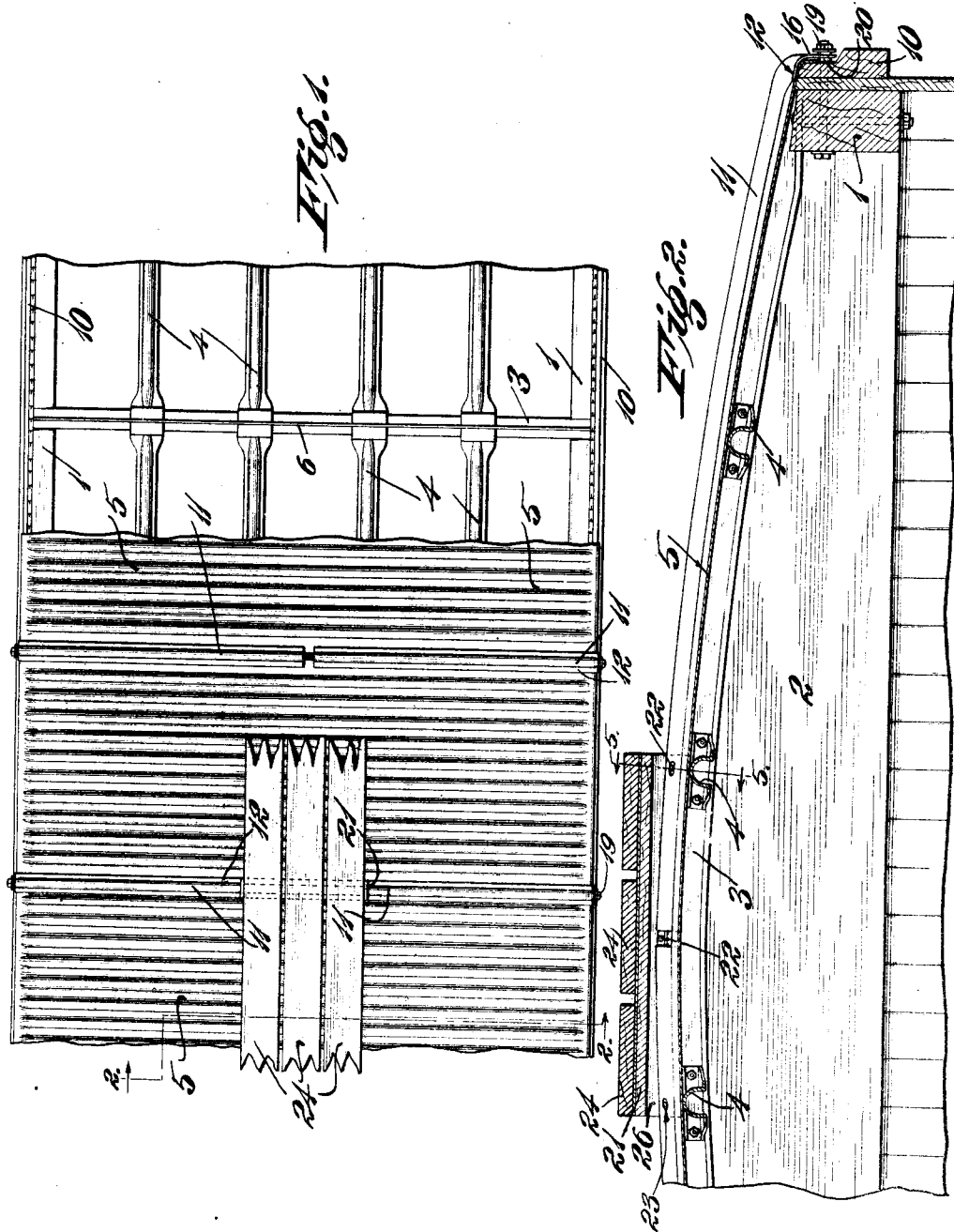


W. P. MURPHY.
METAL CAR ROOF.
APPLICATION FILED DEC. 4, 1911.

1,030,603.

Patented June 25, 1912.

