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METHOD OF MAKING ARTIFICIAL BRANCH ASSEMBLIES AND RESULTING ARTIFICIAL BRANCH ASSEMBLY
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FIG. 1

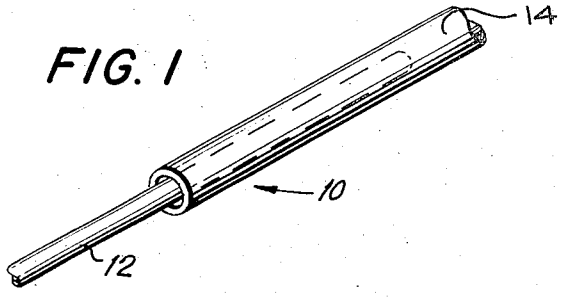


FIG. 2

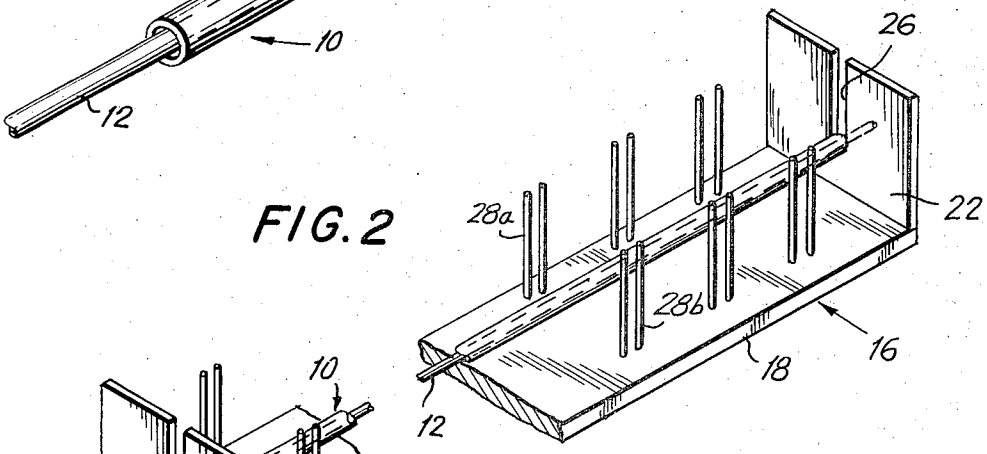


FIG. 3

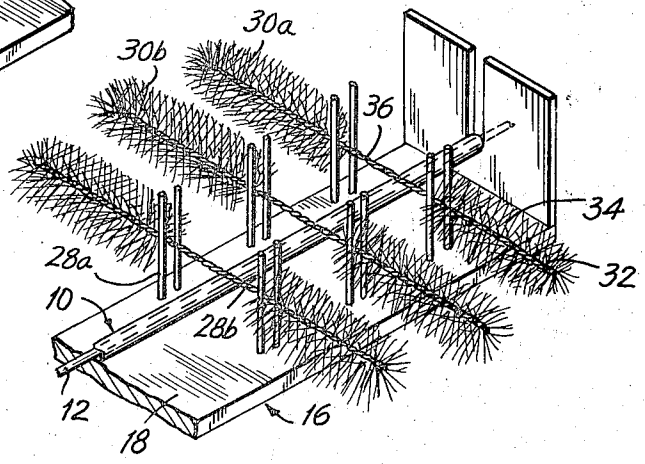
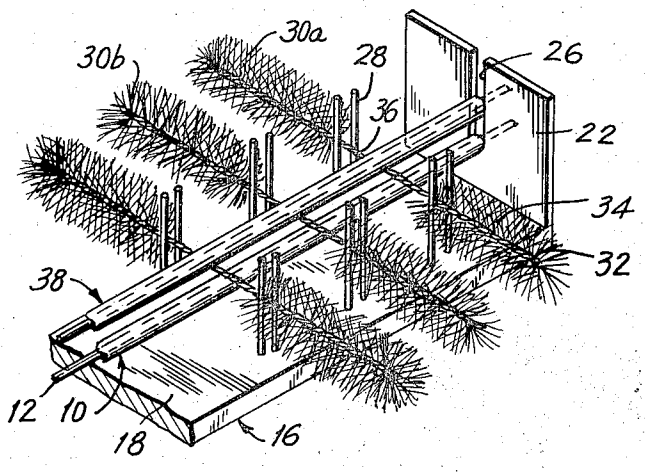


