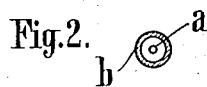
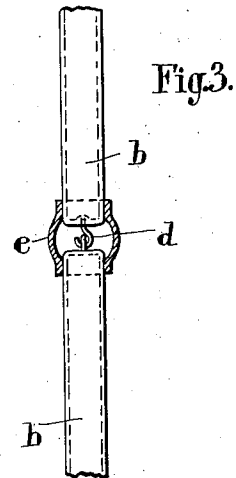
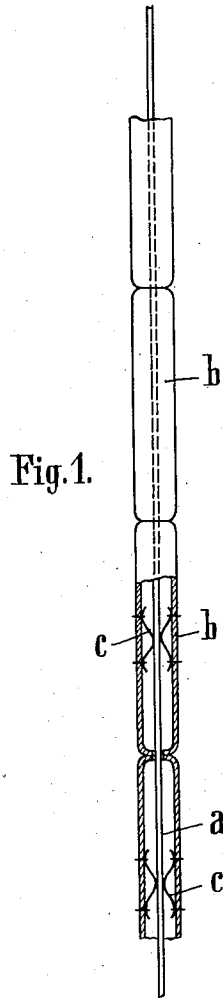


R. H. RENDAHL.
ANTENNA.
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Patented Oct. 10, 1911.



Witnesses:

H. H. Knight
Ray J. Ernst.

Inventor:

Ragnar Hakan Rendahl
by his attorneys
Ames & Co.

UNITED STATES PATENT OFFICE.

RAGNAR H. RENDAHL, OF LILJEHOLMEN, NEAR STOCKHOLM, SWEDEN.

ANTENNA.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, RAGNAR HAKAN RENDAHL, a subject of the King of Sweden, and residing at Liljeholmen, near Stockholm, Sweden, have invented certain new and useful Improvements in Antennæ, of which the following is a specification.

My invention relates to antennæ for wireless telegraphy and the like.

The maximum energy which can be brought into an antenna of a given shape without material losses is principally governed by the tension in the antenna. The greater the diameter of the wires and with it the radius of curvature, the more energy can the antenna take up without losses occurring owing to scintillating discharges. For this reason it has been endeavored to protect particularly the ends of serial wires from scintillating losses by means of balls or the like placed thereon. Also, various kinds of material have been proposed for antennæ in order to obtain a large diameter in spite of small weight. Nevertheless all measures proposed heretofore have only been accompanied with but little success.

According to my invention I attain the end in view substantially by making the antenna principally of thin metal tubes of large diameter which are placed flexibly one against the other in rows. Such an antenna can be formed, for example, by pushing metal tubes over the aerial wire as has been done heretofore, the individual tubes being closed at their ends with the exception of small concentric holes by means of which the tubes are drawn over the wire.

One illustrative embodiment of my invention is represented by way of example in the accompanying drawing, wherein:—

Figure 1 is an elevation, partly in vertical section, showing one form of my improved antenna, and Fig. 2 is a cross-section through the same. Fig. 3 is an elevation, partly in section, showing a modified form of coupling.

Referring to the drawing, *a* designates the wire carrying the tubes *b*. According to the size of the antennæ the tubes may be of various lengths, *e. g.* half a meter to two meters, and are threaded close together in a row on the wire. In this manner on the one hand sufficient movability of the an-

tenna is obtained, and, on the other hand, in spite of less weight the desired large diameter and large radius of curvature are obtained. In order to make a good conducting connection between the tubes and the wires carrying them, which is important particularly when receiving, elastic connecting members *c* or the like may be arranged at or in the tubes. As wire for carrying the tubes, besides the materials customary heretofore steel wire may be employed, whose surface is preferably provided with a better conducting coating for producing a good conductor with good contact. It is also possible to secure together the ends of the tubes by hooks or the like as shown at *d*, in Fig. 3 and thus to combine the individual parts to form an entirety without an internal wire. Then, for obtaining good conductivity, the individual tubes must be well connected together electrically in suitable manner, and on the other hand, for avoiding scintillating losses, the joints between the tubes must be surrounded with ball-like structures for example, as shown at *e* in Fig. 3.

The described antenna can be employed as a simple antenna, and also an optional number of such conductors may be assembled in the well-known forms to form a multiple antenna, without departing from the scope of my invention.

I claim:—

1. An antenna for the purposes of radiotelegraphy, comprising in combination a plurality of thin, metal tubes of large diameter, and means holding the same arranged flexibly in a row.

2. An antenna for the purposes of radiotelegraphy, comprising in combination a wire, and a plurality of thin metal tubes of large diameter threaded thereon in a row, substantially as shown.

3. An antenna for the purposes of radiotelegraphy, comprising in combination a wire, a plurality of thin metal tubes of large diameter threaded thereon in a row, and an elastic, good electrically-conducting member arranged between each tube and the wire, substantially as shown.

RAGNAR H. RENDAHL.

Witnesses:

HOWARD NYSTROM,
HEDWIG MELINDER.