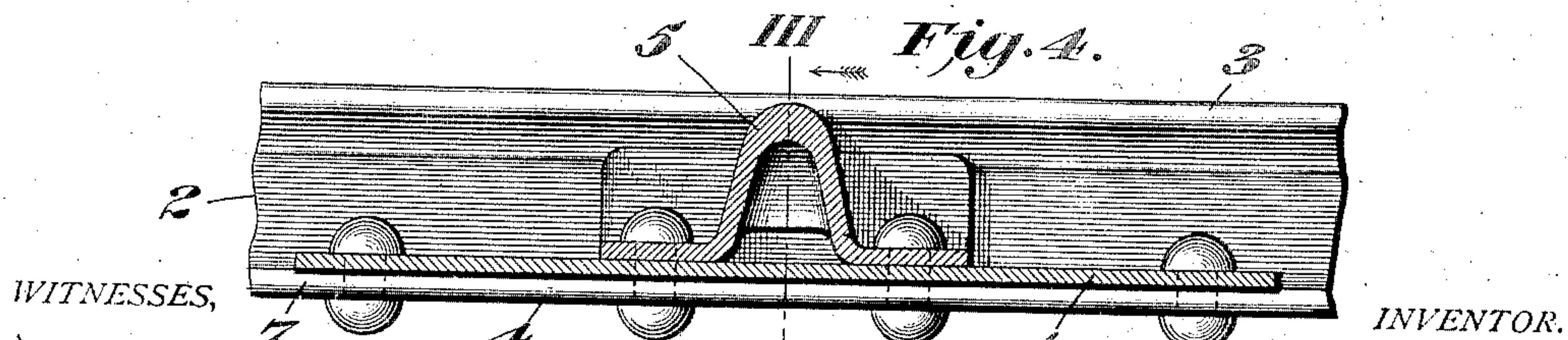
