Jan. 16, 1962 J. L. LAGASSE ET AL 3,017,313

DEVICE FOR WRAPPING INSULATING TAPE AROUND ELECTROMAGNET CORES

Filed June 30, 1958

2 Sheets-Sheet 1

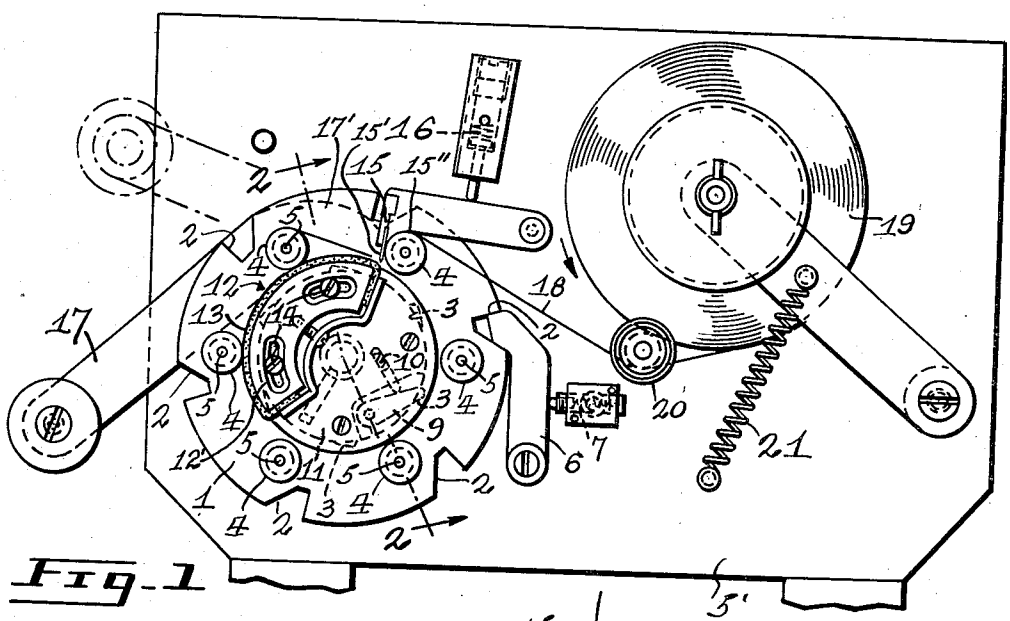


Fig. 1

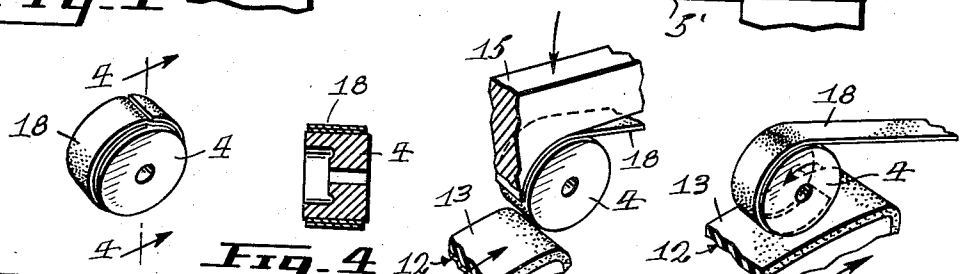


Fig. 3 Fig. 4 Fig. 5 Fig. 6

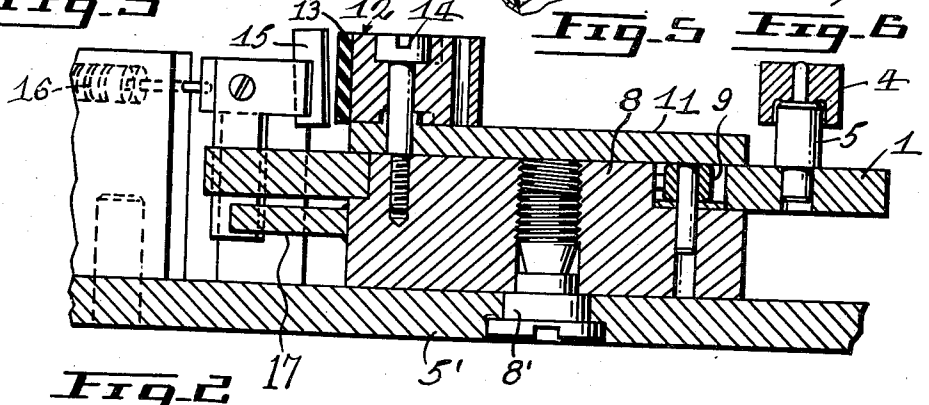


Fig. 2

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2 Sheets-Sheet 2

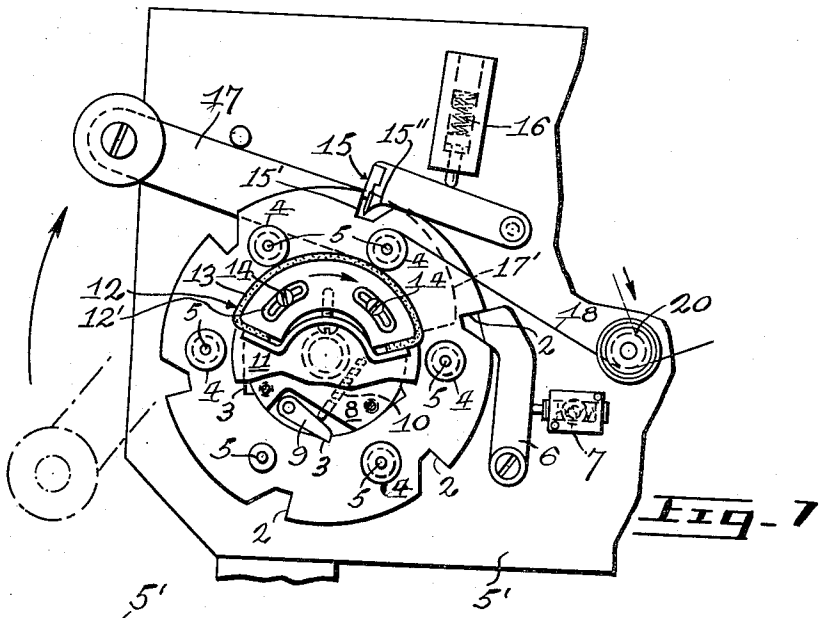


Fig. 7

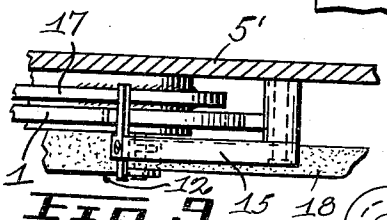


Fig. 8

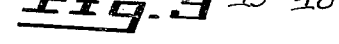
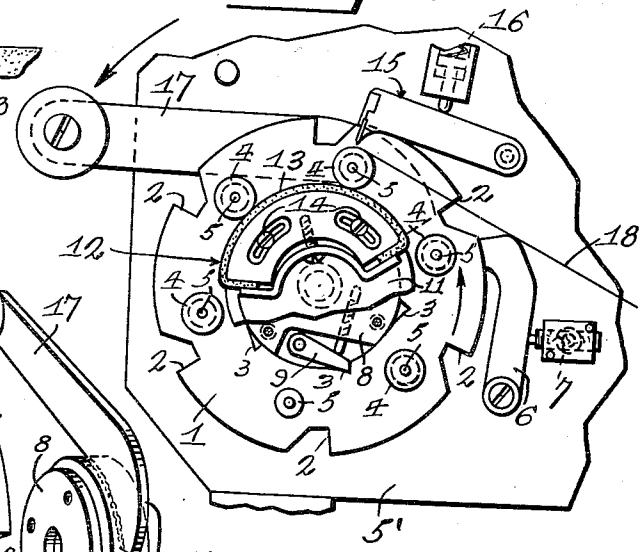


