

Oct. 4, 1966

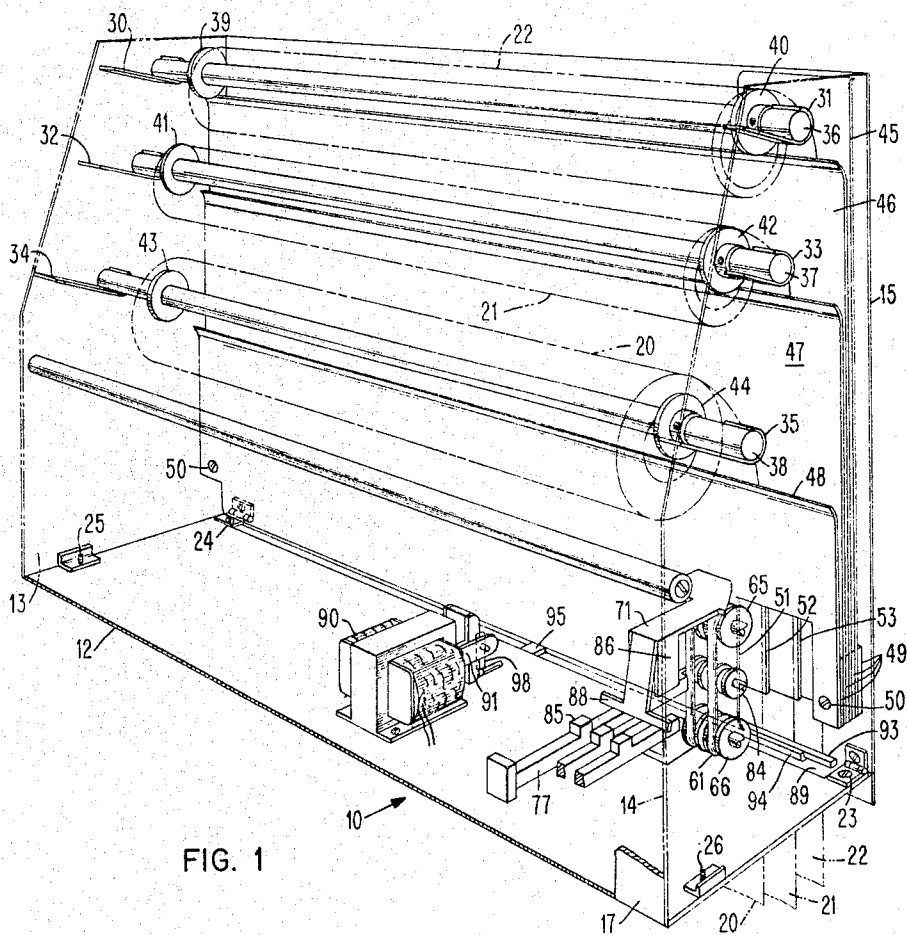
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3,276,706

