ROLL DISPENSING MEANS

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Int. Cl. B65H 49/18

U.S. Cl. 242—55.53

11 Claims

ABSTRACT OF THE DISCLOSURE

There is provided an improvement in dispensing means of the type wherein a roll of material is wound about a central core, such as toilet paper, paper towels or the like, and wherein such supply rolls are mounted in receptacles. The improvement includes a housing adaptable to be received within the supply roll, the housing having a telescopically received end member with a pivot shaft extending outwardly therefrom and receivable in the receptacle. A small motor is mounted in the housing and is rotatable therewith, the motor having a shaft extending outwardly therefrom and being receivable in the receptacle. Electric supply means, such as a battery, is also received in the housing and suitable electrical connections are made through the motor. Friction means mounted on the motor shaft and engageable with the receptacle maintain the motor shaft stationary so that the motor, power means and housing rotate therearound. A suitable lever is mounted for movement into engagement with contact rings on the motor to complete the electric circuit through the power supply means, thus actuating the motor and causing the entire assembly to rotate.

This application is a continuation of application Ser. No. 685,018 filed Nov. 22, 1967, and now abandoned.

This invention relates to dispensing means, and more particularly to a motor driven dispensing device for a supply roll of material of the type wound around a central core.

There are many instances where flexible materials of one kind or another are wound in the form of a coil or roll for dispensing as needed, such roll being mounted in a receptacle or holder for storage and use as necessary. Typical of such materials are paper towls and toilet paper, both of which are normally wound about a cardboard cylinder. The cylinder is received in a suitable receptacle or on a suitable spindle to permit dispensing of the paper as required by the user. It is generally the case that as the material is needed, the user pulls the free end thereof to unroll a sufficient amount from the supply roll and removes that amount from the roll.

Devices have been provided in the past to mechanically rotate such dispensing supply rolls, usually in the form of an electric motor, driving gears and the like, upon response to a closing of a switch or through other means of connecting the motor to a supply power circuit. Such past devices are, however, complicated and cumbersome, requiring a large number of parts in order to accomplish the intended purpose. The motor is normally mounted in some stationary position removed from the dispensing roll, and rollers, gears, levers or the like, must properly connect the power output from the motor to the dispensing roll. Consequently, numerous disadvantages appear, particularly in the number and arrangement of the parts and the size of the power supply necessary to create the intended rotation, along with the numerous points of wear and possible breakdown in such complicated devices. In addition, such devices are seldom adaptable to present dispensing roll receptacles, requiring extensive and expensive construction when mounting such device for convenient use by the user.

The device in which this invention is embodied comprises, generally, a dispensing roll for a supply roll which has mounted therein an electric motor. The motor shaft extends outwardly therefrom, such shaft being receivable in a receptacle. At the opposite end of the spindle is a telescoping end member having an outwardly directed shaft portion, also receivable in the receptacle. The power supply means is further mounted in the housing and connectable to the motor where, upon actuation, the entire housing, motor, supply means and the like will rotate with the dispensing roll, causing the material to dispense from the supply roll. Suitable means are provided to maintain the motor shaft in a non-rotatable position so that the entire assembly will rotate therearound. A lever, or the like, may be mounted on the motor shaft and actuated to operate the power supply means, thus causing dispensing rotation.

A device so constructed is extremely simple to manufacture and produce and is easily adaptable for acceptance in various types of supply rolls. Since the entire assembly is self-contained, it may be easily designed as to be received in present supply roll receptacles, so as not to require remodeling or reconstruction at the location where such device is to be used. Very few parts are required, thus eliminating almost entirely the wear and breakdown problems. The overall result is an extremely economical device to positively rotate a supply roll in response to lever action, and one that may easily be mounted in existing facilities.

These and other advantages will become apparent from the following description, used to illustrate a preferred embodiment of the invention when taken with the accompanying drawings in which:

FIGURE 1 is an elevational view, with parts broken away and in section, of a dispensing device mounted in a receptacle and illustrating the position of the various parts;

FIGURE 2 is an end view of the device illustrated in FIGURE 1, taken substantially along the line 2—2 of FIGURE 1 and looking in the direction of the arrows; and

FIGURE 3 is a partial view similar to FIGURE 1 and showing certain of the parts in a second position of operation.

Referring more particularly to the drawings, where the showings are for the purpose of illustrating a preferred embodiment of the invention only and not for the purpose of limiting same, FIGURES 1 and 2 best show the device as used with a relatively small dispensing roll of material, such as toilet paper. It is the normal practice to provide a suitable wall 10 with an opening 12 to receive a roll of paper, such as illustrated by dashed and dotted lines 14. A receptacle, indicated generally by the numeral 16, is provided with an outwardly extending peripheral flange 18 which is received against the face of the wall 10 around the opening 12, the receptacle 16 being provided with pin receiving openings 20. The rearward portion 22 of the receptacle 20 is arcurately formed and of suitable size to receive the supply roll 14. It is to be understood that the particular construction of the receptacle 16 and the mounting of the receptacle 16 in the wall 10 have no part of the present invention.

