W. F. RICHARDS.

DYNAMO MOUNTING.

APPLICATION FILED MAY 15, 1915.

1,242,596.

Patented Oct. 9, 1917.

4 SHEETS—SHEET 1.

Fig. 1.

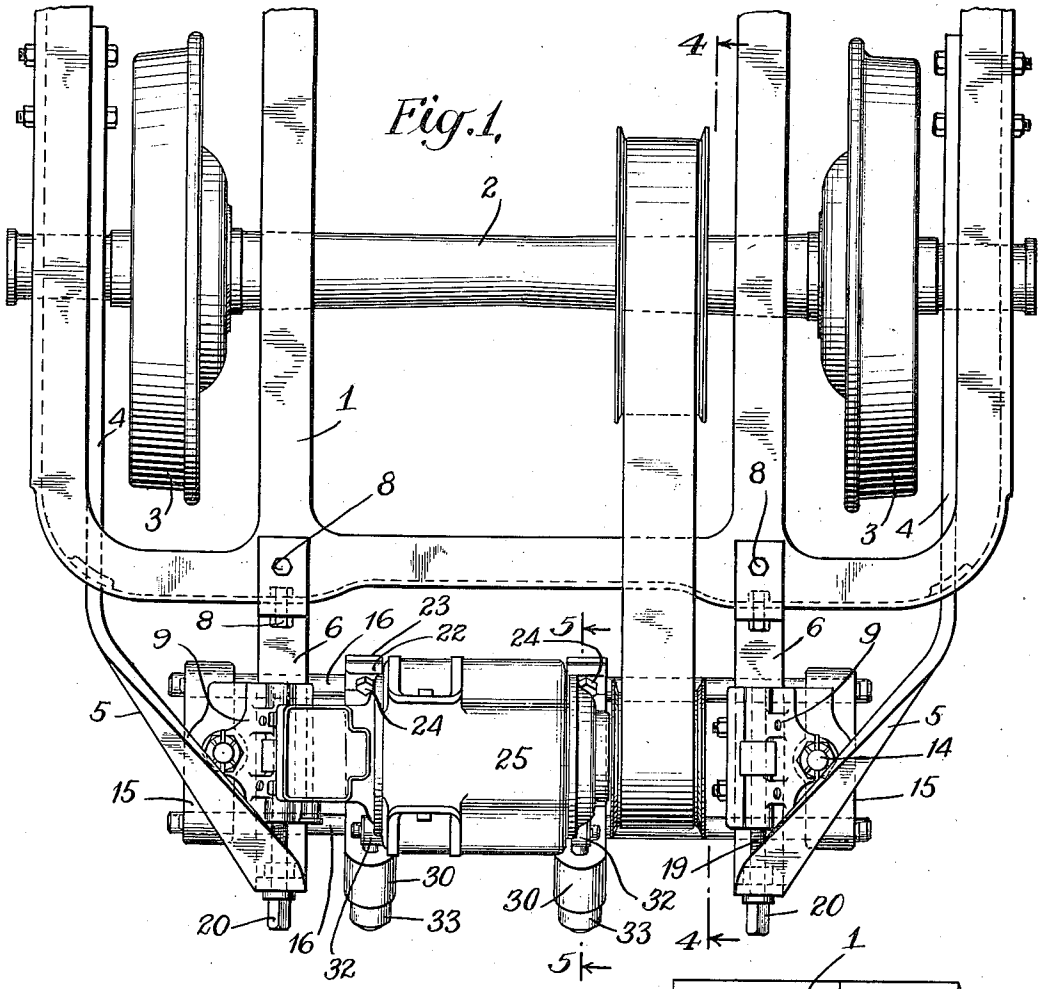
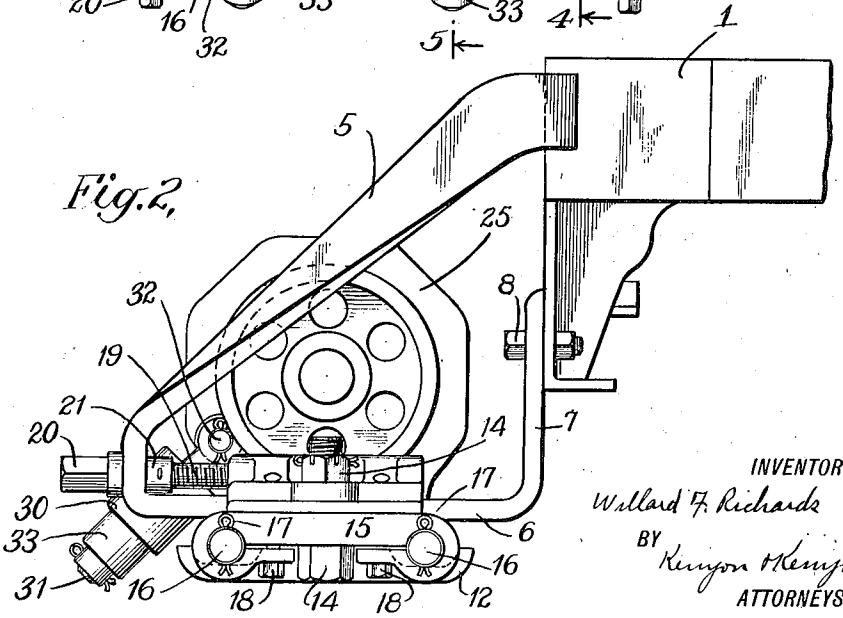


