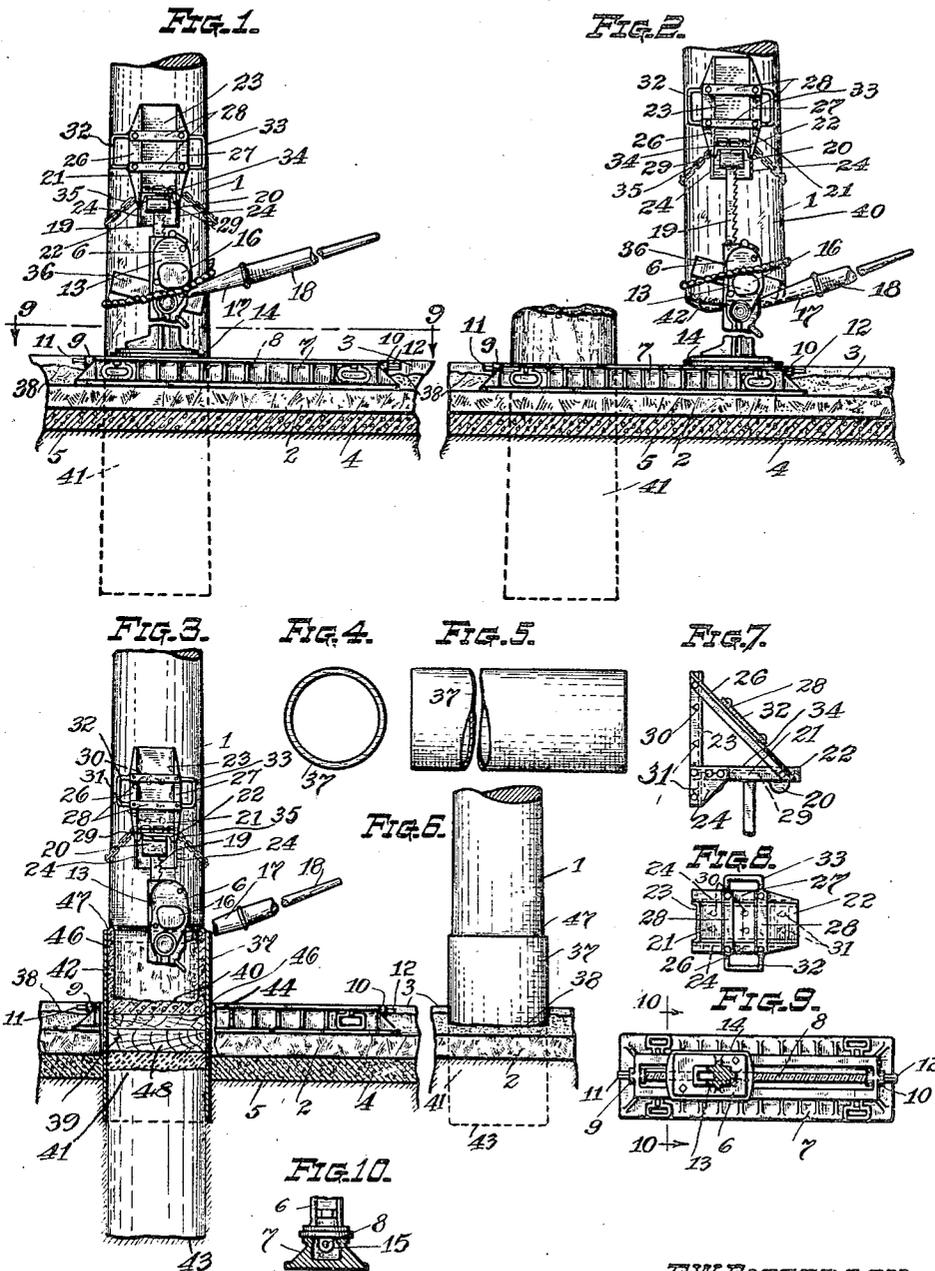


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F. W. PATTERSON
METHOD OF RESTORING POLES

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METHOD OF RESTORING POLES.

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To all whom it may concern:

Be it known that I, FREDERICK W. PATTERSON, a citizen of the United States of America, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Methods of Restoring Poles, of which the following is a specification.

The present invention relates to a method of restoring and renewing used telegraph, telephone, power and electric light poles, so that their usefulness may be indefinitely extended.

It is a well known axiom in the engineering art, that in situations where wooden poles are subjected to the alternating influences of changes in the degree of moisture, that the said poles or timbers decay very much sooner than when they are subjected to a wholly dry or wholly moist or saturated condition. Such an alternating condition or degree of moisture exists at the ground line of practically all poles of the kind before mentioned, and their decay at this point is certain within a comparatively short period, after being set in position. The method hereinafter described furnishes a means of restoring such injured or decayed poles, so that they may be continuously used, and their removal accomplished without removal or detachment of the overhead wires which they support on their cross arms, and at very small expense as will be more fully described in this specification.

