Sept. 26, 1939. A. P. TAYLOR 2,174,429

MEANS FOR STRINGING AND SAGGING IN POWER LINES

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Fig. 1

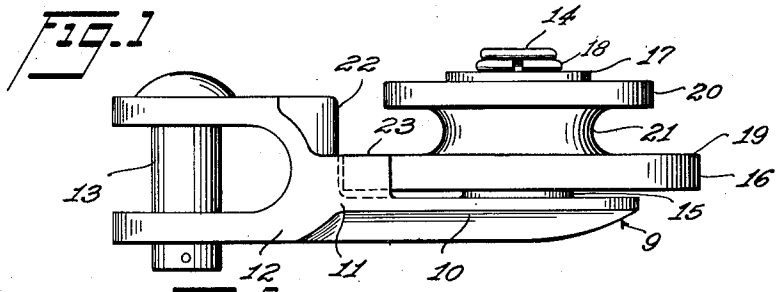


Fig. 2

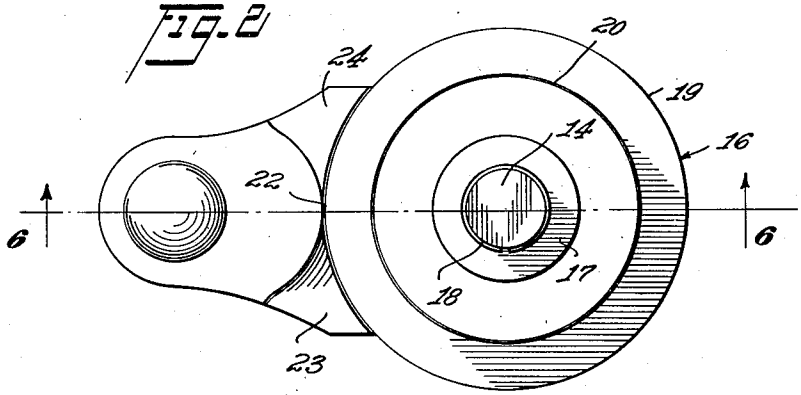


Fig. 3

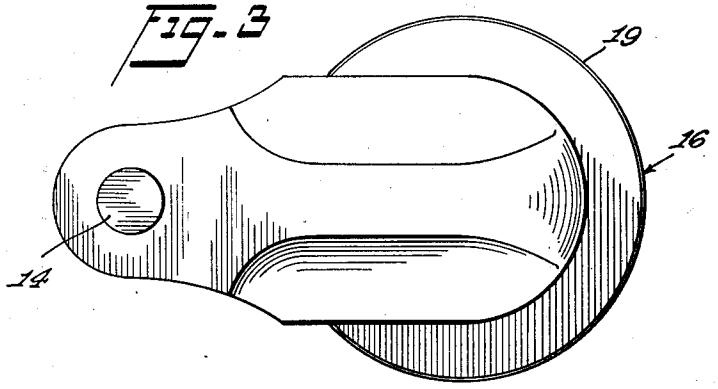
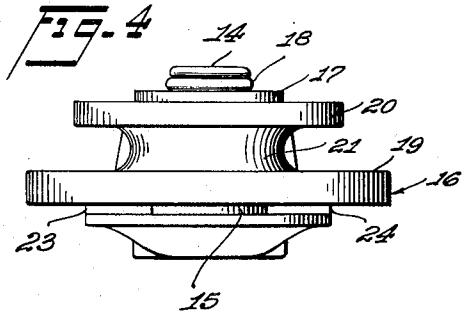