DISPENSER FOR ROLL MATERIALS

Filed July 16, 1965

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

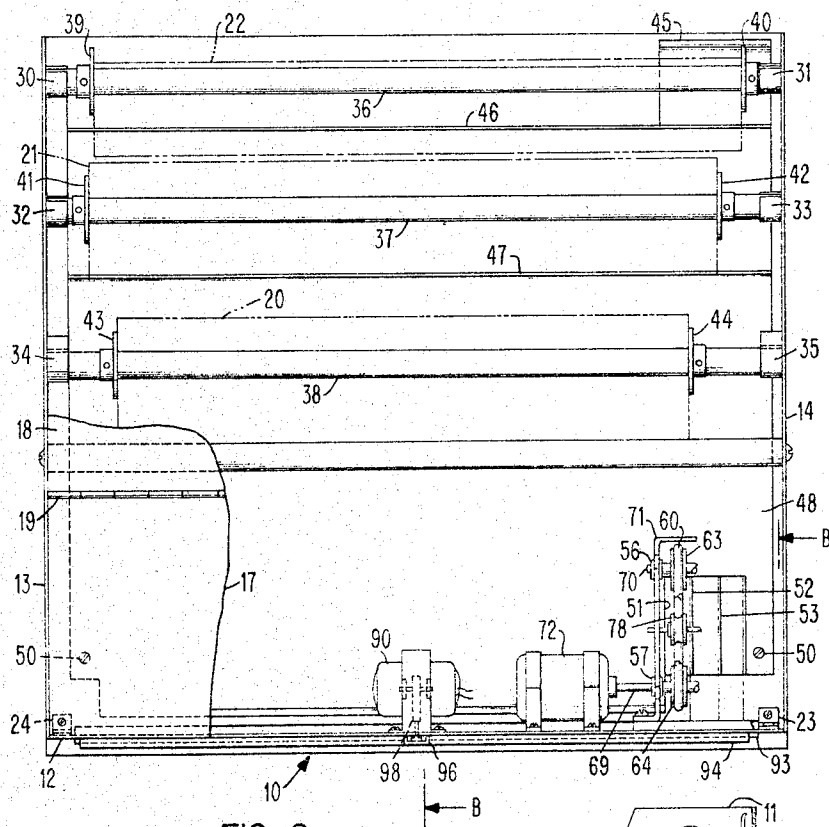


FIG. 2

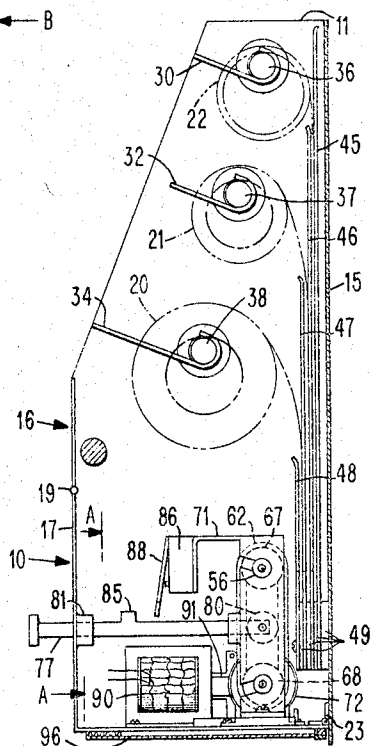


FIG. 3

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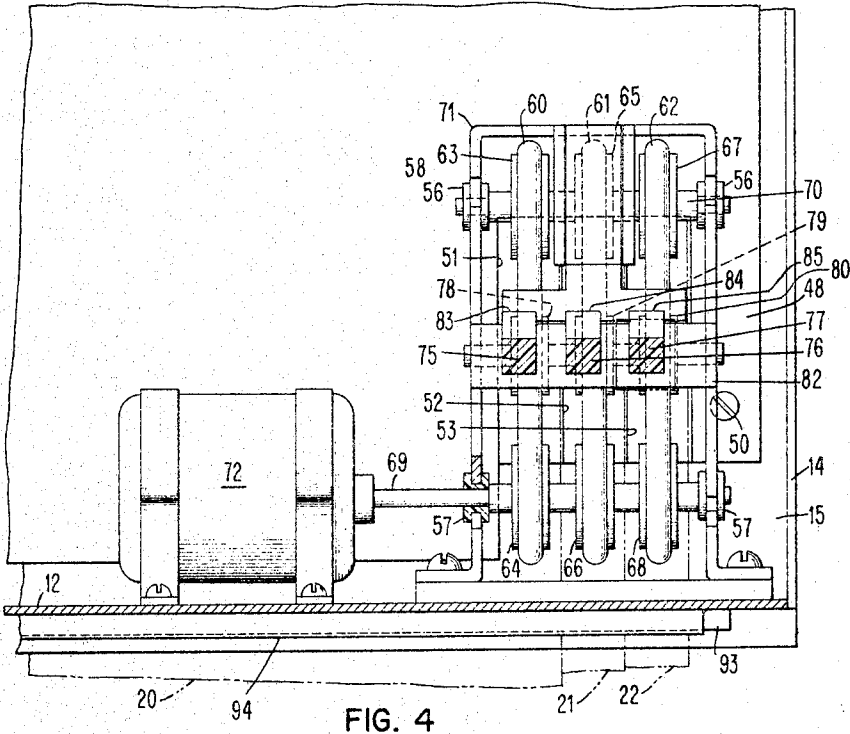


