June 24, 1947. R. J. BRITTAIN, JR 2,422,946

RAILWAY JOURNAL BOX

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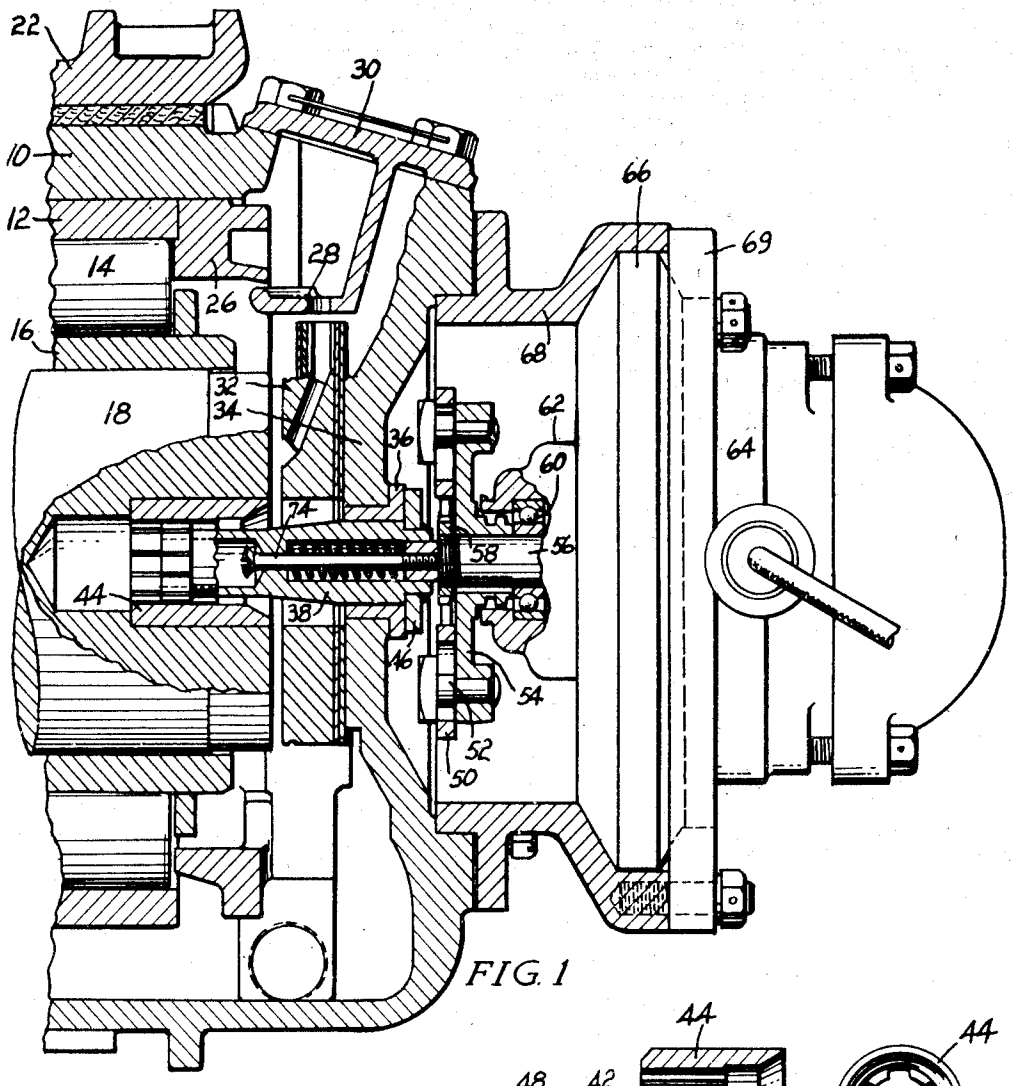


