13087/88

COMMONWEALTH OF AUSTRALIA

THE PATENTS ACT 1952-1973

594560

APPLICATION FOR A PATENT

APPLICATION ACCEPTED AND AMENDMENTS ALLOWED 2-1-90

I,
We, FORSHEDA AB

of S-330 12 Forsheda, Sweden,

hereby apply for the grant of a Patent for an invention entitled:

"A DEVICE FOR MOULDING A PIPE SOCKET"

which is described in accompanying ~~Provisional~~/Complete Specification.

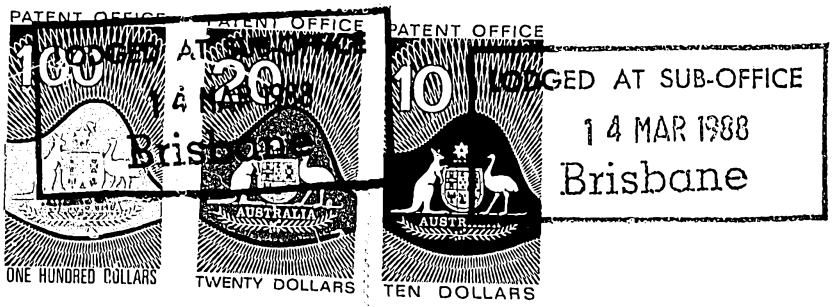
Our address for service is C/- G.R. Cullen & Co., Patent Attorneys, of Dalgety House, 79 Eagle Street, Brisbane, in the state of Queensland, Commonwealth of Australia.

DATED this 14th day of March, 1988.

FORSHEDA AB
By their Patent Attorneys
G.R. CULLEN & CO

T.G. AHEARN

TO:
The Commissioner of Patents,
Commonwealth of Australia.



COMMONWEALTH OF AUSTRALIA
THE PATENTS ACT 1952

DECLARATION IN SUPPORT OF AN APPLICATION FOR A PATENT

In support of the Application made for a patent for an invention entitled:

Insert Title of Invention

"A DEVICE FOR MOULDING A PIPE SOCKET"

Insert Full Name(s) and Address(es)

I/We Jan-Ove Forsell

of FORSHEDA AB, S-330 12 Forsheda, Sweden,

do solemnly and sincerely declare as follows:—

1. ~~I am/We are the applicant(s) for the patent~~ –

Insert Full Name(s) of applicant(s)

(or, in the case of an application by a body corporate)

1. I am/We are authorised by FORSHEDA AB

the applicant(s) for the patent to make this declaration on its/their behalf.

2. ~~I am/We are the actual inventor(s) of the invention referred to in the basic application(s)~~

(or, where a person other than the inventor is the applicant)

Full Name(s) and Address(es) of Inventor(s)

2. Sören Forsberg, Svartkråkevägen 5, S-331 00 VÄRNAMO, Sweden
Olof Nordin. Prinsgatan 9, S-331 00 VÄRNAMO, Sweden, and
Stefan Petersson, Nygatan 15, S-330 12 FORSHEDA, Sweden

is/are the actual inventor(s) of the invention and the facts upon which the applicant(s) is/are entitled to make the application are as follows:–

State how Applicant(s) derive title from inventor(s) e.g. The Applicant(s) is/are the assignee(s) of the invention from the Inventor(s)

Note: Paragraphs 3 and 4 need only be completed for a Convention Application

3. ~~The basic application(s) as defined by Section 141 of the Act was/were made~~

Basic Country(ies) Priority Date(s) Basic Applicant(s)

~~in~~ ..... ~~on~~ .....
~~by~~ .....
~~in~~ ..... ~~on~~ .....
~~by~~ .....

~~The basic application(s) referred to in paragraph 2 of this Declaration was/were the first application(s) made in a Convention country in respect of the invention(s) the subject of the application:~~

Declared at Forsheda this 25 th day of March 19 88

To: The Commissioner of Patents .....

Signature of Declarant(s)
Jan-Ove Forsell

G.R. CULLEN & COMPANY

(12) PATENT ABRIDGMENT (11) Document No. AU-B-13087/88
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 594560

(54) Title
A DEVICE FOR MOULDING A CONCRETE PIPE SOCKET

International Patent Classification(s)
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(71) Applicant(s)
FORSHEDA A.B.

(72) Inventor(s)
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(74) Attorney or Agent
G.R. CULLEN & COMPANY, BRISBANE.

