Feb. 8, 1927.

1,617,041

N. W. BLOSS

CAR ROOF

Filed Sept. 16, 1925 2 Sheets-Sheet 1

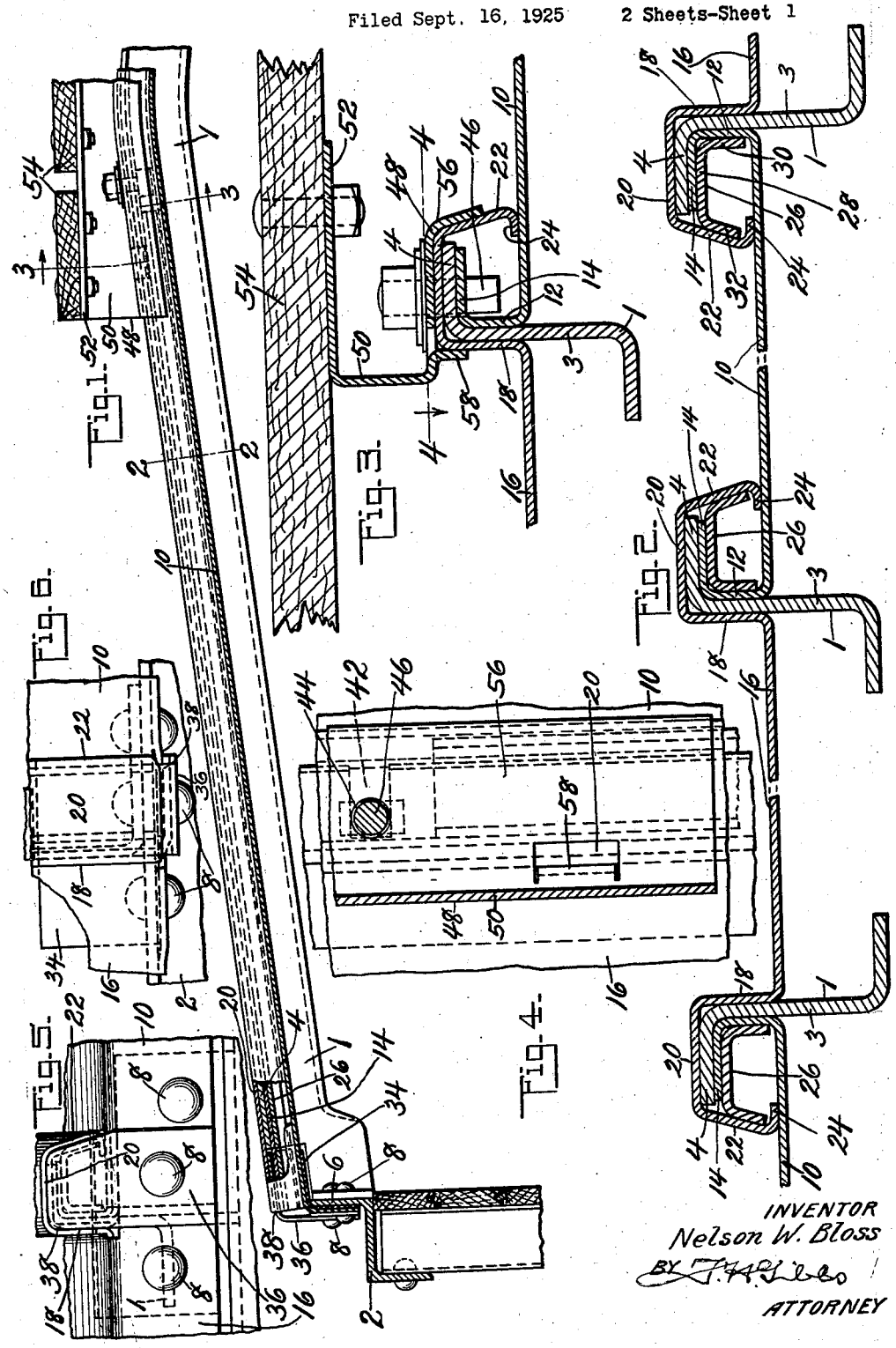

Fig. 1.

Fig. 3.

