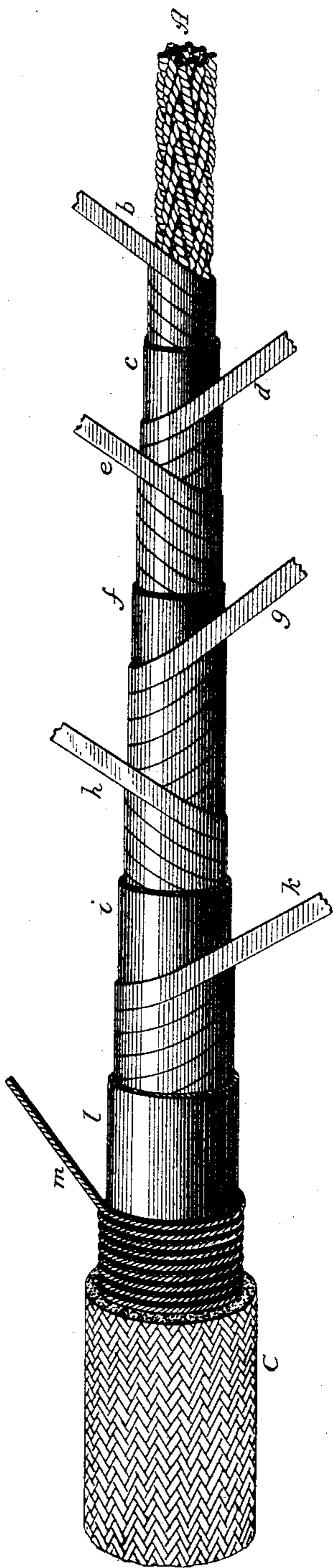


(No Model.)

H. C. SPALDING.
MULTIPLEX ELECTRICAL CABLE.

No. 327,473.

Patented Sept. 29, 1885.



Attest:
Raymond Barnes
W. Frisby

Inventor:
Henry C Spalding
By Parker Page
att'y

UNITED STATES PATENT OFFICE.

HENRY C. SPALDING, OF BOSTON, MASSACHUSETTS.

MULTIPLEX ELECTRICAL CABLE.

SPECIFICATION forming part of Letters Patent No. 327,473, dated September 29, 1885.

Application filed December 14, 1883. Renewed February 28, 1885. (No model.)

To all whom it may concern:

Be it known that I, HENRY C. SPALDING, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Multiplex Electric Cables, of which the following is a specification, reference being had to the drawing accompanying and forming a part of the same.

My invention relates to cables containing a group of individually-insulated electric conductors which constitute independent circuits; and it consists in a novel construction of the cable, more particularly with reference to the arrangement of the conductors, by which induction or interference between and retardation in the several circuits is prevented.

Insulated electrical conductors have been twisted together in pairs and used as the leading and return conductors of a circuit, and several pairs of these conductors have been assembled in a cable. Insulated wires have also been braided or plaited together, with a view to lessening the effects of induction between them. It is well known, however, that neither of these plans accomplishes the desired object beyond a certain degree, which is not sufficient to remedy but only ameliorate the trouble. In order, therefore, to overcome the induction or interference that exists in multiple-circuit cables, I use two insulated wires twisted together for each circuit, and I braid or plait the several pairs together. I have found that this plan of arranging the conductors breaks up entirely the induced currents, so that their effects are not perceptible, besides adding to the strength of the cable, and producing a round core of small diameter, upon which the insulating-coatings are laid.

To still further improve the cable and to prevent the retardation and inductive electrical reactions, I inclose the braided conductors above described in one or more insulated metallic sheaths, and in these features my invention consists.

In the accompanying drawing the cable is shown with parts of each layer exposed.

A is the core composed of a group of strands, each consisting of two conductors individually insulated and formed into a round braid. It is evident that a flat braid rolled upon itself would also answer; but the circular braid

is preferable. The wires are preferably insulated by thin paper laid on an insulating-varnish. They are then brought together in pairs and twisted. The twisted strands are then formed into the braid, the machinery for making similar braids of other materials being suited to this purpose.

Around the braid A is wound a strip of paper, *b*. Over this is a coat of varnish, *c*. Then follow, in the order named, a spirally-wound strip of paper, *d*, a similarly-wound strip of metal foil, *e*, a coating of resinous varnish, *f*, a strip of paper, *g*, a strip of metal foil, *h*, a coating of varnish, *i*, a paper strip, *k*, a coating of bituminous compound, *l*, a serving of strong twine, *m*, and a braided jacket or protecting-sheathing, C.

The specific manner of insulating and protecting the cable may be greatly varied. I prefer, however, the plan described, as it renders it very easy to use one or more insulated metallic sheathings, the purpose of which, as I have more fully set forth in other applications now pending, is to prevent electrical inductive reactions or retardation.

In a cable composed of strands of twisted wires braided together in the manner herein shown the positive and negative wires of each strand are in turn associated with the positive and negative wires of the other strands in a great variety of juxtaposition at frequent intervals, and thus the induced currents are split up into infinitesimal fractions and disappear.

Having now described my invention, what I claim is—

1. In an electrical cable, a group of conductors composed of a number of strands consisting of two insulated conductors forming a complete or round wire circuit, the strands being braided together in substantially the manner set forth.

2. In an electrical cable, the combination, with a core composed of strands braided together and each consisting of the two insulated wires, of a complete or round wire circuit of insulating or protective coatings or layers surrounding said core, as set forth.

3. In an electrical cable, the combination, with a core composed of strands braided together and each composed of the two insulated wires, of a complete or round wire circuit of

layers or coatings of insulating material and one or more insulated sheaths of metal surrounding said core, as set forth.

4. In a multiple-conductor cable, the combination of a core composed of a series of strands braided together, each strand consisting of two insulated wires forming a metallic circuit, and the two wires of each strand being also twisted together with insulating anti-inductive and protective coatings and layers

surrounding said core, substantially as hereinafore described.

In witness whereof I have hereunto signed my name in the presence of the subscribing witnesses.

HENRY C. SPALDING.

Witnesses:

E. B. WELCH,

ALEX. L. HAYES.