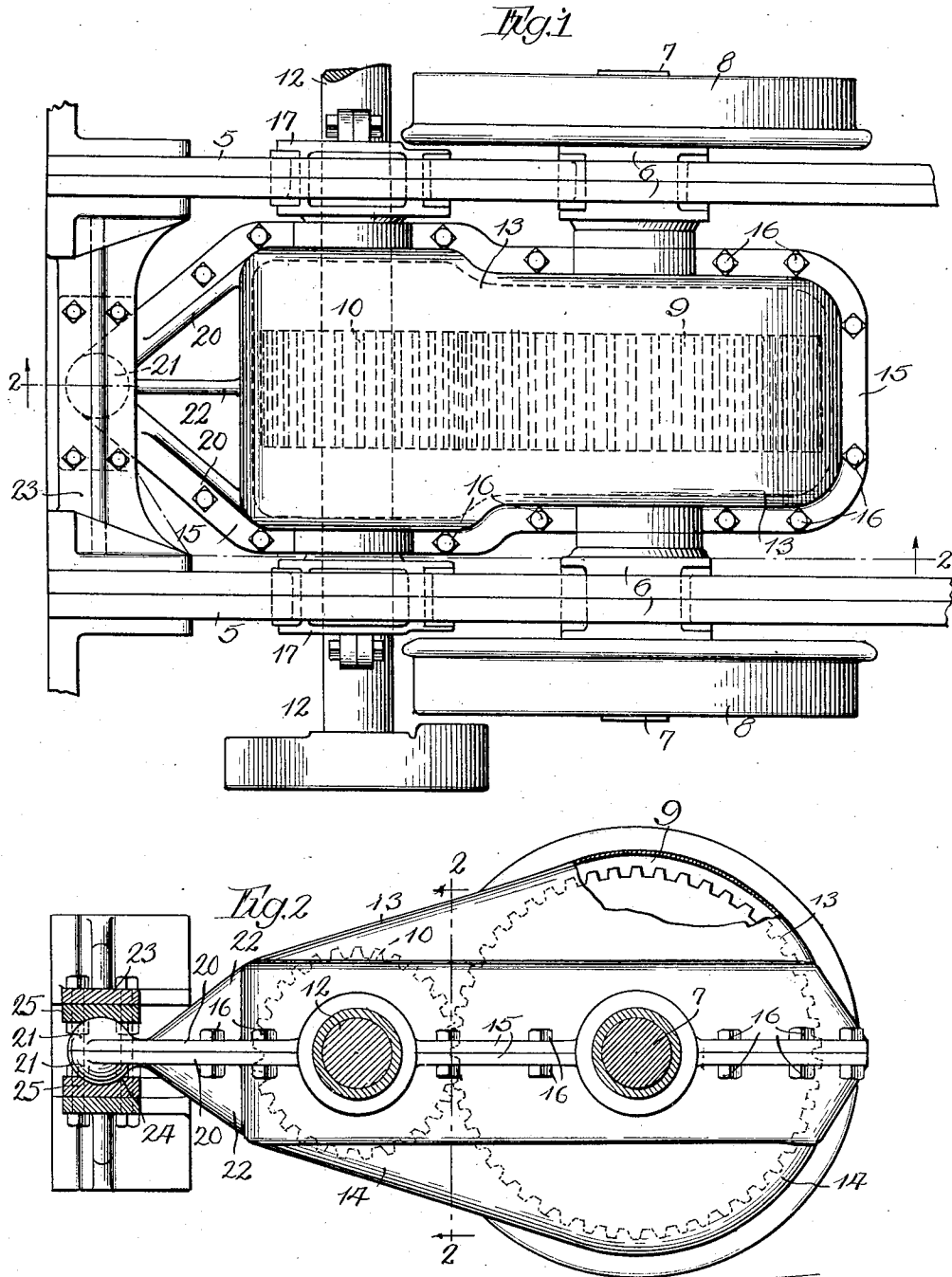


E. F. BACKER,
GEARED LOCOMOTIVE.
APPLICATION FILED JUNE 21, 1920.

1,360,709.

Patented Nov. 30, 1920.
2 SHEETS—SHEET 1.



