

J. E. WOODBRIDGE.
TRUNNION SUSPENSION FOR RADIATORS.
APPLICATION FILED JUNE 28, 1907.

1,056,874.

Patented Mar. 25, 1913.

Fig. 1.

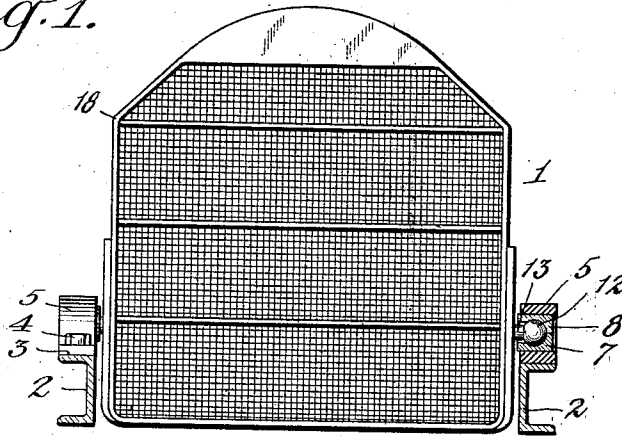


Fig. 2.

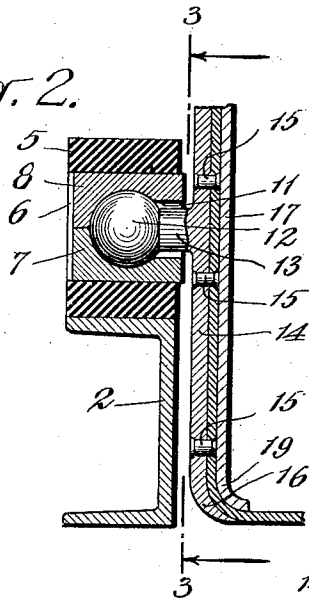


Fig. 3.

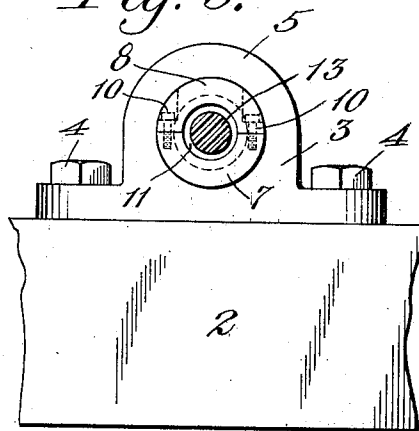
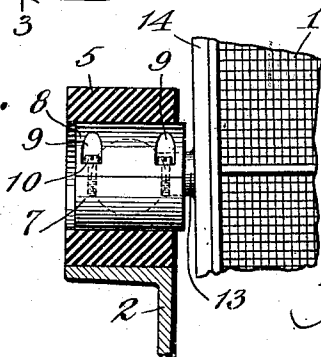


Fig. 4.



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TRUNNION SUSPENSION FOR RADIATORS.

1,056,874.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed June 28, 1907. Serial No. 381,330.

To all whom it may concern:

Be it known that I, JAMES E. WOODBRIDGE, a citizen of the United States, residing in Bridgehampton, county of Suffolk, and State of New York, have invented a new and useful Improvement in Trunnion Suspensions for Radiators, of which the following is a description.

This invention relates to supporting means for coolers or radiators for automobiles and has particular reference to a "trunnion suspension" for said coolers or radiators.

Among the objects of my invention may be noted the following: to provide means whereby the radiator may be supported on the frame of an automobile, or a car of like character, in such manner as to prevent the jolts and jars and strains of the car from affecting the radiators; to provide means whereby radiators may be suspended on cars without straining, springing or twisting the frame of the radiator, irrespective of what may happen to the car in ordinary running; and to provide a simple and effective trunnion support or pivotal suspension means for radiators in automobile construction.

With the above objects in view, and others which will be detailed during the course of this description, my invention consists of the parts, features and combinations of elements hereinafter described and claimed.

In order that my invention may be clearly understood, a sheet of drawings forms part of this specification, and therein: Figure 1 is a front elevation of cooler or radiator shown as suspended, according to my invention, on the frame of the car; Fig. 2 is a vertical, central section on an enlarged scale, showing the construction of the trunnion suspension and the adjacent portion of the radiator; Fig. 3 is an elevation of that portion of Fig. 2, behind the line 3—3 of the latter figure, and looking in the direction of the arrow and showing the trunnion in section; and Fig. 4 is an enlarged detail showing in section and elevation the trunnion support and a portion of the radiator or cooler, and showing how the movement of the latter may vary relatively to the frame of the car.

