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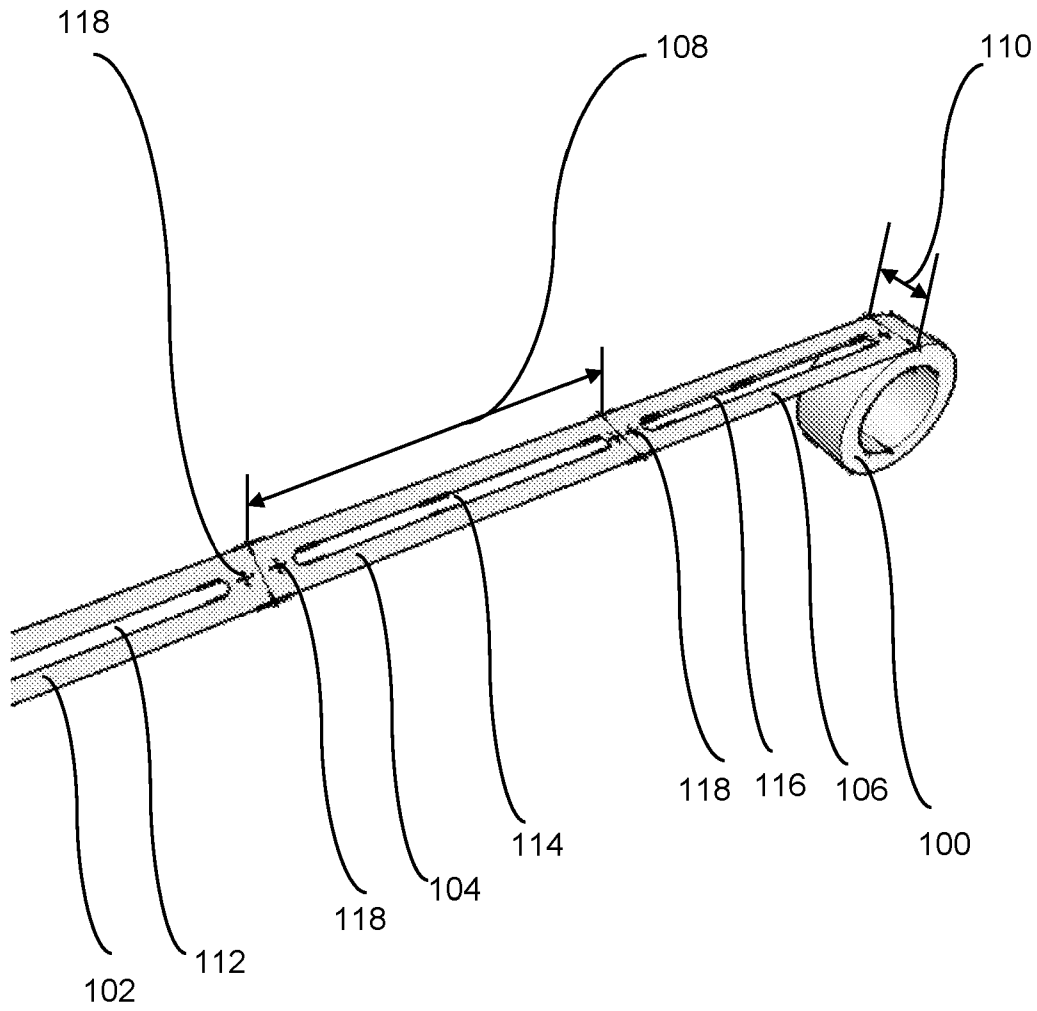


