W. F. KIESEL, Jr.

LOCOMOTIVE.

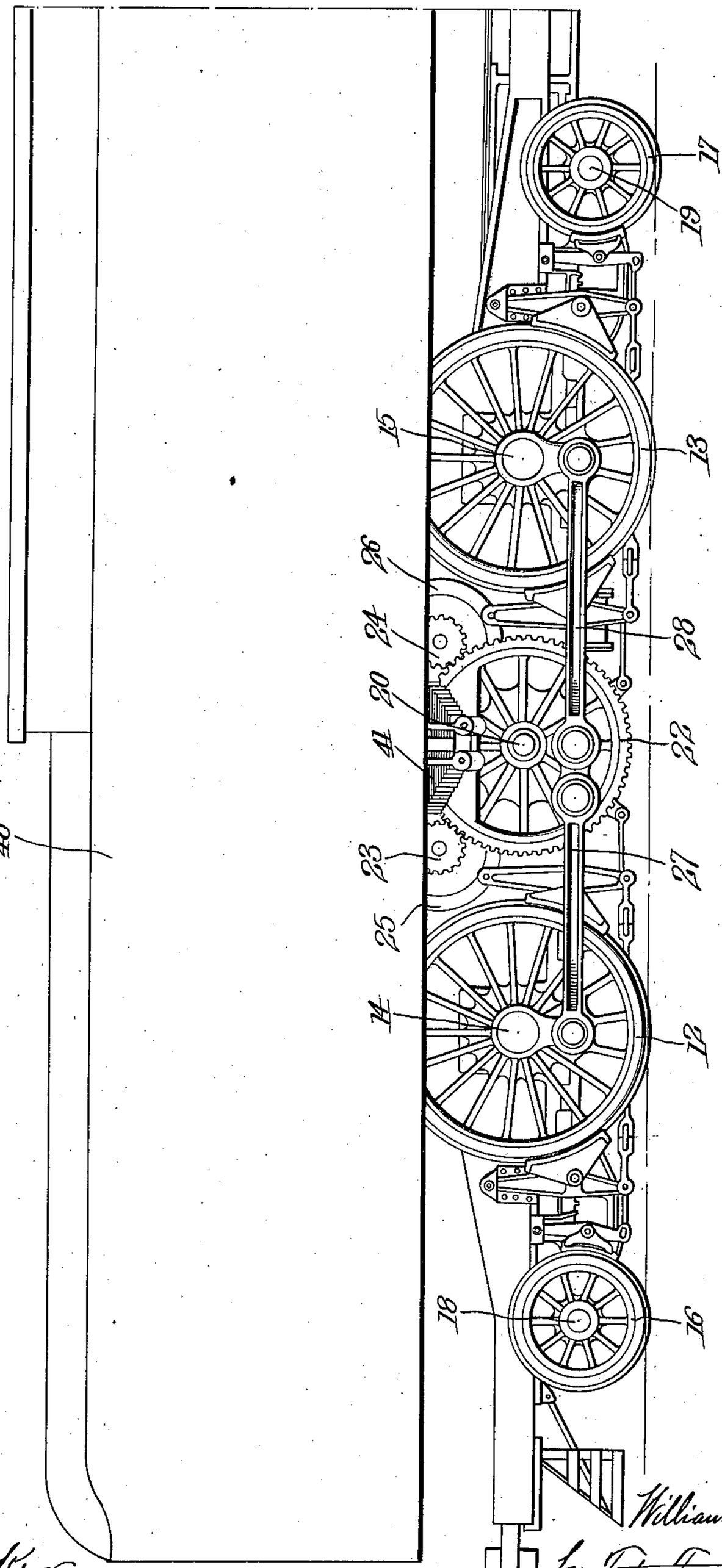
APPLICATION FILED AUG. 20, 1914.

1,166,696.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.

Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

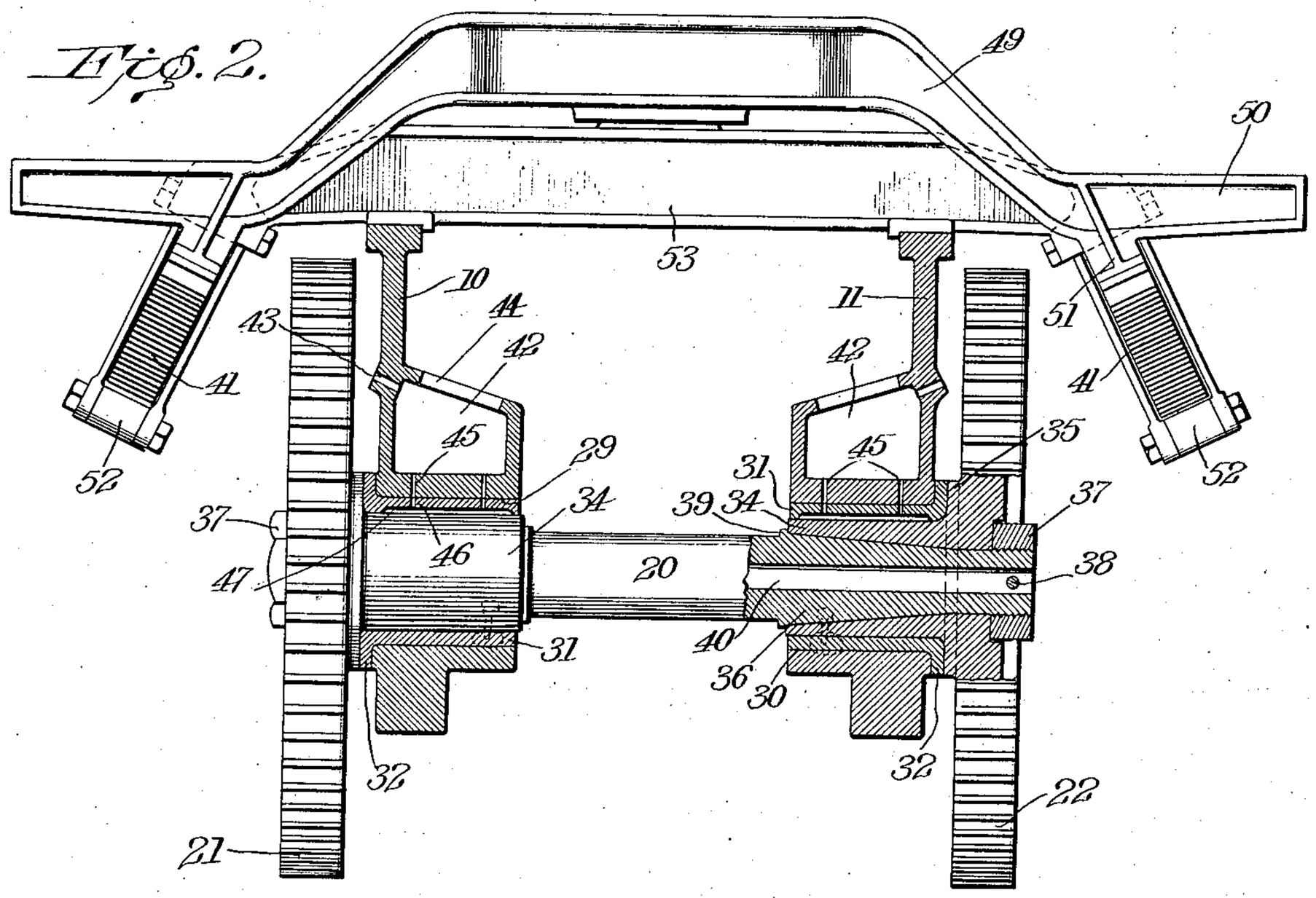
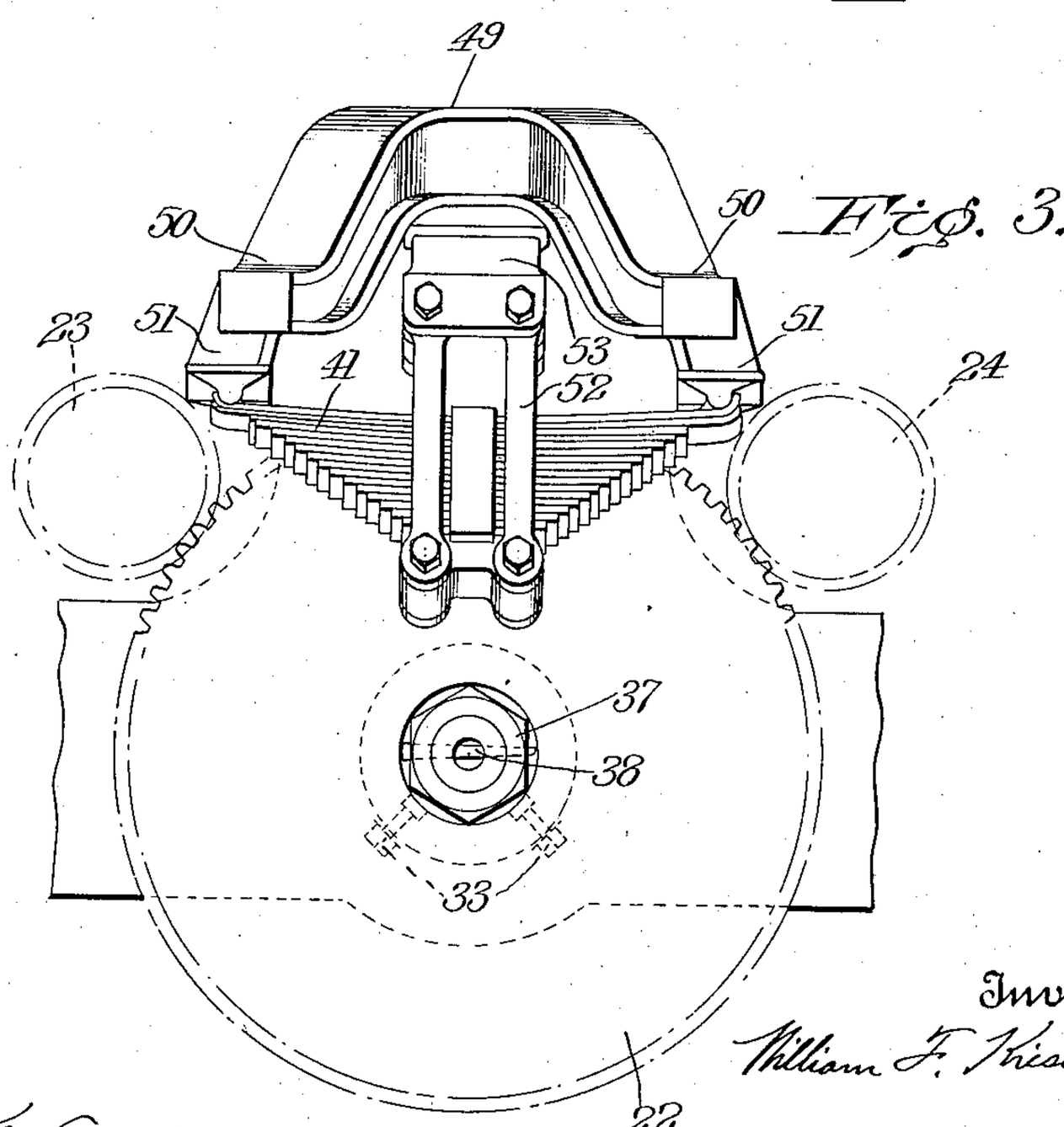


