Oct. 21, 1969 D. E. ROGERS 3,473,749

ROLL DISPENSING MEANS

Original Filed Nov. 22, 1967

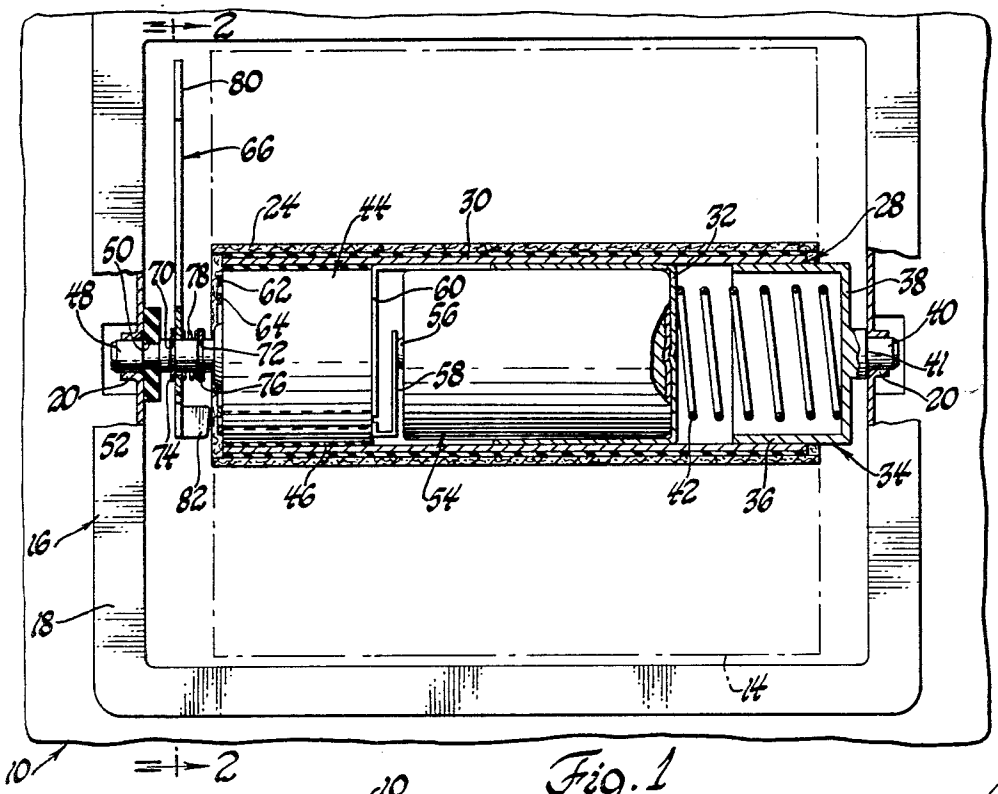


Fig. 1

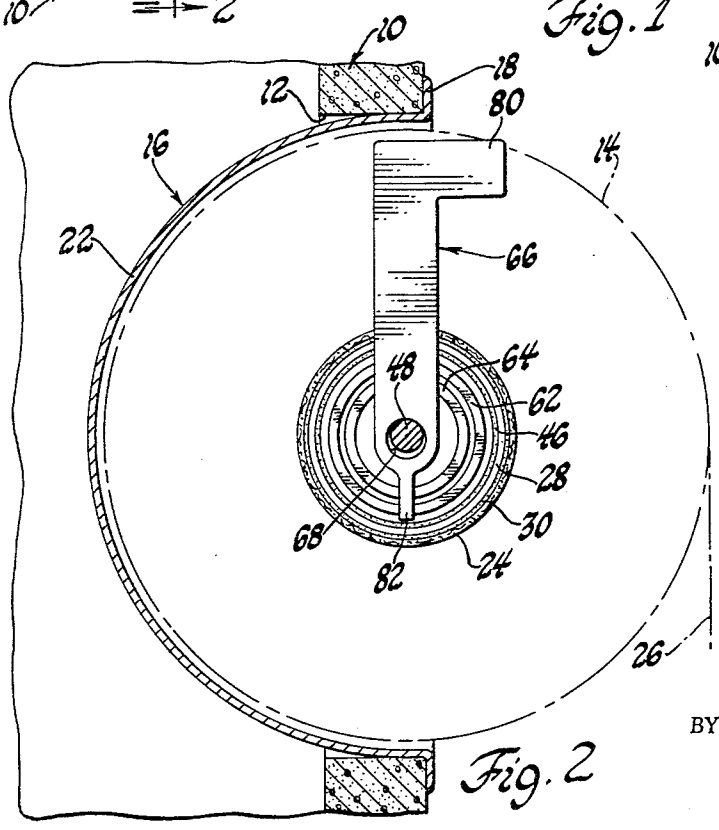


Fig. 2

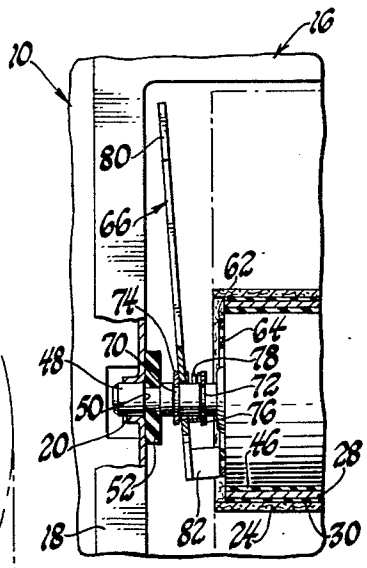


Fig. 3

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3,473,749

Patented Oct. 21, 1969

3,473,749

ROLL DISPENSING MEANS

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Continuation of application Ser. No. 685,018, Nov. 22, 1967. This application Feb. 3, 1969, Ser. No. 800,338
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 adapted to be received within the supply roll, the housing having a telescopically received end member with a pivot shaft extending outwardly thereform 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 towels 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 unreel 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. A 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 recetpacle **20** is arcuately 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.

Received within the cardboard 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**, the housing **28** can be caused to rotate and carry with it 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 **40** in the receptacle **16**. Disposed 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 to be closely received within the housing **28** for rotation 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 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 electric 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 groves received retaining rings **74** and **76** to position the lever **66**. A spring **78**, bearing between the lever **66** and one of the rteaining rings, as **76**, normally maintains the lever **66** in the position shown in FIGURE 1. Lever **66** includes 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 engage the contact rings **62** and **64**. 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 recptacle **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 manufacture and design and may be easily mounted 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 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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