Fig. 9



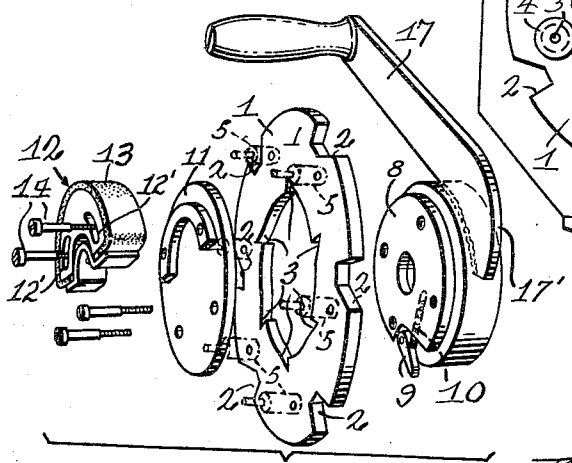


Fig. 10

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United States Patent Office 3,017,313 Patented Jan. 16, 1962

3,017,313

DEVICE FOR WRAPPING INSULATING TAPE AROUND ELECTROMAGNET CORES

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Filed June 30, 1958, Ser. No. 745,749
5 Claims. (Cl. 156—446)

This invention relates to a wrapping device and more particularly to a device for automatically wrapping an insulating tape around the core of an electromagnet preparatory to the winding of the coil conductors thereon.

