WINDING SPOOL FOR STOWAGE OF WIRES

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This invention allows for easy, simple stowage of wires, cables and cords of consumer electronic devices. Being constructed of molded flexible rubber or similar, the Winding Spool will hold wound wires in place with the unique feature of its sheath which is molded to one flange and covers the spool channel. This sheath will fold inside out, sliding open in order to allow wire to be wound to the spool. The notches in the opposite spool flange provide a secure place for the wire to rest, while the sheath grips around the edge of the edge of the flange to hold the wire into one of these notches. The flexibility and springiness of the molded rubber provides the gripping feature of the sheath, and allows the wire to be extracted from the spool simply by pulling, since the sheath and notches both will give way to light pressure.
WINDING SPOOL FOR STOWAGE OF WIRES
CROSS-REFERENCE TO RELATED APPLICATIONS

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STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISC APPENDIX

BACKGROUND OF THE INVENTION

1. Field of the Invention
The Winding Spool has been created to solve the perpetual problem of: (a) storage of wires, cables or cords on electrical and electronic devices when not in use, or (b) the containment of an excess portion of the wires, cables or cords while the device is in use for the purpose of protecting said wires from being snagged, which may lead to breakage of the wire, the electrical device, or injury to the user.

2. Related Art
The terms wire, cable and cord used herein are interchangeable and refer collectively to any wires of an electronic device that allow hardwiring to a power source or peripheral device. The tangle of wires and cords of electrical products have posed problems for many years, creating unsightly, unwieldy and dangerous situations, whether they be in the home, the workplace, the car or on the person. These problems have plagued the use of all corded devices since the first harnessing of electricity. Other methods have been created to deal with this situation, but the subject of this application affords the most simplicity and element of safety in solving this issue. The use of this device can be adapted to anything that has a cord, be it electrical or otherwise.

BRIEF SUMMARY OF THE INVENTION
The subject of this application is a spool-type winding device that contains several features that make it unusual and highly effective. Features that are unique to this invention are:

(a) One-piece construction,
(b) No moving parts,
(c) Pliable, unbreakable molded rubber or similar material,
(d) Fold-over sheath spool channel cover that folds back away from the spool channel and stays open to allow easy hand winding of wires,
(e) Sheath cover folds back over the spool channel and stays closed, holding the wound cord in place,
(f) Sprocket-style spool flange (opposite the sheath attachment) allows the cord to be held securely to any length,
(g) The cord can quickly be unwound from the spool to any desired length simply by pulling it from the spool without folding back and opening the sheath cover, after which the remaining coiled wire stays secured in a notch in the sprocket flange,
(h) The soft, flexible construction allows the cord to release from the spool if it is snagged, thus minimizing the risk of damage or injury,
(i) Adds minimal weight and bulk to the coiled wire,
(j) Spool can remain securely attached to the wire even when the cord is fully unwound from the spool,
(k) The flexible rubber material gives the device an "indestructible" property, where it can be twisted, folded or stepped on without damage to the spool.

The Winding Spool can be manufactured in various sizes, scaled accordingly to accommodate various lengths or gauges of wire.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

Refer to the diagrams on page 7 for the following descriptions:

FIG. 1. Top view showing the fit, when closed, of the sheath cover to the flange, the flange being shaped like a sprocket with notches around its circumference. FIG. 1 shows the hole through the center of the spool.

FIG. 2. Side view cut-away shows the construction of the Winding Spool. Note the unique features of the two flange walls. The outer edge of the lower flange turns in a radius to become a sheath which touches the upper sprocket flange to form a seal over the channel. This figure illustrates that the spool walls are thicker than the sheath to allow the walls and axle of the spool to be more rigid, and the sheath to be more flexible.

FIG. 3. Side view cut-away shows the sheath turned inside out (open), allowing access to the channel.

FIG. 4. This solid side view of the closed spool shows the wire access hole or opening in the central axle to allow the insertion of a plug end of the cord to be wound on the spool. The opening has rounded ends to allow for strain relief which will prevent tearing of the flexible material.

FIG. 5. This 3/4 view allows the access hole to be seen in its entirety. Its position along the radius of the flange and sheath and the stress-relief holes are fully visible.

FIGS. 6-11 on page 8 illustrate the sequence for winding a wired device to the spool.

DETAILED DESCRIPTION OF THE INVENTION
The device of this application is a wire winding spool and has been designed to be of the simplest form and to
address all concerns of wire stowage for consumer electrical and electronic devices. It is of one-piece construction, made of cast molded flexible rubber or similar. The material can be of various colors to give a selection of choices to the consumer. The manufacturing method used is well established and in general use, and is applied to many other products. While this device can be sized to accommodate various lengths and gauges of wire, for the purpose of this description we are illustrating the smallest size of approximately 1" in diameter and 1.67" in height. See FIG. 1 of the drawings on page 7 for a top view depicting the diameter, and FIG. 2 for the height. This size device would be appropriate for winding small gauge wires such as stereo music earbuds. However, the application for this patent does not ask for nor require that the patent be limited to the dimensions given. In other words, the patent will not be limited by size dimensions and it should also protect the proprietary designs scaled to other sizes.