2 SHEETS-SHEET 1.



Witnesses:
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Am. Holcomb

Inventor:
Walter P. Murphy
By *Carroll*
his attys.

W. P. MURPHY.

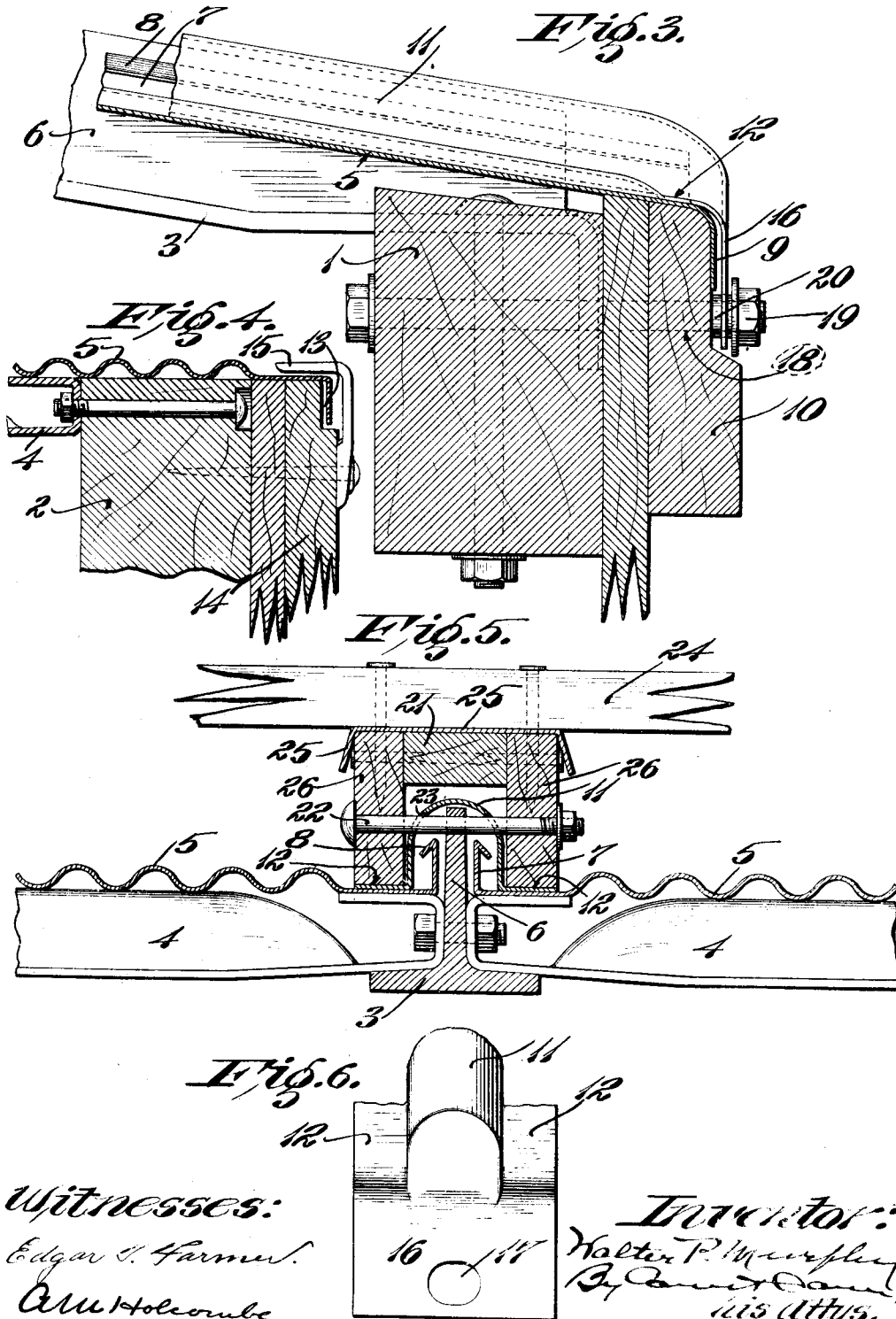
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UNITED STATES PATENT OFFICE.

WALTER P. MURPHY, OF CHICAGO, ILLINOIS.

