

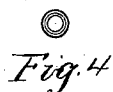
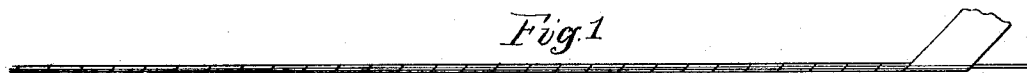
(No Model.)

2 Sheets—Sheet 1.

W. R. PATTERSON.  
MANUFACTURE OF ELECTRIC CABLES.

No. 544,372.

Patented Aug. 13, 1895.



Witnesses;  
George L. Cragg.  
Edith M. Arnold.

Inventor.  
William R. Patterson.  
By Barton & Brown Att'ys

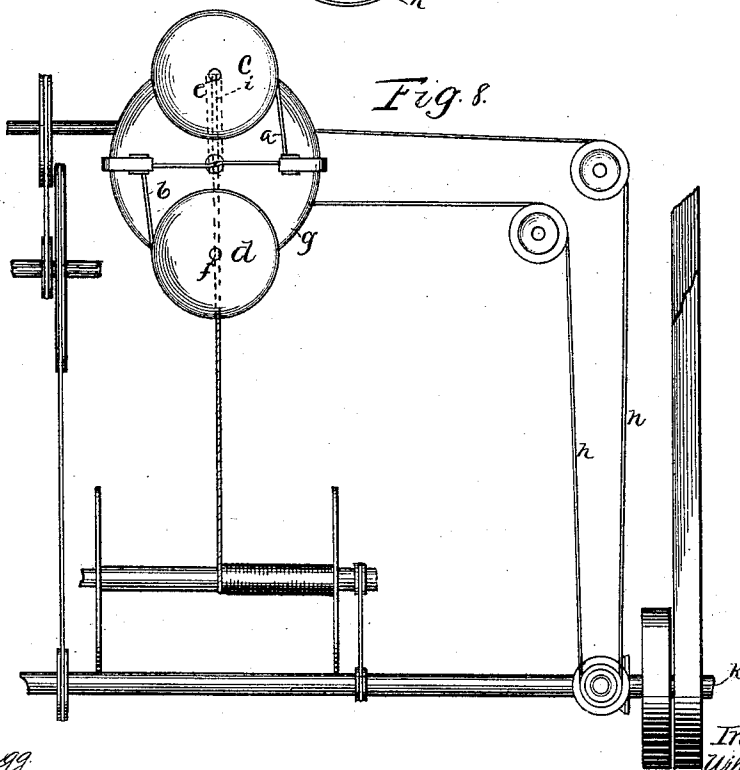
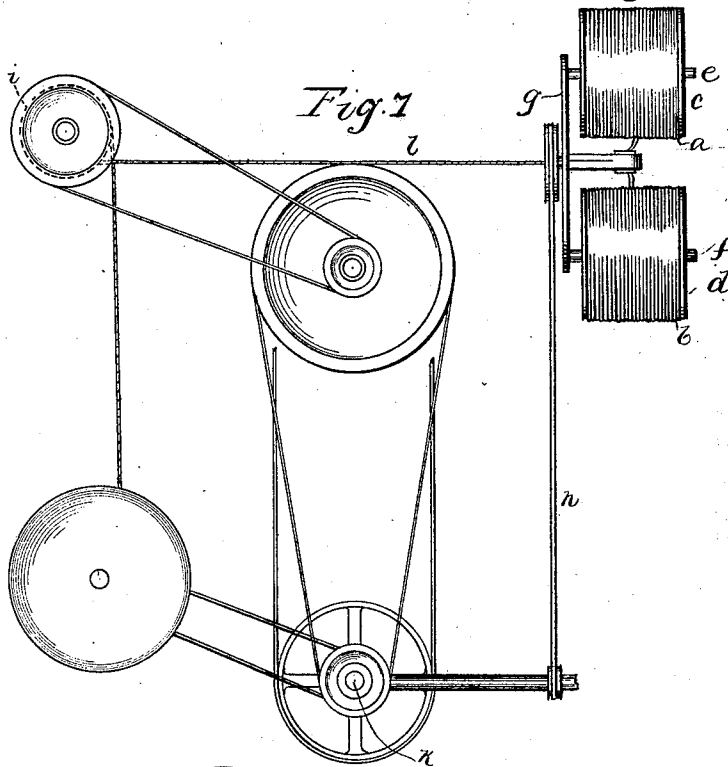
(No Model.)

