

Jan. 22, 1924.

W. E. BOUSCHOR

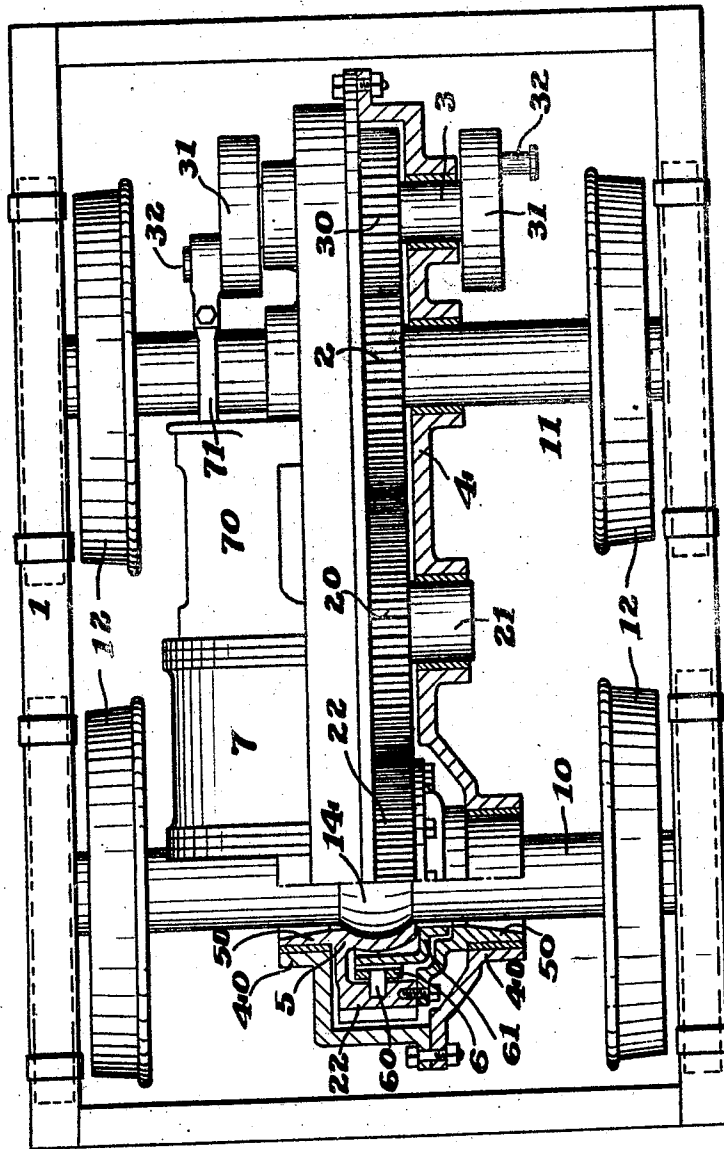
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LOCOMOTIVE

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Fig. 1



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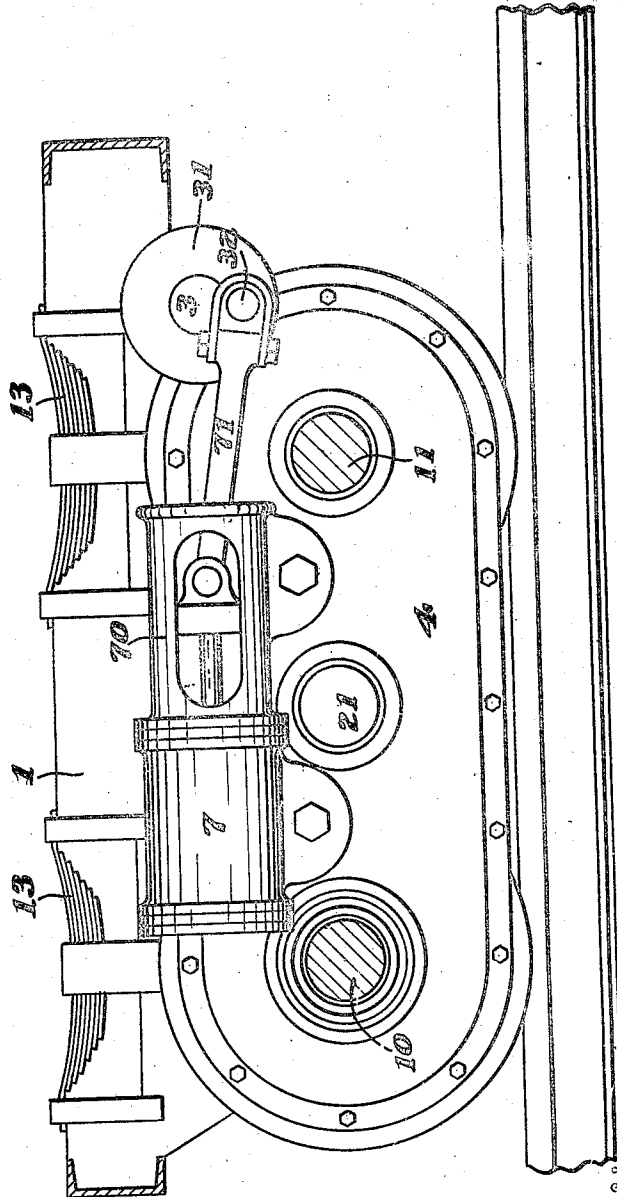
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Fig. 2