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

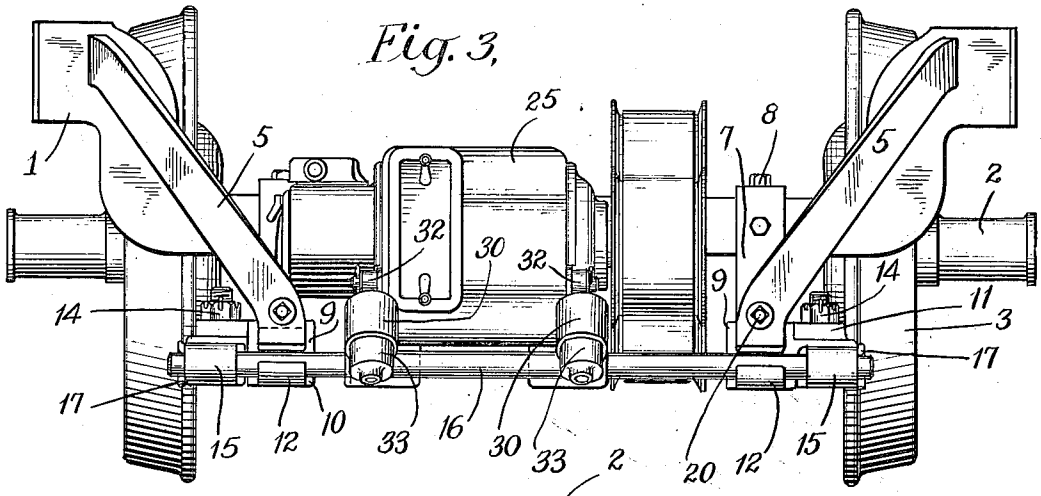


Fig. 4.

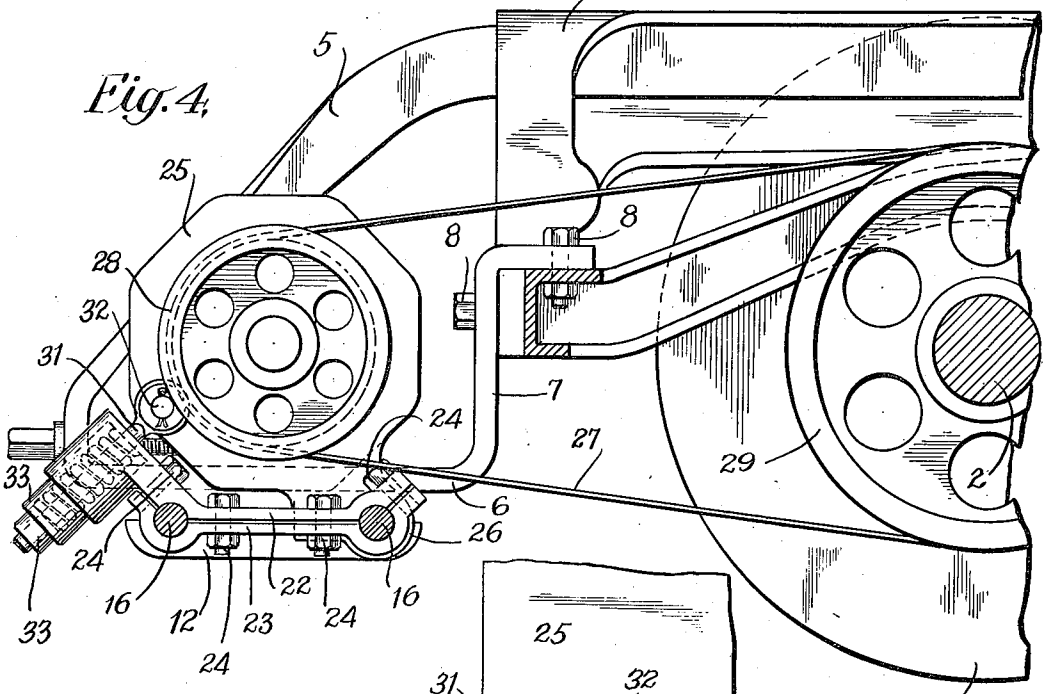
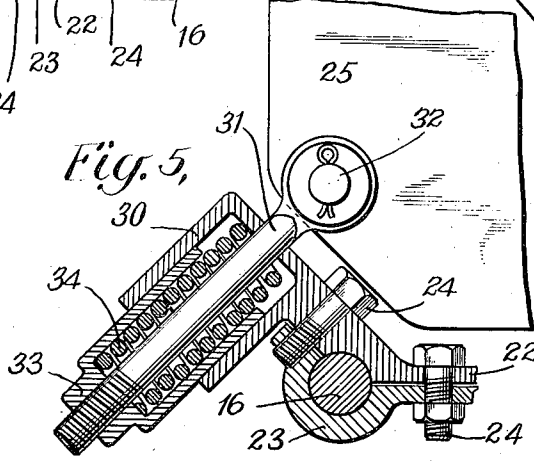


Fig. 5.



