

Description

PIPING COVER ASSEMBLING SET

Technical Field

[0001]

The present invention relates to a piping cover assembling set and, more particularly, to a piping cover assembling set capable of forming a piping cover easily and rapidly no matter how intricate the shape of a portion requiring the piping cover is.

Background Art

[0002]

Conventionally, in the existing above-ground open-system piping equipment in which pipelines consisting of straight pipes, T tubes, elbow tubes or L tubes, and the like are connected via connecting members such as joints, there has been known a piping cover capable of temporarily preventing leakage of a fluid, such as a liquid or a gas, flowing in the pipeline by wrapping each pipe or connecting member from the outside with a resin-made sheet and by sealing it tighteningly, and thereby capable of preventing surrounding pollution and environmental destruction (Patent Document 1). This piping cover is configured so that the interior thereof is visible, so that the maintenance and inspection work of the pipeline can easily be performed

from the outside visually.

[0003]

Generally, there are many kinds of combinations of the pipes and the connecting members of piping equipment, and each combination has a different shape. Therefore, it is necessary to prepare the piping cover so as to correspond to the shape of each kind.

[0004]

However, the piping equipment has a huge number of portions requiring the piping cover, and the shapes of those portions are vastly different. Therefore, to prepare the piping covers one by one according to the shape of the portion requiring the piping cover results in an enormous waste of time and labor.

[0005]

For example, in plant equipment in which a huge number of pipes are laid, after the plant equipment has been completed, it is necessary to observe the shapes of pipes and connecting members after the plant equipment has been completed, to design piping covers according to these shapes, and to prepare the piping covers one by one according to the shapes by beginning from the cutout work of a resin-made sheet, which process requires much time. Therefore, in plant equipment having a fear of fluid leakage, even if the plant equipment has been completed, the plant equipment cannot be operated until the piping covers are mounted, and therefore the start timing of plant

equipment is delayed significantly depending on the construction period of the piping covers.

[0006]

Also, in plant equipment being operated at the present as well, in the case where the fluid leaks due to deterioration or the like and therefore the piping covers become necessary, the operation of plant equipment must be stopped until the piping covers are mounted. However, if the operation of plant equipment is stopped even temporarily, an enormous loss is caused. Therefore, it is desirable that the piping covers be mounted as soon as possible to restart the operation of plant equipment at an early stage.

[0007]

Further, in the case where the operation of plant equipment cannot be stopped soon even if fluid leakage occurs, surrounding pollution caused by the leaking fluid is feared. In such a case as well, it is necessary to mount the piping covers as soon as possible to prevent, at an early stage, the surrounding pollution caused by the leaking fluid.

[0008]

On the other hand, in order to mount the piping cover easily and rapidly in the portion requiring the piping cover without the need for beginning from the cutout work of a resin-made sheet according to the shape of that portion, a method can be thought of in which a piping cover

having been prepared in advance is selected and used according to the shape of that portion. However, it is realistically impossible to prepare the piping cover in advance for each shape of the portion requiring the piping cover.

Patent Document 1: Japanese Unexamined Utility Model
Application Publication No. 4-50794

Disclosure of Invention

Problems to be Solved by the Invention

[0009]

The inventor made studies in detail on the pipes and connecting members of various shapes used for piping equipment and the like. Figures 15 and 16 show the results of studies made by wrapping all kinds of pipes and connecting members with piping covers. As the result of studies, the inventor found that all kinds of pipes and connecting members can be disassembled to only four kinds of common elements, and all kinds of pipes and connecting members can be wrapped by appropriately selecting elements from these four kinds of elements according to the shape of the portion requiring the piping cover and by welding the selected elements to each other and assembling the piping cover.

[0010]

Since the piping covers have intricate shapes matching various shapes of the pipes and connecting members,

it is thought that the welding parts between the elements also have intricate shapes. As a result, the welding work is troublesome, and the weld may be incomplete. Since some fluids flowing in the pipes are harmful for human bodies and surrounding environment, it is desirable that the sealing ability of the welding part between the elements be high, and the sealing state be reliable.

[0011]

The inventor found that by disassembling the piping covers to only four kinds of elements, the sealing ability between the elements can be made high, and the sealing state can also be reliable, and finally completed the present invention.