FIG. 4

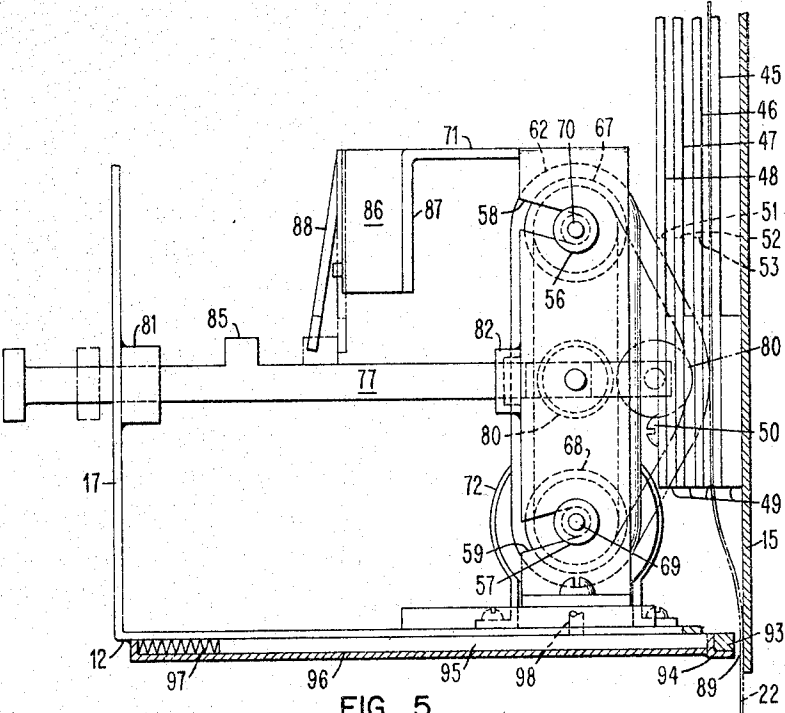


FIG. 5

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3,276,706
DISPENSER FOR ROLL MATERIALS
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This invention relates to improvements in household dispensers for rolls of absorbent paper, wax paper, aluminum foil and the like.

Attempts to provide power-operated household dispensers have, so far as known, resulted in relatively complex, cumbersome and expensive mechanisms.

It is therefore a primary object of the present invention to provide a power-operated household dispenser which is simple, reliable and inexpensive.

In the preferred embodiment, there are three rolls of material, each of which is loosely received on a cylindrical support bar. The ends of the support bars are removably received in open supporting guides on opposite sides of the support structure. The free ends of the rolls of material are inserted between juxtaposed vertical guide plates in the rear portion of the support structure and fed downwardly through an opening in the bottom of the dispenser. The lower ends of the guide plates are cut away in successively larger portions for permitting frictional engagement of the materials with respective drive means. Aligning guides on the support bars are located in axially staggered relation so that an edge of each roll of material is exposed for a short lateral distance to permit frictional engagement with its respective drive means. The drive means for each material comprises an endless pulley belt of circular cross-section and preferably of a polyvinyl chloride composition having a high coefficient of friction. The pulley belts are mounted on pairs of spaced, rotatably mounted wheels. A motor is coupled to one wheel of each pair for driving the belts. A push rod is provided for each pulley belt and includes at its inner end an idler feed roll with a peripheral groove for engaging its respective pulley and forcing it against its respective material. When the push rod is moved inwardly to its operating position, the moving pulley pulls material from the roll and forces it downwardly through the bottom opening in the dispenser. A microswitch is provided with an operating arm which projects into a position adjacent the three push rods. Upwardly extending projections on each push rod engage the operating arm when the push rod is moved inwardly to its operating position to close the switch contacts. Then the switch contacts close, and an operating circuit is completed for the motor.

In the preferred embodiment, the switch also completes a circuit for energizing a solenoid which withdraws a tear bar from the bottom opening in the dispenser to permit free movement of the material through the opening. When the switch is opened to deenergize the solenoid, the tear bar moves against the material which was withdrawn from the dispenser to permit manual tearing of the material with a clean straight edge.

It is important that the material be removed without skewing. It has been found that each roll can be received loosely on its support bar, that the support bar need not be journaled but instead can merely rest in guides, and that the frictional drive means need not engage the central portion of the material but instead can engage end portions thereof. These discoveries have given rise to the design of an economical, yet reliable, dispenser.

Accordingly, it is an important object of the present invention to provide an improved dispenser in which rolls of material are mounted in staggered relation for friction engagement of adjacent edges thereof with individual motor driven pulleys.

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A feature of the present invention is the loose mounting of the rolls on their support bars.

Another feature is the removable mounting of the support bars in guides.

Another feature is the simplified pulley assembly and mounting.

Other objects and features of the invention will be evident upon a perusal of the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a fragmentary isometric view of a portion of the improved dispenser;

FIG. 2 is a fragmentary front elevation view with the front cover cut away;

FIG. 3 is a side elevation view with the side panel removed;

FIG. 4 is an enlarged fragmentary view along line A—A of FIG. 3 illustrating more clearly the details of the material drive mechanism; and,

FIG. 5 is an enlarged fragmentary view along line B—B of FIG. 2 illustrating more clearly the details of the material drive mechanism, the microswitch operating means and the tear strip.

The preferred embodiment of the dispenser includes an outer housing or support structure 10 including a top 11 and bottom 12, side walls 13 and 14, a rear wall 15 and a front wall 16. The front wall 16 includes a vertical lower plate 17, which is integral with the bottom 12, and an upper plate 18 which is pivotally mounted on the upper end of the plate 17 by means of a hinge mechanism 19 (FIG. 2) for movement away from the side walls to permit filling of the dispenser with rolls of material 20, 21 and 22.

