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(54) **HEAT SHRINK FILM WITH INCREASED TEAR STRENGTH**

(57) The invention is related to film wrapping bundles of articles or articles with heat shrink film by providing a film having folded edges to increase tear resistance.

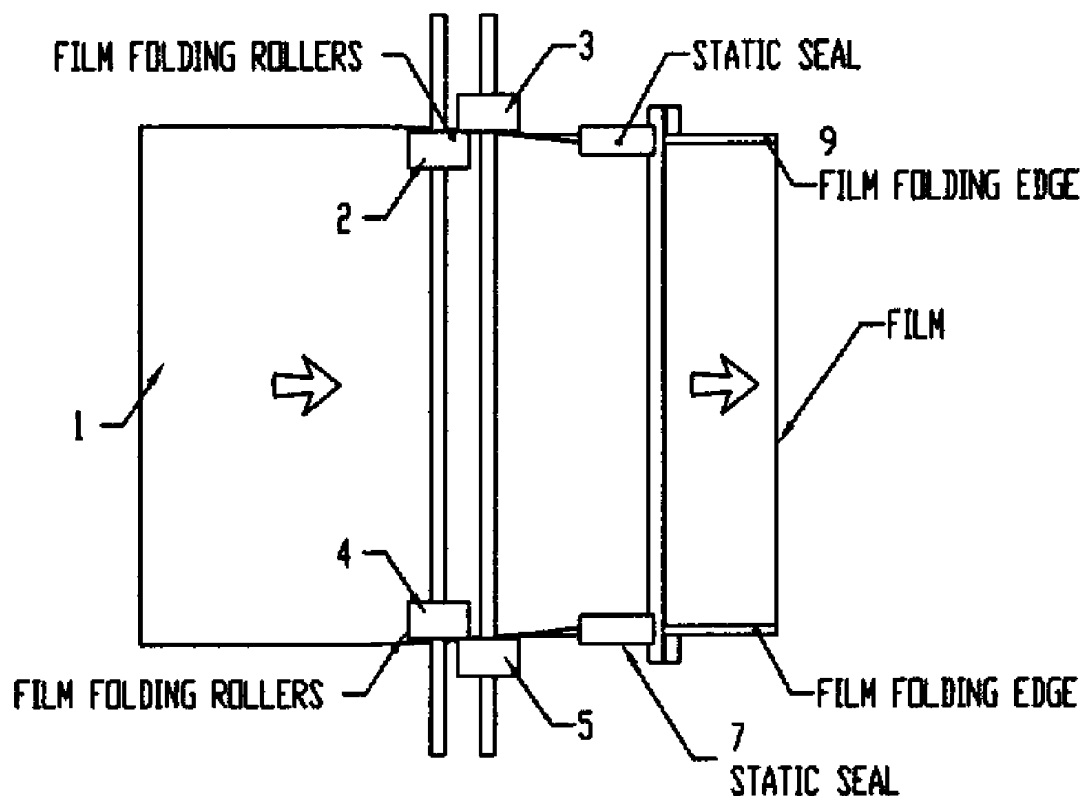


Fig. 1

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Description

Technical Field

[0001] This invention is related to film wrapping bundles of articles or articles with heat shrink film by providing a film having better tear strength when lifting the bundle. A bundle is defined to include an article or a collection of articles.

Background Art

[0002] After heat shrinking a film wrapped bundle moving on a conveyor, the sides of the bundles are not covered with the film. This creates an opening on each side of the bundle for manually lifting the bundle by gripping the film through the opening. To reduce the risk of tearing during the manually lifting of the bundle, the prior art has increased the thickness of the film to resist the tearing of the film.

[0003] The objective of this invention is to eliminate the need for a thicker film. By folding the film edges of a thinner film to create an overlap, the tear strength of the openings is substantially increased.

Brief description of drawings

[0004]

Fig 1 shows an unshrunk film being threaded between film folding rollers to fold the edges of the film to a sustainably vertical position.

Fig 2 shows a static seal.

Fig 3 shows a heat shrink film wrapped bundle 11 having folded edges.