FIG. 1

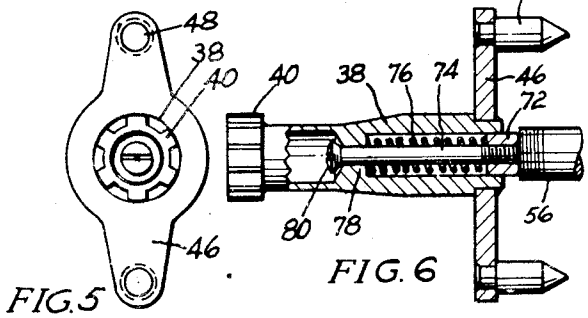


FIG. 5

FIG. 6

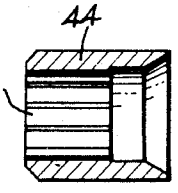


FIG. 7

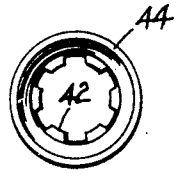


FIG. 8

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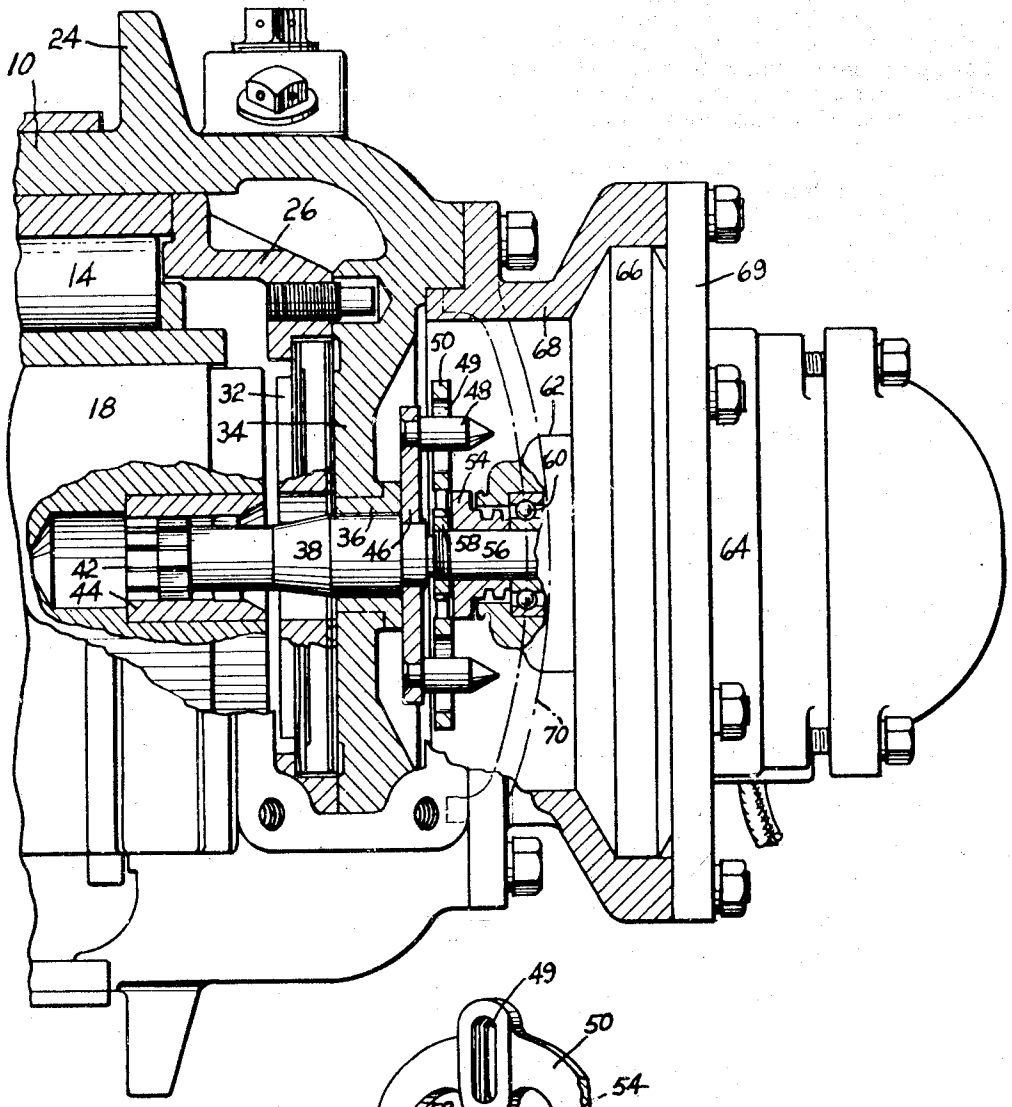