[0012]

Accordingly, an object of the present invention is to provide a piping cover assembling set capable of forming piping covers having all shapes easily and rapidly by selecting four kinds of elements of piping covers according to a portion requiring the piping cover and by welding the elements to each other without the need for beginning from the cutout work of a resin-made sheet and without a fear of fluid leakage from the welding part.

[0013]

Other objects of the present invention will become apparent from the description below.

Means for Solving the Problems

[0014]

The above object is achieved by the inventions described below

[0015]

The invention described in claim 1 provides a piping cover assembling set in which a resin-made sheet is formed into a tubular shape or a bag shape to wrap, from the outside, a connecting portion between pipes, a connecting portion between a pipe and a pipe fitting, a connecting portion between pipe fittings, a pipe existing in the connecting portion, or the whole of pipe fittings provided in piping equipment on the ground, under the ground, under a floor, or in the ceiling cavity, by which a fluid leaking or scattering from the connecting portion is stored temporarily, wherein the piping cover assembling set has four kinds of elements of a conical element, a cylindrical element, a curved tube shaped element, and a T-shaped element; the conical element is formed into a conical shape by connecting the end sides of a substantially fan shaped resin-made sheet to each other, and a large-diameter opening of the conical shape is a welding part welded to the opening of another element and a small-diameter opening of the conical shape is an insertion port for the pipe; the cylindrical element is formed into a cylindrical shape by connecting the end sides of a rectangularly shaped resin-made sheet to each other, and openings at both ends of the cylindrical shape are welding parts welded to the opening

of another element including another cylindrical element; the curved tube shaped element is formed into a curved tube shape by connecting the end sides of a resin-made sheet to each other, and openings at both ends of the curved tube shape are arranged so that the center axis line of one opening and the center axis line of the other opening intersect and the openings are welding parts welded to the opening of another element including another curved tube shaped element; and the T-shaped element is formed by an octagonally shaped resin-made sheet so that two end sides for forming a first opening and a second opening, which are welding parts welded to the opening of another element including another T-shaped element, are arranged opposedly, two end sides for forming a third opening that is open in the direction at right angles to the center axis lines of the first and second openings are arranged opposedly, and parts between the end side forming the first opening and the end side forming the third opening and parts between the end side forming the second opening and the end side forming the third opening each are connected to each other, by which the first opening, the second opening, and the third opening are formed.

[0016]

The invention described in claim 2 provides the piping cover assembling set according to claim 1, wherein the connecting part of the end sides in the conical element, cylindrical element, curved tube shaped element, and T-

shaped element is an attaching part of an engagement element for closing the elements into a bag shape.

Effect of the Invention

[0017]

According to the present invention, no matter how intricate the shapes of the pipes and connecting members are, the piping cover having a necessary shape, in which the sealing ability of the weld part is high, can be assembled merely by selecting a combination of four kinds of elements of the conical element, cylindrical element, curved tube shaped element, and T-shaped element.

Therefore, there is no need for beginning from the cutout work of a resin-made sheet according to the portion requiring the piping cover. Also, the pipe cover having all shapes, which has no fear of fluid leakage from the welding part, can be formed easily and rapidly.

Brief Description of Drawings

[0018]

Figure 1 is a perspective view of a piping cover assembling set in accordance with the present invention;

Figure 2(a) is a development view showing a conical element, and Figure 2(b) is a perspective view showing a state in which the conical element is formed into a conical shape;

Figure 3(a) is a development view showing a

cylindrical element, and Figure 3(b) is a perspective view showing a state in which the cylindrical element is formed into a cylindrical shape;

Figure 4(a) is a development view showing a curved tube shaped element, and Figure 4(b) is a perspective view showing a state in which the curved tube shaped element is formed into a tubular shape;

Figure 5 is a development view showing components of a curved tube shaped element;

Figure 6 is a perspective view showing another mode of a curved tube shaped element;

Figure 7(a) is a development view showing a T-shaped element, and Figure 7(b) is a perspective view showing a state in which the T-shaped element is formed into a tubular shape;

Figure 8 is a view showing an application example of a piping cover;

Figure 9 is a view showing a configuration example of a piping cover;

Figure 10 is a view showing an application example of a piping cover;

Figure 11 is a view showing an application example of a piping cover;

Figure 12 is a view showing an application example of a piping cover;

Figure 13 is a view showing an application example of a piping cover;

Figure 14 is a sectional view showing another example of an engagement element;

Figure 15 is a view showing the results of studies made by wrapping all kinds of pipes and connecting members with piping covers; and

Figure 16 is a view showing the results of studies made by wrapping all kinds of pipes and connecting members with piping covers.