(57) Claim

1. A device for moulding a concrete pipe socket having in the area of an inner sealing surface a sealing ring partially moulded into the material of the pipe socket and an annular mould and protective element used as a mould portion when the pipe socket is moulded and as a protective element during storage and transportation of pipe in which the pipe socket is included, said sealing ring and mould and protective element being positioned axially adjacent each other on a bottom ring, characterised in that the sealing ring and the mould and protective element are each provided with means for sealing the edge portions of the sealing ring and the mould and protective element, said means being positioned at a distance from each other in relation to the bottom ring in order to prevent penetration of slurry and the like between the sealing ring and the mould and protective element on one hand, and the bottom ring on the other hand when the pipe socket is being moulded.

2. A device as claimed in claim 1, characterised in that the sealing means of the sealing ring is constituted by a

projection positioned at said edge portion of the sealing ring, said projection providing an increased sealing pressure against the bottom ring at said edge portion and subjecting the sealing ring to such a turning force that the engagement pressure on the sealing ring against the mould and protective element at the adjacent edge portions of the sealing ring and the mould and protective element is increased and that the sealing means of the mould and protective element is constituted by a curved edge portion having less radius of a curvature than an opposite, curved edge portion of the bottom ring improving the engagement of the mould and protective element with the bottom ring.

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COMMONWEALTH OF AUSTRALIA

The Patents Act 1952-1969

Name of Applicant: FORSHEDA AB

Address of Applicant: S-330 12 FORSHEDA,
SWEDEN

Actual Inventor:

This document contains the amendments made under Section 49 and is correct for printing.

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Patent & Trade Mark Attorneys
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BRISBANE. QLD. 4000.
AUSTRALIA

COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED:

"A DEVICE FOR MOULDING A PIPE SOCKET"

The following statement is a full description of the invention including the best method of performing it known to us:

The present invention relates to a device for moulding a concrete pipe socket of the kind having in the area of an inner sealing surface a sealing ring partially moulded into the material of the pipe socket and an annular mould and protective element used as a mould portion when the pipe socket is moulded and as a protective element during storage and transportation of the pipe in which the pipe socket is included.

A previously known concrete pipe socket which can be moulded by means of the device according to the invention has a sealing ring consisting of rubber or a rubber elastic material positioned at an inner sealing surface. The sealing ring is provided with a connector portion partially moulded into the material of the pipe socket and a projecting sealing portion. Axially inside the sealing ring the pipe socket is provided with a mould and protective element connecting with the surface portion of the sealing ring positioned axially inside the projecting portion thereof as well as with the surface of the pipe socket positioned axially inside the sealing ring. The mould and protective element is adapted to constitute a protection for the surfaces of the sealing ring and the pipe socket covered by the mould and protective element during storage and transportation of the pipe to which the pipe socket belongs. When transporting and storing a conventional pipe without a mould and protective element of the kind described above the inner surface portion of the pipe socket is frequently subjected to soiling and icing which without cleaning of the sealing surfaces before the jointing of the pipes make the jointing difficult or even impossible to perform or make the joint leaky.

The sealing ring and the mould and protective element are positioned in the pipe socket when the pipe socket is moulded utilizing a device comprising a bottom ring on which the sealing ring and the annular mould and protective element are positioned side by side with adjacent edge portions connected with each other. Thus, when moulding the concrete pipe socket the sealing ring, the annular mould and protective element and the surface portions of the bottom

ring positioned axially outside the sealing ring and the mould and protective element form a mould surface for forming the inner surface of the socket. Thereby, it is a problem that concrete slurry and the like can penetrate between the sealing ring and the mould and protective element on one hand and the bottom ring on the other hand and also between the sealing ring and the mould and protective element leading to subsequent problems in respect of the removal of the mould and protective element before the pipe jointing takes place and providing a tight pipe joint.

The object of the invention is to provide a device for moulding a concrete pipe socket of the kind described above in which said problems have been obviated.

In order to comply with this object the device according to the invention is characterized in that the sealing ring and the mould and protective element are provided with means for sealing the edge portions of the sealing ring and the mould and protective element positioned at a distance from each other in relation to the bottom ring in order to prevent penetration of slurry and the like between the sealing ring and the mould and protective element on one hand and the bottom ring on the other hand when the pipe socket is being moulded.

In a preferred embodiment of the device according to the invention the sealing means of the sealing ring is constituted by a projection positioned at said edge portion of the sealing ring, said projection providing an increased sealing pressure against the bottom ring at said edge portion and subjecting the sealing ring to such a turning force that the engagement pressure on the sealing ring against the mould and protective element at the adjacent edge portions of the sealing ring and the mould and protective element is increased, and the sealing means of the mould and protective element is constituted by a curved edge portion having less radius of a curvature than an opposite, curved edge portion of the bottom ring improving the engagement of the mould and protective element with the bottom ring.