FIG. 2

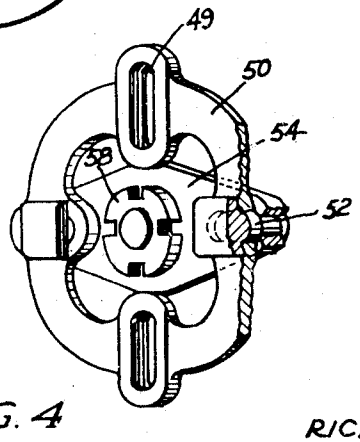


FIG. 4

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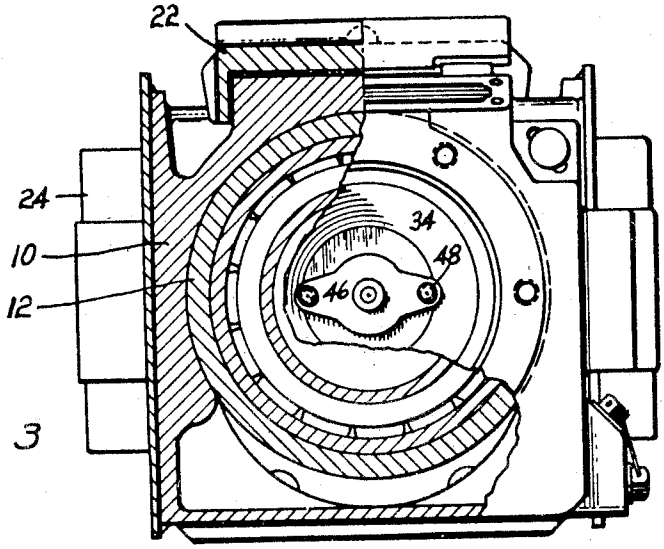