Explanations of Letters or Numerals

[0019]

1: conical element

1A, 1B: opening

10: attaching part

11: large arcuate end side

12: small arcuate end side

13, 14: end side

2: cylindrical element

2A, 2B: opening

20: attaching part

21, 22, 23, 24: end side

3: curved tube shaped element

3A, 3B: opening

3a, 3b: sheet

30: attaching part

31, 31a, 31b: arcuate end side

32, 33, 34, 35, 36, 37: end side

4: T-shaped element

4A: opening (first opening)

4B: opening (second opening)

4C: opening (third opening)

40: attaching part

41, 42: large end side

43, 44: medium end side

45, 46, 47, 48: small end side

5: fastener (engagement element)

6: slider

7: tightening member

8: face fastener (engagement element)

C1 to C5: piping cover

P1: straight pipe

P2: elbow tube

P3: T tube

F: flange

Best Mode for Carrying Out the Invention

[0020]

An embodiment of the present invention will now be described by reference to the accompanying drawings.

[0021]

Figure 1 shows a piping cover assembling set in accordance with the present invention. This piping cover assembling set is made up of a conical element 1, a cylindrical element 2, a curved tube shaped element 3, and

a T-shaped element 4.

[0022]

The piping cover is a cover for wrapping, from the outside, a connecting portion between pipes for chemicals, oil, pure water, and other fluids, which are laid on the ground, under the ground, under a floor, or in the ceiling cavity, or a connecting portion between the pipe and a pipe fitting, including pipes and pipe fittings existing in the connecting portion, and is formed by using a resin-made sheet. The pipe fittings include a flange, elbow, tee, expansion joint, various valves, a socket, reducer, pressure gage, and the like.

[0023]

Such connecting portions have various shapes according to the combination of pipes and pipe fittings. The present invention is configured so that piping covers for wrapping the connecting portions having various shapes are selected from the above-described four elements 1, 2, 3, and 4 having been formed in advance so as to match the shape of the connecting portion, and the selected elements are assembled, by which the pipe cover can be prepared easily and rapidly.

[0024]

Therefore, the piping cover need not be prepared each time according to various shapes of connecting portions by beginning from the molding and cutout work of a resin-made sheet, so that a piping cover matching the shape of

connecting portion can be prepared easily and rapidly.

[0025]

The resin-made sheet for forming the elements 1, 2, 3, and 4 of the piping cover assembling set in accordance with the present invention is transparent or translucent, and may be colored.

[0026]

The material property of the resin-made sheet is not subject to any special restriction. A synthetic resin having weather resistance, chemical resistance, and oil resistance, which is formed into a sheet shape, may be used.

[0027]

The thickness of the resin-made sheet forming the elements 1, 2, 3, and 4 is preferably in the range of 0.15 to 3.0 mm, further preferably in the range of 0.15 to 2.0 mm.

[0028]

Next, the elements 1, 2, 3, and 4 constituting the piping cover assembling set in accordance with the present invention is explained.

[0029]

Figure 2(a) is a development view showing the conical element, and Figure 2(b) is a perspective view showing a state in which the conical element is formed into a conical shape.

[0030]

The conical element 1 is an element mainly for

forming a sealing portion for sealing the interior of the piping cover by being tightened by using a tightening member such as a tape, a band, or the like with respect to the outer surface of pipe when the piping cover is formed. The conical element 1 is formed, by the resin-made sheet, substantially into a fan shape having a large arcuate end side 11 forming a large circular arc, a small arcuate end side 12 forming a small circular arc, and two end sides 13 and 14 that linearly connect the large arcuate end side 11 and the small arcuate end side 12 to each other.

[0031]

To form the conical element 1 into a conical shape, as indicated by the arrow mark shown in Figure 2(a), the conical element 1 is rounded so that the end sides 13 and 14 are brought close to each other to form a tapered conical shape as shown in Figure 2(b).

