Aug. 25, 1964 A. R. HENRY 3,145,940

SILENT TOILET TISSUE ROLL

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Fig. 1

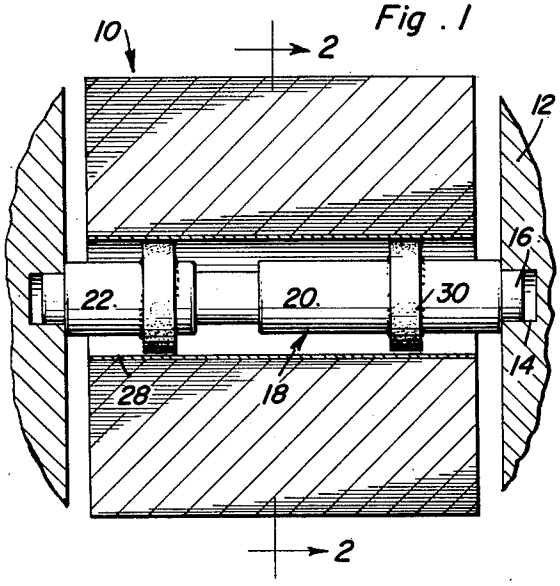


Fig. 2

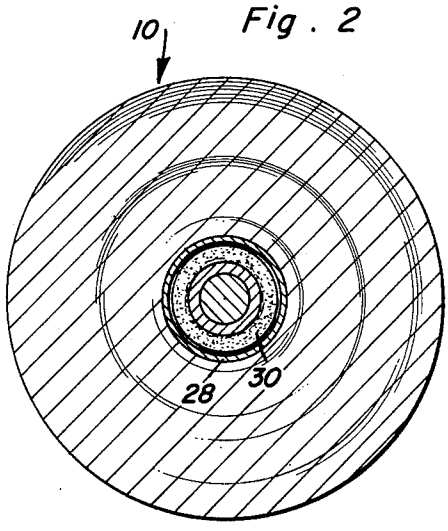


Fig. 3

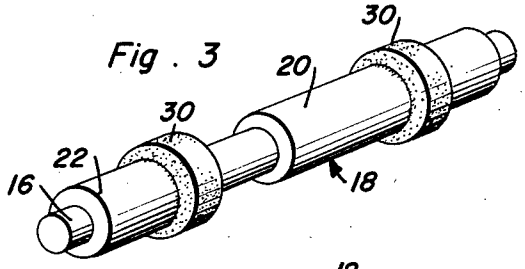


Fig. 4

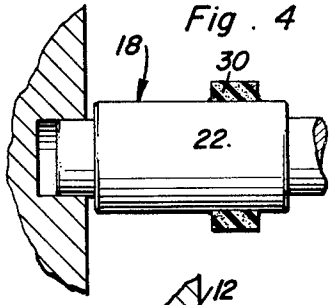


Fig. 5

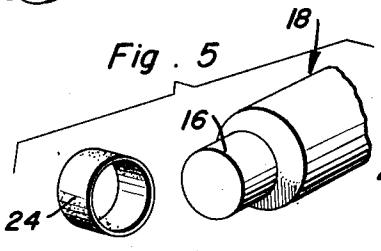


Fig. 6

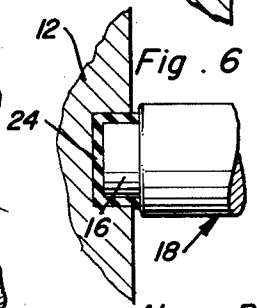


Fig. 8

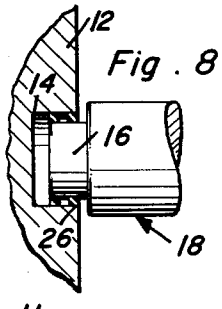
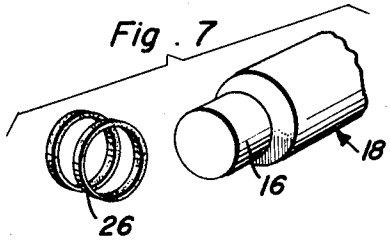