Description of embodiments

[0005] Figure 1 shows unshrunk film 1 being threaded between film folding rollers 2 and 3, and 4 and 5 to fold the edges of the film to a sustainably vertical position. Afterwards the edges are pressed down by the rod 6 to create a folded edge. Usually a one inch (2.54 mm) fold is sufficient to achieve a desired tear strength. Electrostatic sealer 7 treats the folded edges to maintain the fold. Other sealing devices can be used such as heat or glue to maintain the fold. The heat shrink film with the folded edges can be substituted for any film used for film wrapping bundles or articles with a heat shrink film. US Patent 9,216,832 issued on December 22, 2015, US Patent 7,836,670 issued on November 23, 2010 and US Patent 6,761,014 issued on July 13, 2004 invented by Alain Cerf are incorporated by reference in their entirety. These patents show various conventional film wrapping bundle technologies with heat shrink film.

[0006] Figure 3 shows a heat shrink film wrapped bundle 11 having folded edges. Usually the film is heat shrunk in a heat shrink tunnel. The heat shrunk bundle 12 creates

an opening 10 with folded film edges 9 on opposite sides of the bundle. During heat shrinking the folded edges can bond together to further increase the tear resistance when manually lifting the product.

Claims

1. A process for increasing the tear resistance of a heat shrunk film wrapped around a bundle comprising, providing a heat shrink film with folded edges, film wrapping the bundle with the heat shrink film having folded edges, and heat shrinking the film wrapping the bundle.
2. A process according to claim 1 wherein the folded edges are treated to maintain the fold in its proper position.
3. A process according to claim 1 wherein a heat shrink tunnel heat shrinks the film.
4. A product produced by the process of claim 1.
5. A bundle comprising a heat shrunk film having folded edges wrapped around the bundle, and openings in the film on opposite sides of the bundle where the edges of opening are folded thereby increasing the tear resistance when manually gripping the folded film to lift the bundle.
6. An apparatus for increasing the tear resistance of heat shrunk film wrapped around a bundle comprising, means for forming a heat shrink film with folded edges, means for film wrapping the bundle with the heat shrink film having folded edges, and means for heat shrinking the film wrapping the bundle.
7. An apparatus according to claim 6 wherein the folded edges are treated to maintain the fold in its proper position.
8. An apparatus according to claim 6 wherein a heat shrink tunnel heat shrinks the film.