[0032]

The conical element 1 formed into a conical shape is provided with a large-diameter opening 1A by forming the large arcuate end side 11 into a substantially circular shape, and is provided with a small-diameter opening 1B by forming the small arcuate end side 12 into a substantially circular shape.

[0033]

The large-diameter opening 1A functions as a welding part for welding the conical element 1 to another element, described later, by aligning the opening 1A with the

opening of another element, and the small-diameter opening 1B functions as a pipe insertion port, described later. The small-diameter opening 1B side serves as a sealing part of sealing the interior of the piping cover.

[0034]

When the piping cover is formed, the conical element 1 is closed so as to be openable by connecting the end sides 13 and 14, which are close to each other, to each other by an engagement element, described later. Therefore, the end sides 13 and 14 serve as an attaching part 10 for the engagement element.

[0035]

Figure 3(a) is a development view showing the cylindrical element, and Figure 3(b) is a perspective view showing a state in which the cylindrical element is formed into a cylindrical shape.

[0036]

The cylindrical element 2 is an element mainly for wrapping a flange portion connecting pipes to each other, and is formed, by the resin-made sheet, into a rectangular shape having four straight end sides 21, 22, 23, and 24.

[0037]

To form the cylindrical element 2 into a cylindrical shape, as indicated by the arrow mark shown in Figure 3(a), the cylindrical element 2 is rounded so that the two opposed end sides 23 and 24 are brought close to each other to form a cylindrical shape as shown in Figure 3(b).

[0038]

The cylindrical element 2 formed into a cylindrical shape is provided with openings 2A and 2B at both ends thereof by forming the two opposed end sides 21 and 22 connected to both ends of the two end sides 23 and 24, which are brought close to each other, into a substantially circular shape.

[0039]

The openings 2A and 2B are formed so as to have the same diameter as that of the large-diameter opening 1A of the conical element 1 by making the lengths of the end sides 21 and 22 equal to the length of the large arcuate end side 11 of the conical element 1. Therefore, the openings 2A and 2B each function as a welding part for welding the cylindrical element 2 to the conical element 1 by aligning the opening 2A or 2B with the large-diameter opening 1A of the conical element 1. Also, the cylindrical element 2 is welded to another cylindrical element 2 by aligning the opening 2A or 2B with the opening 2A or 2B of another cylindrical element 2. Therefore, the openings 2A and 2B each function as a welding part in the case where a long cylindrical element 2 is formed, or as a welding part for welding the cylindrical element 2 to another element, described later, by aligning the opening 2A or 2B with the opening of another element.

[0040]

When the piping cover is formed, the cylindrical

element 2 is closed so as to be openable by connecting the end sides 23 and 24, which are close to each other, to each other by the engagement element, described later.

Therefore, the end sides 23 and 24 serve as an attaching part 20 for the engagement element.

[0041]

Figure 4(a) is a development view showing the curved tube shaped element, and Figure 4(b) is a perspective view showing a state in which the curved tube shaped element is formed into a tubular shape, and Figure 5 is a development view showing components of the curved tube shaped element.

[0042]

The curved tube shaped element 3 is an element mainly for wrapping a connecting portion using an elbow tube in piping equipment, and is formed, by the resin-made sheet, into a curved tube shape as if being cut out of a doughnut shape substantially into a fan shape as shown in Figure 4(b).

[0043]

The curved tube shaped element 3 is symmetrical with an arcuate end side 31 being a boundary, and has a shape in which straight end sides 32 and 33 and end sides 34 and 35 one end of which connects with the end part of the arcuate end side 31 incline so as to come close to each other gradually as they go away from the arcuate end side 31, and the other end of the end side 32 and the other end of the end side 34 are connected to each other by a straight end

side 36 and the other end of the end side 33 and the other end of the end side 35 are connected to each other by a straight end side 37.

[0044]

For this curved tube shaped element 3, it is preferable that as shown in Figure 5, two substantially fan-shaped sheets 3a and 3b be used, and the arcuate end sides 31a and 31b thereof be bonded or welded to each other to form one arcuate end side 31 because the curved tube shaped element 3 can be prepared easily by being cut out of a planar resin-made sheet.

