July 2, 1935. E. G. FRANCK ET AL 2,006,760

CAR ROOF

Filed April 3, 1934 2 Sheets-Sheet 1

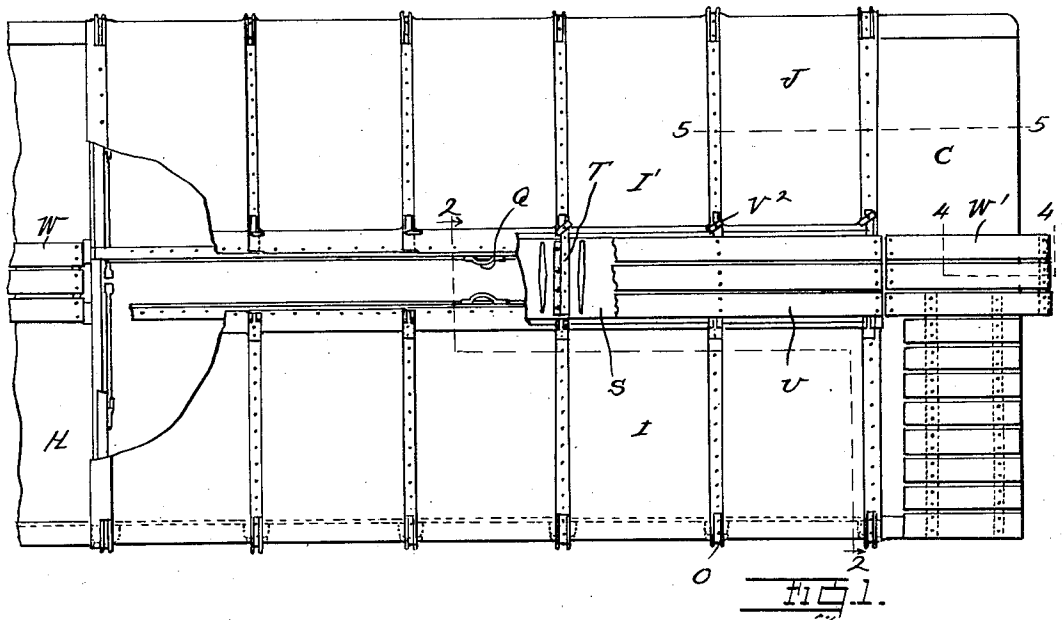



FIG. 1.

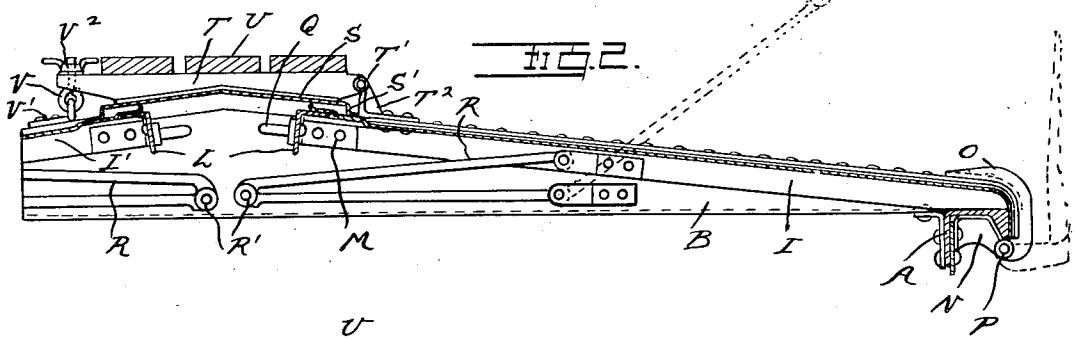



FIG. 2.

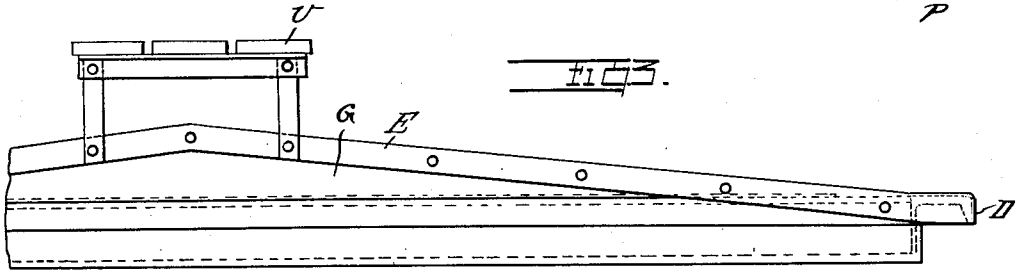



FIG. 3.