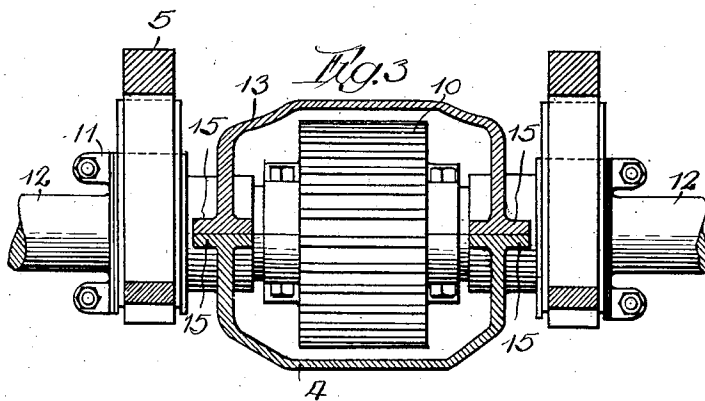
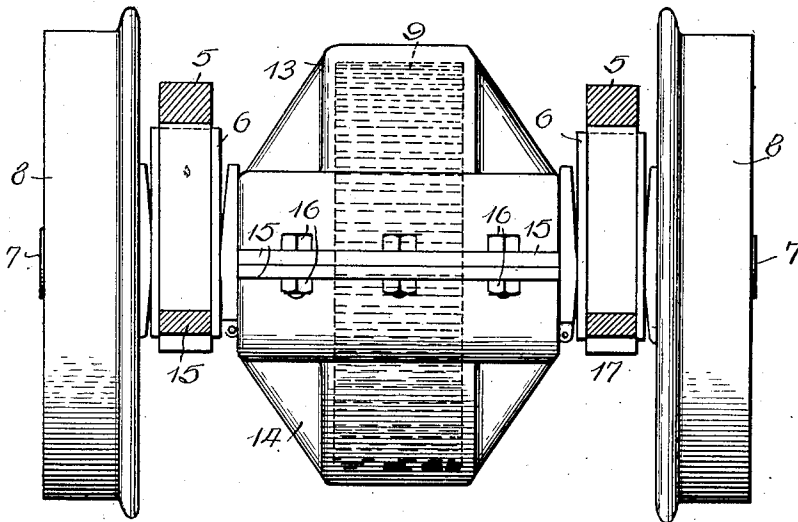
Inventor
Elmer F. Backer.
By Frank D. Thomason Atty.

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Fig. 3



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UNITED STATES PATENT OFFICE.

ELMER F. BACKER, OF DAVENPORT, IOWA.

GEARED LOCOMOTIVE.

1,360,709.

Specification of Letters Patent. Patented Nov. 30, 1920.

Application filed June 21, 1920. Serial No. 390,530.

To all whom it may concern:

Be it known that I, ELMER F. BACKER, a citizen of the United States, residing at Davenport, in the county of Scott and State of Iowa, have invented new and useful Improvements in Geared Locomotives, of which the following is a full, clear, and exact description.

My invention relates to geared locomotives and particularly to the type referred to in my pending application for Letters Patent of the United States filed September 22, 1919, Serial No. 325,347.

The object of my invention is to provide a three point support for the crank-shaft of such a locomotive that will always insure the axis of the same and of the axle of the drive-shaft remaining in perfect parallelism so that the gears connecting them will always be in perfect mesh, substantially as hereinafter described and as illustrated in the drawings, in which:

Figure 1 is a plan view of a broken away portion of the supporting-frame of a locomotive showing my improvements applied thereto.

Fig. 2 is a vertical section thereof taken on dotted line 2, 2 Fig. 1.

Fig. 3 is a rear elevation thereof.

Fig. 4 is a transverse vertical section taken on dotted line 4, 4, Fig. 2.

Referring to the drawings, 5, 5, represents the side-members of the supporting-frame of a locomotive of the type to which my improvements are applicable, and 6, 6, represent the bearings in the pedestals of said frame for the axle 7 of the drive-wheels 8, 8. These bearings and the pedestals of the side-frames in which they are mounted are the same as those now in extensive use and a detailed description thereof is deemed unnecessary.

At its center of length axle 7 has a broad faced gear 9 securely mounted thereon and this gear is engaged by a pinion 10 of corresponding breadth that is securely mounted upon a transverse crank-shaft, 12, whose axis must always be parallel to the axis of the axle. In order to accomplish this result a housing consisting of an upper and lower section, 13, and 14, is provided for said gears which is placed between the sides of the supporting-frame. These sections preferably correspond in construction and design and have their longitudinal edges 15 flanged and secured together by bolts and nuts 16, or other suitable means. In vertical longitu-

nal section the housing is, preferably, pear-shaped, and the larger end incloses the large gear on the axle 7 and the smaller end incloses the pinion on the crank-shaft. This housing has bearings, that are made half in the longitudinal edge of its upper section and half in the opposing edge of its lower section, for the axle to pass through, and has bearings in the sides of its smaller end in which the crank-shaft is journaled. It will be observed that the drive-shaft supports the larger end of the housing whereas the smaller end supports the crank-shaft. The ends of the crank-shaft pass out through guide-blocks 17 that are supported and have a vertically sliding movement in suitable openings or pedestals in the supporting-frame, and the vertical edges of said blocks are grooved and the edges of the pedestals enter said grooves and retain the block in position.