[0045]

To form the above-described curved tube shaped element 3 into a tubular shape as shown in Figure 4(b), as indicated by the arrow marks shown in Figure 4(a), the end side 36 and the end side 37 are brought close to each other, and the end side 32 and the end side 33 are separated from each other and the end side 34 and the end side 35 are separated from each other.

[0046]

The curved tube shaped element 3 formed into a tubular shape is provided with openings 3A and 3B at both ends by forming the separated end sides 32 and 33 and end sides 34 and 35 into a substantially circular shape. The openings 3A and 3B are arranged in a positional relationship such that the center axis line of one opening 3A and the center axis line of the other opening 3B

intersect with each other.

[0047]

The openings 3A and 3B each are formed so as to have the same diameter as that of the large-diameter opening 1A of the conical element 1 by making each of the total length of the end sides 32 and 33 and the total length of the end sides 34 and 35 equal to the length of the large arcuate end side 11 of the conical element 1. Therefore, the openings 3A and 3B each function as a welding part for welding the curved tube shaped element 3 to the conical element 1 by aligning the opening 3A or 3B with the large-diameter opening 1A of the conical element 1. Also, the openings 3A and 3B each function as a welding part for forming a continuous curved tube shaped element 3 by welding the curved tube shaped element 3 to another curved tube shaped element 3 by aligning the opening 3A or 3B with the opening 3A or 3B of another curved tube shaped element 3. Alternatively, the openings 3A and 3B each function as a welding part for welding the curved tube shaped element 3 to another element, described later, by aligning the opening 3A or 3B with the opening of another element.

[0048]

When the piping cover is formed, the curved tube shaped element 3 is closed so as to be openable by connecting the end sides 36 and 37, which are close to each other, to each other by the engagement element, described later. Therefore, the end sides 36 and 37 serve as an

attaching part 30 for the engagement element.

[0049]

For the curved tube shaped element 3, the attaching part 30 can be provided at a position different from the position shown in Figure 4(b). For example, instead of bonding the arcuate end sides 31a and 31b of the resin-made sheets 3a and 3b shown in Figure 5 to each other, by bonding the end sides 36 and 37 to each other, the arcuate end sides 31a and 31b brought close to each other can be used as the attaching part 30 as shown in Figure 6.

[0050]

The elbow tubes come in various types having a different bend angle such as 45° and 90°. However, the curved tube shaped element 3 can be used by being curved freely according to the bend angle of the elbow tube to which the curved tube shaped element 3 is applied because being formed by a resin-made sheet. Therefore, one kind of the curved tube shaped element 3 can be used even in the case where a plurality of types of elbow tubes having different bend angles are wrapped.

[0051]

Figure 7(a) is a development view showing the T-shaped element, and Figure 7(b) is a perspective view showing a state in which the T-shaped element is formed into a tubular shape.

[0052]

The T-shaped element 4 is an element mainly for

wrapping a connecting portion in which pipes intersect with each other in a T shape in the piping equipment, and is formed, by a resin-made sheet, into a octagonal shape having opposedly arranged large end sides 41 and 42 that are longest, medium end sides 43 and 44 that are shorter than the large end sides 41 and 42 and arranged opposedly in the direction substantially at right angles to the large end sides 41 and 42, small end sides 45 and 46 that are shorter than the medium end sides 43 and 44 and connect the large end side 41 to the medium end sides 43 and 44, and small end sides 47 and 48 that connect the large end side 42 to the medium end sides 43 and 44.

[0053]

To form the above-described T-shaped element 4 into a tubular shape as shown in Figure 7(b), as indicated by the arrow marks shown in Figure 7(a), the small end sides 45 and 46 and the small end sides 47 and 48 are rounded so as to be brought close to each other.

[0054]

The T-shaped element 4 formed into a tubular shape is provided with an opening (first opening) 4A and an opening (second opening) 4B arranged opposedly by forming the large end sides 41 and 42 into a substantially circular shape, and is provided with an opening (third opening) 4C by forming the joint of the medium end sides 43 and 44 into a substantially circular shape. The opening 4C is arranged so as to open in the direction substantially at right

angles to the center axis line connecting the centers of the openings 4A and 4B to each other.

