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COMPOSITE BRANCH FOR ARTIFICIAL TREES PROTECTED BY TWIG MEMBERS ATTACHED BY A METAL CLAMP

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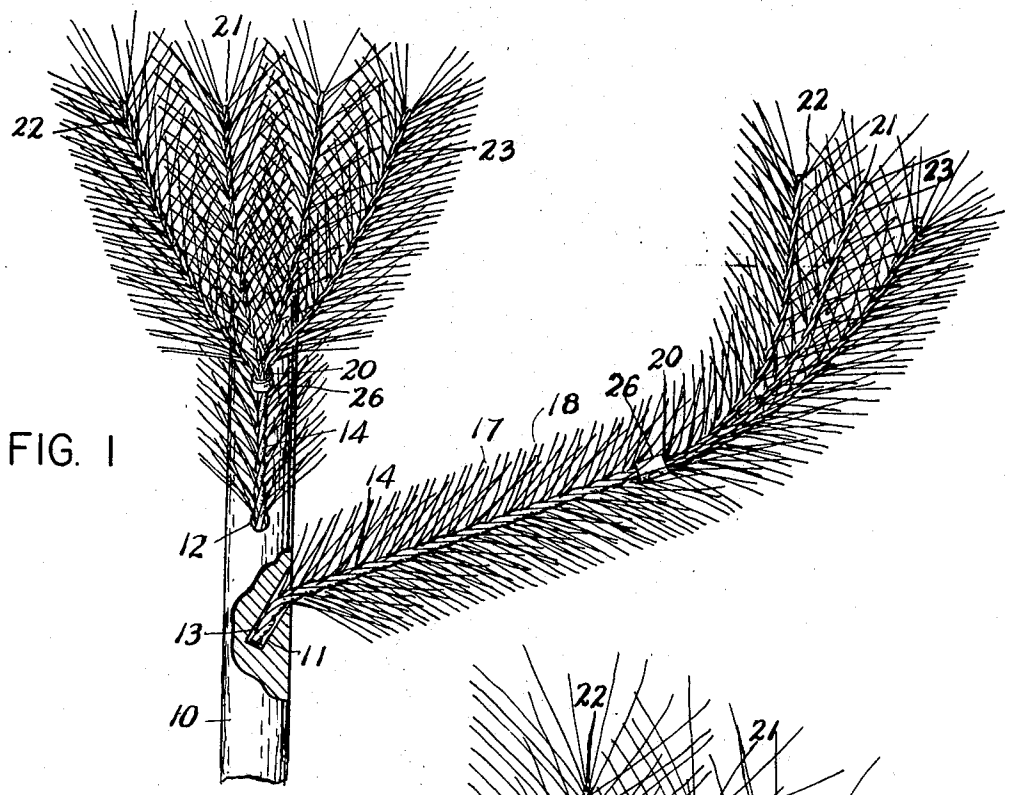


FIG. 1

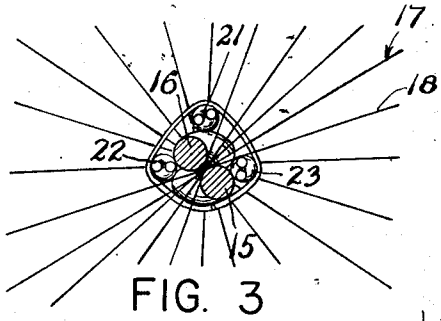


FIG. 3

FIG. 2

FIG. 4

INVENTOR

Stephen D. Kent

BY Harry Jacobson

ATTORNEY

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COMPOSITE BRANCH FOR ARTIFICIAL TREES PROTECTED BY TWIG MEMBERS ATTACHED BY A METAL CLAMP

Stephen D. Kent, Newburgh, N.Y., assignor to R. O. Kent Corp., New York, N.Y., a corporation of New York

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ABSTRACT OF THE DISCLOSURE

The outer portion of the length of the branch consists of a number of substantially identical but separate twigs. The twigs are uniformly more pliable and of thinner twisted wire throughout than the remaining stiffer and thicker inner part of the branch constituting the limb. The twigs are compactly fastened by a sheet metal clip to the otherwise hazardous extreme cut and sharp outer end portion of the stiffer limb. The twigs are yieldable extensions of the limb and move out of the way when pushed. The needles of the limb, and of all of the twigs regardless on which side of the limb the twigs are arranged, are inclined away from the inner end of the twig or limb as the case may be. The inner end portions of the twigs are parallel to and overlap the outer end portion of the limb sufficiently to conceal and guard the hazardous end surface of the limb from being touched and to permit all said end portions to be compacted under pressure by the fastening clip with friction producing needles caught therebetween.