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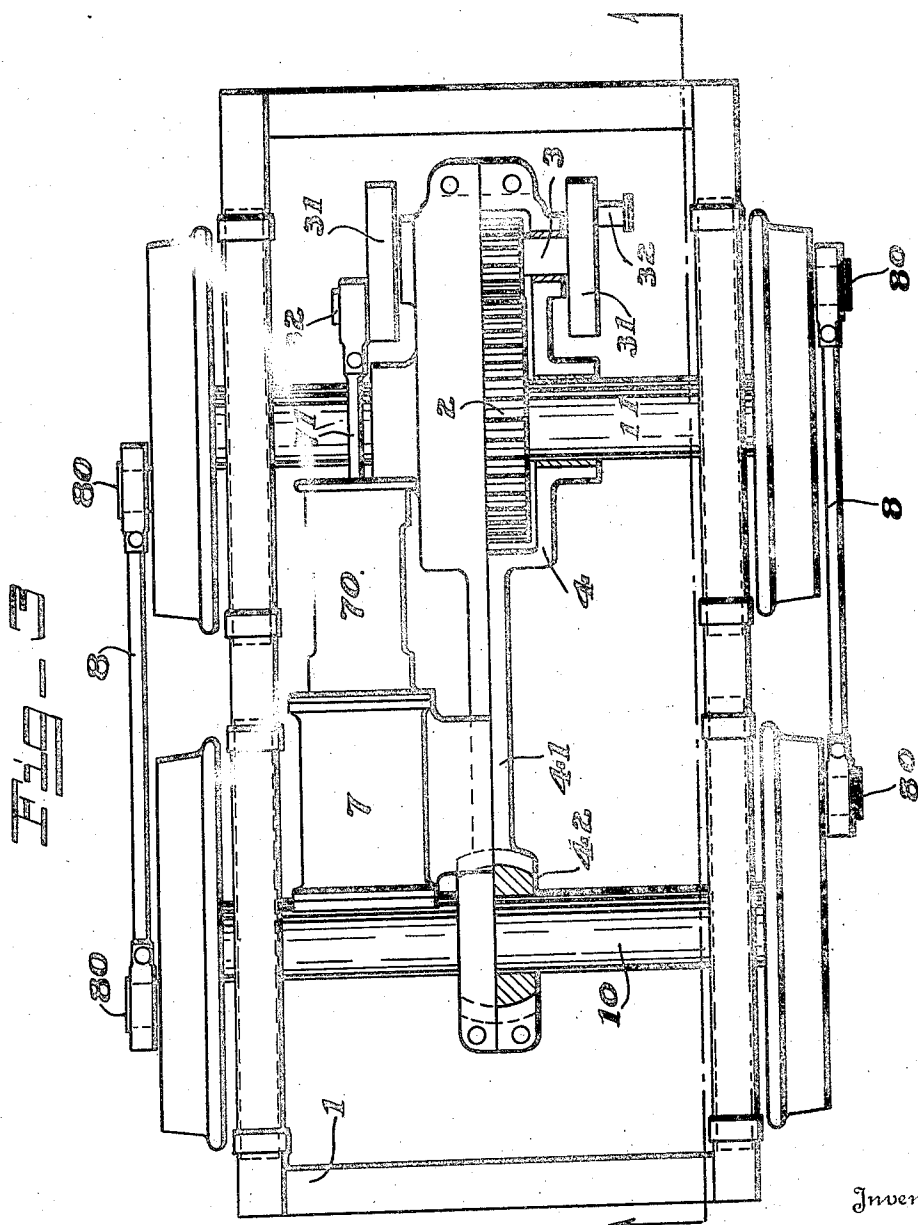
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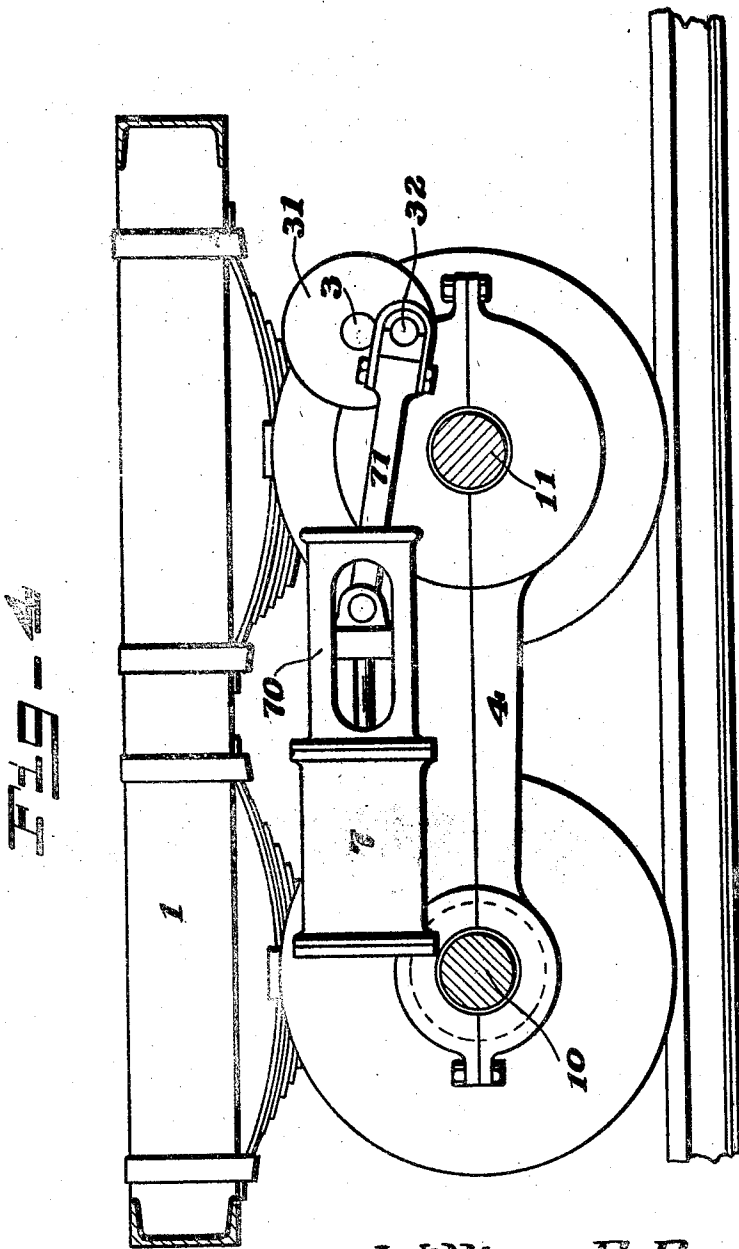
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UNITED STATES PATENT OFFICE.