Fig. 7



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Fig . 9

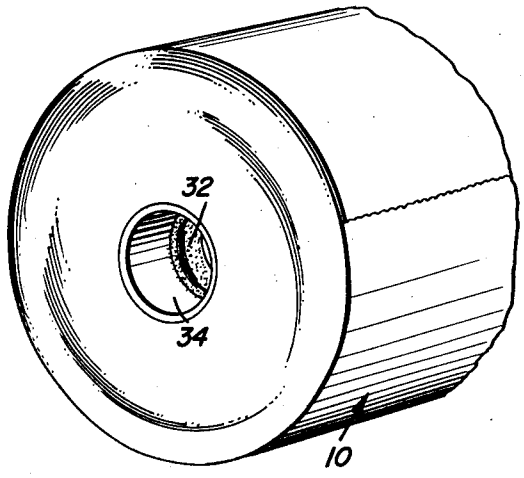


Fig . 10

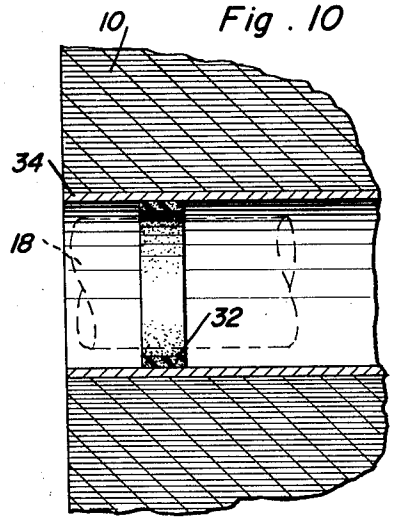


Fig . 11

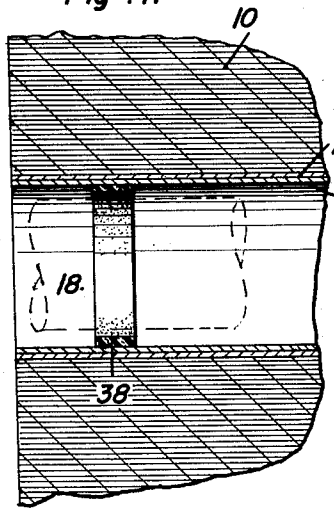
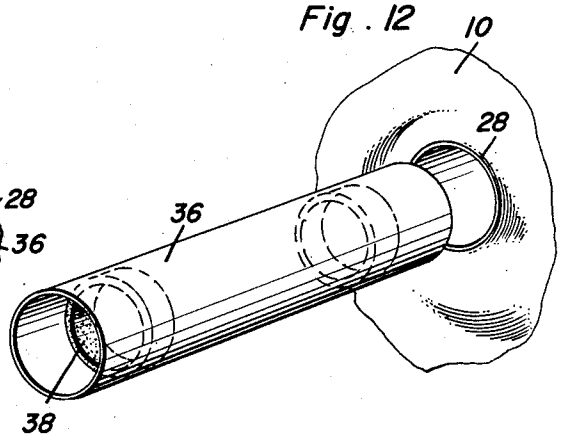


Fig . 12



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SILENT TOILET TISSUE ROLL

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16 Claims. (Cl. 242—55.2)

This invention relates to the mounting of toilet tissue rolls and more particularly to the elimination of noises developed when removing toilet tissues from the roll in its mounted position.

A primary object of the present invention is the silencing of the clattering and bumping noises which occur when toilet tissue paper on a roller is unrolled. The noises developed during the unrolling of toilet tissue paper are not only disagreeable but are very often embarrassing in various situations as for example in small residences where the bathrooms and lavatories are located adjacent to living areas.

In accordance with the foregoing object, the present invention contemplates a new and useful variation in the rotatable mounting arrangement for the usual roll of toilet tissue mounted on a hollow cardboard core in any roll mounting location or roll dispensing location. It is therefore an important object of the present invention to eliminate noises developed due to relative rotation between the journal ends of the roller and the roller mounting structure and also eliminate noises developed between the hollow cardboard core of the paper roll and the roller.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a longitudinal sectional view through a toilet paper roll in a typical mounted installation.

FIGURE 2 is a transverse sectional view taken substantially through a plane indicated by section line 2—2 in FIGURE 1.

FIGURE 3 is a perspective view of the roller modified in accordance with the principles of the present invention.

FIGURE 4 is a partial sectional view of an end portion of the roller installed without the paper roll thereon.

FIGURE 5 is a perspective view of a disassembled end portion of a roller modified in accordance with the principles of the present invention.