Figure 1

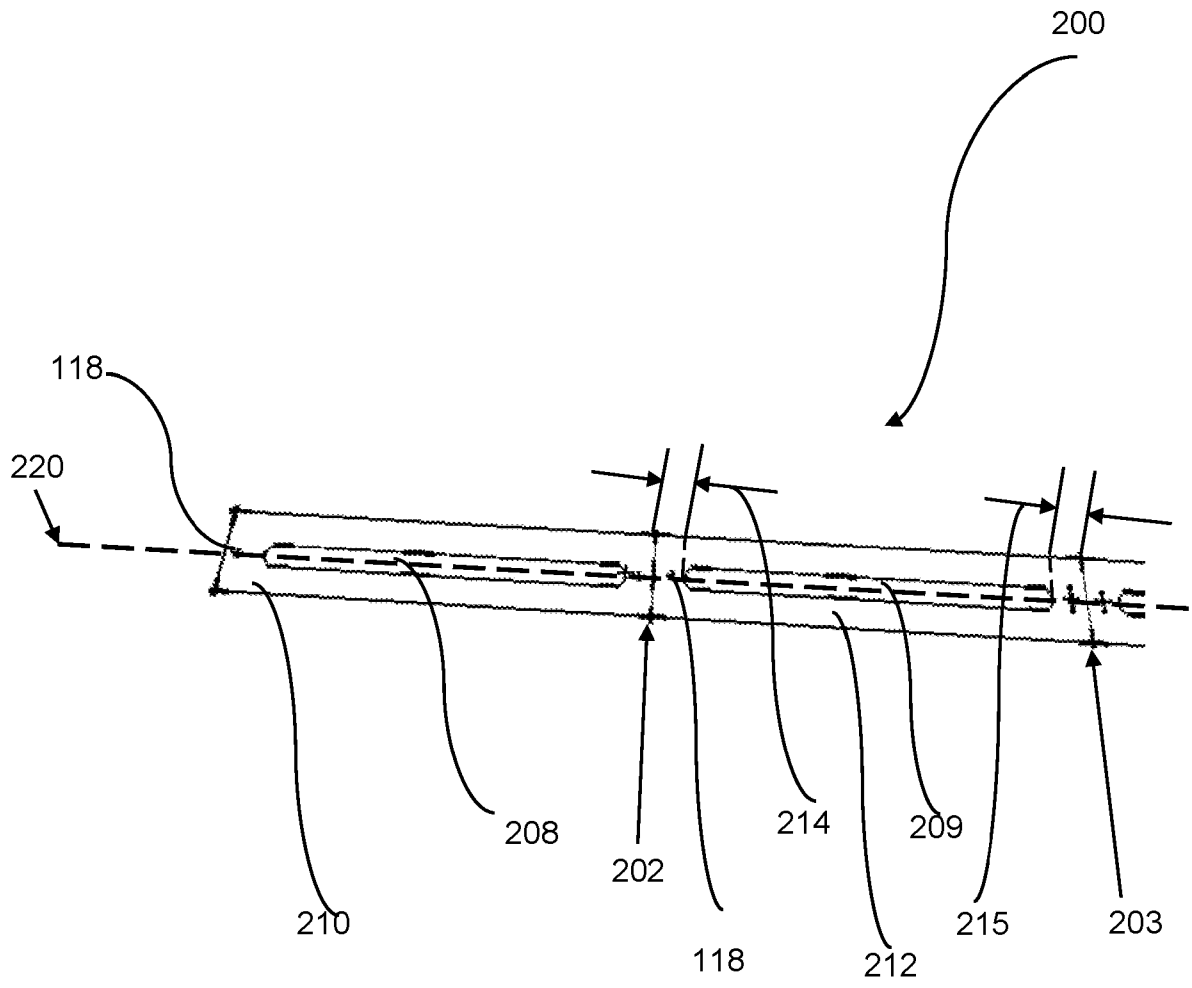


Figure 2

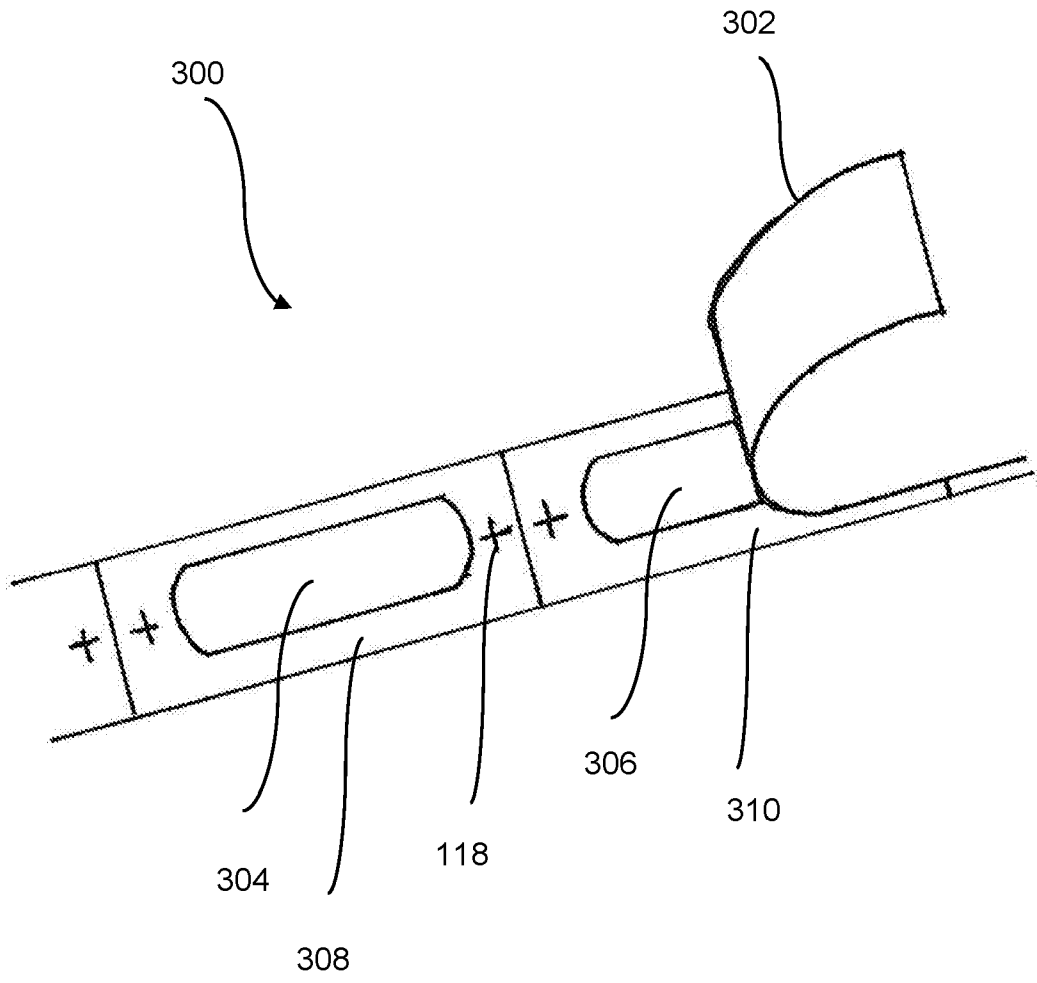


Figure 3

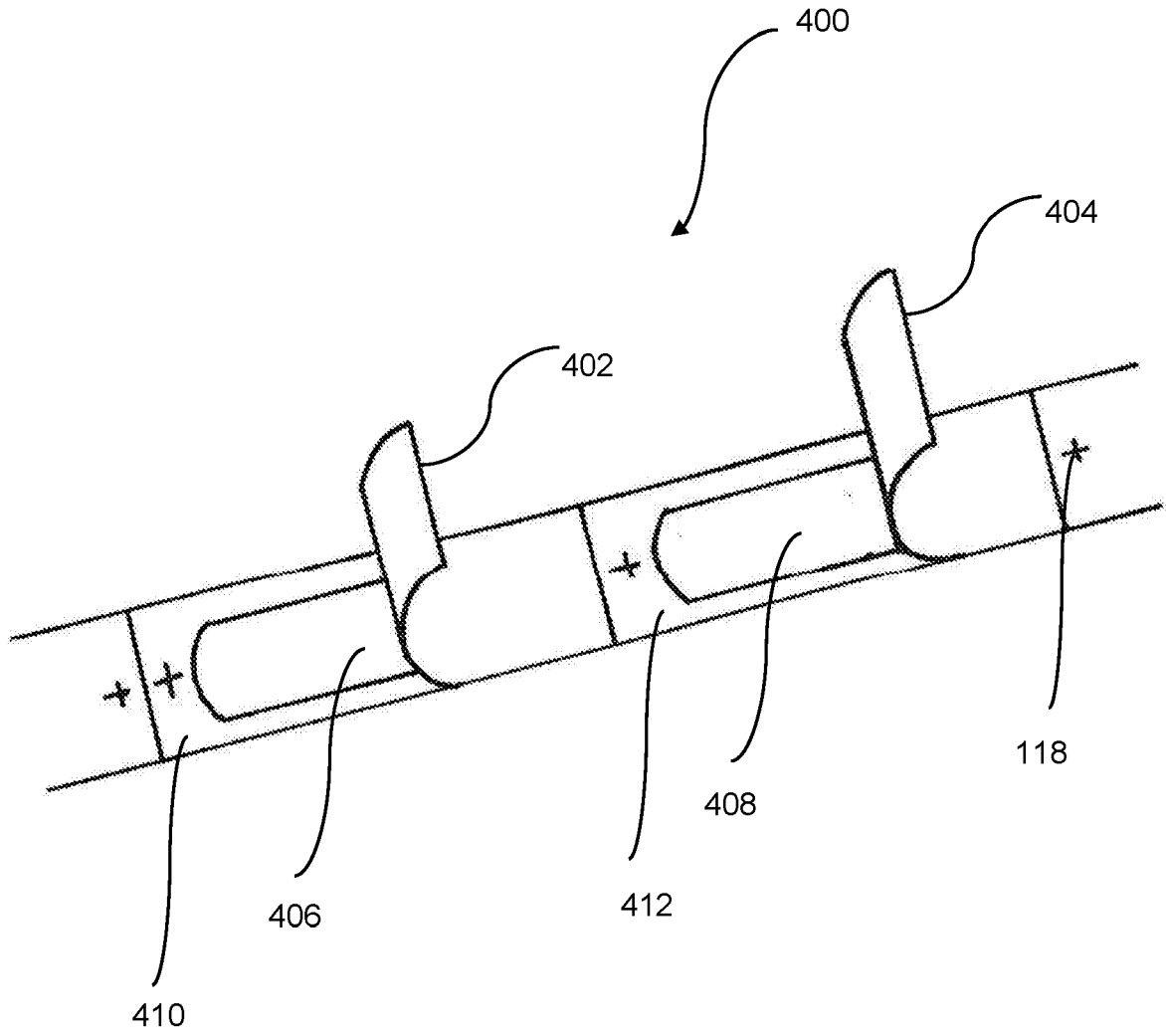


Figure 4

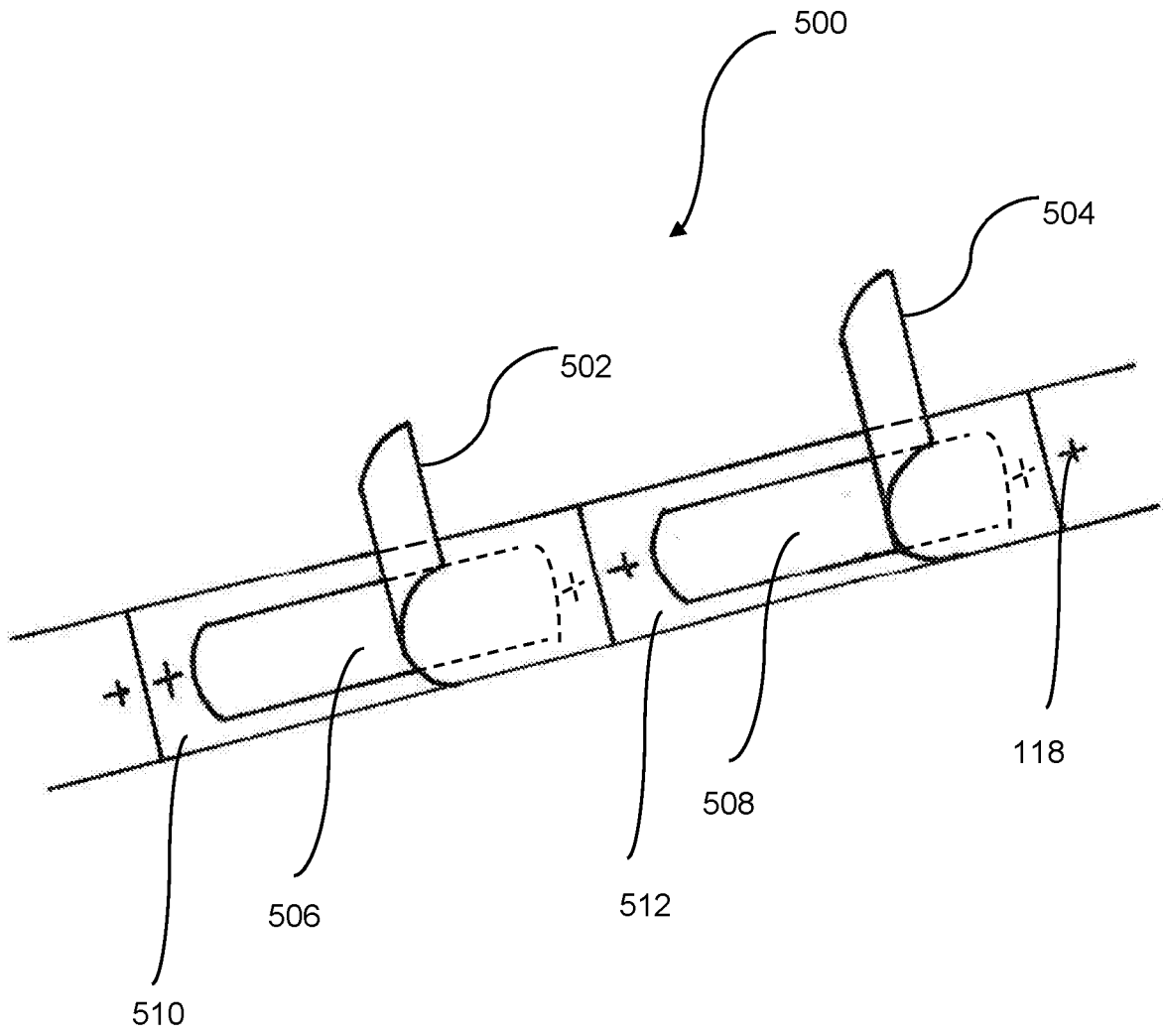


Figure 5

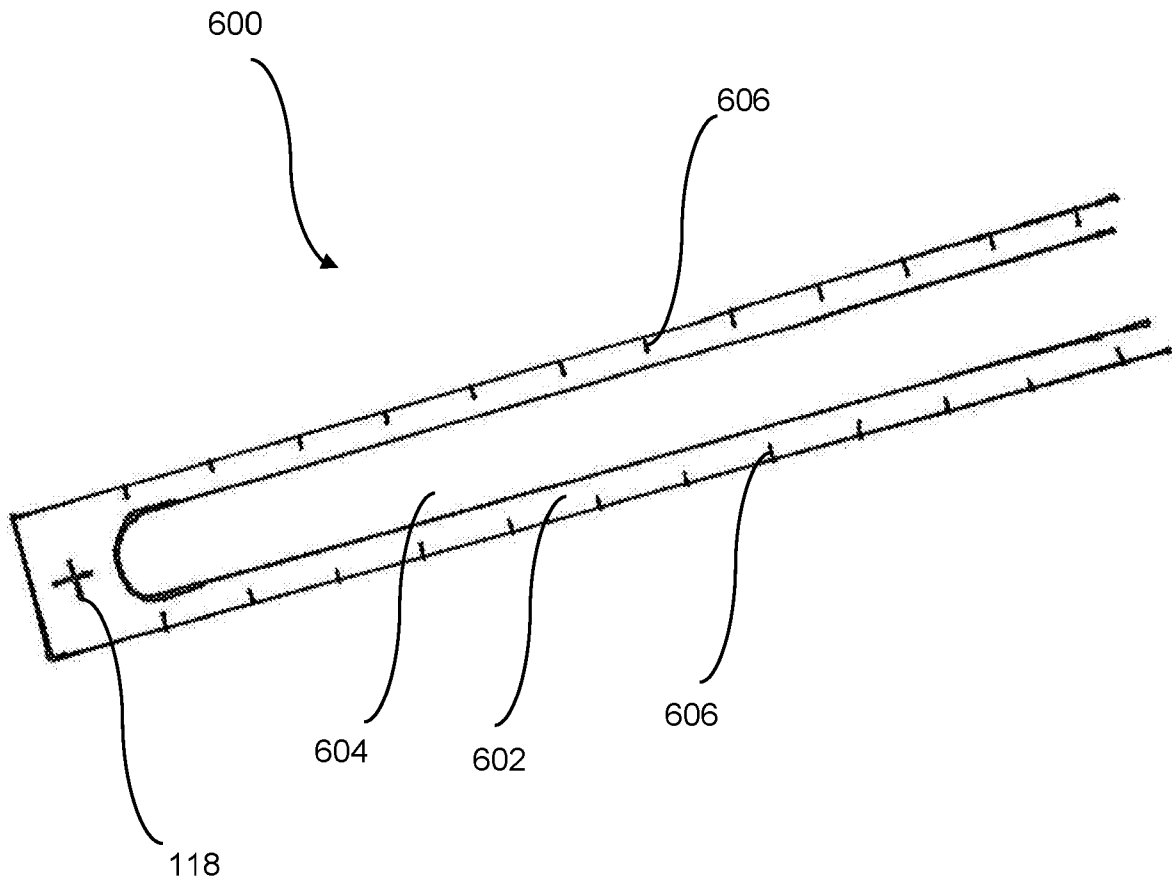


Figure 6

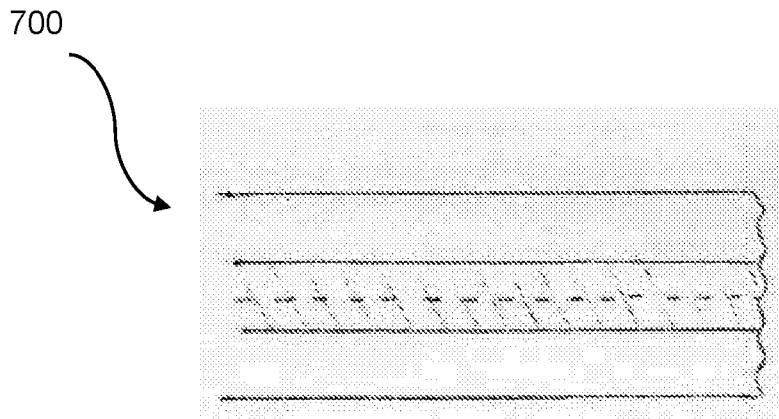


Figure 7a

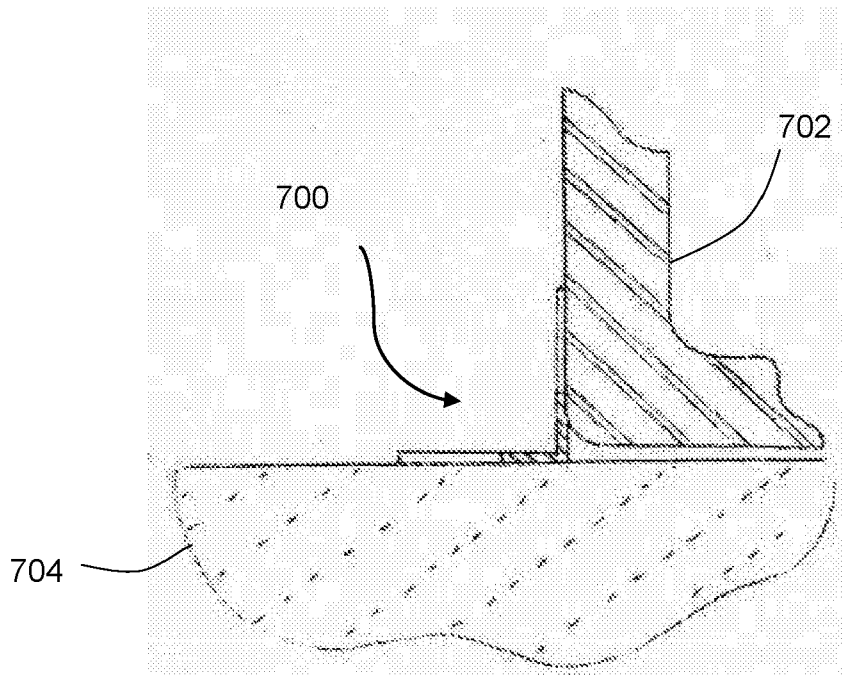


Figure 7b

TAPE FOR USE IN RELATION TO SEAMS AND JOINTS

Field of Invention

[001] The present invention relates to a masking tape for use in relation to a pipe seam or joint. For example, in use, the masking tape provides a guide for applying
5 a coating such as paint, sealant, and the like to the pipe seam or joint.

Background of the Invention

[002] Insulation provides protection and prevents heat loss, which has become increasingly important for pipes intended for the transport of fluids. For example, thermal insulation of subsea pipes improves the safety of oil and gas transportation
10 from offshore wells by preventing formation of waxes or hydrate plugs within the pipes due to cooling of oil or gas composition during transportation.

