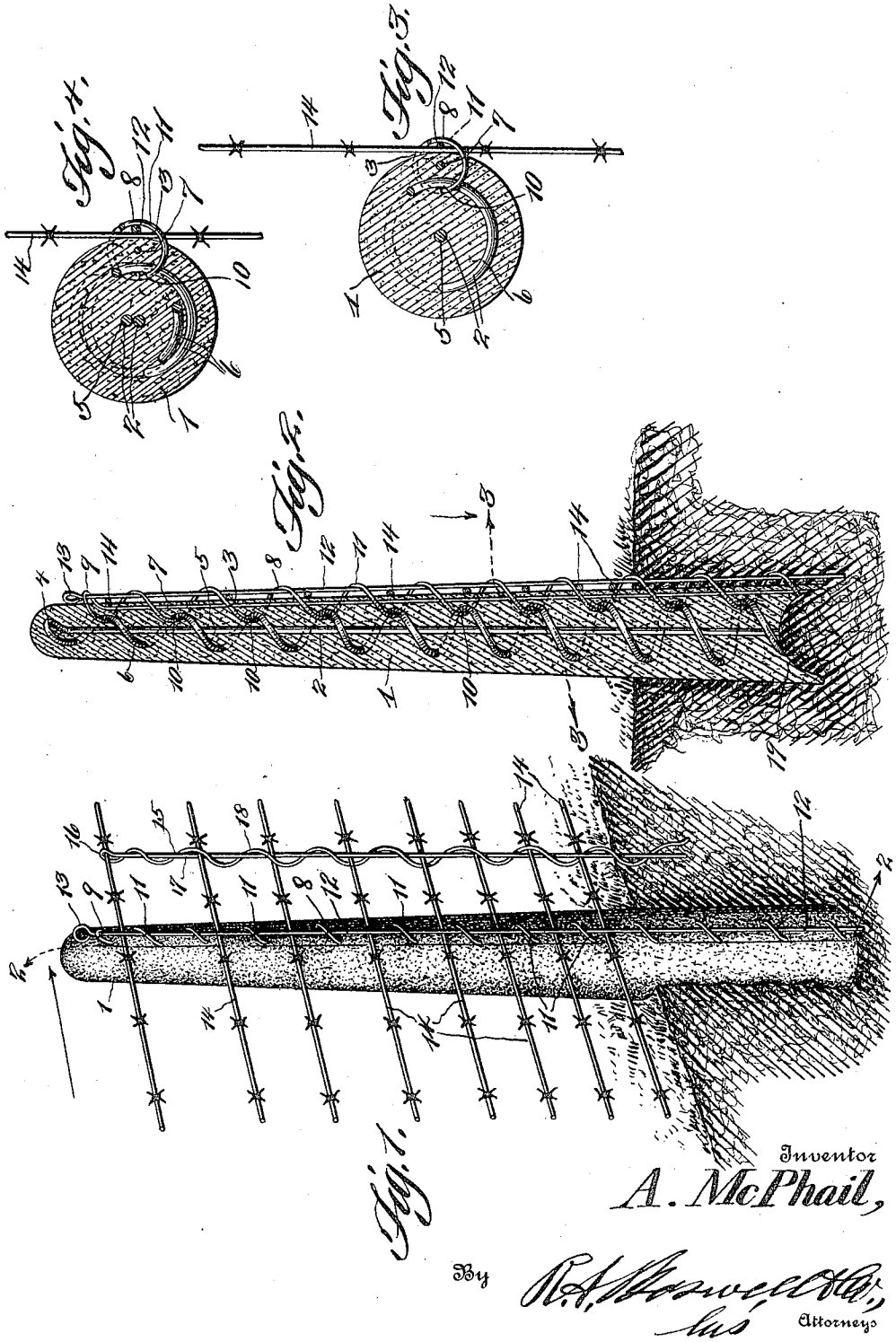
A. McPHAIL.

REINFORCEMENT AND FASTENING.

APPLICATION FILED JAN. 22, 1919.

1,322,802. Patented Nov. 25, 1919.



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UNITED STATES PATENT OFFICE.

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REINFORCEMENT AND FASTENING.

1,322,802. Specification of Letters Patent. Patented Nov. 25, 1919.

Application filed January 22, 1919. Serial No. 272,593.

To all whom it may concern:

Be it known that I, ARCHIBALD McPHAIL, a citizen of the United States of America, residing at Fargo, in the county of Cass and State of North Dakota, have invented a new and useful Reinforcement and Fastening, of which the following is a specification.

This invention relates to the art of concrete fence posts and particularly to a new and improved reinforcement and fence wire fastening therefor.

Heretofore, in the construction of concrete posts of this kind, there has been no practical method of maintaining the reinforcement for the concrete evenly distributed, while molding the post.

