

656012

SPRUSON & FERGUSON

AUSTRALIA

PATENTS ACT 1990

PATENT REQUEST: STANDARD PATENT

I/We, the Applicant(s)/Nominated Person(s) specified below, request I/We be granted a patent for the invention disclosed in the accompanying standard complete specification.

[70,71] Applicant(s)/Nominated Person(s):

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ANTILLES

[54] Invention Title:

Method of Protecting a Pipe End

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[31] Appl'n No(s):

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Details of Basic Application(s):

[33] Country:

FI

[32] Application Date:

3 September 1991

DATED this FIRST day of SEPTEMBER 1992

Uponor N.V.

By:



Registered Patent Attorney

IRN: 219266

INSTR CODE: 59705

NOTICE OF ENTITLEMENT
(To be filed before acceptance)

I/~~We~~ Esko Hippelainen, Manager, Patent Department
of Uponor N.V., Emmalein #1, Philipsburg, St. Maarten,
Netherlands Antilles

being the ~~*applicant/*~~ authorised by the applicant in respect of an application for
a patent for an invention entitled Method of Protecting a Pipe End
~~Filed under Application No. _____~~, state the following:-

Part 1 - Must be completed for all applications.

The person(s) nominated for the grant of the patent:

☒ ~~*is/*are~~ the actual inventor(s)

or

☐ has, for the following reasons, gained entitlement from the actual inventor(s):

The Applicant/Nominated Person is the assignee of Oy Uponor Ab
which is the assignee of the actual inventors.

Part 2 - Must be completed if the application is a Convention application.

The person(s) nominated for the grant of the patent ~~*is/*are~~:

☒ ~~the applicant(s) of the basic application(s) listed on the patent request form~~
~~or~~

☐ entitled to rely on the basic application(s) listed on the patent request form
by reason of the following:

Oy Uponor Ab made the basic application as assignee of the actual
inventors and have assigned their rights in the invention to
the Applicant/Nominated Person.

Part 3 - must be completed if the application was made under the PCT and
claims priority.

The person(s) nominated for the grant of the patent ~~*is/*are~~:

☒ ~~the applicant(s) of the application(s) listed in the declaration under Article 8~~
~~of the PCT~~

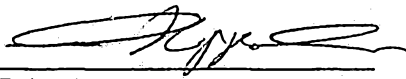
or

☐ ~~entitled to rely on the application(s) listed in the declaration under Article 8~~
~~of the PCT by reason of the following:-~~

(continued over)

Part 4 - Must be completed if the application is a Convention application, or the application was made under the PCT and the applicant made a declaration under Article 8 of the PCT in respect of the basic application.
[] The basic application(s) *listed on the patent request form/*~~referred to in the declaration under Article 8 of the PCT~~ *is/*are the application(s) first made in a Convention country in respect of the invention.

UPONOR N.V.

p.p.a.
Signed: 
Esko Hippeläinen

Date: August 18, 1992

Status: Manager, Patent Department





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METHOD OF PROTECTING A PIPE END
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- (56) Prior Art Documents
AU 248604 2469/61 27.5 35.3
- (57) Claim

1. A method of protecting an end of one of a pipe and a connecting piece therefor, the method comprising:
forming a film web in a pattern corresponding to a surface of an end of one of said pipe and connecting piece therefor;
covering the end with the film web with the pattern of the film web aligned with the surface; and
attaching the film to at least portions of the surface by heat sealing at least one layer of the film web to the surface.

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COMPLETE SPECIFICATION

FOR A STANDARD PATENT

ORIGINAL

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Invention Title: Method of Protecting a Pipe End

The following statement is a full description of this invention, including the best method of performing it known to me/us:-

Method of protecting a pipe end

This invention relates to a method of protecting a pipe end.

The protection of pipe ends by means of end plugs passed over the pipe ends or pushed inside the pipes for delivery from the factory to the customer is known. Such plugs are usually made of polyethylene or foamed polystyrene. The purpose of the plugs is to keep the pipes clean up to the installation. This is especially important in pressure pipes to be connected to sensitive equipment and having high hygiene requirements.

