Aug. 20, 1935. R. McC. JOHNSTONE 2,012,102

METHOD OF AND MEANS FOR WINDING FLEXIBLE MATERIAL

Original Filed May 13, 1932

Fig-1

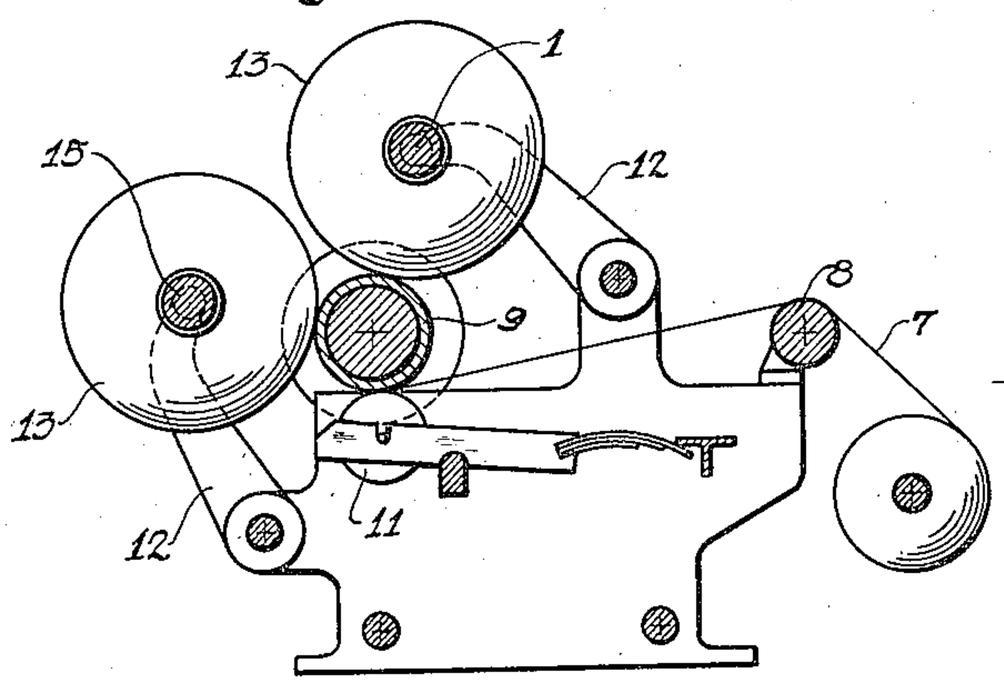


Fig-2

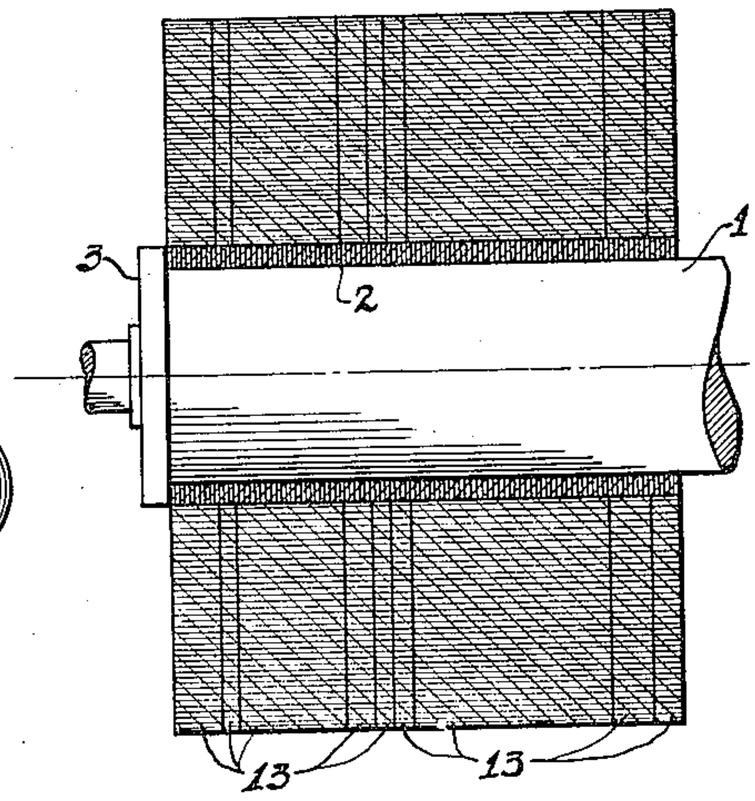
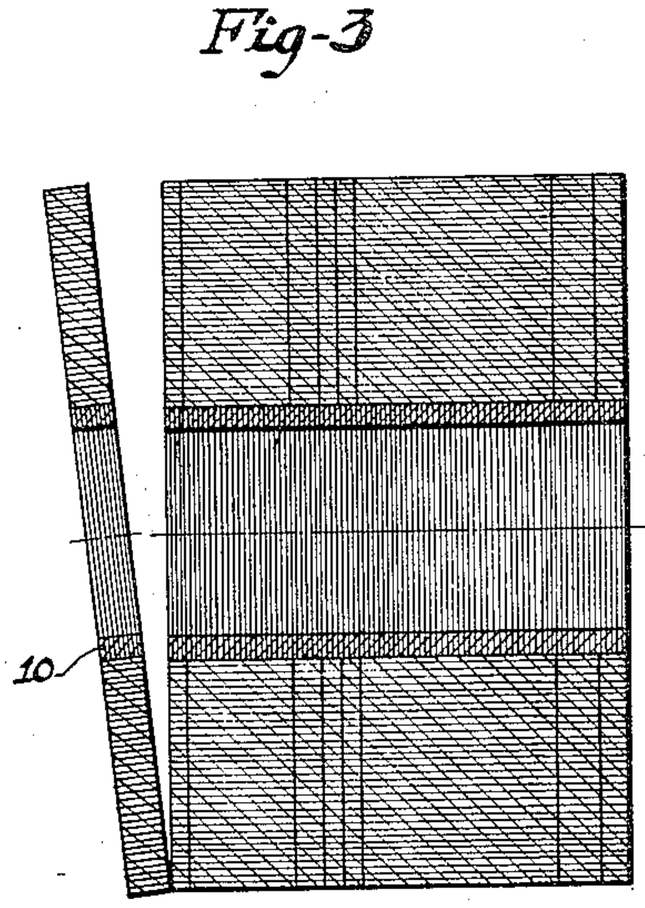