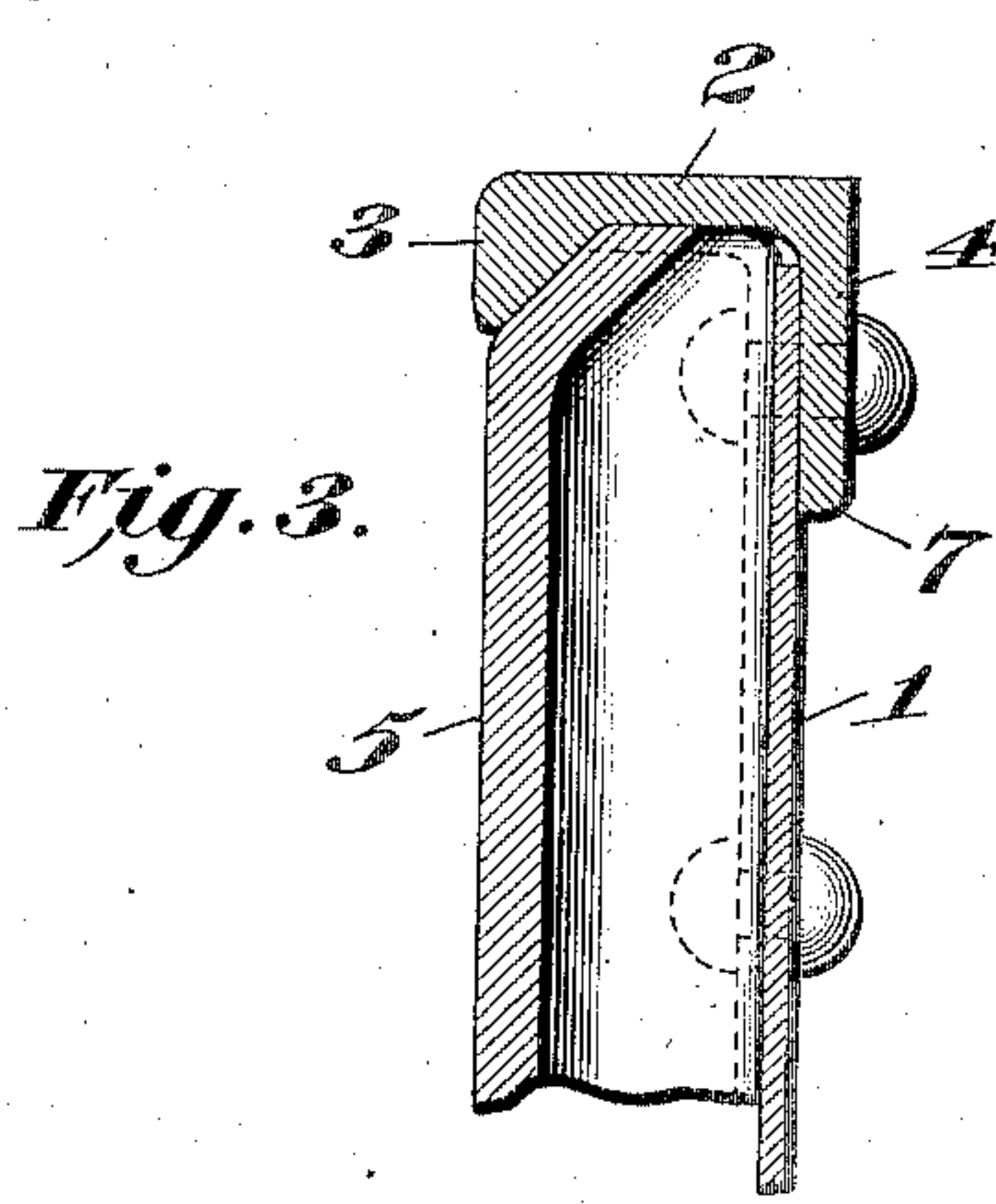
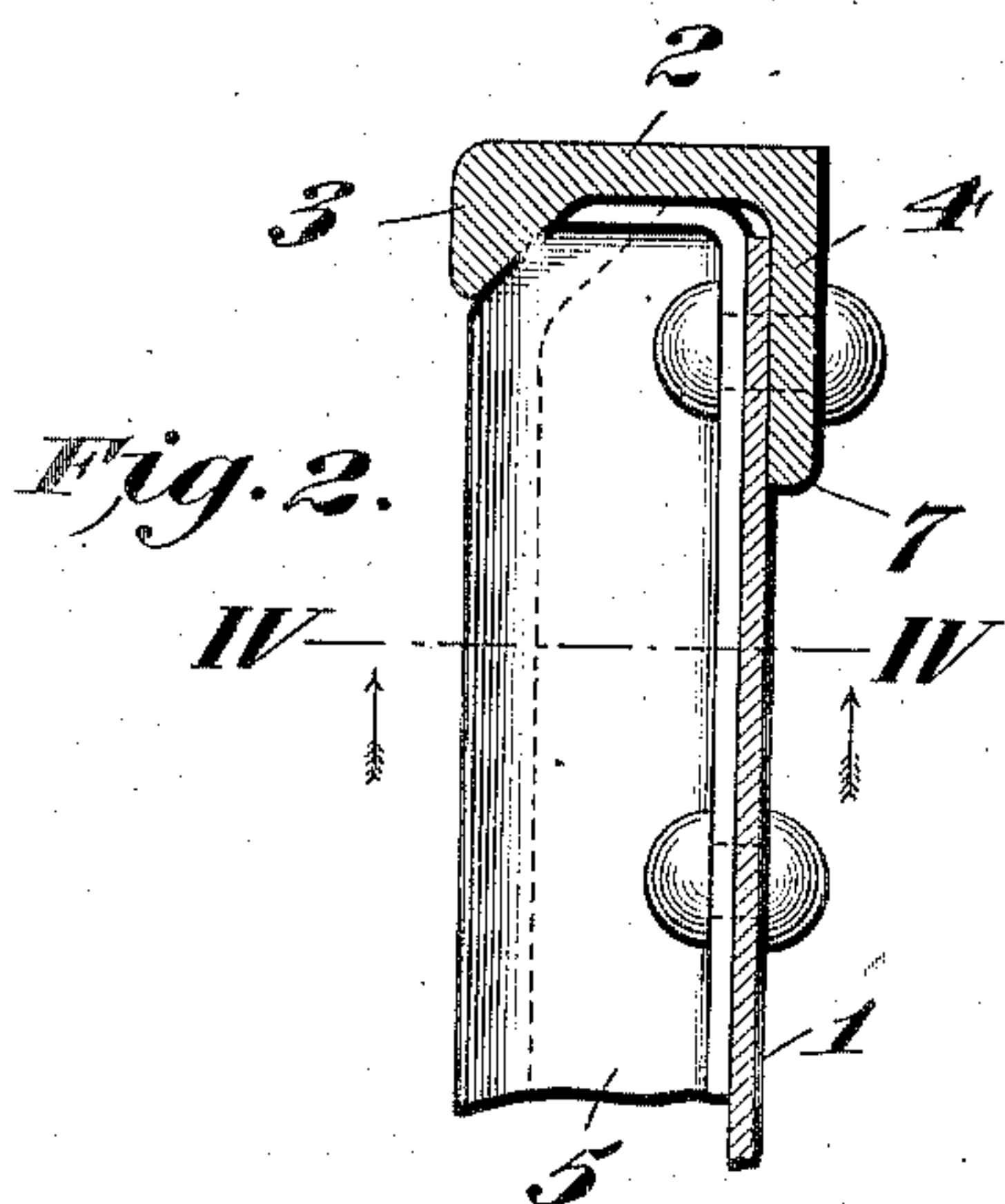