A drawback of known plugs is that the plugs are separate and may be installed at the factory only after a long factory storage time, in addition to which they tend to come off when exposed to wind during transport. Moreover, the plugs are expensive and cannot be returned from the installation site for practical reasons.

The object of the present invention is to provide a method by means of which pipes can be protected easily and advantageously.

There is disclosed herein a method of protecting an end of one of a pipe and a connecting piece therefor, the method comprising:

15 forming a film web in a pattern corresponding to a surface of an end of one of said pipe and connecting piece therefor;

covering the end with the film web with the pattern of the film web aligned with the surface; and

20 attaching the film to at least portions of the surface by heat sealing at least one layer of the film web to the surface.

Other preferred embodiments of the invention are characterised by what is disclosed in the accompanying claims.

In the following the invention will be described by means of an example with reference to the attached drawings, in which

25 Figure 1 shows a pipe end provided with a protective film by the method according to the



invention;

Figure 2 shows a protective film web; and

Figure 3 shows one practical application of the method of forming and sealing a protective film according to the invention.

As shown in Figure 1, an end 1 of a pipe 6 is provided with a protective film 2 in accordance with the invention. The film 2 is heat sealed to the end surface of the pipe in such a way that it can be torn off before the installation of the pipe in a pipeline. As used in this connection, the end surface of the pipe 6 refers to the cutting surface of the pipe end 1, which is in a plane perpendicular to the longitudinal axis of the pipe. The end surface may also be the end surface of a socket formed in the pipe end or a piece attached to the pipe, as shown in Figure 3.

In place of inductive heat sealing, it is possible to use e.g. ultrasonic welding. To facilitate tearing, the film comprises a free edge 3 which can be gripped to tear off the film. The provision of a seal which withstands storage and transport but can nevertheless be torn off by gripping the film by hand is obvious to one skilled in the art (cf. e.g. the sealing of the aluminium covers of packages containing certain milk products).

The protective film is preferably formed from a film web 4, as shown in Figure 2, whereby a pattern corresponding to the shape of the pipe end is perforated in the film web so as to be detached from the web in connection with the heat sealing. A round film 5a larger than the pipe end 1 can be positioned eccentrically to form a tearing edge, whereas a smaller film 5b is so shaped that a free edge 3 for tearing off the film is formed automatically.

The protective film is preferably formed from a laminate web comprising at least one firm layer preventing the film from splitting when being torn off, and at least one layer which can be sealed or welded to the pipe material. The laminate may be a plastic/plastic, plastic/cardboard, plastic/paper or e.g. plastic/aluminium laminate, possibly reinforced with fibre. Essential is that the protective film is made so strong that it is detached in one piece from the end surface of the pipe when torn off. Advantageously, instructions of use etc. can be printed on the outer surface of the protective film to facilitate the installation of the pipe. In addition, the basic colour of the protective film can be easily dyed e.g. in accordance with the use of the pipe, its nominal diameter or pressure classification.

To obtain optimal protection, it is preferable to seal the film covering the pipe end to the end surface of the pipe before the pipe leaves the production line.

In the following, one specific practical application of the method of protecting a pipe end according to the invention will be described with reference to Figure 3.

A laminated film web 7 having a width proportional to the diameter of the pipe 6 to be protected is drawn from a film reel 8 by means of tension rolls 9 and 10. Figure 3 shows by way of example that the method according to the invention can be applied to a piece or socket 14 preinstalled in the pipe 6 instead of the end surface of the pipe itself. Protective films of desired size and shape for the pipe ends are perforated in the film web 7 by means of a tool 11 (cf. Figure 2). After perforation the web is passed onwards and the perforated area is aligned with the

pipe end. A heat plate 12 and/or the pipe 6 move towards each other and are pressed against each other, and so the film laminate 7 positioned between them is welded to the end surface of the pipe by the action of heat and pressure. The sealing typically takes 1 to 2 seconds. Simultaneously a detaching ring 13 removes the perforated area from the film laminate web. Waste web is wound onto a waste reel 15 to be subsequently recycled.

