

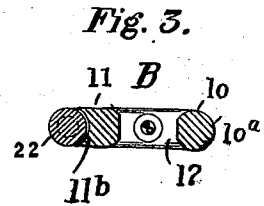
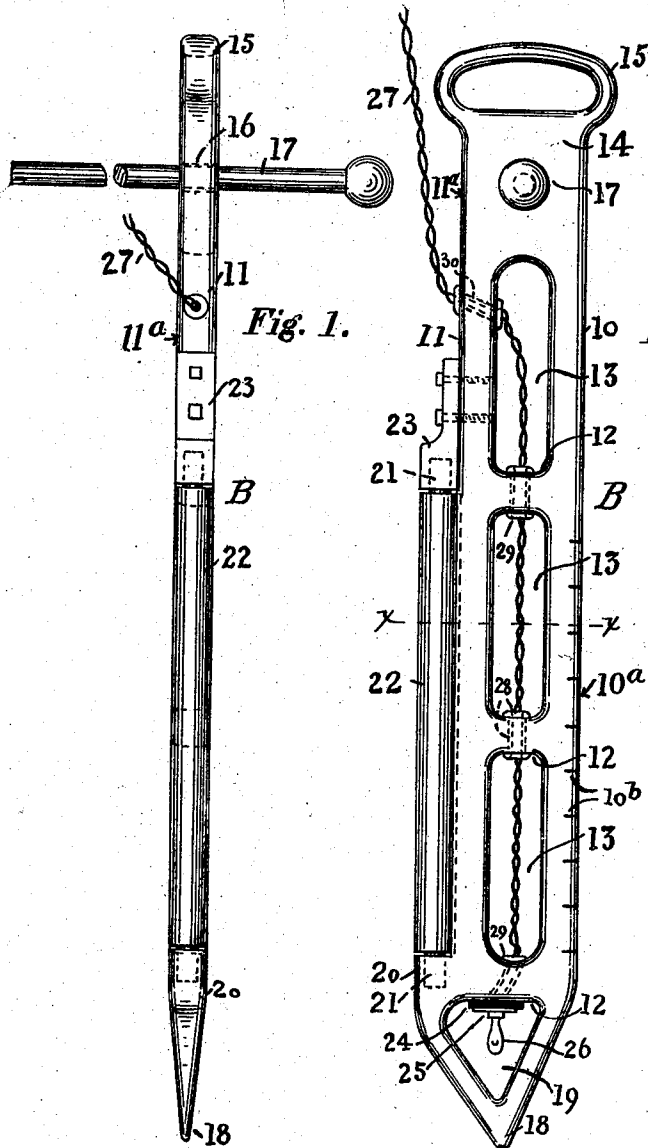
No. 893,319.

PATENTED JULY 14, 1908.

A. G. GILLESPIE & W. E. POTTER.
CABLE RAISING OR SEPARATING DEVICE.

APPLICATION FILED MAR. 11, 1908.

2 SHEETS—SHEET 1.



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Fig. 4.

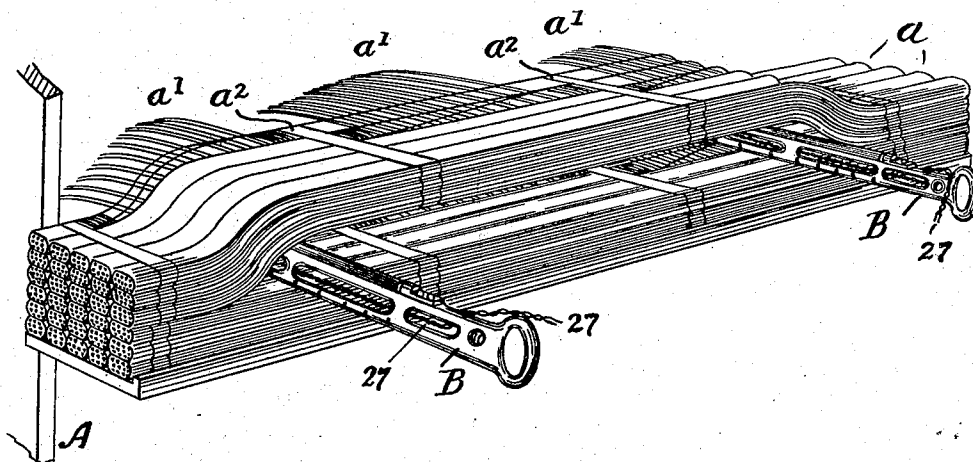


Fig. 5.