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4 SHEETS—SHEET 3.

Fig. 6.

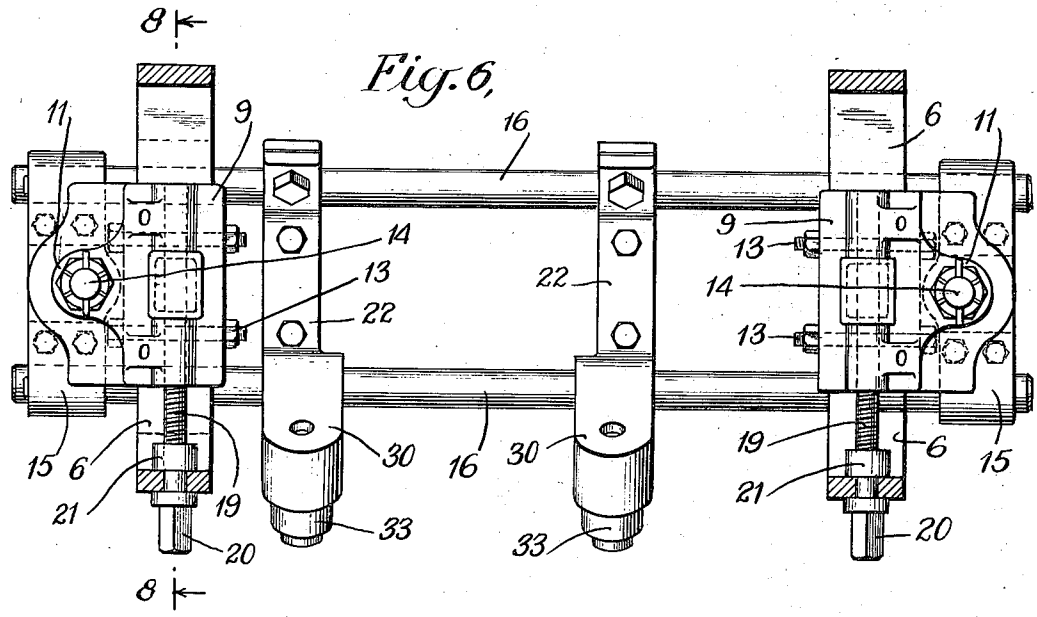


Fig. 7.

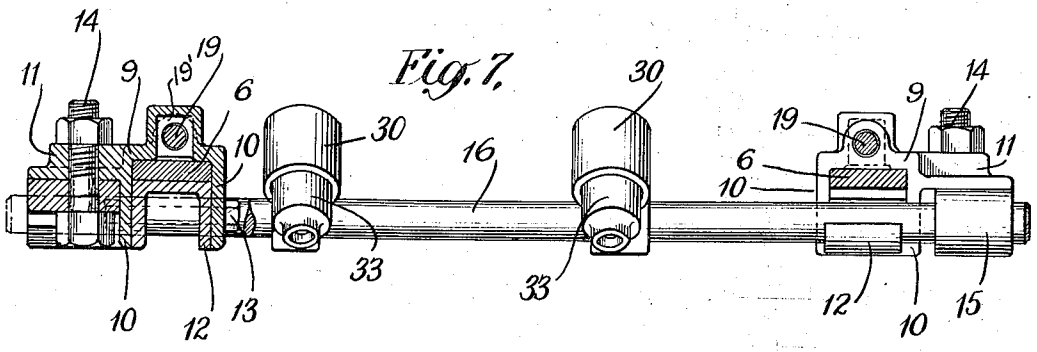
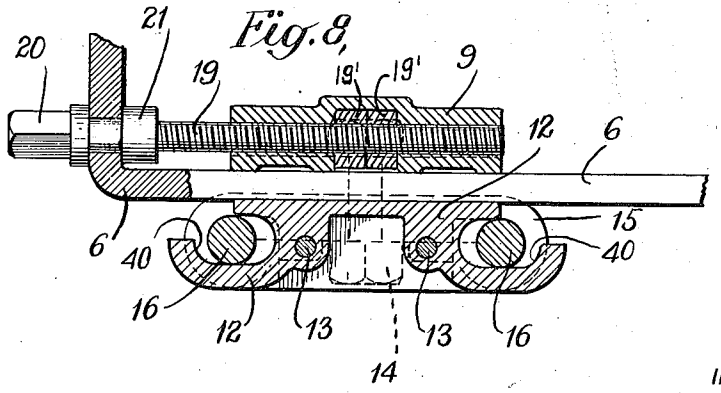


Fig. 8.



