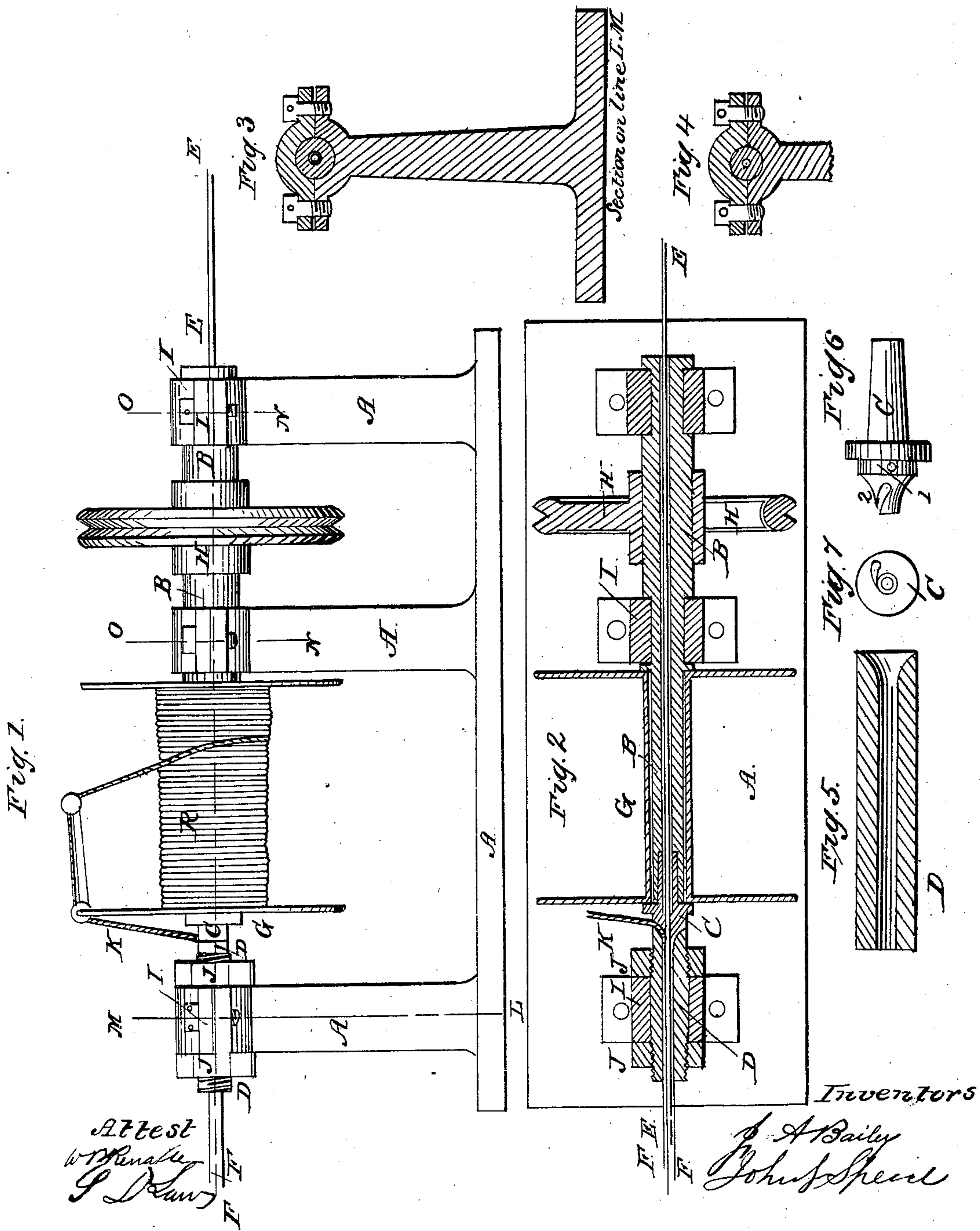


BAILEY & SPEED. Telegraph-Wire Insulator.

No. 42,040.

Patented March 22, 1864.



UNITED STATES PATENT OFFICE.

JOHN A. BAILEY, OF BROOKLYN, NEW YORK, AND JNO. J. SPEED, OF GORHAM, MAINE.

IMPROVEMENT IN MACHINES FOR COVERING WIRES FOR TELEGRAPHS.

Specification forming part of Letters Patent No. 42,040, dated March 22, 1864.

To all whom it may concern:

Be it known that we, JOHN A. BAILEY, of Brooklyn, Kings county, and State of New York, and JOHN J. SPEED, of Gorham, Cumberland county, and State of Maine, have invented a new and improved mode or process of covering or incasing wire for telegraphic and other purposes with twine, cordage, and other similar covering; and we do hereby declare that the following is a full, clear, and exact description thereof, and of its construction and mode or manner of operation, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

The nature or character of our invention consists in so covering or incasing wire to be used for telegraphic and other purposes with any material capable of being made into twine or cordage or capable of being wound around a wire that the article used as a covering shall be compressed into a firm, solid mass, so hard and compact as to resist the action of moisture upon it, at least for a considerable length of time, and thus improve the insulation of the wire.

