Dec. 29, 1942. D. BENJAMIN 2,306,611

CORD TAKE-UP AND CONTROL APPARATUS

Filed Dec. 10, 1941 2 Sheets-Sheet 1

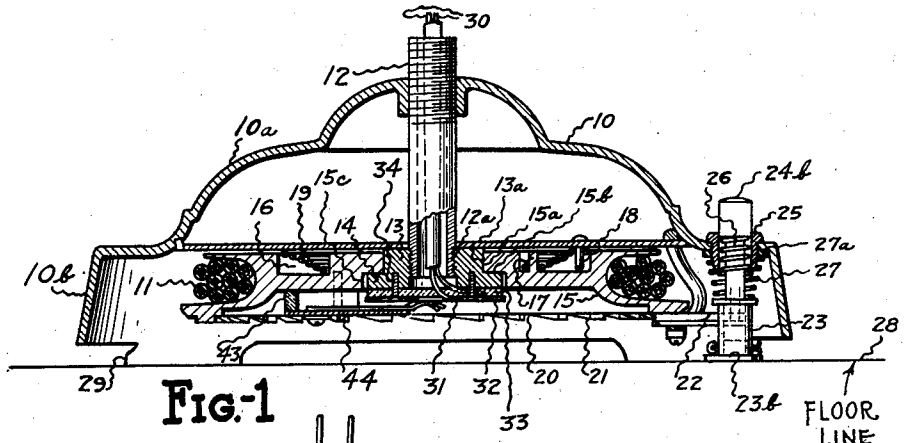


FIG.-1

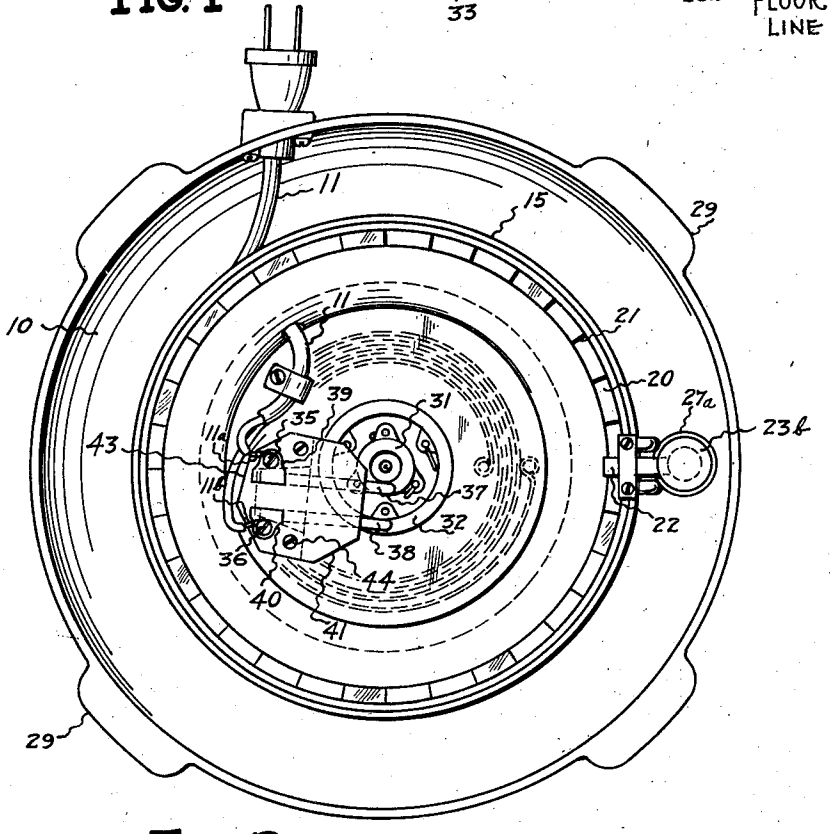


FIG.-2

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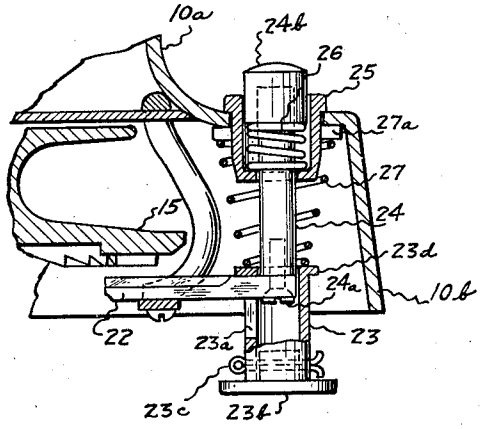