This invention relates to branches for artificial Christmas trees and especially to that type made of twisted wire and plastic fringe cut to simulate tree needles. The limb members of branches have been made of relatively large diameter twisted wire, which though bendable, enables the branch to sustain the bending and other stresses to which it is subjected when in use. At least one such limb member has usually extended throughout the entire length of the branch from one end to the other end and is made of relatively thick wire. Other relatively short side twig members have been secured in various ways to an intermediate point of the limb member as is shown for example, in Patent No. 3,380,487. In this patent however, the inclined artificial twig needles slant in the wrong direction on one side of the limb of the branch, that is, they slant toward the inner end of the twig instead of toward the free end of the twig.

To avoid this unnatural appearance of the needles, trees have been made with the needles projecting at right angles to the twisted wires of the twigs, so that it becomes immaterial from which side of the limb member, the twig member projects.

The limb member nevertheless, extends throughout the entire length of the branch and substantially resists bending because of the type of wire used therein. Furthermore, the wire cutters used during the manufacture of the limb members inevitably leave sharp end edges of considerable extent on the wires. Grinding off the great number of sharp edges would be so costly as to be prohibitive. Such sharp edges or corners are exposed to a large extent at the end of the branch and are a source of danger to those passing by or working on the tree. They can inflict serious injury to children playing near the tree and to unwary persons. The danger of injury is aggravated by the character of the relatively stiff wire which does not readily yield or move out of the way on impact, as when touched or struck by a person accidentally or otherwise

during close contact with the tree or its parts occurring when erecting, ornamenting or assembling the tree.

In addition, the shiny cut ends of considerable area on the relatively large diameter limb wires are also difficult to conceal from view and detract materially from the proper natural appearance of the tree. Artificial fringe needles at the branch end, which may be deliberately bent over the cut ends of the wires in various ways, are usually insufficient in number to conceal or protect said ends in the attempt to preserve the otherwise natural appearance of the assembled branches which project from the trunk. Green paint on the exposed wire end surfaces is usually ineffective as camouflage and may actually result in attracting attention to the defective appearance of the branches rather than remedying the blemish. The twig needles are generally green in color. It is extremely difficult to match precisely, the green shade of the plastic needles.

The outermost parts of the prior art branches including the limb and twig members, have also been bent upwardly and in other directions to simulate the appearance of natural trees. While the relatively high stiffness of the limb wires is necessary to enable them to support gifts, ornaments and the like hung on the branch without excessive bending of the limb member, high stiffness has disadvantages. The stiff branch end is not only a hazard as above explained, but more force is required to impart the desired bend to the stiff limb wires than to the twig wires.

In natural trees, the limbs are generally smaller in diameter at their free ends than at their inner ends, but this is not the case in artificial branches in which relatively large diameter wire extends throughout the entire length of the branch.

This invention is therefore directed to the provision of a composite branch having a limb member of adequate strength and stiffness for supporting purposes while having an outer end edge substantially concealed and protected at a point between the ends of the branch by the end parts of the twigs, and having a side twig member and a limb-extending twig member, both twig members being relatively small at the end edges of the wires thereof so that the end surfaces are easily concealed and protected, the needles all slanting toward the free end of the twig member, the limb member terminating at a point intermediate of the inner and outer ends of the complete branch so that the danger of injury of a person coming into contact with the free end part of any of the members of the branch is considerably reduced.

The invention is further directed to the provision of a composite branch having a relatively stiff limb member of relatively thick wire and a number of cantilever extensions of said limb member composed of relatively thin and yieldable wire and forming in part side twigs and in part a member generally coplanar with the limb member and of greater flexibility.

The above and other objects of the invention will be clear from the description which follows and from the drawings, in which

FIG. 1 is a fragmentary elevational view, partly in section, of a conventional trunk for an artificial tree and of a pair of branches held thereby and arranged in different planes, one in the plane of the paper and the other outstanding from the plane of the paper, the wires and the fringe needles of the branches being shown more or less diagrammatically.