An object of this invention is to provide a device capable of automatically applying a tape, of a predetermined length, to sequentially advancing cores.

Another object of this invention is to provide a device with the foregoing characteristics having means to measure, to a predetermined length, and sever the tape being applied to the core.

This and other objects of this invention are attained, in one embodiment, by providing an indexing dial, on which the cores to be wrapped are positioned, and providing means in association therewith to rotate the dial intermittently and, as it rotates, to measure and sever a predetermined length of tape.

A better understanding of the invention may be attained by referring to the following description, taken in conjunction with the drawings, in which like numbers refer to like parts, in which:

FIG. 1 represents a plan view of the device at the beginning of the wrapping operation;

FIG. 2 represents a view, in elevation, taken at the line 2—2, in the directions of the arrows, FIG. 1;

FIG. 3 represents a completed wrapped work piece;

FIG. 4 represents a view, in elevation, taken at the line 4—4, in the direction of the arrows, FIG. 3;

FIG. 5 represents a view of the tape being attached to the core at the beginning of the wrapping operation;

FIG. 6 represents a view of the core, on which the tape is wound, rolling on frictional resistive material;

FIG. 7 represents a view showing the first movement of the device;

FIG. 8 represents a view showing the second movement of the device;

FIG. 9 represents a view, in elevation, taken at the line 9—9, in the direction of the arrows, FIG. 7; and

FIG. 10 represents an exploded view showing the essential elements of the device.

Considering the drawing, there is shown the device of the invention, comprising in combination a circular plate-like dial 1, having a central circular opening and provided with notches 2 and 3 on its outer and inner peripheries respectively, equally spaced apart around the peripheries of the dial 1. Secured to a flat face of the dial 1 are six pins 5, extending upward therefrom, on which cores 4 are rotatably mounted.

There is also shown in the drawings, a plate-like circular mounting means 8 having a raised central circular portion adapted to project through the central circular opening of the dial 1 so that the dial 1 is rotatable thereon, a pawl 9, tensioned by spring 10, hinged on the mounting means 8. The notches 3 of the dial 1 are so shaped that when the mounting means 8 is rotated in an anti-clockwise or clockwise direction, by the actuator 17 secured to the mounting means 8, the pawl 9 engages or disengages with a notch 3 respectively. Actuator 17 has a cam portion 17'.

Also shown in the drawings is a plate-like circular cover 11, mounted on and secured to the raised portion

of the mounting means 8, a plate-like wrapping element 12, having the surface of its outer edge face conforming to the configuration of the periphery of the cover 11 and surfaced with frictional resistive material 13 such as rubber, positioned on and secured to the cover 11 so that such face is adapted to rotate a selected number of the cores 4, when the mounting means 8 is rotated. Also provided are fasteners 14, projecting through slots 12' in cover 11 into mounting means 8 so that the position of the wrapping element 12 may be adjusted with respect to the cores 4 and then secured to the cover 11.

There is further shown in the drawings a supporting plate-like means 5' on which the mounting means 8 is pivoted by means 8', a pawl 6, tensioned by spring 7, hinged on the supporting means 5'. The notches 2 of the dial 1 are so shaped that when the dial 1 is rotated in a clockwise or anti-clockwise direction, pawl 6 engages or disengages a notch 2 respectively.

In addition, there is shown in the drawings severing means 15, hinged on the supporting means 5' and spaced apart from the pawl 9, tensioned by spring 16. The notches 2, as described heretofore, are so shaped that when the dial 1 is rotated in a clockwise or anti-clockwise direction severing means 15 engages or disengages a notch 2 respectively. The notch engaging end of the severing means 15 is provided with a rounded portion 15'', shaped to conform with the peripheral surface of the cores 4 and with a severing edge 15', both the rounded portion 15'' and the edge 15' extending out from the upper flat face of the dial 1. The tape 18 preferably having an adhesive surface on one side, to be applied to the cores 4 is withdrawn from the supply roll 19, which may be tensioned through the guide roll 20 and spring 21.

