A method for packaging a roll of paper using a sheet of packaging material, whereby in the sheet of packaging material are applied a number of creases or folding lines running parallel to one another and bordering neighboring sheet parts. The sheet of packaging material is folded around the creases or folding lines in order to form a polygonal packaging box for the paper roll. The packaging box is formed by the sheet parts enclosing an angle with one another. Partitions are fitted inside the packaging box near the ends of the packaging box. A packaging box made by the method and sheets of packaging material to be used for making the packaging box and the enclosing member are also described.
METHOD FOR PACKAGING ROLL OF PAPER AND THE PACKAGING BOX TO BE APPLIED THEREWITH

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority under 35 U.S.C. §119(a) to Application No. 1034786.0, filed in The Netherlands on Dec. 3, 2007, the entirety of which is expressly incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a method for packaging a roll of paper using a sheet of packaging material, so that a number of creases or folding lines are applied in the sheet of packaging material. The creases or folding lines are formed running parallel to one another and bordering neighboring sheet parts. The sheet of packaging material is folded around the creases or folding lines in order to form a polygonal packaging box for the paper roll. This packaging box is formed by sheet parts enclosing all angles with one another. Partitions are fitted inside the packaging box near the ends of the packaging box. The present invention further relates to the packaging box thus created and the sheets to be used therewith.

[0004] 2. Description of Background Art

[0005] A method of this kind is known from U.S. Pat. No. 5,941,476. A number of rolls are enclosed between two round disks interlinked by means of a centrally positioned linking rod. The round disks have their outer circumference touching the inner sides of the sheet parts. Furthermore, partitions that are formed by flat disks are fitted near the ends. The partitions are provided with protuberances that link into notches applied to the sheet parts. This leads to a complicated construction and the link between the partitions and the sheet parts of the packaging is weak.

[0006] In addition, a box for accepting products is known from U.S. Pat. No. 3,314,531, which is constructed from two sliding box parts that are hexagonal in cross-section. A holder accepting the products to be packaged is placed inside one of these box parts, following which the other box part is slid over the box part containing the holder accepting the products. Each box part is provided, near an end, with a partition with bent edges accepted in that end, which are connected to the inner side of the box part in question. However, this known packaging also has a complicated construction using a particularly large amount of packaging material.

SUMMARY OF THE INVENTION

[0007] The aim of the present invention is to obtain a method with which the disadvantages associated with the known method can be eliminated.

[0008] According to an embodiment of the present invention, this can be achieved by fitting the packaging box tightly around the roll to be accepted in the packaging by fitting the sheet of packaging material directly tightly around the roll while folding around the creases or folding lines whereby the sheet of packaging material has been measured such that the packaging box thus formed around the roll protrudes on both ends of the roll accepted in the packaging box beyond the roll accepted in the packaging box, and a one-piece enclosing member formed by a sheet of packaging material is fitted inside each of the ends of the packaging box, this enclosing member being constructed from a partition touching an end of a roll fitted inside the packaging box, the dimension of this partition corresponding at least practically with the internal polygonal cross-section of the packaging box formed around the roll, and from edge parts forming a unit with the partition, bent round in respect of the partition, which are touching the inner sides of the sheet parts of the packaging box, the sheet parts enclosing an angle with one another.

[0009] According to the present invention, a method for packaging a roll of paper using a sheet of packaging material includes applying a number of creases or folding lines in the sheet of packaging material to form a plurality of sheet parts, said number of creases or folding lines running parallel to one another and bordering neighboring sheet parts of the plurality of sheet parts; folding the sheet of packaging material around the creases or folding lines in order to form a polygonal packaging box for the paper roll, the packaging box being formed by the plurality of sheet parts enclosing an angle with one another; tightly fitting the packaging box around the roll of paper by fitting the sheet of packaging material directly tightly around the roll while folding around the creases or folding lines; measuring the sheet of packaging material such that the packaging box thus formed around the roll of paper protrudes beyond opposite ends of the roll of paper; forming a pair of one-piece enclosing members from a sheet of packaging material, each of said one-piece enclosing members being constructed from a partition and edge parts forming a unit with the partition, the edge pairs being bent around the partition and enclosing an angle with one another, the dimension of the one-piece enclosing members being generally the same as an internal polygonal cross-section of the packaging box formed around the roll of paper; and fitting the one-piece enclosing members inside opposite ends of the packaging box, so that the partitions touch opposite ends of the roll of paper and the edge parts touch inner sides of the plurality of sheet parts of the packaging box when the roll of paper is fitted inside of the packaging box.