In the accompanying drawing I have illustrated by a series of figures, and some details of the special devices used, the best mode I have so far devised for the practical application of the principles of my invention.

Figure 1 is a side elevation of a telegraph pole with the devices used for elevating same in proper relative position therein.

Figure 2 is an elevational view of the pole shown in Figure 1, showing the upper portion severed from the lower and the former removed a short distance to one side of the base portion.

Figure 3 is a similar elevation to those just described, partly in section, to illustrate certain features of the invention.

Figure 4 is an end view of a cylindrical metal tube used with my invention.

Figure 5 is a side view of Figure 4.

Figure 6 is an elevation of the lower portion of a restored pole, exhibiting the general appearance of same, when the work of restoration has been completed.

Figure 7 is a side elevation of a specially designed "head" used in connection with a lifting "jack" in carrying out my invention.

Figure 8 is a plan view of Figure 7.

Figure 9 is a horizontal section of a lifting jack taken on line 9—9 of Figure 1.

Figure 10 is a transverse section on line 10—10 of Figure 9.

The numeral 1 indicates a telephone or other pole of the kind above-described; 2 the granite or concrete curb usually found on city streets; 3 the sidewalk usually of concrete; and 4 the ordinary street paving composed of concrete, bituminous material, or like substance, while 5 indicates the earth beneath the latter. These it will be noted are the customary conditions found in city streets of the present day. The numeral 6 indicates a lifting "jack," of which there are a number of types, the one illustrated being particularly well suited to the purpose in hand, to-wit: the removal of the pole 1, laterally as shown in Figures 1 and 2 of the drawings. The said metal jack 6 has a base 7, within which operates a threaded screw 8, which rotates in bearings at 9, 10 at opposite ends of the base 7. The threaded screw 8 is also provided with angular ends 11, 12 adapted to be manually operated with an ordinary wrench. 13 indicates an upright part, mounted on a plate 14, the under surface of which carries a downwardly projecting screw-threaded lug 15. The screw 8 passes through said lug 15, and as the ends 11, or 12 are operated, it is at once seen that the upright 13 will advance along the screw 8, according to the direction of rotation of the latter. The upright part 13 has the usual internal mechanism at 16, and socket arm 17, which, when the handle 18 is operated cause the serrated rack bar 19, and its head 20 to be raised (or lowered) to any desired position. I have a specially constructed "head" 21 which engages on the top of the usual T shaped top of the rack bar 19, which head 21 is clearly illustrated in Figures 1, 7 and 8. Said head 21 consists of a horizontally disposed channel-iron 22,

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a vertically positioned channel-iron 23, and two gusset plates 24, 24 connecting the said channel-irons as shown. Also a pair of stiffening angles 26, 27, having flats 28, 28 connecting them, are used to join the channel-irons. Suitable prongs 30, 31, etc., are formed on, and preferably integral with the channel-iron 23 for engaging the surface of the pole 1. The flats 28 are provided with handles 32, 33 for convenience in handling, and adjusting the head 21 on the top of the metal jack 6. A flat bar 29 is fastened within the flanges of the channel-iron 22 for stiffening the web 34 of the latter. A chain 35 and spacing block 36 are also usually necessary in practicing the present method of pole restoration. 37 indicates a metal and preferably cylindrical tube, usually about four feet in length and three-sixteenth of an inch in thickness, the diameter depending on the size of the pole 1 as will be explained.

In practicing my invention I proceed as follows: The lifting jack 6 is placed in position shown in Figure 1 of the drawings on any substantial foundation which is usually the curb or surrounding earth. The special head 21 placed on top of the jack 6 as shown in said Figure 1, a chain 35 adjusted over the top of channel-iron 22, around the pole 1, and the ends of said chain securely fastened. The handle 18 is next operated to elevate the head 21 and with it the pole 1, the prongs 30, 31 engaging into the side of the pole and assisting in securing a good grip on the same. It is understood that the earth around the pole base is loosened in any suitable manner prior to the lifting operation to facilitate as much as possible the raising of the pole. It will be noted that as the overhead wires (not shown) are always disposed in the form of a sagged or catenary curve between successive poles that said surplus wire enables the pole 1 to be raised without the wires at its top being disturbed in any manner, as is at once understood. Ordinarily the pole is cut or hewed with an axe about at ground level, say at point 38, but the exact point depending on the point of worst decay of the pole itself. The pole is next removed by operating the screw 8 in the jack base 7 to a position illustrated by Figure 2. The decayed portion illustrated by the space 39 Figure 3 is then entirely removed from the base of the upper portion 40 of the pole as well as the top of the stump portion 41. The end 42 is then reduced in size, by using preferably a draw-knife, to fit the size of the metal tube 37, and in like manner the upper end of the stump 41 is fitted to enter the tube 37. The stump 41 is lowered to its original position as at 43 Figure 3 with the casing 37 in position as shown in said figure. Dry earth or shale is next tamped in the space 39 to form a good foundation for the pole, and if

preferred one or more layers of plank 44, 48, etc., can be used as a top for the tamped earth as shown.