The plate 17 and the bottom 12 are pivotally mounted on the lower edge of the rear wall by means of hinge assemblies 23, 24 to permit access to the lower chamber in the dispenser. The bottom 12 is secured to the side walls 13 and 14 by means of screws 25 and 26.

Three sets of aligned support guides 30 and 31; 32 and 33; 34 and 35 are provided on the side walls. Each guide slopes slightly toward the rear wall and each has an upward extending, curved portion at the rear end thereof.

Support bars 36, 37 and 38 are received in the curved portions of the support guides. The bars include disk-like projections 39-44 thereon which act as alignment guides. The projections, 40, 42 and 44, are staggered axially and are fixed to the support bars. The projections, 39, 41 and 43, preferably are movable on the support bars to accommodate the width of the respective rolls of material.

Vertical spaced separator plate 45-48 are mounted adjacent the rear wall, and their lower ends are secured to the rear wall by spacers 49 and screws 50. Material from the top, intermediate and lower rolls are received respectively between plates 45-46, 46-47 and 47-48. Preferably, the plates are flexible to permit bending during the insertion of new rolls of material, and they require a low coefficient of friction. Sheets of thin tempered steel are suitable.

The plates 48, 47 and 46 include progressively smaller rectangular apertures 51, 52 and 53; and the right-hand edges (FIG. 4) of the material on rolls 22, 21 and 20 are aligned respectively adjacent the right-hand edge of the apertures and the left-hand edges of the apertures 53 and 52.

The drive means for the materials include three endless pulley belts 60, 61 and 62 of which are carried by pulley wheels 63-64, 65-66 and 67-68. The wheels are secured to shafts 69 and 70 which are rotatably carried by upper and lower nylon bearing pairs 56 and 57 held in slots 58 and 59 of a support bracket 71. A drive motor 72, which is geared down for relatively slow output

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shaft speeds, is coupled to the shaft 69. After the pulleys are assembled, to mount the pulley assemblies on the bracket 71, the bearings are placed on the shafts 69 and 70. The lower bearings 57 are pressed into the slots 59, and then the pulley belts are stretched to press the upper bearings 56 into the upper slots 58. The angle of the slots and the tension of the belts hold the bearings in place. The support bracket 71 and the motor are secured to the bottom 12.

Each pulley belt is positioned immediately adjacent its respective material which appears in the apertures 51, 52 and 53. The pulleys are moved into engagement with their respective materials by an actuator assembly which includes push rods 75, 76 and 77 having idler feed rolls 78, 79 and 80 rotatably mounted at the inner ends of the push rods and positioned within the paths defined by the pulley belts. The peripheries of the feed rolls are grooved to receive the pulley belts.

The push rods are mounted and guided for longitudinal movement by the support and guide plate 81 and a guide bracket 82 on the support bracket 71. The plate 81 is secured to the bottom 12.

The push bars include upwardly extending projections 83, 84 and 85. A microswitch 86 mounted on a bracket arm 87 includes an operating arm 88 which is engageable with the projections 83, 84 and 85 to close the switch contacts when any push bar is moved inwardly to its operating position. This switch energizes the motor 72 when its contacts are closed.

Also, when a push bar is moved inwardly to its operating position, it moves its corresponding pulley into engagement with the respective material to move the latter downwardly through an opening 89 in the bottom 12.

A solenoid 90 is also energized by the switch 86. The armature 91 of the solenoid is connected to a tear strip assembly 92. The assembly 92 includes a tear strip 93 secured to a support arm 94. The arm 94 is welded to a transverse rod 95 which is received within a channel member 96, the member being secured to the bottom 12. A spring 97 urges the assembly 92 into engagement with the material in the opening 89. A pin 98 connects the rod 95 to the solenoid armature 91.

When the solenoid 90 is energized, the tear strip is withdrawn from the material in the opening 89. When the solenoid is de-energized, the tear strip 93 moves against the material under the force of the spring 97.

The pulley belts 60-62 are preferably of a material which has a high coefficient of friction to pull material from the rolls, which is flexible to permit the simplified mounting described above and which is readily deformable so that the round periphery becomes flattened when it forcibly engages the material to impart greater pulling force to the material. One suitable material is a polyvinyl chloride compound sold under the trademark Plast-syn KP44 by Dat Wyler Ltd. of Altdorf, Uri, Switzerland.