Fig. 4



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Fig. 5

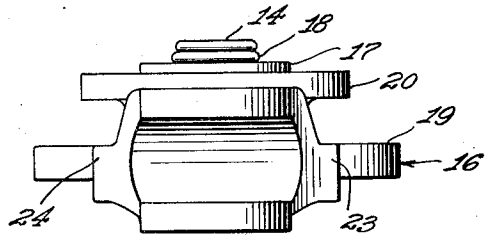


Fig. 6

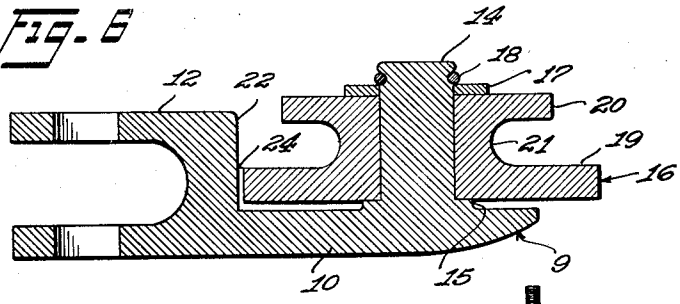


Fig. 8

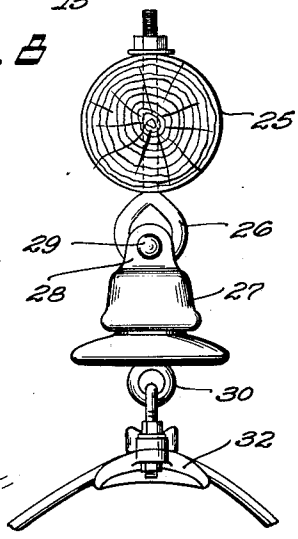
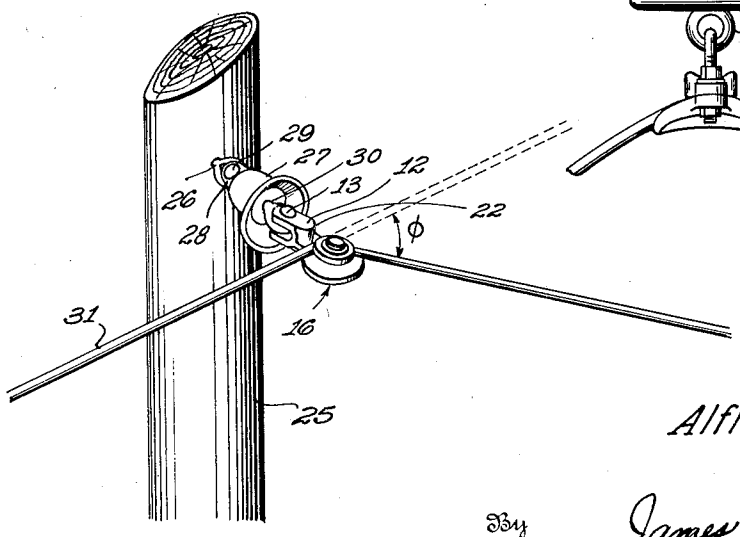


Fig. 7



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MEANS FOR STRINGING AND SAGGING IN POWER LINES

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Application April 7, 1939, Serial No. 266,629

4 Claims. (Cl. 175—376)

The present invention relates to a device for use in the stringing and sagging in of electric conductors during the erection of power lines.

It is frequently necessary for power lines to make turns or angles and these angles of course must be made at the power line poles. When the angle to be made at any particular pole is small, the conductors can be secured to the pole by means of conventional pole top or cross arm insulator pins. However for angles greater than 30° the stress imposed upon pole top or cross arm pins by a tightly strung conductor is too great for safety. For that reason, in making angles of 30° or more, it has become customary to use what are termed "swinging insulators". These insulators are secured to the side of the pole near the top thereof by means of an eye bolt extending diametrically through the pole. The insulator has an eye headed stud extending from the free end thereof and to this is secured a cable clamp. The conductor is thus secured to the pole and insulated therefrom without the use of either a pole top pin or a cross arm pin. The device conforming to the present invention is designed to be attached to the free end of such a swinging insulator in order to afford a substantially frictionless support and guide for the electrical conductor during the stringing and sagging in operation. After the stringing and sagging in operation is completed, the device is intended to be removed from the insulator and replaced by a conventional cable clamp.

