CLAIMS

1. A railcar air conditioning duct which guides air fed from an air conditioner mounted on a railcar,

the railcar air conditioning duct comprising:

a duct wall forming an air flow passage which guides the air, fed from the air conditioner, in a car longitudinal direction; and

a plurality of through holes lined up in the car longitudinal direction, the through holes being open at a lower wall portion of the duct wall as air outlet ports through which the air in the air flow passage is blown from the air flow passage toward a passenger room, wherein

a ratio of an opening area of one of the through holes to an area of one of a plurality of partial regions formed by dividing, in the car longitudinal direction, an inner surface of the lower wall portion such that in plan view, the partial regions contain the respective through holes falls within a range of 2.0% or more and 7.5% or less.

2. The railcar air conditioning duct according to claim 1, further comprising an air feed port through which the air is fed from the air conditioner, wherein

the air flow passage has a chamber-less structure which faces both the air feed port and the through holes.

3. A railcar air conditioning duct which guides air fed from an air conditioner mounted on a railcar,

the railcar air conditioning duct comprising:

a duct wall forming an air flow passage which guides the air, fed from the air conditioner, in a car longitudinal direction;

a plurality of through holes lined up in the car longitudinal direction, the through holes being open at the duct wall as air outlet ports through which the air in the air flow passage is blown from the air flow passage toward a passenger room; and

an air feed port through which the air is fed from the air conditioner, wherein:

a ratio of an opening area of one of the through holes to a total of opening areas of all the through holes that are open at the duct wall falls within a range of 0.05% or more and 0.65% or less; and

the air flow passage has a chamber-less structure which faces both the air feed port and the through holes.

4. A railcar air conditioning duct which guides air fed from an air conditioner mounted on a railcar,

the railcar air conditioning duct comprising:

an air flow passage which extends in a car longitudinal direction and guides the air, fed from the air conditioner, in the car longitudinal direction;

a chamber extending in the car longitudinal direction and arranged adjacent to the air flow passage in a direction perpendicular to the car longitudinal direction;

a dividing wall which separates the air flow passage and the chamber from each other;

a plurality of through holes which are lined up in the car longitudinal direction and are open at the dividing wall as communication holes which make the air flow passage and the chamber communicate with each other; and

an air outlet port through which the air is blown from the chamber toward a passenger room, wherein

a ratio (mm^2/mm^3) of an opening area of one of the through holes to a volume of one of a plurality of partial spaces formed by dividing the air flow passage in the car longitudinal direction such that in plan view, the partial spaces correspond to the respective through holes falls within a range of 1.0×10^{-4} or more and 3.4×10^{-4} or less.

5. The railcar air conditioning duct according to any one of claims 1 to 4, wherein air receiving plates which receive the air flowing through the air flow passage project at opening edge portions of the respective through holes so as to be located at a far side from the air conditioner.

6. The railcar air conditioning duct according to claim 1 or 2, wherein:

an outer surface of the lower wall portion of the duct wall faces the passenger room in the railcar;

a groove extending in the car longitudinal direction is formed at an inner surface opposite to the outer surface of the lower wall portion; and

the plurality of through holes are provided at a bottom portion of the groove.

7. The railcar air conditioning duct according to any one of claims 1 to 6, wherein:

a return duct which extends in an upper-lower direction and takes the air from the

passenger room into the air conditioner is provided at a car width direction middle of the railcar;

the air flow passage includes an intake port vicinity region extending in the car longitudinal direction at a position away from the return duct in a car width direction; and

the through holes are arranged so as to overlap the intake port vicinity region in plan view.

8. The railcar air conditioning duct according to claim 7, wherein the through holes are located at an opposite side of the return duct within a range which overlaps the intake port vicinity region in plan view.

9. A railcar air conditioning duct which guides air fed from an air conditioner mounted on a railcar,

the railcar air conditioning duct comprising:

a duct wall forming an air flow passage which guides the air, fed from the air conditioner, in a car longitudinal direction; and

a plurality of through holes lined up in the car longitudinal direction, the through holes being open at the duct wall as air outlet ports through which the air in the air flow passage is blown from the air flow passage toward a passenger room, wherein:

a ratio of an opening area of one of the through holes to a total of opening areas of all the through holes that are open at the duct wall falls within a range of 0.05% or more and 0.65% or less; and

air receiving plates which receive the air flowing through the air flow passage project at opening edge portions of the respective through holes so as to be located at a far side from the air conditioner.