[0010] By applying the method according to the present invention, a sturdy enclosure of the roll inside the packaging box can be achieved without using any further tools. Additionally, a sturdy construction of the ends of the packaging box is achieved through the partitions fitted inside the ends of the packaging box together with the bent edge parts forming a whole therewith, so that damage of the roll accepted inside the packaging box as a result of impact received against the ends of the packaging box can be prevented. The sturdy embodied ends of the packaging box can also be utilized for grabbing the packaging box manually or through a mechanical transport device, with a view to relocating the packaging box and its contents.

[0011] The bent edge parts of the enclosing members are preferably glued to the inner sides of the sheet parts of the packaging box, the sheet parts enclosing an angle with one another. It is also preferable for the packaging box to be given a hexagonal cross-section while folding the packaging material around the roll. Particularly cardboard is used as packaging material and the packaging box is formed such that the ends of the packaging box protrude by between 0.5-5 cm beyond the ends of the roll surrounded by the packaging box.

[0012] As such, an advantage of the method according to the present invention is that it is no longer necessary to have a plurality of different broadsheets in stock in order to suitably package one or more rolls of paper. It is only necessary
to have packaging material in sheet form in stock from which are created upon demand broadsheets of such dimensions that one or more rolls of paper can be packaged inside the packaging box formed from the broadsheet. This will provide a considerable saving in material costs for the packaging material in stock and more flexibility in the dimensions of the rolls of paper when it is desirable that these are packaged as tightly as possible inside the packaging box according to the present invention.

Further scope of applicability of the present invention will become apparent from the detailed description given hereinafter. However, it should be understood that the detailed description and specific examples, while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent to those skilled in the art from this detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become more fully understood from the detailed description given hereinafter and the accompanying drawings which are given by way of illustration only, and thus are not limiting of the present invention, and wherein:

FIG. 1 is a perspective view of an embodiment of a packaging box according to the present invention indicating components of the packaging box at a distance from one another;

FIG. 2 is a view of a broadsheet from which the packaging box shown in FIG. 1 can be created; and

FIGS. 3 and 4 are schematic views of other possible embodiments of packaging boxes according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention will now be described with reference to the accompanying drawings, wherein the same reference numerals have been used to identify the same or similar elements throughout the several views.

The packaging box 1 shown in FIG. 1 has a hexagonal cross-section. The packaging box 1 is formed by a sheet of packaging material 2 shown in FIG. 2, which may for example consist of cardboard or a suitable plastic material.

The sheet of packaging material 2 is divided into seven neighboring sheet parts 4-10 by means of a number of creases or folding lines 3 applied to the sheet that run parallel to one another. In order to form the packaging box 1 shown in FIG. 1, the sheet parts 4-10 are folded around the creases or folding lines 3 in respect of one another in the hexagonal shape shown in FIG. 1. The sheet part 4 ends up touching the outer side of the sheet part 10 and is attached thereto, for example by gluing. The packaging box 1 is formed such that a paper roll 11 can be accepted tightly inside the packaging box 1, because the paper roll touches against the inner sides of the sheet parts 4-10.

As will also be clear from FIG. 1, the packaging box 1 is formed such that the ends of the packaging box protrude by a certain distance of 0.5-5 for example, beyond the ends of the paper roll 11. The ends of the packaging box are enclosed by means of enclosing members 12 that each constructed from a partition 13 and edge parts 14 joining thereto. The edge parts 14 are bent around in relation to the partition 13 and form a whole with the partition 13. The edge parts 14 are positioned at right angles to the partition 13. The shape of the partition 13 is adjusted to the internal shape of the packaging box 1 that is hexagonal in cross-section, so that the partition 13 can be fitted tightly inside the inner area of the packaging box 1. Each enclosing member 12 is fitted inside the packaging box 1 such that the partition 13 is touching a relevant end of the paper roll 11 and the bent edges 14 extend from the partition 13 towards the outer end of the packaging box. The bent edges 14 are connected to the inner sides of the sheet parts 4-10 by suitable adhesives.