The primary object of my invention is to provide a device for facilitating the stringing and sagging in of power lines in those cases where it is necessary to use a swinging type of insulator.

A further object of my invention is to provide such a device which will permit greatly increased lengths of conductor to be strung and sagged in in one operation.

Still another important object of my invention is to provide a device which eliminates any possibility of injury to an electrical conductor during the stringing and sagging in operation.

Other objects of the invention will be apparent from the following description of the present preferred form of my invention, taken in connection with the accompanying drawings, wherein—

Figure 1 is a side elevation view of a device constructed in accordance with the present invention;

Figure 2 is a top plan view of the device;

Figure 3 is a bottom plan view thereof;

Figure 4 is an end elevation view thereof;

Figure 5 is an end elevation view of the opposite end of the device to that shown in Figure 4;

Figure 6 is a cross sectional view looking in the direction of the arrows along the line 6—6 of Figure 2;

Figure 7 is a perspective view showing the device attached to a swinging type insulator and supporting an electrical conductor; and

Figure 8 is a top plan view showing the manner in which an electrical conductor is secured to a pole by means of a cable clamp after the stringing and sagging in operation has been completed.

The device conforming to my invention comprises a body designated generally by the reference character 9, having a sheave arm 10, an intermediate portion 11, and a clevis 12. The clevis 12 is shown in Figure 1 as provided with a pin 13 by which the body is adapted to be secured to the eye headed stud of a swinging type insulator.

A stub axle 14 extends at right angles from the sheave arm 10. The axle 14 may be cast integrally with the body or it may be in the form of a stud threadedly secured in a tapped hole in the sheave arm 10. At the base of the axle 14, I prefer to provide an upstanding shoulder 15. Mounted for rotation on the stud axle 14 is a sheave designated generally by the reference character 16. The sheave 16 abuts against the raised shoulder 15 and is held in position on the axle 14 by means of a washer 17 and a spring clip 18.

The sheave 16 is provided with a wide lower flange 19 and an upper flange 20 of somewhat lesser diameter. The flanges 19 and 20 thus form a recess 21 which is adapted to receive an electrical conductor in a manner to be explained later.

As best shown in Figures 1 and 2, the intermediate portion 11 of the body 9 is provided with an upwardly extending abutment 22 which lies as close as possible to the periphery of the lower flange 19 while still providing clearance for rotation of the sheave 16. The abutment 22 extends upwardly into spaced relationship to, but so as to at least partially overlap the periphery of the upper flange 20.

On either side of the abutment 22, the intermediate portion 11 is provided with arcuate shaped fillers 23 and 24 which lie flush with and partially surround the periphery of the lower flange 19.

The use of the device conforming to the present invention is best illustrated in Figure 7. A power line pole 25 is provided near its upper end with an eye bolt 26. Attached to the eye bolt 26 is a

conventional swinging type insulator 27. These conventional insulators are usually provided with a clevis arrangement 28 and a pin 29 at one end and an eye headed stud 30 at the opposite end thereof. After an electrical conductor has been laid out on the ground at the foot of a pole, the conductor is carried to the top of the pole, one of my devices is secured to the eye headed stud 30 of the insulator 27 by means of the clevis 12 and the pin 13 in the manner shown in Figure 7, and the conductor is inserted between the periphery of the upper flange 20 and the abutment 22 and into the recess 21. In Figure 7 the electrical conductor is designated by the reference character 31 and is shown as making an angle ϕ at the pole. It will be understood that one of my devices is secured to each pole throughout the length of conductor to be sagged in. The conductor is then in readiness to be stretched and sagged into place by any conventional stretching means. As the conductor is stretched, there will, of course, be relative movement between the conductor and the pole, and the primary object of my invention is to permit this relative movement to be as nearly frictionless as possible. It will be apparent, since the conductor 31 rests in the recess 21 and upon the wide lower flange 19 and since the sheave 16 is free to rotate, that there will be only rolling contact between the conductor and the support. The fillers 23 and 24, lying flush with the upper edge of the lower flange 19, prevent the conductor 31 from becoming wedged between the sheave 16 and the sheave arm 10. The abutment 22 which lies between the fillers 23 and 24 and in close proximity to the periphery of the lower flange 19 prevents the conductor 31 from becoming wedged between the sheave 16 and the clevis 12, and since this abutment 22 partially overlaps the periphery of the upper flange 20, it also serves to prevent the conductor from whipping out of the recess 21 when the conductor is slack before stretching or when the stretching operation is commenced.

