No. 793,647. PATENTED JULY 4, 1905.

R. A. FESSENDEN.

CAPACITY.

APPLICATION FILED DEC. 14, 1904.

Fig. 1.

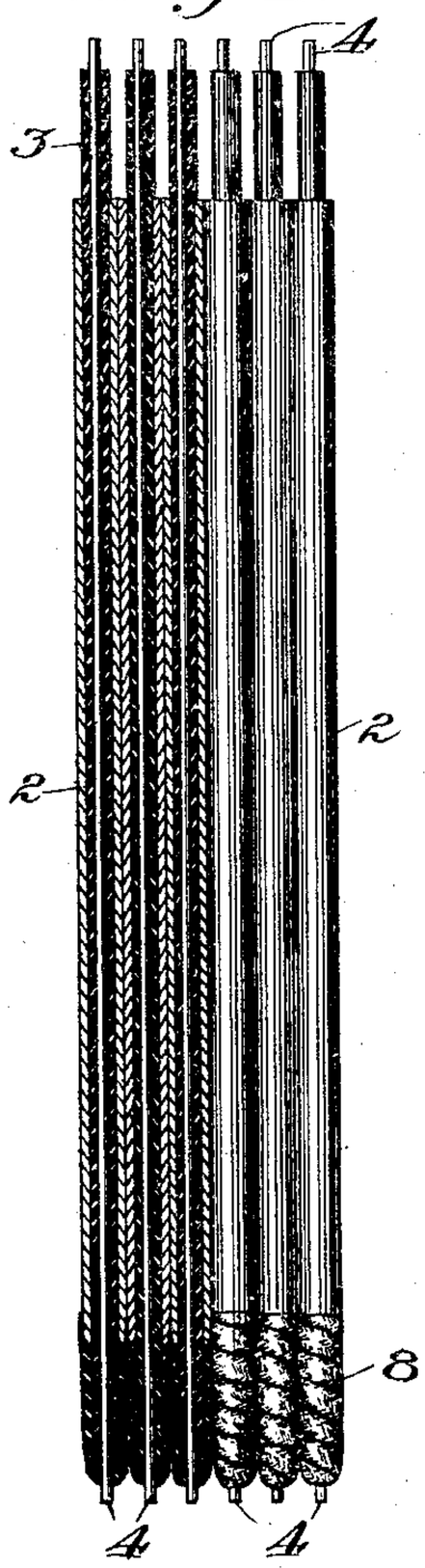


Fig. 2.

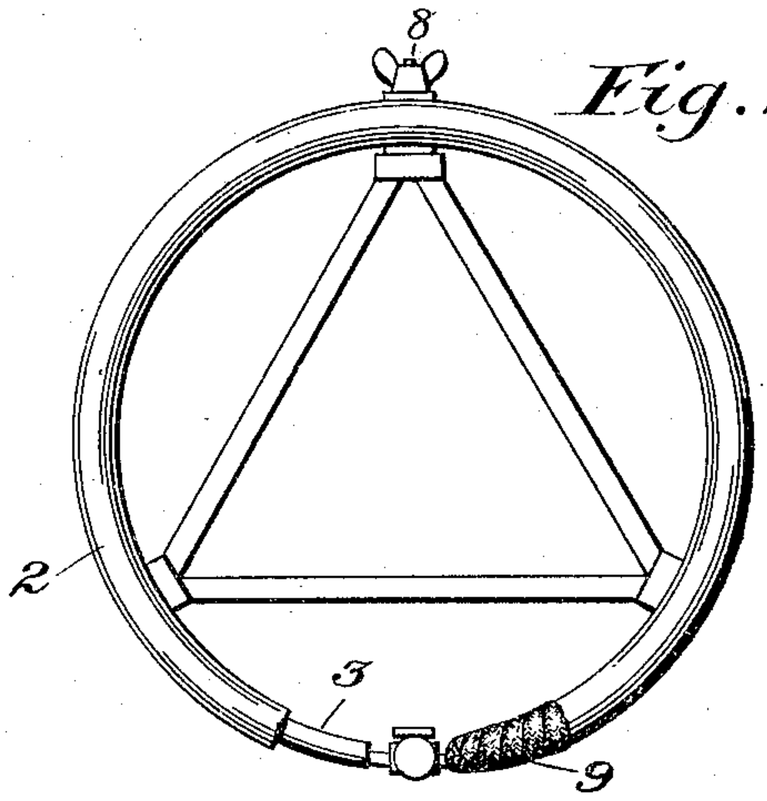


Fig. 3.