Fig. 2.

Fig. 6.

Fig. 4.

Fig. 5.

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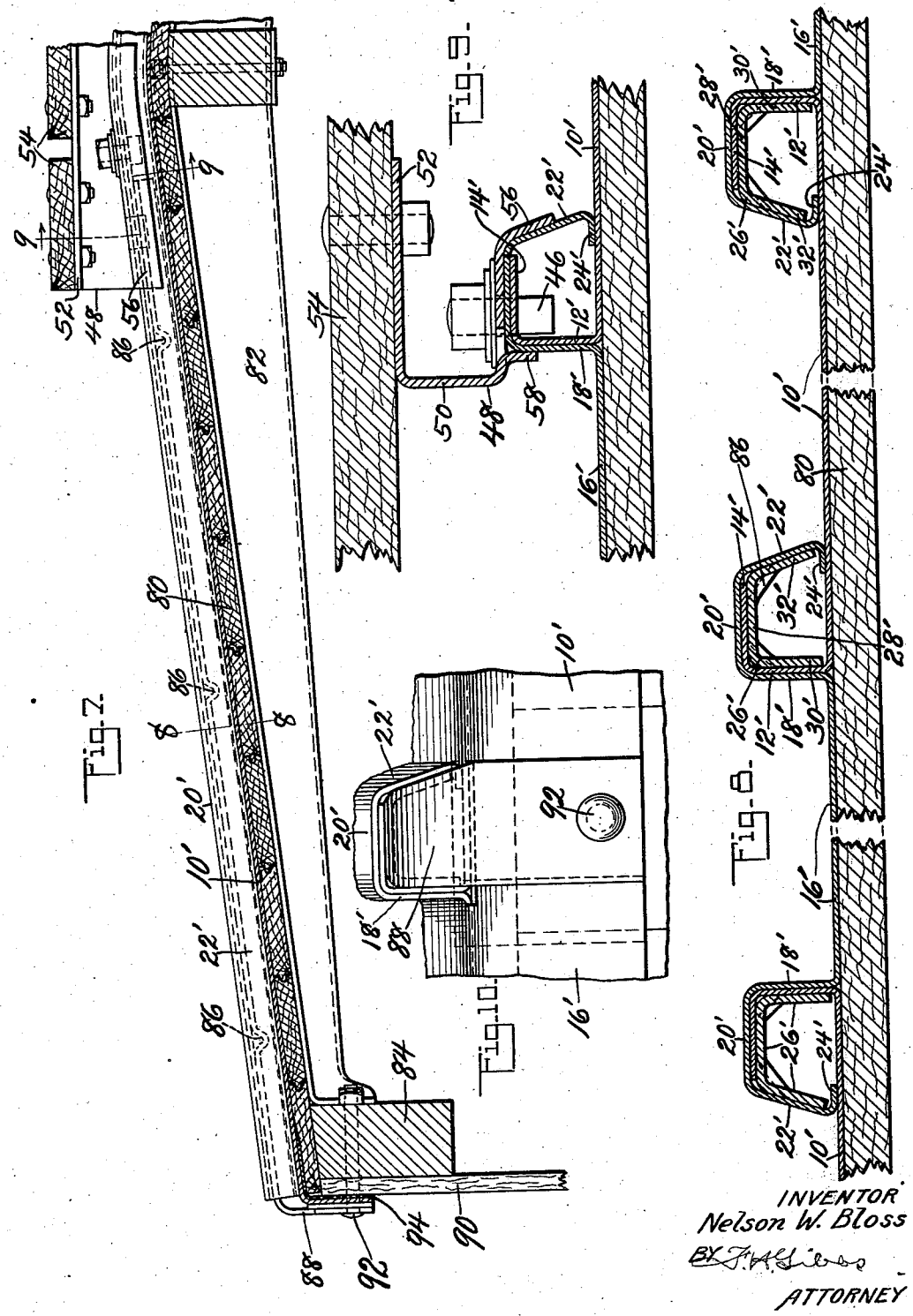

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UNITED STATES PATENT OFFICE.

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CAR ROOF.

Application filed September 16, 1925. Serial No. 56,715.

