

May 20, 1924.

O. E. SZEKELY

1,494,965

LOCOMOTIVE

Filed Oct. 6, 1923

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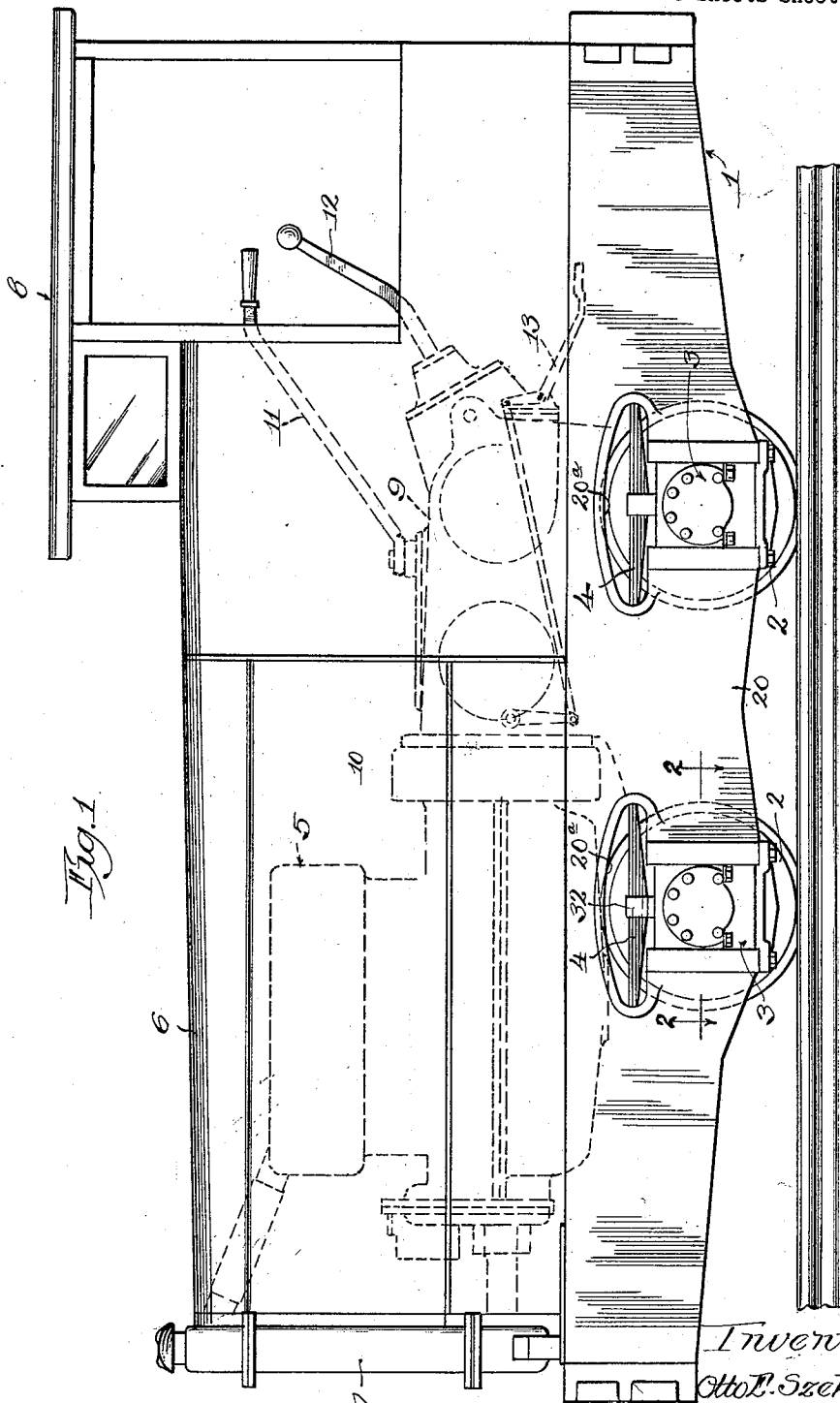