FIG. 3

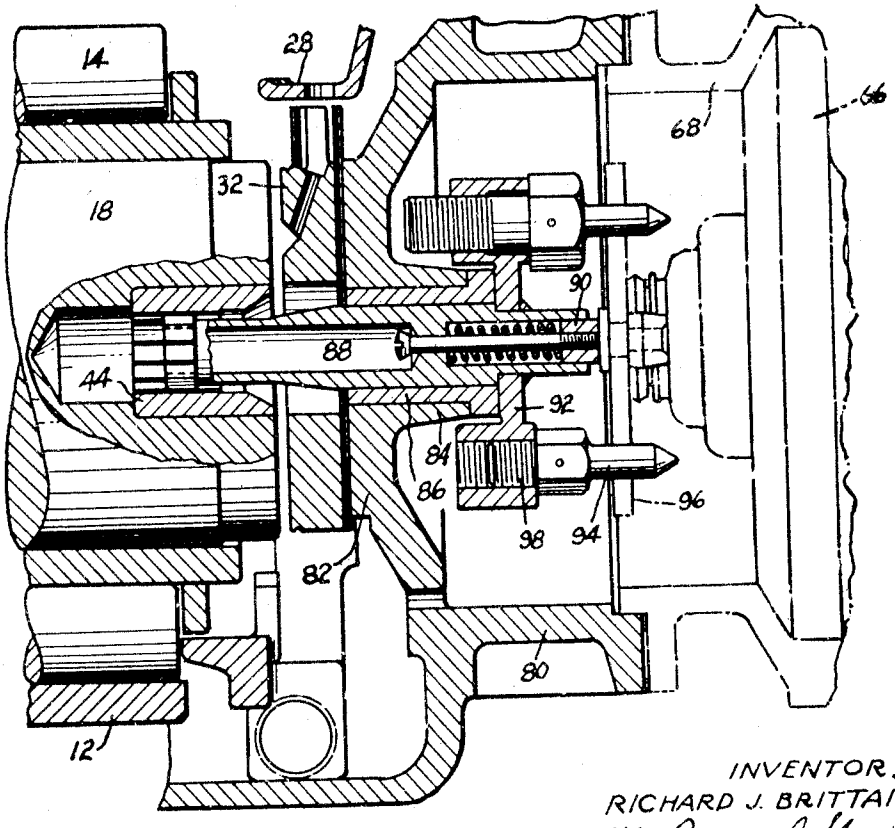


FIG. 9

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UNITED STATES PATENT OFFICE

2,422,946

RAILWAY JOURNAL BOX

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Application September 25, 1942, Serial No. 459,730

12 Claims. (Cl. 64—1)

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This invention relates to railway journal boxes and comprises all of the features of novelty herein disclosed. An object of the invention is to provide an improved driving connection between a wheeled axle and a driven shaft such as that of a generator mounted on the journal box. To these ends and also to improve generally upon devices of the character indicated, the invention consists in the various matters hereinafter described and claimed. In its broader aspects the invention is not necessarily limited to the specific constructions selected for illustrative purposes in the accompanying drawings in which

Fig. 1 is a vertical sectional view through the outer portion of the journal box and appurtenances.

Fig. 2 is chiefly a horizontal section, parts being broken away.

Fig. 3 is partly a section and partly an end view of Fig. 1 to smaller scale, parts being removed.

Fig. 4 is a perspective view of a coupling.

Fig. 5 is an end view of a driving member.

Fig. 6 is chiefly a central section of the driving member.

Fig. 7 is a sectional view of a splined sleeve.

Fig. 8 is an end view of the sleeve.

Fig. 9 is a view similar to Fig. 1 showing a modification.

Figs. 1 and 2 show the outer portion of a railroad journal box or axle housing 10 containing a raceway sleeve 12 for two rows of roller bearings 14 running on an inner raceway sleeve 16 pressed on an axle 18. The box has a pad on the top supporting the usual equalizer plate 22 and the sides of the box have the usual pedestal flanges 24. At the end of the sleeve 12 is the usual oil collecting ring 26 which delivers oil to a pan 28 on a cover 30, the pan delivering oil to passages on a thrust block 32 which is centrally perforated and clamped against a transversely extending end wall 34 of the box by a flange on the ring 26. The axle is free to shift axially to engage the thrust block.

The end wall 34 of the box which extends crosswise of the axle has an opening in line with the axle center and a flanged bushing 36 is pressed into the opening. A driving member in the form of a sleeve 38 is journalled for rotation in this bushing and its inner end has a series of teeth or splines 40 for driving engagement with more elongated internal teeth or splines 42 formed on a sleeve 44 which is pressed in the axle. The axle end of driving sleeve 38 is no larger than its journalled portion so that it can be withdrawn

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or inserted endwise through the bushing 36. Welded on a seat at the outer end of the sleeve 38 is a projection comprising a cross arm 46 having driving pins 48 entering radial slots 49 in a spider or coupling plate 50. Shouldered pins or studs 52 with square heads enter slots at 90° from the pins 48 and are carried by enlargements on the ends of an arm 54 whose hub is keyed to a shaft 56 and locked by a nut 58. The shaft 56 is illustrative of any driven or driving shaft in approximate alignment with the axle and having a loose connection therewith through a flexible coupling. The shaft is shown as the driven shaft of a generator and is journalled near its inner end in a ball bearing 60 carried by an extension 62 of a generator casing 64. This generator is of known kind and its casing has a flange 66 fitting in an adapter plate 68 which is removably bolted on the end of the box. The flange 66 is secured to the adapter by a clamping plate 69. The adapter, generator and its driving means are removable from the box in which event a cover 70 indicated in broken lines in Fig. 2 is bolted on the box in the place of the adapter.