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[003] Specially constructed insulation jackets (e.g. insulation products from Rockwool®, Armaflex®, Foamblass®, Arma-Check® and Ulva) can be applied to the pipes to provide thermal insulation. The insulation jackets may be made of
15 metal (e.g. stainless steel, galvanised steel or aluminium) or pliable plastic.

[004] When wrapping an insulation jacket around a pipe, the longitudinal edges of the jacket are arranged to abut against each other or in an overlapping relationship to each other. To prevent heat loss, gaps arising from the butting or overlapping edges must be sealed by filling the gaps with a sealant or the like.

20 [005] Sealants are substances used to prevent ingress of fluids, gases or dust through openings in, or joints between, solid materials. They can also be used to suppress noise or vibrations and/or provide thermal or electrical insulation. Different types of sealants have different physical properties, including tensile strength, rigidity, flexibility and viscosity. Some sealants are designed to be
25 temporary, whereas others are designed to be applied permanently and never removed. Although sealants generally have some adhesive properties, they are not adhesives and normally have lower strength than adhesives. They do however offer

superior flexibility, resisting some degree of movement between the substrates to which they are applied.

[006] It is desirable that sealants should not degrade easily, and therefore be insoluble and corrosion resistant. Sealants include silicone, acrylic, polysulphide, water-proof, fire-proof and epoxy sealants, and can be in a liquid, solid, powder or foam form. Mastic sealant is an example of a sealant usually in liquid or paste form.

[007] Different sealants have different curing mechanisms, wherein some are non-reactive, some cure in air and others require chemical curing. Non-reactive sealants include sealing tapes and putties. Air-cured sealants include bitumen and silicone emulsion. Air-cured sealants can take a very long time to cure, and since curing causes a skin to form, may never fully cure if the bead is too large. Chemically