No. 834,084. PATENTED OCT. 23, 1906.

L. STEINBERGER.

HIGH POTENTIAL INSULATOR.

APPLICATION FILED MAR. 24, 1905.

Fig. 1.

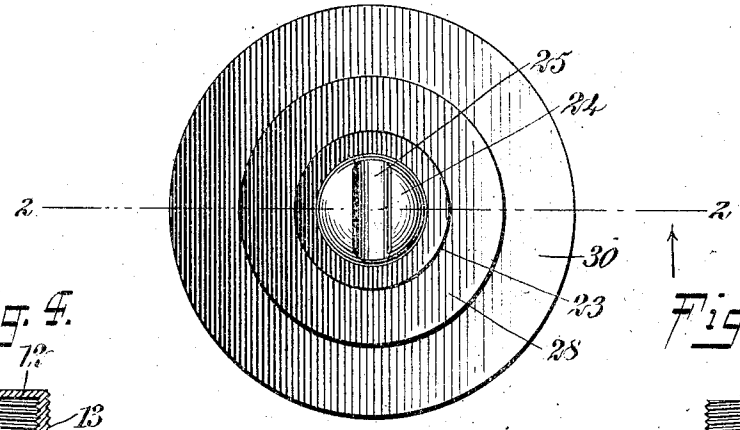


Fig. 4.

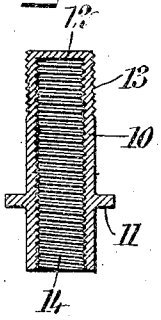


Fig. 2.

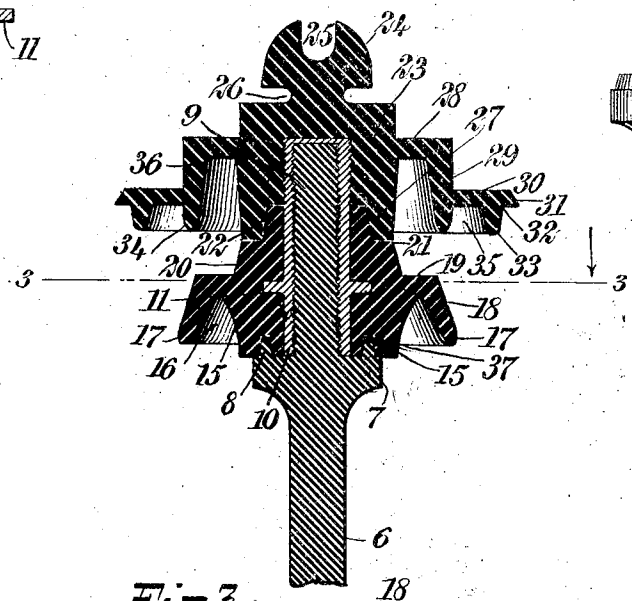


Fig. 5.

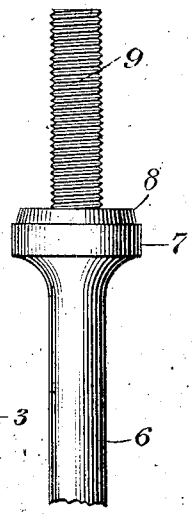
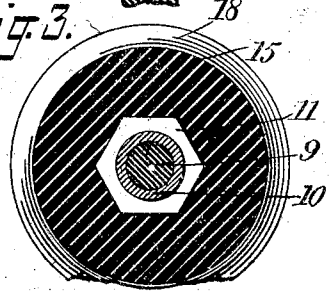


Fig. 3.



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LOUIS STEINBERGER, OF NEW YORK, N. Y.

HIGH-POTENTIAL INSULATOR.

No. 834,084. Specification of Letters Patent. Patented Oct. 23, 1906.

Application filed March 24, 1905. Serial No. 251,845.

To all whom it may concern:

Be it known that I, LOUIS STEINBERGER, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved High-Potential Insulator, of which the following is a full, clear, and exact description.