FIG. 4



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FIG. 5

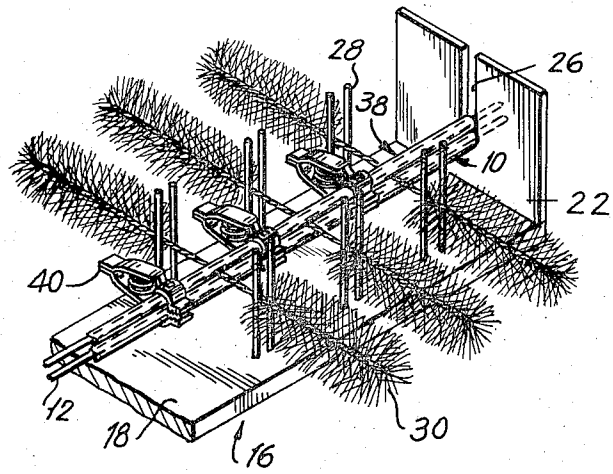


FIG. 6

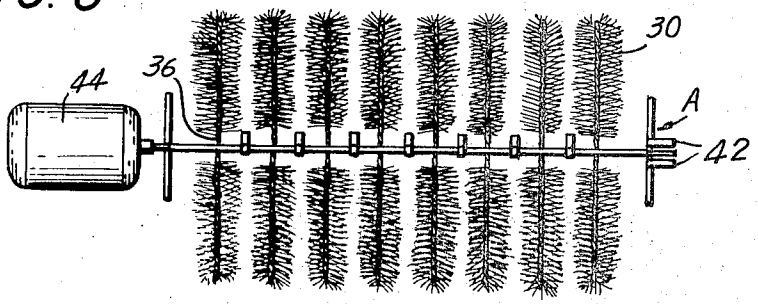


FIG. 7

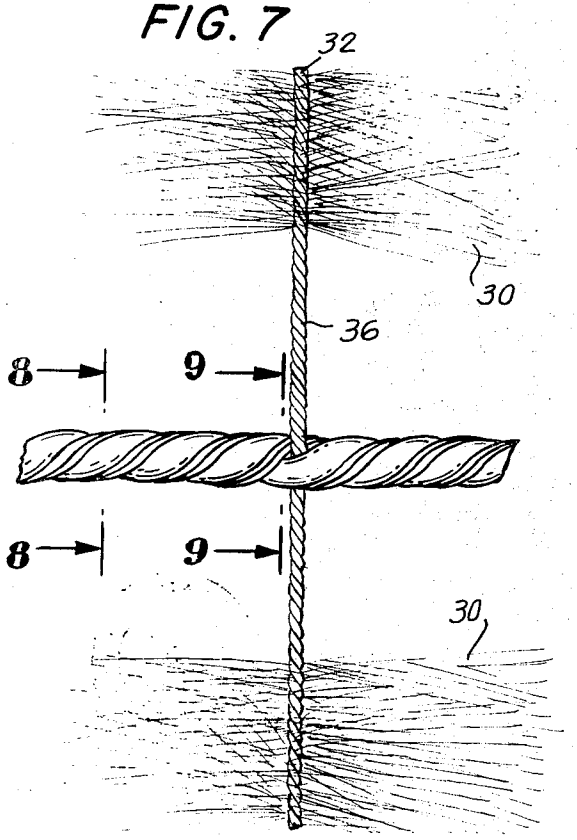


FIG. 8

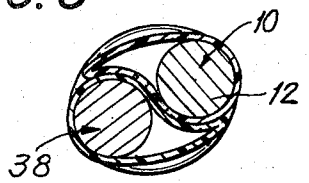
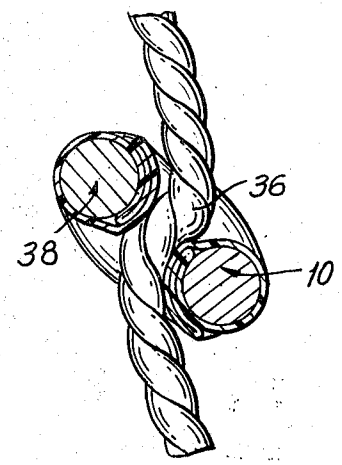


FIG. 9



United States Patent Office 3,834,976
Patented Sept. 10, 1974

3,834,976

METHOD OF MAKING ARTIFICIAL BRANCH ASSEMBLIES AND RESULTING ARTIFICIAL BRANCH ASSEMBLY

Alan Mottel, Yonkers, N.Y., assignor to Consolidated Novelty Co., Inc., Paterson, N.J.

Filed Sept. 7, 1973, Ser. No. 395,140
Int. Cl. A47g 33/06
U.S. Cl. 161—22 8 Claims

ABSTRACT OF THE DISCLOSURE

A method of making artificial branch assemblies utilizes two elongated stiff wires, each of which is in a plastic sheath. First, one of the ensheathed wires is placed into a horizontal mode in a jig. A number of branches are spaced along the sheathed wire in the jig, each branch being centered on and at right angles to the sheathed wire. The second sheathed wire is placed over the branches so that the branches are sandwiched between them. Then, a number of temporary clamps hold the sheathed wires to one another so that the branches remain in place. Finally the wires are twisted along their long axes to form an artificial branch assembly.

This invention relates to decorative articles and specifically to artificial branch assemblies used in the making of artificial Christmas trees, and a method of making such artificial branch assemblies.

Artificial Christmas trees have been popular for many years, and various methods and apparatus for making the same and their component parts are known. These prior methods have in general been costly, time-consuming and requiring of an extensive amount of hand labor.

