

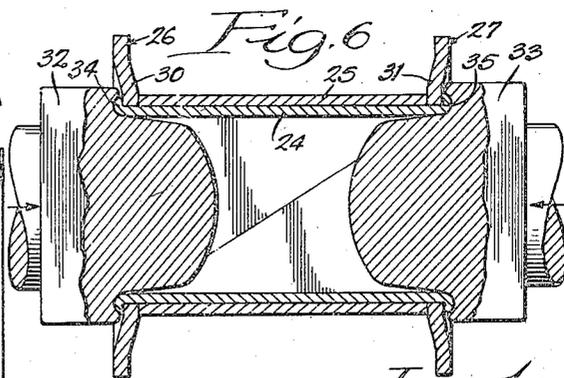
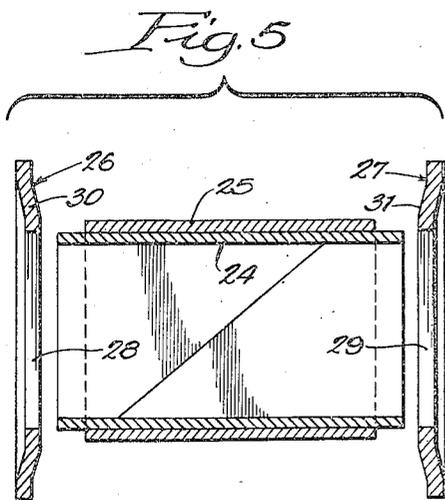
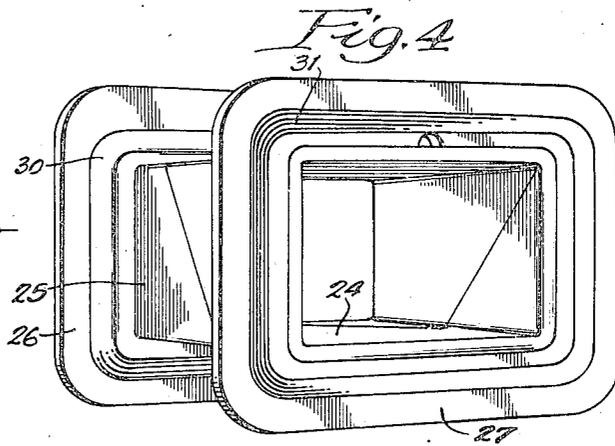
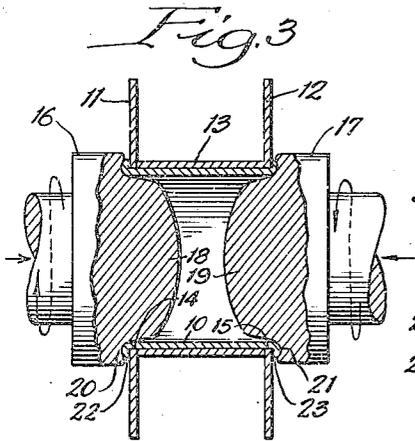
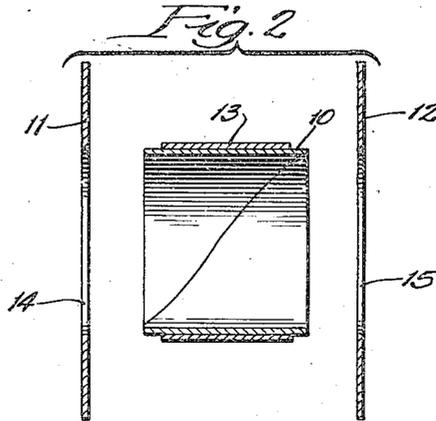
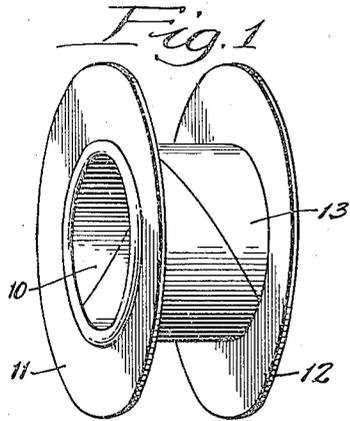
March 7, 1944.