The device according to the invention provides in a

simple way and without special operations an effective and tight connection of the sealing ring and the mould and protective element with the bottom ring so that the unfavourable penetration of slurry and the like between the sealing ring, the mould and protective element and the bottom ring is obviated.

The invention is described in the following with reference to the accompanying drawings.

Fig. 1 is an axial section of a concrete pipe socket manufactured by means of a device according to the invention.

Fig. 2 is an axial section of an embodiment of a device according to the invention.

In Fig. 1 there is shown an end portion of a pipe 2, being constituted by a socket portion 4 of a concrete pipe 2. The socket portion of the pipe 2 is provided at its inner surface with a sealing ring 6 consisting of rubber or another rubber elastic material. The sealing ring is provided with a connector portion 8 which is partially embedded in the pipe material and a projecting sealing portion 10. The sealing portion 10 of the sealing ring has an annular projection 12 having the object described in connection with the following description of a device for manufacturing the socket portion 4.

Axially inside the sealing ring 6 the socket portion 4 of the pipe 2 has a mould and protective element in the form of a sleeve 14 which closely connects with the surface portion of the sealing ring 6 positioned axially inside the projecting sealing portion 10 thereof as well as with the surface of the socket portion 4 of the pipe 2 positioned axially inside the sealing ring 6. The sleeve 14 forms a curved portion 15, and the inner angle of this portion is formed with a curved recess 16, the object of which is described in the following with reference to the device for manufacturing the socket portion 4. The sleeve 14 is adapted to constitute a protection for the surfaces of the sealing ring and the socket of the pipe which are covered by the sleeve during storage and transportation of the pipe 2.

When transporting and storing a conventional pipe without a sleeve 14 according to the invention said surfaces are often soiled and iced. Such soiling and icing require a cleaning of the pipe before the pipe is jointed with another pipe. If no such cleaning is performed it will be difficult or impossible to joint the pipes and besides the tightness of the joint can be jeopardized.

The sleeve 14 shall remain connected with the pipe socket until the pipe is jointed with another pipe by introducing the spigot end thereof in the socket 4. In order to provide that the sleeve 14 is securely retained in the pipe during transportation and storage but in spite thereof is easily removable when the pipe is to be jointed with another pipe the sleeve consists of a rigid but easily breakable and removable material. A material having these characteristics is constituted by such a styrene cellular plastic which is manufactured by moulding expanded granules in closed moulds wherein the material by being treated with steam sinters together to a unitary cellular mass. A sleeve 14 of such a material closely connects with the surfaces of the sealing ring 6 and the socket 4, constitutes a rigid and securely retained element during transportation and storage of the pipe and can easily be broken away therefrom when the pipe is to be used.

In Fig. 2 there is shown the moulding of a concrete pipe while using a device according to the invention for providing the socket of the concrete pipe.

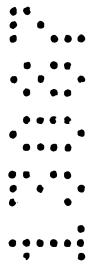
The concrete pipe is manufactured by means of a mould which in a conventional way consists of two concentric mould portions 20 and 22 for constituting the outer and inner surfaces of the pipe wall and a bottom ring 24 for forming the inner surface of the socket of the pipe and the end portion of said socket. Before the concrete is filled into the mould a sleeve 14 of for example styrene cellular plastic as well as the sealing ring 6 of rubber or another rubber elastic material are positioned against the bottom ring 24. When the concrete is filled into the mould the connector portion 8 projecting from the sealing ring 6 is firmly

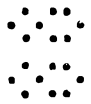
embedded in the concrete while the rest of the sealing ring 6 and the sleeve 14 form the main portion of the inner surface of the socket 4 of the pipe. When the concrete has hardened the concrete pipe is removed from the mould portions 20, 22 and 24 with the sealing ring 6 and the sleeve 14 remaining in the socket 4 of the pipe.