In the drawings, the numeral 1 indicates the radiator or cooler used on automobiles, and 2 indicates the angle bars of the frame

or chassis of an automobile, upon the front portion of which the radiator is usually supported. A bracket 3 is bolted, riveted or otherwise secured to the frame portion 2, as indicated at 4, said bracket being provided with a journal bearing 5, provided with a transverse aperture 6, in which slides a journal composed of two semi-circular portions 7 and 8, the former of which is tapped and screw-threaded, and the latter of which is provided with opposite bores and apertures, indicated by 9, for the reception of the screws 10, the heads of which are completely housed by said apertures 9, said screws being passed through the portion 8 and tapped into the portion 7, as clearly shown in Figs. 3 and 4. These journal portions 7 and 8 are grooved and bored so as to provide a ball-socket 11, for the reception of the ball 12, on the end of the stem or trunnion 13, formed as a part of the supporting-plate 14, riveted or otherwise suitably secured, as indicated at 15, to the opposite sides of the frame of the radiator, the rivets passing through said frame, as indicated in Fig. 2. Preferably, the support 14 is extended around the lower corner of the frame of the radiator, so as to provide a reinforce, as at 16. A further reinforce 17, for the frame of the radiator, is provided in the shape of a plate or strip of heavy metal applied to the inside of the radiator frame and extending, preferably, from the upper angle 18 of the frame of the radiator, down to the bottom of the latter, and curved around the angle of said frame at 19.

By the construction above described, a trunnion-suspension for the radiator is provided, constituting a universal joint which is not only strong, simple and compact, but which provides for complete freedom of movement between the car and the radiator. That is to say, the ball-bearing in the two-part slide-journal, which latter has its bearing in the bracket 3, permits the radiator to have universal swinging movement on the car, and relatively, also, to the two-part journal, while the latter is free to reciprocate and have rotary or oscillatory movement in said bracket. Hence, the frame of the car can jar and jolt to any extent without straining the radiator or having any detrimental effect thereon, and the frame of the car may receive all kinds of racking strains and

spring to the limit of its elasticity, without straining, twisting or otherwise injuriously affecting the radiator.

Fig. 4 illustrates the manner in which the two-part slide-journal 7—8 may slide back and forth in the bracket 3, and it is obvious that said journal may also have rotary or oscillatory movement in said bracket, while the ball-bearing or trunnion-support between the radiator and said two-part journal permits the radiator to have universal movement relatively to both the two-part journal and the frame of the machine. Hence, twisting or straining action of the opposite portions of the frame of the car in which the radiator is suspended may take place in practically any direction without affecting the radiator, since the two-part journal slides and rotates relatively to the car, while the ball trunnions provide for universal movement of the car, two-part journal and the radiator relatively.

It will be understood that the radiator is usually steadied at the top by a rubber water-circulating hose which is connected to the motor. This rubber hose yields sufficiently to render the radiator independent of the engine vibration, and it is also sufficiently elastic to resist the sudden jars which the radiator receives when a car runs into holes or otherwise receives jolts, in road running.

The reinforce 17 on the inside of the frame of the radiator is for the purpose of preventing the radiator from leaking in the event of an accident, resulting in ripping the support 14 of the trunnion from the side of the frame of the radiator; that is to say, should an accident occur such as would tear the supporting-plate 14 from the radiator frame, the latter would ordinarily leak, but, by applying the reinforcing strip as indicated, leakage will be prevented and the frame of the radiator may be fractured and torn without putting the radiator out of action or use. It will be readily understood that excessive strains might rip the supporting-plate 14, secured by the rivets 15, from the side of the radiator frame, but with the reinforcing plate 17 in place the radiator will still be capable of use.

While, in most cases, I deem it better to

interpose the two-part journal between the ball 12 and the bearing 5, because of the advantages heretofore set forth, and while this is the preferred form of my invention, still, in some instances, I might, and have found it desirable to, dispense with said two-part journal and allow the ball 12 to pivot on the bearing 5 and move relatively thereto. Therefore, in my claims, I shall set forth my invention in sufficiently broad terms to cover both ideas of means.

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

1. A radiator support for automobiles comprising ball trunnions attached to opposite sides of the radiator, and a two-part horizontally separable casing embracing each trunnion, said casing having internal spherical surfaces contacting with the trunnions and external cylindrical surfaces, and cylindrical bearing supports carried by the automobile frame constructed to permit axial sliding of said casing, whereby universal movement is afforded.

2. A radiator support for automobiles comprising ball trunnions attached to opposite sides of the radiator, two-part cap plates removably secured to said trunnions having internal surfaces conforming to the trunnions and cylindrical external surfaces, and fixed brackets on the side frames having cylindrical bearings inclosing the cap plates and permitting limited longitudinal sliding movement.

3. A radiator support for automobiles comprising ball trunnions secured to the radiator, brackets secured to the side frame having cylindrical bearings, and two-part cap plates conforming to the spherical trunnion surfaces and clamped thereto by countersunk screws, said cap plates having cylindrical outer surfaces to conform to the bearings.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JAMES E. WOODBRIDGE.

Witnesses:

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