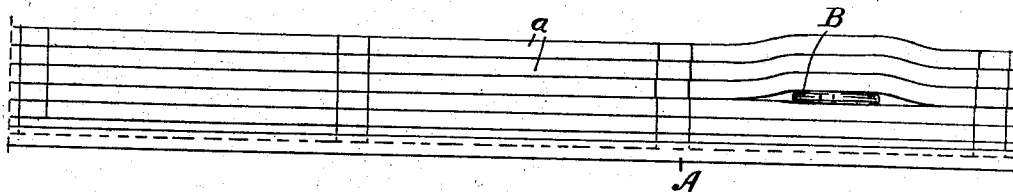
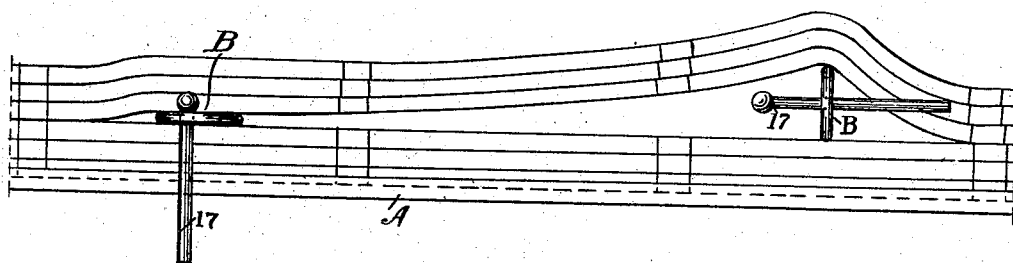


Fig. 6.



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UNITED STATES PATENT OFFICE.

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AMERICAN TELEPHONE AND TELEGRAPH COMPANY, OF BOSTON, MASSACHUSETTS, A
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CABLE RAISING OR SEPARATING DEVICE.

No. 893,319.

Specification of Letters Patent.

Patented July 14, 1908.

Application filed March 11, 1908. Serial No. 420,525.

To all whom it may concern:

Be it known that we, ANDREW G. GILLESPIE and WILLIAM E. POTTER, both residing at Chicago, in the county of Cook and State of Illinois, have invented certain Improvements in Cable Raising or Separating Devices, of which the following is a specification.

This invention relates to devices for raising or separating such objects as connecting cables for electrical purposes, it being especially useful as applied to the cables multiplying the jacks of telephone switchboards. These multiple cables are compactly massed at the rear of the board, being in tiers one upon the other and also being arranged in vertical series. There are as many horizontal layers as there are horizontal rows of multiple jacks, sometimes exceeding fifty, each layer being situated directly behind the corresponding row, and as many vertical series as there are panels in each switchboard section, the maximum number being ordinarily nine. If it is desired to reach the rear of the jack strips for their removal or other purposes, it becomes necessary to raise all the cables above those corresponding to the row in which the jacks in question are located, to thus give a space through which to work. As these upper tiers may possess great weight, amounting to hundreds of pounds for comparatively short sections, this is difficult to accomplish without injuring the cables or their connections, and to furnish an effective implement for this purpose is the principal object of our invention.

In the accompanying drawings, forming a part of this specification and in which similar characters designate like parts throughout the several views, Figure 1 shows an edge elevation of one embodiment of the invention; Fig. 2 is a side elevation thereof, looking from the right in Fig. 1; Fig. 3 is a transverse section on the line $x-x$ of Fig. 2; Fig. 4 shows in perspective a portion of the rear of a telephone switchboard with our invention applied to the cables thereof, and Figs. 5 and 6 are detail views in elevation illustrating successive steps in the application of the implement.

This improved cable raising device is preferably in the form of a bar B having an elongated main or body portion, which may be cast or drop forged from steel, and which is conveniently formed with side members 10

and 11 united by cross members 12, between which are open spaces 13. The cross members are sufficient in number to give the requisite strength and stiffness, yet there not being so many as to render the appliance unduly heavy. In cross section the body portion is oblong, the diameter, or lateral axis, passing centrally through both the members 10 and 11 being much greater than that at right angles thereto. The outer edge of the member 10 is rounded at 10^a, the curve being substantially semicircular so that the sides of the bar merge gradually into it as tangents. The member 11 has a plane surface 11^a extending for some distance from one end, and beyond this is a groove 11^b circular in contour. At one extremity of the bar the side members are joined by a cross member 14 of considerable width, upon which is formed a handle 15, and in this member 14 is an opening 16 to receive loosely a turning bar or lever 17 of such length that the proper force may be applied to rotate the bar about a longitudinal axis.

The opposite extremity of the bar from the handle is tapered, the side members converging beyond the last cross member 12 and being inclined in both lateral directions to approach a point at 18, this however being somewhat rounded to prevent the injury of objects with which it may contact. In this reduced end portion is a generally triangular recess or opening 19 continuing the series of spaces 13, while the outer edges are curved similarly to the edge of the bar at 10^a. The tapered end of the bar at its inner side is wider than the body portion, thus furnishing a shoulder 20 extending beyond and at an angle of approximately ninety degrees with the edge of the side member 11. This shoulder furnishes a bearing for one of the journals 21, 21 of a roll or elongated rotatable member 22, the other journal having a bearing in a bracket 23, which, as illustrated, is bolted to the edge 11^a of the bar adjacent to the end of the groove 11^b. The periphery of the roll lies in close proximity to the wall of the groove, the proportion and relation of the parts being such that the surface of the roll outside the groove becomes practically a continuation of the sides of the bar, which are tangential to it. This edge of the bar therefore resembles in this respect the opposite curved edge 10^a of the member 10, the

outer portion of the roll lying at the opposite extremity of the maximum diameter of the bar. The length of the roll is at least as great as the width of any layer of cables to which the implement is to be applied; so that the entire horizontal series may have a bearing on the roll. Upon the bar, preferably along the edge opposite the roll, is a set of uniformly spaced index marks 10^b by which the extent of insertion of the appliance may be determined.

