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(54) A riser with floating cover.

(57) A riser pipe with a floating gully covering comprising a covering rim (17) connected at a socket (12) to the riser pipe (10). There is provided on the outside of the riser pipe a circumferential spherically curved bulge (15) having the center of curvature on the center axis of the riser pipe, and there is provided on the inside of the socket an annular concavity adapted to the spherical curvature of the bulge, said concavity bearing against the bulge maintaining the riser pipe and the socket in mutual engagement allowing the gully covering to be universally tilted in relation to the riser pipe. According to the invention this concavity is formed by a strip element (19) provided between the socket (12) and the pipe (10) and consisting of plastics having good bearing properties, said element being received by an annular groove (17) in the inside cylindrical surface of ther socket.

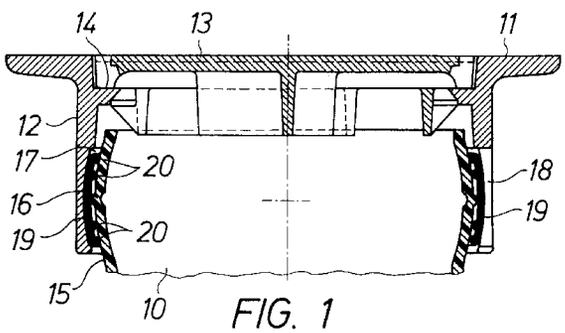

FIG. 1

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The present invention relates to a riser pipe with floating gully covering comprising a covering rim connected at a socket to the riser pipe.

It is known to construct for example sewage gullies with a telescopic riser pipe in order that a gully covering connected to the riser pipe can be easily adjusted when the roadway is reconstructed, to be adapted to the level of the roadway, and in order that the gully covering is able to follow existing ground movements and will stay flush with the roadway. Gully coverings having this mobility or adaptability commonly are termed floating gully coverings.

More particularly the invention relates to a riser pipe with a floating gully covering of the kind referred to above wherein there is provided on the outside of the riser pipe a circumferential spherically curved bulge having the center of curvature on the center axis of the riser pipe, and there is provided on the inside of the socket an annular concavity adapted to the spherical curvature of the bulge, said concavity bearing against the bulge maintaining the riser pipe and the socket in mutual engagement allowing the gully covering to be universally tilted in relation to the riser pipe. Thus, the connection between the riser pipe and the covering rim is formed by a ball joint which allows the gully covering to be angled in relation to the telescope pipe such that the covering can be inclined in order to be adapted to existing slope of the ground surface.

SE-B-398 904 discloses a riser pipe with a floating gully covering, constructed in said manner, the pipe wall and the socket being curved to form matching spherical surfaces. Although the intended purpose to allow angling of the gully covering is achieved, this prior art embodiment is difficult to manufacture because one of the two elements forming the ball joint - the riser pipe or the socket of the curved - in the manufacture before the covered shape is imparted thereto has to be passed into or over the other element in order then to be curved. This method of manufacture is complicated and cumbersome. Alternatively, one element, the riser pipe or the socket, can be slotted so that the elements can be pulled together by the slotted element yielding resiliently, but also this involves a cumbersome method of manufacture.

The object of the invention is to simplify considerably the manufacture of a riser pipe with a floating gully covering of the kind referred to herein, and this object is achieved by providing a riser pipe with a floating gully covering of said kind having the characterizing features of claim 1.

In order to explain the invention in more detail reference is made to the accompanying drawing which discloses an illustrative embodiment of the invention and wherein

FIG 1 is a vertical cross sectional view of a riser pipe with a floating gully covering in horizontal position,

FIG 2 is a vertical cross sectional view as in FIG 1 but with the gully covering tilted in relation to the riser pipe, and

FIG 3 is a fragmentary horizontal cross sectional view of the socket of the gully covering.

In the drawing there is shown a pipe 10 which can be assumed to be made of plastics and can form the upper portion of an underground telescopic riser pipe. At the upper end of the pipe a gully covering is provided which can be made of cast iron or plastics and comprises a covering rim 11 which should be flush e.g. with the surface of a roadway and is integral with a depending connection socket 12. The gully covering also comprises a gully cover 13 supported by a shoulder 14 in the rim. The upper surface of the cover is flush with the upper surface of the rim.

The pipe 10 at the upper end thereof is shaped to form a spherically curved outside surface 15 the center of curvature of which being located on the center axis of the pipe. Centrally of said spherically curved surface there is formed an annular rib 16.