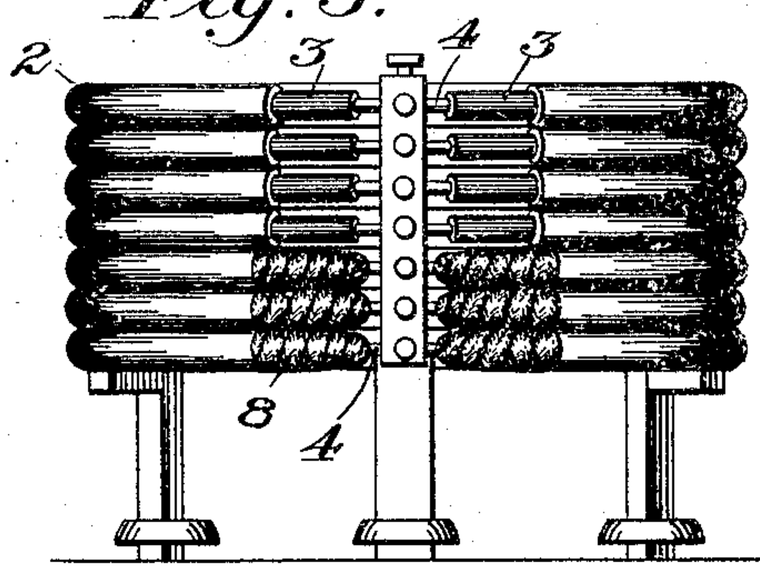


Fig. 5.

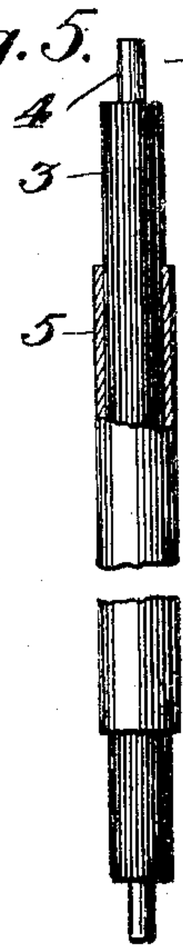


Fig. 6.

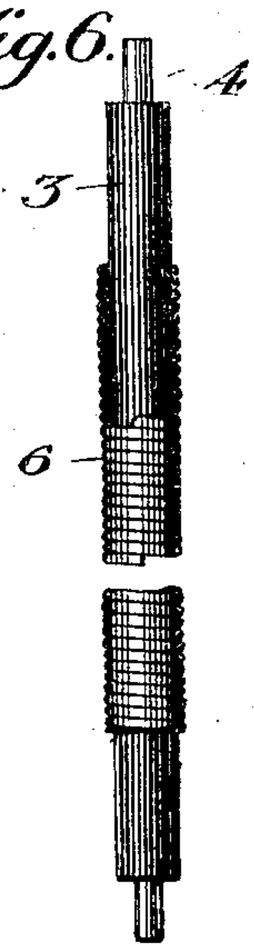
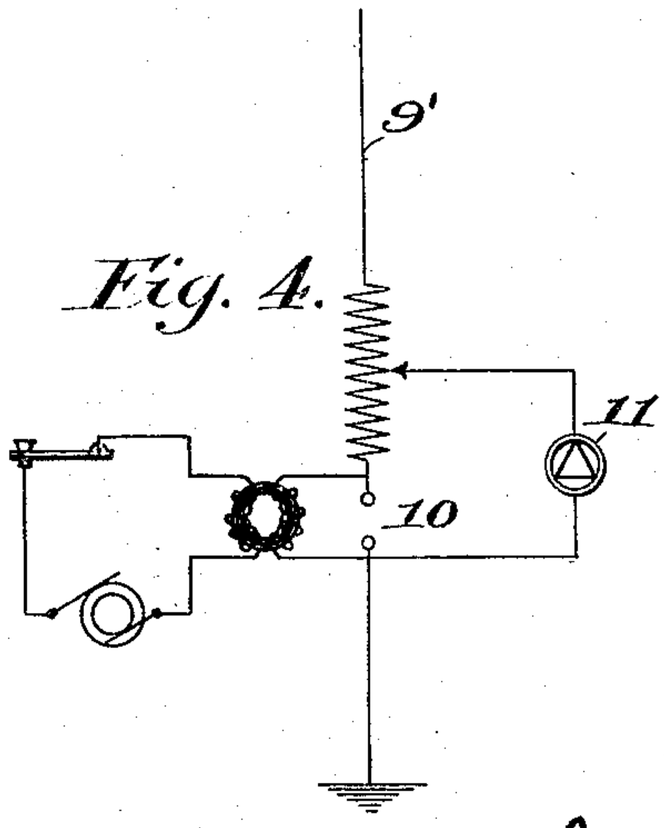