METAL CAR-ROOF.

1,030,603.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed December 4, 1911. Serial No. 663,755.

To all whom it may concern:

Be it known that I, **WALTER P. MURPHY**, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Metal Car-Roofs, of which the following is a specification.

My invention relates to radial car roofs in which the roof covering consists of sheets of metal extending from eaves to eaves of the car supported directly on the purlins, and has for its object the improvement of roofs of this type, particularly with respect to the roof sheet, seam cap and running board saddle, and arrangement of these parts on the roof substructure.

Further objects of my invention will appear in connection with the description of the embodiment thereof illustrated in the drawings accompanying this application and forming a part thereof, and are more particularly pointed out in the claims.

In the drawings, in which like characters are used to designate like parts throughout the several views,—Figure 1 is a top plan view of a part of a car roof, partly broken away to show the roof substructure; Fig. 2 is a vertical transverse section through a part of the top of a car on the line 2—2 in Fig. 1; Fig. 3 is a transverse section through the corner of a car showing the eaves fastening for securing the roof covering in place; Fig. 4 is a longitudinal vertical section through the upper corner of the end of a car showing the clip for securing the roof sheets at the end of the car in elevation; Fig. 5 is a vertical section on the line 5—5 in Fig. 2 through a part of my improved roof adjacent a carline showing the purlins in side elevation; and Fig. 6 is an elevation of the end of the seam cap.

Referring to the drawings, my improved roof as applied to a box car having wooden side plates 1 and wooden end plates 2 comprises metal carlines 3 extending from one side plate to the other in substantially the arc of a circle, and securely bolted to the side plates at the ends. Metal purlins 4 extend lengthwise of the car parallel with the side plates, and bridging the spaces between the carlines, to which they are rigidly bolted.

Upon the purlins are arranged corrugated metal roof sheets 5, extending from eaves to eaves, with the corrugations running length-

wise of the sheets across the car. These roof sheets lie between the vertical webs 6 of the carlines, with their side margins struck up to form flanges 7 having rebent extremities 8, the sheets being of such width that the flanges 7 are spaced from the webs 6 of the carlines adjacent thereto. The corrugations stop short of the ends of the sheets and the end margins of the roof sheets are turned down forming terminal flanges 9 extending into rabbets in the upper outside corners of the side fasciæ 10. The corner of the fascia where the sheet turns down over it should be rounded, and the ends of the roof sheets rounded where they are bent down to form the terminal flanges 9 so that in case of deformation of the roof substructure, tending to spread the car at the eaves or twist it out of square, the roof sheets may slip over the corner of the fascia sufficiently to prevent their being strained or torn thereby. The roof sheets are held in place on the substructure by means of the seam caps 11 straddling the flanges 8 of the roof sheets and spaced therefrom, and covering the gaps between them and the webs 6 of the carlines. These seam caps have lateral flanges 12 resting on the roof sheets between the corrugations and the flanges 7 thereof, as shown in Fig. 5. This form and arrangement of roof sheets and seam caps makes a water tight joint between the roof sheets, and allows a limited movement of the roof sheets lengthwise of the car to avoid possibility of the sheets being strained or torn by reason of the distortion of the roof substructure to which wooden box cars having steel floor framing are especially liable. At the ends of the car the roof sheets are turned down along their side margins into rabbets 13 in the end fasciæ 14, and loosely secured by clips 15 spaced from the margins of the roof sheets to allow some movement thereof, as shown in Fig. 4.

The seam caps 11 do not run clear across the car from eaves to eaves, but extend only from the eaves to a point just short of the center line of the car. At their inner ends they are loosely held in place by the running board saddles, and at their outer ends they are turned down over the ends of the carlines and roof sheet flanges, these turned down ends 16 being punched at 17 to enable a bolt 18 to be passed through to secure them to the eaves. These bolts 18 pass through the fascia and side plate, and have a nut 19

and thimble 20 so arranged that the fascia is secured to the side of the car by the thimble, which serves at the same time to space the nut away from the fascia to enable the seam cap to have some longitudinal movement in a direction across the car, as shown in Fig. 3. The elongated holes 17, shown in Fig. 5, permit limited sidewise movement of the ends of the seam caps upon the top of the car.