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4 SHEETS—SHEET 4.

Fig. 9,

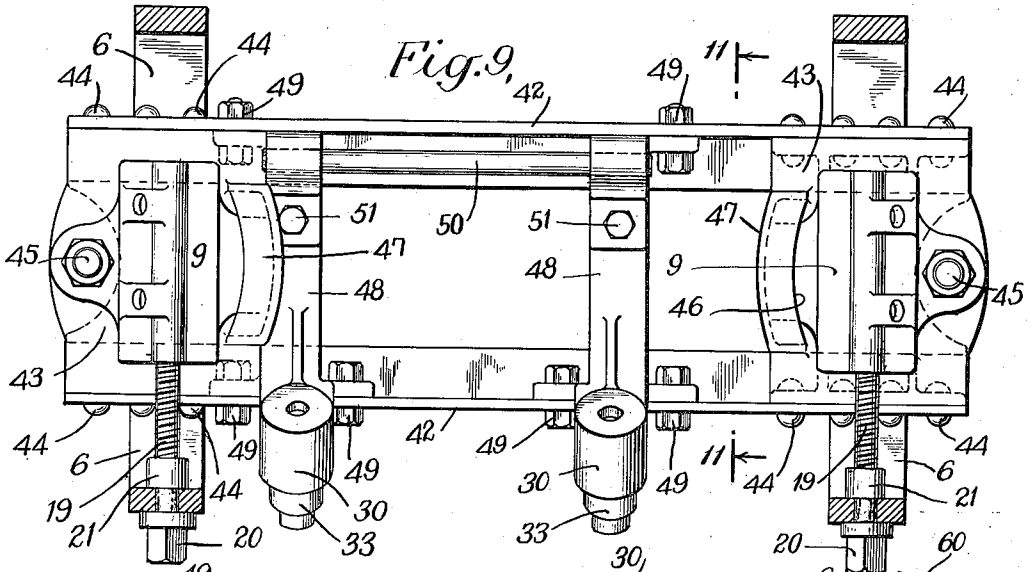


Fig. 10,

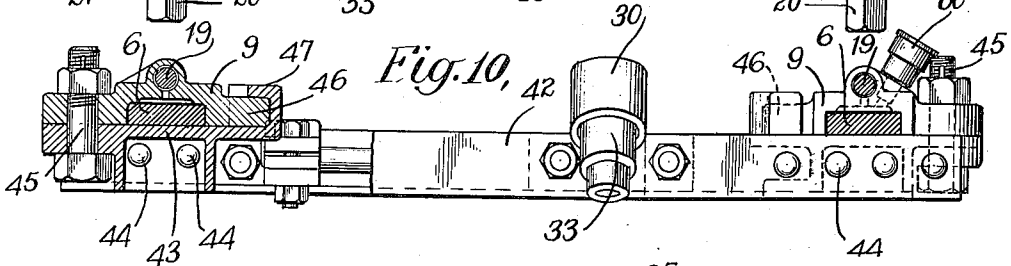


Fig. 11,

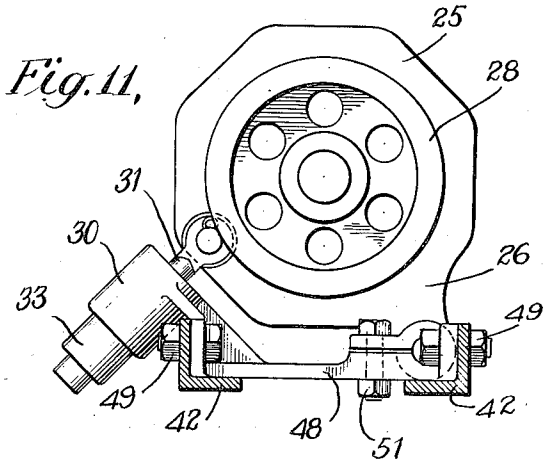
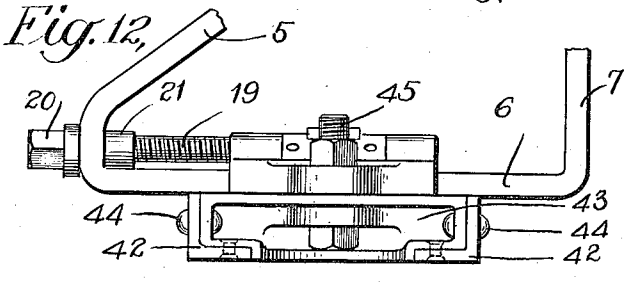


Fig. 12,



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WILLARD F. RICHARDS, OF BUFFALO, NEW YORK, ASSIGNOR TO GOULD COUPLER COMPANY, A CORPORATION OF NEW YORK.

DYNAMO-MOUNTING.