FIG.-3

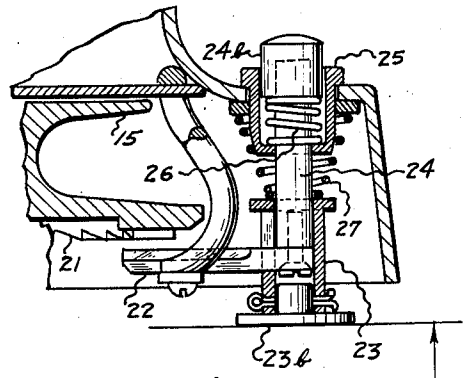


FIG.-4

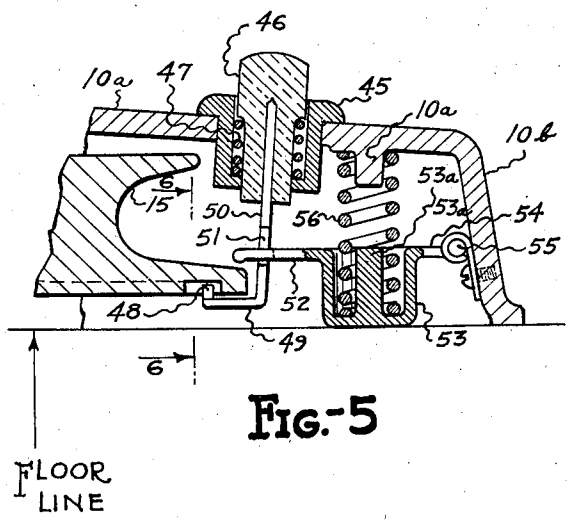


FIG.-5

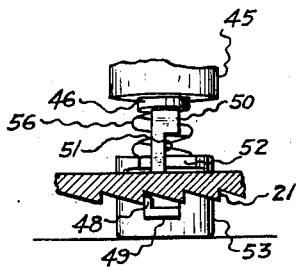


FIG.-6

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Patented Dec. 29, 1942 2,306,611

UNITED STATES PATENT OFFICE

2,306,611

CORD TAKE-UP AND CONTROL APPARATUS

David Benjamin, Cleveland Heights, Ohio

Application December 10, 1941, Serial No. 422,360

9 Claims. (Cl. 191—12)

This invention relates to means for enabling electric cords or wires for electric lamps and analogous movable articles to be automatically taken up when the said articles are moved toward the base plugs with which said cords or wires are connected and to be automatically paid out when the said articles are moved away from the said base plugs.

It is the general purpose and object of the invention to enable the foregoing objects to be accomplished in a particularly efficient manner and by means of a construction which is simple and economical of production. Other and more limited objects of the invention will be set forth hereinafter and will be capable of accomplishment by means of the construction shown in the accompanying drawings, wherein Fig. 1 represents a vertical section through the base of a portable electric lamp equipped with my invention and Fig. 2 a bottom plan view of the said base; Fig. 3 a sectional detail showing the position of the reel-locking and reel-unlocking mechanism shown in the preceding views, the parts being in position to enable the reel on which the cord is mounted to be rotated freely when the lamp base is lifted from its support; Fig. 4 a view similar to Fig. 3, showing the positions of the parts when the lamp base is resting on its support and when the reel is being released, as by manual means; Fig. 5 a view, similar to Figs. 3 and 4, of a modification of the reel-locking and reel-unlocking mechanism; and Fig. 6 a detail in section taken on the line 6—6 of Fig. 5.

Describing the parts by reference characters, and first with reference to Figs. 1 to 4 inclusive, 10 denotes the hollow base of a movable article to which an electric cord or wire 11 is connected. The base as illustrated constitutes a portion of an electric lamp and comprises an extended top portion 10^a and a side wall 10^b, the said base supporting a central tube 12 to which the standard of the lamp may be secured, the upper end of the tube being threaded for this purpose.

The tube 12 extends through and is threaded into the top 10^a of the base 10 and is also threaded beneath said base, as indicated at 12^a, for the reception of a bushing 13 having a radially outwardly projecting flange 14 at its base.