2 Sheets—Sheet 2.

W. R. PATTERSON.  
MANUFACTURE OF ELECTRIC CABLES.

No. 544,372.

Patented Aug. 13, 1895.



Witnesses  
George L. Cragg  
Edith M. Arnold

Inventor:  
William R. Patterson.  
By Barton Brown  
Atty's

# UNITED STATES PATENT OFFICE.

WILLIAM R. PATTERSON, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN  
ELECTRIC COMPANY, OF SAME PLACE.

## MANUFACTURE OF ELECTRIC CABLES.

SPECIFICATION forming part of Letters Patent No. 544,372, dated August 13, 1895.

Application filed August 24, 1891. Serial No. 403,598. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM R. PATTERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in the Manufacture of Electric Cables, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to the manufacture of telegraph-cables, and its object is to place the paper tape constituting the insulating covering or clothing of the wires loosely about the conductors, so that there may be an air-space next to the wires, thereby reducing the electrostatic capacity of the cable as compared with cables heretofore made, in which the paper has been wound tightly upon the conductor.

My invention will be more readily understood by reference to the accompanying drawings, in which—

Figure 1 is an elevation showing a wire with a single paper tape wound tightly thereon. Fig. 2 is a sectional view thereof. Fig. 3 is a view of a wire having two layers of paper tape wound tightly thereon. Fig. 4 is a sectional view thereof. Fig. 5 is an elevation of a strand of two wires twisted together in a direction to partially unwind the tape previously wound thereon, so as to form the loose paper covering constituting the essential feature of my invention. Fig. 6 is a sectional view thereof. Fig. 7 is an end view of a twisting-machine by means of which the wires may be twisted together to constitute a strand such as shown in Fig. 5. Fig. 8 is a front view of the same machine.

In practice I first insulate the wire with one or more windings of paper tape, as shown in Figs. 1 and 2 or in Figs. 3 and 4, it being essential that when two or more layers of tape are used they shall be wound in the same direction, as shown in Fig. 3. It is evident that if a wire covered with tightly-wound paper tape, as shown in Figs. 1 and 3, is twisted in a direction to untwist the paper tape the paper covering will be loosened, so that the wire will be, so to speak, in a loosely-fitting tube. I find it more convenient, however, to loosen

up the winding paper tape at the same time and by the same means with which the wires are formed into pairs or strands. Thus, as shown in Fig. 5, the two wires *a* and *b* constituting the strand have been twisted together and in a direction so that the paper covering on each has been loosened. A machine suitable for doing this work is shown in Figs. 7 and 8. This machine is a wire-twisting machine suitable for laying up wires in pairs and at the same time twisting them in any direction. The wires *a b* to be formed into the strand are placed upon bobbins *c d*. These bobbins turn loosely upon the studs *e f*, the studs being fast in the plate *g*, this plate *g* being given a rotary movement by the belt or sprocket-chain *h*. The pulley *i*, by suitable connections with the driving-shaft *k*, is turned in a direction to draw the strand *l*, formed from the wires *a b*, off from the bobbins. These wires *a b* have the tape covering wound tightly thereon in the same direction. When these two wires *a b* are twisted together, as shown, in a direction opposite to that in which the tape is wound thereon, they will be formed into a strand having the covering of the individual wires loosened or partially untwisted, so that there will be an air-space next to the wire. Cables formed of wires having loose paper covering thereon, as described, I have found of very low static capacity.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The method of insulating electric conductors and forming the same into cables, which consists in spirally winding tightly upon the individual wires the paper tape, and then bunching the insulated wires together, the wires being placed in position to bring the individual winding of tape upon each in the same direction and then twisting the wires in mass in a direction opposite that of the winding of the tape to partially untwist and thereby loosen the individual windings in the act of forming the strands into a cable, whereby air spaces are formed next to the wires thereby reducing the electrostatic capacity of the cable, substantially as and for the purpose specified.

2. The combination with two or more conductors, of a flat paper tape wound spirally around each of said conductors, the tape being wound about the several conductors in  
5 the same direction, said conductors being twisted together to form the cable, the twist being in a direction opposite to that in which the tape is wound about the several conductors; whereby the tape wound about each con-

ductor is loosened to form air spaces about the individual conductors, substantially as described.

In witness whereof I hereunto subscribe my name this 18th day of July, A. D. 1891.

WILLIAM R. PATTERSON.

Witnesses:

EDITH M. ARNOLD,

GEORGE L. CRAGG.