10. A railcar air conditioning duct which guides air fed from an air conditioner mounted on a railcar,

the railcar air conditioning duct comprising:

an air flow passage which extends in a car longitudinal direction and guides the air, fed from the air conditioner, in the car longitudinal direction;

a chamber extending in the car longitudinal direction and arranged adjacent to the air flow passage in a direction perpendicular to the car longitudinal direction;

a dividing wall which separates the air flow passage and the chamber from each other;

a plurality of through holes which are lined up in the car longitudinal direction and are open at the dividing wall as communication holes which make the air flow passage and the chamber communicate with each other; and

a plurality of air outlet ports through which the air is blown from the chamber toward a passenger room, wherein:

a ratio of an opening area of one of the through holes to a total of opening areas of all the through holes that are open at the dividing wall falls within a range of 0.05% or more and 0.65% or less; and

air receiving plates which receive the air flowing through the air flow passage project at opening edge portions of the respective through holes so as to be located at a far side from the air conditioner.

11. A railcar air conditioning duct which guides air fed from an air conditioner mounted on a railcar,

the railcar air conditioning duct comprising:

a duct wall forming an air flow passage which guides the air, fed from the air conditioner, in a car longitudinal direction; and

a plurality of through holes lined up in the car longitudinal direction, the through holes being open at the duct wall as air outlet ports through which the air in the air flow passage is blown from the air flow passage toward a passenger room, wherein:

a ratio of an opening area of one of the through holes to a total of opening areas of all the through holes that are open at the duct wall falls within a range of 0.05% or more and 0.65% or less;

an outer surface of the lower wall portion of the duct wall faces the passenger room in the railcar;

a groove extending in the car longitudinal direction is formed at an inner surface opposite to the outer surface of the lower wall portion; and

the plurality of through holes are provided at a bottom portion of the groove.

12. A railcar air conditioning duct which guides air fed from an air conditioner mounted on a railcar,

the railcar air conditioning duct comprising:

a duct wall forming an air flow passage which guides the air, fed from the air conditioner, in a car longitudinal direction; and

a plurality of through holes lined up in the car longitudinal direction, the through holes being open at the duct wall as air outlet ports through which the air in the air flow passage is blown from the air flow passage toward a passenger room, wherein:

a ratio of an opening area of one of the through holes to a total of opening areas of all the through holes that are open at the duct wall falls within a range of 0.05% or more and 0.65% or less;

a return duct which extends in an upper-lower direction and takes the air from the passenger room into the air conditioner is provided at a car width direction middle of the railcar;

the air flow passage includes an intake port vicinity region extending in the car longitudinal direction at a position away from the return duct in a car width direction; and

the through holes are arranged so as to overlap the intake port vicinity region in plan view.

13. A railcar air conditioning duct which guides air fed from an air conditioner mounted on a railcar,

the railcar air conditioning duct comprising:

an air flow passage which extends in a car longitudinal direction and guides the air, fed from the air conditioner, in the car longitudinal direction;

a chamber extending in the car longitudinal direction and arranged adjacent to the air flow passage in a direction perpendicular to the car longitudinal direction;

a dividing wall which separates the air flow passage and the chamber from each other;

a plurality of through holes which are lined up in the car longitudinal direction and are open at the dividing wall as communication holes which make the air flow passage and the chamber communicate with each other; and

a plurality of air outlet ports through which the air is blown from the chamber toward a passenger room, wherein:

a ratio of an opening area of one of the through holes to a total of opening areas of all the through holes that are open at the dividing wall falls within a range of 0.05% or more and 0.65% or less;

a return duct which extends in an upper-lower direction and takes the air from the passenger room into the air conditioner is provided at a car width direction middle of the railcar;

the air flow passage includes an intake port vicinity region extending in the car longitudinal direction at a position away from the return duct in a car width direction; and

the through holes are arranged so as to overlap the intake port vicinity region in plan view.