reactive sealants include different types of silicone, polyurethane and silane-modified polymers. The curing process of chemically reactive sealants may release toxic fumes or heat, potentially causing safety issues

[008] In most cases, sealing a seam involves tearing off strips of a tape such as masking tape or other suitable tape and covering areas at each side of the seam with separate strips judged to leave a reasonable amount of space therebetween within which a sealant can be applied. It is a very time-consuming and difficult procedure to accurately apply the tape to enable a bead to be formed neatly and evenly within the space, as the two separate strips must be applied at an equal distance from the seam and be kept parallel to each other for the entire length of the seam. If the tape is applied incorrectly, the sealant may be applied unevenly and therefore prone to gaps, and as a result, for example, the loss of heat.

Summary of invention

[009] It is desirable to provide a simplified and convenient way of applying a coating such as a sealant or paint to a seam or joint. It is further desirable to enable the coating to be applied neatly and evenly along the seam or around the joint with less time and effort.

[010] According to a first aspect of the present invention, there is provided a masking tape with an adhesive layer disposed on a first of its surfaces, the tape comprising two or more strips, wherein each of the two or more strips is provided with a longitudinal slot, and wherein the strips are connected together along
5 common edges across the width of the tape.

[011] Preferably, the masking tape further comprises alignment marks which allow longitudinal axes of the slots to be aligned against the seam or joint so as to apply the coating evenly along the seam and joint.

[012] Preferably, the masking tape further comprises one or more films removable
10 from the second surface of the tape, wherein removal of the one or more films exposes at least a portion of the slots.

[013] Alternatively, the masking tape comprises one or more films disposed on the first surface such that removal of the one or more films exposes at least a portion of the slots.

