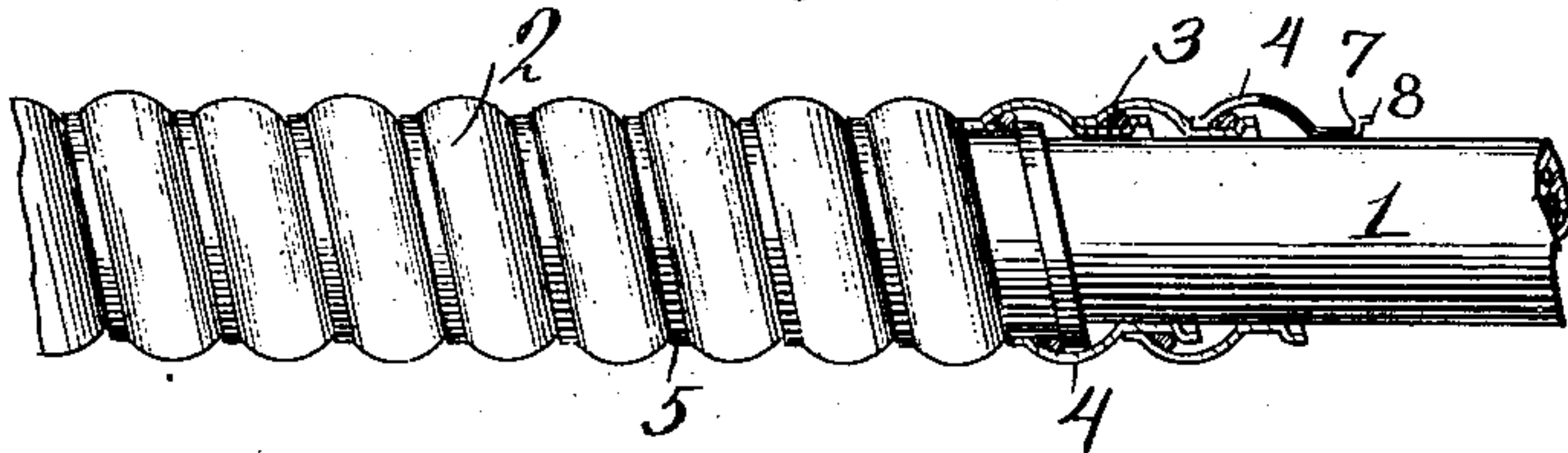


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TUBING.  
APPLICATION FILED OCT. 3, 1908.

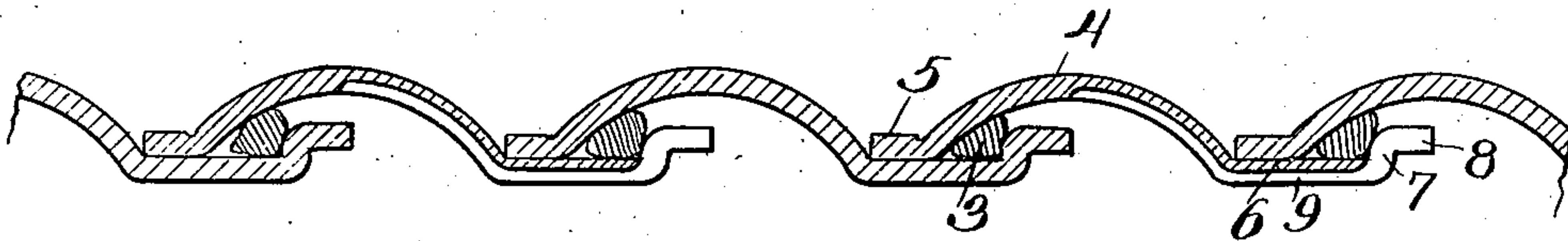
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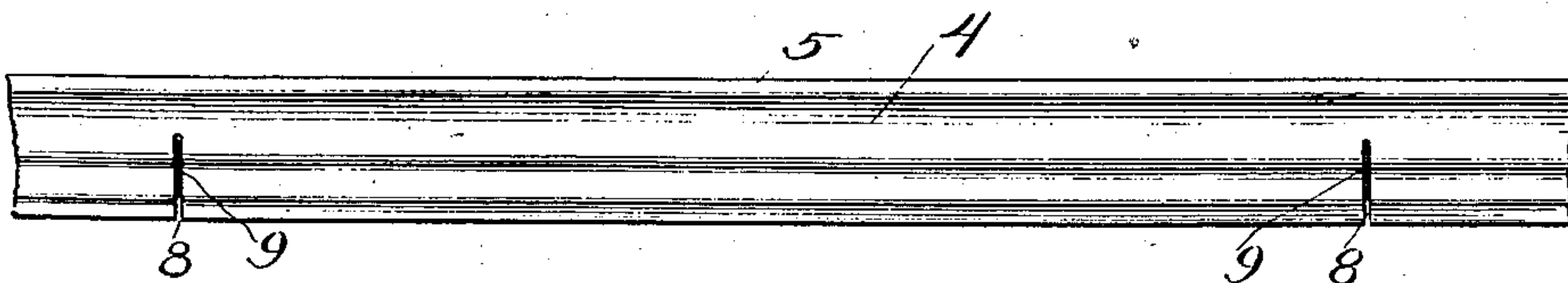
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



