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DETACHABLE CONNECTION FOR CHAIN LINKS.
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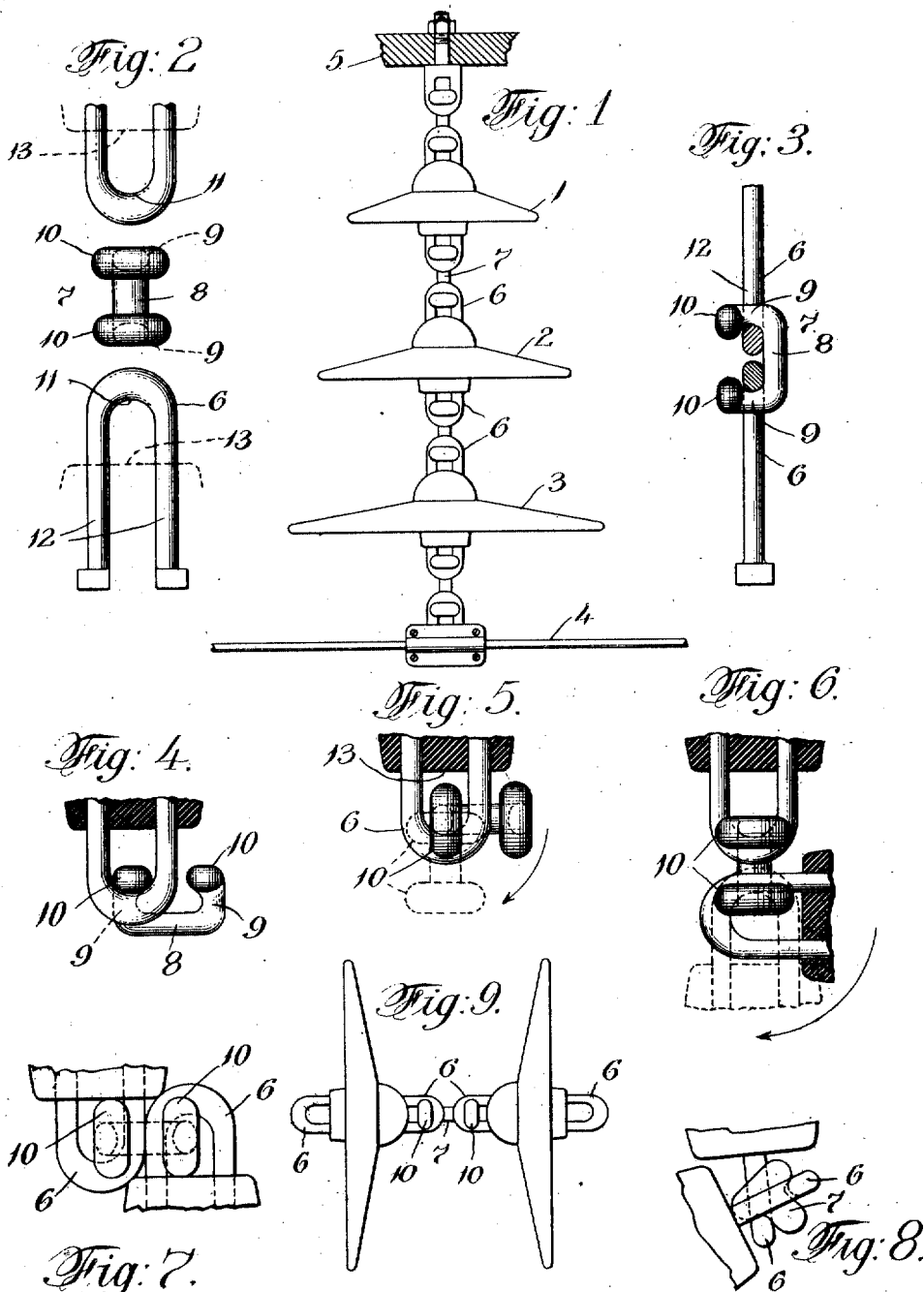


Fig. 7.
WITNESSES
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Fig. 8.
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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LOUIS STEINBERGER, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Detachable Connection for Chain-Links, of which the following is a specification.

This invention relates to a means for connecting the separately formed units or links of a chain-type insulator and an object of the invention is to provide a detachable member which may be readily manipulated for connecting the units together and which will be of such shape as to cooperate with portions of the unit structures to prevent unintentional detachment of the units from each other.

A further object is to provide a separately formed link member having turned neck portions adapted to engage in loop parts of the insulator units, and having head portions adapted to cooperate with the loop parts of the insulator units for positively preventing retrogressive movements of the necks from the loop parts except when the adjacent units are moved into an abnormal position.

