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[54] **ROLLER ASSEMBLY FOR PAPER ROLLS**
2 Claims, 7 Drawing Figs.

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242/68.4

[51] Int. Cl. **A47k 10/22,**
A47k 10/32, B65h 19/00

[50] Field of Search **242/55.2,**
55.3, 55.53, 55.55, 68.4, 68, 68.1, 68.2, 73, 71.9,
129.51

[56]

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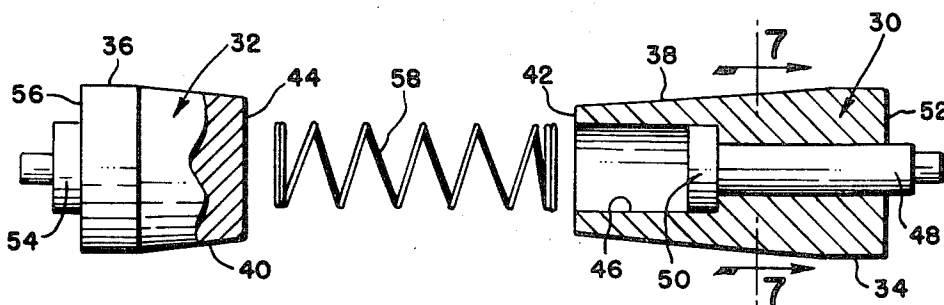
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ABSTRACT: A roller assembly is disclosed for use with paper rolls. The rollers are shaped for ease in insertion in the paper rolls even if the inner core is deformed out of round. Use of the rollers assures a smooth pull in dispensing of the paper.