[0055]

The openings 4A and 4B each are formed so as to have the same diameter as that of the large-diameter opening 1A of the conical element 1 by making the length of each of the large end sides 41 and 42 equal to the length of the large arcuate end side 11 of the conical element 1. Also, the opening 4C is formed so as to have the same diameter as that of the large-diameter opening 1A of the conical element 1 by making the length of each of the medium end sides 43 and 44 equal to a half of the length of the large end side 41 or 42, that is, by making the total length of the two medium end sides 43 and 44 equal to the length of the large arcuate end side 11 of the conical element 1. Therefore, the openings 4A, 4B and 4C each function as a welding part for welding the T-shaped element 4 to the conical element 1 by aligning the opening 4A, 4B or 4C with the large-diameter opening 1A of the conical element 1. Also, the openings 4A, 4B and 4C each function as a welding part for forming a continuous T-shaped element 4 by welding the T-shaped element 4 to another T-shaped element 4 by aligning the opening 4A, 4B or 4C with the opening 4A, 4B or 4C of another T-shaped element 4. Alternatively, the openings 4A, 4B and 4C each function as a welding part for welding the T-shaped element 4 to another element, described later, by aligning the opening 4A, 4B or 4C with

the opening of another element.

[0056]

When the piping cover is formed, the T-shaped element 4 is closed so as to be openable by connecting the small end sides 45 and 46, that are close to each other, and the small end sides 47 and 48, that are close to each other, to each other by the engagement elements, described later. Therefore, the small end sides 45 and 46 and the small end sides 47 and 48 serve as attaching parts 40 and 40 for the engagement element.

[0057]

The piping cover in accordance with the present invention can be formed into a desired shape easily and rapidly by appropriately selecting at least two kinds of elements from the piping cover assembling set having the above-described conical element 1, cylindrical element 2, curved tube shaped element 3, and T-shaped element 4 according to a portion requiring the piping cover in the piping equipment and combining the selected elements, and by welding the openings of the elements to each other.

[0058]

For example, Figure 8 shows an application example of a piping cover C1 in which two kinds of elements are combined into a shape matching a joint portion between straight pipes P1 and P1. Symbol F denotes a flange provided in the end part of each of the straight pipes P1 and P1.

[0059]

As shown in Figure 9, the piping cover C1 is formed by combining two conical elements 1 and one cylindrical element 2. Specifically, the piping cover C1 is formed by aligning the attaching parts 10 and 10 of the conical elements 1 and the attaching part 20 of the cylindrical element 2 with each other so as to form a straight line, by welding the large-diameter openings 1A of the conical elements 1 to the openings 2A and 2B of the cylindrical element 2, and then by welding a fastener 5 and 5, which is an engagement element, ranging over the attaching parts 10, 10, and 20. The fastener 5 and 5 is cut according to the length of all of the attaching parts 10, 10, and 20, and is opened and closed by the sliding operation of a slider 6.

[0060]

As shown in Figure 8, for the piping cover C1, after the straight pipes P1 and P1 including the flanges F and F has been wrapped by the piping cover C1, the small-diameter opening 1B and 1B sides of the conical elements 1 and 1 on both sides are directly tightened by using appropriate tightening members 7 each consisting of a packing, an adhesive tape, a tightening band, and the like, or are tightened via packings, spacers, or the like formed of the same material as that of the resin-made sheet, as necessary.

[0061]

If the slider 6 having been used for closing the fasteners 5 and 5 is removed from the fasteners 5 and 5,

the slider 6 does not become a hindrance when the conical elements 1 and 1 are tightened. The fasteners 5 and 5 is preferably formed so that both end parts thereof project about 10 to 20 mm from the small-diameter openings 1B and 1B of the conical elements 1 and 1 to the outside to improve the workability at the time when the slider 6 is attached again to the fastener 5.

[0062]

The piping cover C1 using two kinds of elements of the conical element 1 and the cylindrical element 2 can be formed very easily and rapidly for a portion in which pipelines consisting of straight pipes are connected to each other via flanges without beginning from the cutout work of a resin-made sheet.

[0063]

Similarly, by using two kinds of elements of the conical element 1 and the curved tube shaped element 3 or two kinds of elements of the conical element 1 and the T-shaped element 4 according to the shape of the connecting portion, the piping cover can be formed easily and rapidly.