It will be clear that a sturdy enclosure of the paper roll 11 inside the packaging box 1 can thus be achieved, whereby the packaging box can easily be folded from a broadsheet 2 cut to size.

By fitting the above-described enclosing members 12 inside the ends of the packaging box 1, a functional reinforcement of the ends of the packaging box 1 protruding beyond the paper roll 11 is also achieved. The functional reinforcement is formed partly by the double-layer embodiment of the ends of the packaging box protruding beyond the roll 11 as a result of fitting the bent edge parts 14 to the inner sides of the sheet parts 4-10. These sturdy ends prevent any undesirable damage to the ends of the paper roll 1 by impact exerted upon the ends of the packaging box 1. Additionally, reinforced ends of this type lend themselves well for grabbing the packaging box, either manually or by means of mechanical tools with a view of relocating the packaging box 1, without risking any damage to the packaging box 1 or the roll 11 therein.

FIG. 3 shows a schematic view of an embodiment of a packaging box 15 used for accepting two paper rolls 16. It will be clear that a packaging box 15 of this type can be constructed in a similar way as the packaging box 1 described above and shown in FIG. 1. However, sheet parts of various widths are formed in the packaging material in sheet form, from which the packaging box 15 is folded, by means of the creases or folding lines, as will be clear from FIG. 3.

This also applies to the packaging box 17 shown in FIG. 4, which is intended for accepting three paper rolls 18. Here too, the packaging box 17 will be formed by a packaging material in sheet form in which creases have been applied such that sheet parts of various widths are formed.

It will be clear that within the spirit and protection scope of the present invention, variations and/or additions can be applied to the above-described embodiment of the packaging box. For example, it will be possible to provide the packaging box with an additional handle which can be glued to or formed from the same sheet material as the rest of the packaging.

The invention being thus described, it will be obvious that the same may be varied in many ways. Such variations are not to be regarded as a departure from the spirit and scope of the invention, and all such modifications as would be obvious to one skilled in the art are intended to be included within the scope of the following claims.

What is claimed is:

1. A method for packaging a roll of paper using a sheet of packaging material, said method comprising the steps of:
   - applying a number of creases or folding lines in the sheet of packaging material to form a plurality of sheet parts, said
number of creases or folding lines running parallel to one another and bordering neighboring sheet parts of the plurality of sheet parts;

folding the sheet of packaging material around the creases or folding lines in order to form a polygonal packaging box for the paper roll, the packaging box being formed by the plurality of sheet parts enclosing an angle with one another;

tightly fitting the packaging box around the roll of paper by:
fitting the sheet of packaging material directly tightly around the roll while folding around the creases or folding lines;

measuring the sheet of packaging material such that the packaging box thus formed around the roll of paper protrudes beyond opposite ends of the roll of paper;

forming a pair of one-piece enclosing members from a sheet of packaging material, each of said one-piece enclosing members being constructed from a partition and edge parts forming a unit with the partition, the edge parts being bent around the partition and enclosing an angle with one another, the dimension of the one-piece enclosing members being generally the same as an internal polygonal cross-section of the packaging box formed around the roll of paper;

fitting the one-piece enclosing members inside opposite ends of the packaging box, so that the partitions touch opposite ends of the roll of paper and the edge parts touch inner sides of the plurality of sheet parts of the packaging box when the roll of paper is fitted inside of the packaging box.

2. The method according to claim 1, further comprising the step of gluing the edge parts of the enclosing members to the inner sides of the plurality of sheet parts of the packaging box.

3. The method according to claim 1, wherein the packaging box is given a hexagonal cross-section while folding the packaging material around the roll of paper.

4. The method according to claim 1, wherein the sheet of packaging material is cardboard.

5. The method according to claim 1, wherein the packaging box is formed such that the ends of the packaging box protrude by between 0.5-5 cm beyond the ends of the roll of paper surrounded by the packaging box.

6. A packaging box created using the method according to claim 1.

7. A sheet of packaging material used for creating a packaging box according to claim 6.

8. A sheet of packaging material used for creating an enclosing member to be applied in the method according to claim 1.

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