It has been found that the small percentage of fence wire fastenings now in use are entirely unsatisfactory, not only since such fastenings are not secure and require considerable labor in connecting the fence or line wires thereto, but also for the reasons that the fastenings will pull from and shatter the concrete of the posts, incident to the strains imposed thereon.

In the present invention it is the aim to overcome the above disadvantages, and to provide a combined reinforcement and fence line wire fastening, which is simple and efficient in construction, and may be manufactured for a small cost and sold at a reasonable profit.

It is a further aim to provide a combined reinforcement and fastening of such practical construction and design, as to render the hereinafter advantages available.

For instance, in the present design of structure, the reinforcement and fastening requires considerable less material, and at the same time insures greater strength and rigidity to the concrete than heretofore attained.

At the time of molding concrete fence posts, the combined reinforcement and fastening is of such practical construction that the parts thereof will remain evenly distributed, thereby, after setting of the concrete, the strength and rigidity will likewise be evenly distributed.

In the construction of a concrete post the reinforcement and fastening extends the full length of the post, and comprises a central elongated leg or rod, surrounding and concentric with which is a tapered helix with one end integrally connected to the central leg, and its convolutions equally spaced, thereby uniformly distributing the strength and rigidity throughout the entire length of the concrete post.

Since the fastening is similar in construction to the reinforcement, and has its convolutions interlocked with those of the reinforcement, additional strength and rigidity of the concrete, and the adhesion of the particles thereof, are insured, particularly adjacent the points of interengagement between the convolutions of both helix.

The fastener helix is disposed in concrete fence post and interlocked with the reinforcement, whereby portions of the convolutions thereof are exposed adjacent the surface of the post, for the reception of a line or fence wire key, the line or fence wires being arranged between the exposed parts of the convolutions.

As a further object of the invention it is the aim to provide a key to be inserted through the superimposed exposed portions of the convolutions, for holding the fence wires intermediate the convolutions, said key acting as a lightning rod or conductor for carrying the electrical discharges to the ground.

A further object of the invention consists in providing a fence post having a concaved bottom or butt end, up into which the soil or ground extends with sufficient suction, as to insure holding the post firm and perpendicular.

The invention is embodied in a structure which at present is deemed most preferable and practical, but which is not to be restricted. In practice various changes and alterations may be necessary, consequently the right to such changes and alterations that may be required, is claimed, provided they fall within the limits of the appended claims.

This combined reinforcement and fastening is to be manufactured by an improved machine, which is automatic, as set forth, illustrated, and claimed in a copending application in the name of A. McPhail, filed 22nd day of January, 1919, Serial No. 272,594.

The invention comprises further features

and combination of parts, as hereinafter set forth, illustrated in the drawings, and claimed.

In the drawings:—

Figure 1 is a perspective view of a concrete fence post, showing the improved reinforcement and fence wire fastening as applied thereto, and also illustrating a stay also in the form of a helix, for reinforcing the line wires.

Fig. 2 is a vertical sectional view on line 2—2 of Fig. 1, illustrating the interlocking feature between the fastening and reinforcement helix.

Fig. 3 is a transverse sectional view on line 3—3 of Fig. 2.

Fig. 4 is a transverse sectional view through a fence post, showing a modified construction of reinforcement and fastening, in which one or more reinforcements are embedded in the post.