[0029] The basic component of the winding spool is a center cylindrical axle with a circular flange on either end. The axle is hollow, with a center hole that can be used to place the spool over a finger while winding the wire onto it. Where the flanges connect to the axle is rounded to a quarter radius. FIG. 3 illustrates this radius.

[0030] One flange connects on the outer edge by a similar radius to a cylindrical or conically tapered sheath which acts as a cover over the spool channel, or area where the wire would rest when wound. The sheath cover extends to the opposite flange and rests on its circumference edge, being flush with its outer flat surface. The outer edge of the sheath is fully radiused to a half circle. See FIG. 2 for illustration of this sheath. The sheath holds the wrapped wire in place on the spool, and can be turned inside out to open the access to the channel while winding the wire to it.

[0031] The aforementioned opposite flange contains notches spaced evenly around its outer edge, creating the appearance of a sprocket or gear. These notches and the teeth they form between them are radiused to create a full half circle on all edges. FIG. 1 illustrates the top view showing the notches, teeth and their radii, and FIG. 3 shows the side view and the radii. The notches are for the purpose of holding the protruding end of the wire after the sheath has been returned to the closed position. The wire can exit from any of these notches as needed. The radiused edges of the sprocket help to allow the wire to pass smoothly to and from the notches and alleviates snagging on the spool itself.

[0032] Within the inner central axle is an access hole to allow the insertion of the plug end of a wire. See FIGS. 4 and 5 for details of the construction of this access hole. A slit creates an opening through which the plug or jack end of the cord can be inserted before winding the wire to the spool. This allows the spool to remain on the cord while the cord is fully unwound, and permits the user to plug in the cord and use the device while the wire is fully or partially wound. Rounded ends on the slot help relieve strain that might tear the flexible material.

[0033] The flexible rubber construction allows the user to unwind the cord from the spool simply by pulling, since the rubber will give way to light pressure. In this way, the user can fully or partially unwind the cord as needed, and the remaining wire will settle into a notch again and remain secure. This also makes for a safety feature, as the rubber material will give way if the cord is snagged and pulled accidentally.

[0034] The dimensions given in this description show the smallest version of this spool and do not limit the patent to any given dimension. The device can also be scaled to larger sizes to accommodate longer and heavier gauge wires.

[0035] A series of six illustrations on page 8 demonstrates the method of winding a pair of earbuds to the spool and further clarifies the process and functionality of this invention.

What is claimed is:
1. A spool for winding wires or cables on electronic products, but not limited to this use, comprised of a spool of a similar shape as a standard bobbin, consisting of a cylindrical axle with circular flanges on either end, wherein a wire can be wrapped around the spool and be held in place by:
   a) a cover sheath connected to one flange which folds over the open channel of the spool, and
   b) a series of evenly spaced notches in the edge of the opposite spool flange, forming the look of a sprocket or gear, into which the wire rests.
2. The spool of claim 1, wherein the central axle is hollow and open on both ends.
3. The spool of claim 1, wherein the sheath covering the channel is molded to the outer edge of one flange.
4. The spool of claim 1, wherein the sheath extends to the opposite flange and covers the edge of said flange.
5. The spool of claim 3, wherein the connection between the flange and its attached sheath is approximately, but not limited to, 90°.
6. The spool of claim 5, wherein the connection between spool and flange and flange and sheath is quarter radiused, rather than a sharp angle, to permit the sheath to remain in the open or closed position.
7. The spool of claim 6, wherein the sheath can be turned inside out in order to allow access to the channel to wind the cord onto the spool.
8. The spool of claim 6, wherein the sheath cover folds back over the spool channel and stays closed, holding the wound cord in place.
9. The spool of claim 1, wherein the notches are in the flange opposite the sheath attachment.
10. The spool of claim 1 is of one-piece construction with no moving parts.
11. The spool of claim 1 is constructed of molded rubber or similar material which will flex as necessary to either:
    a) hold the coiled wire in place, or
    b) allow the wire to be pulled from the spool.
12. The spool of claim 1, wherein the cord can quickly be unwound from the spool to any desired length simply by pulling it from the spool without folding back and opening the sheath cover, after which the remaining coiled wire stays secured in a notch in the sprocket flange.
13. The spool of claim 1, which contains a slot cut into the central axle, which allows the plug end of the cord to be inserted into the slot, thus allowing the spool to remain attached to the wire at all times.