FIG. 2 is a fragmentary elevational view on an enlarged scale of the outer end portion of the branch showing the relatively thin and yieldable extension of the relatively thick and stiff limb member in the form of a bent

twig member and also showing two side twig members spread slightly apart.

FIG. 3 is a sectional view taken on the line 3—3 of FIG. 2 and showing the fastening clip for the members.

FIG. 4 is a fragmentary exploded elevational view of the wires at the adjacent parts of the limb and twig members showing said parts overlapping preparatory to the clipping of the parts together, the needles of the members being indicated diagrammatically.

In the practical embodiment of the invention shown by way of example, the conventional tree trunk **10** is provided with numerous holes as **11**, **12** and the like for the reception of the inner tip part **13** of a typical limb member **14** of a branch. Said tip **13** is bent at the desired angle to the remainder of the limb member **14** thereby to arrange the branch to extend from the trunk in the desired position, when the tip is inserted into the hole selected.

The limb member is made of the relatively thick wires **15**, **16** which hold the plastic fringe **17** between them and when twisted, twist the fringe to spread the needles **18** in a manner which is well known and needs no further description. Said limb member terminates at an intermediate or interior point as **20** of the branch and does not extend throughout the length of the complete branch. Instead, the inner end portion of a limb-extending member **21** is suitably secured permanently and rigidly to the limb member at or adjacent to the intermediate point **20** and is arranged to extend in the general plane of the limb member to form a substantially coplanar extension thereof. The twig member **21** is made, similarly, of twisted wire and plastic fringe, but the wire thereof is of substantially lesser diameter, and is consequently more pliable and flexible, than that of the limb member.

Should one accidentally walk into the branch, the thinner wire of the twig member yields much more easily than the thicker wire of the limb member of the type which extends all the way to the free end of the branch and danger of injury is thereby materially reduced. The cut ends of the twig wires are also of much lesser area than those of the limb member whereby the end covering needles of the branch are usually sufficient to protect the twig ends from injurious direct contact with a person. Said small area ends are adequately concealed from view by the covering needles to permit the twigs to perform their decorative function with minimum visibility of the otherwise exposed metallic ends. The twig wires are also easily bent to the desired shapes and positions by means of uniform force exerted thereon since they offer uniform resistance to such bending force.

In addition to the twig member **21**, any desired number of additional side twigs as **22**, **23** all preferably of wires of the same diameter are secured at their inner end parts to the outer end part of the limb member. The twig member **21** differs from the side twig members by being arranged substantially coplanar with the limb member regardless of how the side twig members are initially arranged alongside the limb member and then bent transversely. The transverse bending of all the twig members excepting the member **21** is usually done by the user to the extent desired as the tree is assembled, all of the members being fastened together.

In the form shown, the fastening means for the members comprises the sheet metal clip **26** of any suitable type, which surrounds and is wrapped around and compresses together the inner end parts **25** of the twig members and the outer end part **27** of the limb member, said parts **25** and **27** being shown as parallel and overlapping each other. Enough of the needles are caught between the clip **26** and the various wires of the branch to prevent a substantial area of contact between the metal of the clip and that of the wires which might permit relative motion therebetween involving dislocation of the parts. In other words, the needles caught between the metallic clip and the wires substantially increase the friction therebetween and prevents relative rotation of the clip and the wires. It will be understood however, that any suitable fastening means, metallic or otherwise, strong enough to secure the twig ends to the adjacent limb end and preferably inconspicuous, may be used instead of the clip **26**.

It will also be understood that while a specific form of the invention has herein been shown and described, such form is intended to be illustrative and not limitative of the invention, which is defined by the appended claims.