15 denotes a reel having a cylindrical central opening 15^a, which reel is mounted upon the upper cylindrical surface 13^a of the bushing, being supported thereon by a shoulder 15^b resting on top of the flange 14, the reel also having a cylindrical wall 15^c extending downwardly from the shoulder 15^b. The reel is provided within its upper surface with an annular chamber 16 provided with a post 17 adjacent to its inner wall, there being a post 18 anchored in the upper wall 10^a of the base and projecting downwardly into the said chamber adjacent to the outer wall thereof. These posts provide means for anchoring thereto the opposite ends of a torsion spring 19 which tends to rotate the reel about the bushing 13. In order to control such rotation, the base of the reel is provided, adjacent to its periphery, with upwardly projecting notches 20 alternating with ratchet teeth 21.

22 denotes a detent arm the outer end of which projects through a slot 23^a in the tubular guide 23, said guide having a flanged base 23^b secured thereto, as by a cotter pin 23^c. The outer end of the detent arm is secured to the lower end of a stem 24 by means of the screw 24^a, the said stem passing through an opening provided therefor in a cap 23^d for the tubular guide 23.

25 denotes a cupped bushing which is fitted within the upper wall 10^a of the base and through the bottom of which the stem 24 projects, the upper end of the stem being provided with a push button 24^b secured thereto and projecting above the said upper wall of the base. A spring 26 is mounted within the bushing, with one end thereof in engagement with the bottom of the same and the other end in engagement with the button, whereby it tends to hold the stem 24 elevated and the detent arm 22 in engagement with the ratchet teeth 21. 27 denotes a spring, the upper end of which surrounds the bushing 25 and engages a washer 27^a surrounding the upper portion of the said bushing, the lower end of the spring bearing against the cap 23^d.

It will be noted that, when the lamp is supported upon a surface 28 as by means of the feet 29, the tubular guide 23 is pressed upwardly, thereby compressing the spring 27 and allowing the detent arm 22 to engage the ratchet teeth 21, as shown in Fig. 1. When in this position, the cord 11 will be relieved from the torsion of the spring 19. However, when it is desired to move the lamp, the act of lifting the same from its support 28 will enable the spring 27, which is of greater strength than the spring 26, to depress the sleeve 23; and the engagement of the upper wall of the slot 23^a with the detent arm 22 disengages the detent from the ratchet teeth 21 and enables the cord to be unwound from the reel against the torsion of the spring 19. When the lamp is placed upon its new support, the tubular guide will be moved upwardly to the position shown

in Fig. 1, thereby compressing the spring 27 sufficiently to enable the spring 26 to lift the stem 24 to a position to enable the detent arm to engage a ratchet tooth.

If it is desired to unwind the cord without lifting the lamp from its base, as when it may be desired to insert the cord plug into a socket located closer to or farther from the lamp than the one with which the plug has been used, this result may be accomplished by pressing the stem 24 downwardly, as by the hand or foot of the operator, as shown in Fig. 4, thereby to disengage the detent arm from the ratchet on the bottom of the reel.

In order to relieve the portion of the cord which leads to the lamp from any tendency to twist, or from any pull that might be unintentionally exerted thereupon by unwinding the said cord entirely from the reel, I have provided the following means for effecting this result: 30 denotes the wires which extend upwardly through the tube 12 to the lamp socket (not shown). One of these wires is shown as connected to an inner circular track 31 of conductive material and the other to an outer circular track 32 of conductive material, the said tracks being secured to a disk 33 of insulating material which, in turn, is secured to the flange 14 of the bushing 13 by screws 34. The inner ends of the wires 11a and 11b of the cord which is wound upon the reel are connected by screws 35 and 36, respectively, to contact fingers 37 and 38, respectively, which contact fingers are adapted to engage the circular switch tracks 31 and 32, respectively. The contact fingers are carried by and preferably formed with spring arms which are electrically connected with the wires 11a and 11b by means of lugs 39 and 40, respectively, of conducting material with which the said wires are held in contact by the screws 35 and 36, respectively, these lugs being in turn electrically connected with the spring arms by means of rivets which extend through the lugs and through an insulating disk 41, said disk being in turn secured to a block of insulating material 43 by screws 44, the upper edge of the block 43 engaging the bottom of the reel thereabove and spacing the lugs and the screw heads from the base in such manner as to enable the upwardly bent portions or fingers of the spring arms to engage their respective tracks.

It will be evident that, by this construction, as the cord 11 is unwound from and upon the reel, the latter will be rotated, but electrical connection will be preserved, through the mechanism described, between the inner ends of the cord 11 and the conductors leading to the lamp.