15 [014] Preferably, the one or more films are at least partially transparent.

[015] Preferably, the strips are spaced at regular pre-determined intervals.

[016] Preferably, the common edges are perforated.

[017] Preferably, the masking tape is made from paper.

[018] Preferably, the masking tape has a thickness greater than 0.15mm.

20 **Brief description of drawings**

[019] Embodiments of the present invention will now be described, by way of example only, with reference to the drawings, in which:

[020] Figure 1 illustrates, in schematic form, a tape comprising one or more strips provided with slots, in accordance with an embodiment of the present invention;

[021] Figure 2 illustrates, in schematic form, a tape comprising one or more strips provided with cut-out slots, in accordance with an embodiment of the present invention;

5 [022] Figure 3 illustrates, in schematic form, a tape comprising a film removable from the upper surface of the tape, in accordance with an embodiment of the present invention;

[023] Figure 4 illustrates, in schematic form, a tape comprising a plurality of films removable from the upper surface of the tape, in accordance with an embodiment of the present invention;

10 [024] Figure 5 illustrates, in schematic form, a tape comprising a plurality of partially- transparent films removable from the upper surface of the tape, in accordance with an embodiment of the present invention;

[025] Figure 6 illustrates, in schematic form, a tape comprising one strip provided with one slot; and

15 [026] Figure 7a shows an example of a tape in accordance with the present invention and figure 7b is a cross sectional view of the tape of figure 7a applied to the junction between a floor/ceiling and wall.

Description of embodiments

20 [027] In the Figures, elements labelled with reference numerals found in the preceding Figures represent the same elements as described for the respective preceding Figure. For example, feature 118 in Figure 2 corresponds to the same feature 118 as described with reference to Figure 1.

[028] Figure 1 illustrates, in schematic form, a tape 100 according to an embodiment of the present invention. The tape 100 comprises strips 102, 104 and 25 106, which can be wrapped along a seam or around a joint. The strips (102, 104 and 106) are spaced at regular pre-determined intervals 108 across the width 110 of the tape 100. When in use, the length of the tape required to fully cover a seam or

joint with a particular dimensions can be easily calculated. In an example, a pipe has a diameter of 114mm applied with a 50mm-thick layer of insulation. The total diameter of the pipe together with the applied insulation is 214mm given by $114\text{mm} + 2 \times 50\text{mm}$. The full circumference of the pipe and, therefore, the length of the tape required, is 672.38mm, given by $214\text{mm} \times 3.142$ (wherein 3.142 is the approximation for the constant pi). In this example, the strips (102, 104 and 106) of the tape 100 are spaced every 250mm. Dividing the circumference of the pipe by 250mm gives 2.689 and, therefore, three strips of the tape 100 are sufficient to cover the pipe with the length of 672.38mm.

[029] With reference to Figure 1, a slot or channel is provided to each respective strip of the tape 100. For example, slots or channels 112, 114 and 116 are provided to the strips 102, 104 and 106, respectively. The slot or channel clearly and conveniently defines a space to guide the application of a coating thereto, allowing a neat and even finish of the applied coating. The coating may be a sealant (e.g. a silicon sealant or mastic) or paint. According to another embodiment of the present invention (not shown), the tape may comprise a strip to which a plurality of slots or channels are provided.

[030] In more detail, the width 110 of the tape 100 is dependent upon the width of a sealant bead or paint bead required for sealing or painting a seam or joint. In one example, a 3mm bead requires a tape 12mm wide. In the following examples, a 6mm bead requires a tape 20mm wide, a 9 mm bead requires a tape 30mm wide and a 12mm bead requires a tape 36mm to 40mm wide. In another example, the required width of a sealant bead or paint bead determines the width of the slot or channel of the tape. The tape 100 is made from paper thicker than that which is normally used for masking tapes. In this example, the tape 100 has a thickness greater than 0.15mm. Furthermore, the tape 100 can be in different colours.

[031] The tape 100 contains alignment marks 118 such as cross hairs on the front surface of the tape 100. In this example, the centre of the alignment marks 118

aligns to the centre of the slot (112, 114 or 116), so that when wrapping the strip (102, 104 or 106) along a seam, by aligning the alignment marks 118 against the seam, an even amount of space along the seam can be identified by the slot.

[032] According to an embodiment of the present invention, as shown in Figure 2, a tape 200 comprises strips 210 and 212, wherein the strips are connected together along common edges 202 and 203 across the width of the tape 200. In this example, the common edges (202 and 203) are perforated, allowing the strips to be cut or torn off the tape with ease.

[033] With reference to Figure 2, a slot 208 provided for the strip 210 and a slot 209 provided for the strip 212 are cut-out slots, which are oriented longitudinally along the tape 200. In this example, the cut-out slots 208 and 209 are located in the centre of the strips 210 and 212, respectively. For example, the distance between one end of the slot 209 and its nearest perforated common edge 202, indicated by 214, is 25mm, which is the same for the distance between the other end of the slot 209 and its nearest perforated common edge 203, indicated by 215. According to another embodiment of the present invention (not shown), the slots are located off-centre in the respective strips of the tape.