Fig. 3.



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UNITED STATES PATENT OFFICE.

WILLIAM F. KIESEL, JR., OF ALTOONA, PENNSYLVANIA.

LOCOMOTIVE.

1,166,696. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed August 20, 1914. Serial No. 857,720.

To all whom it may concern:

Be it known that I, WILLIAM F. KIESEL, Jr., a citizen of the United States, and resident of Altoona, Blair county, State of Pennsylvania, have invented certain new and useful Improvements in Locomotives, of which the following is a specification.

My invention relates to locomotives of that type wherein the power used to rotate the driving wheels is transmitted to and through a jack shaft which is positioned between the prime mover and driving wheels.

Heretofore it has been customary to make the bearing for the jack shaft similar to the bearings for the driving axles so that the jack shaft could be dropped downward into a pit by removing the frame strap underneath the journal box and dropping it out of the box.

My invention contemplates a jack shaft positioned transversely of the locomotive and adapted to rotate in bearings at either end, the bearings being rigidly fixed in the frame of the locomotive and having means whereby the jack shaft crank can be readily placed in position and removed without the usual difficulties associated with this type of power transmission device.

The above and other objects and the novel features of my invention will be apparent from the following description, taken in connection with the drawings, in which:

Figure 1 is a side elevation of substantially one-half of an electric locomotive embodying my invention; Fig. 2 is an enlarged detail view partly in section showing the manner of mounting the jack shaft on the frame; and Fig. 3 is an end elevation of the parts shown in Fig. 2.