Figure 1 is an elevation of a machine adapted to cover wire with twine and also compress the covering so as to make it hard and compact to resist moisture. Figs. 2, 3, 4 are sectional views of the same. Figs. 5, 6, 7 are views of detached parts.

The machine has three or more supports, A A, to sustain the reel R, pulley H, and covering-tubes C and D. The wire F, which is to be covered, passes lengthwise through the center of the machine. The tubes C and D are metallic, and the latter is stationary and is fixed and held in the framing or clamps J. J. The tube C is what may be termed the "compressing-tube," and is revolved around the wire F by the action of the wheel H, with which it is connected. One end of this tube C is of an auger-like shape, (shown more fully in Fig. 6,) and this end is so fitted to the end of the stationary tube D that it will, as it is revolved by the wheel H, compress the twine or cordage while being wound around the wire both endwise or longitudinally and spirally to any degree of compactness or solidity desired or required. The action of the tube C to compress the twine or cordage upon

the wire is controlled and regulated by the speed with which the wire F is allowed to pass through the machine and tube. If its passage is retarded the tube C will compress the covering more closely, while if the wire passes more quickly the covering will be less firmly compressed. The speed of the passage of the wire may be regulated by friction upon the wire or by any device which will act upon the wire so that its movement can be governed and controlled as desired.

The action or operation of the machine in winding and compressing the cord or twine upon the wire is substantially as follows: The twine, either unsaturated or after it has been saturated with any non-conducting substance, having been wound upon the reel R, passes through a guide and then through the eye 1 and along the groove 2 in the end of the tube C. (Such eye and groove are shown more plainly in Figs. 6 and 7.) The end of the tube C being made to fit within the mouth of the stationary tube D, the groove 2 is to be deep and large enough to receive the cord or twine which is to be wound upon the wire, so that the twine will not be cut nor interfere with the action of the tube C. That part of the tube C fitting within the tube D has also a flat face or end, to act against the cord as it is wound upon the wire and thus compress it longitudinally. The cord or twine being wound a few times around or fastened to the wire, motion or revolution is imparted to the tube C, and as this revolves it both winds the cord or twine around the wire and also at the same time with its flat face or end compresses the twine as it is being wound, and thus continually drives or pushes the wire through the tube D.

It will be readily perceived that if the wire is allowed to pass freely through the tube, that the twine will be but very little compressed; but if the movement of the wire is retarded by any device, as friction or the like, the cord or twine will be compressed in proportion as the movement of the wire is retarded.

In order to insure the successful operation of such a machine for covering wire and compressing its covering, the wire should first be passed through a straightening machine or some mechanism to take out all short bends, and the wire so straightened may be then taken

directly from one reel and wound upon another as fast as covered.

The several parts of the mechanism above described, and represented in the drawings are substantially like those heretofore found in machines for winding wire, except as to the construction and application and arrangement of the two tubes C and D, the one for compressing the twine or covering upon the wire and the other for receiving and delivering the wire when wound and compressed. Other machines may, however, be devised and arranged for winding wire and compressing the covering, either while being wound or afterward. The particular form or arrangement of mechanism used is not, however, so material, the compressing of the twine, cordage, &c., about and upon the wire so as to surround it with a covering which shall be impervious to moisture for at least a considerable length of time being the important feature of our invention.

The twine, cordage, &c., used to cover the wire may be saturated previous to being wound and compressed about the wire with any non-conducting material, or it may be wound and compressed before saturation and then saturated or covered with any such non-conducting substance or material. It will, however, probably be found most advisable to partly saturate the twine or covering before it is wound and compressed upon the wire and then saturate or cover the whole after the covering has been so wound and compressed with a like material.

We are aware that twine or cordage has been wound spirally around wire, and has also been plaited or braided around it in various ways, and then, for the purpose of insulation, that wire so enveloped has been covered with some non-conducting substance or material; but when so covered the insulation has consisted in the use and application of the non-conducting substance with which the twine, cordage, &c., was coated, and if such coating cracked or checked by exposure to the atmosphere, as it is very liable to do, or from the

bending of the wire, the insulation immediately became defective.

By our method of covering wire, insulation is rendered complete by making the covering of the wire impervious to moisture by compressing such covering into a solid coating so hard and compact as to resist, at least for a considerable length of time, the action of the moisture of the atmosphere, and this even without saturating the fibrous or other covering with any non-conducting material. The insulation will, however, be made more perfect and the covering rendered more durable by saturating such twine, &c., with some non-conducting material before the winding and compression.

Twine, cordage, or any material capable of being compressed so as to form a firm, solid mass about the wire may be used to cover the wire, as described.

The movement of the wire is to be such or so regulated that the compression of the covering will be sufficient to form it into a solid mass, to be impervious to moisture, as above set forth.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The compression longitudinally, in conjunction with the winding spirally upon the wire, of any fibrous material, such as flax, hemp, jute, cotton, or other substance capable of being made into cordage, and whether saturated or unsaturated with any non-conducting substance, for the purposes set forth.

2. The screw-shaped cylinder C, in combination with the receiving-cylinder D, or their equivalent, for the purpose of winding and compressing the cordage upon the wire, for the purposes set forth.

J. A. BAILEY.
JOHN J. SPEED.

Witnesses:

W. R. RONALDS,
S. D. LAW.