1,242,596. Specification of Letters Patent. Patented Oct. 9, 1917.

Application filed May 15, 1915. Serial No. 28,306.

To all whom it may concern:

Be it known that I, WILLARD F. RICHARDS, a citizen of the United States, and a resident of Buffalo, county of Erie, and State of New York, have invented certain new and useful Improvements in Dynamo-Mountings, of which the following is a specification.

The invention relates to mountings for dynamo electric machines, more particularly to arrangements for mounting such machines on car trucks, where the dynamo is adapted to be driven from one of the car axles. One object of my invention is to provide a simple and efficient arrangement for this purpose, which will not interfere with other apparatus mounted beneath the car. A further object is to provide an arrangement which is compact and in which the dynamo is easily accessible and may be removed for the purpose of inspection and repairs. A further object of the invention is to provide an arrangement in which adjustment of the dynamo supporting means toward and from the car axle, at the same time adjusts the tension on the driving belt by which the dynamo is driven from the car axle. Further objects, features and advantages will more clearly appear from the detailed description given below, taken in connection with the accompanying drawings, which form a part of this specification.

In the drawings Figure 1 is a plan view, illustrating one embodiment of my invention applied on a car truck. Fig. 2 is a side view of the same. Fig. 3 is an end view of the same. Fig. 4 is a section taken on the line 4—4 of Fig. 1. Fig. 5 is a detailed section taken on the line 5—5 of Fig. 1. Fig. 6 is a detailed plan view of the dynamo supporting bed structure or frame. Fig. 7 is an end view of the parts shown in Fig. 6, partly in section. Fig. 8 is a section taken on line 8—8 of Fig. 6. Fig. 9 is a view similar to Fig. 6, but showing a modification. Fig. 10 is an end view of parts shown in Fig. 9, partly in section. Fig. 11 is a section taken on the line 11—11 of Fig. 9, also showing the generator in position. Fig. 12 is an end view of parts shown in Fig. 9.

Referring to Figs. 1 to 8, 1 represents a car truck carrying the axle 2, and car wheels 3. Rigidly bolted to side pieces of the truck on each side thereof, are bars 4, which, where they project in front of the truck, are bent inwardly and downwardly, as at 5, thence they are bent backwardly to form parallel horizontal portions 6, and thence they are bent upwardly as at 7 and over the end piece of the truck and secured thereto by bolts 8. Carried upon the horizontal portions 6 are slides 9, having depending ears 10 and an outwardly extending flange 11. Ears 10 are adapted to pass about and below the horizontal portions or bars 6 and there is placed between them, beneath the bars 6, an auxiliary supporting member 12, secured thereto by lateral bolts 13. Secured to and beneath the flanges 11, by means of vertical pivot bolts 14, are end pieces 15. The two end pieces 15 are secured together by means of two rods 16, provided with cotter pins 17 in their ends. The ends of the rods are firmly clamped to the members 15 by means of screw bolts 18. (See Fig. 2.)

It will thus be seen that rods 16 and end pieces 15 form a frame or bed structure which is supported at each end on the sliding members 9, by means of the vertical pivot bolts 14. In order to adjust either or both ends of this frame or bed structure toward and away from the truck and car axle, there are provided screws 19, screw threaded into the top of the slides 9 and passing through the outer portion of the bars 5, 6 and having square heads 20 on one side of said bars and collars 21 on the other side, both rigidly secured to the screws 19, so that upon turning the screws 19, the slides 9 are adjusted inwardly and outwardly upon the horizontal portions 6 of the supporting bars. It will be seen that each of the supporting bars has a horizontal portion 6, and a member 5, which extends upwardly, laterally and rearwardly from the outer end of the bar, to act as a brace therefor, both ends of each bar being secured to the truck.

On the rods 16 of the bed structure, there are provided two cross members 22, lying on top of the rods 16 and two members 23, passing below the rods 16, the members 22 and 23 being clamped together about the rod 16 by means of bolts 24.

The dynamo electric machine 25 is provided with lugs 26, having apertures therethrough, through which apertures the rear rod 16 passes. The dynamo is preferably provided with two lugs 26, which lie between the members 22, but closely abutting

the same, so that the dynamo is prevented from sliding along the rod 16, although mounted to rotate about the rod 16 as a pivot. 27 represents a belt passing over a pulley 28 on the dynamo and a pulley 29 on the car axle, so that the dynamo is driven from the car axle. It will be noted that the center of gravity of the dynamo lies well in front of the axes of rod 16 about which it is pivoted, so that the weight of the dynamo tends to keep the belt 27 taut. In order to apply additional tension to the belt, each of the members 22 is provided with outwardly extending cup portions 30 and links 31, have one end thereof pivotally secured to the dynamo, as at 32, the other end of the links passing centrally through the cup portions 30 and having screw threaded thereon, on their outer ends, cups 33, coil springs 34 (see Fig. 5) being compressed between the cups 33 and 30, in such a manner that the springs tend to pull the dynamo 25 outwardly and downwardly about its pivot rod 16 and so increase the tension on the belt 27.