I claim:

1. In an artificial Christmas tree having a trunk provided with a multiplicity of blind holes for the reception of the ends of artificial branches, composite branches each having a limb consisting of a pair of wires terminating in sharp end edges and twisted with plastic fringe therebetween to form needles inclined less than 90° to the axis of the limb, the length of the limb being substantially less than the overall length of the branch, a bent end portion on the limb constituting the inner end of the branch and entering one of the holes of the trunk, a first side twig consisting of a pair of wires thinner than the wires of the limb and twisted with plastic fringe therebetween to form needles inclined less than 90° to the axis of the twig, a second limb-extending twig similar to said first twig, the inner end portions of said twigs being coextensive and substantially parallel to and overlapping the outer end of the limb and compacted therewith to conceal and to form guard elements for the sharp end edges of the limb wires, the needles of the limb and the twigs being inclined outwardly from the respective twisted wires of said limb and twigs and away from the respective inner ends of said limb and twigs, the outermost ends of the twigs being concealed and protected by the needles adjacent thereto, and a sheet metal clip of lesser length than the overlapped portions of the limb and the twigs surrounding and compressing said overlapped portions with a number of needles caught therebetween and thereby fastening said portions permanently and rigidly together out of direct contact with each other and resisting relative movement of the clip and said portions in all directions, the twigs being sufficiently stiff to sustain conventional Christmas tree loads at the ends thereof.

2. A composite branch for an artificial Christmas tree comprising a limb member having twisted wires each terminating in a cut sharp ouer end edge and having plastic needles held by the wires, the needles being flexible and inclined at an acute angle to the wires and extending away from the inner end edge of the limb, and means for concealing said sharp edge and for shielding said edge from contact with a person and for supplying twigs to said limb, said means comprising a multiplicity of twig members each of thinner twisted wires than the twisted wires of the limb member and plastic fringe held by the thinner wires and forming flexible needles inclined from the wires away from the inner end edge of the twig member, said means further including a sheet metal clip permanently and rigidly securing, compacting and squeezing together the inner end portions of the twig members and the outer end portion of the limb member in overlapping relation with a number of said needles interposed and producing friction therebetween and between the twig members.

3. The composite branch of claim **2**, and needles projecting outwardly from the outer ends of the wires of the respective twig members and resisting direct access to and partly concealing the end surfaces of the wires of said twig members.

4. A composite branch for an artificial Christmas tree comprising a limb member terminating in an end edge within the interior of the branch, and means for concealing said edge and shielding said edge from contact with a person and for supplying twig-like elements to said limb, said means comprising a multiplicity of twig members sufficient in number and so arranged as to hinder access to said edge and fastening means embracing and compacting under pressure the end portions of said twig and

limb members in overlapping and parallel relation and thereby permanently and rigidly securing said end portions of the members together, each of the twig members and the limb member comprising twisted wires and plastic fringe held by the wires and forming artificial tree needles extending transversely and longitudinally from the wires and inclined at an acute angle in a direction away from the inner end portions of the respective members, the wires of the twig members being of substantially lesser diameter and more yieldable than the wires of the limb member, and friction producing means to reduce the areas of direct contact between said fastening means and the overlapping end portions of the members and between the respective end portions of the twig and limb members comprising a number of said tree needles projecting from said wires and haphazardly interposed between said members and the fastening means and between said members themselves.

5. The composite branch of claim 4, the members and the fastening means being fixed together against relative rotation and the twig members being of sufficiently thin wire to yield on accidental contact with a person and thereby minimize the danger of injury to the person.

6. The composite branch of claim 4, the needles being relatively soft and flexible, the fastening means comprising a relatively thin sheet metal clip of substantial width wrapped around said end portions of the twig and limb members into generally cylindrical form and exerting sufficient pressure thereon and on the needles interposed therebetween to produce greater frictional resistance of said end portions to movement relatively to each other than the resistance occurring to such movement in the absence of said interposed needles.

7. A composite branch for an artificial Christmas tree comprising a limb member terminating in a sharp outer end edge constituting a hazard to persons brushing against said edge, and means for concealing and safely guarding said sharp edge and rendering access thereto difficult, said means comprising a multiplicity of twig members each of twisted wires and needles projecting transversely from said wires, said means further including a clip permanently and rigidly embracing the inner end portions of the twig members and the outer end portion of the limb member and squeezing said end portions together to occupy a minimum space, said means further including a number of said needles, said needles being interposed between the individual twig members and also between the twig members, limb member and the clip, the needles, twig members and limb member being squeezed together by the clip with sufficient force to prevent relative movement thereof under forces applied to the twig and limb members in any direction, the limb member comprising twisted wires of greater diameter than the diameter of the wires of the twig members

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JOHN T. GOOLKASIAN, Primary Examiner

J. D. SMITH, Assistant Examiner

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