In the inner side of the socket 12 a shallow annular groove is provided said groove having a spherically curved bottom surface and the center of curvature thereof being located on the center axis of the socket. In the socket 12 there is also provided a through passage 18 joining said annular groove tangentially as shown in FIG 3.

The difference between the inner diameter of the socket 12 and the maximum outer diameter of the shaped end of the pipe 10 is sufficient to allow the socket to be passed over the pipe end. When this has been done an elastically flexible strip element 19, preferably extruded of suitable plastics having good bearing properties has been inserted from the outside into the groove 17 through the passage 18 in order to interconnect the covering and the pipe. Said element has a smooth outside surface and this surface preferably is plane initially. However, after insertion of the element into the groove 17 the surface has adjusted to the curved bottom of the groove so that the element is curved transversally along the bottom. The element 19 adjacent the longitudinal edges thereof has two mutually spaced ribs 20 at each side of the annular rib 16, the annular rib 16 and the ribs 20 having such height that the element and the pipe interengage at these ribs.

When the element 19 is located in the groove 17 the gully covering 11 and the pipe 10 are effectively interlocked axially, the gully covering being easily rotated and tilted universally in relation to the pipe to allow adjustment of the position of the gully covering to existing slope of the ground surface. Thus, there is provided by the invention in a simple manner a ball joint connection beween the covering rim and the pipe. A spherical surface can be formed on the pipe by a simple working operation.

Also, the provision of an inside annular groove in the socket of the gully covering involves no difficulties. The element 19 can be extruded and, thus, also this element can be manufactured by a simple method of manufacture. The gully covering and the pipe are interconnected by the element 19 being pushed into the groove 17 through the passage 18, and also this working operation is not complicated.

Suitable materials for the element 19 is softened PCV and hard rubber.

The spherical surface on the pipe 10 in the simplest way is provided by shaping the pipe but it is of course also possible to mount on the cylindrical pipe a ring having a cylindral inside surface and a spherically curved outside surface. It is not necessary that the groove 17 is continuous over the entire circumference of the socket. This groove can be limited to the peripherally spaced raised portions on the inside surface of the socket.

In the embodiment described the element 19 and the surface 15 interengage at the ribs 16 and 20 but the element and the surface can also interengage directly. The ribs limit tilting of the covering rim and prevent the rim from being pulled off the pipe by the rim being tilted.

Claims

1. A riser pipe with a floating gully covering comprising a covering rim (17) connected at a socket (12) to the riser pipe (10), wherein there is provided on the outside of the riser pipe a circumferential spherically curved bulge (15) having the center of curvature on the center axis of the riser pipe, and there is provided on the inside of the socket an annular concavity adapted to the spherical curvature of the bulge, said concavity bearing against the bulge maintaining the riser pipe and the socket in mutual engagement allowing the gully covering to be universally tilted in relation to the riser pipe, **characterized** in that the concavity is formed by a strip element (19) provided between the socket (12) and the pipe (10) and consisting of plastics having good bearing properties, said element being received by an annular groove (17) in the inside cylindrical surface of the socket, said groove being available for the insertion of the element through a passage joining the groove substantially tangentially and opening at the outside of the socket.

2. Riser pipe with a floating gully covering as in claim 1, **characterized** in that the groove (17) has a curved bottom and that the element (19) which is flat per se is curved along the bottom.

3. Riser pipe with a floating gully covering as in claim 1 or 2, **characterized** in that a circumferential annular rib (16) is provided centrally on the spherically curved surface (15) of the pipe (10).

4. Riser pipe with a floating gully covering as in claim 3, **characterized** in that the element (19) has at least one circumferential rib (20) at each side of the annular rib (16) of the pipe at the side of the element facing the pipe (10).

5. Riser pipe with a floating gully covering as in any of claims 1-4, **characterized** in that the annular groove (17) in the inside of the socket (12) extends continuously over the total circumference of the socket.

6. Riser pipe with a floating gully covering as in any of claims 1-5, **characterized** in that the element (19) consists of softened PVC.

7. Riser pipe with a floating gully covering as in any of claims 1-5, **characterized** in that the element (19) consists of hard rubber.