In the drawings:

Fig. 1 is a vertical transverse section of a portion of a small metal car roof constructed in accordance with this invention, parts being broken away to show other parts more clearly;

Fig. 2 is a broken longitudinal section of a portion of the car roof shown in Fig. 1 taken on line 2—2 of Fig. 1;

Fig. 3 is a section through a carline taken on the line 3—3 of Fig. 1;

Fig. 4 is a partial horizontal section taken on the line 4—4 of Fig. 3;

Fig. 5 is a fragmentary side elevation taken at the end of a carline;

Fig. 6 is a fragmentary top plan view taken at the end of a carline;

Fig. 7 is a vertical transverse section of a portion of an outside metal car roof constructed in accordance with this invention;

Fig. 8 is a broken vertical longitudinal section of a portion of the car roof shown in Fig. 7 taken on the line 8—8 of Fig. 7;

Fig. 9 is a section through a carline taken on the line 9—9 of Fig. 7, and

Fig. 10 is a fragmentary side elevation of the roof shown in Fig. 7 taken at the end of a roof seam.

This invention relates to car roofs and it is an object of this invention to provide an improved securing means for the roof sheets which is adapted to secure the roof sheets together and to the carlines in the case of an all-metal roof and equally adapted to secure the roof sheets together in the case of an outside metal roof. It is also an object of this invention to provide an improved car roof in which the roof sheets are interlocked to form substantially tubular seams and are held in interlocking position by key members inserted in the seams, the key members serving also to hold the roof sheets interlocked with the carlines in the case of an all-metal roof. It is also an object of this invention to provide a means for closing the tubular seams formed by the roof sheets which holds the key members therein and which serves as a means for securing the roof sheets to the side plates.

In the all-metal roof shown in Figs. 1 to 6, inclusive, Z-shape carlines 1 extend between Z-shape side plates 2 and have their webs 3 placed vertically and their top flanges 4 directed inwardly in pairs. At the ends of the carlines the webs 3 are extended beyond the flanges and bent laterally to engage the upwardly projecting flanges 6 of the side plates and are secured thereto by rivets 8. In the alternate spaces between the carlines 1 are placed the roof sheets 10 which have their edges or margins retroverted or formed with return bends, the vertical portions 12 of which engage with the webs 3 of the carlines while the horizontal portions 14 engage beneath the inwardly directed flanges 4 of the carlines. Roof sheets 16 which are placed in the remaining spaces between the carlines have their edges or margins bent upwardly providing vertical portions 18, then outwardly providing horizontal portions 20 and downwardly providing vertical portions 22, the vertical portions 22 being provided at their lower edges with inwardly turned or retroverted flange portions 24. The plates 16 are placed so that the portions 18 and 20 of the sheets engage with the webs 3 and top flanges 4 of the carlines while the portions 22 project downwardly beyond the edges of the inwardly turned portions 14 of the plates 10. Thus the upper carline flanges 4 are engaged and interlocked in the seam between the roof sheets 10 and 16. The vertical portions 22 are of sufficient length to bring the inwardly turned flanges 24 in engagement with the sheets 10 so that the bent portions of the sheets engage with the carline 3 and form hollow substantially tubular seams extending along the carlines from side plate to side plate.

In the tubular seams formed by the roof sheets there are inserted inverted channel-shape key members 26 having webs 28 and downwardly projecting flanges 30 and 32. The webs 28 are positioned beneath the inwardly turned portions 14 of the roof sheets 10, the flanges 30 against the vertical portions 12 of the sheets 10 with their lower edges over the main horizontal portions of said sheets 10, and the flanges 32 against the downwardly projecting portions 22 of the sheets 16 with the flanges 24 on the latter projecting or engaging beneath their lower edges. Thus the key members 26 engage between the retroverted portions 14 and 24 of the sheets 10 and 16, and substantially fill the hollow roof seams. The key members 26 extend from the side plates 2 substantially to the center of the roof, or substantially throughout the length of the seams. At the side plates 2 the roof sheets rest upon flash-

ing plates 34 which extend beneath the outer edges of the roof sheets and over the upwardly projecting flanges 6 of the side plates. The ends of the seams are closed by cap members 36 having inverted U-shape portions 38 which are inserted in the tubular seams and engage with the outer ends of the key members 26, the webs of the U-shape portions of the cap members being extended beyond the sides and bent downwardly to close the openings in the tubular seams and secured to the side plates by the rivets 8.