[0064]

Figure 10 shows an application example of a piping cover C2 in which two kinds of elements are combined into a shape matching a portion in which two straight pipes P1 and P1 are joined by using an elbow tube P2. In this case, in place of the cylindrical element 2 shown in Figure 9, the curved tube shaped element 3 shown in Figure 4 is used to

weld the openings 1A and 1A of the conical elements 1 to the openings 3A and 3B of the curved tube shaped element 3, and the attaching parts 10, 10, and 30 are formed so as to be openable and closable using the fastener (not shown in Figure 10).

[0065]

The piping cover C2 using two kinds of elements of the conical element 1 and the curved tube shaped element 3 can be formed very easily and rapidly for a portion in which pipelines are connected to each other using an elbow tube without beginning from the cutout work of a resin-made sheet.

[0066]

Figure 11 shows an application example of a piping cover C3 in which two kinds of elements are combined into a shape matching a portion in which three straight pipes P1, P1, and P1 are joined by using a T tube P3. In this case, the T-shaped element 4 shown in Figure 7 is used to weld the openings 1A of the conical elements 1 to the openings 4A, 4B and 4C of the T-shaped element 4. For the conical element 1 welded to the third opening 4C of the T-shaped element 4, another attaching part 40 is formed so as to correspond to the two attaching parts 40 and 40 of the T-shaped element 4 by cutting one location ranging from the opening 1A to the opening 1B, and the attaching parts 10, 10, 40, and 40 are formed so as to be openable and closable using the fastener (not shown in Figure 11).

[0067]

The piping cover C3 using two kinds of elements of the conical element 1 and the T-shaped element 4 can be formed very easily and rapidly for a portion in which pipelines consisting of straight pipes are connected to each other so as to cross in a T shape without beginning from the cutout work of a resin-made sheet.

[0068]

The conical element 1 is not an element that must always be provided in the end part of the piping cover. For example, in a portion in which one end of the straight pipe is closed by the flange, the conical element 1 need not be used. For example, one opening 2A (or 2B) of the cylindrical element 2 may be closed merely by using an appropriate resin-made sheet.

[0069]

Further, according to the piping cover assembling set in accordance with the present invention, the formation of the piping cover is not limited to the above-described combination of two kinds of elements, and the piping cover can also be formed by a combination of three or more kinds of elements. In this case, the cylindrical elements 2, the curved tube shaped elements 3, or the T-shaped elements 4 can be combined with each other.

[0070]

For example, Figure 12 shows an application example of a piping cover C4 using three kinds of elements of two

conical elements 1, one cylindrical element 2, and one curved tube shaped element 3.

[0071]

The piping cover C4 can be formed very easily and rapidly without beginning from the cutout work of a resin-made sheet in the case where the whole of a portion in which the two straight pipes P1 and P1 are connected to each other and a portion in which the two straight pipes P1 and P1 are connected to each other via the elbow tube P2 need be wrapped.

[0072]

Also, Figure 13 shows the case where all of the four kinds of elements are used, showing an application example of a piping cover C5 using three conical elements 1, one cylindrical element 2, two curved tube shaped elements 3, and one T-shaped element 4.

[0073]

The piping cover C5 can be formed very easily and rapidly without beginning from the cutout work of a resin-made sheet in the case where the whole of a connecting portion having an intricate shape in which the straight pipe P1, the elbow tube P2, and the T tube P3 are connected to each other, including a portion in which the three straight pipes P1, P1, and P1 are connected to the T tube P3 and a portion in which the two straight pipes P1 and P1 are connected to each other via the two elbow tubes P2 and P2 is wrapped as shown in Figure 13. In particular, the

piping cover C5 can remarkably achieve the effect of the present invention.

[0074]

Further, it will easily be understood that even if the connecting portion has a shape other than the shapes described above, the piping cover having a shape similarly matching the connecting portion having a more intricate shape can be formed easily and rapidly, without beginning from the cutout work of the resin-made sheet, by appropriately combining two or more kinds selected from four kinds of the conical element 1, the cylindrical element 2, the curved tube shaped element 3, and the T-shaped element 4 and welding the openings of these elements to one another. The number of elements selected from four kinds of the elements 1, 2, 3, and 4 is, of course, changed appropriately according to the shape of the connecting portion.

[0075]

Generally, the pipes and connecting members have various standardized sizes. Therefore, the above-described four kinds of elements are formed into a plurality of sizes matching the various sizes of pipes and connecting members, and the above-described four kinds of elements are preferably prepared as a set for each size.

