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H. FITCH

2,285,263

FORMING TOOL

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FIG. 1

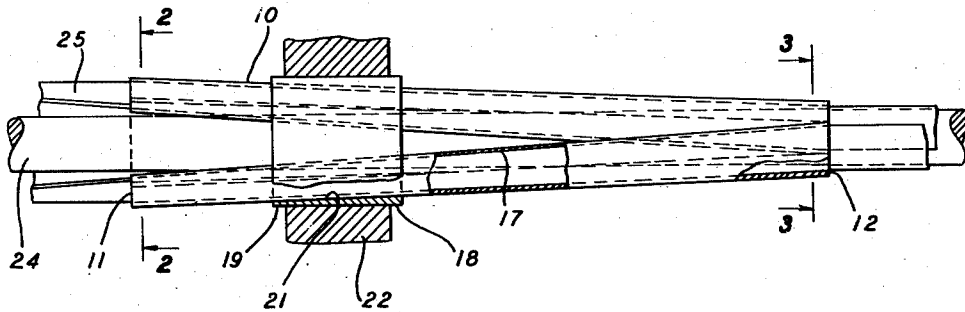


FIG. 3

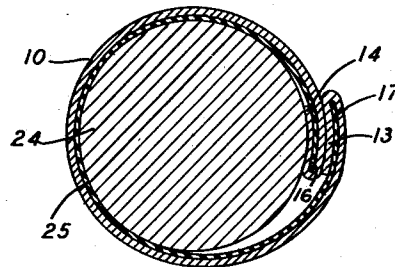


FIG. 2

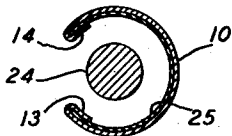


FIG. 4

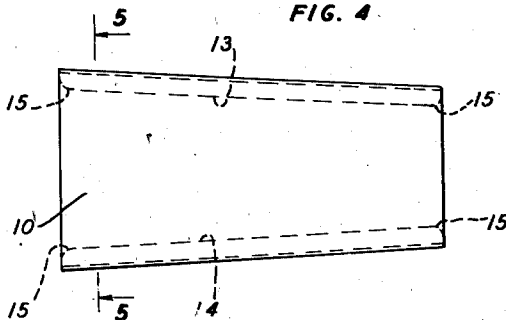
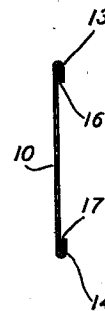


FIG. 5



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## UNITED STATES PATENT OFFICE

2,285,263

## FORMING TOOL

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3 Claims. (Cl. 93—82)

This invention relates to a forming tool, and more particularly to a tool for guiding and wrapping paper tape longitudinally about a core.

In bending paper tape longitudinally, as, for example, when covering cores therewith, it has been found desirable to provide definite guides for both edges of the tape as they move toward each other into overlapping relation.

An object of the invention is to provide a simple, efficient and practical forming tool to guide edges of paper when bent longitudinally.

With this and other objects in view, the invention comprises a forming tool having a body of sheet material with inclined edges, bent to provide guide grooves, and the body bent into a hollow contour tapering from an entrance end, with the guide grooves spaced apart circumferentially to an exit end where the guide grooves terminate in parallel overlapping relation.

Other objects and advantages will be apparent from the following detailed description when taken in conjunction with the accompanying drawing, wherein—

Fig. 1 is a top plan view of the forming tool;

Fig. 2 is a sectional view taken along the line 2—2 of Fig. 1;

Fig. 3 is an enlarged sectional view taken along the line 3—3 of Fig. 1;

Fig. 4 is a top plan view of the body of the tool prior to its completion, and

Fig. 5 is a sectional view taken along the line 5—5 of Fig. 4.