Referring more especially to the drawings,

1 designates a fence post, which may be constructed of any suitable plastic material preferably cement or the like, and which may be of any suitable shape, preferably conical or tapered, or it may be rectangular in cross section or otherwise formed. Embedded in the post for its full length is a reinforcement and fastening 2 and 3. It might be said that the fastening 3 and the reinforcement 2 constitute the entire reinforcement as a whole, as will be shown subsequently. However, the reinforcement 2 is constructed from a single length of suitable wire, which is bent upon itself, as shown at 4, to provide a central leg or portion 5. The other part 6 of the wire is formed into a helix, either tapered or having convolutions of uniform or equal diameter, preferably the former. This helix 6 is in surrounding concentric relation to the leg and is also embedded in the concrete of post. It is obvious that a reinforcement of this kind will insure strength and rigidity to the concrete. In other words, when molding or forming the post, the parts of the reinforcement will be evenly distributed, and, after setting of the concrete, the strength and rigidity will likewise be evenly distributed the full length of the post. It is to be noted that the reinforcement tapers correspondingly to the taper of the post. However, should the post be made cylindrical, the reinforcement should correspond thereto. The fastening 3 or anchor for the line wires also comprises a central leg or portion 7, and a helix 8, constructed from a single length of wire which is bent upon itself to form the leg and the helix. It is to be observed that the bend or loop 9 is laterally disposed. The fastening is also embedded in the concrete post, whereby portions of the convolutions of the helix are exposed, as well as the lateral portion or loop 9. The convolutions of the fastening helix are interlocked, as shown at 10, with the convolutions of the reinforcement, and it is obvious that at the points of interengagement between said convolutions the reinforcement, strength and rigidity are greatly increased. The particles of the concrete at such points adhere more closely together. The exposed portions 11 of the fastening helix are superimposed, and are designed to receive an elongated fastening key 12, which also passes through the exposed lateral bent portion or loop 9. This key has an eye 13 at its upper end, to be grasped, whereby the key may be inserted in place. The fence or line barb-wires are arranged adjacent the side of the post, in between the exposed portions 11 of the helix fastening, and by inserting the key downwardly through the exposed portions 11, the line wires 14 are held in place. The key 12 is long enough to engage in the ground or soil, and acts as a lightning rod or conductor for carrying off the lightning discharges to the ground, thereby preventing the post from being struck and shattered by lightning. The bend or loop 4 of the reinforcement is also laterally disposed, and constitutes additional means for reinforcing the concrete. In order to hold the line or fence wires uniformly spaced, a suitable stay 15 is provided. This stay is also constructed from a single length of suitable wire bent upon itself to form the loop 16, which is similar to the loops 4 and 9, and to provide an elongated leg 17 and a helix 18, which in cross section are substantially concentric, the helix being in surrounding relation to the leg. This stay is connected to the fence or line wires by imparting a twisting action to the stay, so that the convolutions of the helix of the stay will become interlocked with the line wires, the line wires being in between the central leg and the convolutions, as shown clearly in Fig. 1. The stay is long enough to penetrate the ground or soil, and also constitutes a lightning rod or conductor for carrying the discharges to the ground. The reinforcement and the fastening helix and the stay are designed to be manufactured or formed by the machine of the hereinmentioned pending application. The central reinforcement is designed to be made of more or less heavy wire, and is formed in a tapered design by means of a tapered needle. Should the convolutions of the central reinforcement be of uniform or equal diameter in cross section, a cylindrical needle is employed. The fastening reinforcement, which has its convolutions interlocked with the central reinforcement, and also the line wire stay, are manufactured by the same machine, but needles of smaller

diameters are employed. The fence post proper, at its lower or butt end, is provided with an upwardly protruding concavity 19, into which the soil or ground extends with sufficient suction as to hold the post firm and perpendicular. It is obvious that since the central reinforcement reinforces the particles of the concrete through the entire diameter of the post and owing to the central leg being centrally concentric with relation to the convolutions, the fastening reinforcement helix is more securely anchored to the concrete than it has been able to heretofore attain.

In Fig. 4, which is a transverse sectional view, there is disclosed a pair of helices embedded in the post, one within the other, eccentric to each other, and each eccentric to the post. It is obvious that greater strength and rigidity, by this construction of reinforcement, are assured, and, further, it is to be apparent that any number of helices may be embedded in the post, consistent with the practical arrangement of the helices. For instance, a central helix may be embedded and several offset from the central helix, there being interlocking connections between all of them.

The invention having been set forth, what is claimed as new and useful is:

1. In a combined reinforcement and fastening for fence posts, the combination with a plastic fence post, of a pair of reinforcement helices, one being centrally disposed, the other being eccentrically disposed, both having interlocked connections, and the latter having superimposed exposed portions for the reception of a line wire fastening key.

2. In a combined reinforcement and fastening for fence posts, the combination with a plastic post, of a longitudinally extending centrally disposed uniform helix embedded therein and provided with a central leg forming a continuous integral part of the helix, said leg having one end free and unattached, whereby it is possible to feed the helix spirally into a duplicate helix.

3. In a combined reinforcement and fastening for fence posts, the combination with a plastic post, of a longitudinally extending spirally disposed tapered helix, constructed from a single length of wire bent upon itself to form a central leg provided with a free and unattached terminal and having its helix in surrounding concentric relation therewith.

4. In a combined reinforcement and fastening for fence posts, the combination with a plastic post, of a longitudinally extending spirally disposed tapered helix, constructed from a single length of wire bent upon itself to form a central leg and having its helix in surrounding concentric relation therewith, and a second reinforcement fastening helix partially embedded in the post and having its convolutions interlocked with those of the first reinforcement.

5. In a combined reinforcement and fastening for fence posts, the combination with a plastic fence post, of a reinforcement embedded longitudinally therein and comprising a pair of spiral helices, one entirely embedded and the other offset relatively to the former and being partially embedded, and connections between the two helices.

6. In a combined reinforcement and fastening for fence posts, the combination with a plastic fence post, of a reinforcement embedded longitudinally therein and comprising a pair of helices, one entirely embedded and the other partially embedded, connections between the two helices, said partially exposed helix having means, intermediate which the line wires are adapted to be disposed, and means extending through the first means for holding the line wires in place.