By adjusting the slides 9 toward and from the car axle by means of screws 19, the dynamo 25 may be made to rock about its pivot rod 16, as this rod moves toward and away from the car axle, thus decreasing or increasing the compression of the springs 34, so that the tension on the belt may be regulated in this manner. That is, if the cups 33 have been once adjusted to place the springs under proper tension, the tension to be applied to the belt may be regulated by operating the screws 19, and without further adjustment of the screw cups 33.

It will be noted that the member 12 is provided with cutaway portions at 40 to accommodate the rods 16, and that as the bed structure, comprising rods 16 and end pieces 15, is moved about pivot bolts 14, the rods 16 move in the cutaway portions 40 of the member 12. The members 12, however, are so cut away at 40 as to provide portions which underlie the rods 16 and act as safety carriers for the rods 16, and prevent the rods 16 from vibrating, due to looseness or wear of the pivot bolts 14.

In removing or replacing the belt, it is not necessary to move both the adjustment screws 19, but only the adjustment screw at the belt end of the supporting structure. By moving this end of the supporting frame rearwardly, the belt may be quickly slipped off, and replaced. If the dynamo is not in alinement, either of the screws 19 may be turned slightly, so that the dynamo and its supporting bed structure will be brought into alinement and the belt run true on the pulleys.

Referring to the modification shown in Figs. 9 to 12, inclusive, the general construction is substantially the same. However, instead of providing the rods 16, angle irons 42 are provided, connected at their ends by means of cross pieces 43, bolted to the angle irons 42 by bolts 44. The end pieces 43 are carried by the slides 9 by means of vertical pivot bolts 45 and the slides 9 are provided with projecting ears 46, enveloped by portions 47, integral with the end pieces 43, the ears 46 being adapted to oscillate back and forth in the portions 47, as the screws 19 are operated to adjust one or the other of the ends of the supporting bed structure, (comprising irons 42 and end pieces 43) along the bar 6, toward and away from the car axle. Intermediate the pivot bolts 45 there is secured to the angle irons 42, two cross members 48, which are bolted to each of the angle irons 42 by means of bolts 49. At one end, each of the members 48 is constructed to receive one end of a rod 50, which is clamped to the inner ends of the members 48, by means of clamping bolts 51. The generator 25, as before, is provided with lugs perforated to receive the rod 50, so that the generator is pivotally mounted upon said rod, in the same manner that it was pivotally mounted in one of the rods 16 in the modification shown in Figs. 1 to 8 inclusive. The lugs 26 on the generator abut closely the ends of the members 48, so that the generator is prevented from moving laterally along the rod 50. The members 48 are provided with forward extensions, having cups 30, as shown in connection with the modification illustrated in Figs. 1 to 9 inclusive. Links 31 are also adapted to pass through the cups 30 and have screwed on their outer ends, screw cups 33, for inclosing tension springs to apply the proper tension to the generator driving belt. Oil or grease cups may be provided wherever desired. One is shown at 60 (Fig. 10), for the purpose of applying lubricant to the bar 6, beneath the slides 9, and to the screws 19.

Although I have described my improvements in great detail and with respect to preferred forms thereof, nevertheless, I do not desire to be limited to the details shown and described, as many changes and modifications may well be made without departing from the spirit and scope of my invention in its broader aspect.

What I claim and desire to secure by Letters Patent of the United States is:

1. A mounting for dynamo electric machines on car trucks, having in combination supporting bars extending downwardly and laterally from and in front of the car truck and thence horizontally rearwardly to the truck, both ends of the bars being secured to the truck, a dynamo electric machine driven from an axle of the car truck and means for supporting said dynamo electric machine on the horizontal portion of said bars.

2. The combination with a car truck of a pair of supporting bars extending downwardly and inwardly away from said truck and then horizontally rearwardly to the truck, a dynamo driven by the car axle, and means for supporting said dynamo on the horizontal portion of said bars.

3. The combination with a car truck of a pair of supporting bars extending downwardly and inwardly away from said truck and then horizontally rearwardly to the truck, a dynamo driven by the car axle, and means for supporting said dynamo on the horizontal portion of said bars, said means comprising slides, one movable along each of said horizontal portions, and a supporting frame carrying the dynamo, one end of the frame being pivoted to one slide and the other end being pivoted to the other slide.

4. The combination with a car truck of a pair of supporting bars secured to and extending outwardly from the truck, a dynamo driven from an axle of the car, a dynamo supporting frame slidably mounted on said bars toward and away from the truck, and pivotally mounted with respect to each of said bars, means for pivotally supporting the dynamo on said frame and means for holding said frame in adjusted position.

5. The combination with a car truck of a pair of supporting bars extending outwardly from the truck, a dynamo supporting frame or bed rigidly mounted on and pivotally adjustably carried by said bars, a dynamo driven by an axle of the car and means for pivotally mounting said dynamo directly to said frame or bed, whereby it may swing toward and away from the axle, and resilient means tending to swing the dynamo away from the axle.