Fig. 1

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Otto E. Szekely,

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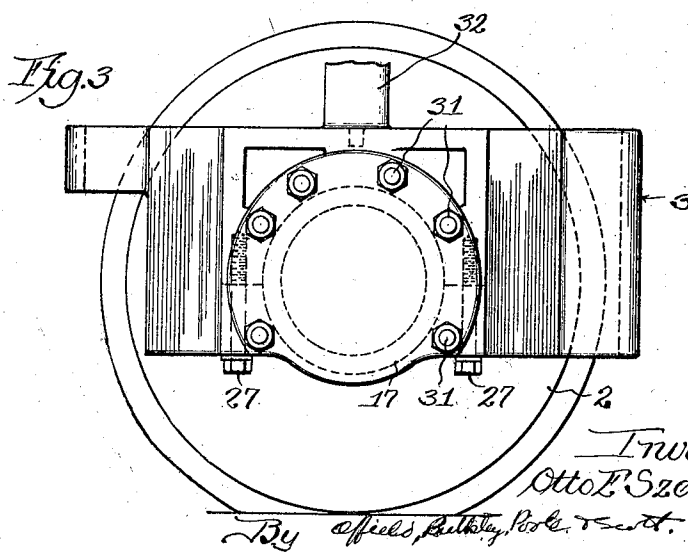
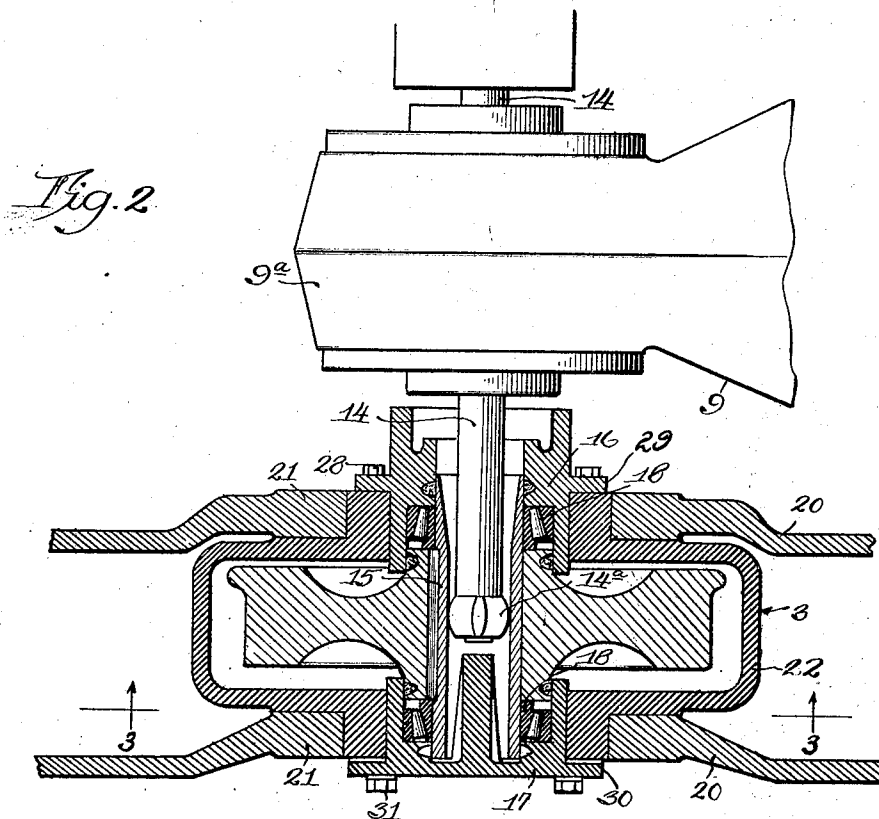
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May 20, 1924.