7. In a reinforcement for fence posts, the combination with a post, of a reinforcement therefor and embedded longitudinally therein, a second reinforcement partially embedded therein and connected to the first reinforcement, the second reinforcement having exposed superimposed loops for the reception of an elongated member, and a member inserted longitudinally through said loops constituting a conductor.

8. The combination with a concrete post of a uniformly tapered reinforcement helix embedded longitudinally in the post and having a leg continuous from one end of the reinforcement and extending concentrically through the convolutions of the helix, said leg having a free and unattached terminal.

9. The combination with a filler, of a reinforcement therein, said reinforcement comprising a central leg having its terminal free and unattached and a surrounding helix, whereby it is possible to feed the helix into a duplicate helix.

10. The combination with a filler, of a reinforcement therein for substantially its full length, said reinforcement comprising a central leg provided with a free and unattached end and a surrounding helix, and a similar reinforcement helix substantially offset eccentrically to the former and partially embedded in said filler and connected to the first reinforcement.

11. In a reinforcement for fillers, the combination with a filler, of a plurality of reinforcements therefor and embedded longitudinally therein, said reinforcements being interlocked, and a fastening helix partially embedded in the filler and interlocked with the reinforcement.

12. In a reinforcement for fence posts, the combination with a filler, of a plurality of helix reinforcements spirally joined by

feeding one within the other and one having its convolutions laterally offset relatively to those of the other and being embedded longitudinally in the filler.

13. In a reinforcement the combination with a filler, of a plurality of helix reinforcements embedded in the filler, each reinforcement being constructed of a continuous wire, and each being fed spirally interlocked to the other and both offset relatively to each other.

14. In a reinforcement for fence posts, the combination with a filler, of a plurality of reinforcements fed spirally one within the other and having their convolutions relatively offset, certain of the reinforcements being concentrically and longitudinally embedded in the filler, a certain other reinforcement being eccentrically embedded in the filler.

15. In a reinforcement for fence posts, the combination with a filler, of a plurality of reinforcements spirally interlocked, certain of the reinforcements being concentrically and longitudinally embedded in the filler, a certain other reinforcement being eccentrically embedded in the filler, and having certain of its convolutions exposed adjacent the exterior surface of the filler, thereby forming loops for the reception of an elongated member.

16. In a reinforcement for fence posts, the combination with a filler, of a plurality of reinforcements, a certain reinforcement being concentrically embedded in the filler, a certain other reinforcement being eccentrically embedded in the filler and an interlocking engagement with the concentric reinforcement and having portions of its convolutions exposed adjacent the exterior surface of the filler forming a member receiving loops, said latter reinforcement being fed spirally in an offset relation into the former, whereby it is possible to interlock the reinforcements and exposed portions of said convolutions.

17. In a reinforcement for fence posts, the combination with a filler, of a plurality of reinforcements, a certain reinforcement being concentrically embedded in the filler, a certain other reinforcement being eccentrically embedded in the filler and having an interlocking engagement with the concentric reinforcement and having portions of its convolutions exposed adjacent the exterior surface of the filler forming a member receiving loops, each reinforcement being constructed of a continuous wire and having a leg extending concentrically through the convolutions.

18. A reinforcement, consisting of a continuous length of wire bent upon itself at a certain point, a portion on one side of the bend being formed into a helix, the other portion being straight and passing substantially concentrically through the helix, the opposite ends of both portions being free and unattached relatively to each other, whereby the reinforcement may be fed into engagement with a duplicate reinforcement.

19. A reinforcement, having a loop at one end, and comprising a helix and a leg, the former receiving and being in surrounding spaced relation to the latter, the terminals of both being free and unattached.

20. A reinforcement, comprising a plurality of members, each being formed with a loop at one end and consisting of a helix and a leg, the helix being yieldably movable laterally and in surrounding relation to the leg, the terminals of both being free and unattached, thereby rendering it possible to feed said members spirally relatively to each other, whereby the parts of successive members may coöperatively engage and offset laterally.

21. In combination, a plurality of members, each comprising a helix and a leg, one being movable laterally and in surrounding relation to the other, the terminals of both being free and unattached, thereby rendering it possible to feed said members in offset successive relations, whereby the parts of the helices are interlocked and offset laterally.

22. A reinforcement for fillers, comprising a plurality of interengaging reinforcements, each of a continuous wire, and having a symmetrical helix, one end thereof being free and unattached, and a leg provided with a free and unattached end passing through the helix, whereby certain of the reinforcements may be interlocked with certain other reinforcements.

In witness whereof, in the presence of two witnesses, the inventor's signature is hereunto affixed.

ARCHIBALD McPHAIL.

Witnesses:
THOS. H. UNSWORTH,
ROBERT A. BOSWELL.