It is the general object of the present invention to provide artificial branch assemblies for use in the making of artificial Christmas trees, which are capable of being made by mass production techniques, and which can be carried out at relatively low cost with a minimum amount of skilled hand labor, and which are attractive and simulate natural trees.

Among the relevant prior art is Raymond, Pat. No. 3,244,577. This patent demonstrates a method of making artificial Christmas tree components through the use of elongated twisted wires. Specifically, first an elongated wire is placed in tension between a pair of gripping heads. Branches comprising twisted wires capturing fiber glass filaments are reversely bent over, hairpin fashion, and are spaced along the tensioned wire in clusters. Then, each branch is bent further about itself to form a loop completely encircling the tensioned wire. A second wire is placed over the first wire, and the wires are twisted to capture the branches. The disadvantage in this technique, is the requirement of the time and hand labor needed to twist each branch individually about the tensioned wire, prior to the same being permanently captured and furthermore, the resulting product is a poor imitation of a natural Christmas tree.

In Dieffenbach, Pat. No. 3,594,260, another method of making artificial branches is shown. There, two long stiff wires are taken, and a branch is placed between them, adjacent to one set of ends thereof. Then, a small tubular spacer is slid over one set of ends of the wires to a point adjacent to this branch. Then, another branch is placed between the wires, and still another spacer is slid over the ends of the two wires. This continues until the two wires hold a number of branches crosswise between them, each separated by a spacer, and then the wires are twisted to form an assembly branch. The disadvantage of this method lies in the inherent slowness and labor of sliding one tubular spacer after another from one end of the pair of wires to a position along the length of the wires.