My invention relates to high-potential insulators and admits of general use, but is of peculiar service upon transmission-lines employed for conveying currents of high potential from one point to another distant therefrom.

Among the several objects of my invention are the following: first, to give the insulator such conformity as to present a number of abrupt angles in order to reduce to a minimum the leakage from the conductor to the insulator-support; second, to provide a clearance-space of such conformity as not to be readily rendered moist; third, to give certain parts of the insulator such shape that the wind is unable to blow rain or other moisture against certain portions of the insulator; fourth, to confer upon the insulator as a whole a degree of strength commensurate with the use of metal, but without proportionate danger of allowing an arc to form; fifth, to enable the insulator to be used successfully upon a pin of insulating material, such as wood or electrose; sixth, to use a metallic sleeve which is completely covered by insulating material; seventh, to firmly anchor one of the hoods to the metallic sleeve; eighth, to afford certain advantages in the matter of detaching and assembling the hoods, and, ninth, to provide the insulator with a gasket so disposed as to increase the length of the path across which leakage or an arc is likely to occur.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my high-potential insulator complete. Fig. 2 is a vertical section through the same upon the line 2 2 of Fig. 1 looking in the direction of the arrow. Fig. 3 is a horizontal section upon the line 3 3 of Fig. 2 looking in the direction of the arrow and showing the angular anchorage 11. Fig. 4 is a vertical section through the sleeve 10 and anchorage 11, and Fig. 5 is a front elevation of the supporting-pin of wood or other insulating material.

The supporting-pin is shown at 6 and is provided with an enlarged disk-like portion 7, from the upper edge of which projects an annular bead 8, and within this annular bead is a threaded stem 9, integral with the enlarged portion 7 and body portion 6. The supporting-pin is made, preferably, of insulating material, such as wood, electrose, or hard rubber. Mounted upon the threaded stem 9 is a sleeve 10, provided with a bead 11, serving as an anchorage, the outer periphery of which bead is angular, as shown in Fig. 3, the bead being integral with the sleeve. The sleeve is provided internally with an aperture 14 for engaging the threaded stem 9. The sleeve 10 is also provided with a closed end 12 and with a threaded portion 13, the rest of the external portion of the sleeve being smooth, as indicated in Fig. 4.

Molded rigidly upon the smooth portion of the sleeve 10 and engaged by the angular bead 11 is a hood 15, of insulating material, provided with an annular bead 17, which has an annular inner face 16 and an annular outer face 18, as indicated in Fig. 2. Above the bead 17 is an annular ledge or step 19, perfectly horizontal, and forming an abrupt angle with this ledge is an annular portion 20, provided with another annular ledge 21, and above this last-mentioned ledge is another annular bead 22. The arrangement is such that the upper surface of the lower hood presents a number of successive annular concentric steps. The upper hood 23 is provided with a head 24, having a slot 25, which is supported by a neck 26. The lower portion of the upper hood terminates in an annular bead 27 and is provided with an annular flat surface 28, which is met at an angle by an annular surface 29, and the latter is in turn similarly met by a horizontal surface 30, so as to form a series of annular concentric steps or ledges, separated from each other by abrupt vertical portions. The extreme outer edge of the upper hood terminates in a bevel 31, and below this bevel is an annular clearance-space 32 and a pair of concentric petticoats 33, separated by an annular space 35. Another clearance-space 36, having an abrupt angular form, is mounted over the lower hood 15, and in contact with the annular bead 8 is a gasket 37, of soft rubber, upon which the

body portion of the lower hood 15 is caused to bind. This increases still further the path over which leakage might otherwise occur and prevents the arcing of the current to the metal sleeve 10.

Referring to Fig. 2, it will be seen that the bevel surface 31 projects outwardly a little distance beyond the petticoat 33. This projection serves in a measure to protect this petticoat 33 and other parts of the insulator against the danger of chipping and is of special value in cases where the insulators are to be shipped from one point to another.

