CLAIMS

1. A refrigeration apparatus for shipping, comprising:

a casing (11) to be attached to an open end of a container body (2),

the casing (11) having an opening that allows an internal space (20) to communicate with outside;

a temperature sensor (50) configured to detect a temperature of the internal space (20); and

a guide member (60) that extends from the opening to the internal space (20) and guides the temperature sensor (50) to the internal space (20), wherein

air flows around the guide member (60) in a predetermined flow direction,

the guide member (60) has a curved portion (72) that is arranged in the internal space (20) and is curved as viewed from the flow direction of the air,

the temperature sensor (50) includes a detector (51) configured to detect the temperature of the internal space (20) and a lead wire (52) connected to the detector (51), and

the guide member (60) holds the detector (51) and the lead wire (52).

2. The refrigeration apparatus for shipping of claim 1, wherein

the guide member (60) includes a first guide portion (71) extending from the opening and a second guide portion (73) extending continuously from the first guide portion (71) in a direction at a right angle or an obtuse angle relative to the first guide portion (71) as viewed from the flow direction of air.

3. The refrigeration apparatus for shipping of claim 1 or 2, wherein

the guide member (60) has a first wall (70) and a second wall (75) facing the first wall

(70), and

the second wall (75) has an inclined portion (76) that is closer to a distal end of the second wall (75) than the curved portion (72) and is inclined to approach the first wall (70) as viewed from the flow direction of air.

4. The refrigeration apparatus for shipping of any one of claims 1 to 3, wherein at least a distal end portion of the guide member (60) arranged in the internal space (20) is configured to guide the detector (51) substantially horizontally or upward.

5. The refrigeration apparatus for shipping of any one of claims 1 to 4, wherein the guide member (60) covers the detector (51).

6. The refrigeration apparatus for shipping of any one of claims 1 to 5, further comprising:

a holder (80) in a tubular shape, the holder (80) configured to guide the temperature sensor (50) into the guide member (60) from the outside, wherein

the lead wire (52) is provided with an elastic member (53), and

the temperature sensor (50) is fixed to the holder (80) via the elastic member (53).

7. The refrigeration apparatus for shipping of claim 6, wherein

the elastic member (53) has a tapered portion (56), and

the tapered portion (56) is at least partially arranged inside the holder (80).

8. The refrigeration apparatus for shipping of claim 6 or 7, further comprising:

a lock member (90) configured to fix the holder (80) and the elastic member (53),

wherein

the lock member (90) has an insertion hole (93) in which the temperature sensor (50) is inserted and a slit (94) that opens in a radial direction and is connected to the insertion hole (93), and

the lock member (90) has a restriction portion (95) configured to restrict an increase in an opening width of the slit (94).

9. The refrigeration apparatus for shipping of any one of claims 1 to 8, further comprising:

a holder (80) in a tubular shape, the holder (80) configured to guide the temperature sensor (50) into the guide member (60) from the outside, wherein

an inner peripheral edge of an end of the holder (80) closer to the internal space (20) is formed into a tapered portion (81a) having a diameter increasing toward the internal space (20).

10. The refrigeration apparatus for shipping of claim 1, further comprising:

a first passage member (80) provided for the casing (11) to allow the internal space (20) to communicate with the outside and guide the temperature sensor (50) into the internal space (20); and

a second passage member (60) that is arranged on the side of the first passage member (80) closer to the internal space (20) and allows the temperature sensor (50) to be arranged in the internal space (20), wherein

the second passage member (60) is the guide member (60), and

the first passage member (80) and the second passage member (60) are formed as separate members.

11. The refrigeration apparatus for shipping of claim 10, wherein

the casing (11) has an exterior wall (13) facing the outside and an interior wall (14) facing the internal space (20),

the first passage member (80) is fixed to the exterior wall (13), and

the second passage member (60) is fixed to the interior wall (14).

12. The refrigeration apparatus for shipping of claim 11, wherein

a hole (13a) is formed in the exterior wall (13), and

the first passage member (80) includes a passage body (81) inserted into the hole (13a) and a protrusion (84) provided on an outer peripheral surface of the passage body (81), the protrusion (84) being switchable between a first position at which the protrusion (84) is able to pass through the hole (13a) and a second position at which the protrusion (84) engages with a surface of the exterior wall (13) facing the internal space (20).

13. The refrigeration apparatus for shipping of claim 1, wherein

the casing (11) has a passage that connects the outside and the internal space (20),

the refrigeration apparatus for shipping further includes a cover member (60) that is arranged closer to the internal space (20) than the passage and covers the temperature sensor (50),

the cover member (60) is the guide member (60), and

the cover member (60) is provided with a plurality of holes (68).

14. The refrigeration apparatus for shipping of claim 13, wherein

the cover member (60) includes a curved portion (72) formed in a curved shape as

viewed from the flow direction of air and a linear portion (73) extending linearly and continuously from the curved portion (72).

15. The refrigeration apparatus for shipping of claim 13 or 14, wherein

air flows around the cover member (60) in a predetermined flow direction, and

the plurality of holes (68) are formed along the flow direction of the air.

16. The refrigeration apparatus for shipping of claim 15, wherein

the cover member (60) forms therein an interior space (65) in which the temperature sensor (50) is arranged,

the cover member (60) includes a first cover portion (77) overlapping the interior space (65) when viewed in the flow direction of the air, and

the plurality of holes (68) are formed in the first cover portion (77).

17. The refrigeration apparatus for shipping of any one of claims 13 to 16, wherein

the cover member (60) includes: a first member (61) made of resin; a second member (62) that is made of resin and formed into one piece with the first member (61) with a fold (64) interposed therebetween so that the temperature sensor (50) is covered between the first member (61) and the second member (62); and a coupling portion (63) that connects the first member (61) and the second member (62).

18. A shipping container, comprising:

the refrigeration apparatus for shipping (10) of any one of claims 1 to 17; and

a container body (2).