6. The combination with a car truck of a pair of supporting bars extending outwardly from the truck, a dynamo supporting frame or bed rigidly mounted on and pivotally adjustably carried by said bars, a dynamo driven by an axle of the car and means for pivotally mounting said dynamo on top of said frame or bed whereby it may swing toward and away from the axle, and a spring carried by said frame or bed, tending to swing the dynamo away from the axle.

7. The combination with a car truck, of a pair of supporting bars, each bar having a horizontal member and a member which extends upwardly, laterally, and rearwardly from the outer end of the bar to act as a brace therefor, both ends of each bar being secured to the truck, and a dynamo driven from the axle and supported by said bars.

8. The combination with a car truck, of a pair of supporting bars, each bar having a horizontal member and a member which extends upwardly, outwardly, and rearwardly from the outer end of the bar to act as a brace therefor, both ends of each bar being secured to the truck, and a dynamo driven from the axle and supported by said bars, on the parallel horizontal portions thereof and adjustable thereon toward and away from the truck.

9. The combination with a car truck of a bed structure supported in front of the truck and adjustable toward and from the truck, a dynamo, a belt driving the dynamo from the car axle, means for pivotally supporting the dynamo on said bed structure about a horizontal axis parallel to the axis of the dynamo, the dynamo axis lying in front of said pivotal axis, whereby the action of gravity on the dynamo tends to keep the belt taut, and spring tensioning means also tending to keep the belt taut.

10. The combination with a car truck of a bed structure supported in front of the truck, a dynamo, a belt driving the dynamo from the car axle, means for pivotally supporting the dynamo on said bed structure about a horizontal axis parallel to the axis of the dynamo, the dynamo axis lying in front of said pivotal axis, whereby the action of gravity on the dynamo tends to keep the belt taut, a spring having one end abutting a part secured to the dynamo and the other end abutting a part secured to the said supporting structure, to tighten the said belt, and means for adjusting said supporting structure toward and away from the car axle to vary the tension on the belt.

11. The combination with a car truck of a bed structure supported in front of the truck and adjustable toward and from the truck, a dynamo, a belt driving the dynamo from the car axle, means for pivotally supporting the dynamo on said bed structure about a horizontal axis parallel to the axis of the dynamo, the dynamo axis lying in front of said pivotal axis, whereby the action of gravity on the dynamo tends to keep the belt taut, and spring tensioning means also tending to keep the belt taut, and means for adjusting each end of said supporting structure toward and away from the truck independently of the other end of the said structure, to aline the dynamo with the car axle and vary the tension on the belt.

12. The combination with a car truck of a pair of supporting bars, each bar having a horizontal member and a member which extends upwardly, laterally and rearwardly from the outer end of the bar to act as a brace therefor, both ends of each bar being secured to the truck, a bed structure supported on said horizontal members in front of the truck and adjustable toward and from the truck, a dynamo, a belt driving the dynamo from the car axle, means for pivotally supporting the dynamo on said bed structure about a horizontal axis parallel to the axis of the dynamo, the dynamo axis lying

in front of said pivotal axis whereby the action of gravity on the dynamo tends to keep the belt taut, and spring tensioning means also tending to keep the belt taut.

13. The combination with a car truck of a pair of supporting bars, each bar having a horizontal member and a member which extends upwardly, laterally and rearwardly from the outer end of the bar to act as a brace therefor, both ends of each bar being secured to the truck, a bed structure carried by said horizontal members in front of the truck, a dynamo, a belt driving the dynamo from the car axle, means for pivotally supporting the dynamo on the bed structure, a spring having one end abutting a part secured to the dynamo and the other end abutting a part secured to the said supporting structure to tighten the said belt, and means for adjusting said supporting structure toward and away from the car axle to vary the tension on the belt.

14. The combination with a car truck of a pair of supporting bars, each bar having a horizontal member and a member which extends upwardly, laterally and rearwardly, from the outer end of the bar to act as a brace therefor, both ends of each bar being secured to the truck, a bed structure carried by said horizontal members in front of the truck, a dynamo, a belt driving the dynamo from the car axle, means for pivotally supporting the dynamo on the bed structure, spring tensioning means for the belt carried by said bed structure and means for adjusting each end of said supporting structure toward and away from the truck independently of the other end of said structure, to aline the dynamo with the car axle and vary the tension on the belt.

15. The combination with a car truck of a bed structure supported in front of the truck, a dynamo, a belt driving the dynamo from the car axle, means for pivotally supporting the dynamo on said bed structure about a horizontal axis parallel to the axis of the dynamo, the dynamo axis lying in front of said pivotal axis, whereby the action of gravity on the dynamo tends to keep the belt taut, spring tensioning means for the belt carried by said bed structure, and means for adjusting each end of said supporting structure toward and away from the truck independently of the other end of said structure, to aline the dynamo with the car axle and vary the tension on the belt.