After the conductor 31 has been stretched to the proper tension and this tension has had an opportunity to equalize itself between all poles, the device conforming to my invention is removed from the insulator 27 and is replaced by a conventional cable clamp 32 shown in Figure 8. Since the cable clamp 32 is conventional and forms no part of my present invention, its description is unnecessary.

The abutment 22 in combination with the fillers 23 and 24 will prevent wedging of the conductor even after considerable wear has occurred between the axle 14 and the sheave 16. The fillers 23 and 24, in addition to their function of preventing wedging of the conductor, add materially to the strength of the device at the area subjected to the greatest stress during use.

Although for a particular body the lower flange 19 of the sheave 16 must be of a fixed thickness and diameter, it will be apparent that the upper flange 20 may be varied in diameter in order to enable the device to accommodate conductors of various sizes. It is contemplated that interchangeable sheaves may be provided for this purpose. The sheaves may, of course, be made of any suitable material such as metal or wood. My experiments indicate that various plastic materials now on the market are highly suitable for the manufacture of these sheaves.

It will thus be seen that I have provided a device for use in the stringing and sagging in of power lines which affords a frictionless support and guide for the electrical conductor even though sharp angles are made. It will also be seen that the possibility of the conductor becoming wedged and injured is entirely eliminated. The device is of rugged construction and will withstand rough usage.

Having thus described my invention, I claim:

1. A device for stringing and sagging in power lines comprising a body having a sheave arm, an intermediate portion and suspending means, a sheave rotatably mounted on said sheave arm with its axis of rotation substantially normal thereto, upper and lower flanges on said sheave forming a power line conductor receiving groove on said sheave, the lower of said flanges having a greater radial width than the upper of said flanges and an abutment on the intermediate portion of said body extending in close proximity to the periphery of said lower flange and into spaced relationship to and at least partially overlapping the periphery of said upper flange.

2. A device for stringing and sagging in power lines comprising a body having a sheave arm, an intermediate portion and suspending means, a sheave rotatably mounted on said sheave arm with its axis of rotation substantially normal thereto, upper and lower flanges on said sheave, the lower of said flanges having a substantially greater radial width than the upper of said flanges and the intermediate portion of said body having fillers lying in close proximity to and partially surrounding the periphery of said lower flange.

3. A device for stringing and sagging in power lines comprising a body having a sheave arm, an intermediate portion and suspending means, a sheave rotatably mounted on said sheave arm, upper and lower flanges on said sheave, the lower of said flanges having a substantially greater radial width than the upper of said flanges, the intermediate portion of said body having fillers lying in close proximity to and partially surrounding the periphery of said lower flange and an abutment extending from between said fillers into spaced relationship with and at least partially overlapping the periphery of said upper flange.

4. A device for stringing and sagging in electrical conductors comprising a body having a sheave arm, an intermediate portion and suspending means, an axle extending upwardly from said sheave arm, a sheave rotatably mounted on said axle, upper and lower flanges on said sheave, a filler on the intermediate portion of said body lying in close proximity to and partially surrounding the periphery of said lower flange, an abutment extending upwardly from the intermediate portion of said body in substantially parallel relationship to said axle, and the upper flange on said sheave terminating in such relationship to said abutment as to provide a restricted passageway to permit the placing of an electrical conductor of predetermined diameter on said sheave and to prevent accidental dislodgment of said conductor from said sheave.

ALFRED PAUL TAYLOR.