CLAIMS

1. A railcar comprising:

an underframe including

a pair of side sills and

a plurality of cross beams each connected to the pair of side sills, the cross beams being arranged at intervals in a car longitudinal direction; and

a floor pan arranged in a space surrounded by the pair of side sills and a pair of adjacent cross beams among the plurality of cross beams, the floor pan being fixed to the underframe,

the floor pan being configured as a strength member configured to bear at least one of a compressive load and shearing load applied from the underframe, the strength member being prevented from deforming.

2. A railcar comprising:

an underframe including

a pair of side sills and

a plurality of cross beams each connected to the pair of side sills, the cross beams being arranged at intervals in a car longitudinal direction; and

a floor pan arranged in a space surrounded by the pair of side sills and a pair of adjacent cross beams among the plurality of cross beams, the floor pan being fixed to the underframe,

the floor pan being configured as a strength member configured to bear at least one of a compressive load and shearing load applied from the underframe,

a bottom wall portion of the floor pan including

at least one swelling portion swelling in a vertical direction; and

a flat portion surrounding the at least one swelling portion.

3. The railcar according to claim 2, wherein when viewed from the car longitudinal direction, a contour shape of the at least one swelling portion is a curved shape.

4. The railcar according to claim 2 or 3, wherein when viewed from a car width direction, a contour shape of the at least one swelling portion is a shape constituted by: a linear portion spaced apart from the flat portion and extending in the car longitudinal

direction; and a pair of curved portions each curvedly connected to a corresponding one of both car longitudinal direction end portions of the linear portion and the flat portion.

5. The railcar according to any one of claims 2 to 4, wherein when viewed from the vertical direction, each of contour shapes of both car longitudinal direction end portions of the at least one swelling portion is a curved shape.

6. The railcar according to any one of claims 2 to 5, wherein when viewed from the vertical direction, an apparent total area of the at least one swelling portion is larger than an apparent total area of the flat portion.

7. The railcar according to any one of claims 2 to 6, wherein the at least one swelling portion comprises a plurality of swelling portions arranged on the bottom wall portion of the floor pan and lined up in a car width direction.

8. The railcar according to claim 7, wherein the at least one swelling portion comprises a plurality of swelling portions extending in the car longitudinal direction on the bottom wall portion of the floor pan.

9. The railcar according to any one of claims 1 to 8, wherein:

the floor pan includes

side wall portions extending upward from a peripheral edge of a bottom wall portion of the floor pan and

a flange portion connected to upper ends of the side wall portions and fixed to the underframe; and

the bottom wall portion of the floor pan is located lower than upper surfaces of the cross beams and upper surfaces of the side sills.

10. The railcar according to any one of claims 1 to 9, wherein:

the underframe further includes a pair of bolster beams supported by a pair of bogies;

the plurality of cross beams are arranged between the pair of bolster beams;

the space is one of a plurality of spaces provided at the underframe and lined up

in the car longitudinal direction, each of the spaces being surrounded by the pair of side sills and a pair of cross beams among the plurality of cross beams; and

among the plurality of spaces, the floor pan is arranged in a space spaced apart from each of the bolster beams inward in the car longitudinal direction by one or more spaces.