The running board saddles 21 span the roof at the ridge from purlin to purlin, straddling the seam caps, and are secured to the carlines by bolts 22 running through the top edges of the webs thereof and the side pieces 26 of the running board saddles. Normally the running board saddles and running boards are supported by these bolts directly from the carlines, thus leaving the roof sheets and seam caps free to move slightly on the roof substructure, but in case of excessive weight upon the running boards the ends of the running board saddles would bear on the seam caps and roof sheets over the purlins and be supported directly by the latter. The tops of the running board saddles are provided with sheet metal strips 25, on top of which the running boards 24 are supported, and securely nailed. These metal strips, together with the side pieces 26, which protect the seam caps and roof sheet flanges at the sides, prevent the water from finding its way into the car at the gaps between the ends of the seam caps. Elongated slots 23 are cut through the seam caps where these bolts pass through to allow longitudinal movement of the seam caps, and the running board saddles are slightly spaced from the seam caps to permit the free movement of the latter. The eaves and ridge fastenings, while securing the seam caps from rising from the roof, allow them sufficient lateral play in all directions to avoid binding the roof sheets and still secure them in place on the roof substructure under all conditions.

My improved roof covering is not only flexible and thus the sheets are better adapted to withstand service without tearing, but is free from clips or other attaching devices along the eaves which tend to wear out the sheets in this region, and is quickly applied and easily repaired.

It is evident that the details of the embodiment of my invention described herein may be modified without affecting their co-operation with the various elements of the roof in their novel arrangement as devised by me, and I do not wish to be limited to such details.

What I claim and desire to secure by Letters Patent is as follows:

1. In a car roof, a substructure comprising metal carlines extending from eaves to eaves and having vertical webs, purlins extending between the carlines and rigidly se-

cured thereto, the tops of said purlins being at a lower elevation than the tops of the carlines, metal roof sheets arranged on said purlins and having marginal flanges adjacent the vertical webs of the carlines and spaced therefrom, said roof sheets extending from eaves to eaves and being provided with terminal flanges overlying the eaves, and seam caps extending from ridge to eaves and covering the vertical webs of the carlines and marginal flanges of the roof sheets and spaced from the latter, said seam caps being loosely secured at the ridge and eaves.

2. In a car roof, a substructure comprising metal carlines extending from eaves to eaves and having vertical webs, purlins extending between the carlines and rigidly secured thereto, the tops of said purlins being at a lower elevation than the tops of the carlines, corrugated metal roof sheets arranged on said purlins and having marginal flanges adjacent the vertical webs of the carlines and spaced therefrom, said roof sheets extending from eaves to eaves and being provided with terminal flanges overhanging the eaves, and seam caps extending from ridge to eaves and covering the vertical webs of the carlines and marginal flanges of the roof sheets and spaced from the latter, said seam caps being loosely secured at the ridge and eaves and provided with horizontal side flanges along their lower edges bearing upon the roof sheets between the corrugations and marginal flanges thereof.

3. In a car roof, a substructure comprising metal carlines extending from eaves to eaves and having vertical webs, and horizontal base flanges, purlins extending between the carlines and rigidly secured thereto, the tops of said purlins being at a lower elevation than the tops of the carlines, said purlins being supported on the base of the flanges of the carlines, corrugated metal roof sheets arranged on said purlins and having marginal flanges adjacent the vertical webs of the carlines and spaced therefrom, said roof sheets extending from eaves to eaves and being provided with terminal flanges overhanging the eaves, and seam caps extending from ridge to eaves and covering the vertical webs of the carlines and marginal flanges of the roof sheets and spaced from the latter, said seam caps being loosely secured at the ridge and eaves and provided with horizontal side flanges along their lower edges bearing upon the roof sheets between the corrugations and marginal flanges thereof.