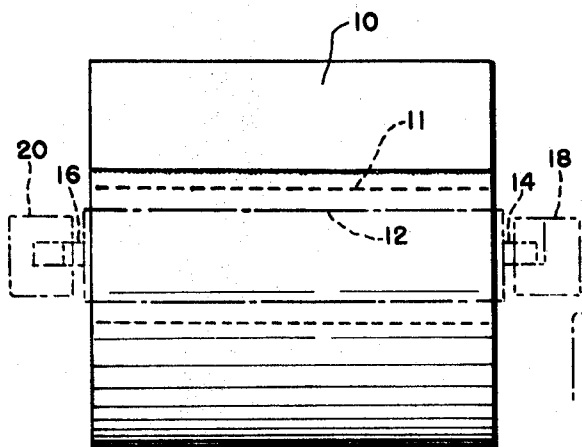


FIG. 1

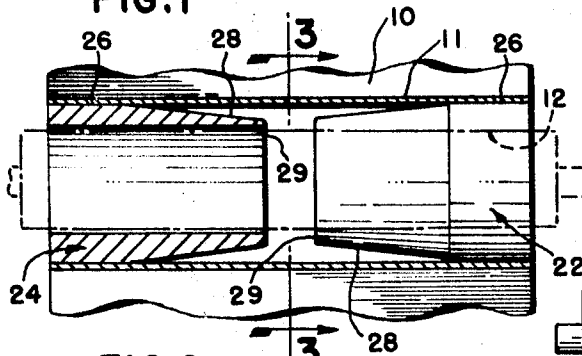


FIG. 2

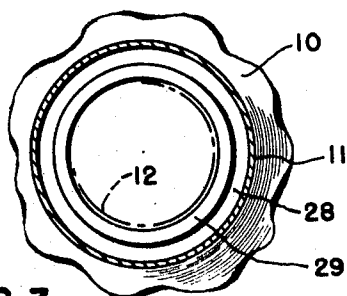


FIG. 3

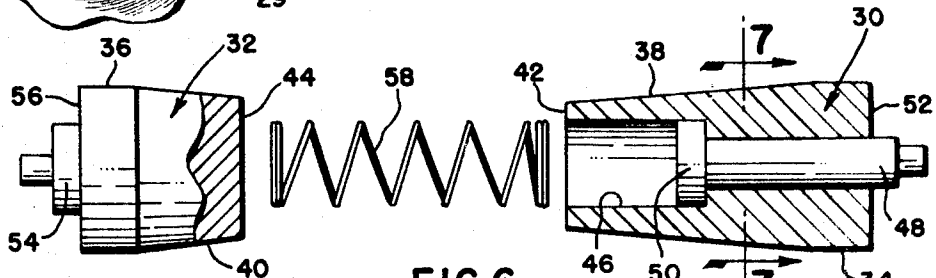


FIG. 4

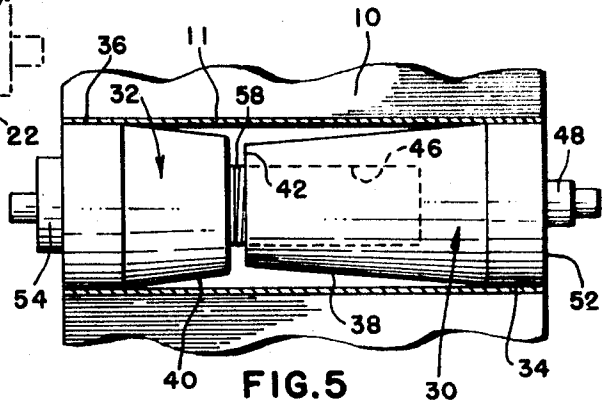


FIG. 5

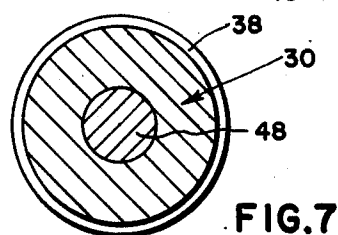


FIG. 6

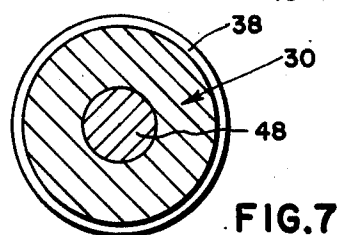


FIG. 7

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ROLLER ASSEMBLY FOR PAPER ROLLS

BACKGROUND OF THE INVENTION

This invention relates to paper roll holders and more particular to an improved roller assembly for insertion in paper rolls.

Since the advent of the application of paper about deformable inner cores, such as being made out of cardboard, a problem has existed for which no inexpensive solution has heretofore been found. The problem was that the inner core would become deformed, i.e. no longer round, through any number of reasons. For example, a number of rolls might be packed too tightly in a box or a person might pinch or squeeze the roll to test its softness. The deformed paper roll is then placed on a shaft much smaller in diameter than the inner core. Thus, when the paper is pulled or dispensed therefrom, an uneven pull wobble and lapping sound occurs because of the out of round inner core.

A further problem existing is that the supporting shaft is generally longer in axial length than the paper roll. Hence, longitudinal or axial movement of the paper relative to shaft will occur.

Applicants invention eliminates the previous problems through the use of a roller assembly construction which is simple, inexpensive and efficiently serves the purpose for which it is made.

One object of the present invention is to provide a roller assembly which will prevent a roll of paper from shifting longitudinally relative to the supporting shaft about which it turns.

Another object of the invention is to form a roller assembly which may be inserted with ease into paper rolls in which the inner core might be deformed out of round and which will urge the inner core into a round shape.

SUMMARY

A roller assembly is shown for insertion in paper rolls. Opposing roller members have an outer portion cylindrically shaped for tightly fitting within the inner core of a paper roll. A conical portion extends from the cylindrical portion to the inner end of the roller members to provide for ease of insertion of the roller members in deformed inner cores.

Other details, uses and advantages of this invention will become apparent as the following description of the exemplary embodiments thereof presented in the accompanying drawings proceeds.

BRIEF DESCRIPTION OF THE DRAWINGS

The accompanying drawings show present exemplary embodiments of this invention in which:

FIG. 1 is a plan view showing a paper roll support of the prior art;

FIG. 2 is a sectional view illustrating one exemplary embodiment of this invention showing the improved roller assembly applied to a standard prior art supporting shaft;

FIG. 3 is a cross-sectional view taken on the line 3-3 of FIG. 2;

FIG. 4 is a plan view of another illustrative embodiment of this invention;

FIG. 5 is a partially sectional view illustrating the exemplary embodiment of FIG. 4;

FIG. 6 is an exploded fractional sectional view of the roller assembly of FIG. 5; and

FIG. 7 is a cross-sectional view taken on the line 7-7 of FIG. 6.

DESCRIPTION OF ILLUSTRATED EMBODIMENT

Reference is now made to FIG. 1 which illustrates a prior art roller or shaft 12 supporting a roll of paper 10, such as a roll of toilet paper. The ends 14 and 16 of the roller 12 fit in sockets 18 and 20 of any holding bracket. The paper 10 is wrapped about an inner core 11 of cardboard. It can be seen that the

diameter of the inner core 11 is much greater than the diameter of the roller 12. This loose fit permits the wobble and uneven pull if the core is out of round and also allows for relative axial movement of the core 11 to the roller 12.

In the illustrative embodiment of the present invention shown in FIGS. 2 and 3, a standard paper roll 10 having an inner core 11 is mounted on roller members 22 and 24 which are of duplicate construction and preferably formed out of a plastic material, although other materials may be used. In as much as both rollers are of identical construction, only roller 22 will be described in detail.