Referring to the drawings, and particularly Fig. 1, each half of the electric locomotive or engine consists of a parallel frame members 10 and 11 about 34 feet 6 inches long, two pairs of driving wheels 12 and 13 mounted on the axles 14 and 15, two pony trucks comprising the pairs of pony truck wheels 16 and 17 mounted on the pony truck axles 18 and 19, and a jack shaft 20 between and substantially in line with the axles 14 and 15 and carrying two gear wheels 21 and 22 into which the pairs of pinions 23 and 24 on the axles of the motors 25 and 26 mesh. Each of the gear wheels 21 and 22 is connected by suitably located connecting rods 27 and 28 with the pairs of driving wheels 12 and 13 respectively.

The bearings for the jack shaft 20 consist of circular holes 29 and 30 in the frame members 10 and 11 respectively into which the phosphor bronze bearing sleeves 31 are pressed. The bearing sleeves 31 are provided at one end with exterior flanges 32 to limit their inward movement. For the purpose of keeping the bearing sleeves 31 from rotating a plurality of bearing anchor bolts 33 are provided and are preferably located on the underside thereof having the shanks extending through the bearing and the heads countersunk therein with the securing bolts bearing against the underside of the frame members. The faces of the journals adapted to engage the inner surfaces of the bearing sleeves 31 are, in this construction, formed integral with the crank located on the jack shaft. The cranks in this construction comprise the gear wheels 21 and 22 which at their center are provided with the laterally extending hollow bosses or hubs 34, the exterior surfaces of which are designed to fit the interior of the bearing sleeves 31 and are enlarged at their bases as at 35 to engage the flanges 32 on the sleeves and space the gear wheels 21 and 22 from the frame members 10 and 11 respectively. The gear wheel hubs slide freely in the phosphor bronze sleeves which provide a suitable bearing for the gear wheels and the jack shaft 20 which is secured thereto.

The hollow hubs 34 have tapering axial openings therein to receive and fit the tapering ends 36 of the jack shaft 20. The jack shaft 20 passes through the wheel hubs and the ends thereof are threaded to receive the nuts 37, whereby the wheels are held to the shaft on the outside of the wheel center and thus the bearings on the inside of the wheels are held to the shaft and in place in the frame. The nuts at the end serve to draw the taper fit into place to press the journal of the gear wheels between the collars 39 on the shaft and the face of the nuts 37 on the end of the shaft. Pins 38 extend through the shaft and nuts at their end to lock the nuts in place. For the purpose of heat-treating the shaft a longitudinal hole 40 is drilled through the same, the ends of which are preferably plugged after the shaft is reassembled.

The phosphor bronze bearing sleeves 30 are solid, that is, they are not cut in halves and if they wear considerably they may be replaced by new ones after first withdrawing

the gear wheels. This arrangement makes it easier to keep the shaft 20 in proper alinement and makes it no more difficult to replace the bearings. In case it is necessary to remove either of the gear wheels this can readily be done by first removing the adjacent side-motion spring 41, then removing the nut 37 and drawing out the wheel. The opposite wheel with the shaft 20 may readily be pulled out from the other side. Since there are no torsional strains transferred through the jack shaft 20, it is not necessary to provide the shaft and gear wheels with keys, which arrangement is commonly found in prior constructions of this type.

For the purpose of supplying lubricant to the bearing surfaces between the sleeves 31 and the hubs 34, an oil reservoir 42 is provided on the inner side of each of the frame members 10 and 11 directly above the opening therein and is preferably made integral with the frame. Each of the lubricant containers 42 has a filling opening 43 for filling the reservoir from the outside of the frame and a larger opening 44 on the inside for filling the reservoir from the inside of the frame and for cleaning it out. Ducts 45 extend through the bottom of the reservoir and register with perforations 46 in the bearing sleeves 31 to lead the lubricant to a recess 47 on the inner surface of the bearing sleeves 31 and at the top thereof between the said bearing sleeves and the hollow hubs 34 on the gear wheels.

The cab 48, one-half of which is shown in outline in Fig. 1, is secured and rests on the body bolster 49. The body bolster 49 has a pair of extensions 50 at each of its ends and the underside of each extension is provided with a lug 51 which fits the top surface of the side-motion spring 41 which rests in a saddle 52. The saddles 52 at each side of the truck are mounted at the ends of the truck bolster 53 which is supported by the side frame members 10 and 11.

The particular cab supporting arrangement herein shown is made the subject-matter of a separate application.