The smaller end of the housing is, preferably, made slightly wider than the rear portion and each section has a corresponding V-shaped frame consisting of converging arms 20, 20, that project from each corner of said end and meet a suitable distance from the housing at a point in alinement with the center of width of the latter and merge into semi-spherical members 21, 21, which, when the sections of the housing are secured together, form a spherical journal or bearing ball. If desired, the V-shaped frames can be reinforced by vertical struts 22, 22 that are made integral with the adjacent ends of the upper and lower sections and extend in alinement with the center of the width of the housing to the crotch of said arms 20, 20.

The spherical journal above referred to is journaled between an upper and lower transverse cross-bar, 23 and 24, the opposing surfaces of which, where they are engaged by said semi-spherical bearing, are concaved sufficiently to retain and support the adjacent end of the housing, and to permit the rear end of said housing to move up and down synchronously with either or both of the drive-wheels, and at the same time carry and maintain the crank-shaft absolutely parallel with the drive-axle at all times.

It is evident that the improvements hereinbefore described can be used in conjunction with geared locomotives of various designs. I do not, therefore, desire to be confined to the specific construction of the parts of my invention as hereinbefore described

or as illustrated in the drawings, as it is obvious that they may be changed to meet the requirements of the changes in the design of any locomotive to which said improvements might be applied without departing from the principle of my invention.

What I claim as new is:

1. In a geared locomotive the combination with a locomotive supporting-frame, and the axle of the drive-wheels thereof journaled in the side members of said frame, of a transverse crank-shaft which imparts its motion to said axle, gears connecting said axle and crank-shaft, and means journaled at one point at one end and at two points on the axle that retains said crank-shaft in constant parallelism with said axle.

2. In a geared locomotive the combination with a locomotive supporting-frame, the axle of the drive-wheel thereof, journaled in the side members of the same, of a transverse crank-shaft which imparts its motion to said axle, gears connecting said axle and shaft, a gear housing therefor one end of which is pivotally mounted upon said axle and which has bearings in its other end through which said crank-shaft extends, means provided with bearings for said crank-shaft the end of which farthest from said axle has a single journaling member, and a single bearing therefor supported midway between the side members of said supporting-frame.

3. In a geared locomotive the combination with a locomotive supporting-frame and the axle of the drive-wheel thereof journaled in the side members of the supporting-frame, of a transverse crank-shaft which imparts its motion to said axle, a gear housing one end of which is pivotally mounted at two points upon said axle and has bearings in its other end for said crank-shaft, a swiveled journaling device for supporting the opposite end of the said gear housing, and a bearing therefor supported midway between the side members of said supporting-frame.

4. In a geared locomotive the combination with the locomotive supporting-frame, and the axle of the drive-wheels thereof, journaled in the side members of said supporting-frame, of a crank-shaft, gearing mounted on and connecting said shaft and axle, a housing inclosing said gearing and pivotally mounted at one end on said axle at two points, and a universal joint connecting the

opposite end thereof to a cross-member of said supporting-frame.

5. In a geared locomotive the combination with the supporting-frame thereof, and the axle of the drive-wheels journaled in said supporting-frame, of a floating transverse crank-shaft, gears connecting the same to said axle, journaled in said supporting-frame, a housing for said gears, a substantially V-shaped member the ends of which are connected to the end of the housing farthest from the axle, and a ball attached to the vertex of said member, and a bearing therefor in a cross-member of said frame that is adapted to permit said crank-shaft to move parallel with said axle at all times.

6. In a geared locomotive the combination with the supporting-frame thereof, and the axle of the drive-wheels journaled in the supporting-frame, of a floating transverse crank-shaft, gears connecting the same to said axle, a housing for said gears which is mounted on said axle and has bearings in its sides in which the crank-shaft is journaled, a substantially V-shaped member the ends of which are connected to the end of the housing farthest from said axle, a ball made integral with the vertex of said member, and a stationary bearing made integral with said supporting-frame in which said ball is journaled.

7. In a geared locomotive the combination with the supporting-frame thereof, and the axle of the drive-wheels the journals of which have bearings in the supporting frame, of a floating transverse crank-shaft, gears connecting the same to said axle, a housing for said gears consisting of an upper and lower section one end of which is mounted on said axle and which has openings in its sides through which the crank-shaft passes, a substantially V-shaped member supporting the end farthest from the axle, a ball made integral with the vertex of said member, and a stationary bearing made integral with said supporting-frame in which said ball is journaled.

In witness whereof, I have hereunto set my hand and seal this 15th day of June, 1920.

ELMER F. BACKER.

Witnesses:

H. A. ARZBERGER,
JOHN J. KASTLIN.