

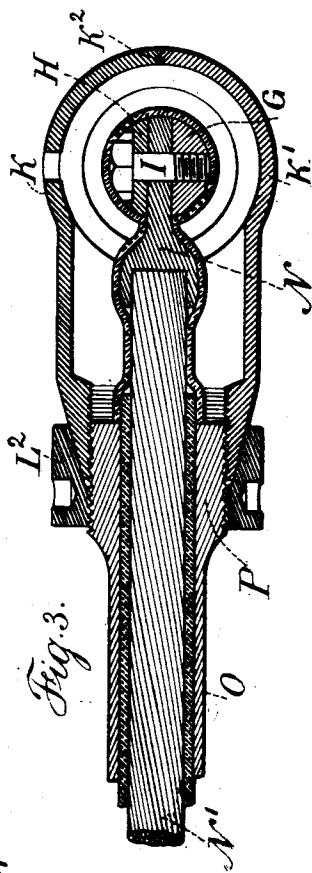
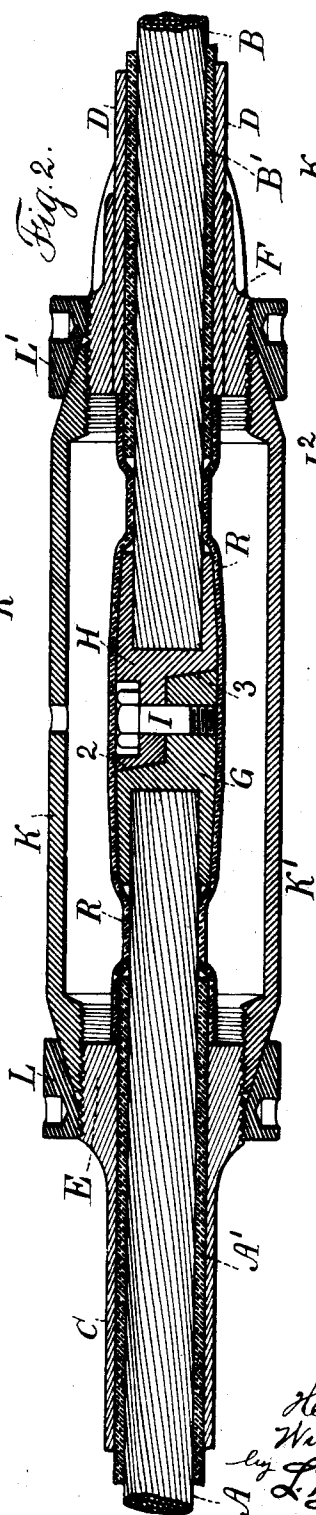
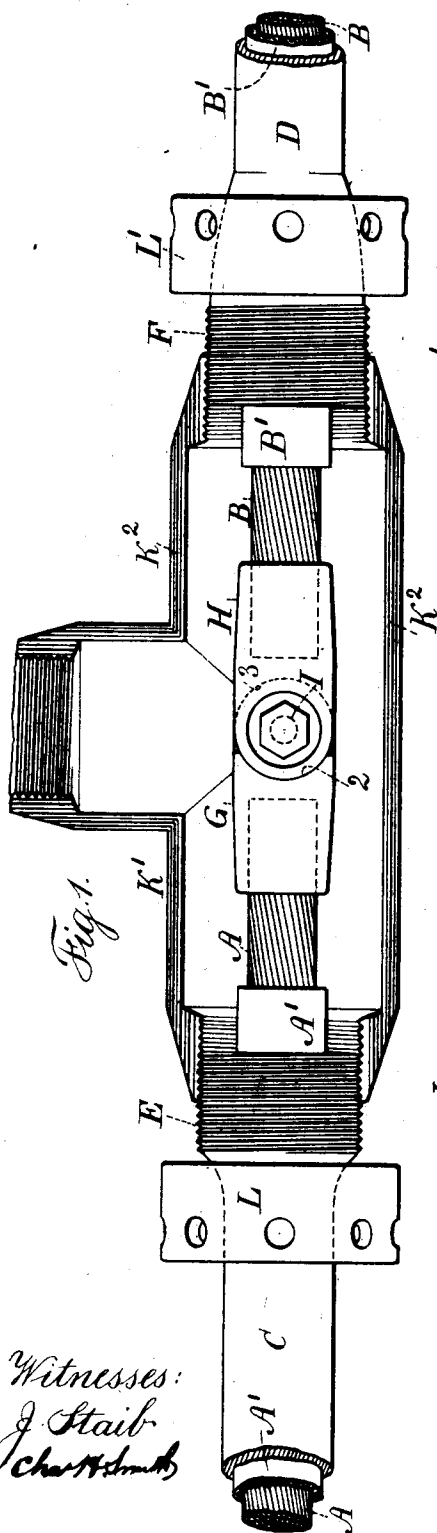
No. 608,412.

