E. H. KNUTZ.

COMBINED INSULATOR AND CURRENT DISTRIBUTER.

APPLICATION FILED NOV. 20, 1909. RENEWED SEPT. 12, 1912.

1,043,321.

Patented Nov. 5, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

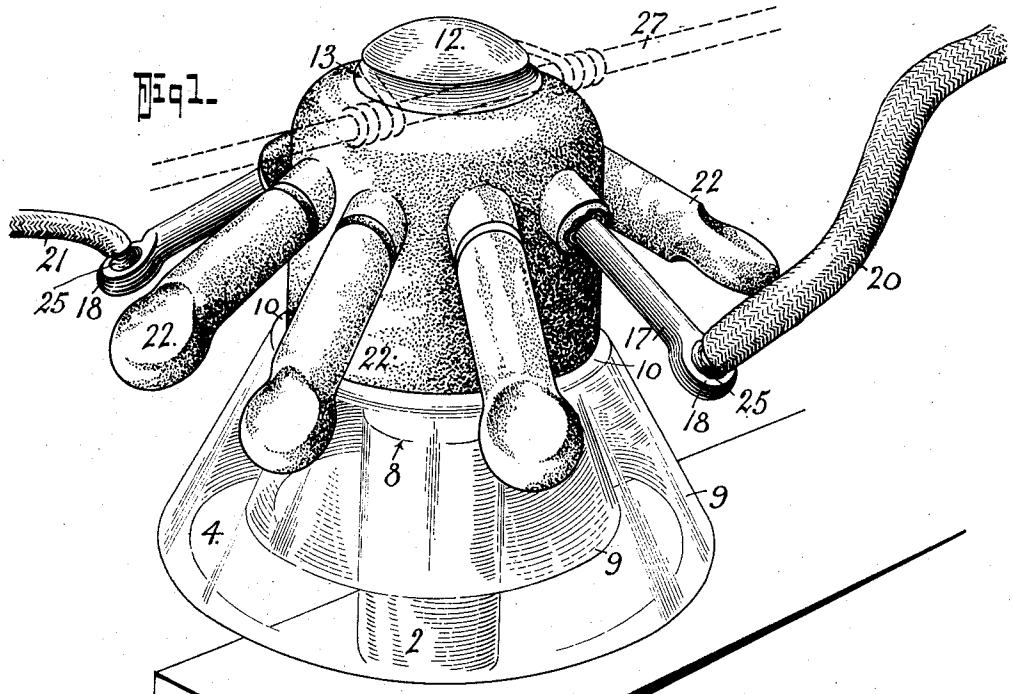


Fig. 3.

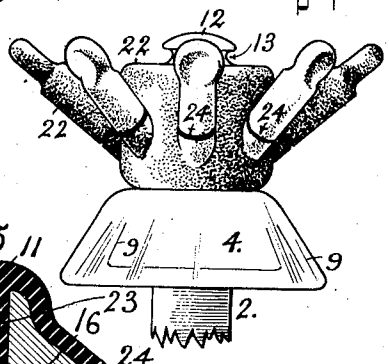
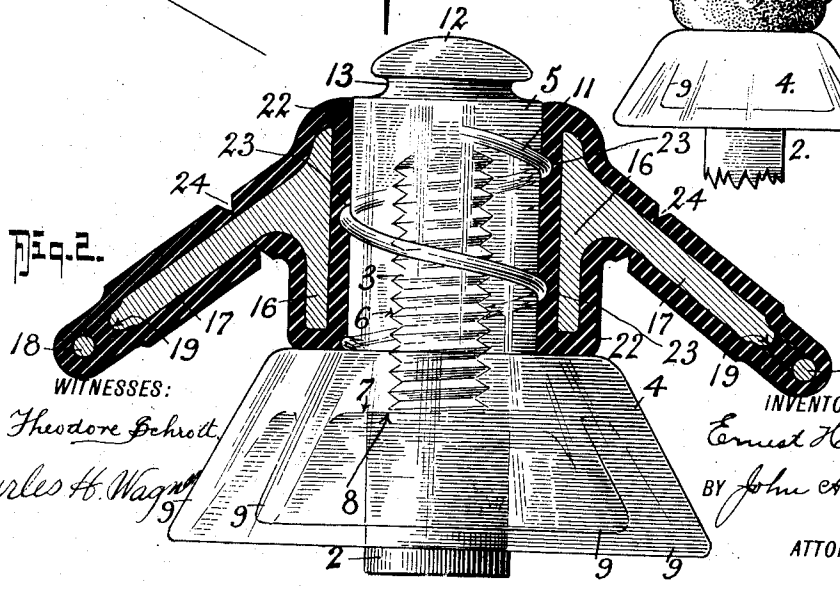