WITNESSES:

*W. Edwards.*  
*J. Bartlett.*

INVENTOR

*Edward T. Greenfield*  
BY *J. Edwards*  
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# UNITED STATES PATENT OFFICE.

EDWIN T. GREENFIELD, OF KIAMESHA, NEW YORK.

## TUBING.

938,575.

Specification of Letters Patent.

Patented Nov. 2, 1909.

Application filed October 3, 1908. Serial No. 458,076.

*To all whom it may concern:*

Be it known that I, EDWIN T. GREENFIELD, a citizen of the United States, residing at Kiamesha, in the county of Sullivan and State of New York, have invented a certain new and useful Improvement in Tubing, of which the following is a specification.

This invention relates to tubing consisting of spirally-formed strip-metal, and has reference more particularly to such tubing when used as armoring for electric conductors.

In installing armored electric conductors in buildings, it is frequently necessary to remove the armoring from the conductors along a portion of the length of the conductors, as, for instance, in baring the end of a conductor in order to make a connection thereto. When the armoring consists of a single strip of sheet-metal wound spirally so as to form a series of interlocking, relatively movable convolutions, such removal of the armoring from one end of the armored conductor may be readily accomplished by merely unwinding the spirally formed strip from the conductor, this operation being known as "stripping"; but at the other end, the armoring cannot be so stripped, since the end spiral is held in place by the underlapping portion thereof which underlies the edge of the next adjacent spiral. The armoring at this end of a conductor has sometimes been removed by cutting the armoring at the desired point, as, for instance, by means of a hack-saw, and then unwinding it from this out to the end; but this practice has been strongly condemned, because of the danger of breaking and possibly cross-connecting the conductors, by the saw passing through the insulation and engaging the conductors.

The object of my invention is to provide an armoring so constructed that it may be readily removed at either end of a conductor without danger of injury to the conductors, and this without appreciably reducing the strength of the armoring.

In accordance with the invention, I provide weakened portions in the strip employed for the armoring, at intervals throughout its length, such that the completed armoring may be readily severed at these weakened portions and the armoring unwound from the point where it is thus severed. The weakened portions may be cuts passing entirely through the strip at

one edge thereof, or the strip may be merely indented, such indentations being of sufficient depth to permit of readily rupturing the strip along the line of the indentation. The strip is thus weakened at one edge thereof only; that is, at the edge which forms the underlapping portion of the spirals; preferably, it extends a slight distance farther than this underlapping portion of the strip, so that the positions of the weakened portions may be readily detected from the exterior of the tubing.

I have illustrated the preferred embodiment of my invention in the accompanying drawings, in which—

Figure 1 is a sectional elevation of a length of armored conductor, Fig. 2 is a section of a portion of the armoring thereof, and Fig. 3 is a bottom view of a portion of the strip of the armoring.

Referring to these drawings, 1 indicates an insulated electric conductor, provided with an armoring 2, consisting of a strip of sheet-metal curved transversely and then wound spirally so as to form a series of spirals each interlocking with and movable relatively to the spirals adjacent thereto. In forming the armoring, a gasket 3 may be led in between adjacent spirals. The lateral curvature which the strip is given may be varied as desired, though that which I have shown is well adapted for this use. In the drawings, the strip is shown as provided with a central overlapping portion 4, an extension 5 at the edge of this portion, an underlapping portion 6 at the opposite edge of the overlapping portion 4, and a flange 7 at the edge of the underlapping portion 6. When a strip thus curved laterally is formed into a series of convolutions, the adjacent convolutions may move one relatively to another and will be interlocked against excessive movement by the coaction of the flanges 7 with the flanges at the junction of the central portion 4 and extension 5.