Fig. 4.



Witnesses:
Geo. E. Gauett
Andrew McLuckie

Inventor
Reginald A. Fessenden
by Dawnie S. Woleott
Attorney.

No. 793,647. Patented July 4, 1905.

UNITED STATES PATENT OFFICE.

REGINALD A. FESSENDEN, OF WASHINGTON, DISTRICT OF COLUMBIA.

CAPACITY.

SPECIFICATION forming part of Letters Patent No. 793,647, dated July 4, 1905.

Application filed December 14, 1904. Serial No. 236,859.

To all whom it may concern:

Be it known that I, REGINALD A. FESSENDEN, a citizen of the United States, and a resident of Washington, District of Columbia, have invented certain new and useful Improvements in Capacities, of which the following is a specification.

The invention herein described relates to improvements in capacities for obtaining highly-oscillatory currents, and more particularly for obtaining highly-oscillatory and high-potential currents, such as are used for wireless telegraphy.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional view of a capacity constructed in accordance with my invention; and Figs. 2 and 3 are plan and elevations, respectively, showing a suitable arrangement of the parts or elements of the capacity. Fig. 4 is a diagrammatic view illustrating a manner of using the capacity at wireless-telegraph or other stations. Figs. 5 and 6 illustrate modifications.

Heretofore difficulty has been experienced in obtaining suitable capacities, and not only suitable for use in wireless telegraphy and for other purposes capacities formed of metallic sheets and glass or oil or paraffin have been commonly employed; but all are objectionable on account of softening by heat or great bulk and weight or heavy losses and for other reasons. Another difficulty which has been met with is the fact that with ordinary forms of capacity the inductance of the leads is large and the capacities are necessarily so arranged as to make it difficult to repair a breakdown or to substitute a new element of capacity. Heretofore, also, capacities have been specially constructed in such manner that it has been difficult to readily duplicate elements which have been destroyed—as, for example, capacities have been formed by arranging metallic sheets in a box and pouring melted rosin, &c., between and around the sheets. In such a construction the renewal of a destroyed element is practically impossible. The cost of these special capacities has also been very large. All these difficulties and others are overcome by the use of the improved capacity herein described.