My invention is used as follows: The sleeve 10, carrying the lower hood 15, is screwed upon the threaded stem 9. The washer or gasket 37 is laid upon the annular bead 8 and is forced rigidly into the annular recess when the sleeve is driven into its lowermost position Upon the threaded portion 13 of the sleeve is next screwed the upper hood 23, so that the two hoods interlock firmly together. If desired, the insulator may be assembled before being mounted upon the supporting-pin. This is done by merely screwing the upper hood 23 upon the lower hood 15, so that the two parts practically constitute a single member and may be handled in the same manner as any other insulator. In order to mount the insulator upon the supporting-pin, it is simply placed in such position that the sleeve 10 can be screwed upon the stem 9 and the insulator as a whole is caused to revolve until it reaches its lowermost position, binding the gasket 37 upon the annular bead 8.

I take advantage of the fact that if an insulating member be given such conformity as to present a number of successive steps or ledges making abrupt angles with other portions, so as to break the continuity of the surface, the dielectric qualities of the insulator are greatly improved. It will be observed that if the bevel 31 be given such position as to cause the rain and other forms of moisture to drive downwardly a clearance-space, such as indicated at 32 immediately below the bevel 31, prevents the moisture from unduly creeping, and the result is that an annular space coincident with the clearance-space 32 is formed, so as to prevent the moisture from creeping across. The petticoats 33 34 being separated from each other by a clearance-space 35 and the petticoat 34 being separated from the main body portion of the insulator by means of clearance-spaces, also tends to prevent the creeping of moisture. My theory is that moisture—such, for instance, as that produced by rain or dew or fog—tends to creep along a surface until it reaches an abrupt boundary, but tends to stop at that boundary. Of course if there be a number of concentric steps or ledges disposed horizontally the water may accumulate upon them to some extent owing to surface tension in not allowing it to run away as freely as might be desired; but in such cases there is comparatively little chance for any moisture to cling upon the portions which are substantially vertical. One reason is that water upon the vertical portions is subjected more directly to the influence of gravity.

I do not limit myself in every instance to the particular form of insulator herein shown. Neither do I limit myself to use in every instance a pin of the form here shown nor to have same in every case of insulating material, as certain changes and combinations known to those skilled in the art may be effected without departing from the scope or spirit of my invention.

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

1. A high-potential insulator, comprising a supporting-pin provided with an enlarged portion and with an annular bead projecting from said portion, a gasket of soft rubber engaging said annular bead, and a hood provided with means whereby it may be secured to said enlarged portion, said hood being provided with a portion integral therewith for engaging said gasket.

2. A high-potential insulator, comprising a supporting-stem provided with an enlarged portion and with an annular bead projecting slightly from said enlarged portion, a metallic member disposed concentric to said annular bead, and a hood connected with said metallic member and provided with an annular channel into which said bead projects.

3. A high-potential insulator, comprising a plurality of hoods engaging each other, a metallic sleeve engaging each of said hoods and connecting the same firmly together, said sleeve being provided with a surface flush with the surface of one of said hoods, and a supporting member fitting against said sleeve and also fitting against the hood so as to avoid exposure of said sleeve.

4. A high-potential insulator, comprising a supporting-stem provided with an enlarged portion and with a threaded portion concentric thereto and extending directly therefrom, said enlarged portion being provided with an annular bead encircling said stem, a sleeve threaded internally and fitted upon said threaded stem, said sleeve being provided with an annular portion having an angular periphery, and a hood of plastic material molded upon said sleeve and engaging said annular portion, said hood being provided with an annular recess engaging said annular bead.

5. As an article of manufacture, a supporting-pin provided with a body portion having an enlargement, and with an annular bead projecting from said enlargement, said annular bead having a surface for entering an an-

nular channel, said pin being further provided with a stem integral therewith and concentric to said annular bead.

6. In a high-potential insulator, the combination of a pin of insulating material provided with an enlarged portion of comparatively great diameter and with an annular bead integrally connected with said enlarged portion, and a hood provided with a metallic sleeve for engaging said insulator-pin, and further provided with an annular groove for receiving said annular bead of said pin.