Upon the inner side of the triangular opening 19 is mounted an insulating block 24 carrying a socket 25 to receive a small incandescent lamp 26. Current may be supplied to this lamp for its illumination by flexible conductors 27, 27, passing through the spaces 13 and through openings 28 in the cross members 12, these openings being provided with insulating bushings 29. From the space adjacent to the handle the conductors leave the bar by way of a bore 30, suitably bushed, and inclined toward the handle, this inclination tending to prevent too sharp bending of the conductors.

Referring to Figs. 4 to 6 of the drawings, the letter A designates a portion of a switchboard frame supporting the multiple cables a , from which the separate pairs of conductors or "skimmers" a' extend from successive cables in each horizontal layer to the corresponding rows of jacks. Strips a'' of webbing encircle each tier, serving to separate them and to facilitate their identification. Let it be supposed that a fault has been located in a particular multiple jack strip in the third row from the bottom and that the repair men wish to reach it. With the lever 17 removed for convenience in handling and with its maximum diameter extending horizontally, the tapered end of a cable raising implement is inserted between the proper tier of cables and that next above and at a point to one side of the jack strip sought. Then the bar is gradually worked between the layers, as is shown in Fig. 5, until, considering the arrangement of the particular switchboard upon which the work is being done, the index marks 10^b show that the inner end of the roll 22 has passed the last vertical series of cables, and therefore to continue further is unnecessary and might cause damage by contact of the point with the jacks. This insertion is readily accomplished because of the wedging effect of the tapered end and the comparative thinness of the bar in its minor lateral dimension. The lever 17 is then passed through its opening and the bar rotated about the edge 10^a resting upon the cable beneath, while the roll 22 runs under the overlying layer. The device now occupies the position shown at the right of Fig. 6, and this change is effected easily without injury to the cables, skimmers or webbing by scraping, straining or displacement, since the move-

ment of the edge 10^a is very slight, the extent and character of the rounded surface preventing indentation of the cable; and though the roll travels over considerable surface, its rotation reduces the frictional resistance to a minimum. A second bar is now similarly inserted (see at the left of Fig. 6) at the opposite side of the jack strip, turned and the lever removed, thus giving between the two bars an unobstructed opening or working space of practically uniform rectangular section, which is somewhat longer than the jack strip and in width equal to the maximum diameter of the bars. We have found it convenient to make the latter dimension two and three fourths inches. This condition of the cables and raising devices is illustrated in Fig. 4. The flexible cords 27 may now be connected to some source of electrical energy, causing the lamps to glow and supplying light where it most aids the workmen in discovering and removing the fault. The position of the lamp affords it considerable protection, so that it is not liable to be broken in handling the device. The switchboard difficulty having been remedied, the bars are turned back to the position which followed their introduction and are withdrawn. It will be evident that both these operations of insertion and removal may not only be accomplished without harm to the cables, for the reasons already pointed out, but also that they will cause no jarring of the switchboard and therefore will have no tendency to loosen or otherwise affect the jack connections. Furthermore, the device possesses the merits of simplicity, strength and portability.

We claim:

1. A cable raising device comprising an elongated body portion having one of its lateral dimensions greater than the others, and means for turning the body portion about a longitudinal axis.

2. A cable separating device comprising an elongated body portion having one of its lateral dimensions greater than the others, means for turning the body portion about a longitudinal axis, and means extending along the body portion for facilitating its turning.

3. The combination with a separating bar adapted for insertion between cables and being provided with a recess, of illuminating means carried within the recess.

4. A switchboard cable raising implement comprising a bar having a tapered end, and a rotatable member extending longitudinally of the bar and having its outer portion lying at the extremity of the maximum diameter of the bar.

5. A cable raising implement comprising an oblong bar having curved edges and with one end tapered, and a lever cooperating with the bar near the opposite end.

6. The combination with a bar oblong in

cross section and provided with a handle at one end and being tapered at the opposite end, one edge of the bar being curved and the portion between the handle and tapering end having one or more index marks, of a roll extending along the bar opposite the curved edge, and a lever cooperating with the bar adjacent to the handle.

7. The combination with a bar consisting of separated side members and intermediate cross members which are provided with openings, the side members converging beyond an outer cross member, a handle at the opposite end of the bar, an incandescent lamp sit-

uated in the space between the converging portions of the side members, and flexible conductors extending from the lamp through the openings in the cross members to a point in proximity to the handle.

In testimony whereof, we have signed our names to this specification in the presence of two subscribing witnesses, this 7th day of March 1908.

ANDREW G. GILLESPIE,
WILLIAM E. POTTER.

Witnesses:

EDWARD D. WALLACE,
MARION A. REEVE.