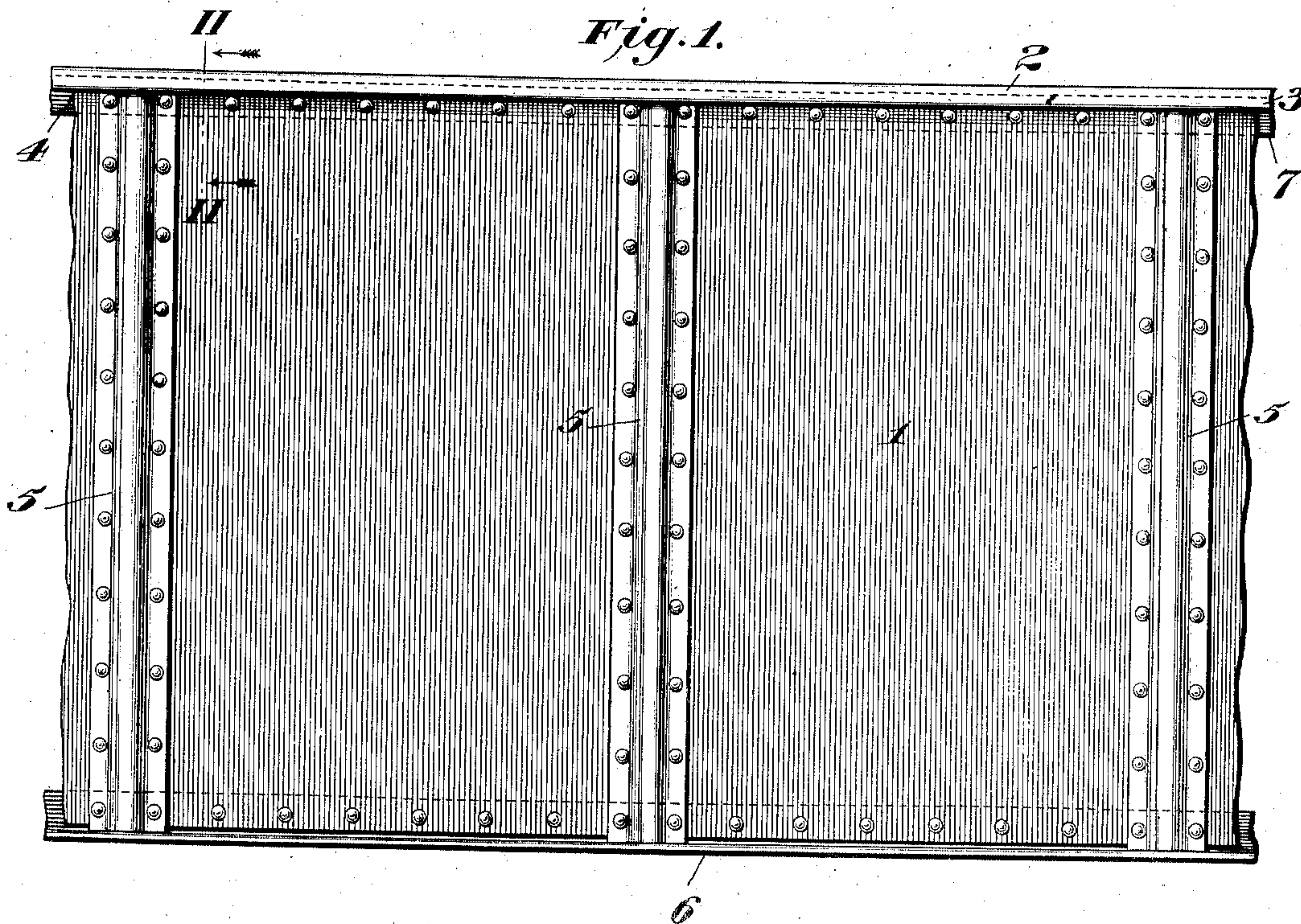