7. A high-potential insulator, comprising a supporting-pin provided with an enlarged portion and with a member projecting upwardly therefrom, a sleeve encircling said member and resting upon said enlarged portion, and a hood encircling said sleeve and provided with a portion engaging said enlarged portion of said pin.

8. As an article of manufacture, an insulator-pin consisting of a body portion made of insulating material and provided with an enlarged portion, said body portion being further provided with an annular bead integral therewith and projecting upwardly therefrom for the purpose of engaging an insulator.

9. In a high-potential insulator, the combination of a hood provided at its base with an annular groove, a resilient member within said groove, and a pin provided with means for engaging said hood, and with an annular projecting portion engaging said resilient member.

10. A high-potential insulator, comprising a supporting-pin of insulating material provided with an enlarged portion, and with a member projecting upwardly therefrom, a metallic sleeve encircling said last-mentioned member, and a hood of insulating material encircling said sleeve and molded thereupon, said hood being provided with a surface directly engaging the surface of said enlarged portion of said pin.

11. A high-potential insulator, comprising a plurality of hoods, each provided with concentric ledges whereby said hoods are fitted together, a metallic sleeve engaging said hoods, said ledges being in contact with each other, and a supporting-pin provided with a surface engaging said metallic sleeve, said surface being in direct engagement with one of said hoods.

12. A high-potential insulator, comprising a plurality of hoods provided with concentric ledges whereby said hoods are fitted together, a metallic sleeve anchored permanently upon one of said hoods and detachably engaging the other, and a supporting-pin provided with a surface engaging said metallic sleeve.

13. A high-potential insulator, comprising a pin of insulating material, a plurality of hoods provided with stepped surfaces engaging each other directly, and a metallic sleeve engaging said hoods for the purpose of connecting the same together, said sleeve being detachably connected with one of said hoods and being permanently anchored relatively to another hood.

14. A high-potential insulator, comprising a plurality of hoods, a supporting-pin therefor, and a metallic sleeve being partially embedded within one of said hoods and directly engaging said supporting-pin, said sleeve being completely inclosed at both of its ends by said hoods and said pin.

15. A high-potential insulator, comprising a hood of insulating material having an aperture extending therethrough, a supporting member permanently secured within said aperture and having a portion extending therefrom, a second hood connected to said extended portion of said supporting member, and a pin engaging said member.

16. A high-potential insulator, comprising a hood of insulating material having an aperture extending therethrough, and a supporting member permanently secured within said aperture.

17. A high-potential insulator, comprising a hood of insulating material having an aperture extending therethrough, a member permanently secured within said aperture and having a portion extending therefrom, a supporting member mounted upon said portion thus extending and provided with a portion for supporting a conductor, and a pin of insulating material engaging said member first mentioned.

18. A high-potential insulator, comprising a hood of insulating material having an aperture extending therethrough, a member permanently secured within said aperture and having a portion extending therefrom, a hood supported upon said portion thus extending, and means for mounting said first-mentioned hood.

19. As an article of manufacture, an insulator-pin consisting of a body member provided with an enlarged portion, said body member being further provided with an annular bead integral therewith and projecting upwardly therefrom for the purpose of engaging an insulator.

20. A high-potential insulator, comprising a hood of insulating material provided upon its exposed surface with a plurality of terraces of different diameters, said hood having an aperture extending through it, a member permanently mounted within said aperture, said member being provided with means whereby it may be supported.

21. A high-potential insulator, comprising a hood of insulating material and provided upon its outer surface with a plurality of terraces of different diameters, said hood being further provided with an aperture extending

through it, a hollow member permanently secured within said aperture, and means for supporting said hollow member.

22. As an article of manufacture, an insulator-pin comprising a body member provided with a thread and with a portion extending laterally, said portion having an annular member integrally mounted thereupon.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS STEINBERGER.

Witnesses:
JNO. M. RITTER,
WALTON HARRISON.