In accordance with an embodiment of the present invention, the depressions are, at least in part, shaped as open circumferential annular channels. The annular channels could run parallel to each other.

Another embodiment provides annular channels that are arranged equidistantly; should the bending compensation require otherwise, a grouping of annular channels in which the annular channels are placed relatively closely together is also possible.

The depressions could, at least partly, be fashioned to accommodate liquid or gaseous media, which could, for example, be used to heat or cool the sleeve. The channels could also be spray or suction channels for color.

It has proven useful to equip the expandable layer with surface layer protection on the outer circumferential surface. This ensures a longer lifespan for the expandable layer in particular when the sleeve is often exchanged.

In an embodiment of the present invention, the expandable layer is made of an elastic material with gaseous filling, for example, plastic foam or expanded polystyrene pellets.

In another embodiment, for some uses, the elastic material and/or the surface layer protection is fitted with electrical conduction particles.

The re-designed expandable layer allows other functions to be implemented whereby it is still placed on the core cylinder or as the case may be on the inner side of the sleeve, to serve as an improved compensation layer which precisely sets up the contact line, for example, between the sleeve and an impression cylinder in a flexography printer.

In another embodiment, the invention provides a core cylinder with an expandable layer made of compressible material, which could be attached to a rotary printing form between the core cylinder and a sleeve, fitted with depressions on the outer circumferential surface or on the inner circumferential surface of the expandable layer, whereby an initial section of the depressions stretches in axial direction on the expandable layer and whereby a subsequent section of the depressions stretches in radial direction over the expandable layer, whereby a part of the material of the expandable layer can be displaced in the depressions and at least some of the depressions are arranged according to a required bending compensation of the sleeve.

In another embodiment, the invention provides a rotary printing form with an expandable layer made of compressible material, which is attached to a rotary printing form between a core cylinder and a sleeve, whereby the expandable layer is fitted with depressions on its outer circumferential surface or on its inner circumferential surface, whereby in accordance with the invention an initial section of depressions stretches in axial direction on the expandable layer and whereby a subsequent section of the depressions stretches in radial direction over the expandable layer, whereby a part of the expandable layer material can be displaced in the depressions and at least a portion of the depressions is arranged according to a required bending compensation of the sleeve.

The invention characteristics disclosed above and in the drawings as well as in the claims could be significant both individually and in any chosen combination for the implementation of the invention.

The foregoing disclosure of the preferred embodiments of the present invention has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the invention to the precise forms disclosed. Many variations and modifications of the embodiments described herein will be obvious to one of ordinary skill in the art in light of the above disclosure. The scope of the invention is to be defined only by the claims appended hereto, and by their equivalents.

Further, in describing representative embodiments of the present invention, the specification may have presented the method and/or process of the present invention as a particular sequence of steps. However, to the extent that the method or process does not rely on the particular order of steps set forth herein, the method or process should not be limited to the particular sequence of steps described. As one of ordinary skill in the art would appreciate, other sequences of steps may be possible. Therefore, the particular order of the steps set forth in the specification should not be construed as limitations on the claims. In addition, the claims directed to the method and/or process of the present invention should not be limited to the performance of their steps in the order written, and one skilled in the art can readily appreciate that the sequences may be varied and still remain within the spirit and scope of the present invention.

What is claimed is:

1. A rotary printing form with an expandable layer made of compressible material, which is attached to a core cylinder before being inserting into a sleeve,

wherein the expandable layer has separate recessed depressions on at least one of its outer circumferential surface and its inner circumferential surface, and

wherein when the core cylinder with the expandable layer is inserted into the sleeve, an initial section of the depressions stretches in an axial direction on the expandable layer, and

a subsequent section of the depressions stretches in a radial direction over the expandable layer, whereby a part of the material of the expandable layer can be displaced in the depressions and at least a part of the depressions provides channels between the expandable layer and the sleeve when the sleeve is attached to the core cylinder and the expandable layer.

2. A core cylinder with an expandable layer made of compressible material, the expandable layer adapted to be attached to a rotary printing form between the core cylinder and a sleeve,

wherein the expandable layer has separate recessed depressions on at least one of its outer circumferential surface and its inner circumferential surface, and

wherein when the core cylinder with the expandable layer is inserted into the sleeve, an initial section of the depressions stretches in an axial direction on the expandable layer, and

a subsequent section of the depressions stretches in a radial direction over the expandable layer, whereby a part of the material of the expandable layer can be displaced in the depressions and at least a part of the depressions provides channels between the expandable layer and the sleeve.

3. An expandable layer comprising a compressible material, the expandable layer being attached to a core cylinder before inserting into a sleeve, wherein the expandable layer has separate recessed depressions on at least one of its outer circumferential surface and inner circumferential surface, wherein the recessed depressions are, at least partly, fashioned as open circumferential annular channels, and wherein when the core cylinder and the expandable layer are inserted into the sleeve, the expandable layer is between the sleeve and the core cylinder, and at least a part of the recessed depressions provides channels between the expandable layer and the sleeve.