In Figs. 5 and 6 there is shown a modification of the means shown in the preceding views for enabling the detent arm to be released from engagement with the ratchet on the base of the reel, either by the act of lifting the lamp base from its support or by the manual disengagement of the detent arm from the ratchet. In the last mentioned views, 45 denotes a cupped bushing which is fitted within the upper wall 10a of the base and which has a push button 46 mounted for reciprocation therein and having a stem portion extending through the bottom thereof, there being a spring 47 interposed between the bottom of the head of the button and the cupped bottom of the bushing. 48 denotes a detent tooth or projection extending upwardly from the horizontal portion 49 of a stem 50 which is shown as extending into and secured to the push button 46. The stem is provided with a slot 51 for the reception of an arm 52, which may be conveniently formed with a cup 53 and an arm 54, the latter arm being opposed to the arm 52 and pivoted to the side wall 10b of the base, as shown at 55. The cup 53 is provided with a stem 53a projecting centrally upwardly therefrom and forming a guide for the lower end of a spiral spring 56, the upper end of which surrounds a short stem projecting downwardly from the top portion 10a of the cover and presses against the said portion.

With the parts constructed and arranged as described, it will be evident that, when the lamp base is resting upon a suitable support, the spring 56 will be compressed by upward movement of the cup 53, thereby enabling the spring 47 to bring the detent tooth 48 into engagement with one of the teeth of the ratchet formed on the bottom of the reel; also that, when the base is lifted from its support, the spring 56, which is of greater strength than the spring 47, will rock the cup 53 about its pivot, causing the arm 52 to engage the bottom wall of the slot 51, thereby to depress the stem 50 against the action of the spring 47, thereby disengaging the detent tooth from the ratchet and permitting the reel to be wound or unwound, according to the direction in which the lamp may be moved.

It will be evident further that, if it is desired to wind or unwind the reel without lifting the base, this may be effected by depressing the push button 46 manually, as is the case with the push button 24b.

This application is a continuation in part of my application Serial No. 393,210, filed May 13, 1941.

Having thus described my invention, what I claim is:

1. In a device of the character described, the combination, with a base having an elevated upper portion and supporting means depending therefrom, of a real rotatably supported within said supporting means and having means for supporting a cord or wire wound thereupon, a spring connected to said reel for rotating the same in a direction to wind a cord or wire thereupon, the said reel being provided with ratchet teeth extending therearound, pawl mechanism comprising a detent, and means operative by the engagement of said base with a support on which said base is placed for engaging the detent with a ratchet tooth thereby to prevent rotation of the reel by said spring in one direction.

2. In a device of the character described, the combination, with a base having an elevated upper portion and supporting means depending therefrom, of a reel rotatably supported within said supporting means and having means for supporting a cord or wire wound thereupon, a spring connected to said reel for rotating the same in a direction to wind a cord or wire thereupon, the said reel being provided with ratchet teeth extending therearound, and pawl mechanism comprising a detent and a member for moving said detent into engagement with a tooth of said ratchet through the engagement of said member with a support on which the base is placed.

3. In a device of the character described, the combination, with a base having an elevated upper portion and supporting means depending therefrom, of a reel rotatably supported within the said supporting means, a spring connected to said reel for rotating the same in a direction to wind a cord or wire thereupon, the said reel being provided with ratchet teeth extending

therearound, a pawl mechanism comprising a stem having a detent connected thereto and extending therefrom and adapted to engage a tooth of said ratchet, a member reciprocable with respect to said stem and adapted to project below the supporting means for the base and to be moved upwardly by its engagement with the support upon which the said supporting means for the base is placed and having a portion adapted, when said member is depressed, to be held in engagement with the said arm, and a spring in engagement with the said portion of the said member for moving the said portion and the member and the arm downwardly.

4. In the device set forth in claim 3, means for operating the stem independently of the first mentioned spring thereby to release the detent from engagement with a ratchet tooth while the means for supporting the lamp base is resting upon its support.

5. In a device of the character described, the combination, with a base having an elevated upper portion and supporting means depending therefrom, of a reel rotatably supported within the said supporting means, a spring connected to said reel for rotating the same in a direction to wind a cord or wire thereupon, the said reel being provided with ratchet teeth extending therearound, pawl mechanism comprising a stem having a detent connected thereto and extending therefrom and adapted to engage a tooth of said ratchet, a member reciprocable with respect to said stem and adapted to project below the supporting means for the base and to be moved upwardly by its engagement with the support upon which the said supporting means for the base is placed and having a portion adapted, when said member is depressed, to be held in engagement with the said arm, a spring in engagement with the said portion of the said member for moving the said portion and the member and the arm downwardly, and a second spring also surrounding the said stem and tending to lift the same and the arm connected thereto, the second spring being weaker than the first-mentioned spring.

