

## SPECIFICATION

**Method of introducing an anti-microphony sponge into an air-cored coil and a device for performing the method**

The invention relates to a method of introducing an anti-microphony sponge into an air-cored coil for a television channel selector.

- 10 The introduction of pieces of sponge into air-cored coils for television channel selectors in order to prevent microphony in these coils is known *per se*.

- 15 Hitherto, the sponges were introduced by hand after the winding of the coil on a winding machine.

- According to the present invention, in a method of introducing an anti-microphony sponge into an air-cored coil for a television channel selector, a length of a spongy material is introduced into a sleeve so that an end portion of the length is enclosed by the sleeve, an air-cored coil whose inner diameter is substantially equal to the outer diameter of the sleeve then being slid onto the sleeve, after which the air-cored coil is blocked against movement in the axial direction and the end portion of the length is clamped at both ends of the air-cored coil, the sleeve subsequently being withdrawn from the blocked air-cored coil and being slid over the clamped length so that the portion of the length enclosed by the sleeve is exposed and engages the inner circumference of the air-cored coil, the portion of the length which is enclosed by the air-cored coil then being separated from the portion of the length situated in the sleeve, and subsequently the blocking of the air-cored coil and the clamping of the sponge introduced into the air-cored coil being removed so that the air-cored coil with the anti-microphony sponge inserted therein is released.

- Using the method in accordance with the invention, the introduction of pieces of sponge into air-cored coils for television channel selectors can be simply performed at a very high rate.

- The invention also relates to a device for performing the method.

- The device in accordance with the invention comprises an axially displaceable mandrel which comprises a cylindrical end portion around which a coil can be arranged and an axial bore which serves to accommodate a length of a spongy material, a pair of diametrically opposed slots in the end portion, two blocking members which can be displaced towards the axis of the mandrel from opposite directions until they project into the slots, and clamp said length at both ends of the coil, means for the axial displacement of the mandrel after the introduction of the blocking members into the slots so that the end portion of the mandrel is withdrawn from the coil,

and cutting means which are displaceable transversely of the axis of the mandrel and which serve to cut off a piece of sponge in the zone between the blocking members and the withdrawn end portion of the mandrel.

- 70 The device in accordance with the invention preferably comprises means for supplying jets of compressed air simultaneously with a return movement of the blocking members in order to discharge from the device the coil with the piece of sponge inserted therein.

- The main advantage of the device in accordance with the invention, of course, is the fact that manual operation is replaced by a mechanical operation, so that the manufacturing tolerances are much more constant and more accurate. Moreover, the device is very suitable for mounting directly adjacent the exit point of the winding machine and for synchronization therewith, so that the operation directly succeeds that of the winding machine and can even take place simultaneously with the formation of a new coil by the winding machine. Thus, the production capacity of the winding machine is not reduced, while the overall efficiency of the operation is improved.

- A practical embodiment of the device in accordance with the invention will be described in detail hereinafter with reference to the accompanying diagrammatic drawings.

Figure 1 is a front view of the device,

Figure 2 is a plan view of the device,

- Figure 3 is a sectional view of the device, taken along the line III-III in Fig. 2;

- 100 Figure 4 is a sectional view of the device, taken along the line IV-IV in Fig. 3;

Figures 5 to 10 diagrammatically show successive steps in the device in sectional view as in Fig. 3;

- 105 Figures 9 and 10 diagrammatically illustrate the steps of the Figs. 6 and 7 in a plan view.

- The device shown in the Figs. 1 to 4 comprises a basic frame 1 with a set of supports 2 which act as a guide for a vertically displaceable slide 3 which is supported and driven by the rod of a compressed air cylinder 4 which is mounted on the basic frame 1 by way of a block 5.

- The slide 3 is rigidly connected to a mandrel 6 which comprises a cylindrical end portion 7 in which a pair of diametrically opposed slots 8 are provided. The mandrel 6 comprises a bore 9, the lower end of which communicates with an oblique duct 10 in the slide 3.

- On the slide 3 there is secured, by means of screws 11, a support 12 for a pivotable plate 13 which cooperates with a counter-plate 14 which comprises pilot pins 15 for the positioning of a knife 16, the cutting edge of which is exposed at the area of a profiled window 17 in the counter-plate 14 (Fig. 2) for the cutting of the spongy material. The pivotable plate 13 is pivotably journaled, by means of a pin 18, on the support 12 and is driven

via a pivot 23 and a fork 19 on the rod of a compressed air cylinder 20 mounted on the support 12. The pivoting movement of the pivotable plate 13 is limited by an abutment 21 which comprises a recess 22 for the displacement of the pivot 23.

On the supports 2 there are mounted, by way of L-shaped brackets 24, two blocks 25 for supporting and guiding two slides 26 which are situated on opposite sides of the mandrel 6 (Fig. 3) and which are driven by compressed air cylinders 27. In conjunction with grooves 29 (Fig. 3) pins 28 guide the movements of the slides 26, each of which comprises a blocking member 30 which terminates in a pair of teeth 31 which are arranged one above the other and which can be inserted into the slots 8 in the end portion 7 of the mandrel 6.

On one support 25 there is also secured a tube 32 which comprises openings 33 (Figs. 1, 2 and 4) which are directed obliquely downwards and through which jets of compressed air can be supplied.