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2,343,389

METHOD OF MAKING FORMS FOR WINDINGS AND THE LIKE

Filed Nov. 27, 1941



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UNITED STATES PATENT OFFICE

2,343,389

METHOD OF MAKING FORMS FOR WINDINGS AND THE LIKE

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Application November 27, 1941, Serial No. 429,667

1 Claim. (Cl. 93--1)

This invention relates to a method for making forms for windings and the like and more particularly to the forming of uniformly swaged ends on the core of a bobbin or form.

In the making of bobbins or forms for windings the outwardly extending end flanges of the form may be placed on the core and the ends of the core outwardly swaged to lock the flanges in position. To provide a uniform space between the flanges, spacing members may be inserted between the flanges. These members prevent the movement of the flanges toward each other and prevent the varying of the distance between the flanges during the swaging operation.

Despite the application of a spacing member which prevents the movement of the flanges toward each other, the swaging of the ends of the core may cause the flanges and the spacing member between them to be shifted in position on the core and thus produce swaged ends on the core which may be of different depths. When the flanges are applied to the ends of the core, each flange is spaced a predetermined distance from the extreme end of the core and the end portion of the core beyond the flange is turned outwardly to lock the flange in position. If the flange is shifted along the core the size of the end portion of the core which is swaged may be varied. The swaged ends of the resulting product are not uniform and if too large an end portion is swaged at one end of the core the end portion which remains to be swaged at the other end of the core is too small and will not properly lock the adjacent flange in position.

An object of the invention is to provide a form for windings and the like wherein the flanges forming the ends of the form are locked on the core by outwardly swaging the ends of the core and wherein the core is provided with uniformly swaged ends. Another object is to provide in a method of making forms for windings and the like, the swaging of a predetermined end portion of the core without permitting the swaging to extend beyond this predetermined portion. Still another object is to provide a method of swaging or outwardly turning the end portions of a core in a bobbin or form wherein the portions at the opposite ends of the core which are swaged are of exactly the same length.

Another object of the invention is to provide a method of making a form for windings and the like, wherein the ends of a core are outwardly swaged and the swaged end portions at the opposite ends of the core are equally effec-

tive in locking the outwardly extending flanges of the form in position.

Other features and advantages will appear from the following specification and drawing, in which—

Figure 1 is a perspective view of a bobbin or form for windings; Fig. 2 is an exploded view in vertical section; Fig. 3 is a vertical sectional view of the bobbin in which the end portions of the core are being swaged; Fig. 4 is a perspective view of a modification of the invention; Fig. 5 is an exploded longitudinal sectional view of the structure shown in Fig. 4; and Fig. 6 is a longitudinal sectional view of the structure shown in Figs. 4 and 5 with the swaging mandrels applied to the ends of the core.

In the embodiment of the invention described herein and illustrated in Figs. 1 to 3, the form or bobbin includes a tubular core 10 outwardly extending end flanges 11 and 12 and a tubular spacing member 13 received about the core 10.

The core 10 is preferably a hollow laminated paper tube formed by helically winding strips of paper or gummed tape about a suitable mandrel. The spacing member 13 may be of the same construction and formed in the same manner. The spacing member 13 is preferably of an internal diameter only slightly greater than the external diameter of the core 10 so that the spacing member when applied to the core 10 fits snugly thereon.

The flanges 11 and 12 may be in the form of circular discs as shown and may be provided with central apertures 14 and 15. The apertures 14 and 15 are preferably sufficiently large to receive the end portions of the core 10 and sufficiently small to prevent the insertion of the tubular spacing member 13 in the aperture. Thus when the flanges are applied to the ends of the core 10, the core is snugly received within the apertures 14 and 15. The flanges may be of any suitable material, for example, of cardboard or paper.