Fig-3



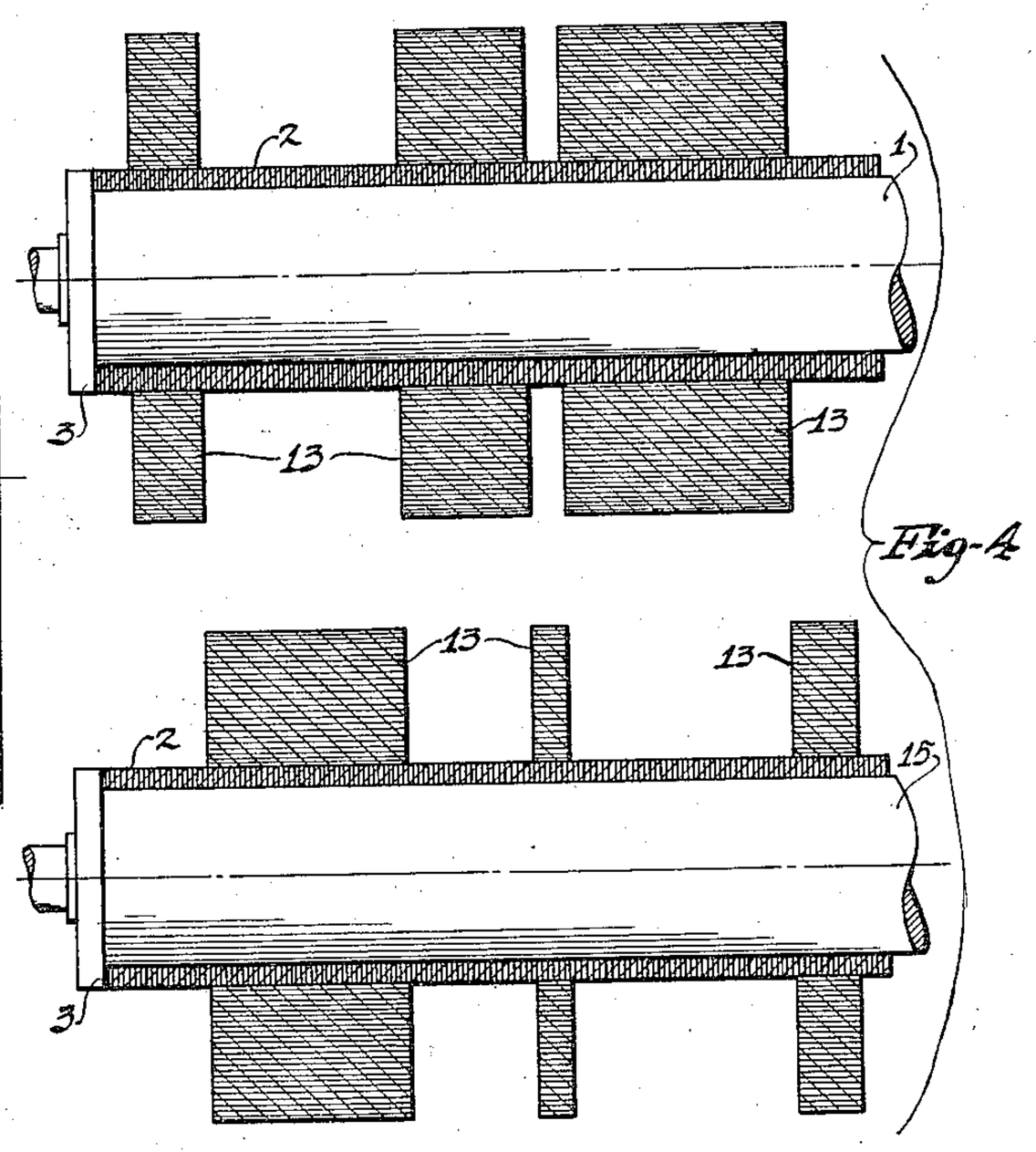


Fig-4

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METHOD OF AND MEANS FOR WINDING FLEXIBLE MATERIAL

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Continuation of application Serial No. 611,015, May 13, 1932. This application April 11, 1933, Serial No. 665,600

7 Claims. (Cl. 242—68)

This invention relates to a method of winding, and subsequently separating, sections of flexible material, as well as to the core on which the material is wound, and to the product obtained thereby, and has for its main object and feature a new method and means whereby it becomes unnecessary to have the core divisions correspond exactly to the wound sections. The value of this invention will be appreciated when it is remembered that flexible material is sometimes slitted into very narrow sections, and that, when these sections are wound side by side, unless the size and position of the core members correspond exactly to the lines of division of the sections, said sections will overlap on different core members and, in consequence, it becomes very difficult to separate the wound sections. Moreover, sometimes the width of the slitted sections is such that it is impossible to divide the core into a number of sections that will add up to correspond with the width of the web being slitted. For instance, in slitting ¼'' wide strips in a 26'' machine, it would be necessary to have one hundred and four core members, and if each core member is .003'' too great in length, the overall length of a group of one hundred and four members will be 26.312''. It is therefore evident that a large number of the wound coils would overlap on different core members. In carrying out my invention there is employed a plurality of disk-like members or washers or laminations to form a core, and these disk-like members are so thin that the line of separation between adjacent