During the filling of the concrete into the mould it is important to prevent that a concrete slurry penetrates between the sealing ring 6 and the bottom ring 24, between the sealing ring 6 and the sleeve 14 and between the sleeve 14 and the bottom ring 24. Such penetration of concrete slurry can bring about difficulties with regard to the removal of the sleeve 14, damages to the sealing ring in connection with the removal of the sleeve 14 and problems in providing a tight pipe joint. In the device according to the invention the above risk of penetration of concrete slurry is obviated by the existence of the projection 12 and the recess 16. The projection 12 provides an increased engagement pressure against the bottom ring at one of the edge portions of the sealing ring and also provides such a turning force of the section of the sealing ring that the other edge portion of the sealing ring is forced into a firm engagement with the sleeve. Thus, the concrete slurry is prevented from penetrating between the sealing ring and the bottom ring and between the sealing ring and the sleeve. Penetration of concrete slurry between the sleeve 14 and the bottom ring 24 at the edge of the sleeve 14 opposite the sealing ring is prevented by the recess 16 by the fact that the recess forms a curved surface having a smaller radius than the opposite surface of the bottom ring and that the adjacent edge portion of the sleeve 14 will thereby firmly engage the bottom ring. It is suitable that said radius of the sleeve is between 0.8 and 2.0 mm smaller than the radius of the opposite surface of the bottom ring, the radius of the curved portion of the sleeve 14 for example amounting to 15 mm and the corresponding radius of the bottom ring for example amounting to 16 mm.

The invention can be modified within the scope of

the following claims.





THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A device for moulding a concrete pipe socket having in the area of an inner sealing surface a sealing ring partially moulded into the material of the pipe socket and an annular mould and protective element used as a mould portion when the pipe socket is moulded and as a protective element during storage and transportation of pipe in which the pipe socket is included, said sealing ring and mould and protective element being positioned axially adjacent each other on a bottom ring, characterised in that the sealing ring and the mould and protective element are each provided with means for sealing the edge portions of the sealing ring and the mould and protective element, said means being positioned at a distance from each other in relation to the bottom ring in order to prevent penetration of slurry and the like between the sealing ring and the mould and protective element on one hand, and the bottom ring on the other hand when the pipe socket is being moulded.

2. A device as claimed in claim 1, characterised in that the sealing means of the sealing ring is constituted by a projection positioned at said edge portion of the sealing ring, said projection providing an increased sealing pressure against the bottom ring at said edge portion and subjecting the sealing ring to such a turning force that the engagement pressure on the sealing ring against the mould and protective element at the adjacent edge portions of the sealing ring and

the mould and protective element is increased and that the sealing means of the mould and protective element is constituted by a curved edge portion having less radius of a curvature than an opposite, curved edge portion of the bottom ring improving the engagement of the mould and protective element with the bottom ring.

3. A device as claimed in claim 2, characterised in that the radius of curvature of the curved portion of the protective element is between 0.8 and 2.0mm smaller than the radius of curvature of an opposite, curved edge portion of the bottom ring.

4. A device for moulding a pipe socket substantially as hereinbefore described with reference to the accompanying drawings.

DATED this sixth day of December 1989.

FORSHEDA AB

By Their Patent Attorneys

G R CULLEN & CO

13087/88

Fig.1.

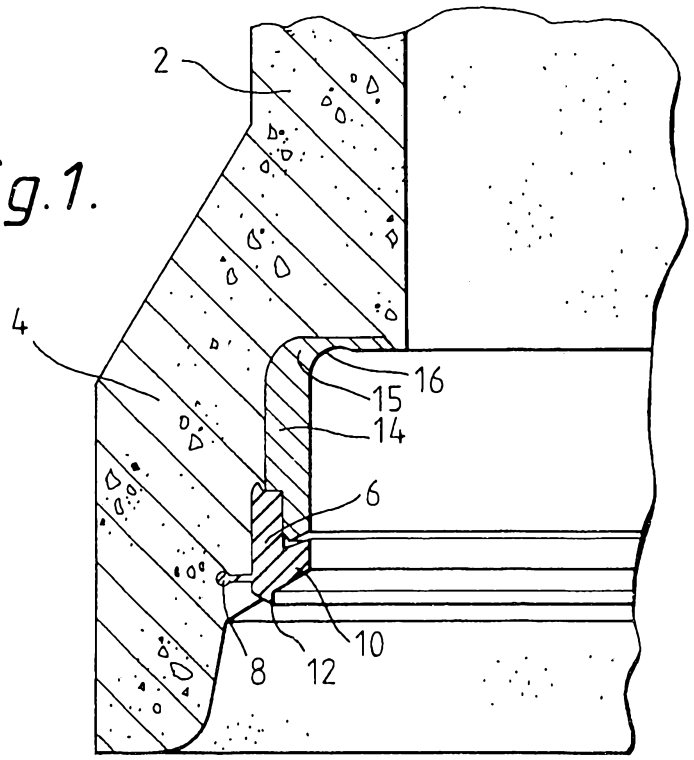


Fig.2.