4. In a car roof, a substructure comprising metal carlines extending from eaves to eaves, purlins extending between the carlines and rigidly secured thereto, corrugated metal roof sheets arranged on said purlins and having marginal flanges, said roof sheets extending from eaves to eaves and being

provided with terminal flanges overhanging the eaves, and seam caps extending from ridge to eaves and covering the marginal flanges of the roof sheets and spaced from the latter, said seam caps being loosely secured at the ridge and eaves and provided with horizontal side flanges along their lower edges bearing upon the roof sheets between the corrugations and marginal flanges thereof.

5. In a car roof, end roof sheets arranged transversely of the car and extending from eaves to eaves, said roof sheets being provided with downturned marginal side and end flanges, said end flanges overhanging the eaves in contact therewith, and said side flanges overhanging the ends of the car and spaced therefrom.

6. In a car roof, end roof sheets arranged transversely of the car and extending from eaves to eaves, said roof sheets being provided with downturned marginal side flanges overhanging the ends of the car and spaced therefrom and means for preventing bodily movement of the sheets transversely of the car.

7. In a car roof, a rigid substructure, movable roof sheets arranged transversely thereon, and seam caps covering the transverse joints between adjacent roof sheets, said seam caps being secured at the ridge and eaves to the roof substructure by bolts passing through orifices in said seam caps, said orifices being longer horizontally than the bodies of the bolts whereby said seam caps are permitted limited movement in all directions upon the substructure but prevented from vertical movement with respect thereto.

8. In a car roof, a rigid substructure, movable roof sheets arranged transversely thereon, and seam caps covering the transverse joints between adjacent roof sheets, said seam caps being loosely secured at the ridge and eaves to the roof substructure in such manner that said seam caps are permitted limited movement in all directions upon the substructure but prevented from vertical movement with respect thereto.

9. In a car roof, a rigid substructure, movable roof sheets arranged transversely thereon, and seam caps covering the transverse joints between adjacent roof sheets and turned down at the eaves, said seam caps being secured at the ridge and eaves to the roof substructure by horizontal bolts passing through orifices in said seam caps, said orifices being larger horizontally than the bodies of the bolts.

10. In a car roof, a rigid substructure, movable roof sheets arranged transversely thereon, and seam caps covering the transverse joints between adjacent roof sheets and turned down at the eaves, said seam caps being secured at the ridge and eaves

to the roof substructure by horizontal bolts passing through orifices in said seam caps, said orifices being larger horizontally than the bodies of the bolts, said bolts at the eaves being passed through the fascia and side plate, and provided with thimbles between the outer heads and the fascia spacing said outer heads from the fascia and seam caps.

11. In a car roof, roof sheets extending from eaves to eaves, metal carlines having vertical webs projecting above the roof sheets, seam caps covering said carlines and resting on the marginal portions of adjacent roof sheets, and running board saddles straddling said carlines and secured thereto and partially supported thereon, said running board saddles being horizontally spaced from said seam caps.

12. In a car roof, roof sheets extending from eaves to eaves and having marginal flanges, metal carlines having vertical webs projecting above the marginal flanges of the roof sheets, seam caps covering said carlines and marginal flanges of the roof sheets, said seam caps extending from the eaves to a point short of the ridge of the car, running board saddles straddling the carlines and ends of the seam caps at the ridge, and having side and top pieces bridging the gaps between the ends of the seam caps, said running board saddles being secured to the carlines by means passing through the said caps between the ends of the seam caps and over the marginal flanges of the roof sheets.

13. In a car roof, roof sheets extending from eaves to eaves and having marginal flanges, metal carlines having vertical webs projecting above the marginal flanges of the roof sheets, seam caps covering said carlines and marginal flanges of the roof sheets, said seam caps extending from the eaves to a point short of the ridge of the car, running board saddles straddling the carlines and ends of the seam caps at the ridge, and having side pieces bridging the gaps between the ends of the seam caps, said running board saddles being secured to the vertical webs of the carlines by bolts passing through the side pieces and between the ends of the seam caps and over the marginal flanges of the roof sheets.

14. In a car roof, roof sheets extending from eaves to eaves and having marginal flanges, metal carlines having vertical webs projecting above the marginal flanges of the roof sheets, seam caps covering said carlines and marginal flanges of the roof sheets, running board saddles straddling the carlines and seam caps at the ridge, and having side pieces secured to the vertical webs of the carlines by bolts passing through the side pieces and over the marginal flanges of the roof sheets.