coils of wound material need not coincide exactly with the line of division between adjacent washers, because even if there is a slight overlapping of adjacent coils with respect to the same washer, the amount of overlapping will be so slight as to form practically no impediment to the separation of said coils, and the washers will divide along any line that happens to be natural to them under the circumstances. At the same time, a core portion will remain within each coil.

Furthermore, it is frequently desired to change from one width of slitted section to another, in operating the machines, and under prevailing practice it is necessary to provide core-portions of a different length or length to match up with the desired new width of sections, whereas with the improvement herein disclosed the question of length of the core-portions becomes immaterial. The invention is likewise of great utility when the slitted sections are wound on different cores as in the well-known staggered arrangement, because a section of flexible material can be wound at any point on a core, and said core can thereafter be divided at points approximately corresponding to the width of a wound section.

In the accompanying drawing the invention is disclosed in several concrete and preferred forms, in which

Fig. 1 is a longitudinal sectional view of a typical slitting and winding machine in connection with which the invention may be practiced;

Fig. 2 is a sectional view of a group of disk-like members forming a core mounted on a support and showing also the slitted sections of flexible material on the core;

Fig. 3 is a view similar to Fig. 2 but showing the core removed from the support and the separation of wound sections and of the core into core portions; and

Fig. 4 is a sectional view similar to Fig. 2 but showing the arrangement when the slitted sections are wound in staggered relation on different supports.