The operation of the device described above will be readily understood on the basis of the Figs. 5 to 10 which diagrammatically illustrate the use of the device in direct cooperation with a winding machine. In Fig. 5, the blocking members 30 are remote from each other and the mandrel 6, which is carried by the slide 3, occupies a position just below the winding mandrel 34 of a winding machine (not shown), while an ejector 35 which forms part of the winding machine slides a wound coil 36 off the mandrel 34 and onto the end portion 7 of the mandrel 6. The outer diameter of the end portion 7 equals the external diameter of the winding mandrel 34, and hence the internal diameter of the coil 36. A length 37 of a spongy material has previously been introduced, via the duct 10, into the bore 9 of the mandrel 6. Subsequently, the two compressed air cylinders 27 drive the slides 26 so that the two blocking members 30 are moved towards each other until the two pairs of teeth 31 project into the slots 8, are closed over the ends of the coil 36 and together clamp the end portion of the length 37 which is present in the end portion 7 (Figs. 6 and 9). When the compressed air cylinder 4 is actuated, the mandrel 6 is moved downwards, so that the end portion 7 is withdrawn from the coil 36 and is moved out of reach of the teeth. The end portion of the length 37 is then retained by the teeth 31, so that the length 37 is pulled through the duct 10 and the bore 9. As is shown in the Figs. 7 and 10, the knife 16 is subsequently actuated by the compressed air cylinder 20, so that in the zone between the teeth 31 and the mandrel 6 a piece of sponge 38 is cut off from the length 37.

After withdrawal of the two blocking members 30, the coil 36 with the piece of sponge

38 inserted therein can be discharged from the device in the transverse direction (Fig. 8) by jets of compressed air which are supplied via the tube 32 and the apertures 33.

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## CLAIMS

1. A method of introducing an anti-microphony sponge into an air-cored coil for a television channel selector, wherein a length of a spongy material is introduced into a sleeve so that an end portion of the length is enclosed by the sleeve, an air-cored coil whose inner diameter is substantially equal to the outer diameter of the sleeve then being slid onto the sleeve, after which the air-cored coil is blocked against movement in the axial direction and the end portion of the length is clamped at both ends of the air-cored coil, the sleeve subsequently being withdrawn from the blocked air-cored coil and being slid over the clamped length so that the portion of the length enclosed by the sleeve is exposed and engages the inner circumference of the air-cored coil, the portion of the length which is enclosed by the air-cored coil being separated from the portion of the length situated in the sleeve, and subsequently the blocking of the air-cored coil and the clamping of the sponge introduced into the air-cored coil being removed so that the air-cored coil with the anti-microphony sponge inserted therein is released.

2. A method of introducing an anti-microphony sponge into an air-cored coil for a television channel selector, substantially as herein described with reference to the accompanying drawings.

3. An air-cored coil having an anti-microphony sponge inserted thereby by means of the method claimed in Claim 1 or 2.

4. A device for performing the method claimed in Claim 1, comprising an axially displaceable mandrel which comprises a cylindrical end portion around which a coil can be arranged and an axial bore which serves to accommodate a length of a sponge material, a pair of diametrically opposed slots in the end portion, two blocking members which can be displaced towards the axis of the mandrel from opposite directions until they project into the slots and clamp said length at both ends of the coil, means for axial displacement of the mandrel after the introduction of the blocking members into the slots so that the end portion of the mandrel is withdrawn from the coil, and cutting means which are displaceable transversely of the axis of the mandrel and which serve to cut off a piece of sponge in the zone between the blocking members and the withdrawn end portion of the mandrel.

5. A device as claimed in Claim 3, comprising means for supplying jets of compressing air simultaneously with a return movement of the blocking members in order to discharge

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via a pivot 23 and a fork 19 on the rod of a compressed air cylinder 20 mounted on the support 12. The pivoting movement of the pivotable plate 13 is limited by an abutment 21 which comprises a recess 22 for the displacement of the pivot 23.

On the supports 2 there are mounted, by way of L-shaped brackets 24, two blocks 25 for supporting and guiding two slides 26 which are situated on opposite sides of the mandrel 6 (Fig. 3) and which are driven by compressed air cylinders 27. In conjunction with grooves 29 (Fig. 3) pins 28 guide the movements of the slides 26, each of which comprises a blocking member 30 which terminates in a pair of teeth 31 which are arranged one above the other and which can be inserted into the slots 8 in the end portion 7 of the mandrel 6.

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2. A method of introducing an anti-microphony sponge into an air-cored coil for a television channel selector, substantially as herein described with reference to the accompanying drawings.

3. An air-cored coil having an anti-microphony sponge inserted thereby by means of the method claimed in Claim 1 or 2.

4. A device for performing the method claimed in Claim 1, comprising an axially displaceable mandrel which comprises a cylindrical end portion around which a coil can be arranged and an axial bore which serves to accommodate a length of a sponge material, a pair of diametrically opposed slots in the end portion, two blocking members which can be displaced towards the axis of the mandrel from opposite directions until they project into the slots and clamp said length at both ends of the coil, means for axial displacement of the mandrel after the introduction of the blocking members into the slots so that the end portion of the mandrel is withdrawn from the coil, and cutting means which are displaceable transversely of the axis of the mandrel and which serve to cut off a piece of sponge in the zone between the blocking members and the withdrawn end portion of the mandrel.

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from the device the coil with the piece of  
sponge inserted therein.

6. A device for performing the method in  
Claim 2, the device being constructed and  
5 arranged to operate substantially as herein  
described with reference to the accompanying  
drawings.

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