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FORMING APPARATUS

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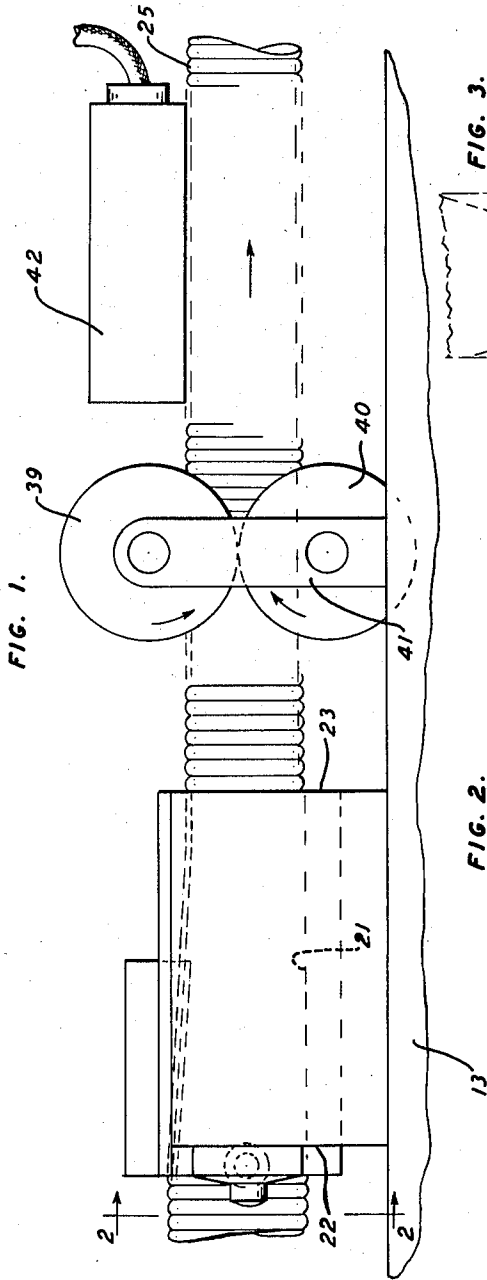


FIG. 1.

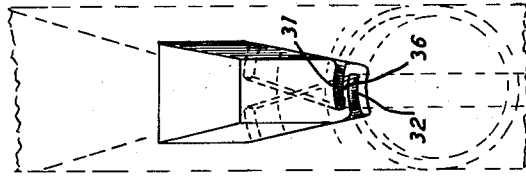
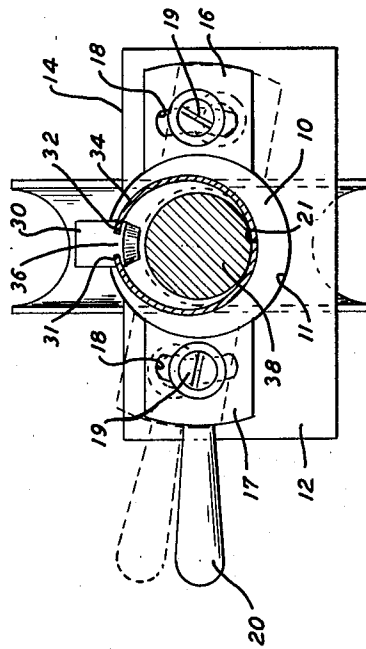


FIG. 3.



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FORMING APPARATUS

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Application June 9, 1938, Serial No. 212,675

1 Claim. (Cl. 153—32)

This invention relates to a forming apparatus and more particularly to an apparatus for overlapping the longitudinal edges of material in forming a tube.

During the advancement of the art of forming tubes of sheet material and forming sheaths on cores, considerable study has been made regarding the guiding of the side edges of the material into overlapping positions while bending the material longitudinally. The different types of materials employed in this art usually require different means to control or guide the edges of the material.

An object of the present invention is to provide efficient, accurate and adjustable means to guide edges of material into overlapping relation.

With this and other objects in view the invention comprises a material forming element with a longitudinal aperture for the passage of material being formed therethrough, the aperture decreasing in diameter from the entrance end, where the edges of the material are spaced from each other, to the exit end, where the edges overlap, the edges of the material travelling in separated grooves of a guide during the overlapping thereof, and the element and guide being rotatably adjustable for aligning the overlapping junction of the edges with a soldering means.

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 side elevational view of the apparatus;

Fig. 2 is a front elevational view taken along the line 2—2 of Fig. 1, and

Fig. 3 is a perspective view of the guide forming part of the invention looking toward the exit end thereof.

