulated electric conductors having metallic sheaths outside the insulation to protect said insulation from injury.

Some effective means of protecting the insulation of electric conductors from accidental injuries, such as the driving of nails, gnawing of rodents, and other injuries, is now recognized to be of great importance in the electric wiring of buildings, ships and other structures; for experience shows that the insulation is liable to injury from many causes unless properly protected, and that fires are liable to occur because of the injury to the insulation; and it is not too much to say that, in the view of the underwriters, proper protection of the insulation of electric conductors is one of the most important matters in practical electrical installation.

The present invention aims to provide a conductor with adequate protection for the insulation, within reasonable limits of cost, and having the necessary flexibility to permit of all requisite curvatures of the electric conductors when being installed.

The armor consists essentially of two spiral metal strips inclosing and protecting the insulated conductor, and forming one therewith, the outer metal strip covering and closing the joints of the inner metal strip; and it is the essential feature of this invention that each strip shall be so curved or corrugated that the outer strip will have a true and smooth working fit on the corrugation of the inner strip; so as to work smoothly thereon when the conductor is deflected, without scraping or cutting either strip. The fit of the outer upon the inner strip is so smooth and true, that I term it a "ball bearing" fit, thereby indicating that the two strips fit each other and move relatively to each other with much of the smoothness of a ball in its bearing. The aforesaid smooth and true fit of the strips one on the other is especially advantageous when the said strips are galvanized, which is now the case with practically all armored

conductors, since experience has shown that the galvanizing is necessary to prevent the rusting and deterioration of the armor. When however, the said strips are galvanized, a smooth and true fit of one strip on the other is indispensable to prevent injury to the galvanizing from the strips scratching or cutting the galvanized surface. It is, moreover, necessary that the shape of the strips be such that the manufacturing and bending of the strips to the desired shape shall not injure the galvanizing; and for the first time in this art this invention satisfies all these conditions.

As the invention is not limited to any precise curvature of the strips, it can manifestly be embodied in strips of various curvatures, provided that the fit of the outer strip upon the inner is smooth and true; and therefore I illustrate in the drawings which accompany the specification and hereinafter describe several modifications of the said strips, all embodying my said invention.

Referring to the said drawings to aid the description, Figure 1 is a broken elevation of an armored conductor with one form of the invention; Fig. 2 is a broken section and elevation of the same, particularly illustrating the strips of the armor in section; and Fig. 3 is a broken section and elevation of an armored conductor embodying another form of the invention, and particularly illustrating the modification of the armor in section. For the sake of clearness all said figures are represented upon a relatively large scale.

Referring to Figs. 1 and 2, A being any electrical conductors, one or more in number, and B the insulation thereof, the armor is composed of two spirally wound metal strips, C and D respectively. Said inner strip C is formed in any suitable manner with longitudinal corrugations, $a-b-a$, said corrugation b being in effect a bead between said corrugations $a-a$. Said inner strip C is spirally wound tightly upon said insulation B, and so as to leave open slits or joints g between adjacent edges of said strip, to permit of bending or deflecting the armored conductor as occasion may require when installing the same. Outside of said inner strip C is spirally wound the outer strip D, so as to cover the aforesaid slit g , and the curvatures of said strip D and the said corrugations $a-a$, as well as the curvature of the corrugation b of said strip C, are such

that said strip D has a true and smooth working fit on said strip C, so that said strips may move relatively to each other, whenever the armored conductor is bent or deflected, smoothly and without either strip catching on or scratching or injuring the other strip; and said outer strip D is of such width, and is so positioned on said inner strip C, that it can move thereon with proper freedom when the armored conductor is bent or deflected.

Referring to Fig. 3, A being the conductors and B the insulation, the inner strip of armor, C', may, if desired, be of the same form as is shown in Figs. 1 and 2, and with the bead *b* and corrugations *a-a* as shown. But the outer strip D' of said armor is formed with a lip or corrugation *e'* at one side of the corrugation *d'*, and said outer strip D' is wrapped spirally outside of said inner strip C' in such position that the said corrugation *d'* covers the slit *g* between the adjacent edges of said inner strip C' and the said lip *e'* partly covers the bead *b* of said inner strip, and both the said strips C', D', are so shaped that said outer strip D' has a true smooth working fit on said inner strip as shown in Fig. 3 and hereinbefore explained, and it will be understood that the said slit *g* and the slit *h*, between the adjacent edges of the outer strip, will be of sufficient width to permit of any desired deflection of the armored conductor. It will be seen that the construction illustrated in Fig. 3 provides a double armor at every point, except at the narrow slits, and therefore affords additional protection against injury to the insulation, from nails, rodents and other causes.

Now having described my improvements I claim as my invention.

1. In an armored conductor, a flexible protective covering for the insulation consisting of two metallic strips, the inner of said strips being corrugated and beaded longitudinally and the outer of said strips having a longi-

tudinal corrugation of relatively greater width and lip of relatively less width adapted to true and smooth working fit on the corrugations and beads of said inner strip and over the joint between the adjacent edges of said inner strip, substantially as described.

2. In an armored conductor, a flexible protective covering for the insulation consisting of two longitudinally corrugated metal strips arranged one on the other so as to constitute practically a double armor, the inner strip being provided with relatively wide corrugations and relatively narrow beads between said corrugations and the outer strip having a smooth true working fit on the corrugations of the inner strip, substantially as described.

3. In an armored conductor, the combination of a flexible galvanized metallic inner tubular strip provided with relatively wide corrugations and relatively narrow beads between said corrugations, and a flexible galvanized metallic outer tubular strip provided with corrugations fitting smoothly on said relatively wide corrugations of said inner strip, substantially as described.

4. In an armored conductor, the combination of a flexible galvanized metallic inner tubular strip provided with relatively wide corrugations and relatively narrow beads between said corrugations, and a flexible galvanized metallic outer tubular strip provided with corrugations fitting smoothly on said relatively wide corrugations of said inner strip, and with lips fitting smoothly on said beads of the said inner strip, substantially as described.

Signed at New York city this 25th day of June 1908.

EDWARD D. SPEER.

Witnesses:

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