Patented Aug. 2, 1898.

H. S. PATTEN & W. MAVER, JR.
JOINT FOR ELECTRIC CONDUCTORS.

(Application filed Dec. 31, 1897.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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JOINT FOR ELECTRIC CONDUCTORS.

SPECIFICATION forming part of Letters Patent No. 608,412, dated August 2, 1898.

Application filed December 31, 1897. Serial No. 664,827. (No model.)

To all whom it may concern:

Be it known that we, HERBERT S. PATTEN, residing at Montclair, in the county of Essex, and WILLIAM MAVER, Jr., of Jersey City, in the county of Hudson, State of New Jersey, citizens of the United States, have invented an Improvement in Joints for Electric Conductors, of which the following is a specification.

10 The present invention is especially intended for giving access to the joint in the electric conductor for testing sections of the line and also for effecting repairs, and by the present improvement a branch line or conductor can
15 be taken off.

In carrying out the present improvement coupling-pieces are permanently secured by solder or otherwise to the adjacent ends of conductors, and these coupling-pieces are made to fit into each other closely, so as to have an extended surface contact, and a bolt is made use of for binding the parts together, thereby preventing resistance or the development of heat, and to these coupling-pieces a
20 branch conductor is applied at places where such a branch is required, and the parts are connected and clamped by a single screw.

It is important to inclose the joint with a case that shall be perfectly waterproof and
30 at the same time that can be easily removed, so as to give access to the joint. This is of considerable importance, because in instances where a case has to be injured or destroyed in obtaining access to the joint considerable
35 time is lost as well as expense involved, and where a break or injury arises or where there may be a "ground" the location of such imperfection is of considerable importance. By the present improvement the case can be removed with rapidity from around the joint
40 and the joint disconnected for the purpose of testing the circuit to the given point, and then the next joint can be uncovered, and so on until the defect is located, and this is accomplished with great rapidity and the parts
45 replaced in succession. To effect the aforesaid object, a two-part case is applied around the joint, such case setting together and being rendered moisture-proof by suitable ce-

ment, and the inclosing tubes for the con- 50
ductors and the ends of the case are tightly connected by screw-collars with projecting edges passing over the tapering ends of the case and by which the parts of such case are bound securely together and also pressed 55
upon the collars at the ends of the inclosing tubes for the conductors.

In the drawings, Figure 1 is a plan view with the top of one of the cases removed. Fig. 2 is a longitudinal section without a 60
branch conductor, and Fig. 3 is a cross-section with a branch conductor.

A and B represent the main conductors, and C and D the tubes containing the same, the ends of which are at a convenient distance for 65
giving access to the joint between the conductors. These tubes C and D may be of any desired character. If they are iron tubes, the ends will be screw-threaded, as usual. If they are lead or other soft metal the screw-threaded 70
collars E and F will be connected to the ends of the respective tubes C and D, and we prefer in so doing to have a sleeve projecting from the collar a sufficient distance to allow for a wiped or soldered connection to be made 75
between the same and the soft-metal tube, as represented in connection with the collar F.

The conductors A and B are to be insulated from the tubes C and D, and we have also represented these conductors as made up of 80
a number of wires brought together; but the present improvement is available where only a single wire composes the conductor, and also where a number of conductors are introduced in the same tubular cases, it being un- 85
derstood that the conductors are properly insulated and are to be joined up in any desired manner or in the same way that the conductors A and B are joined, as hereinafter set forth. 90

The couplings G and H are permanently connected to the respective ends of the conductors A and B. Such couplings are advantageously made with tubular recesses for receiving the ends of the conductors, the connection being made by solder or equivalent 95
material melted or sweated into the respective couplings for permanently joining such coup-

lings to the conductors. These couplings G and H are made to set closely together and to be connected by the clamping-bolt I, and we prefer to make the end surfaces 2 and 3 of the couplings as segments of cones and the adjacent surfaces as conical-shaped recesses, so that the parts will set closely together, and the clamping-bolt I will apply pressure to bring such surfaces into intimate contact in order that there may not be any more resistance in the couplings and joint than there is in the conductor itself, thus preventing loss of electric energy or the heating of the couplings.

The insulating-coverings A' B' to the conductors A and B are advantageously stopped between the ends of the tubes C and D and the respective couplings G and H, and insulating tape or wrapping R may be applied around the ends of the conductors and around the couplings, and this is done with facility because the parts are not incased.