Adjacent the center of the roof the carlines 3 of are provided with slots 42, while the roof sheets are provided with openings 44 to receive bolts 46 which project through the openings in the roof sheets and carlines and engage in openings in running board saddles 48. The saddles 48 are of substantially channel shape having the webs 50, the flanges 52 which support the running board 54 and the flanges 56 which rest on the tubular seams and have their outer ends bent downwardly to engage with the downwardly bent portions 22 of the roof sheets 16 and lips 58 formed therein to engage with the vertical portions 18 of the sheets 16. These saddles 48 bridge gaps between key members 26 in the two longitudinal halves of the roof and supply reinforcement at these gaps.

In Figs. 7 to 10, inclusive, the improved roof is shown applied as an outside metal roof to a wood roof formed of planks 80 carried by carlines 82 which extend between and are secured to the side plates 84. The roof comprises sheets 10′ having their edges or margins bent upwardly as at 12′ and inwardly as at 14′ and sheets 16′ having their edges or margins bent upwardly as at 18′ and then outwardly as at 20′ and downwardly as at 22′, the lower edges of the downwardly bent portion being bent inwardly to form the flange 24′. The bent portions of the sheets 16′ fitting over the bent portions of the sheets 10′ and the portions 22′ and the flanges 24′ engage with the sheets 10′ forming substantially tubular seams where the sheets join. In the tubular seams are inserted channel shape key members 26′ having webs 28′ which engage beneath the inwardly bent portions 14′ of the sheets 10′ and downwardly extending flanges 30′ which engage the upwardly bent portions 12′ of the sheets 10′ and downwardly extending flanges 32′ which engage the downwardly extending portions 22′ of the sheets 16′. The key member 26′ is provided with corrugations 86 spaced throughout its length. It has its web 28′ extending beyond the side flanges and bent downwardly as at 88, forming a cap member which overlaps the sheathing 90 and is secured thereto by bolts 92, which also secure the carlines to the side plates. The sheets 10′ and 16′ extend to the side of the car and are bent downwardly to overlap the sheathing 90, flashing plates 94 being inserted beneath the outer edges or margins of the sheets and overlapping the sheathing 90 beneath the downwardly bent portions of the roof sheets. In this construction, as in the construction shown in Figs. 1 to 6, the running board saddle 48 is secured to the tubular seam by the bolt 46 which engages in the openings in the roof plates and in the running board saddle. It will be noted that the roof sheets are bent at their edges or margins so as to interlock each with the other and are held in interlocking position by the insertion of the keyed member and that in the construction shown in Figs. 1 to 6 the roof sheets are held in interlocking engagement with the web flanges of the carlines by the insertion of the key member. It will also be noted that the cap member 36 of construction shown in Figs. 1 to 6, inclusive, closes the end of the tubular seam and through its attachment to the side plate holds the key member in position to hold the roof sheets and carlines interlocked.

In the construction shown in Figs. 7 to 10, inclusive, the cap member is formed by extending the web of the key member so that the cap member is formed integral with the key member and through its attachment to the side plate 84 secures the key member in position to hold the roof sheets interlocked. It will also be noted that the bolts 46 securing the running board saddles to the roof sheets are the only bolts used in securing the sheets together.

What is claimed is:

1. In a car roof, roof sheets having their adjacent margins interlocking and a key member holding said roof sheets in interlocking relation substantially throughout the length of their interlocked margins.

2. In a car roof, roof sheets having their adjacent margins interlocking and forming a substantially tubular seam and a key member inserted in said seam substantially filling the same, and thereby holding said roof sheets in interlocking relation.

3. In a car roof, roof sheets having their adjacent margins retroverted and interlocked one within the other, with an internal key engaged between the retroverted portions of the sheets and thereby holding them in interlocking relation.

4. In a car roof, roof sheets having their adjacent margins interlocked in a hollow seam, with an inverted channel member extending through said seam and holding said roof sheets in interlocking relation.