[0076]

Also, the engagement element is not limited to the type in which the above-described fasteners 5 and 5 is

opened and closed by the sliding operation of the slider 6. Any type of the engagement element capable of being configured so as to be able to open and close the attaching parts 10, 20, 30, and 40 of the elements can be used.

[0077]

For example, as another example of engagement element, a face fastener 8 can be used as shown in Figure 14. Figure 14 shows a cross section in the case where the face fastener 8 is used on the cylindrical element 2. One face fastener 8 is attached to the inside of one attaching part 20 of the cylindrical element 2, and the other face fastener 8 is attached to the outside of the other attaching part 20 thereof. By engaging these face fasteners 8 and 8 with each other, the cylindrical element 2 is closed into a bag shape.

[0078]

The face fastener 8 can be applied to other elements 1, 3, and 4 in the same way. Therefore, by providing the face fastener 8 ranging over the whole of two or more kinds of elements, the piping cover formed by these elements can be closed so as to be openable.

[0079]

Thus, according to the piping cover assembling set in accordance with the present invention, the piping cover capable of wrapping the connecting portion having various shapes can be formed easily and rapidly without the need for beginning from the cutout work of a resin-made sheet by

appropriately combining at least two kinds of elements selected from the conical element 1, cylindrical element 2, curved tube shaped element 3, and T-shaped element 4 having a predetermined shape. Therefore, for example, even in the case of plant equipment, the preparation and mounting of piping cover can be completed rapidly, so that the construction period before the start of plant operation can be shortened tremendously.

[0080]

Also, the welding part in which the elements 1, 2, 3, and 4 are welded has a substantially circular shape for any of the openings 1A, 1B, 2A, 2B, 3A, 3B, 4A, 4B, and 4C. Therefore, since the openings are formed merely into one simple line shape, the welding of intricate shape need not be performed, and therefore the welding work is very easy. For this reason, the sealing ability between the elements 1, 2, 3, and 4 is high, and the sealing state can be formed reliably. Therefore, a piping cover having no fear of fluid leakage from the welding part can be assembled.

Claims

1. A piping cover assembling set in which a resin-made sheet is formed into a tubular shape or a bag shape to wrap, from the outside, a connecting portion between pipes, a connecting portion between a pipe and a pipe fitting, a connecting portion between pipe fittings, a pipe existing in the connecting portion, or the whole of pipe fittings provided in piping equipment on the ground, under the ground, under a floor, or in the ceiling cavity, by which a fluid leaking or scattering from the connecting portion is stored temporarily,

wherein the piping cover assembling set has four kinds of elements of a conical element, a cylindrical element, a curved tube shaped element, and a T-shaped element,

the conical element is formed into a conical shape by connecting the end sides of a substantially fan shaped resin-made sheet to each other, and a large-diameter opening of the conical shape is a welding part welded to the opening of another element and a small-diameter opening of the conical shape is an insertion port for the pipe,

the cylindrical element is formed into a cylindrical shape by connecting the end sides of a rectangularly shaped resin-made sheet to each other, and openings at both ends of the cylindrical shape are welding parts welded to the opening of another element including another cylindrical element,

the curved tube shaped element is formed into a curved tube shape by connecting the end sides of a resin-made sheet to each other, and openings at both ends of the curved tube shape are arranged so that the center axis line of one opening and the center axis line of the other opening intersect with each other and the openings are welding parts welded to the opening of another element including another curved tube shaped element, and

the T-shaped element is formed by an octagonally shaped resin-made sheet so that two end sides for forming a first opening and a second opening, which are welding parts welded to the opening of another element including another T-shaped element, are arranged opposedly, two end sides for forming a third opening that is open in the direction at right angles to the center axis lines of the first and second openings are arranged opposedly, and parts between the end side forming the first opening and the end side forming the third opening and parts between the end side forming the second opening and the end side forming the third opening each are connected to each other, by which the first opening, the second opening, and the third opening are formed.

2. The piping cover assembling set according to claim 1, wherein the connecting part of the end sides in the conical element, cylindrical element, curved tube shaped element, and T-shaped element is an attaching part of an engagement element for closing the elements into a bag shape.