The pole 1, is then raised to a proper height, to clear the top of tube 37 and returned from the position 45 shown in Figure 2 to the position directly over the tube 37 and ready to be lowered therein. A cement "grout" (which is preferably in proportions of one part cement and one part sand) is next poured into the tube 37, and on top of the plank 44. The pole is then lowered by using the jack into the pipe 37, taking its final position as indicated in Figure 3, the surplus of grout being displaced by the end 42 of the pole. In some places where it is desired to water proof the seal between the pole and the top of the cement grout 46, some of the latter is removed for a depth of say two inches at 47 all around the pole and within the tube 37, and the space filled with an asphaltic composition composed of asphalt and sand. In this way a water-tight seal is made all around the pole. In connection with the matter of practical sizes and depths as actually used, by way of illustration, it may be said that it is ordinarily found, for a pole base of, say twelve inches in diameter, that a metal tube of fourteen inches outside diameter, with not less than three-sixteenths of an inch thickness of metal is the proper working size to give best results. Also the metal tube used is ordinarily about four feet in length, with one and a half feet of same above the ground line, or surface.

The bottom of the pole is usually 5 to 6 feet below the surface and after the decayed portion has been removed it should have approximately one and a half feet of its upper stump portion in engagement within the metal tube; while the lower end of the upper section of the pole should have at least an equal portion within the metal tube also. However, it will be understood these sizes and depths vary according to local conditions and are merely given as an illustration of what usually obtains in practice, in the way of relative sizes and depths used.

Attention is called to the fact that the whole restoration of the pole to a new period of usefulness is accomplished without removing or even adjusting any of the overhead wires which the pole supports, and that the final heights of said wires remain practically the same as they were on the old pole.

In some cases where the stump portion 41 is badly decayed and unfit for use from any cause, a longer casing 37 may be used to extend to the bottom of the stump hole in which case the dry earth or shale occupies the whole interior of the casing, up to the bottom of the planking 44. The casing 37 under these conditions must of necessity be

from six and one half to seven and one half feet in length, according to the local conditions to be met.

5 It is observed that the expense involved in making the resoration is very small comparatively, and can be made at about half the cost of purchasing and setting a new pole.

10 The whole method can be performed in an incredibly short space of time, with two or three men, and without interruptions in the power, or lighting service.

15 From which it is seen that I have provided a very useful and economical method of restoring old telegraph, electric light and similar poles, to a new period of serviceability, which is a matter of importance when the growing increase in cost and scarcity of timber is considered.

20 What I claim is:

1. In a method for restoring the butts of poles, raising the pole vertically to a point where the decayed portion of said pole is exposed above the surface of the ground, severing the stump and removing the said decayed portion; removing the pole laterally away from its original position, and dressing the ends of the pole and stump to fit a metal tube; lowering the stump to its first position, adjusting the metal tube on the end of said stump and partly filling the tube with tamped earth and cement grout; and returning and lowering the pole to a position within the metal tube thereby displacing some of the cement grout, so that when the grout "sets" a secure bond will be established between the stump, the tube and the pole itself.

2. A method of restoring the butts of poles which consists in raising the pole vertically; removing the portion to be replaced; dressing the ends of the pole and stump to fit a metal encasing tube, placing the stump and tube in the stump hole and partly filling the tube with grout; and then placing the pole

within the tube, displacing some of the grout and forming a bond between the tube and the pole.

3. A method of restoring poles which consists in raising the pole vertically with a lifting jack having a specially constructed head adapted to engage the pole and the upper end of the lifting jack; removing the portion of the pole to be replaced; transferring the upper section of the pole laterally with the jack away from the stump; lowering the stump to its original position, with a metal tube adjusted on the upper end of same; partly filling the tube with grout; and returning the upper section of the pole laterally and vertically by means of the jack to a position within the said tube, thereby displacing some of the grout and forming a bond between the tube and the pole.

4. A method of restoring poles which consists in raising the pole vertically with a lifting jack having a specially constructed head adapted to engage the pole and the upper end of the lifting jack; removing the portion of the pole to be replaced; transferring the upper section of the pole laterally with the jack away from the stump; lowering the stump to its original position, with a metal tube adjusted on the upper end of same; partly filling the tube with grout, returning the upper section of the pole laterally and vertically by means of the jack to a position within the said tube, thereby displacing some of the grout and forming a bond between the tube and the pole; removing some of the grout for a small depth all around the pole at the top of the metal tube, and placing in said annular space a waterproof material to a point flush with the top of the metal tube.

In testimony whereof I affix my signature.
FREDERICK W. PATTERSON.

Witnesses:

WILLIAM A. HIRTLE,
HOWARD C. WATSON.