Fig. 2.



WITNESSES:

J. Theodore Schrott.

Charles H. Wagner

INVENTOR

Ernest H. Knutz

BY John A. Prentice

ATTORNEY.

E. H. KNUTZ.

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2 SHEETS—SHEET 2.

Fig. 3.

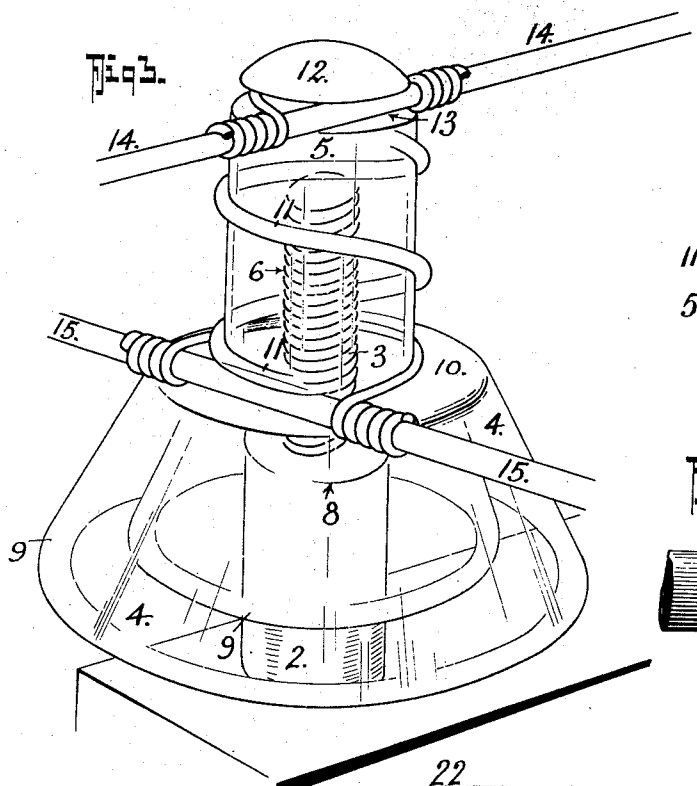


Fig. 9.

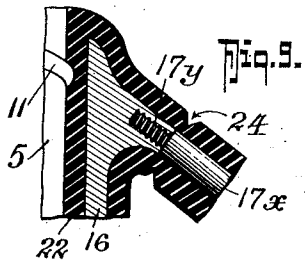


Fig. 7.

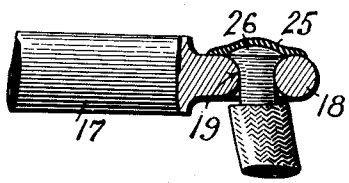


Fig. 5.

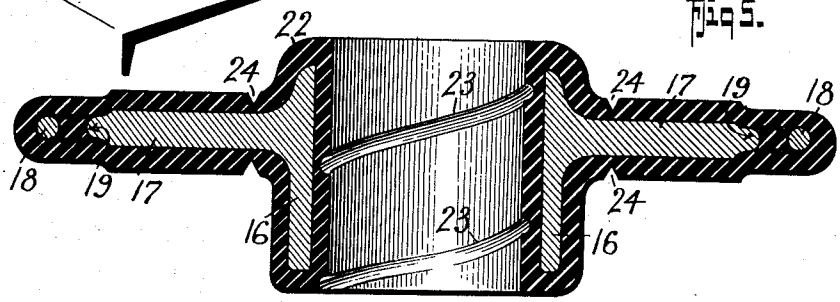


Fig. 4.