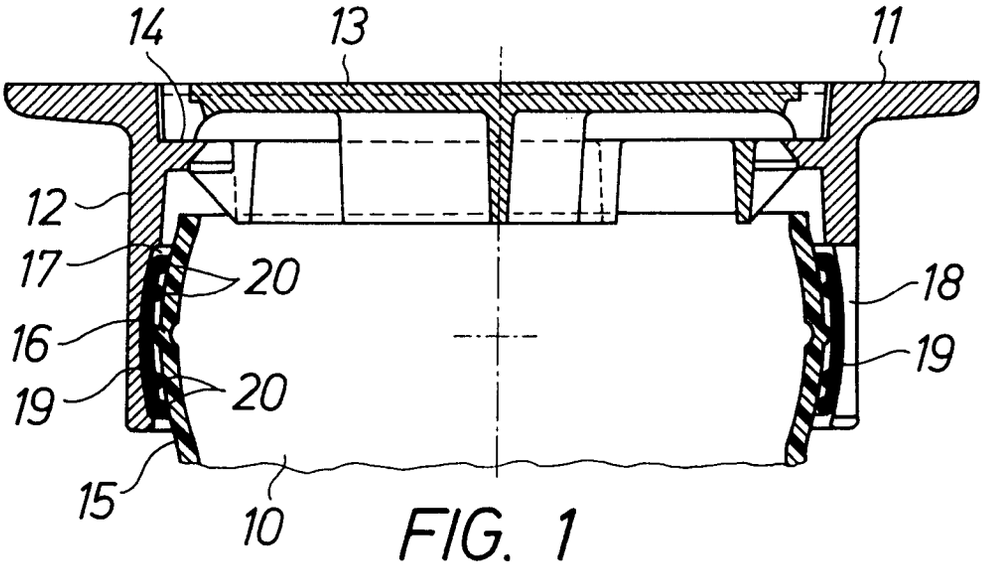

FIG. 1

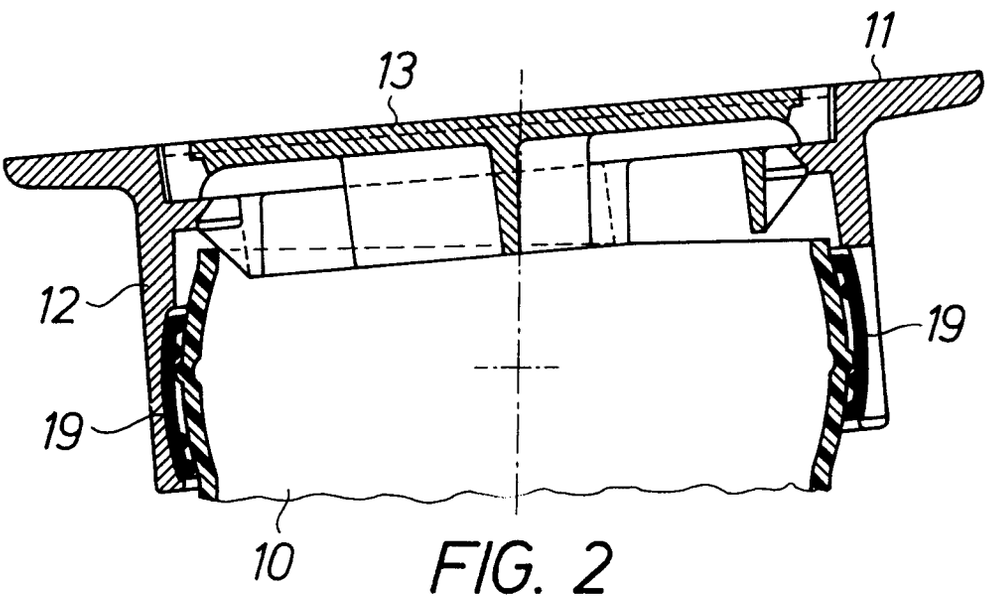

FIG. 2

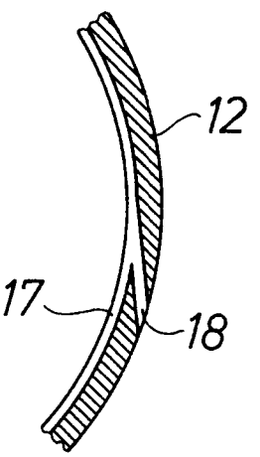

FIG. 3

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 92 85 0225

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A,D	SE-B-398 904 (GUSTAVSBERG LUBONYL) * the whole document * ---	1	E02D29/14
A	CH-A-435 135 (GUBSER) * page 1, left column, line 24 - page 1, left column, line 42; figure 1 * ---	1	
A	DE-A-2 509 971 (SCHÄFER) -----		

TECHNICAL FIELDS SEARCHED (Int. Cl.5)

E02D
E03F

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	04 JANUARY 1993	BELLINGACCI F.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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