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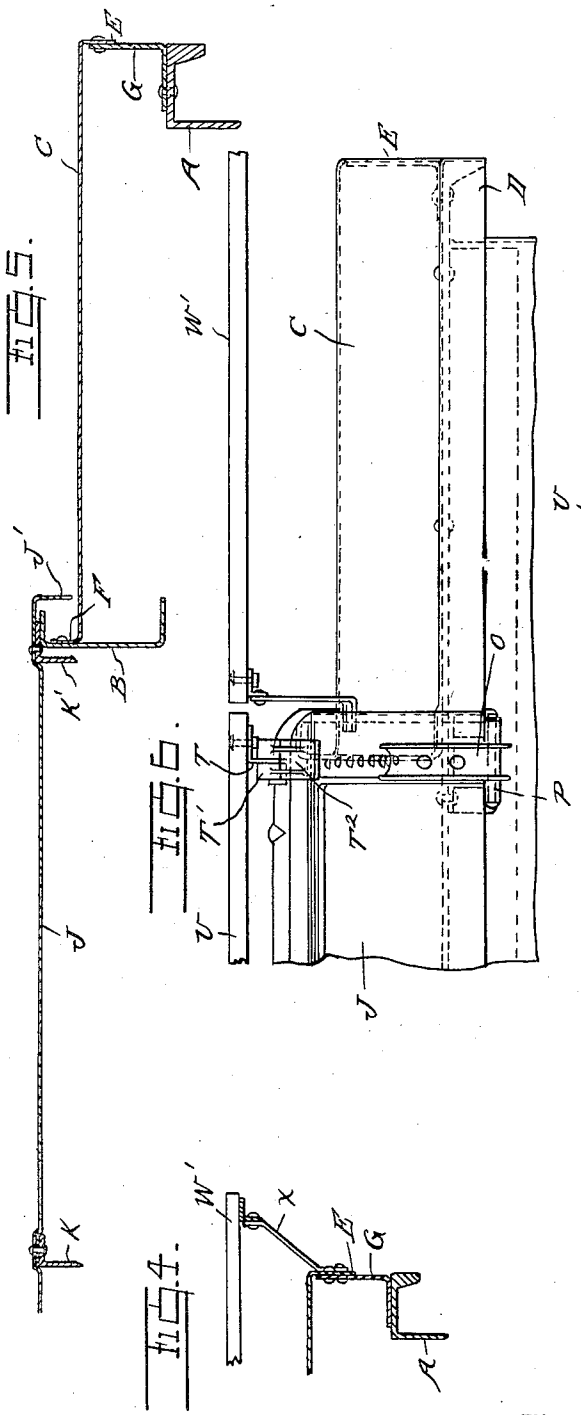


FIG. 5.



FIG. 6.



FIG. 4.

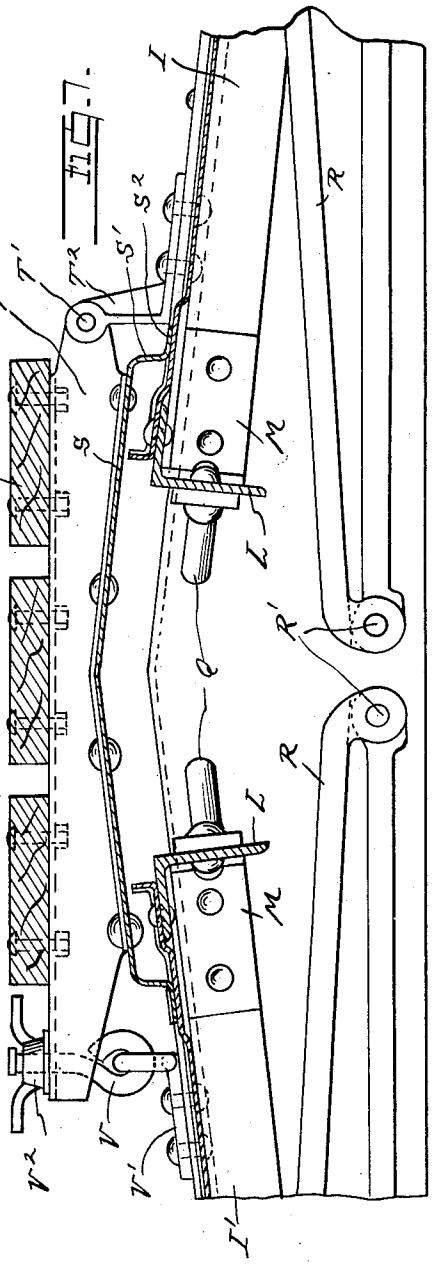


FIG. 7.