WILLIAM E. BOUSCHOR, OF SEATTLE, WASHINGTON.

LOCOMOTIVE.

Application filed October 16, 1922. Serial No. 594,867.

To all whom it may concern:

Be it known that I, WILLIAM E. BOUSCHOR, a citizen of the United States of America, and resident of the city of Seattle, in the county of King and State of Wash-
 5 in the county of King and State of Wash-
 10 ington, have invented certain new and useful Improvements in Locomotives, of which the following is a specification.

My invention relates to locomotives of a
 10 special type of construction which are adapted for use upon irregular, rough tracks, and also for industrial purposes such as logging, mining, and roads of similar
 15 character which are of low grade of construction, as well as about industrial plants.

The object of my invention is to provide means of propulsion which may be applied to ordinary bogie trucks, by which they may be employed for propelling the car or loco-
 20 motive under which they may be placed.

It is a further more specific object of my invention to connect the engine with one of the axles through a spur gear drive, and in
 25 one modification of my invention to connect the various axles of the truck with spur gears.

These and other features of my invention will be hereinafter described and the parts which I believe to be novel and upon which
 30 I desire to obtain Letters Patent will be particularly defined in the claims terminating this specification.

The accompanying drawings show my invention in two modifications, the same being the type of structure now preferred by
 35 me.

Figure 1 is a top plan view with a portion of the gear housing in section and the engine at one side removed, showing the manner of applying my invention to a bogie
 40 truck.

Figure 2 is a side sectional elevation taken just inside of the near set of wheels.

Figure 3 is a top plan view showing a modified type of construction in which the gear housing at one side of the center line is in section and the engine at this side is removed.

Figure 4 is a sectional side elevation of the type of construction shown in Figure 3, the same being taken upon a plane just inside of the near wheels.