1 indicates a support or winding shaft on which are mounted side by side a plurality of disk-like members 2, which may consist of paper, steel, brass, celluloid or what not. These members, which are greater in number than the plurality of coils, are separable and are held under compression by suitable abutment members, one of which is shown at 3, arranged at opposite ends of support 1 so as to form a core with a substantially uninterrupted supporting surface. The winding shaft, here supported by pivotal arms 12, may form part of any suitable winding machine such as shown in Fig. 1, in which web 7 is led from a supply roll over a suitable guide 8, around backing member 9 and to the winding shaft. In passing over the backing member, the web is slitted into a plurality of sections by means of score-cut slitters 11. The particular construction of winding machine, and the particular slitting means used are unimportant. The slitted sections which are wider than the thickness of washers 2 are then wound into coils 13, in a well-understood manner. After the winding operation is completed, the shaft and wound material are removed from the machine, and the shaft is withdrawn from the core. It will now be evident, as shown in Fig. 3, that the coils or wound sections may be readily separated, and that the core will be separated into core-portions 10 along any line of division natural to the disk-like members and that a core-portion, consisting of a plurality of such disk-like members, will remain within each wound section. It will further be understood that this natural line

of division of the members may or may not coincide with the line of separation of the wound sections.

The slitted sections of flexible material may, if desired, be wound on different supports. As shown in Figs. 1 and 4, the machine may be provided with a second support 15 and the slitted sections can then be wound in staggered relation on supports 1 and 15. After winding is completed the shafts and cores are removed from the machine and, as a shaft is withdrawn from a core, said core can be separated along any natural line of division as before, leaving a core-portion within each wound section.

From the foregoing it will be understood that the ultimate product consists of a core-portion, to sustain a section of wound flexible material, composed of disk-like members that are freely separable into core-portions of various pre-indeterminable lengths, together with a section of flexible material wound on said core-portion to thereby prevent separation of the core-portion into its constituent members. Furthermore, that the entire core (as distinguished from the core-portion) can be characterized as a core, for wound sections of flexible material, composed of a plurality of disk-like members that are freely separable into core-portions of various pre-indeterminable lengths approximately determined by the width of the wound sections of flexible material.

The present application is a continuation of one filed May 13, 1932, Ser. No. 611,015.

I claim:

1. As a new article of manufacture: a core-portion, to sustain a section of wound flexible material, composed of a plurality of freely separable disk-like members that are freely separable into core-portions of various pre-indeterminable lengths; and a section of flexible material wound on said core-portion to thereby prevent separation of the core-portion into its constituent members.

2. As a new article of manufacture: a core, for wound sections of flexible material, composed of a plurality of disk-like members that are freely separable into core-portions of various pre-indeterminable lengths approximately determined by the width of the wound sections of flexible material.

3. As a new article of manufacture: a core, to sustain along its length one or more sections of wound flexible material, composed of a plurality of freely separable disk-like members; and one or more sections of flexible material wound on said core to prevent separation into its constituent members, of the core-portion within the wound material and to admit of the separation of the core into various pre-indeterminable lengths of core-portions approximately determined by the width of the wound section or sections.

4. As a new article of manufacture: a plurality of wound sections of flexible material; and a core therefor composed of a plurality of disk-like members, that are freely separable into core-portions of various pre-indeterminable lengths, said disk-like members being greater in number than the plurality of sections and each member of less thickness than the width of a section of flexible material.

5. A method of winding sections of flexible material on a core and subsequently separating said core into core-portions which consists in: mounting, on a support, a plurality of disk-like members in side by side relation to thereby form a substantially uninterrupted supporting core to sustain along its length one or more sections of wound flexible material; winding one or more sections of flexible material, each of greater width than the thickness of a disk-like member, on said core; and separating said core on any line of division natural to the disk-like members, as approximately determined by the width of a wound section, while leaving a core portion within the wound section.

6. A method of winding and subsequently separating sections of flexible material which consists in: mounting, on a support, a plurality of disk-like members in side by side relation to thereby form a substantially uninterrupted supporting core; winding a plurality of sections of flexible material, each of greater width than the thickness of a disk-like member, in side by side relation on said core; separating said wound sections and thereby separating said core on any line of division natural to the disk-like members while leaving a core-portion within each wound section.

7. A method of providing a section of wound flexible material with a core-portion which consists in: mounting, on a support, a plurality of disk-like members in side by side relation to thereby form a substantially uninterrupted supporting core to sustain along its length a section of wound flexible material; winding a section of flexible material, of greater width than the thickness of a disk-like member, on said core; and separating said core on any line of division natural to the disk-like members, as approximately determined by the width of the wound section, while leaving a core-portion within the wound section.

ROBERT McC. JOHNSTONE.

CERTIFICATE OF CORRECTION.

Patent No. 2,012,102. August 20, 1935.

ROBERT McC. JOHNSTONE.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 2, first column, lines 37-38, claim 1, strike out the words "freely separable"; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 8th day of October, A. D. 1935.

Leslie Frazer
Acting Commissioner of Patents.

(Seal)