A further object is to provide a link of the type defined, having head and neck portions at its opposite ends so proportioned relatively to the cooperative loop parts as to necessitate a swinging or rotary movement of the link transversely of the general length of the insulator structure in order to assemble and disassemble the heads with the loop parts.

A further object is to provide a connecting link of the type defined which may be connected with or disconnected from the loop parts of the insulator units only by moving the link into a position substantially at right angles with the axial line of the insulator structure, and it may then only be connected and disconnected by a subsequent rotary movement about its own longitudinal axis.

Other objects and aims of the invention, more or less specific than those referred to above, will be in part obvious and in part pointed out in the course of the following description of the elements, combinations, arrangements of parts and applications of principles, constituting the invention; and the scope of protection contemplated will be indicated in the appended claims.

In the accompanying drawings which are

to be taken as a part of this specification, and in which I have shown a merely preferred form of embodiment of the invention; Figure 1 is a side elevational view of a concatenated or chain insulator, the units of which are connected by connecting links constructed in accordance with the principles of this invention; Fig. 2 is an enlarged detailed elevational view of one of the connecting links shown disconnected from the loop portions of adjacent insulator units; Fig. 3 is a view taken at right angles to Fig. 2 illustrating the parts in assembled relation, the loop portions of the insulator units being shown in section; Figs. 4 and 5 graphically illustrate the method of procedure necessary for assembling one of the links with the loop part of an insulator unit; Fig. 6 graphically illustrates the preferable position of parts for the assembling of a second insulator unit upon the connecting link shown in Figs. 4 and 5; Figs. 7 and 8 are diagrammatic views illustrating possible positions into which the parts may move; and Fig. 9 illustrates a pair of insulator units disposed in horizontal plane being connected by a link constructed in accordance with this invention.

Numerous efforts have been made to provide a simple and inexpensive method of connecting together the units of a chain-type insulator but these efforts have usually resulted in the production of devices requiring the use of separately formed locking members or the like or have been of such nature that they might readily become disengaged because of the irregular and erratic swinging of an insulator structure of this type.

With the use of the present invention it is practically impossible for the units to become disengaged except upon the intentional adjustment of the connecting links into an extremely abnormal position, as will be hereinafter clearly set forth.

Referring to the drawings for a detailed description of the parts illustrated, the reference numerals 1, 2 and 3 indicate a plurality of insulator units of the disk type arranged in concatenated relation for supporting a conductor wire 4 and insulating the same from a support 5. For efficiency of operation the disk insulators 1, 2 and 3 are shown to be of varying sizes or diameters, the one nearest the conductor 4 being of the greatest insulating value and those above

being of successively reduced values in accordance with a principle defined in my co-pending application. From opposite surfaces of the insulators, 2 and 3 project loop members 6. These loop members are U-shaped, as best seen in Fig. 2 and are insulated from each other in any suitable manner now well understood in the art.

Extending between the loop members 6 of the adjacent insulator units is a link member 7 each comprising a body part 8, neck parts 9, at the opposite ends of the body, and heads 10 upon each of the necks 9. The necks 9 are turned at right angles to the longitudinal dimension of the body 8 and the necks at opposite ends are turned in the same direction. The heads 10 are elongated and set transversely of the longitudinal dimensions of the necks, the two heads being parallel to each other and held separated but rigid by the body 8. The necks 9 are rounded, as best seen by dotted lines in Fig. 2 and by full lines in Fig. 3, for fitting snugly and easily in the curved hollows 11 of the loops 6. When in connected relation, as shown in Figs. 1 and 3, the loops 6 engage the necks 9 and are maintained thereby in substantially aligned condition being held by the body 8, the heads 10 extending transversely and overlapping the legs 12 of the loops. With the parts connected, as described, it is apparently impossible to disconnect the links except by swinging them into a position with their longitudinal dimensions at right angles to the longitudinal dimensions of the legs 12. If the transverse disposition of the heads 10 for lapping the legs 12 of the loops were the only means for preventing disconnection of the parts, it is apparent that a force tending to lift the conductor 4, or any one of the units toward another unit, might easily swing the link into a right angular position in which the heads would readily fall out of the loops. Further provision therefore is made for preventing such disconnection. This provision is best understood in connection with Figs. 4 and 5, wherein the manner of assembling is illustrated.