Paper roll 14 includes an inner cardboard cylinder 24, around which the paper is wound to form the roll 14. Thus, a leading edge, indicated by the numeral 26, is the outward terminal end of the paper wound around the roll. As the paper is needed, the entire roll 14 and cylinder 24 are rotated until a sufficient amount of paper is freed from the roll. It is to be understood that the formation of the paper roll has no part in the present inven-
tion, it being only necessary that the material be wound so as to have a hollow central core. A shaft 40 and a portion of the roll 24 is an open ended cylinder, or housing, indicated generally by the numeral 28, which may be of any suitable material and may have an outer friction surface 30 to engage the inner surface of the cardboard cylinder 24. By proper sizing of the housing 28 and by the suitability of the friction surface 30, which can be caused to rotate end carry on the supply roll 14. Within the housing 28 and adjacent one end thereof, is a transverse wall 32, the purpose for which will become hereinafter more apparent. Telescopically received in the adjacent end of the housing 28 is an end member, indicated generally by the numeral 34, having a cylindrical portion 36 slidably received within the housing 28 and closed by an end wall 38. Extending outwardly from end wall 38 is a pivot shaft 40 which is receivable in one of the openings 20 in the receptacle 16. A shoulder 41 on the shaft 40 limits the location of the shaft 48 in the receptacle 16. Disposition between the inner surface of the end wall 38 and the transverse wall 32 in the housing 28 is a spring 42 biasing the end member 34 in an outward direction.

Mounted in the opposite end of the housing 28 is a motor, indicated generally by the numeral 44, sufficiently sized not to interfere with the housing 28 or end member 34, and yet sufficient to drive the motor shaft 48 to rotate therewith. A suitable friction surface, or resilient surface, in the form of a sleeve 46 may be disposed between the motor 44 and the inner surface of the housing 28 to absorb any vibrations or the like that might occur. Extending outwardly from motor 44 is a motor shaft 48 which extends into the pivot pin receiving opening 20 at the left-hand side of the receptacle, as viewed in FIGURE 1. A groove 50 is formed in the motor shaft 48 adjacent the wall of the receptacle 16 and a friction washer 52 is received and retained in the groove 50 to maintain the shaft 48 in a non-rotating position. It will be apparent that the biasing force of the spring 42 will cause the washer 52 to bear against the side wall of receptacle 16.

Also disposed within the housing 28 and between the transverse wall 32 and the motor 44 is a power supply means, conveniently shown in the form of a small battery 54 indicated generally by the numeral 54. Battery 54 includes a contact post 56 which engages a contact strip 58 mounted on the motor 44. The transverse wall 32, engaging the opposite end of the battery 54, terminates in a contact strip 60 which engages the motor 44. The transverse wall 32 thus serves as both a holding means for the battery 54 and a portion of the electrical circuit, which will become hereinafter more apparent.

At the outward end of the motor 44 are a pair of spaced and concentric contact rings 62 and 64, each of which is electrically connected to the contact strips 58 and 60 respectively, interiorly of the motor 44 and in any suitable fashion.

Mounted on motor shaft 48 is an operating lever, indicated generally by the numeral 66, and having an enlarged opening 68 to permit the lever to be rocked about the shaft 48 in a manner to be hereinafter more particularly described. Formed in the motor shaft 48 and on opposite sides of the lever hub or opening 68 are grooves 70 and 72, the grooves receiving retaining rings 74 and 76 to position the lever 66. A spring 78, bearing between the lever 66 and one of the retaining rings, as 76, normally maintains the lever 66 in the position shown in FIGURE 1. Leverating an operating flange 80 at one end thereof and a contact flange 82 at the opposite end thereof. Contact flange 82 is so formed as to engage the contact rings 62 and 64 on the motor 44, upon actuation of the lever, to complete the electrical circuit to the motor 44 and cause operation thereof.

It will now be apparent that with the housing assembly disposed within a supply roll, the entire assembly may be mounted in a receptacle by compressing the end member 34 against the spring 42 to provide clearance for the shafts 40 and 48 and mounting of the assembly in the receptacle 16. When properly positioned, release of the end member 34 causes the spring 42 to bias the device in position and causes the friction washer 52 to bear against the wall of the receptacle 16. When it is desired to dispense material from the roll 14, the operating flange 80 of the lever 66 is moved toward the left, to the position illustrated in FIGURE 3, thus causing the contact flange 82 to bear against the transverse wall 32. This completes the electrical circuit from the battery 54 to the motor 44 and causes rotation of the motor 44, the housing 28 and the supply roll 14 about the motor shaft 48. When the desired amount of material is dispensed, release of the lever 66 breaks the circuit at the contact rings 62 and 64, thus removing the power supply from the motor 44 and ceasing further rotation in a dispensing direction. When the material is completely dispensed from the supply roll, the assembly may be removed from the receptacle 16 by depressing the end member 34 into the housing 28, thus permitting clearance for removal of the assembly from the receptacle 16. The cardboard cylinder 24 may then be removed from the housing 28 and a new supply roll disposed thereon.