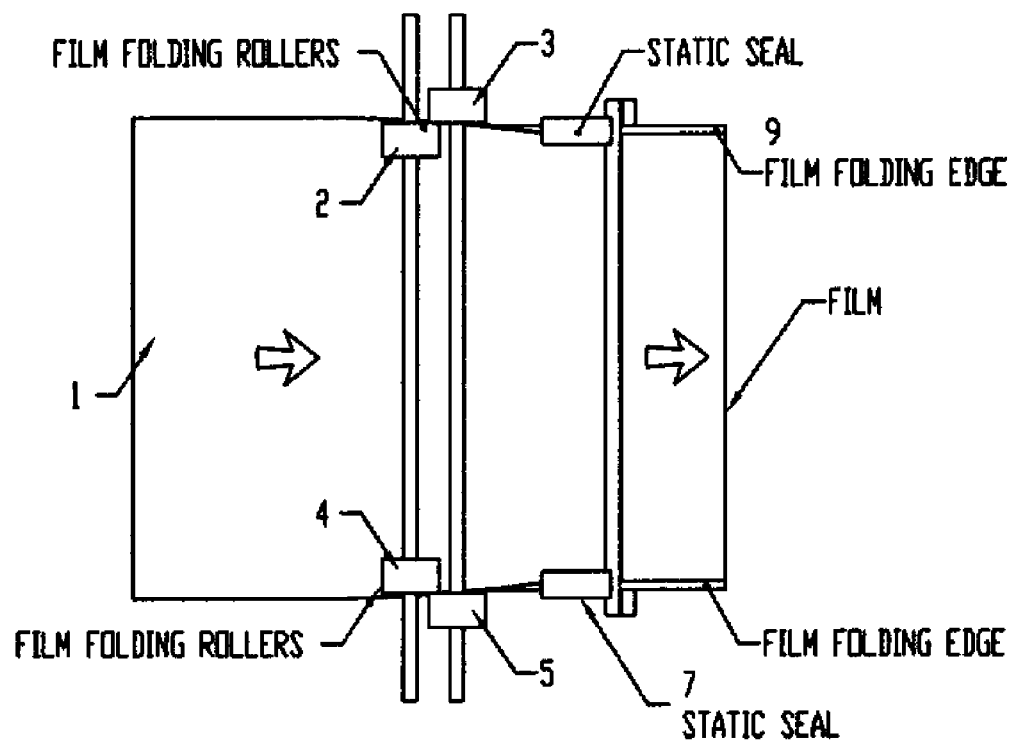


Fig. 1

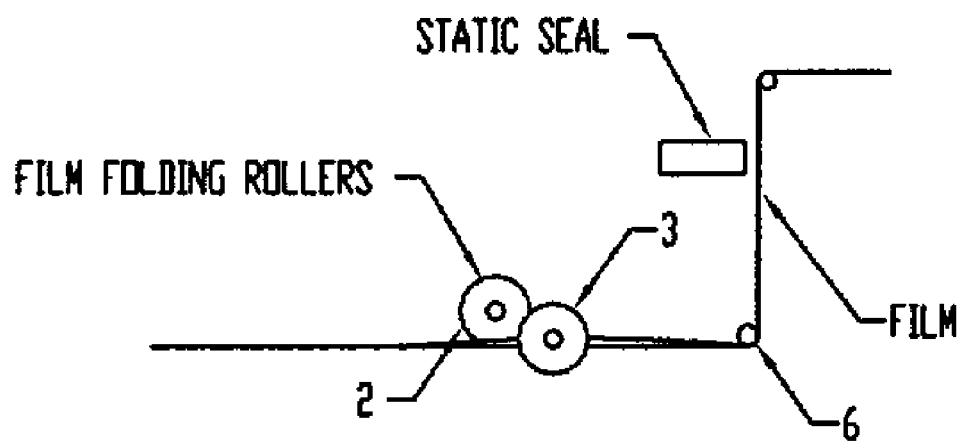


Fig. 2

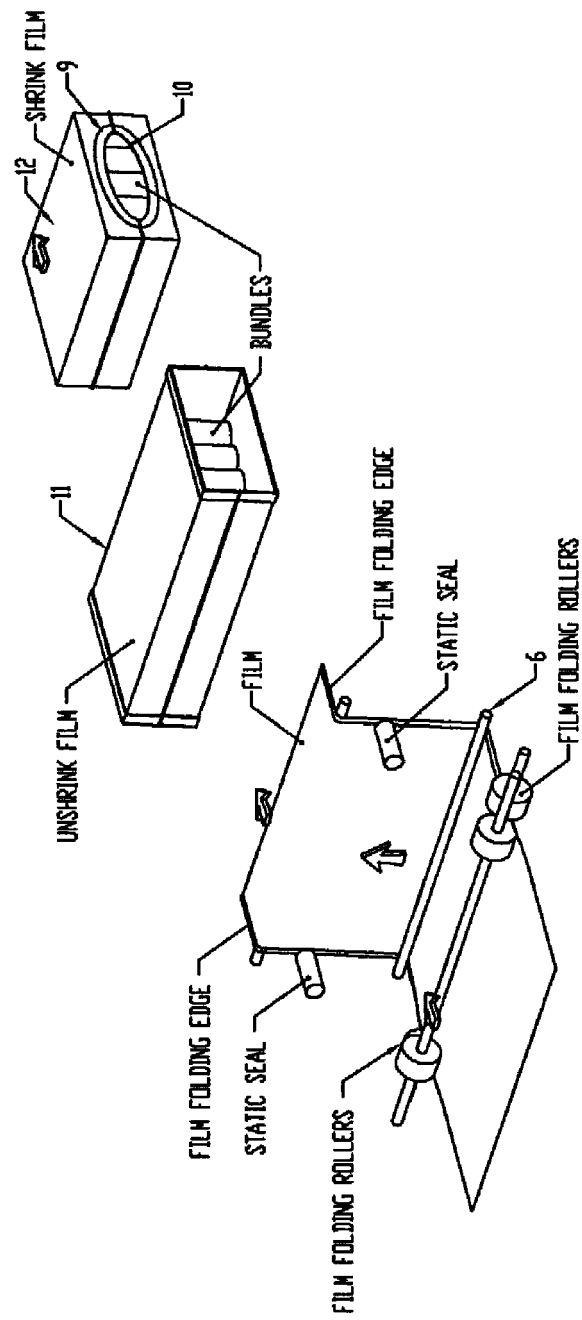


Fig. 3



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Place of search Munich		Date of completion of the search 31 July 2018	Examiner Weyand, Tim
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