FIGURE 6 is a partial sectional view of the assembled end portion of the roller illustrated in FIGURE 5.

FIGURE 7 is a perspective view of a variation of the arrangement shown in FIGURE 5.

FIGURE 8 is a partial sectional view similar to FIGURE 6 but corresponding to the illustration of FIGURE 7.

FIGURE 9 is a perspective view of a paper roll modified in accordance with the principles of the present invention constituting a variation of the arrangement illustrated in FIGURE 1.

FIGURE 10 is a partial sectional view of the arrangement shown in FIGURE 9.

FIGURE 11 is a partial sectional view similar to that of FIGURE 10 but showing a still further variation from the arrangement shown in FIGURES 9 and 10.

FIGURE 12 is a perspective view of the variation illustrated in FIGURE 11.

Referring now to the drawings in detail, a typical toilet tissue paper roll generally referred to by reference numeral 10 is shown in FIGURES 1 and 2 installed in any typical location as for example a recess in the tiled wall of a bathroom, from which toilet paper may be

drawn from the roll 10. The toilet paper roll holder structure generally referred to by reference numeral 12 therefore includes a pair of aligned journal bores 14 within which the end portions 16 of a typical roller 18 may be received. The roller 18 illustrated is of the type composed of separate sections 20 and 22 which are spring-biased apart so that the end journal portions 16 will be retained within the journal bores 14. In most cases, the rollers which are made of wood or metal even when they are of the spring-biased type illustrated, are loose in the bores 14 as a result of which clattering noises are developed in response to rotation of the roller 18 when paper is being unrolled from the roll 10. In order to eliminate these journal noises, a resilient bearing surface may be formed on the journal end portions 16 so as to both dampen vibrations resulting from rotation of the roller and to absorb any noises that may develop as a result thereof.

In one form of the invention, illustrated in FIGURES 5 and 6, the end portions of the roller are provided with a resilient or rubber cap 24. The external surface of the cap 24 thus forms the resilient bearing surface aforementioned. Alternatively, the journal end portions 16 may be embraced by rubber bands 26 as illustrated in FIGURES 7 and 8 which will serve the same purpose. Thus, the elimination of the clattering noises developed in response to rotation of the roller within the journal bores 14, contributes to the total silencing in cooperation with other modifications of the otherwise old paper roll mounting arrangement.

The outside diameter of the roller 18 in accordance with the present invention, is substantially reduced from that of the internal diameter of the hollow cardboard core 28 on which the paper roll is mounted. Ordinarily, the hollow cardboard core 28 would be loosely mounted on the roller producing a thumping noise in response to the pulling of toilet paper from the roll. In order to eliminate this thumping noise, a pair of annular cushion elements 30 are disposed between the hollow cardboard core 28 and the roller 18 in axially spaced relation to each other and in axially spaced relation from the journal end portions 16 of the roller so as to be confined within the hollow core itself. As illustrated in FIGURES 1, 3 and 4, the annular cushion elements 30 are fixed to the sections 20 and 22 of the roller 18. The annular cushion elements 30 may therefore be made of foam rubber or other similar materials such as rubber, felt, cork, soft fibrous paper and other pliable soft materials. These annular elements 30 are thus arranged to contact the hollow core and maintain the roller itself out of contact with the hollow core during relative rotation between the roller and the hollow core.

In another form of the invention, annular cushion elements 32 are fixedly mounted as by glue to the internal surface of a specially prepared hollow cardboard core 34, the internal diameter of the cushion element 32 being slightly greater than the external diameter of the roller 18. Accordingly, contact will occur between the cushion elements 32 and the roller which will be thereby effective to maintain the internal surface of the hollow cardboard core itself out of contact with the roller in order to avoid the thumping noises that would otherwise be developed during rotation. The cushion elements 32 as illustrated in FIGURES 9 and 10 thus differ from the cushion elements 30 as illustrated in FIGURES 1 and 3 in that the internal diameters thereof are slightly larger than the external diameters of the roll as compared to the slightly smaller external diameters of the elements 30 as compared to the internal diameter of the hollow cardboard core 28. The relative arrangement and disposition of the parts in connection with the variation illustrated in

FIGURES 9 and 10, is otherwise the same as described with respect to FIGURES 1 through 8.

