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METHOD OF MANUFACTURING PAPER TACKING STRIPS

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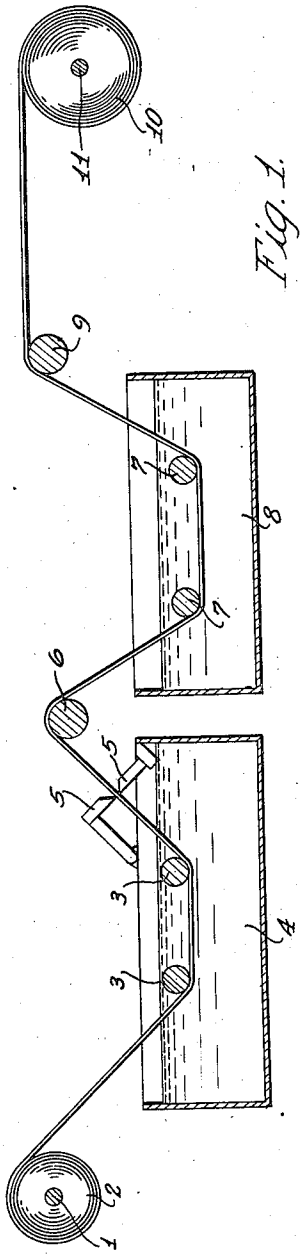


Fig. 1.

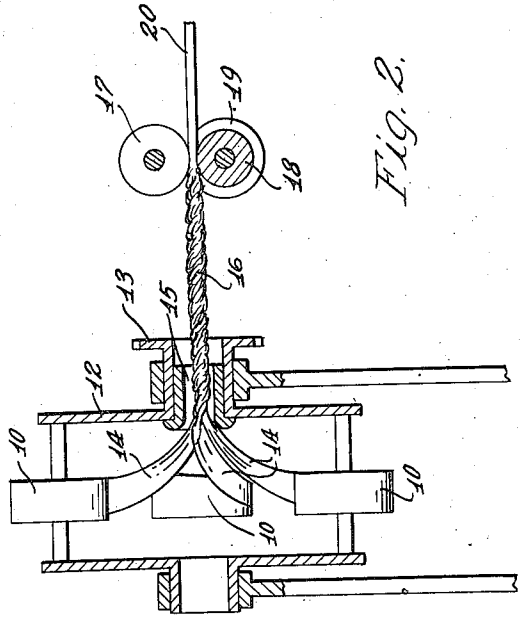


Fig. 2.

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METHOD OF MANUFACTURING PAPER TACKING STRIPS

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6 Claims. (Cl. 117—3)

The present invention relates to tacking strips formed of paper and comprises an improvement on the tacking strip disclosed and claimed in my prior Patent No. 1,912,121 to which attention is invited.

Since the advent of the all metal automobile body fibrous tacking strips have been quite extensively used for the purpose of providing means for the reception of tacks which are employed to secure the body upholstery and trim in place. In order to secure the fibrous strip with respect to the automobile body, the latter is provided with channels and recesses into which the strip is inserted, the strips being held in these recesses and channels by prongs which are formed integral with the recess or channel parts and are bent into engagement with the strip. These channels and recesses in some cases must take irregular forms, for example, around the window openings, door openings, windshield, seats, etc., and the fibrous strip used accordingly must be capable of being bent to conform to the shapes of these parts. Accordingly it is the primary object of the present invention to provide a fibrous strip which is capable of being bent abruptly, and more particularly, to provide a fibrous strip formed of spirally twisted paper ribbons because such a method of forming the strip provides for economical manufacturing as well as an efficient tack holding construction.

Tacking strips formed of spirally twisted paper ribbons have heretofore been used quite extensively in the automobile industry, but they are known to have a very undesirable characteristic in that the natural tendency of the spirally twisted ribbons to unwind causes the finished strip to assume an irregular or cork-screw form. This irregular form makes it difficult to place the strip in the recesses or channels which are provided in the automobile body for the reception of the same. This invention has as another object to form a tacking strip of spirally twisted ribbons with the several ribbons adhered one to another so that the natural tendency of the ribbons to unwind cannot cause the finished strip to take on an irregular shaped or cork-screw form and to provide a novel and economical process for forming the strips and for adhering the several strands of ribbons together.

Fibrous tacking strips, especially those formed of paper ribbons, have a natural tendency to absorb moisture from the atmosphere under humid weather conditions and the moisture so absorbed cause the strips to swell. When the strip is in a swelled condition it can only be inserted in the channels and recesses with difficulty. Accordingly it is another object of the present invention to provide a paper tacking strip which is water proofed and an economical and effiicent process of water proofing the same.

A further object of the present invention is to provide a process for the formation of a fibrous tacking strip, wherein the strip is formed of spirally twisted ribbons so that the strip when completed may be bent abruptly without the strands or twisted ribbons pulling apart or spreading and also so that the strip may have portions thereof cut away as with a grinding wheel without the strands unraveling or forming protruding ends. It is well known that the several parts of automobile bodies are welded together and that after a welding operation it is necessary to grind away the flash. In the present day methods followed in the automobile plants it is the practice to insert the tacking strips in place prior to the operation of grinding away the flash and under such conditions a tacking strip is sometimes cut by the grinding wheel during the grinding operation and, unless prevented, the ends formed by the grinding wheel cutting into the strip tend to unravel or to form loose projecting parts which make the operation of tacking the upholstery or trim in place more difficult and in some cases mar the appearance of the upholstery.