The end of the generator shaft 56 abuts against a plunger comprising a round nut 72 which is threaded on a bolt 74 extending through a coil spring 76 contained in a bore in the driving sleeve 38. The spring bears against the nut 72 and reacts against a shoulder on an internally projecting portion 78 of the driving sleeve 38. The head 80 of the bolt lies in a recess of the driving sleeve and is adapted to engage the projecting portion 78 to limit outward movement of the plunger. In use the plunger engages the generator shaft and the spring reacts on the internal projection 78 of the driving sleeve 38 to hold the arm 46 against the flange of the bushing 36. Thus endwise shifting of the axle will not tend to move the driving sleeve 38 to the right. The splines in the sleeve 44 are longer than the splines 40 on the driving sleeve 38 so that there is always driving connection even when the axle moves endwise. Thus power from the rotating axle drives the generator shaft from which current may be extracted in the usual way to control brakes on the car or for other purposes.

Fig. 9 shows a modification wherein a box projection 80 extends outwardly a considerable distance from the end wall 82. The end wall has a flange or circular boss 84 supporting a long bushing 86 which provides a bearing for a driving sleeve 88 containing a spring pressed plunger 90

similar to that of Fig. 1, the driving sleeve 88 being elongated and driven by a slip connection with the axle in a similar way. A cross arm 92 secured on the driving sleeve has enlargements for driving pins 94 engaging a spider or coupling plate 96 similar to the spider 50. The spider may have the same kind of connection to the generator shaft as in Fig. 1 and the generator casing may be mounted in a similar adapter. The pins 94 are formed on studs 98 threaded in the enlargements and are or may be the same studs which are threaded into the end of the axle in other kinds of journal boxes for direct connection of the axle with the coupling plate or spider. Such boxes however are not closed at the front or outer end.

I claim:

1. In a device of the character indicated, an axle housing having a transverse end wall to resist axle thrust, an axle journalled for rotation in the housing with provision for axial movement, a casing supported beyond the end wall and supporting a driven shaft in alignment with the axle, a driving member journalled for rotation in and supported by the end wall, the driving member extending into the center of the axle and having a splined connection therewith, the portion of the driving member at the axle side of the supporting end wall being no larger than the journalled portion for endwise removal through the end wall, and a coupling between the other end of the driving member and the driven shaft.

2. In a device of the character indicated, an axle housing having an end wall, an axle journalled for rotation in the housing with provision for axial movement, a casing supported beyond the end wall and supporting a driven shaft in alignment with the axle, a driving member journalled for rotation in and supported by the end wall and having a splined connection at one end with the axle, the other end of the driving member being flexibly coupled with the driven shaft, and spring actuated means reacting on the driven shaft for urging the driving member inwardly towards the axle to a limiting portion.

3. In a device of the character indicated, an axle housing having an end wall, an axle journalled for rotation in the housing with provision for axial movement, a casing supported beyond the end wall and supporting a driven shaft in alignment with the axle, a driving member journalled for rotation in and supported by the end wall and having a splined connection at one end with the axle, a flexible coupling between the other end of the driving member and the driven shaft including an arm secured to the driving member and projecting alongside said end wall, and a spring pressed plunger housed in the driving member and engaging the driven shaft to urge the arm toward said end wall.