6. In a device of the character described, the combination, with a base having an elevated upper portion and supporting means depending therefrom, of a reel rotatably supported below said upper portion, a spring connected to said reel for rotating the same in a direction to wind a cord or wire thereupon, the said reel being provided with an annular series of alternating downwardly projecting ratchet teeth extending entirely around a lower surface thereof which surrounds the support for said reel, pawl mechanism comprising a stem having a detent arm connected thereto and adapted to engage a tooth of said ratchet, a tubular guide having an abutment at its upper end and surrounding the lower portion of the stem and having a vertical slot through which the detent arm projects, said guide being adapted to project below the bottom of the supporting means for the base when the base is lifted from a support, a cupped bushing mounted in the said base and through the bottom of which the upper end of the stem extends, there being an abutment carried by the upper portion of the stem within the bushing, a spring interposed between the said abutment and the cupped bottom of the bushing, and a spring engaging the said abutment on the top of the tubular guide and exerting a downward pressure thereupon.

7. In a device of the character described, the combination, with a base having an elevated upper portion and supporting means depending therefrom, of a reel rotatably supported below said upper portion, a spring connected to said reel for rotating the same in a direction to wind a cord or wire thereupon, the said reel being provided with an annular series of alternating downwardly projecting ratchet teeth extending entirely around a lower surface thereof which surrounds the support for said reel, pawl mechanism comprising a stem having a detent arm connected thereto and adapted to engage a tooth of said ratchet, a tubular guide having an abutment at its upper end and surrounding the lower portion of the stem and having a vertical slot through which the detent arm projects, said guide being adapted to project below the bottom of the supporting means for the base when the base is lifted from a support, a cupped bushing mounted in the said base and through the bottom of which the upper end of the stem extends, there being an abutment carried by the upper portion of the stem within the bushing, a spring interposed between the said abutment and the cupped bottom of the bushing, and a spring surrounding the lower portion of said bushing and the stem having its upper end in engagement with an anchored abutment on the top of the tubular guide and its lower end in engagement with the upper portion of the tubular guide.

8. In a device of the character described, the combination, with a base having an elevated upper portion and supporting means depending therefrom, of a reel rotatably supported below said upper portion, a spring connected to said reel for rotating the same in a direction to wind a cord or wire thereupon, the said reel being provided with an annular series of alternating downwardly projecting ratchet teeth extending entirely around a lower surface thereof which surrounds the support for said reel, pawl mechanism comprising a stem, a detent projecting from said stem and adapted to engage a tooth of said ratchet, the said stem having a slot providing upper and lower walls, a cupped bushing mounted in said base and extending downwardly thereinto, a push button reciprocably mounted in the said bushing and with which the said stem is connected, the said button having an abutment adjacent to its upper end, a spring surrounding the lower portion of said push button and engaging the abutment thereof at one end and the cupped bottom of the bushing at its other end, a cupped member having arms projecting outwardly therefrom, means pivotally supporting one of said arms from the said base, the other arm extending into and through said slot, and a spring having one end mounted within the said cup and its opposite end pressing against a portion of the said base, the second spring being of greater strength than the first mentioned spring and the cup being adapted to be projected below the base when the latter is raised from its support, whereby the arm connected thereto may press the said stem downwardly and disengage the detent from engagement with the said ratchet.

9. In a device of the character described, the combination, with a lamp having a base provided with downwardly extending supporting means, of a tube extending through and secured to the upper portion of said base, a bushing secured to the lower portion of said tube, a reel rotatably supported by said bushing, a spring connected to said reel and adapted to rotate the same in a direction to wind electrical conductors there-

upon, electrical conductors leading upwardly through said tube for supplying current to a lamp, electrical conductors wound upon said reel, and means for effecting an electrical connection between the conductors wound upon the reel and the first mentioned conductors while the reel is being rotated as well as when it is at rest, the last mentioned means comprising circular tracks of conducting material supported by and beneath said bushing and connected to the first mentioned conductors respectively, a disk of insulating material supported by the lower portion of said reel and spaced from and below said bushing, upwardly projecting spring contact fingers mounted on the upper surface of the said disk and engaging the said tracks respectively, and terminal means freely accessible from below said disk and adapted to connect the second-mentioned conductors to said contact fingers respectively.

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