Thus, a motor driven dispensing device is provided which is extremely simple in its operation, economical in its manufacturing cost, and is completely recessible in present receptacles for operation in the desired manner. It will be readily apparent that the device is adaptable to other sizes and shapes of dispensing rolls and provides positive rotation of the roll when it is desired to dispense material therefrom. The relatively few number of parts avoid any replacement or wear problems to a great extent, and avoid the necessity of requiring a large assembly which must be separately mounted in a desired location to operate as intended.

The present invention has been described in connection with certain structural embodiments; however, it is to be appreciated that various changes may be made in the structural embodiments without departing from the intended spirit and scope of the present invention as defined in the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A motor driven dispensing roll adapted to be received in a receptacle and comprising: a cylindrical housing adapted to receive a supply roll; an end member in one end of said housing and having a shaft extending outwardly therefrom and being receivable in said receptacle; a motor mounted in said housing and having a motor shaft extending outwardly therefrom, said motor shaft being receivable in said receptacle; power supply means in said housing and operatively connectable to said motor for operating said motor; and means for operatively connecting said power supply means to said motor to cause rotation of said motor and said housing and said supply roll about said motor shaft for dispensing material from said supply roll.

2. The dispensing roll set forth in claim 1 wherein said end member is telescopically received in said one end of said housing and is axially movable relative thereto.

3. The dispensing roll set forth in claim 2 and further including means for biasing said end member axially outwardly from said housing.

4. The dispensing roll set forth in claim 2 and further including a transverse wall in said housing and spaced from said one end thereof, and a spring disposed in said said housing and engaging said end member and said transverse wall to bias said end member in an outward direction.

5. The dispensing roll set forth in claim 1 and further including means for holding said motor shaft in a non-rotating position.
6. The dispensing roll set forth in claim 5 wherein said means for holding said motor shaft includes a friction member mounted on said shaft and adapted to engage a portion of said receptacle when said dispensing roll is mounted therein.

7. The dispensing roll set forth in claim 1 wherein said means for operatively connecting said power supply means to said motor includes a lever member rockably mounted on said motor shaft, and contact means on said motor engageable by said lever in one position of operation, said lever completing a circuit between said power supply means and said motor when in said one position of operation.

8. The dispensing roll set forth in claim 7 wherein said contact means includes a pair of concentric rings mounted on said motor and engageable by said lever member.

9. A motor driven dispensing roll adapted to be received in a receptacle and comprising: a cylindrical housing adapted to receive a supply roll, said housing having a friction surface thereof; an end member telescopically received in one end of said housing and having a shaft extending outwardly therefrom and receivable in said receptacle; a transverse wall in said housing and inwardly spaced from said one end thereof and from the inner end of said end member; a spring disposed between said end member and said wall and biasing said end member and said housing in opposite axial directions; a motor mounted in said housing and rotatable therewith, said motor having a shaft extending outwardly therefrom and outwardly from said housing, said shaft being receivable in said receptacle; a friction member on said shaft and adapted to engage said receptacle to prevent rotation of said motor shaft when said motor is operated; a pair of concentrically shaped contact rings on the outer end surface of said motor; power means in said housing and operatively connected to said contact rings; a lever member rockably mounted on said motor shaft and having a contact portion engageable with said contact rings to complete an electric circuit with said power means and said motor to cause operation of said motor and rotation of said housing and said supply roll, said lever being movable out of contact with said contact rings to break said circuit and cause said motor and said housing to stop rotating; and spring means on said motor shaft and operatively engaging said lever and biasing said lever in a non-contacting position.

10. A motor drive dispensing roll adapted to be received in a receptacle and comprising: a cylindrical housing adapted to receive a supply roll; a motor mounted in said housing and having a motor shaft extending outwardly therefrom, said motor shaft being receivable in said receptacle; and means for selectively actuating said motor to cause rotation of said motor and said housing and said supply roll about said motor shaft for dispensing material from said supply roll.

11. Apparatus for dispensing flexible sheet material from a supply roll comprising: a spindle adapted to receive a supply roll of flexible sheet material and adapted to be rotatably mounted in a receptacle; a motor mounted within said spindle operable to cause rotation thereof; and means for selectively actuating said motor to rotate said spindle.

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