R. V. SAGE.  
CONSTRUCTION OF METAL CARS AND FLANGED BAR THEREFOR.  
APPLICATION FILED OCT. 2, 1905.

907,410.

Patented Dec. 22, 1908.



WITNESSES,  
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# UNITED STATES PATENT OFFICE.

RALPH V. SAGE, OF THE BOROUGH OF WESTMONT, PENNSYLVANIA.

## CONSTRUCTION OF METAL CARS AND FLANGED BAR THEREFOR.

No. 907,410.

Specification of Letters Patent.

Patented Dec. 22, 1908.

Application filed October 2, 1905. Serial No. 280,923.

*To all whom it may concern:*

Be it known that I, RALPH V. SAGE, a citizen of the United States, residing in the borough of Westmont, in the county of Cambria and State of Pennsylvania, have invented certain new and useful Improvements in Construction of Metal Cars and Flanged Bars Therefor; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to railway cars and more particularly to the construction of same with respect to a special top guard angle which I have devised for strengthening and stiffening the upper edges of the sides and ends thereof.

In the construction of railway cars and especially those made of metal for carrying freight, upper strengthening members have been used composed of ordinary rolled angles, channels or similar sections secured to the upper edges of the cars, but I have found by experience that these ordinary forms become too easily bent or broken on their outer edges, and to prevent this difficulty is the object of my present invention.

My invention includes a flanged bar constituting an angle of special form, having the outer edge of one of its legs provided with a bulb of substantially triangular cross section with rounded corners, the other or plain leg of said angle being provided with a rounded corner on its exterior edge, thus leaving the interior surface of this plain leg to be substantially straight throughout its width and terminating in an approximately rectangular corner.

In the preferred form of car construction embodying my invention, I secure my special flanged bar or top guard angle to the top of a metal car-side or end with the inner surface of the plain leg of said angle resting against and secured to the inner side of the upper edge of the plates forming the car-side or end with the bulb leg of said angle projecting outwardly. At intervals, as may be required, I also provide metal stakes secured to the car sides, the upper ends of which are fitted against the lower surface of the projecting bulb-leg of my special angle, and the upper ends of said stakes may be secured to the car sides and the plain leg of my special angle by through rivets or bolts.

My special form of top guard angle is such that on account of the bulb on the edge of its outstanding leg, it is particularly adapted to withstand shocks from falling material, such as lumps of coal, stone, etc., without becoming bent or broken and at the same time it provides extra metal at the upper edge of the car sides, which strengthens said sides when considered or acting as girders to carry the load of the car and its lading.

Although, for the purpose of simplifying the description and drawings, I have shown my construction as applied to the side of a gondola car, I wish it understood that it is equally applicable to the ends of a car and to other forms of cars, as may be readily understood.

Having thus given a general description of my invention, I will now refer to the sheet of drawings forming part hereof, in which like characters of reference designate like parts.

Figure 1 is a fragmentary side elevation of a gondola car showing my top guard angle in position. Fig. 2 is a vertical cross section on the line II—II of Fig. 1. Fig. 3 is a vertical cross section on the line III—III of Fig. 4. Fig. 4 is a horizontal sectional plan on the line IV—IV of Fig. 2 looking upward in the direction of the arrows.

In the drawings 1 designates the car side preferably formed of metal plates; 2 is my improved flanged bar or top guard angle of special form; and 3 is the bulb or reinforced edge of said angle for the purpose of strengthening and stiffening the same. It will be noted that the bulb 3 is of substantially triangular cross section with rounded corners and as viewed in section, its interior surface is inclined approximately 45 degrees to the lines of the legs, although this angle may be more or less, as desired.

4 is the plain leg of my special top guard angle, which, however, differs from the leg of an ordinary structural angle in that the rounded edge technically termed the "rounding" as indicated at 7, is on the exterior of the edge as shown, whereas the ordinary structural angle has this rounding on the interior projecting corner of its leg, as is well known. The advantages of having the "rounding" on the exterior edge of the plain leg are that it thus forms a neat and smooth finish against the side of the car, avoiding reentrant angles, and it also provides a longer, and thus more substantial, straight



bearing for the interior surface of said leg against the plate to which it is attached, all as clearly shown in Figs. 2 and 3 of the drawings.