16. The combination of a car truck having a depressed end sill to accommodate a deep center beam of the car, a pair of supporting bars having portions extending forwardly and downwardly from the truck, a supporting bed structure connecting the lower portions of said bars, a dynamo pivotally carried by said bed structure and means for driving the dynamo from the car axle.

17. The combination of a car truck, a pair of supporting bars having portions extending forwardly and downwardly from the truck, a supporting bed structure connecting the lower portions of said bars, a dynamo pivotally carried by said bed structure, a belt for driving the dynamo from the car axle, and spring tensioning means carried by the bed structure and tending to rotate the dynamo about said pivot to tighten the belt.

18. The combination of a car truck, a pair of supporting bars having portions extending forwardly and downwardly from the truck, a supporting bed structure connecting the lower portions of said bars, a dynamo pivotally carried by said bed structure, a belt for driving the dynamo from the car axle, and spring tensioning means carried by the bed structure and tending to rotate the dynamo about said pivot to tighten the belt, and means for adjusting said bed structure toward and away from the car axle to vary the tension on the belt.

19. The combination with a car truck, a dynamo driven from the car axle, and a bed structure carried by the truck and supporting said dynamo, said bed structure comprising end pieces and two transverse pieces connecting said end pieces, said dynamo being pivotally mounted on one of said transverse pieces and adapted to swing toward and from the other transverse piece.

20. The combination with a car truck, a dynamo driven from the car axle, and a bed structure carried by the truck and supporting said dynamo, said bed structure comprising end pieces and two transverse pieces connecting said end pieces, said dynamo being pivotally mounted on one of said transverse pieces and adapted to swing toward and from the other transverse piece, and spring tensioning means tending to force the dynamo toward said last mentioned transverse piece.

21. The combination with a car truck, a a dynamo driven from the car axle, and a bed structure carried by the truck and supporting said dynamo, said bed structure comprising end pieces and two transverse pieces connecting said end pieces, said dynamo being pivotally mounted on one of said transverse pieces and adapted to swing toward and from the other transverse piece, and spring tensioning means carried by said last mentioned transverse piece and tending to force the dynamo toward said last mentioned transverse piece.

22. A supporting structure for car lighting dynamos including a bed structure, having end pieces and two transverse pieces connecting said end pieces, said dynamo being

pivotally mounted on one of said transverse pieces and adapted to swing toward and from the other transverse piece, a belt for driving the dynamo and means tending to rotate said dynamo about said pivot to tension the belt.

23. A supporting structure for car lighting dynamos including a pair of substantially horizontal supporting bars, a slide adjustable longitudinally on each bar, a bed structure having end pieces pivotally mounted to said slides on vertical axes, and transverse members connecting said end pieces, and means whereby a dynamo may be supported on said bed structure.

24. The combination with a car truck, a dynamo driven from the car axle, and a bed structure carried by the truck and supporting said dynamo, said bed structure comprising end pieces and two transverse pieces connecting said end pieces, said dynamo being pivotally mounted on one of said transverse pieces and adapted to swing toward and from the other transverse piece, and a member adjacent the dynamo adapted to hold said transverse pieces in spaced relation.

25. The combination with a car truck, a dynamo driven from the car axle, and a bed structure carried by the truck and supporting said dynamo, said bed structure comprising end pieces and two transverse pieces connecting said end pieces, said dynamo being pivotally mounted on one of said transverse pieces and adapted to swing toward and from the other transverse piece, and a member adjacent the dynamo adapted to hold said transverse pieces in spaced relation, said member carrying spring tensioning means tending to force the dynamo toward said last mentioned transverse piece.

26. A supporting structure for car lighting dynamos including a pair of substantially horizontal supporting bars, a slide adjustable longitudinally on each bar, a bed structure having end pieces pivotally mounted to said slides on vertical axes, and transverse members connecting said end pieces, means for pivotally supporting a dynamo on one of said transverse members, and spring tensioning means tending to force the dynamo toward the other of said transverse members.

27. The combination with a car truck of a pair of supporting bars extending from said truck, each of said bars having a horizontal portion and a portion extending upwardly, rearwardly and laterally from the outer end thereof, both ends of each bar being secured to the truck, a slide adjustable longitudinally on each of said horizontal portions, a bed structure having end pieces pivotally mounted to said slides on vertical axes, and transverse members connecting said end pieces, means for pivotally supporting a dynamo on one of said transverse members, and spring tensioning means tending to force the dynamo toward the other of said transverse members.

28. The combination with a car truck of a pair of supporting bars extending from said truck, each of said bars having a horizontal portion and a portion extending upwardly, rearwardly and laterally from the outer end thereof, both ends of each bar being secured to the truck, a dynamo carried by the horizontal portions of said bars and means for driving the dynamo from the car axle.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

WILLARD F. RICHARDS.

Witnesses:

DONALD C. DAVIS,

ALLEN B. BRIMMER.