4. In a device of the character indicated, an axle housing having an end wall to resist axle thrust, an axle journalled for rotation in the housing with provision for axial movement towards or from the end wall, a driving member extending through an opening in the end wall and supported for rotation therein, the driving member having a slip driving connection with the axle at the center thereof, the portion of the driving member at the axle side of the end wall being no larger than the journalled portion to provide for endwise removal of the driving member through the opening, a generator having a casing removably mounted on the other side of the end wall and having a driven shaft journalled

therein, and a slip driving connection between the driven shaft and the driving member.

5. In a device of the character indicated, an axle housing, an axle journalled for rotation in the housing, a generator supported by the housing and having a driven shaft in alignment with the axle, a driving sleeve between the axle and the generator shaft, said driving sleeve entering the center of the axle and having splined connection therewith, a spring pressed plunger slidably mounted in the driving sleeve and pressing against the end of the generator shaft, and connecting means between the driving sleeve and the generator shaft.

6. In a device of the character indicated, an axle housing, an axle journalled for rotation in the housing, a generator supported by the housing and having a driven shaft in alignment with the axle, a driving sleeve between the axle and the driven shaft, said driving sleeve entering the center of the axle and having splined connection therewith, a supporting member surrounding the sleeve, an arm on the sleeve at the side of the supporting member, and spring actuated means for urging the arm against the supporting member.

7. In a device of the character indicated, a rotary axle, a driven shaft in substantial axial alignment with the axle, an axle housing having a transverse supporting wall extending crosswise of the axle to resist axle thrust, a driving member journalled in and supported for rotation by said transverse wall, the driving member having a slip driving connection at one end with the axle to provide for relative axial movement, all of the driving member at the axle side of the transverse supporting wall being no larger than the journalled portion for removal through the journal opening in the supporting wall, and the other end of the driving member having a flexible connection with the driven shaft.

8. In a device of the character indicated, a rotary axle, a driven shaft in substantial axial alignment with the axle, an axle housing having a transverse supporting wall extending crosswise of the axle, a driving member journalled in and supported for rotation by said transverse wall, the driving member having a projection alongside of the transverse wall, a spring engaging said driving member and reacting on the driven shaft for urging the projection towards the transverse wall, and the driving member having a slip connection with the axle and a flexible connection with the driven shaft.

9. In a device of the character indicated, a rotary axle, a driven shaft in substantial axial alignment with the axle, an axle housing having a transverse supporting wall extending crosswise of the axle, a driving member journalled in and supported for rotation by said transverse wall, an arm projecting from the driving member alongside the transverse wall, a spring reacting between the driving member and the driven shaft, a slip connection between the driving member and the axle, and a flexible connection between the arm and the driven shaft.

10. In a device of the character indicated, a rotary axle, a driven shaft in substantial axial alignment with the axle, an axle housing having a transverse supporting wall extending crosswise of the axle, a driving sleeve journalled in and supported for rotation by said transverse wall, a plunger slidable in the sleeve and engaging the driven shaft, a spring reacting between the plunger and the sleeve, a projection extending from

the sleeve on the outer side of the transverse wall, a slip connection between the driving sleeve and the axle to provide for relative axial movement, and a flexible connection between the projection and the driven shaft.

11. In a device of the character indicated, a rotary axle, a driven shaft in substantial alignment with the axle, a driving member having a slip connection with the axle to provide for relative axial movement, the driving member having a flexible connection with the driven shaft, and an axle housing having a transverse supporting wall alongside the end of the axle for resisting axle thrust and rotatably supporting the driving member, the axle end of the driving member having a diameter no larger than the journalled portion.

12. In a device of the character indicated, a rotary axle, a driven shaft in substantial alignment with the axle, a driving sleeve between the axle

and the driven shaft, the sleeve having an arm provided with driving pins, driving means connecting the pins with the driven shaft, a plunger slidable in the sleeve and arranged to engage the driven shaft, the sleeve having a projection, and a spring reacting between the plunger and the sleeve projection.

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