Roller 22 has an outer portion 26 of cylindrical shape and a conical portion 28 extending axially from the cylindrical portion 26 and terminating at the inner end 29. The diameter of the cylindrical portion 26 is sufficiently large so that a tight frictional grip will take place between portion 26 and the inner core 11 when roller 22 is inserted therein. It can also be seen that the conical portion 28 facilitates ease in insertion even if the core 11 is deformed out of round. Upon complete insertion of the roller 22, the inner core 11 will be maintained in a round shape.

An axially extending aperture or bore 30 is formed in the roller member 22 to receive a standard toilet roller or shaft 12. The diameter of the bore 30 is slightly larger than the diameter of shaft 12. It is seen that when rollers 22 and 24 have been inserted in a paper roll 10 and mounted about a shaft 12, the opportunity for wobble or uneven pull has been eliminated because the inner core has been urged outward into a rounded position and is maintained round by the cylindrical portion 26.

Another illustrative embodiments of the present invention is illustrated in FIGS. 4-7 in which it is seen that roller member 30 has an axial length greater than the axial length of roller member 32. The combined axial length of rollers 30 and 32 is less than the axial length of the core 11.

As best seen in FIG. 6, rollers 30 and 32 have cylindrical portions 34 and 36 respectively. Conical portions 38 and 40 extend axially from the respective cylindrical portion and terminate at the respective inner end 42 and 44.

Roller member 30 is formed with a stepped aperture or bore 46 extending therethrough. The greater diameter of bore 46 is seen to be at the inner end portion. A stepped shaft 48 having a large flanged end 50 extends through the stepped bore 46. The shaft 48 is slidably mounted in the bore 46 and one end of the shaft extends axially outward from the outer end 52 of roller 30 for engaging a socket in any holding bracket.

A shaft 54 extends axially outward from the outer end 56 of roller member 32 for engaging a socket in the holding bracket.

A resilient element, such as a spring 58, is inserted between roller members 30 and 32 to urge shafts 48 and 54 into engagement with the sockets of the holding bracket. The spring 58 fits inside the bore 46 and reacts against flange 50 of shaft 48 at the one end. The other end of spring 58 acts against the inner surface 44 of the roller member 32. Shaft 48 may be urged inward along the bore 46 by applying an inwardly directed force to the extending shaft 48 greater than the spring force.

It is seen that the embodiment illustrated in FIGS. 5-7 will urge any deformed core outward into a rounded configuration so as to eliminate the uneven pull and wobble problems. In addition, there will be no longitudinal or axial movement of the paper because of the tight fit between the core and cylindrical portions. The assembled paper roll and roller assembly is mounted in the holding bracket by placing shaft 54 in one socket and urging shaft 48 inward against spring 48 to provide the necessary clearance to allow insertion of the shaft 48 in a cooperating socket in the holding bracket.

It is seen that the construction of the present invention is simple, inexpensive, and efficiently serves the purpose for which it is designed, that is to eliminate the wobble relative longitudinal movement of paper and the uneven pull in dispensing paper from paper rolls. Although the present invention has been described with particular reference to rolls of toilet paper, it is understood that the present invention may

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be used with any type of roll of paper which may be wrapped about a deformable inner core.

While present exemplary embodiments of this invention have been illustrated and described, it will be recognized that this invention may be otherwise variously embodied and practiced by those skilled in the art.

What I claim is:

1. A roller assembly for supporting paper rolls having a deformable inner core comprising:
a first roller member,
a second roller member having an axial length greater than said first roller member,
each of said roller members having an outer cylindrical portion and a conical portion extending from the cylindrical portion and terminating at the inner end wherein the conical portion permits each roller to be inserted in a paper roll regardless of the deformation of the inner core such that deformed cores are urged into a round shape for a frictional fit about the cylindrical portion and thereby providing for a smooth pull and dispensing of the paper, said second roller member being formed with an axially extending stepped bore there through, the greater diameter

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of the bore being at the inner end,
resilient means fitting in the bore and acting against the inner end of said first roller member urging said first and second roller members axially apart, and

means for supporting said first and second roller members in a paper roll holding bracket

said means for supporting the roller members further comprising a stepped shaft for insertion through the stepped bore, the other end of the shaft extending axially outward from the outer end of the second roller member for engagement with the holding bracket and the inner end of the shaft being in the stepped bore, and

a shaft extending axially outward from the outer end of the first roller member for engagement with the holding bracket.

2. A roller assembly as set forth in claim 1 in which the resilient means is a compression spring, one end of said spring fitting in said bore and acting against the inner end of the stepped shaft, and the other end of the spring acting against the inner end of the first roller member.

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