One of the purposes of my present invention is to provide a type of construction
 55 for engines of the character stated, wherein the engines may be placed between the truck

wheels and over the axles and be connected with one of the axles in such manner that the position of the engine relative to lateral rocking is determined by this axle, and its
 60 connection with the other axle or axles is such that the lateral rocking of the axles due to inequalities in the road bed will not be communicated to the engine at its driving
 65 connection with the axles. The bogie truck may in the main be of any suitable or standard construction. A simple type of construction has been shown in the drawings. Such construction comprises a frame 1,
 70 axles 10 and 11 having thereon wheels 12 adapted to run upon a track. Supporting springs as 13 are usually employed to carry the weight of the load.

To one of the axles, as the axle 11, is fixedly secured a gear wheel 2 and driving this
 75 gear is a pinion 30 which is secured to a shaft 3 journaled in the gear housing 4. The shaft 3 of the pinion is located sufficiently above the plane of the axles 10 and
 80 11 to permit the proper operation of the connecting rod of the driving engine.

The housing 4 extends to and embraces the other axle 10 of the truck. Where the second axle is driven from the primary driving
 85 axle 11 through a gear train, as is shown in Figures 1 and 2, an idler gear 20 has its shaft 21 journaled in the housing. Journaled in the same housing is a gear 22 which is connected with the other axle 10 through
 90 some form of universal joint. This may be a ball and socket joint or a gimbal joint. This universal coupling may consist of a spheroidal enlargement 14 centrally placed upon the shaft 10, and a sleeve as 5 which
 95 fits over the same and which is connected in any suitable way with the driving gear 22. As illustrated this sleeve is integral with or rigidly connected with the gear 22. Such sleeve has end projections 50 which are journaled in hubs 40 of the gear casing. One of
 100 the sleeves 50 should preferably be removably connected with the gear for purposes of assembly.

For the purpose of securing such universal movement between the axle and the gear 22
 105 a ring 6 connected by pins as 60 with the gear and by other like pins spaced 90° therefrom with a sleeve 61, may also be employed.

The pinion shaft 3 also serves as the shaft
 110 of the driving engine. It has cranks as 31 secured to the ends thereof and each of these

carries a crank pin 32. The engine cylinder 7 with the cross head guides 70 are secured to each other and to the sides of the gear housing 4. Said gear housing forms a base frame for the engine. The connecting rods 71 engage the crank pins 32 to thereby turn the pinion shaft 3.

The construction shown in Figures 3 and 4 in the main resembles that just described. There is, however, only one gear connected with one of the axles. This is the gear 2 connected with the axle 11. A gear housing 4 has an extension 41 which extends to and embraces another truck axle, as the axle 10. The purpose of this is to furnish another support for the housing and to prevent up and down movement thereof. This end of the housing should have a universal bearing upon the axle and this has been secured by giving the two parts complementary spheroidal surfaces 42 which are in engagement. The mounting of the engines and their connection with the shaft and the manner of driving the gear 2 is the same as that which has just been described.

The driving connection between the two truck axles is, however, different. This consists of side rods as 8 which connect crank pins 80 carried by the wheels at the outer side thereof. This type of construction avoids the necessity for any universal joints in the driving connections. The type of construction which has been illustrated and described furnishes a compact mechanism which is located so that it is not liable to injury by engagement with logs or other objects which may be adjacent to the track or carried upon the cars. It is also a type of construction which may be made cheaply and one which is reliable and rugged in its

construction. An engine constructed along these lines is excellently adapted for the type of rough use required in logging and mining railways and about industrial plants.

What I claim as my invention is:

1. The combination with a bogie truck, a gear secured to a truck axle, a gear housing having supporting connection with another truck axle, a pinion meshing with said gear and journaled in the housing above the plane of the truck axles, cranks connected with the outer ends of said pinion shaft, and an engine carried upon said housing at each side and connected with said cranks.

2. The combination with a car truck having a plurality of axles, a gear secured to one axle, a gear housing having an extension embracing another axle, a universal bearing between the housing extension and said other axle, a pinion and shaft journaled in the housing and having driving engagement with the gear, and an engine carried by the housing and having cranks carried by the pinion shaft.

3. The combination with the device defined in claim 1 of crank pins and side rods connecting the truck axles.

4. The combination with a bogie truck having side rods connecting its axles, a gear secured to the central part of one axle, a pinion meshing with said gear, a shaft for said pinion having engine cranks upon its ends, a housing for said gear and pinion supporting the pinion shaft above the plane of the truck axles, and an engine carried by said housing at each side and connected with the cranks carried by the pinion shaft.

Signed at Seattle, King County, Washington, this 9th day of October, 1922.

WILLIAM E. BOUSCHOR.