APPARATUS FOR MAKING ARTIFICIAL TREE HAVING EXPOSED BRANCH ENDS OF WEBLIKE MATERIAL

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ABSTRACT
An artificial tree is made using branches of twisted wire holding slitted weble material therebetween, each branch having exposed ends of twisted wire to facilitate insertion of each branch in a pole. The apparatus employs means to control and stop the feed of weble material independent of the wire feed.

4 Claims, 5 Drawing Figures
APPARATUS FOR MAKING ARTIFICIAL TREE HAVING EXPOSED BRANCH ENDS OF WEBLIKE MATERIAL

My invention relates to an artificial tree having branches made of weblike material and an apparatus and method for making such branches.

In prior artificial trees, the branches have generally flat needles and are formed of twisted wire holding web-like or vinyl or ribbon material therebetween, the material extending transversely across the wires, from one wire end to the other. Large numbers of these branches are inserted into respective holes formed in a pole in a predetermined manner to simulate the appearance of a tree. Difficulty has been found in inserting the branches into the pole because of the protruding flat needles. The ribbonlike needles interfere with the insertion, proper positioning and even removal of the branch in the pole. Further, it has been difficult to remove the needles at the branch ends because the wires are tightly twisted and grip the weblike material.

An object of this invention is to provide an artificial tree having branches of twisted wire and web material in which the branches have exposed ends.

A further object of this invention is to provide a method for making a branch of twisted wire and web material in which the branch has exposed ends.

Still another object of this invention is to provide an apparatus and method for making a branch of twisted wire and web material in which the feed of the web material is controlled independently of the feed of the wire.

The above-mentioned and other features and objects of this invention and the manner of attaining them will become more apparent and the invention itself will be best understood by reference to the following description of an embodiment of the invention taken in conjunction with the accompanying drawing, wherein:

FIG. 1 is a diagram of a conventional chenille machine;
FIG. 2 is a sectional view illustrating a machine and method using the principles of this invention;
FIG. 3 is an enlarged sectional view illustrating a branch made from the machine of FIG. 2;
FIG. 4 is a sectional view of a tree using the branch of FIG. 3; and
FIG. 5 is an enlarged, partially exploded view of a portion of the tree of FIG. 4.

Referring now to the drawings, there is shown in FIG. 1, a machine for making branches using weblike materials. By weblike material, I am referring to ribbonlike material which is slitted inwardly along the edges leaving an uncut longitudinally-running center section. Such material has been referred to in the art as chenille, or vinyl, one form of which is shown, for example, in U.S. Pat. No. 1,801,388. Typical slitted web material used in my invention having an uncut longitudinal center section is shown in "Method and Apparatus For Slitting Web Material," Ser. No. 791,561, filed Jan. 16, 1969, owned by the assignee hereof, the contents of which may be deemed incorporated by this reference.

As shown in FIG. 1, a web material 1 is applied from a roll 2 of such material to a pair of drive rolls 3 which cause the material to be advanced. A pair of continuous wires 10 and 11 from respective wire rolls are advanced over idlers 12, 13 and fed through grooved wheels 20, 21, each having a peripheral groove 22 to seat the respective wires 10, 11. A rotatable and longitudinally reciprocable chuck 30 pulls and twists the wires, twisting the web material therebetween to develop the branch 50 (FIGS. 1, 3). The chuck may move reciprocally by driving a threaded gear along a longitudinally extending guide screw 31. Of course, other drive arrangements using pneumatic cylinders or the like are available. Cutting elements 32 are actuated by an operator or automatically depending upon a setting developed in accordance with the relative position of the chuck to cut the wires.

In accordance with my invention, I provide a branch as shown in FIG. 3, having twisted wires 10', 11' intertwisting the web 1 to provide simulated needles, the branch end having exposed wires 51 extending at least three or four longitudinal twists, or one-half inch or more. The exposed ends may advantageously fit into the predrilled holes 61 of a pole 60 to form the tree of FIG. 4. The needles thus do not interfere with the insertion of the branch into the pole, a feature which is absent in all prior vinyl or ribbon type trees.

The novel branch 50 is made by the apparatus illustrated in FIG. 1, and more specifically shown in FIG. 2. There is shown the conventional drive 4 for drive wheels 3 which advances the weblike material 1. A clamp 43 having upper and lower jaws is used to clamp the movement of the web material. This clamp is controlled by an actuator 42 which also controls the brake 44 for drive 4, thereby fully stopping the web material.

It is contemplated that wire drive rolls 20 will thus be rotating to advance the wires while the web material is clamped, thereby forming the length 51 of bare twisted wire.

In operation, the branch is formed by twisting wire with web material therebetween until a microswitch 40 or other form of distance locating means is reached, causing said means or switch to close, to energize the actuator, which may include solenoid operated piston means, for example, to close the clamp 43 and turn the brake 44 on. The twisting operation continues until a second microswitch or distance locating means 45 is reached. This microswitch when closed causes the wire drive wheels to stop, and the cutting means 32 to snap off the wire, it being understood that conventional mechanical moves can control the cutting means to move the blades thereof, or such cutting may be performed manually.

The distance between microswitches 40, 45 corresponds to the length of untwisted wire 51. Those skilled in the art will recognize that other means may be used to stop the advance of the wire and control the cutting elements and this invention is not limited to the use of microswitches.

While the foregoing description sets forth the principles of the invention in connection with specific apparatus, it is to be understood that this description is made only by way of example, and not as a limitation of the scope of the invention as set forth in the objects thereof and in the accompanying claims.

What is claimed is:

1. An apparatus for making an artificial tree having branches, the needles thereof formed of slitted, weblike plastic having an uncut longitudinally running center section twisted between a pair of wires having an end section of bare, twisted wire, comprising:
   a. a pair of wire guide rollers;
   b. means for applying each of a pair of continuous wires around one respectively of said guide wire rollers;
   c. means for providing a length of slitted weblike material having an uncut center section;
   d. means for feeding said weblike material between said wire guide rollers, the wires being thereby positioned above and below said weblike material;
   e. means for stopping the advance of said web material;
   f. reciprocating wire pulling means for pulling and twisting said wires, to thereby form a branch section having twisted weblike material between said wires;
   g. first locating means positioned in the path of movement of said pulling means to control the web material stopping means and to stop said web material without interfering with the pulling and twisting of said wires; and
   h. means to stop the pulling and twisting of said wires at a time subsequent to the stopping of said web material.

2. The apparatus of claim 1 including clamping means responsive to said first locating means to clamp said web material.

3. The apparatus of claim 1 in which said means to stop the pulling and twisting of said wires comprises second locating means.

4. The apparatus of claim 3 in which said first and second locating means comprises first and second switches positioned in the path of movement of said reciprocating means.