In the operation of the device, the outer end of the tape 18 is attached automatically to a core 4 by the rounded portion 15'' of severing means 15 and the adhesive on one surface of the tape 18. The actuator 17, which normally is in its lower position, is moved upward from position FIG. 1 to rotate the mounting means 8, the cover 11 and the wrapping element 12 as a whole partially and clockwise. While actuator 17 moves upward, its cam portion 17' lifts the tape severing means 15 clear of the notch 2. Since the dial 1 cannot move clockwise because of the action of pawl 6 in a notch 2, the frictional resistive material 13 on wrapping element 12 moves clockwise and in frictional contact with the core 4 to which the tape 18 is attached, thus causing that core 4 to rotate counter-clockwise thereby wrapping some tape 18 a round its periphery.

Then the actuator means 17 is moved downward from position FIG. 7 to rotate the mounting means 8, the cover 11 and the wrapping element 12 partially and counter-clockwise. This downward movement, through the action of pawl 9 engaging a notch 3, also causes the partial rotation of dial 1 counter-clockwise. During the partial rotation of dial 1, the pawl 6 slides over the outer periphery of the dial 1 until, aided by spring 7, it drops into a notch 2 and the severing means 15, aided by spring 16, enters another advancing notch 2 thereby severing a predetermined length of tape 18 at a point between the core 4, to which the tape is attached, and the next core 4 in a clockwise direction and very close to the latter core 4. Just before the severance operation, the tape 18 is automatically attached to the aforesaid latter core 4 through the partial movement of the dial 1 counter-clockwise and the action of the guide roll 20 in applying pressure to tape 18, at the rounded portion 15'' of the severing means 15, as it leaves the supply roll 19.

This downward and then upward movement of actuator 17 is repeated once culminating in a second core

4 being completely wrapped and the tape 18 being attached automatically to a third core 4. Then the two wrapped cores 4 are removed from the dial 1 and two new unwrapped cores are substituted for them on dial 1.

The above-described operation involving two downward and two upward movements of actuator 17 is repeated until all cores 4 have been wrapped.

What is claimed is:

1. A device for wrapping a tensioned tape on a core comprising in combination: a circular flat plate dial, having a central opening, provided with notches on said dial on its outer and inner peripheries, equally spaced apart around their respective peripheries, pins projecting from a face of the dial, equally spaced therearound; a flat plate circular mounting means having a raised portion adapted to project through the central opening of the dial so that the dial is rotatable thereon, a tensioned pawl hinged on the mounting means in co-action with a notch on the inner periphery of the dial; a flat plate cover mounted on and secured to the raised portion of the mounting means, a wrapping element having its outside edge face conforming to the peripheral configuration of the periphery of the cover and secured on the cover so as to rotate a selected number of the cores as the tape is applied thereon: a flat plate supporting means, means to pivot the mounting means thereon, a tensioned pawl hinged on the supporting means in co-action with a notch on the outer periphery of the dial; the notches on the inner and outer peripheries of the dial each having a lateral face at right angles to the bottom face of the notch and the opposing lateral face outwardly shaped from the bottom face of the notch, the engaging end of the pawls being shaped to conform to the shape of the notches; so that when the mounting means is rotated in one direction, only the mounting means, cover and wrapping element rotate, and when the mounting means is

rotated in the reverse direction, the dial as well rotates.

2. A device claimed in claim 1 having in combination therewith: a spring-tensioned severing means, having a notch engagement portion, hinged on the supporting means positioned in the path of the advancing tape so as to engage a notch on the outer periphery of the dial as the dial is rotated, the notch engaging portion of said dial having a severing edge extending upwardly from the flat face there.

3. A device claimed in claim 2 in which the notch engaging portion of the severing means is provided with a portion shaped to conform to the shape of the peripheral surface of a core.

4. In combination with a device claimed in claim 3, a supply roll, yieldably hinged on the supporting means, a guide roll mounted on the supporting means and in rotatable engagement with the supply roll, a supply of tape extending from the supply roll to the core on the dial and in contact with the guide roll.

5. A device claimed in claim 1 in which the cover is provided with a pair of slotted openings, a fastening means secured to the mounting means and extending through said openings for adjusting the position of the wrapping element on the cover.

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