A film-feeding roller is applicable to an air cushion maker and facilitates alignment of a plastic film roll on roll supporters of the air cushion maker, so as to ensure a plastic film to be continuously and straight released from the film roll to be made into an air cushion.
BACKGROUND OF THE INVENTION

1. Technical Field

The present invention relates to air cushion makers, and more particularly, to a film-feeding roller facilitating alignment of a plastic film roll on roll supports of an air cushion maker, so as to ensure smooth inflating and sealing processes.

2. Description of Related Art

For protecting packed objects from being damaged under accidental impact, buffer or cushion materials are generally used to fill void. As can be seen in FIG. 1, an air-bubble sheet made of plastic films is one of the most popular cushion materials. A manufacturer employs special equipments to produce such air-bubble sheet as a large piece, and a user can later cut or pucker the sheet at will to fill void in a packing case. However, the manufactured air-bubble sheet is space-consuming at transportation and storage due to its characters of being inflated and non-compressible. Thus, such air-bubble sheet is uneconomic and inconvenient in respect of transportation and storage.

A desk-top air cushion maker has been therefore developed to remedy the aforementioned problem by providing an inflated and sealed air cushion, as depicted in FIG. 2. Such air cushion can be made in-site for instant use by the foregoing air cushion maker and is superior in convenience as well as economy. Nevertheless, a conventional desk-top air cushion maker typically suffers from slant film in the maker that tends to cause creases on the film and leads to defective inflating and sealing processes.

SUMMARY OF THE INVENTION

One primary objective of the present invention is to provide a film-feeding roller facilitating alignment of a plastic film on a roll support of an air cushion maker, so as to prevent the film from slanting at the beginning and ensure smooth inflating as well as sealing processes.

To achieve this and other objectives of the present invention, the film-feeding roller comprises:

- a core tube;
- a pair of film retaining plates provided at two ends of the core tube, wherein each said film retaining plate and the corresponding end of the core tube is rotationally retained while the film retaining plate is shiftable along the core tube;
- a pair of caps fixedly assembled to the two ends of the core tube for positioning the film retaining plates; and
- a pair of compression springs, each compression spring settled between one said cap and one said film retaining plate.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

FIG. 3 is a perspective view of a conventional plastic air-bubble sheet;
FIG. 2 is a perspective view of an air cushion made of a conventional desk-top air cushion maker;
FIG. 3 is a perspective view of an air cushion maker according to the present invention, wherein a cover thereof is closed;
FIG. 4 is another perspective view of the air cushion maker according to the present invention, wherein the cover thereof is open;
FIG. 5 is an exploded view of a film-feeding roller according to the present invention; and
FIG. 6 is an assembled cross-sectional view of the film-feeding roller according to the present invention.

While some preferred embodiments are provided hereinafter for illustrating the concept of the present invention as described above, it is to be understood that the components in these drawings are made for better explanation and need not to be made in scale. Besides, in the following description and the drawings, resemblances are indicated by the same numerals.

Referring to FIG. 3 for a perspective view of an air cushion maker according to the present invention. The air cushion maker primarily comprises a base 10 and a cover 12 that is liftably affixed to the base 10, wherein the cover 12 is now lying on the base 10. The cover 12 includes an arched canopy 13, a button switch 14, a plurality of function buttons 15 and a latch assembly 16 for holding the cover 12 with the base 10.

Another perspective view of the air cushion maker according to the present invention can be seen in FIG. 4, wherein the cover 12 is presently open. A film roll 17 to be inflated into an air cushion is mounted on a pair of roll supports 20. A plurality of rubber rollers 211, 212 are arranged on the base 10 and the cover 12, respectively, in the manner that when the cover 12 lies on the base 10, each pair of the rubber rollers 211, 212 facing each other are vertically contact so as to form at least two film-pulling roller sets 21. One said rubber roller 211 of one said film-pulling roller set 21 is rotate by a motor so as to drive the other rubber roller 212 contacting therewith. Hence, after being settled between the two contacting rubber rollers 211 and 212, a plastic film 171 constituting the film roll 17 can be continuously pulling out from the film roll 17 as the rubber rollers keep rotating coordinately. Then the plastic film 171 passes an inflating device 22 and a sealing device 23 settled on the base 10 to receive inflating and sealing processes, thereby forming an air cushion as shown in FIG. 2.