In the practice of my invention I employ as a capacity lengths of cable, such as is commonly used for transmission of high-voltage currents for power transmission. Pieces of cable of suitable length, preferably ten or twelve feet, are cut and the lead covering 2 of the cable at one or preferably both ends is stripped back for a distance of about six or eight inches, depending upon the voltage to be used. The insulating-coating 3 of the cable is also stripped off for a short distance, approximately half an inch, so as to bare the interior conductor 4, which may be either solid or preferably stranded. If the cable does not have a lead covering, it may be covered in any suitable way, by pasting tin-foil 5 around the insulating-covering, as shown in Fig. 5, or preferably by winding wire 6 on the outside of the insulating-coating, as shown in Fig. 6. The separate elements thus formed of the pieces of cable are preferably bent into circular form, with the interior conductors connected to one terminal, as shown in Fig. 3, so as to form one coating of the condenser, and the external metallic coverings connected together preferably by a terminal 8, so as to form the other coating of the condenser. The whole is preferably mounted on an insulating-stand, as shown in Fig. 2, and arranged so that in case of a breakdown of any one element that element can be withdrawn and another one substituted without destroying the other elements. An insulating tape or compound 9 is preferably applied, so as to extend from the interior conductor 4 to and over the ends of the metallic covering 2.

Fig. 4 shows a wireless station consisting of an aerial 9′, spark-gap 10, a generator of highly-oscillatory currents operatively connected to the aerial, and a capacity 11, constructed, as hereinbefore described, in shunt to the spark-gap.

I have found that by the use of this improved construction a capacity can be obtained which is not subject to heating, is little affected by hot weather, has very small losses, is very conveniently arranged, is readily repaired in case of damage, and is comparatively inexpensive.

Various forms of cable may be used; but

the form preferably employed is that in which the lead covering is forced on by pressure, as with this form of cable I have found that the losses with highly-oscillatory currents are much less than if the coating is applied by wrapping.

I claim herein as my invention—

1. A capacity for use with highly-oscillatory-current circuits, consisting of one or more pieces of cable, each piece having an outer conducting-coating.

2. A capacity for use with highly-oscillatory-current circuits consisting of a metallic core, an insulating material around such core, and a metallic covering surrounding the insulating material.

3. The combination at a wireless sending-station of an aerial, a spark-gap, a generator of highly-oscillatory currents operatively connected to the aerial and a capacity in shunt to the spark-gap and consisting of a core, insulating material surrounding the core and a metallic covering over the insulating material.

4. A capacity for use with highly-oscillatory-current circuits, consisting of one or more pieces of cable, each piece having an outer conducting-coating terminating a considerable distance from the end of the non-conducting inner sheath.

5. A capacity consisting of a plurality of pieces of cable each piece having an outer conducting-coating, said outer conducting-coatings being connected in parallel with each other.

6. A capacity consisting of one or more pieces of cable having outer conducting-coatings, the conducting-core of each being stripped for a distance and the outer conducting-coating being removed for a farther distance and means for clamping said inner conducting-cores in parallel.

7. A capacity consisting of a plurality of pieces of cable each having its conducting-core, insulating-sheath and outer conducting-covering stripped successively greater distances from the end and a conducting-clamp securing said inner conducting-cores and electrically connecting them in parallel.

8. A capacity consisting of a plurality of pieces of cable, each having its inner conducting-core stripped and insulating means applied adjacent said ends to separate the outer conducting-coating from the inner conducting-core, a distance greater than the thickness of the intermediate insulating-sheath.

9. A capacity comprising a support, a plurality of metallic-sheathed pieces of cable mounted on said support and a clamp for securing both ends of the inner core of each of said pieces of cable.

10. A capacity comprising an insulating-support, a plurality of pieces of cable having stripped cores and metallic sheaths mounted upon said supports with their metallic sheaths in contact and their exposed conducting-cores secured to a common clamp.

11. A capacity composed of one or more pieces of lead-sheathed cable.

12. A capacity comprising one or more pieces of cable covered with a seamless pressure-applied lead coating.

13. A capacity comprising a plurality of parallel pieces of metallic-sheathed cable.

14. A capacity comprising numerous comparatively short pieces of metal-covered cable parallel to each other and having their ends adjacent, the inner cores being connected in parallel and the metal coverings being on contact.

15. A capacity comprising a considerable number of comparatively short pieces of metal-sheathed cable having their conducting-cores and their metallic sheaths respectively connected in parallel.

Signed at Washington, District of Columbia, this 14th day of December, A. D. 1904.

REGINALD A. FESSENDEN.

Witnesses:

THOMAS P. BROWN,

JESSIE E. BENT.