10 Pipes are usually sealed at both ends. This can, of course, be performed by means of apparatuses provided at both ends of the pipe. Alternatively, one sealing apparatus is used, whereby the pipe is turned 180°. In this case, it is possible to provide a
15 perforating device to form protective films for pipe ends of different diameters.

It is obvious to one skilled in the art that the different embodiments of the invention are not restricted to the above examples, but they may vary
20 within the scope of the accompanying claims.

The claims defining the invention are as follows:-

1. A method of protecting an end of one of a pipe and a connecting piece therefor, the method comprising:
 forming a film web in a pattern corresponding to a surface of an end of one of said
 5 pipe and connecting piece therefor;
 covering the end with the film web with the pattern of the film web aligned with the surface; and
 attaching the film to at least portions of the surface by heat sealing at least one layer of the film web to the surface.
- 10 2. The method according to claim 1, wherein the attaching step comprises heat sealing the film to all of the surface, to thereby seal the end with the film web.
3. The method according to claim 1 or claim 2, wherein:
 the forming further comprises providing the pattern in a shape that corresponds to an enlarged shape of the end and that is perforated into the film web; and
 15 the attaching further comprises separating the pattern from the film web at the perforation for forming a free edge of the film web about the end, whereby the free edge of the film can be pulled to tear the film off the end.
4. The method according to any one of claims 1 to 3, wherein the forming further comprises providing the film web as a laminate comprising the one layer and a
 20 firm layer for preventing the film from splitting when being torn off the end.
5. The method according to any one of claims 1 to 4, wherein the attaching occurs before the one of the pipe and connecting piece leaves a production line for making the one of the pipe and connecting piece.
6. A method of protecting an end of one of a pipe and a connecting piece
 25 therefor, the method being substantially as hereinbefore described with reference to the accompanying drawings.

Dated 2 September, 1994
Uponor N.V.

Patent Attorneys for the Applicant/Nominated Person
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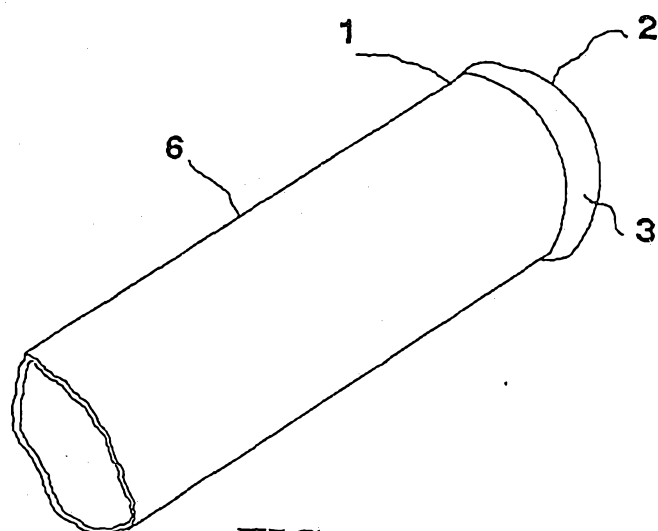