5. In a car roof, roof sheets having their adjacent margins retroverted and interlocked in a hollow seam, with an inverted channel member in said seam having a flange engaged over a portion of each sheet and holding the sheets in interlocking relation.

6. In a car having side plates, roof sheets extending between said side plates and having their adjacent margins interlocking and forming substantially tubular seams, inverted U-shape key members inserted in said tubular seams and holding said roof sheets in interlocking relation and means secured to said side plates holding said key members in said seams.

7. In a car roof, roof sheets having their adjacent margins interlocking and forming a substantially tubular seam, an inverted U-shape key member inserted in said seam and holding said roof sheets in interlocking relation and means holding said key member in said seam.

8. In a car having side plates, a flanged carline extending between said side plates and roof sheets having their adjacent margins interlocking and forming a substantially tubular seam, said carline being interlocked in said seam.

9. In a car having side plates, a flanged carline extending between said side plates and roof sheets having their adjacent margins interlocking and forming a substantially tubular seam, said carline being interlocked in said seam between said roof sheets.

10. In a car having side plates, a flanged carline extending between said side plates, roof sheets having their adjacent margins interlocking with each other and with said carline and forming a substantially tubular seam and a key member inserted in said seam and holding said roof sheets and carline in interlocking relation.

11. In a car having side plates, a flanged carline extending between said side plates, roof sheets having their adjacent margins interlocking with each other and with said carline and forming a substantially tubular seam and inverted U-shape key members inserted in said seam and holding said roof sheets and carline in interlocking relation.

12. In a car having side plates, a flanged carline extending between said side plates, roof sheets having their adjacent margins interlocking with each other and with said carline and forming a substantially tubular seam and a key member inserted in said seam and holding said roof sheets and carline in interlocking relation and means secured to said side plate holding said key member in position in said seam.

13. In a car having side plates, a flanged carline extending between said side plates, roof sheets having their adjacent margins interlocking with each other and with said carline and forming a substantially tubular seam and inverted U-shape key members inserted in said seam and holding said roof sheets and carline in interlocking relation and means connected to said side plates closing the ends of said seam and holding said key members in position in said seam.

14. In a car roof, a roof sheet having a margin bent upwardly and backwardly, a second roof sheet having a margin bent upwardly, forwardly and downwardly to fit over the bent margin of said first roof sheet and an inverted U-shape key member fitting between the upwardly bent portion of said first member and the downwardly bent portion of said second member.

15. In a car roof, a roof sheet having a margin bent upwardly and backwardly, a second roof sheet having a margin bent upwardly, forwardly and downwardly to fit over the bent margin of said first roof sheet and an inverted U-shape key member fitting between the upwardly bent portion of said first member and the downwardly bent portion of said second member and means closing the outer end of said U-shape member and securing said U-shape member in position.

16. In a car roof, a roof sheet having a margin bent upwardly and backwardly, a second roof sheet having a margin bent upwardly, forwardly and downwardly to fit over the bent margin of said first roof sheet and an inverted U-shape key member fitting between the upwardly bent portion of said first member and the downwardly bent portion of said second member, said second roof sheet having an inwardly bent edge portion engaging beneath said U-shape member.

17. In a car roof, roof sheets having their adjacent margins interlocking, a key member holding said roof sheets in interlocking relation and a running board saddle having a flange engaging a downwardly bent portion of the outer sheet and outwardly projecting lips engaging an upwardly bent portion of said outer sheet, and bridging gaps in the reinforcement afforded by the key members.

18. In a car roof, roof sheets having their adjacent margins interlocking, a key member holding said roof sheets in interlocking relation and a running board saddle having a flange engaging a downwardly bent portion of the outer sheet and outwardly projecting lips engaging an upwardly bent portion of said outer sheet, said running board saddle resting on the outwardly bent portion of said second sheet and being secured thereto and bridging gaps between key members.

19. In a car having side plates, roof sheets extending from side plate to side plate and having their adjacent margins interlocking, key members extending substantially from side plate to side plate maintaining said roof sheets in interlocking relation, and means secured to said side plates holding said key members in position.

In witness whereof I have hereunto set my hand.

NELSON W. BLOSS.