SINGAPORE

# PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

## Method and Tools for the manufacture of Spirals from a Resilient Material such as Wood

I, FRANCISCO GOLDBERGER KONSTANDT, of Monckebergstrasse 10, Hamburg, Germany, an Argentine citizen, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to tools for the manufacture of spirals of resilient materials such as wood.

Such spirals can be used as distance pieces between two sheets of, e.g., plywood or fibreboard, so as to produce a sandwich construction. In this case it is advantageous to maintain the spacing between the walls of a spiral as nearly constant as possible so as to give a reasonably uniformly distributed support for the outer sheets of the construction.

According to my invention, I provide a method of forming a spiral of resilent material by cutting a shaving of the material with a blade which consists in providing contact means in the path of the ~~ssaving~~ shaving and maintaining it in contact with said means at a location substantially fixed forwardly and upwardly relative to the blade to increasingly unbend the shaving as it is produced whereby an open spiral is formed. A tool for the manufacture of spirals of resilient material according to the method of my invention may have a cutting blade inclined relative to its cutting direction, a backplate on the front surface of said blade and spaced rearwardly from the cutting edge of the blade, and a nose member, the top surface of which is spaced forwardly and upwardly from the cutting of the blade, said member comprising a portion against which the coil being formed makes contact, said portion reaching its maximum thickness adjacent the cutting edge. Preferably, the end of the nose member adjacent the cutting edge has a height above the surface of the workpiece of between 2 and 10 millimetres.

My invention will now be more particularly described with reference to the accompanying drawings wherein:—

Figs. 1a, 1b and 1c show diagrammatically three successive stages in the production of a ring-like distance piece, and

Figs. 2a, 2b and 2c show diagrammatically three successive stages in the production of a spiral and indicate the main parts of three different forms of tool according to the invention.

Referring to Figs. 1a, 1b and 1c of the drawings, a cutter blade 1 is shown with a backplate 4 on its front surface and spaced rearwardly from its cutting edge. The three figures show successive stages in the formation, from a block of wood 2 constituting the working material, of a shaving 3 for a distance piece, which due to the inclined front face of the backplate 4 takes a ring-like form. In Fig. 1a, one can see that the shaving 3 is beginning to take up a ring-like form. In Fig. 1b the blade 1 has passed further along the piece of wood 2 and has formed a double-walled ring. In Fig. 1c there are nearly three thicknesses within one another forming the completed ring.

If the blade 1 is fitted with a nose member 6 against which the shaving 3 strikes, the shaving is gradually forced further upwardly. By this continuous forcing up of the shaving 3, already bent by the position of the blade 1, the bending angle is altered and thus the radius *b*, *c* of the shaving is continuously increased. The shaving 3 is originally bent relatively sharply and this sharp bend becomes gradually shallower thereby forming a spiral. The formation of the spiral is indicated at its different stages in Figs. 2a, 2b and 2c. As soon as the blade 1 comes close to the other end of the wood block 2 the wood shaving 3 breaks off (Fig. 2c). The original sharp bending which the blade causes is no longer flattened by the nose member 6 and a radius *d* is formed which is equal to the first radius *a*. Thus, the end of the spiral is bent towards the previous spiral wall as is clearly to be seen in Fib. 2c.

The nose member 6 shown in Fig. 2a consists of a plate which is fastened to the base 7 of the tool carrying the blade 1 with a screw

[Price 4s. 6d.]

8. The nose member can be detached and replaced. This is important, since the final shape of the shaving 3 formed by the tool depends upon the thickness of the nose member 6. This member which has a convex profile at its end adjacent the cutting edge, can have a thickness of 2 to 10 mm. and the greater the thickness of the member the more will the shaving be forced upwardly and therefore the greater will be the resulting spiral.

Instead of making the nose member 6 thicker, the region 9 at which it is in contact with the spiral can be roughened as is shown in Fig. 2c. This roughening influences the final shape of the spiral.

Another way of obtaining the same result is shown in Fig. 2b. Here the nose member 6 has at its end adjacent the cutting edge a thickened portion 10 which also causes a flattening of the spiral.

The distance *e* of the backplate 4 from the edge of the blade 1 also influences the shape of spiral produced. The smaller this distance *e* is the more acutely will the shaving 3 be deformed by the backplate 4 and the resulting spiral will be that much smaller or tighter. Vice versa, the greater the distance *e* is the more open will the spiral be. For this reason the backplate 4 is made adjustable so that the distance *e* can be varied as desired.

WHAT I CLAIM IS:—

1. A method of forming a spiral of resilient material by cutting a shaving of the material with a blade which consists in providing contact means in the path of the shaving and maintaining it in contact with said means at a location substantially fixed forwardly and upwardly relative to the blade to increasingly unbend the shaving as it is produced whereby an open spiral is formed.

2. The method according to Claim 1 wherein said contact means provide a friction force acting on the spiral being formed.

3. A tool for the manufacture of spirals of resilient material according to Claim 1 or Claim 2 having a cutting blade inclined relative to its cutting direction, a backplate on the front surface of said blade and spaced rearwardly from the cutting edge of the blade, and a nose member, the top surface of which is spaced forwardly and upwardly from the cutting edge of the blade, said member comprising a portion against which the coil being formed makes contact, said portion reaching its maximum thickness adjacent the cutting edge.

4. A tool according to Claim 3 wherein the thickness of the nose member is between 2 and 10 millimetres.

5. A tool according to Claim 3 or Claim 4 wherein the nose member has a thickened portion at the end adjacent the cutting edge.

6. A tool according to any one of Claims 3 to 5 wherein the upper surface of the nose member is roughened at the end adjacent the cutting edge.

7. A tool according to any one of Claims 3 to 6 wherein the nose member is detachable.

8. A tool according to any one of Claims 3 to 7 wherein the distance between the backplate and the cutting edge is adjustable.

9. A tool for the manufacture of spirals arranged and adapted for use and operation substantially as described herein with reference to any one of Figs. 2a, 2b or 2c.

10. A tool according to Claim 3 for the manufacture of spirals with closely spaced convolutions wherein the nose member of the tool is thin and the backplate is fixed near to the cutting edge of the blade.

11. A method of forming a spiral of resilient material substantially as described herein.

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Another way of obtaining the same result is shown in Fig. 2b. Here the nose member 6 has at its end adjacent the cutting edge a thickened portion 10 which also causes a flattening of the spiral.

The distance *e* of the backplate 4 from the edge of the blade 1 also influences the shape of spiral produced. The smaller this distance *e* is the more acutely will the shaving 3 be deformed by the backplate 4 and the resulting spiral will be that much smaller or tighter. Vice versa, the greater the distance *e* is the more open will the spiral be. For this reason the backplate 4 is made adjustable so that the distance *e* can be varied as desired.

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2. The method according to Claim 1 wherein said contact means provide a friction force acting on the spiral being formed.

3. A tool for the manufacture of spirals of resilient material according to Claim 1 or Claim 2 having a cutting blade inclined relative to its cutting direction, a backplate on the front surface of said blade and spaced rearwardly from the cutting edge of the blade, and a nose member, the top surface of which is spaced forwardly and upwardly from the cutting edge of the blade, said member comprising a portion against which the coil being formed makes contact, said portion reaching its maximum thickness adjacent the cutting edge.

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