Solutions to the above problem have been suggested in, for example, EP 1 090 281, which is owned by the present applicant and which discloses an appliance for sealing a sleeve that has been preassembled around a hose in a contamination-free manner.

~~A problem associated with this solution, however, is that during storage the material of the preassembled sleeves may crack due to stress corrosion, a consequence of which may be that the desired contamination-free sealing of the hose is not obtained. There is thus a need for a solution that eliminates this problem.~~

Prior Art Documents

Patent Document 1 – EP 1098281A

Summary of the Invention

Problem to be solved by the invention

A problem associated with this solution, however, is that during storage the material of the preassembled sleeves may crack due to stress corrosion, a consequence of which may be that the desired contamination-free sealing of the hose is not obtained. There is thus a need for a solution that eliminates this problem.

According to a first aspect of the present invention, the above problem can be eliminated by a sealing means of the kind defined in claim 1. Said sealing means is made of a plastically deformable material for mechanical sealing of hollow hoses of elastic material by means of an appliance having at least two jaws, at least one of which is movable towards and away from the other and which, when moving towards each other, crimp the sealing means against the hose for contamination-tight sealing of the same, wherein the sealing means comprises at least one sealing member, which has two opposite ends and an opening that extends between said ends to allow the at least one sealing member to be slipped onto the hose to be sealed.

Hoses that are to be sealed in a contamination-free manner are often provided with components at their ends, such as a bag for collecting sample liquid or a coupling for connecting the hose to a vessel from which a sample is to be taken. As a rule the components have a size that is greater than the diameter of the hose and because of these components it is therefore often not possible to mount a complete sleeve

around the hose afterwards. To obtain a satisfactory contamination-free seal with the kind of sealing means that is crimped against the hose to be sealed, it is also important that the dimension of the sealing means, for example a sleeve, is not too great in proportion to the hose to be sealed. This means that it will be difficult to slip a sleeve with dimensions that are appropriate for satisfactory sealing of the hose onto the hose and move it along the hose, even if the hose has no components at its ends.

form of a substantially straight cutting edge, which projects to a greater extent than said at least one bar. The method may further comprise placing the hose, with the sealing means disposed thereon, between the two jaws. When an appliance as described above is used in the method this results in an indentation in the sealing means and the hose, which forces the sealing means against the hose for sealing of the same, while at the same time a fracture indication is provided in the sealing means and in the hose.

According to an exemplifying embodiment, said method for mechanical sealing of hollow hoses comprises the use of an appliance as described above with respect to a second aspect of the invention and a sealing means as described above with respect to a first aspect of the invention.

Brief Description of the Drawings

The present invention will be described in more detail below for the purpose of exemplification and with reference to the appended drawings, in which:

Figs. 1a ~~–1d~~ illustrate<u>s</u> schematically a sealing means according to the invention and how this can be arranged around a hose to be sealed;

<u>Fig. 1b illustrates schematically a sealing means according to the invention and how this can be arranged around a hose to be sealed;</u>

<u>Fig. 1c illustrates schematically a sealing means according to the invention and how this can be arranged around a hose to be sealed;</u>

<u>Fig. 1d illustrates schematically a sealing means according to the invention and how this can be arranged around a hose to be sealed;</u>

Figs. 2a ~~–2b~~ show<u>s</u>, in perspective and from above, respectively, a hose with sealing means which is disposed in a crimping appliance;

<u>Fig. 2b shows, in perspective and from above, respectively, a hose with sealing means which is disposed in a crimping appliance;</u>

Figs. 3a ~~-3b~~ show<u>s</u>, in perspective and from above, respectively, a hose with sealing means which is disposed in an appliance at the final stage of sealing;

<u>Fig. 3b shows, in perspective and from above, respectively, a hose with sealing means which is disposed in an appliance at the final stage of sealing;</u>

Fig. 4 is a side view of the sealed hose, partly cut-away, in a state after sealing;

Figs. 5a ~~-5b~~ show<u>s</u> an alternative embodiment of two sealing members which form a sealing means, the sealing members being provided with positioning means;

<u>Fig. 5b shows an alternative embodiment of two sealing members which form a sealing means, the sealing members being provided with positioning means;</u>

Figs. 6a ~~-6c~~ shows an alternative embodiment of two sealing members which form a sealing means, the sealing members being provided with positioning means according to an alternative embodiment;

Fig. 6b shows an alternative embodiment of two sealing members which form a sealing means, the sealing members being provided with positioning means according to an alternative embodiment;

Fig. 6c shows an alternative embodiment of two sealing members which form a sealing means, the sealing members being provided with positioning means according to an alternative embodiment;

Figs. 7a ~~-7b~~ shows an alternative embodiment of two sealing members which form a sealing means, the sealing members being provided with positioning means according to a further alternative embodiment; ~~and~~

Fig. 7b shows an alternative embodiment of two sealing members which form a sealing means, the sealing members being provided with positioning means according to a further alternative embodiment;

Figs. 8a ~~-8c~~ shows an alternative embodiment of one sealing member that forms a sealing means; ~~.~~

Fig. 8b shows an alternative embodiment of one sealing member that forms a sealing means; and

Fig. 8c shows an alternative embodiment of one sealing member that forms a sealing means.

Description of Exemplifying Embodiments

Fig. 1a illustrates an exemplifying embodiment of the present invention in the form of a sealing means 20 consisting of two sealing members 4, 4', which in this embodiment have the form of two cylindrical sleeves. The sealing means 20 is intended, for instance, for mechanical sealing, in a contamination-free manner, of the hoses that extend between, for example, process containers and the conveying means and collecting vessels which are connected thereto, so that the latter, after

being filled with a medium from the process container, can be moved without any risk of contamination to a laboratory or the like for sampling or analysis of the medium. The sealing means may, of course, also be used in a number of other applications where the requirements for good hygienic conditions and/or contamination-free surroundings and/or working environment are more or less exacting.

The sleeves 4, 4' each have an opening 40, 40', which extends between the short sides of each sleeve. As can be seen in Fig. 1a, the sleeves 4, 4' are configured such that their joint cylindrical surface covers a portion that spans more than 360˚, i.e. they do not consist of a single cylinder which has been split, but of two separate, original cylinders, which each have had a portion cut away in order to form the opening.

The sleeves 4, 4' need not have the same shape, which means that it is conceivable, for instance, that the cylindrical surface of the sleeve 4