In Fig. 5 the length of the heads 10 relatively to the size of the opening afforded in the loop part 6, between the insulating material or body 13 and the hollow 11 of the loop, is clearly disclosed. From the surface of the body 13 to the inner surface of the loop is considerably shorter than the length of the head. It is therefore apparent that the head could not possibly pass through the opening, either for assembling or disassembling, except by being rotated about its longitudinal axis. In Fig. 4 a link is illustrated in the first position of assembling. The link is turned at right angles to the length of the loop and is disposed so as to present one end of one of its heads into the

opening of the loop, the neck 9 of that head lying flat against the side of the loop. From this position the link must be rotated to swing the neck 9 and body 8 about the longitudinal axis of the link so as to turn the head 10 through the opening of the loop into the position shown in full lines in Fig. 5. After this movement the link may be rotated downwardly, as indicated by the arrow, into the final or normal position shown in dotted lines in Fig. 5. The link having been thus assembled with one insulator unit, a second insulator unit may be connected in the manner shown in Fig. 6, namely by holding the second unit in a right angular position, shown in full lines, and otherwise manipulating the second insulator unit about the second head of the link to accomplish the result described in connection with the assembling of the link with the first insulator unit, as will be understood. This may comprise movement either of the link or of the insulator unit to swing or rotate the second head of the link through the relatively short opening in the loop of the unit.

With the link assembled with the first insulator unit it is apparent that the link may be swung to any convenient position for facilitating attachment of the second unit, so that the requirement for holding the second unit in a right angular position relatively to the length of the insulator structure may be overcome, the same effect being accomplished by swinging the link into a horizontal position in Fig. 6. After the link has been assembled with two insulator units, it is apparent that in order to disassemble the same the units must be positively moved into an extremely abnormal position to effect a passage of the heads 10 through the openings of the loops. The link must not only be moved into a right angular position relatively to the length of a loop, but it must be swung about its longitudinal axis in order to disengage from the loop and it is positively retained from thus swinging by its engagement with the second loop, for it will be noted that in order to become disengaged it must rotate in one direction for disengaging from one loop, and in an opposite direction for disengaging with the other loop. Disengagement therefor could not possibly take place except upon movement of adjacent units in two precise directions and positions. The units must be moved toward each other into the position shown in Fig. 7 (or which is less likely into the right angular position shown in full lines in Fig. 6) and they must swing relatively to each other into substantially the position shown in Fig. 8, or even further, before the heads, or either one of the heads, could disengage from its loop. Here it should be noted that the space be-

tween the nearest adjacent surfaces of the two heads 10, as best seen in Fig. 4, is much too small to permit passage of two of the legs at the same time. This interference
 5 of itself would prevent accidental disengagement of the parts in practically all cases except when one of the loops is held manually into a position for permitting unobstructed passage of the other loop
 10 through the opening between the heads.

It is apparent from the above description and from the drawings that the construction illustrated, though of extremely simple design and cheap manufacture, nevertheless is possessed of a decided degree of efficiency. Insulator units may be assembled and disassembled with ease and convenience when such operations are manually performed, but are almost positively restrained
 15 against disassembling under any conditions short of manual manipulation. The connecting link must almost of necessity be grasped and manipulated of itself relatively to the adjacent loops in order to bring about
 20 a separation. The connecting means therefore is of thorough efficiency in any relation either in a concatenated structure, as shown in Fig. 1, or in a horizontally disposed structure, as shown in Fig. 9.

As many changes could be made in this construction without departing from the scope of the following claims, it is intended that all matter contained in the above description or shown in the accompanying
 30 drawings shall be interpreted as illustrative only and not in a limiting sense.

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

40 1. A connecting member for insulators or other members, said connecting member comprising a body portion for extending between the members to be connected, a pair of heads one adjacent each end of said body
 45 portion both offset from said body portion

in the same lateral direction, said heads being elongated and each extending longitudinally in a plane at right angles to the longitudinal direction of the body portion, and a pair of extensions from said body
 50 portion projecting laterally therefrom toward said heads respectively and merging into the surfaces of said heads which face toward the body portion.

2. In a device of the class described, the combination with a pair of spaced apertured members, the apertures in said spaced members being elongated and the axes of the longest dimension of said apertures being substantially in alinement, of a connecting member for connecting said spaced
 55 members together, said connecting member comprising a body portion extending longitudinally between said spaced members at one side thereof, a pair of extensions
 60 extending laterally from the end portions of said connecting member and each projecting through one of said elongated openings, and a pair of elongated heads one
 65 formed upon the projected end of each of said extensions, said elongated heads each extending longitudinally in a plane transverse to the longitudinal plane of the body portion of the connecting member and being
 70 of a length greater than the length of the smaller diameters of the elongated openings, and said heads each being also longer than the length of the longer diameters of said elongated openings, but the distance from
 75 one side of said extensions to the opposite end of said heads being relatively shorter than the length of the longer diameters of said elongated openings, all for the purpose
 80 set forth.

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

LOUIS STEINBERGER.

Witnesses:

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NATHALIE THOMPSON.