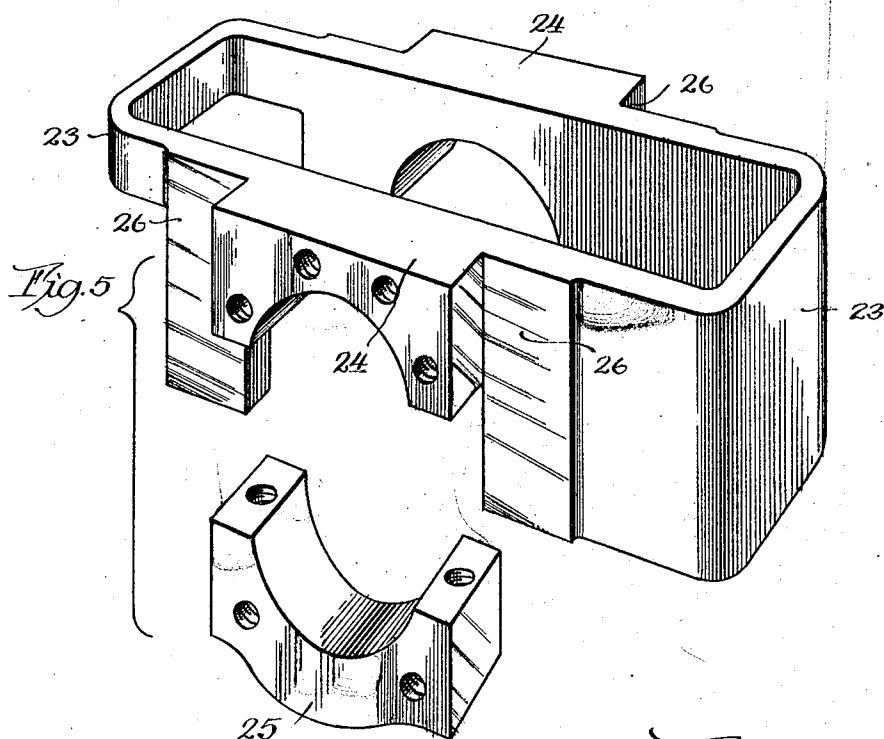
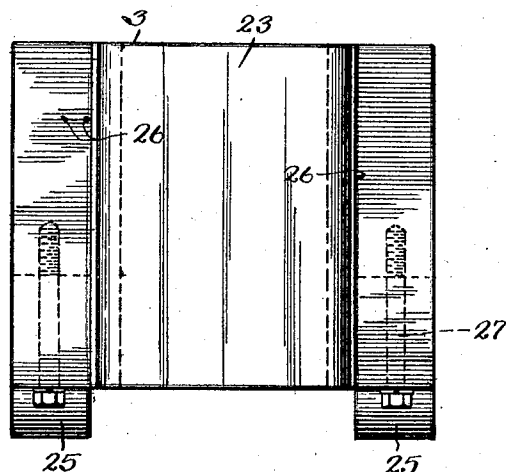
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3 Sheets-Sheet 3

Fig. 4



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UNITED STATES PATENT OFFICE.

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LOCOMOTIVE.

Application filed October 6, 1923. Serial No. 666,873.

To all whom it may concern:

Be it known that I, OTTO E. SZEKELY, a citizen of the United States, and a resident of Moline, in the county of Rock Island and State of Illinois, have invented certain new and useful Improvements in Locomotives, of which the following is a specification.

This invention relates to improvements in locomotives of the type and character disclosed in a prior application for Letters Patent, Serial Number 583,198, filed on August 21, 1922 in the United States Patent Office, namely: internal combustion motor driven locomotive, designed for industrial and construction work.

The object of this invention is to provide an improved truck and journal construction for locomotives of the general character hereinabove described and more especially the locomotive of said prior application.

A further object of the invention is to provide a method of journal construction calculated to afford an improved mounting of the wheel journals in the truck frame including increased guiding area in the relative vertical movement between the parts, and other mechanical advantages having to do with the resistance to thrust and other forces to which the driving parts are subjected.

In the drawings a general disclosure of the locomotive is made, together with a more detailed drawing of the parts embodying the invention.

Figure 1 is a general view in side elevation of the locomotive embodying the invention,

Figure 2 is an enlarged view in horizontal section through the journal box and drive as taken on line 2-2 of Fig. 1,

Figure 3 is an enlarged detail view of the journal box assembly as taken on line 3-3 of Figure 2,

Figure 4 is a view in end elevation of the journal box, and

Figure 5 is a perspective view of the journal box removed and parts disassembled.

Considering the locomotive in its general

aspects, it comprises a main frame 1, rigid throughout and symmetrical in shape. The frame is supported upon two pairs of wheels 2 located midway between the front and rear ends of the frame, said wheels being journalled in journal boxes 3 which in turn are supported between vertical guides in the frame to afford relative movement therebetween. Springs 4-4 form the connection between the journal boxes and the locomotive frame.

Mounted upon the frame 1, is a heavy duty internal combustion motor 5 and occupying the forward portion thereof. A hood or housing 6 covers the motor. At the extreme front end is a radiator 7, similar in construction and function to the radiator of an automobile. The rear portion of the frame is occupied by the operator's cab 8, which is journalled to the rear end of the hood 6.

Rearwardly of the motor 5, and coupled thereto is a transmission casing 9 with clutch and fly wheel housing 10 interposed between. The rear portion of the transmission casing extends into the cab, with the several operating levers at hand, namely, a reversing lever 11, a gear shifting or change speed lever 12, and a clutch pedal 13, all within reach of the locomotive driver.

It will suffice to describe the locomotive power plant as conforming generally to standard automotive practice, although owing to the essential differences between locomotive and road vehicle operation, certain departures are incorporated in the transmission mechanism which may be briefly referred to since they are fully described elsewhere.

Inasmuch as a locomotive is called upon to push as well as pull its load, and from either end, it must be capable of delivering the same power at the wheels regardless of the direction of travel, hence a reversing mechanism is introduced between the change speed gearing and the clutch to the end that equal power is delivered to the change speed mechanism in either direction of rotation of the moving parts.