The present invention contemplates a method of making artificial branch assemblies which is considerably simpler, and requires less labor than the methods just mentioned. Specifically, two stiff wires are each ensheathed in plastic. One of these wires is placed in a horizontal mode in a jig. Then, branches are placed transversely of the stiff wire and spaced along its length, the branches being held in place by the same jig. Next, the second stiff wire, also ensheathed, is placed over the first stiff wire, thereby to form a "sandwich" comprising a pair of ensheathed stiff wires with cross branches between them. A number of removable clamps are then placed to hold these stiff wires to one another and to hold the branches temporarily in place. Lastly, the ends of the stiff wires are twisted to permanently capture the branches in place between them, whereupon the temporary clamps may be removed.

The manner in which the foregoing and other objects of the present invention are attained will be apparent from the accompanying specification and claims considered with the drawing, wherein:

FIG. 1 is a perspective view showing a stiff wire being ensheathed in plastic tubing;

FIG. 2 is a perspective view of the ensheathed wire having been placed into a jig;

FIG. 3 is a perspective view of the ensheathed wire in the jig, with a number of branches also in the jig being situated over the ensheathed wire perpendicularly thereof;

FIG. 4 is a view similar to FIG. 3, but with the second wire, also ensheathed, placed over the branches and first ensheathed wire;

FIG. 5 shows the placement of temporary clamps to hold the stiff wires and branches;

FIG. 6 shows, schematically, the application of a powered twisting apparatus to the remote ends of the stiff wires;

FIG. 7 shows, in an enlargement, the stiff wires after their twisting, and their capture of a cross branch;

FIG. 8 is a cross-sectional view of the branch assembly taken along the line **8**—**8** of FIG. 7; and

FIG. 9 is another cross-sectional view of the branch assembly, taken along the line **9**—**9** of FIG. 7.

Referring now in detail to the drawings, FIG. 1 shows an ensheathed wire **10**, comprising an elongated substantially cylindrical stiff, desirably metal, wire **12** and a plastic sheath **14**. The sheath **14** may be slipped over the length of the wire **12**, or other methods may be utilized to obtain sheathed wires, as for example dipping the stiff wire in a plastic bath, and then cooling the same.

As best seen in FIG. 2, the ensheathed wire **10** is placed into a special jig **16**. The jig comprises an elongated base **18** and a pair of opposed end walls **20**, **22**. Each end wall is attached to the base **18**, and has a central vertical slot **24**, **26** respectively, in it, the slots **24**, **26** being open at the top and continuing to a location short of the bottoms of the end walls. The slots **24**, **26** are configured to receive at least the stiff wire component **12** of the ensheathed wire **10**. Desirably only the wire **12** extends through the slots **24**, **26** in the end walls. The slots **24**, **26** serve to hold the ensheathed wire **10** somewhat above the base **18** of the jig, in a generally horizontal mode.

Holders **28** are situated in the jig in rows along each side of the sheathed wire **10**, each holder constituting a pair of upright rods. Each holder **28***a* on one side of the ensheathed wire **10**, has a counterpart **28***b* in alignment with it, on the other side of the ensheathed wire **10**. The line of alignment is generally perpendicular of the axis of the wire **10**.

Turning now to FIG. 3, it will be seen that the holders **28** serve to function as guides for artificial branches **30***a*,

30*b*, etc., which are placed therein. Each branch comprises a pair of twisted wires forming a twisted wire core **32**, which capture a multitude of man-made, natural or synthetic yarns, fibers, needles, filaments or other decorative elements (hereinafter referred to for convenience as "needles") of generally cylindrical external configuration. The making of such branches is well known in the art, and is shown in both the Raymond and Dieffenbach patents, previously mentioned. Desirably, the central portion **36** of each branch **30** is absent of filaments, so that there are no filaments on a branch, situated between each pair of holders **28***a*, **28***b*. However, each branch may have its entire length covered with filaments. To form shaped branch assemblies, which will be further explained, several branches may be placed in a pair of holders **28***a*, **28***b*, and the shape, size, color and length of the branches may vary in the holders along the length of the jig.