A third form of roll silencing arrangement is illustrated in FIGURES 11 and 12 for the purpose of eliminating the thumping noises developed as a result of relative rotation between the roller and the hollow cardboard core. In FIGURES 11 and 12, a thin tubular mounting member **36** made of paper for example, is insertable within the hollow cardboard core **28** with the annular cushion elements **38** being fixed internally of the tubular mounting member **36** in axially spaced relation to each other and from the ends of the tubular mounting member **36**. The internal diameter of the cushion elements **38** will therefore be slightly greater than the external diameter of the roller **18** so that the roller may be received therethrough. The cushion elements **38** will however maintain the roller out of contact with the hollow core **28** or the tubular mounting member **36** itself so as to avoid the thumping noises that would be otherwise developed. Thus, the mounting member may be utilized in connection with paper rolls mounted on hollow cores which have in no way been modified and in connection with rollers with normal clearance between diameters. This latter form of the invention thus has the advantage of requiring no modification of the hollow core by the manufacture of the toilet roll as would be the case with respect to the form of the invention illustrated in FIGURES 9 and 10. Of course, the arrangement shown in FIGURES 11 and 12, would require the insertion of the additional element in the hollow core of the paper roll. In this respect, the embodiment of FIGURES 1 and 3 might be superior except that in FIGURES 1 and 3 the structural addition of the cushion elements is required for the roller itself and when worn would be difficult to replace.

From the foregoing description, the utility and arrangement of the present invention will be apparent. It will therefore be appreciated, that despite the relatively minor and economical modifications of the mounting arrangement for the paper rolls, a most useful purpose is served in eliminating noises associated with the unrolling of toilet paper.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination with a paper roll holder structure rotatably mounting a roller and a roll of paper having a hollow core mounted on said roller, journal noise absorbing means mounted on said roller for absorbing sounds developed in response to relative rotation between the holder structure and the roller and roll silencing means disposed between said roller and the hollow core for absorbing sounds developed in response to relative rotation between said roll of paper and the roller.

2. The combination of claim 1, wherein said journal noise absorbing means comprises resilient bearing means fixed to journal end portions of said roller.

3. The combination of claim 2, wherein said resilient bearing means are end caps formed of rubber-like material.

4. The combination of claim 3, wherein said roll silencing means comprises annular cushion elements fixed to said roller in axially spaced relation from each other and the journal end portions of the roller to maintain said roller out of contact with the hollow core.

5. The combination of claim 1, wherein said roll silencing means comprises spaced annular cushion elements fixed internally to said hollow core in axially spaced relation to the journal end portions of the roller to maintain said roller out of contact with the hollow core.

6. The combination of claim 5, wherein said journal noise absorbing means comprises resilient bearing means fixed to journal end portions of said roller.

7. The combination of claim 6, wherein said resilient bearing means are rubber bands embracing said journal end portions.

8. The combination of claim 1, wherein said roll silencing means comprises annular cushion elements fixed to said roller in axially spaced relation from each other and the journal end portions of the roller to maintain said roller out of contact with the hollow core.

9. The combination of claim 8, wherein said journal noise absorbing means comprises resilient bearing means fixed to journal end portions of said roller.

10. The combination of claim 9, wherein said resilient bearing means are rubber bands embracing said journal end portions.

11. The combination of claim 1, wherein said roll silencing means comprises thin tubular mounting means insertable and removable within and from said hollow core, and axially spaced annular cushion means internally fixed to said tubular mounting means for contact with said roller.

12. The combination of claim 11, wherein said journal noise absorbing means comprises resilient bearing means fixed to journal end portions of said roller.

13. The combination of claim 12, wherein said resilient bearing means are end caps formed of rubber-like material.

14. The combination of claim 1, wherein said journal noise absorbing means comprises rubber bands mounted in embracing relation on journal end portions of the roller.

15. The combination of claim 14, wherein said roll silencing means comprises thin tubular mounting means insertable and removable within and from said hollow core, and axially spaced annular cushion means internally fixed to said tubular mounting means for contact with said roller.

16. In combination with a roller for paper rolls adapted to be rotatably mounted within a holder structure, a roll of paper, said roll of paper having a hollow core loosely receiving said roller therethrough, silencing means disposed between said roller and the hollow core for absorbing sounds developed in response to relative rotation between the roll of paper and the roller, said silencing means comprising a thin tube removably inserted into said hollow core about the roller, said thin tube including axially spaced annular cushion means internally fixed to said tube for contact with said roller.

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