The power is ultimately delivered to the

wheel axles, which are seen to be considerably below the horizontal axis of the motor crank shaft. The power transmission is accomplished through a series of drive shafts, termed primary, secondary, final, and axle drive shafts, with sprocket wheels and chains driving from one to the other. The disclosure of the drive mechanism is not essential, other than to have it understood that the power is ultimately transmitted, at the desired speed and direction, to the wheel drive shafts 14, 14 (Figure 2) which project from the transmission housing 9 in axial alignment with the wheel axles. It is to be observed that the transmission casing is extended downwardly between the wheel journal in the form of rounded extensions 9^a, from which extend the axle drive shafts 14, 14.

Having considered briefly the drive from motor to the drive shafts 14, 14, the construction of these shafts, journal boxes, and spring suspension will now be discussed.

In general, it may be said that the drive from the shafts 14—14 to the wheels is through a form of universal joint, which permits the free movement of the wheel journals with respect to the transmission casing 4. As shown in Figure 2, each wheel 2 is keyed upon a journal sleeve 15, which in turn is journaled at its ends in inner and outer bearing boxes 16 and 17, through the medium of roller bearings 18, 18, said bearing boxes forming a part of the complete journal box 3, supported by the frame 1 and adapted for movement in vertical guideways.

As clearly shown in Figure 2, the frame member 1 is made up of a pair of laterally spaced and parallel side frame members 20—20, between which the journal box and wheel are mounted, said frame members being provided with openings 20^a, with wide slots extending to their lower edges, as shown in Figure 1, to provide for mounting of the journal boxes. On the opposed vertical edges of the vertical slots in side plates 20, 20 are formed squared guide flanges 21, 21, which have bearing engagement and vertical sliding contact with the main journal member or yoke 22, which lies between the side plates and is extended laterally to completely surround the wheel.

Considering the structure of the journal box more in detail, the formation of the yoke 22 is clearly shown in Figure 5, as consisting of a boxlike casting, open at top and bottom, and, as before suggested, floats in the guideways of the side frame members, under the action of the springs. The end portions 23—23 of the yoke are U-shaped, one side being preferably reduced in height, that is, extends only part way from the upper edge of the yoke in order to allow clearance for the brakes. The end portions

unite at the central portion of the yoke in bearing blocks 24, 24 of increased thickness located near the top and extending downwardly a distance somewhat greater than one-half the height of the yoke. The under faces of the bearing blocks are semi-circular, and the space below entirely open to receive a removable bearing cap 25, forming the under half of each bearing. Extending vertically on each side of the bearing blocks 25 are right angular bearing surfaces 26, 26 forming the guide faces, which engage the guide flanges 21, 21 of the side plates.

The assembly of the journal box is clearly shown in Figure 3, the bearing caps 25, 25 being bolted in position, after the wheel 2, axle sleeve 15 and bearing boxes 16 and 17 have been assembled. A pair of cap screws 27, 27 extend upwardly through the bearing cap and are anchored in the upper half of each bearing block.

The bearing boxes 16 and 17, are cylindric in shape, the inner box having the form of a flanged sleeve, in which is retained its roller bearing 18, and held in position by means of cap screws 28, passing through the flange 29 thereof, and anchored in the face of the bearing blocks 24 and 25. The outer bearing box 17, is more in the nature of a bearing retaining plate, fitting over the end of the axle sleeve 15, and provided with an internal socket in which the outer roller bearing 18 is retained. The outer bearing box is flanged at 30 and a plurality of cap screws 31 anchors the same in place.

The springs 4, 4, are supported intermediate their ends on the top faces of the journal boxes, by means of spring supporting blocks 32, which are supported upon the bearing blocks 24, 24, and on either side of the wheel. The free ends of the springs are connected to the frame 1 through the medium of shackles or other suitable means of connection.

It is to be further noted that the wheel axle sleeve is broached to form a squared seat for the outer end of the axle shaft 14, the latter being shaped in the form of a head 14^a, generally square in cross section, with its several faces rounded axially as well as circumferentially. In this manner the connection between the shaft and axle sleeve partakes of the nature of an universal joint allowing for the movement of the journal boxes in a vertical direction, as well as any axial movement that may be present.

The advantage of this construction for journal box and wheel mounting resides primarily in the added strength and resistance against strains and wear that the ordinary journal structure is subjected to.