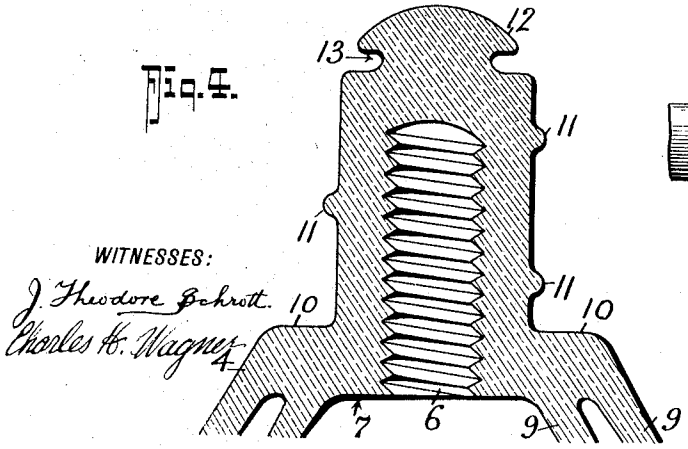
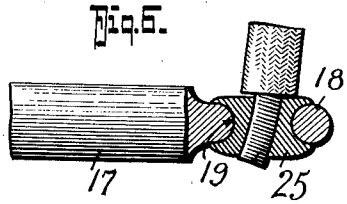


Fig. 6.



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Charles H. Wagner

INVENTOR

Ernest H. Knutz

BY John A. Prentice

ATTORNEY

UNITED STATES PATENT OFFICE.

ERNEST H. KNUTZ, OF ARCATA, CALIFORNIA.

COMBINED INSULATOR AND CURRENT-DISTRIBUTER.

1,043,321. Specification of Letters Patent. Patented Nov. 5, 1912.

Application filed November 20, 1909, Serial No. 529,112. Renewed September 12, 1912. Serial No. 720,091.

To all whom it may concern:

Be it known that I, ERNEST H. KNUTZ, a citizen of the United States, residing at Arcata, in the county of Humboldt and State of California, have invented certain new and useful Improvements in Combined Insulators and Current-Distributers, of which the following is a specification.

This invention has for its object to provide a combined insulator and current distributer and to so construct the parts that the insulator *per se*, may be used to perform the ordinary functions of an insulator and in addition it may be used as a support for the current distributer.

Primarily the invention has for its object to provide a device of the foregoing character of a simple and effective construction that can be easily and cheaply manufactured and that will readily and effectively serve its intended purposes.

In carrying out the invention an insulator, preferably of the double-petticoat type is provided with an internal thread to engage the corresponding thread of an insulator pin, the insulator having an externally threaded portion to receive a current distributer which comprises a metallic ring having a series of radial arms, the whole being covered with insulation, parts of which are removable for the purpose of making electrical connection with said arms.

In order that the insulator may be readily removed from the pin when the pin becomes worn or broken, without disturbing the electrical connections to the distributer, the threads on the inside and outside of the insulator are reversed that is to say, one is a right-handed thread and the other a left-handed thread and they are furthermore of different pitches.

The invention also embodies those novel details of construction, combination and arrangement of parts, all of which will be first described in detail, then be specifically pointed out in the appended claims and illustrated in the accompanying drawings, in which:

Figure 1, is a perspective view of the invention complete. Fig. 2, is a side elevation thereof, the distributer being shown in central longitudinal section. Fig. 3, is a perspective view showing the application of the insulator, *per se*. Fig. 4, is a central vertical longitudinal section of the insulator. Fig. 5, is a central vertical longitudinal section of the current distributer showing a modified form. Fig. 6, is an enlarged detail view of one end of a metallic distributer arm showing one method of securing a current conductor thereto. Fig. 7, is a view similar to Fig. 6, showing another method of securing the conductor to the arm. Fig. 8, is a side elevation showing a different way of connecting the distributer of the insulator. Fig. 9, is a detail sectional view showing how the distributer arms may be removably attached to the body.