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# UNITED STATES PATENT OFFICE

2,006,760

## CAR ROOF

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Application April 3, 1934, Serial No. 718,857

4 Claims. (Cl. 108—5)

The invention relates to car roofs and has more particular reference to roofs designed for use on open cars of the gondola type, being also applicable to box cars and other freight cars. Heretofore various constructions have been devised for this use, and to permit of loading and unloading such roofs have been provided with hatches. However, the openings thus obtained are not sufficiently large to permit of loading many materials that are transported in gondola cars. For instance, steel plates are usually carried in open gondola cars and to protect them from the elements during transportation, it is necessary to cover them with waterproof paper or equivalent material.

It is the object of the present invention to obtain a construction of roof for gondola cars which will permit opening of large areas suitable for receiving steel plates and other material of relatively large dimensions. It is a further object to obtain a construction in which the roof can be quickly opened and closed and which in closed position is thoroughly weatherproofed and of sufficient strength to withstand the stresses to which it is subjected. With these objects in view the invention consists in the construction as hereinafter set forth.

In the drawings:

Fig. 1 is a plan view of one-half of a car provided with our improved roof;

Fig. 2 is a cross section on line 2—2 of Fig. 1;

Fig. 3 is an end elevation;

Fig. 4 is a vertical section on line 4—4 of Fig. 1;

Fig. 5 is a longitudinal section on line 5—5, Fig. 1;

Fig. 6 is a side elevation of a portion of the car;

Fig. 7 is an enlargement of a portion of Fig. 2.

The gondola car to which the roof may be applied is of the usual type provided with reinforcing inverted channel bars A at the top of its sides and ends. To these bars A carlines B are attached, these being preferably of channel cross section with a vertical web and horizontal flanges. The carlines also taper from the ridge to the eaves so as to give the required pitch to the roof. Preferably there are four of these carlines extending across the car, two being arranged on opposite sides of the longitudinal center of the car and being spaced from each other a distance equal to the width of two roofing sheets. The other two carlines are spaced respectively from opposite ends of the car by a distance equal to the width of one roofing sheet. All of these carlines are secured at their ends to the bars A of the car by bolting or riveting so as to form a rigid tie connection extending from one side to the other of the car.

The space between the ends of the car and the adjacent carline is covered preferably by a single sheet C extending from eaves to eaves and provided with downturned flanges D and E at the eaves and end, and an upturned flange F which is riveted to the web portion of the carline. At the end the downturned flange E is riveted to an anchor bar G which in turn is secured to the marginal bar A of the car and is tapered from ridge to eaves similar to the carline but of a lesser height. Between the central carlines the space is covered by a pair of sheets H extending from eaves to eaves and overlapped and riveted to each other at the center of the car. The outer sides of these plates H are flanged and attached to the web of the carline, similar to the construction at the ends.

Between the center section H and the end section C the space is covered by a pair of roof sections I and I′ which are hinged at the eaves and extend inward to near the ridge. Each of these sections is formed of a series of roofing sheets J overlapped at their adjacent edges and riveted to each other and to a reinforcing angle bar K. At opposite ends of each section the angle bars K′ have their laterally extending flanges resting upon the top flanges of the carlines B and the end sheets have downturned flanges J′ to form a weatherproof joint. There is also an angle flange L at the upper or ridge end of the section, which is connected to all of the angle flanges K by angle brackets M. N are stationary hinge brackets which are riveted to the bar A of the car and O are hinge brackets arranged at the overlap or adjacent sheets J and riveted thereto and to the angle bars K. These brackets O bend downward over the eaves and are connected by pivot pins P with the brackets N. Lifting eyes Q are secured to the bars L at the center of each section I for engagement with the hook of a crane or other means for lifting the section into vertical position at the side of the car. It will then be sustained in this position by a folding brace rod R which has a central break joint R′ and which has its opposite ends attached to the bar K′ and to the carline B. Thus in the normal position of the roof it is folded and lies adjacent to the carline.