FIG. 1

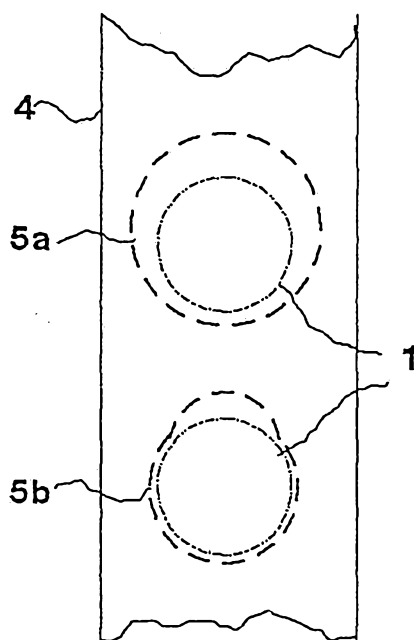


FIG. 2

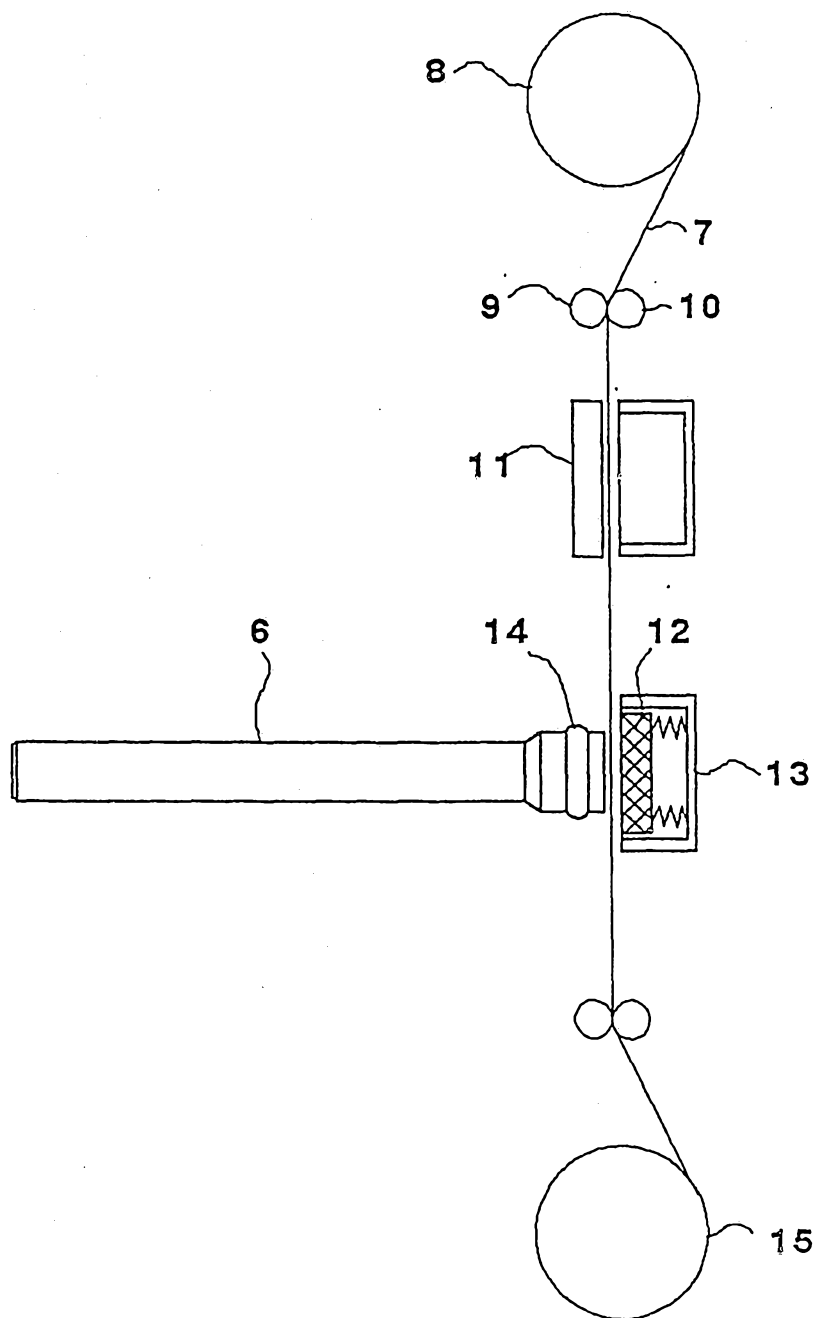


FIG. 3