The core 10 is inserted within the spacing member 13 to the position shown in Fig. 2. The spacing member 13 is preferably slightly shorter than the core 10 so that the end portions of the core extend beyond the spacing member. The spacing member should be so placed as to provide exposed extending end portions of the core which are of substantially equal length. The ends of the core may then be inserted in the apertures 14 and 15 in the flanges 11 and 12 respectively. The flanges are placed on the end por-

tions of the core in engagement with the ends of the spacing member 13.

The core 10 with the spacing member 13 and flanges 11 and 12 assembled thereon is placed between a pair of spinners or rotating mandrels 16 and 17. The spinners may be equipped with ends 18 and 19 which are inwardly tapered to permit the ends to be inserted in the core of the bobbin. Adjacent the tapered end portions 18 and 19 of the spinners 16 and 17 are outwardly extending shoulders 20 and 21 which are preferably arcuate in shape and adapted to receive within the arcuate recesses formed thereby the end portions of the core 10.

The spinners 16 and 17 are applied to the ends of the core 10 and simultaneously urged toward each other while being rotated in opposite directions. The engagement of the shoulders 20 and 21 with the ends of the core 10 produces outwardly swaged portions 22 and 23 on the core 10. These outwardly swaged portions engage the flanges 11 and 12 and lock the same in position on the core. The tubular spacing member 13 prevents movement of the flanges toward each other.

In the embodiment of the invention shown in Figs. 4 to 6, a core 24 of rectangular cross section receives a spacing member 25 and end flanges 26 and 27. The flanges are equipped with central apertures 28 and 29 which are of substantially the same size and cross section shape as the core 24. If desired the flanges may be offset at 30 and 31 to provide a peripheral portion which extends beyond the central portion of the flange.

The form is assembled in the same manner as the form illustrated in Figs. 1 to 3 with the spacing member 25 being placed about the core 24 and the flanges 26 and 27 being placed on the ends of the core. A pair of mandrels 32 and 33 of rectangular cross section corresponding to the cross section shape of the core 24 are applied to the ends of the core 24 and simultaneously urged toward each other to produce the outwardly swaged end portions 34 and 35 on the core 24. The mandrels 32 and 33 are equipped with tapered end portions and with arcuate recessed shoulders similar to those of the mandrels 16 and 17.

In carrying out the invention, the flanges when applied to the ends of the core may be separated from each other by any suitable means. Thus

any means which will prevent the flanges from being moved toward each other while the ends of the core are being outwardly swaged, will be effective in the operation of the invention. The simultaneous application of the swaging means to the opposite ends of the core causes the opposite ends of the core to be simultaneously swaged and to produce uniformly swaged core ends. The spacing means prevents the flanges from being moved toward each other and the simultaneous application of the swaging means prevents the shifting of the flanges and spacing member assembly longitudinally along the core.

The spinners 16 and 17 and the mandrels 32 and 33 are preferably so arranged as to be limited in their inward movement in their swaging operation. In the swaging operation, the spinners and the mandrels are moved toward each other and any suitable conventional means (not shown) may be provided to limit this movement and to prevent the spinners and mandrels from moving closer to each other than the predetermined distance which is chosen.

By referring herein to a tubular core, hollow cores of any cross sectional shape are intended to be included. For example, polygonal cores of any type may be used as may be elliptical or circular cores.

Although the invention has been described in connection with specific embodiments, it will be understood that the method may be modified and changed without departing from the spirit and scope of the invention.

I claim:

A method of making forms for windings and the like comprising providing a tubular core, placing a tubular spacing member about the core and in longitudinal slidable relation therewith, the ends of said member being spaced slightly from the ends of the core, placing flanges on the ends of the core in engagement with the ends of the spacing member, applying swaging means to both ends of the core, and simultaneously urging said swaging means toward each other to outwardly swage the ends of the core and to lock the flanges in position the spacing member being slidable on the core during the swaging operation to permit centering of the spacing member on the core.

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