Referring now to the accompanying drawings in which like letters and numerals of reference indicate like parts in all of the figures, 1 represents a cross-arm or other suitable support of any approved type on which the insulated pin 2 is carried, the pin 2 being also of any approved construction, and having the threaded portion 3, as indicated.

The insulator 4 which may be constructed of any suitable insulating material, such as porcelain, glass and the like, comprises the body 5 having an internally threaded portion 6 to receive the threaded portion 3 of the insulator pin 2, and having a portion 7 to rest against the shoulder 8 of the insulator pin 2, when the insulator 4 is screwed onto the pin. The insulator 4 is provided with one or more petticoats 9—9, as conditions may require.

Where the body portion 5 of the insulator joins the petticoat portion 9, a shoulder 10 is formed, for a purpose hereinafter made clear. The body portion 5 of the insulator is threaded at 11 with a left-handed thread of relatively great pitch. In practice, when the thread 11 is a left-handed thread, the thread 6 will be a right-handed thread and the thread 6 will be of considerably less pitch than the thread 11, for a purpose hereinafter explained. The upper end of the body portion 5 of the insulator is capped or domed as at 12 and formed with a wire receiving groove 13.

When the insulator 4 *per se* is used as a support for wires or conductors 14—15, one of said wires 14 may be secured in the groove 13, as shown in Fig. 3, of the drawings, and another may be secured to the body 5 beneath the threads 11, which it should be understood, terminate short of the ends of the body 5, as shown in Figs. 2 and 3 of the drawing, so that the threads 11 will

serve as a stop or abutment for the wire 15 and prevent its riding up the body portion 5, while the shoulder 10 serves as a rest to prevent the wire dropping.

When the insulator 5 is to be used as a support for a current distributer, the parts are arranged as shown in Figs. 1 and 2 of the drawings, by reference to which it will be seen that the current distributer comprises an annular body 16 having a series of radial arms 17 terminating in flattened eye portions 18 which are apertured as at 19 to receive the wires 20—21.

The ring-like body 16 and the arms 17 are covered with an insulating substance 22 and this insulating substance 22 may be composed of mica, asbestos, malcanzia, fiber, rubber, a vitreous material, or any other suitable substance. The insulation 22 on the inner surface of the ring 16 has a central passage to fit onto the insulator body 5 and the insulation 22 is threaded at 23 to receive the threads 11 of the insulator body 5.

In practice, the radial arms 17 may be downwardly extended as indicated in Fig. 2, of the drawings, or they may be held in a horizontal plane as shown in Fig. 5 of the drawings. When the downwardly extended form shown in Fig. 2 is in use it has the additional advantage that by reversing the distributer on the insulator 5, as shown in Fig. 8. the arm 17 may be upwardly extended should occasion require.

The insulation 22 on the arms 17 is annularly grooved as at 24 so that when it is desired to make a connection with one of the arms 17 by tapping the insulation 22 between the groove 24 and the end of the arm the same may be broken loose from the remaining portion of the insulation 22 and stripped off of the particular arm desired, the operator using any suitable tool when necessary.

In the practical application of the invention as a combined insulator and current distributer, a current feeder 20 may be secured to one of the arms 17 by having its bared end inserted into the aperture 19 of an eye 18 and secured in place by solder 25, as shown in Figs. 1 and 6, of the drawings, or by combined soldering and riveting, as at 25 and 26, shown in Fig. 7. By securing the feeder 20 to one of the arms 17 the other set of arms and ring-like body 16 becomes energized. Now should it be desired to convey current in a given direction from the current distributer 16, the arm 17 which extends in the given direction will be stripped of its insulation in the manner hereinbefore stated, and the off-take wire 21 secured to said arm in a manner similar to the securing of the wire to its respective arm 18. Thus any number of radiating connections may be made with the distributer 17, such connections being only limited by the number of arms on the distributer. The groove 13 when the combined insulator and distributer is in use may be used to receive a wire 27, shown in dotted lines in Fig. 1, and when such wire is used it serves as a lock to retain the distributer 16 on the insulator body 5.