The divided case K K' is advantageously made of two parts that are similar, the plane of division corresponding to the center of the conductors, and the ends of this case set closely around the screw-threaded collars E F at the ends of the tubes C and D, and it is generally preferable to screw-thread the interior surfaces of the divided case to fit the screw-threads of such collars, and the exterior surfaces of the parts of the divided case are conical or tapering at the ends, and the screw-rings L L' have internal conical surfaces to fit the exterior ends of the divided case and also screw-threaded portions to screw upon the collars E and F, respectively, and these rings are to be screwed back over the screw-threaded collars E and F and the pipes before the parts of the case K and K' are applied to the screw-threaded collars as the parts of the case are put together, and then the screw-rings L and L' are screwed forward upon the ends of the divided case and firmly clamp the parts of the case together and hold the same in position around the joint of the conductors. If desired, a hole may be provided in the top part of the divided case through which a liquid insulating material, such as a melted resin, may be poured, so as to close tightly around the joint and exclude the atmosphere.

It is advantageous to groove the adjacent edges of the divided case, as at K², so that the parts will set tightly together, and when white lead or any suitable or similar material is applied between the parts of the case and between the ends of the case and the collars the atmosphere or moisture may be effectually excluded.

The joint heretofore described is adapted to ordinary lines of electric conductors; but where a branch is to be taken off a bar N is inserted between the couplings G and H, through which bar the bolt I also advantageously passes, and the parts of the coupling are made with reference to receiving this bar N, so that they will set tightly together and

also tightly clamp the bar, and this bar N forms the end of the branch conductor N', which may be of any desired character or size, and passes off into a tube O, having at its end a screw or collar P, and the divided case K K' is made with lateral half-branches to grasp such collar in the same way that it grasps the collars E and F, and the screw-ring L² is employed around the collar P to clamp the two parts of the divided case K K' at the lateral half-branches that receive the collar P, so that to separate the parts of the divided case having the branch the screw-rings L L' L² are screwed back from over the conical ends of the case and then the case can be separated and lifted entirely away from the joints, giving access for reconnecting the parts or for repairs, and when the branch conductor is employed the parts may be surrounded or wrapped by insulating-tape or other suitable material.

In Fig. 2 the couplings G and H are represented as coming directly into contact where the clamp-bolt passes through them; but usually it is preferable to make these parts as shown in Fig 3 and to place a washer between the parts H and G where there is not any branch connection N. Hence there will not be any change except to remove the washer when a branch is to be added.

This improvement allows for detaching one part of a conductor from another by removing the bolt I and separating the couplings G H from each other after the case K K' has been taken off, and the end of the conductor that remains may be insulated and protected by an ordinary tubular cap screwed upon the coupling E or F.

In cases where the improvement is applied to a cable that is not separated, especially where a branch is to be taken from the cable, the tube around the cable may be removed and the screw-collars E and F be soldered to the ends of the tube C D. In this case, however, said screw-collars E F and the rings L L' would have to be in two parts, so as to apply them around the cable, such rings L L' being afterward connected by bolts or otherwise.

We claim as our invention—

1. The combination with the tubes and the insulated conductors within the tubes and connections for the conductors, of a two-part case adapted to set together around the joint and having tapering or conical ends and screw-rings around the ends of the inclosing tubes and receiving and clamping together the parts of the divided case, substantially as set forth.

2. The combination with the conductors and their couplings or connections, of tubes surrounding the conductors and having screw-threaded ends, a two-part case having tapering ends and screw-rings upon the ends of the tubes passing over the conical ends of the divided case and holding the same in position, substantially as set forth.

3. The combination with the conductors and

their couplings or connections, of tubes surrounding the conductors and having screw-threaded ends, a two-part case having tapering ends and screw-threaded to fit the ends
5 of the tubes, and screw-rings upon the ends of the tubes passing over the conical ends of the divided case and holding the same in position, substantially as set forth.

4. The combination with the conductors and
10 their couplings or connections, of tubes surrounding the conductors and having screw-threaded ends, a two-part case having tapering ends and screw-threaded to fit the ends of the tubes and interlocking grooved edges
15 and screw-rings upon the ends of the tubes passing over the conical ends of the divided case and holding the same in position, substantially as set forth.

5. The combination with the conductors and
20 their insulating-coverings, of couplings to which the ends of the conductors are soldered or otherwise permanently connected, such couplings having lapping ends with closely-fitting surfaces, a bar between the two parts
25 of the couplings and a branch conductor therewith connected, and a clamping-bolt passing through such couplings and through the bar

and holding them together, substantially as set forth.

6. The combination with the two conductors 30 and their surrounding tubes and insulating material, of a branch conductor and a coupling connecting the conductors, a case divided in two parts and adapted to setting between the ends of the respective inclosing tubes and 35 screw-rings upon the respective tubes acting to confine the parts of the divided case and to connect them with the respective tubes, substantially as set forth.

7. The combination with the conductors and 40 their insulating-coverings, of couplings to which the ends of the conductors are soldered or otherwise permanently connected, such couplings having lapping ends with closely-fitting surfaces, and a clamping device for 45 holding them together, substantially as set forth.

Signed by us this 9th day of December, 1897.

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WILLIAM MAVER, JR.

Witnesses:

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