Referring now to the drawing, attention is first directed to Figs. 1, 2 and 3, wherein the forming tool is illustrated as having a body 10, which in this embodiment is formed into a hollow contour tapering from an entrance end 11 to an exit end 12. The body 10 is formed of sheet material, preferably of sheet metal, having tapered edges 13 and 14 curved at their ends as indicated at 15 (Fig. 4). The edges of the body 10 are first bent, as illustrated in Figs. 4 and 5, to form guide grooves 16 and 17, respectively, which guide grooves extend the full length of the body. After the material of the body is bent at the edges 13 and 14 to form the grooves 16 and 17, it is bent into a desired contour, which in the present embodiment is hollow, with a circular cross sectional taper from the entrance end 11, where the guide grooves are spaced apart, circumferentially to the exit end 12, where the guide grooves terminate in parallel overlapping positions as illustrated in Fig. 3. By forming the body of sheet material this contour may vary, depending upon the final form of the tape ma-

terial desired. For example, instead of being circular in cross section the body member may be oval or of other contours. A retaining sleeve 18 having a cylindrical outer surface 19 is provided with a tapered inner surface 21 conforming to the general cross sectional contour of the body 10 to receive and firmly hold the body against displacement in a suitable support 22 in which the sleeve 18 is mounted.

The forming tool may be used for bending tape material longitudinally in forming a tubular structure of desired variable cross sectional contour, or it may be employed to bend tape material longitudinally about a core to form a covering on the core of a desired variable contour, depending upon the cross sectional contour of the core being covered. In the present illustration a core 24 is advanced longitudinally and simultaneously a desired tape material, such as paper 25, is advanced therewith through the body. The material 25 is guided into the body 10 in any suitable manner (not shown) and as it travels longitudinally its edges enter the guide grooves 16 and 17 at spaced circumferential positions, as illustrated in Figs. 1 and 2. The tapering contour of the body is such that the edges of the material will remain in the grooves, the latter surrounding the edges of the material, to definitely space them one from the other and eliminate any possibility of their engagement from the spaced positions at the entrance end 11 and until after they have been moved into overlapping relation prior to their escape from the exit end 12 of the body.

Various materials used in forming tubes or in forming coverings on cores lack sufficient rigidity and resiliency to follow the tapering contour of a body similar to the body 10 and avoid engagement of the edges while moving into overlapping relation unless definite guides, such as the groove portions 16 and 17 of the body 10, are provided to positively hold the edges of the material from each other and definitely guide them into overlapping relation. Such materials will follow the contour of the body until the side edges are forced inwardly toward each other and their lack of resiliency and rigidity will cause them to fall and possibly engage one with the other in an attempt to move them into overlapping positions, resulting in damage to the material.

The body 10, being formed of sheet metal, has sufficient resiliency for variation in the contour thereof through movement of the sleeve 18 relative thereto, movement of the sleeve toward the

entrance end 11 decreasing the diameters of the body while movement of the sleeve toward the exit end 12 releases the body to allow the resiliency of the body to increase the diameters thereof. Furthermore, the body may be secured against variations if desired, by welding the exit ends together and the sleeve 18 to the adjacent body portions.

The rounded edges 15 eliminate possible damage to the material upon entering the guide grooves, removing sharp edges which might dig into the material.

The embodiment of the invention herein disclosed is merely illustrative and may be modified and departed from in many ways without departing from the spirit and scope of the invention as pointed out in and limited solely by the appended claims.

What is claimed is:

1. A forming tool comprising a body formed of sheet material with opposite edges thereof bent to form guide grooves and the body bent arcuately into a hollow substantially truncated cone contour with the guide grooves extending from spaced positions at one end to overlapping parallel relative positions at the other end to bend tape material longitudinally while advancing through the body and surround the side edges of the tape material at the guide groove during their movement into and through overlapping relative positions, and a sleeve extending around the body to hold the body against variation from a

selected contour and movable relative to the body to vary the contour thereof.

2. A forming tool comprising a body formed of sheet material with opposite edges thereof bent to form guide grooves and the body bent arcuately into a hollow substantially truncated cone contour with the guide grooves extending from spaced positions at one end to overlapping positions at the other end to bend tape material longitudinally while advancing through the body and surround the side edges of the tape material at the guide grooves during their movement into and through overlapping relative positions, and an annular member surrounding the body and movable longitudinally thereof to vary the distances the edges of the material overlap.

3. A forming tool comprising a body formed of flexible sheet material with opposite edges thereof bent to form guide grooves and the body bent arcuately into a hollow substantially truncated cone contour with the guide grooves extending from spaced positions at one end to overlapping positions at the other end to bend tape material longitudinally while advancing through the body and surround the side edges of the tape material at the guide grooves during their movement into and through overlapping positions, and an annular member surrounding the body and movable in either direction relative thereto to flex the body to vary the distances the edges of the material overlap.

HUGH FITCH.