[034] When applying a strip of the tape 200, for example the strip 210, to seal a seam 220, users are able to observe the seam 220 through the cut-out slot 208 of the strip 210 and align the longitudinal axis of the cut-out slot 208 against the longitudinal axis of the seam 220 so that an even amount of space is defined at each side of the seam 220 to avoid leaving gaps. This makes coating a seam or joint more accurate and efficient.

[035] According to an embodiment of the present invention, as shown in Figure 3, a tape 300 comprises strips 308 and 310 and a removable film 302. Removal of the film 302 from the front surface of the tape 300 exposes at least a portion of slots 304 and 306 provided to the respective strips 308 and 310. In this example, the width of the film 302 is wider than the width of the slots 304 or 306.

According to another embodiment of the present invention (not shown), the width of the film is configured to fit the width of the slots of the tape.

[036] According to an embodiment of the present invention, as shown in Figure 4, the tape 400 comprises strips 410 and 412 and a plurality of films 402 and 404.

5 Removal of the films 402 and 404 from the front surface of the tape 400 exposes at least a portion of slots 406 and 408 provided to the respective strips 410 and 412. In this example, the films 402 and 404 are configured to fit the width of the tape 400. The tape 400 comprises an adhesive layer disposed on the back surface of the tape facing a seam or joint. The tape according to another embodiment (not
10 shown) comprises one or more films disposed on the adhesive layer such that removal of the one or more films exposes adhesive agents disposed on the adhesive layer and at least a portion of the slots.

[037] An example of use of the tape 400 for sealing a seam involves cutting off, or tearing from, the tape one or more strips required to fully cover the length of the
15 seam, aligning the strips against the seam guided by the alignment marks 118, wrapping the strips along the seam, removing the films to expose the slots provided to the strips, and applying a sealant to the space defined by the slots.

[038] According to an embodiment of the present invention, as shown in Figure 5, the tape 500 comprises strips 510 and 512 and a plurality of films 502 and 504.

20 Removal of the films 502 and 504 from the front surface of the tape 500 exposes at least a portion of slots 506 and 508 provided to the respective strips 510 and 512. In this example, the films 502 and 504 of the tape 500 are at least partially transparent so that outlines of the slots (506 and 508) can be seen through the films. An example of use of the tape 500 for sealing a seam involves cutting off, or
25 tearing from, the tape 500 one or more strips required to fully cover the length of the seam, aligning the strips against the seam guided by the slots which are visible through the partially-transparent films, wrapping the strips along the seam,

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removing the films to expose the slots provided to the strips, and applying a sealant to the space defined by the slots.

[039] In another example of use of the tape 500 for sealing a seam involves cutting off, or tearing from, the tape 500 one or more strips required to fully cover
5 the length of the seam, removing the films to expose the slots provided to the strips, aligning the strips against the seam guided by the slots, wrapping the strips along the seam, and applying a sealant to the space defined by the slots.

[040] Figure 6 illustrates, in schematic form, a tape 600 which is exemplary of some of the principles of the invention, but is not an embodiment. The tape 600
10 comprises one strip 602 provided with one slot or channel 604. The tape 600 contains length marks 606 at regular intervals across the length of the tape 600 (e.g. 100mm), which provide indications of the length of the tape without using a rule. In an example, the tape 600 has an adhesive backing.

[041] Figure 6 a shows a section of tape 700. Figure 7b shows the section of tape
15 folded at 90° to allow a sealant to be applied to seal a wall 702 at the junction with a ceiling or floor 704.

[042] Improvements and modifications may be incorporated herein without deviating from the scope of the invention.

Claims

1. A masking tape with an adhesive layer disposed on a first of its surfaces, the tape comprising two or more strips, wherein each of the two or more strips is provided with a longitudinal slot, and wherein the strips are connected together
5 along common edges across the width of the tape.
2. The masking tape of claim 1, comprising alignment marks which allow longitudinal axes of the slots to be aligned against a seam or joint.
3. The masking tape of claim 1 or claim 2, comprising one or more films removable from the second surface of the tape, wherein removal of the one or
10 more films exposes at least a portion of the slots.
4. The masking tape of any preceding claim, comprising one or more films disposed on the first surface of the tape such that removal of the one or more films exposes at least a portion of the slots.
5. The masking tape of claims 3 or 4, wherein the one or more films are at
15 least partially transparent.
6. The masking tape of any preceding claim, wherein the strips are spaced at regular pre-determined intervals.
7. The masking tape of any preceding claim, wherein the common edges are perforated.
- 20 8. The masking tape of any preceding claim, wherein the tape is made from paper.
9. The masking tape of any preceding claim, wherein the tape has a thickness greater than 0.15mm.

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