While there has been shown and described what is considered to be the preferred embodiment of the invention, it will be appreciated that various modifications and changes may be made therein, and it is contemplated that the appended claims cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A dispenser for rolls of material comprising a supporting structure having a lower opening therein, a bar for each roll received within and loosely supporting the latter for rotation thereon in axially staggered positions, said structure including supporting guide means removably receiving the bars on spaced, substantially parallel axes, guide plates receiving the material from each roll and directing it to said opening, said plates including apertures adjacent said opening for exposing adjacent edge portions of the material of each roll.

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a drive belt for each roll having a high coefficient of friction and positioned on said structure opposite and facing the exposed edge portion of its respective material,

means moving the belts in paths adjacent the exposed edge portions of their respective materials and in a direction toward said lower opening,

a push bar for each roll having idle and dispensing positions and rendering the last-mentioned means effective when one of the push bars is in the dispensing position, and

means effective when one of the push bars is in its dispensing position for forcing the respective drive belt into engagement with the respective material to move the latter through the lower opening.

2. A dispenser for a roll of material comprising a supporting structure having a lower opening therein, a bar received within and loosely supporting the roll for rotation thereon,

said structure including supporting guide means removably receiving the bar,

at least one guide plate receiving the material from the roll and directing it to said opening,

said one plate including an aperture adjacent said opening for exposing the material,

a drive belt having a high coefficient of friction and positioned in juxtaposed relation to the exposed portion of the material,

means moving the belt in a path adjacent the exposed edge portion of the material and in a direction toward said lower opening,

a push bar having idle and dispensing positions and rendering the last-mentioned means effective when the push bar is in the dispensing position, and

means effective when the push bar is in its dispensing position for forcing the drive belt into engagement with the material to move the latter through the lower opening.

3. A dispenser for rolls of material comprising a supporting structure having a lower opening therein, a bar for each roll received within and loosely supporting the latter for rotation thereon in axially staggered positions,

said structure including supporting guide means removably receiving the bars on spaced, substantially parallel axes,

guide plates receiving the material from each roll and directing it to said opening,

said plates including apertures adjacent said opening for exposing adjacent edge portions of the material of each roll,

a drive belt for each roll having a high coefficient of friction and positioned opposite and facing the exposed edge portion of its respective material,

a pair of pulley wheels receiving each belt, means rotatably mounting corresponding pulley wheels of each pair on a pair of spaced parallel axes,

a push bar for each roll of material having idle and dispensing positions,

an electrical switch operated to its closed position by each push bar when it is in its dispensing position,

a motor energized by the switch and having a drive means coupled to one of the pulley wheels in each pair, and

an idler feed roll on the end of each push bar having a circumferential groove for engaging a corresponding belt and moving it into engagement with its respective sheet of material to withdraw the latter from the roll and urge it through the lower opening.

4. A dispenser for a roller of material comprising a supporting structure having a lower opening therein, a bar for the roll received within and loosely supporting the latter for rotation thereon,

said structure including supporting guide means removably receiving the bar,

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guide plates receiving the material from the roll and directing it to said opening, one of said plates including an aperture adjacent said opening for exposing the material,

a drive belt for the roll having a high coefficient of friction and positioned opposite and facing the exposed portion of the material,

a pair of pulley wheels receiving the belt, means rotatably mounting the pulley wheels on a pair of spaced parallel axes,

a push bar having idle and dispensing positions, an electrical switch operated to its closed position by the push bar when it is in its dispensing position,

a motor energized by the switch and having a drive shaft coupled to one of the pulley wheels, and

an idler feed roll on the end of the push bar having a circumferential groove for engaging the belt and moving it into engagement with the material to withdraw the latter from the roll and to urge it through the lower opening.

5. A dispenser for rolls of material comprising a supporting enclosure having a lower opening therein, a bar for each roll received within and loosely supporting the latter for rotation thereon in one of a plurality of axially staggered positions,

said enclosure including means supporting the bars on spaced, substantially parallel axes,

guide plates receiving the material from each roll and directing it to said opening, said plates including apertures adjacent said opening for exposing adjacent edge portions of the material of each roll,

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a drive belt for each roll having a high coefficient of friction and positioned on said structure opposite and facing the exposed edge portion of its respective material,

means moving the belts in paths adjacent the exposed edge portions of their respective materials and in a direction toward said lower opening,

a push bar for each roll having idle and dispensing positions and rendering the last-mentioned means effective when one of the push bars is in the dispensing position,

means effective when one of the push bars is in its dispensing position for forcing the respective drive belt into engagement with the respective material to move the latter through the lower opening,

a tear strip normally urged against the materials at the lower opening, and

means effective when one of the push bars is in its dispensing position for moving the tear strip away from the materials.

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