While I have shown and described my invention in detail I do not wish to be limited to the exact features disclosed as the construction may be varied without departing from the spirit of the invention.

Having thus described my invention, what I claim is:

1. In a locomotive, the combination of a truck having side frame members, bearing sleeves carried by said side frame members, a jack shaft, gears at the opposite ends of said shaft, hubs for said gears having bosses extending into the bearing sleeves in the side frame members, and lubricant containers on said frame members adjacent said bearing sleeves.

2. In a locomotive, the combination of a truck having side frame members, bearing sleeves carried by said side frame members, a jack shaft having tapering portions near its ends, a gear mounted on each end of said shaft, hubs for said gears having bosses extending into said sleeves and provided with tapering axial openings fitting the tapering portions of said jack shaft, and nuts at the outer ends of said shaft for securing the gears thereon.

3. In a locomotive, the combination with a frame having openings therein, of sleeves fitting said openings, a shaft having tapering portions extending through said openings, and gears mounted on the outer ends of said shaft and having bosses fitting in said sleeves and surrounding the tapering portions of said shaft.

4. In a locomotive, the combination with a frame having openings therein, of sleeves fitting said openings, a jack shaft, and gears fitting the ends of the jack shaft and having hub portions journaled in said sleeves.

5. In a locomotive, the combination with a frame having openings therein, of sleeves fitting said openings, a jack shaft extending through said sleeves, and gear wheels on the outer ends of said jack shaft, said gear wheels having hubs provided with bosses which extend into said sleeves.

6. In a locomotive, the combination with a frame having openings therein, a jack shaft extending through said openings, and gear wheels on the outer ends of said jack shaft and having parts extending into said openings in the frame.

7. In a locomotive, the combination of a frame having openings therein, a jack shaft extending into said openings, gear wheels secured to the ends of said jack shaft and having hollow hubs fitting said jack shaft and extending laterally from the gear wheel into the openings in the frame.

8. In a locomotive, the combination with a frame having openings therein, of sleeves fitting said openings, a jack shaft having tapering ends, gear wheels having hollow bosses or hubs tapered interiorly to receive the tapering end of the jack shaft and constructed to fit inside said sleeves, and means for detachably securing the gears in place on the jack shaft.

9. In a truck, a pair of axles, wheels fixed on the ends thereof, side frame members mounted on said axles, a truck bolster supported on said members, and a jack shaft journaled in said members below said bolster.

10. In a truck, a pair of axles, wheels fixed thereto, a frame mounted on said axles, a truck bolster supported on said frame, and a jack shaft journaled in said frame between and in the same horizontal plane with said axles and directly below said bolster.

11. In a truck, a frame, a jack shaft journaled in bearings in said frame, and means

on the frame for holding lubricating material for the bearings of said jack shaft.

12. In a truck, the combination of a frame, a shaft journaled in bearings in said frame, and boxes integral with the frame for containing lubricant for the bearings of said shaft.

13. In a truck, the combination of a frame, a shaft journaled in bearings in said frame, and means on the frame to hold lubricant for the bearings of said shaft, and means whereby said lubricant holding means is accessible from the exterior and interior of the frame for filling the same.

14. In a locomotive, the combination of a truck frame, a body, and means for supporting the body from the truck frame comprising a body bolster, a truck bolster mounted on the frame and supporting the body bolster, and springs between the body bolster and truck bolster, a jack shaft journaled in the frame below the said bolsters and gears on the ends of said jack shaft between said springs and truck frame.

15. In a locomotive, the combination of a frame having openings therein, a jack shaft extending into said openings and having threaded ends, gear wheels mounted on the ends of said shaft and having members fitting said openings and supporting said shaft in said openings and nuts fitting the ends of said shaft and securing the gear wheels in place thereon.

16. In a truck, the combination of side frame members, a shaft journaled therein and extending beyond the side frame members, gear wheels mounted on the outer ends of the shaft outside said frame members, a truck bolster mounted on said frame members, a body bolster, means extending downwardly beyond the upper sides of said gear wheels to connect said bolsters together.

17. In a truck, the combination of side frame members having openings therein, a jack shaft having tapering ends extending through said openings in the frame members, and gear wheels having interiorly tapering laterally extending hubs fitting said openings, and nuts securing the gear wheels to the outer ends of said shaft and the hubs thereof in place in said openings in the frame members.

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

WILLIAM F. KIESEL, JR.

Witnesses:
C. R. ATKINSON,
J. T. HANLON.