The present embodiment of the invention may be employed for forming various types of materials into tubes but was designed to be used in conjunction with the apparatus for making cables illustrated in my copending application Serial No. 115,566, filed December 12, 1936.

The apparatus is designed to receive preformed material, such as sheet material, bent longitudinally, for example, into circular cross section. A forming element 10 circular in cross section is rotatably mounted in an aperture 11 of a housing or support 12. The support 12 is mounted upon a suitable base 13 and the upper surface 14 thereof intersects the aperture 11 to allow a desired portion of the element 10 to project upwardly therefrom. Diametrically opposed inte-

gral arms 16 and 17 of the element 10 have elongate arcuate apertures for the reception of lock screws 19 threadedly associated with the support 12 to permit adjustment of the element 10 for a purpose hereinafter described. A handle 20 mounted upon or integral with the arm 17 provides means for manually adjusting the element.

The element 10 is longitudinally apertured, as at 21, the radius of the aperture decreasing from the entrance end indicated at 22 in Fig. 1 to the exit end 23. It will be observed by viewing Figs. 1 and 2 that the lowermost wall 21 of the aperture lies in a plane parallel to the center line of the complete tube indicated at 25, whereas the upper walls of the aperture taper downwardly from the entrance end.

The upper portion of the element 10 is provided with a slot extending approximately half the length of the element with the side walls of the slot tapering inwardly to receive a tapered guide 30. The guide 30 may be removably secured to the element 10 by any suitable means (not shown) or may be held in place by friction. Grooves 31 and 32 are formed in the guide 30 as illustrated in Figs. 2 and 3. By viewing Fig. 2, which illustrates the entrance end of the apparatus, it will be observed that the grooves 31 and 32 are spaced from each other to separate the edges of preformed material 34. The upper walls of the grooves are formed to provide a continuation of the inner wall of the element 10 and the walls of the grooves completely house the material being formed at its longitudinal edges. The grooves 31 and 32 are so formed in the guide that throughout the length they are positively separated from each other by a portion 36. The exact form of this portion or material 36 is not important but a general understanding of its formation may be had by viewing Figs. 2 and 3, particularly Fig. 3 which illustrates the grooves extending toward each other and overlapping to provide separate paths for the edges of the material being formed to guide them into overlapping relation.

In the present embodiment of the invention the material 34 consists of sheet metal transversely corrugated, which material as illustrated is formed about a core 38 to provide a sheath therefor. Suitable means, such as driven concave rollers 39 and 40, may be provided for advancing the material 34 and the core 38 relative to the forming means. The rollers 39 and 40 are mounted upon shafts journaled in suitable bearing brackets 41, only one of which is shown in the drawing, the

brackets being supported by the base 13 upon which they may be rigidly mounted.

A soldering unit 42 of any suitable type is positioned to solder the overlapping edges of the material 34 after they pass from the element 10 and guide 30. The soldering unit 42 remains at a fixed position and is supported by any suitable means (not shown). It is important, however, that the overlapping edges of the material pass beneath the soldering unit at a predetermined position with respect thereto. It is possible to vary the relationship of the material 34 with the soldering unit to satisfactorily align the overlapping edges with the soldering unit by loosening the lock screws 19 and by the aid of the handle 20 rotating the element 10 relative to the support 12. After this adjustment has been made the locking screws may again be driven inwardly to hold the arms 15 and 17 together with the element 20 against rotation relative to the support 12.

During the operation of the apparatus the preformed material 34 is moved to the right, Fig. 1, and as it approaches the entrance end 22 the spaced edges of the material enter the grooves 31 and 32. As the material passes through the aperture 21 the diameter of the material is decreased, causing the edges to follow the grooves into overlapping positions, the edges being continually separated from each other while being moved into overlapping positions.

The material thus formed continues in its advancement through the aid of the rollers 39 and 40 and is directed beneath a soldering unit 42, where solder is applied to secure the edges of the material together.

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

What is claimed is:

In a tube forming apparatus, means for forming and overlapping the edges of sheet material to form a tube including an element having continuous longitudinally extending grooves engaging opposite sides of and positively guiding both longitudinal edges of the material, said grooves engaging the edges of the material while still spaced apart circumferentially and being in the same plane at the entrance end of the element, thereafter becoming deeper and ending in parallel planes overlapping the edges of the material, and tapering tubular means surrounding said element to retain the edges in said grooves and cause the edges to converge into overlapping relation, said tubular means extending from a point where the edges are circumferentially spaced apart to a point where the edges are fully overlapped.

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