15. In a car roof, a roof substructure com-

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TRIMMING MACHINE.
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3 SHEETS—SHEET 1.

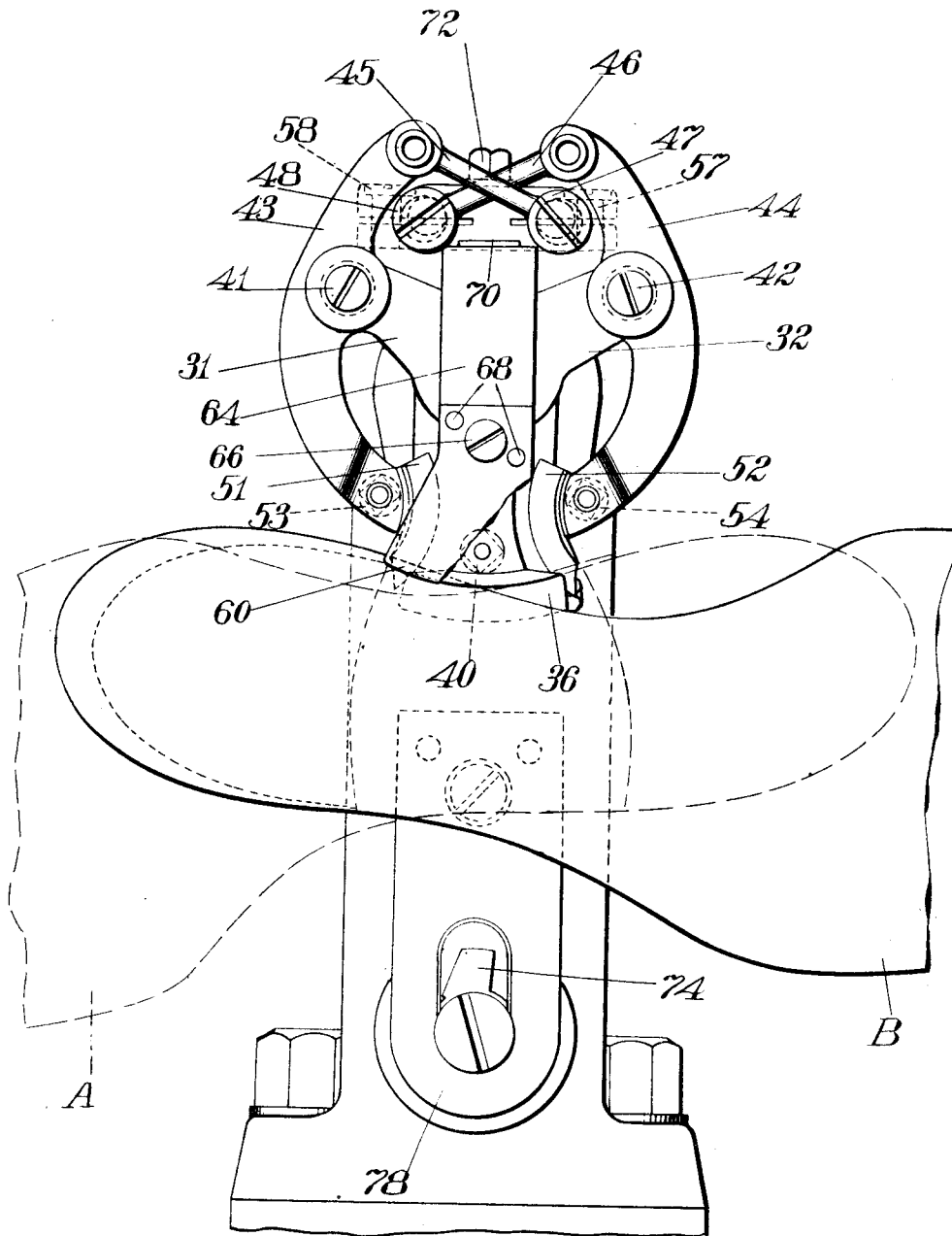


Fig. 1.

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