5 In order to complete the illustration of my invention, I have shown car stakes 5 in connection with the car-sides, which stakes are fitted within and against the lower surfaces of my special top guard angle, although this particular form of stake is no part of my present invention, but is the subject of another application for United States Letters Patent, filed June 9th, 1905, Serial No. 264,395. I wish it understood however, that my special top guard angle can be used in connection with any form of car stake such as those composed of angles, T-bars, pressed plates, corrugated bars or even wooden stakes or other forms, if desired.

20 6 is the bottom flange angle of the car-sides attached to the sides 1 and the stakes 5 as shown; this angle in the form of construction illustrated, acts as the lower chord of the girder, whereas my special form of top guard angle acts also as the upper chord in addition to its other functions. In connection with my construction however, other forms of lower stiffening or chord members may be used such as channels, Z-bars, pressed plates or other shapes, instead of ordinary angles as designated by 6 in the drawings.

30 Although I have shown my invention in a particular form as applied to a gondola car, I do not limit myself to the exact details of the construction, but may apply same to other cars as hereinbefore stated and may modify the same or use equivalents thereof within the scope of my invention as pointed out in the claims.

40 Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. A flanged bar for railway cars comprising an angle provided with a bulb on one of its outer edges, said bulb being of substantially triangular cross section with rounded corners, the other leg having an interior plane surface and a rounding on its exterior extremity.

50 2. In a railway car, a top guard angle secured to the upper edge of the car side by one of its legs, with the other leg outstanding and provided on its exterior edge with an integral bulb or thickening thereof of substantially triangular cross section with rounded corners.

60 3. In a railway car, a top guard angle secured to the inner side of the upper edge of the car-side by one of said angle legs, the other and outstanding leg of said angle being provided with a bulb or reinforcement integral with the edge thereof, said bulb being of substantially triangular cross section with rounded corners.

65 4. In a railway car, the combination with

the car-side and the vertical stiffening members or stakes thereof, of a flanged bar or top guard angle secured to the upper edge of said car-side and stakes aforesaid, and provided with a bulb or reinforcement of substantially triangular cross section with rounded corners integral with its outstanding edge. 70

5. The combination with a car-side and the vertical stiffening member or stakes thereof, of a flanged bar or top guard angle, one leg of which is secured to the inner side of the upper edge of said car side and to said stakes, and having an outwardly projecting leg provided with an integral bulb or thickening of substantially triangular cross section with rounded corners on the exterior edge thereof. 80

6. The combination with a car-side and the vertical stiffening member or stakes thereof, of a flanged bar or top guard angle, one leg of which is secured to the inner side of the upper edge of said car-side and to the upper ends of the aforesaid stakes, said angle having an outwardly projecting leg provided with an integral bulb or thickening on the outer edge thereof, said bulb being of substantially triangular cross section with rounded corners. 90

7. In a railway car, a flanged bar or angle of special form, one leg of which is plain and attached vertically to the inside of the upper edge of the car side, the other leg extending horizontally outwards and reinforced or provided with a bulb of substantially triangular cross section with rounded corners on the lower side of its outer edge, car stakes attached to the car-sides and having their upper ends bent or formed to fit the general inner contour of said reinforced member and bearing against same, and means for securing said top guard angle and stakes to the car side. 105

8. In a railway car provided with metal plate sides, the combination of the stakes or stiffening members secured thereto, a top guard angle of special form, one leg of which is plain with a rounding on its exterior edge, the other leg of said angle being provided on its exterior edge with an integral bulb or thickening of substantially triangular form with rounded corners, said top guard angle being secured to the inner side of the upper edge of the car with its interior plane surface bearing thereon, the exterior leg of said angle outstanding, the upper ends of said car stakes being fitted to conform to the lower and interior contour of said bulb leg and means for securing said angle and stakes to the car side. 120

9. In a railway car provided with metal plate sides, the combination of the stakes or stiffening members secured thereto, a top guard angle of special form, one leg of which is plain with a rounding on its exterior edge, the other leg of said angle being provided on 125 130



its exterior edge with an integral bulb or thickening of substantially triangular form with rounded corners, said top guard angle being secured to the inner side of the upper  
5 edge of the car with its interior plane surface bearing thereon, with the exterior leg of said angle outstanding, the upper ends of said car stakes being fitted to conform to the lower and interior contour of said bulb leg, and

means for securing said angle and stakes to 10 the car side.

In testimony whereof, I hereto affix my signature in the presence of two witnesses.

RALPH V. SAGE.

Witnesses:

STONE EDELEN,  
ELMER SEAVEY.