Before spiraling the strip, I provide weakened portions therein at intervals throughout the length of the strip. These weakened portions may extend entirely across the strip, but I prefer to make them of such size that they extend only across that part of the strip which forms the underlapping portions of the spirals, or a little in excess of this so that the weakened portions extend a short distance into the part of the strip which forms the central or overlapping portion.



The weakened portions may be formed in various ways, as by cutting entirely through the metal at one edge of the strip or by indenting the metal along a line extending transversely of the strip, such indentation extending but a portion of the way through the strip. In the drawings, I have shown a combination of these two methods of providing the weakened portions, the strip being cut entirely through at its underlapping edge as shown at 8 and indented on its under side from this cut over a slight distance into the central or overlapping portion 4 as shown at 9. The position of the indentation shows on the exterior of the armoring or the outer side of the strip as a low ridge is formed along the line of the indentation or the surface of the metal is scored by the blow which formed the indentation on the opposite side. The spacing of the indentations along the strip may be varied as desired; in practice, I find it sufficient to so space them that every alternate spiral has a weakened portion therein as shown in Fig. 2. With armoring thus formed, the removal of the armoring from a length of the conductor may be readily accomplished without danger of injury to the conductors. The position of the weakened portion nearest the point at which it is desired to sever the armoring may be easily seen on the surface of the overlapping portion 4. From the end of this weakened portion to the edge of the strip at the flange 5, the metal may be readily severed, as by means of a hack-saw, without danger of injury to the conductors since the conductors are protected while making this cut by the underlapping portion of the next adjacent spiral which underlies the cut. This being done, the strip is severed or the remaining portion thereof may readily be severed because it has been so weakened by the indentation and the armoring may be stripped by unwinding it from the cut back to the desired point.

Having now described my invention, what I claim as new therein and desire to secure by Letters Patent is as follows:—

1. A tubing consisting of a single strip of sheet-metal spirally formed with a portion of each spiral underlapping the next adjacent spiral, said strip having the underlapping edge thereof weakened at intervals throughout the length of the strip, substantially as set forth.

2. A tubing consisting of a single strip of sheet-metal spirally formed with a portion of each spiral underlapping the next adjacent spiral, said strip having the underlapping edge thereof weakened at intervals throughout the length of the strip on lines extending from the underlapping edge toward the other edge, substantially as set forth.

3. A tubing consisting of a strip of sheet-

metal formed spirally with each convolution overlapping and interlocking with the convolution adjacent thereto, the strip for said tubing being weakened at intervals, substantially as set forth.

4. A tubing consisting of strip-metal formed spirally with each convolution lapping and interlocking with the convolution adjacent thereto, the underlapping portions of certain of the convolutions being cut or weakened so that they may be readily ruptured, substantially as set forth.

5. A tubing consisting of strip-metal formed spirally with each convolution lapping and interlocking with the convolution adjacent thereto, the underlapping portions of certain of the convolutions being cut or weakened so that they may be readily ruptured and the positions of said cuts or weakened portions being indicated upon the exterior of the tubing, substantially as set forth.

6. A tubing consisting of a strip of sheet-metal formed spirally with one edge of each convolution overlapping and the other underlapping the edges of the adjacent spirals, said strip being cut or weakened so that it may be readily ruptured at intervals from its underlapping edge to a point beyond the overlapping edge of the adjacent spiral, substantially as set forth.

7. A tubing consisting of a sheet-metal strip curved transversely and wound spirally to form a series of interlocking, relatively movable convolutions, the underlapping portions of certain of said convolutions being cut or weakened and the overlapping portions being marked to indicate the positions of said cuts or weakened points, substantially as set forth.

8. A tubing consisting of a sheet-metal strip curved transversely and wound spirally to form a series of interlocking, relatively movable convolutions, certain of said convolutions being cut or weakened and said cuts or weakened points extending across the underlapping portions and a part of the overlapping portions of said convolutions, substantially as set forth.

9. A tubing consisting of a sheet-metal strip curved transversely and wound spirally to form a series of interlocking convolutions each underlapping at one edge thereof the next adjacent spiral, said strip having weakened portions therein at intervals extending from the underlapping edge of a spiral transversely of the strip to a point adjacent to the underlapping edge of the next adjacent spiral, substantially as set forth.

This specification signed and witnessed this 28th day of Sep., 1908.

EDWIN T. GREENFIELD.

Witnesses:

WM. T. RUETE,

HARRY H. HORNSBY.