Should for any reason the pin 2 become damaged or worn and it is desired to replace such pin, it is only necessary to disconnect the wire 27, (if such wire be secured in the groove 13) and turn the insulator 5 in a direction to unthread it from the pin 2. This motion causes the distributer to be unthreaded from the body 5 during the first turn or two of the insulator, after which the insulator and pin can be taken away, if desired, or by simply continuing the unscrewing movement of the insulator 4 the pin 2 may be wholly removed and a new one substituted. In replacing the insulator 4 upon a new pin, which pin, of course, is secured to the arm 1, the operator screws the insulator 4 onto the pin to within one or two turns of its final position and then places the distributer 16 over the body 5 after which he completes the screwing of the insulator 4 onto the pin 2 which causes the thread 11 to take into the groove 23 and screw on the distributer 16, it being understood that the wires 20—21 prevent the distributer 16 from turning after the distributer has been placed in use.

When the form of distributer shown in Fig. 2, is used, with the arms 17 slanting downwardly they will readily assist in the shedding of water, thus adding an advantageous feature to the invention. The ends 18 of such arms when the arms 17 are downwardly projected are in a position to more readily stand the strains occasioned by the weight and pull of the several wires fastened to said arms and thus decrease the bending strain on said arms.

In Fig. 9 is shown a modification wherein the arms 17^{x} are tapped into the body 16 so that they may be replaced when broken or damaged.

From the foregoing description taken in connection with the accompanying drawings, it is thought the complete construction, operation and advantages of my invention will be readily understood by those skilled in the art to which the invention appertains.

What I claim is:

1. An insulator comprising an internally threaded body portion, and petticoats depending therefrom, said body portion having an external thread having its ends terminating short of the ends of the body portion.

2. An insulator comprising an internally threaded body portion and petticoats depending therefrom, said body portion having an external thread having its ends ter-

minating short of the ends of the body portion, and said body portion having an annular groove near its upper end beyond the thread.

3. An insulator comprising a body portion having an internally threaded pin receiving chamber and an externally threaded surface, the internal threads being of lesser pitch than the external threads and a current distributer supported on said body portion and threaded to engage said external threads.

4. An insulator comprising a body portion having an internal pin receiving bore, and a petticoat depending from said body portion, said body portion having an outer annular groove near its upper end, and a current distributer mounted on said body portion beneath said groove.

5. An insulator comprising a body portion having an internal pin receiving bore, and a petticoat depending from said body portion, said body portion having an outer annular groove near its upper end, a current distributer mounted on said body portion beneath said groove, and a wire held in said groove to retain said current distributer.

6. An insulator comprising a body portion having an internal pin receiving bore, and a petticoat depending from said body portion, said body portion having an outer annular groove near its upper end, a current distributer mounted on said body portion beneath said groove, said body portion having an external thread and said current distributer having a threaded portion to receive said external thread.

7. An insulator comprising a body portion having an internal threaded pin receiving bore, and a petticoat depending from said body portion, said body portion having an outer annular groove near its upper end, a current distributer mounted on said body portion beneath said groove, said body portion having an external thread, said current distributer having a threaded portion to receive said external thread, one of said body portion threads being left-handed and the other one of said body portion threads being right-handed.

8. An insulator comprising a body portion having an internal threaded pin receiving bore, and a petticoat depending from said body portion, said body portion having an outer annular groove near its upper end, a current distributer mounted on said body portion beneath the groove, said body portion having an external thread, said current distributer having a threaded portion to receive said external thread, one of said body portion threads being left-handed and the other one of said body portion threads being right-handed, and said insulator body portion threads being of different pitches.

9. A current distributer, comprising an annular body having radiating arms, and an insulation wholly covering said body and arms, said insulation having a central support receiving bore, said arms having eye ends, and said insulation of said arms having a weakened portion adjacent to said body.

10. An insulator and current distributer comprising a body portion having a pin receiving bore, a current distributer supported on said body, and comprising an annular body having radiating arms, an insulating covering for said annular body and said arms, and means at the ends of said arms to which a conducting wire may be attached.

In testimony whereof I affix my signature in presence of two witnesses.

ERNEST H. KNUTZ.

Witnesses:
ALONZO J. MONROE,
KATHARINE PALMTAG.