The journal yoke surrounding the wheel manifestly forms a rigid support for the journal bearings, insuring permanent align-

ment, and hence increased life of the running parts. Moreover the increased height and wide expanse of bearing faces throughout the vertical guideways, reduces the wear and distributes the thrust throughout a greater area, thus permitting a more rigid mounting of the wheel.

I claim as my invention:—

1. In a wheeled vehicle, the combination of a side frame member, a journal box mounted in said frame member, and comprising a yoke member having sliding engagement between guideways formed in said side frame, and a wheel having a journal shaft extending transversely of said yoke and journaled in bearings formed on opposite sides of said yoke, and a spring interposed between said yoke and said side frame member.

2. In a wheeled vehicle the combination of a side frame, a journal box comprising a yoke mounted between vertical guideways, in said side frame, and having sliding engagement therewith, a wheel mounted within said yoke, and provided with an axle journaled in bearings on opposite sides of said yoke, and a spring interposed between said yoke and side frame.

3. In a wheeled vehicle the combination of spaced side frame members, a journal box mounted between said side frame members and within vertical guideways therein, said box comprising a hollow yoke member provided with guide faces engaging said guideways, and a wheel mounted within said yoke and journaled in bearings on opposite sides of said yoke.

4. In a wheeled vehicle, the combination of transversely spaced side frame members, a yoke mounted between said side frame members and adapted for vertical sliding movement between guideways formed in said side frame members, said yoke comprising a hollow casing open at top and bottom, and provided with wheel bearings on opposite sides thereof, and a wheel mounted within said yoke and journaled in said yoke bearings.

5. In a wheeled vehicle the combination of parallel side frame members, spaced apart transversely and provided with open guideways and marginal guide flanges, a yoke mounted between said side frame members, and in said guideways, and provided with angular bearing faces having sliding engagement with said guide flanges, a wheel mounted in said yoke and journaled in bearings supported in opposite sides of said yoke and between the bearing faces thereof.

6. In a locomotive of the character described, the combination with a frame and wheels, of a journal mounting for said wheels, comprising a yoke, consisting of a hollow casing having U-shaped end portions extending around the periphery of the wheel,

and supporting wheel bearings in opposite sides thereof, said yoke being slidably mounted in said frame through the medium of vertical guideways.

7. In a locomotive of the character described, the combination with side frame members, consisting of parallel portions spaced apart transversely, a journal box mounted between said side frame members and comprising a yoke provided with bearing faces engaging vertical guideways in said side frame members, and bearing retaining members mounted in opposite sides of said yoke, and a wheel mounted within said yoke, and journaled in said bearings.

8. In a locomotive of the character described, the combination with a frame, journal boxes mounted for vertical movement relative to said frame, a wheel journaled in each journal box, the latter comprising a yoke consisting of a hollow casing having U-shaped portions extending forwardly and rearwardly around said wheel, and intermediate bearing blocks supporting bearing members for said wheel axle, and springs supported upon said bearing blocks, and connected with said side frame members.

9. In a locomotive of the character described, the combination with a frame, journal boxes mounted for vertical movement relative to said frame, a wheel journaled in each journal box, the latter comprising a yoke consisting of integral bearing blocks connected by U-shaped portions extending horizontally around the wheel and angular bearing faces extending vertically on either side of each bearing block and engaging guide flanges formed integral with said side frame members.

10. In a locomotive of the character described, the combination with a frame and wheels of a journal mounting for said wheels, comprising a yoke, consisting of a hollow casing having U-shaped end portions extending around the wheel, and wheel bearing supporting blocks in opposite sides thereof, said yoke being slidably mounted in said frame through the medium of interfitting guideways, and flanges extending vertically on both sides of each of said blocks.

11. In a locomotive of the character described, the combination with a frame, journal boxes mounted for vertical movement relative to said frame, a wheel journaled in each journal box, the latter comprising a yoke consisting of a hollow casting having U-shaped portions extending forwardly and rearwardly around said wheel, and intermediate bearing blocks on opposite sides of said wheel, and comprising removable bearing caps, and bearing retainers mounted in said blocks.

12. In a locomotive of the character described, the combination with a frame, jour-

nal boxes mounted for vertical movement relative to said frame, a wheel journalled in each journal box, the latter comprising a yoke consisting of integral bearing blocks and U-shaped portions extending horizontally around the wheel and angular bearing faces extending vertically throughout the height of said yoke on either side of each bearing block and having sliding engage-

ment between pairs of guideways formed in said side frame members, and springs mounted on top of said yoke on opposite sides of said wheel and connected at their free ends with said side frame members. 10

In witness whereof, I hereunto subscribe my name this first day of October, A. D., 1923. 15

OTTO E. SZEKELY.