Reference is now made to FIGS. 5 and 6. The film roll 17 is mounted around a film-feeding roller 40 that has two ends thereof deposited on the two roll supporters 20. The film-feeding roller 40 includes a core tube 41, a pair of film retaining plates 42 provided at two ends of the core tube 41, wherein each said film retaining plate 42 and the corresponding end of the core tube 41 is rotationally retained while the film retaining plate 42 is shiftable along the core tube 41, a pair of caps 43 fixedly assembled to the two ends of the core tube 41 for retaining the film retaining plates 42 from leaving the core tube 41; and a pair of compression springs 44, each settled between one said cap 43 and one said film retaining plate 42. The film roll 17 is actually mounted around the core tube 41 with two ends positioned by the film retaining plates 42. The film retaining plates 42 press upon the two ends of the film roll 17 under resilience of the compression springs 44. That is, the reciprocal and equivalent resilience from the
compression springs 44 aligns the film roll 17 to a central position between the two roll supporters 20. While the processed plastic film 171 is sourced from the film roll 17, once the film roll 17 is aligned without slant, the plastic film 171 is secured from being slant over the processes.

[0023] Each said end of the core tube 41 is formed with a slit 411 that is axially extending on a periphery of the core tube 41 for a predetermined length while each said film retaining plate 42 is formed with an inset portion 421 so that when the film retaining plate 42 is assembled to the core tube 41, the inset portion 421 is fittingly received in the slit 411, thereby retaining the film retaining plate 42 from rotating with respect to the core tube 41. Besides, since the slit 411 is made with the predetermined length, the film retaining plate 42 is allowed to shift along the core tube 41 so that an interval between the two film retaining plates 42 can be automatically adjusted to fit this film roll 17 or another film roll placed therein due to the resilience of the compression springs 44.

[0024] Each of the caps 43 has an inner ring 431 and an outer ring 432 that are formed as an integral for pressingly receiving the corresponding end of the core tube 41 therebetween. The outer ring 432 has a round outer periphery and a smooth surface while a retaining flange 433 is formed along the outer periphery. When the film-feeding roller 40 is mounted on the roll supporters 20, the two caps 43 lie on the roll supporters 20 while the retaining flanges 433 laterally abut against the supporters 20. As a result, when the plastic film 171 is pulling by the film-pulling roller sets 21, the film roll 17, the core tube 41, the film retaining plates 42, the caps 43 are driven to rotate simultaneously so as to ensure continuous and straight film feeding.

[0025] Although the particular embodiment of the invention has been described in detail for purposes of illustration, it will be understood by one of ordinary skill in the art that numerous variations will be possible to the disclosed embodiments without going outside the scope of the invention as disclosed in the claims.

What is claimed is:

1. A film-feeding roller applicable to an air cushion maker, comprising:
   a core tube;
   a pair of film retaining plates provided at two ends of the core tube, wherein each said film retaining plate and the corresponding end of the core tube is rotationally retained while the film retaining plate is shiftable along the core tube;
   a pair of caps fixedly assembled to the two ends of the core tube for positioning the film retaining plates; and
   a pair of compression springs, each compression spring settled between one said cap and one said film retaining plate.

2. The film-feeding roller as claimed in claim 1, wherein, each said end of the core tube is formed with a slit that is axially extending on a periphery of the core tube for a predetermined length while each said film retaining plate is formed with an inset portion so that when the film retaining plate is assembled to the core tube, the inset portion is fittingly received in the slit.

3. The film-feeding roller as claimed in claim 1, wherein, each of the caps has an inner ring and an outer ring for pressingly receiving the corresponding end of the core tube therebetweem.

4. The film-feeding roller as claimed in claim 3, wherein, the outer ring has a round outer periphery and a smooth surface while a retaining flange is formed along the outer periphery.

5. The film-feeding roller as claimed in claim 4, wherein, when the film-feeding roller is mounted on the roll supporters, the two caps lie on two roll supporters of the air cushion where the film-feeding roller is applied to while the retaining flanges laterally abut against the supporters.

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