Still another object of the invention is to provide a process of forming a spirally twisted paper ribbon tacking strip so that the several strands of paper which are twisted together are also adhered to each other by an adhesive which at the same time prevents the strip from absorbing moisture under humid weather conditions.

With the above and other ends in view the invention is more fully disclosed with reference to the accompanying drawing, in which

Figure 1 is a schematic view illustrating the trim of the paper ribbons, and

Fig. 2 is a cross section illustrating means for twisting the ribbons and for compressing the same.

Referring to Fig. 1 there is illustrated a spindle 1 supporting a roll 2 of paper. The paper from the roll 2 is extended under the guide members 3 in a tank 4. From the guide members 3 in the tank 4 the paper extends between a pair of scraping elements 5 which contact with both the upper and lower surfaces of the paper. The paper then extends over a guide member 6 and under a pair of guides 7 which are disposed in a tank 8. From the guides 8 the paper extends upwardly

over a guide 9 and is wound around a roll 10 on a spindle 11. The particular means for supporting the spindle 1 and for rotating the roll 10 so as to draw the paper from the roll 2 under the guides 3, over the guides 6, under the guide 7 and to wind it on the roll 10, has not been shown in detail because it forms no particular part of the invention. In the tank 4 is provided a quantity of low melting point asphalt held in solution by heat. The asphalt is maintained at a level whereby the paper ribbon when passing under the guides 3 will be submerged beneath the surface thereof. The tank 8 contains a quantity of water or other cooling liquid, the temperature of the water or other liquid being maintained considerably lower than the melting point of the asphalt. As the paper from roll 2 is slowly drawn through the asphalt it will become saturated therewith and as it passes between the scrapers 5 the latter will remove the excess asphalt from both surfaces of the paper. As the paper continues moving it will pass through the cooling liquid in the tank 8 and will become hardened so that the paper may be wound into rolls without the several winds sticking together. The rolls 10 are placed in a rotatable spindle 12 such as is shown in my above referred to prior patent. The spindle 12 is provided with a sprocket 13 for the reception of a driving chain not shown, for the purpose of rotating the spindle. As the spindle is rotated ribbons 14 from the several rolls 10 are drawn through the hub portion 15 thereof and as they are drawn through they are formed into a spirally twisted rope 16.

The means for pulling the rope 16 lengthwise comprises a pair of rollers 17 and 18, the roller 18 having a circumferential groove 19 into which the roller 17 extends. As the rope 16 passes between the rollers 17 and 18 it is compressed into a compact mass and the friction resulting during such a compressing action generates sufficient heat that the asphalt with which the paper was previously saturated is changed from its solid to a liquid state. Asphalt has adhesive characteristics and when changed to a liquid state in the above described manner it causes the several strands of the rope 16 to be adhered together at the same time that they are pressed together.

Machines including rotating spindles such as shown in Fig. 2 are operated at a high rate of speed and if the paper rolls 10 were coated with asphalt or other water proofing material having the characteristics of an adhesive the machines do not work satisfactorily. It has been found by experience that the paper ribbons have a tendency to break due to the fact that the adhesive characteristics of waterproofing material retards the unwinding action of the ribbons from the rolls. This invention avoids this difficulty by providing a process wherein the ribbons may be twisted while they are in a dry state and subsequent treatment with adhesives is unnecessary due to the fact that the compressing operations, which is necessary to give the finished strip the desired shape, is utilized to render these dry strips adhesive.

Although a specific embodiment of the invention has been illustrated and described it will be understood that various changes may be made within the scope of the appended claims without departing from the spirit of the invention and such changes are contemplated.

What I claim is:—

1. The process of forming a tacking strip which comprises passing paper ribbons through asphalt held in solution by heat, removing excessive asphalt from said ribbons, cooling said asphalt to reduce its temperature to a point beneath its melting point, twisting said ribbons into a rope formation, compressing the rope into a compact mass and simultaneously generating through the compression thereof sufficient heat to melt said asphalt to render it adhesive and cooling said strip.

2. The process of forming a tacking strip which comprises saturating paper ribbons with asphalt which is held in solution by heat, cooling said ribbons to dry said asphalt, twisting said ribbons into a rope and compressing the rope to form a compact mass and to generate sufficient heat to render said asphalt adhesive.

3. The process of forming a paper tacking strip which comprises impregnating the paper with asphalt held in solution by heat, removing the asphalt from the surface of the paper, cooling said paper to dry said asphalt, forming said paper into a rope, applying pressure to said rope to compress the same into a compact mass and by compressing the same generating sufficient heat to render said asphalt adhesive and subsequently cooling said rope.

4. The method of forming a tacking strip which consists in passing paper ribbons through a bath of asphalt held in solution by heat, passing said ribbons through a bath of cooling liquid and reducing the temperature thereof and drying said asphalt, forming said ribbons into a rope, and applying pressure to said rope to compress the same and to generate sufficient heat to render said asphalt adhesive.

5. The method of forming a paper tacking strip which consists in saturating the paper with asphalt by passing it through a bath of asphalt held in solution by heat, passing said paper through a bath of cooling liquid and reducing the temperature and causing said asphalt to dry, forming said paper into a rope, and applying pressure to said rope to compress said paper and to generate sufficient heat to render said asphalt adhesive.

6. The method of forming a paper tacking strip which consists in passing paper ribbons through a bath of low melting point asphalt held in solution by heat, removing the asphalt from the surface of said ribbons, passing said ribbons through a bath of cooling liquid and reducing the temperature thereof to harden said asphalt, forming said ribbons into a rope, and applying pressure to said rope to compress the same and to generate sufficient heat to render said asphalt adhesive.

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