As a next step, as seen in FIG. 4, a second wire **38**, also ensheathed, is placed in the jig **16** and in the slots **24**, **26** thereof, over the first ensheathed wire **10**, and over the branches on the jig. Desirably, the ensheathed wires **10**, **38** are identical in construction.

Temporary, relatively small clamps **40**, seen in FIG. 5, are placed to grip and hold together the ensheathed wires **10**, **38** along the lengths thereof. Although shown as such, it is not necessary to utilize clamps **40** between each pair of branches **30**. The clamps **40** serve to temporarily secure the ensheathed wires **10**, **38** to one another and further serve to temporarily capture the branches **30** in position.

Next, as best seen in FIG. 6, the opposed ends of the ensheathed wires **10**, **38** are twisted relatively in opposite directions. This is done conventionally by placing a powered head **44** at one set of ends of the ensheathed wires, and powered chuck **42** at the other ends and applying a twisting movement to form a twisted wire core. The chuck **42** and the head **44** are both situated externally of the end walls **20**, **22** of the jig. Such torque application units are mentioned in the Raymond and Dieffenbach patents, previously discussed. The head **44** twists the ensheathed wires with respect to one another so as to firmly and securely engage the branches **30** in place. At this point, the clamps **40** may be removed, and may be retained for use in the next cycle of operations.

FIGS. 7 through 9, show, in enlarged detail, the resulting branch assembly. As soon there, the ensheathed wires are tightly twisted, each such ensheathed wire including a central stiff wire **12** and a sheath **14**. As best seen in FIG. 7, due to the twisting action, the sheaths have a spiraling outward appearance, somewhat resembling gnarled wood, and a desirable trunk-imitative look.

The twisted wire of the branch, as its central needle-free center **36**, passes between the ensheathed wires, but is slightly misshapen due to the relative twisting of the ensheathed wires **10**, **38**. This distortion is best seen in FIG. 9, and such distortion aids in the secure fixation of the branch to the pair of twisted wires and aids in achieving a "natural" look.

From the foregoing, it will be appreciated that an artificial branches assembly has been presented which is suitable for mass production techniques and which can be manufactured by a method simply in concept and execution.

What is claimed is:

1. A method of making artificial branch assemblies from branches and stiff wires, including the steps of:

(a) ensheathing each of the wires individually;

(b) placing the branches spacedly along and perpendicularly to one of the wires;

(c) placing the other wire over the branches and adjacent the first wire;

(d) temporarily holding the wires and branches in place; and

(e) intertwisting the wires so as to capture the branches therebetween.

2. A method of making artificial branch assemblies as set forth in claim **1** where the branches have their central portions free of needles.

3. A method of making artificial branch assemblies as set forth in claim **1** wherein the branches have needles along their entire length.

4. A method of making artificial branch assemblies as set forth in claim **1** further comprising utilizing a jig to maintain the stiff wires and branches in perpendicular relation.

5. A method of making artificial branch assemblies as set forth in claim **2** further including holding the wires at their ends and holding the branches at the ends of their needle-free central portions.

6. A method of making artificial branch assemblies as set forth in claim **1** further including, as step (d), clamping the wires along their lengths at spaced locations.

7. An artificial branch assembly of the type comprising an array of artificial branches, and a pair of intertwisted wires, the branches passing between and being captured by the twisted wires,

the improvement comprising tubing ensheathing each individual wire, the tubings, when twisted, pressing against the branches to secure the same and having a twisted, gnarled look.

8. An artificial branch assembly as set forth in claim **7** wherein the tubings run substantially the entire length of the wires.

References Cited

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3,244,577	4/1966	Raymond	161—22
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WILLIAM E. SCHULZ, Primary Examiner

U.S. Cl. X.R.

156—61; 161—24