Between the sections I and I′ the open space at the ridge is covered by a ridge cap S which has downturned flanges S′ and laterally extending flanges $S^2$ at each side and each end. Secured to this cap are saddles T which support the running boards U and which are arranged preferably at

each joint between pairs of sheets. The saddles T are hinged at T' to hinge brackets $T^2$ riveted to the section I, while on the opposite side there is arranged clamped eye bolts V engaging the ends of the saddle and pivotally connected to brackets V' secured to the section I'. Wing nuts $V^2$ engaging said eye bolts serve to clamp down the saddles and the cap S upon the sections I and I'. However, when the section I is turned up in vertical position the cap S and running board U can be folded downward, thereby decreasing the vertical height.

Running board sections W are mounted on the central rigid section H and running board sections W' are mounted on the end sections C, these being supported by suitable brackets such as X.

In use, when the car is to be loaded, the wing nuts $V^2$ are loosened and the cap S and running board U hold it back on the section I. The sections I and I' are then lifted by means of the eyes Q and turned to slightly beyond the vertical position where they are held by the brace rods R. This will open the area from side to side of the car and of a length between the end section C and center section H. This is sufficient for receiving plates of sheet metal and other articles which could not be introduced through the hatch openings of car roofs as previously designed. After loading the sections I and I' are turned back, the cap S is placed in position and clamped, which results in forming a weatherproof covering for all parts of the car.

What we claim as our invention is:

1. A roof for gondola type cars comprising fixed roof sections extending from eaves to eaves and spaced from each other longitudinally of the car, each of said sections comprising a roofing sheet and a supporting carline extending upward above the plane of said sheet, sections hinged at the opposite eaves extending between said fixed sections and overlapping and supported by said carlines, being provided with downturned flanges for weatherproofing the joint therebetween, and a ridge cap carried by one of said hinged sections and detachably clamped to the other of said hinged sections.

2. A roof for gondola type cars comprising fixed roof sections arranged respectively at the longitudinal center and at an end of the car extending from eaves to eaves, each of said sections comprising a roofing sheet and a carline supporting said sheet and extending upward above the plane thereof, roof sections hinged at opposite eaves extending between said fixed roof sections and overlapping and supported upon said carlines, being provided with downturned flanges for forming a weatherproof joint therewith, each of said hinged sections being formed of a plurality of sheets extending from eaves to near the ridge, the adjacent edges of said sheets being seamed to each other and a reinforcing frame secured to the under side of said sheets, a ridge cap extending between the adjacent ends of said hinged sections, said cap being hinged to one of said sections to be foldable back thereon, clamping means for said cap on the other section, and a foldable brace between said reinforcing frame and carline adapted to hold said hinge section in upright position.

3. A roof for a gondola type car comprising fixed sections located at the longitudinal center of the car and at an end thereof and extending from eaves to eaves, each of said sections comprising a roofing sheet and a carline for supporting said sheet extending upward above the same, roofing sections hinged respectively at the opposite eaves extending between said fixed sections and overlapping and supported upon said carlines, being provided with downturned flanges for weatherproofing the joint therebetween, a ridge cap covering the adjacent ends of said hinged sections, running boards above said cap and saddles for connecting said running boards to said cap, a hinged connection between one of said hinged sections and said running board saddles permitting of the turning of said cap and running board back upon said section, means for detachably clamping said saddles to the opposite hinged section and complementary running boards mounted on said fixed sections.

4. A roof for a freight car comprising fixed roof sections arranged at the longitudinal center and at an end of the car extending from eaves to eaves and pitched from ridge to eaves, each of said sections comprising a continuous roofing sheet and a carline of channel section having a vertical web and laterally extending base and top flanges, said sheet being attached to the web of said carline below the upper flange thereof and said carline being tapered from ridge to eaves to correspond to the pitch of the roof, roof sections hinged respectively to the opposite eaves extending between said fixed sections and overlapping and supported upon the upper flanges of said carline, being provided with downturned flanges for weatherproofing the joint therebetween, each of said hinged sections being formed of a plurality of roofing sheets having their edges overlapped and seamed to each other, a reinforcing frame for each section comprising angle bars secured to and depending from each seam, and an angle bar extending longitudinally at the inner end of said section, a ridge cap between the adjacent ends of said hinged sections, running board saddles mounted on said ridge cap, running boards mounted on said saddles, hinge brackets secured to one of said hinged sections and pivotally engaging each of said saddles, means for detachably clamping said saddles to the other of said hinged sections to permit of folding said cap and running boards back on the other of said sections, a foldable brake joint brace connecting said reinforcing frame and carline and adapted to hold the hinged section in upright position, grappling eyes on said reinforcing frame for turning up said hinged sections and running boards mounted on said stationary roof sections to be complementary to the running boards on said cap.

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