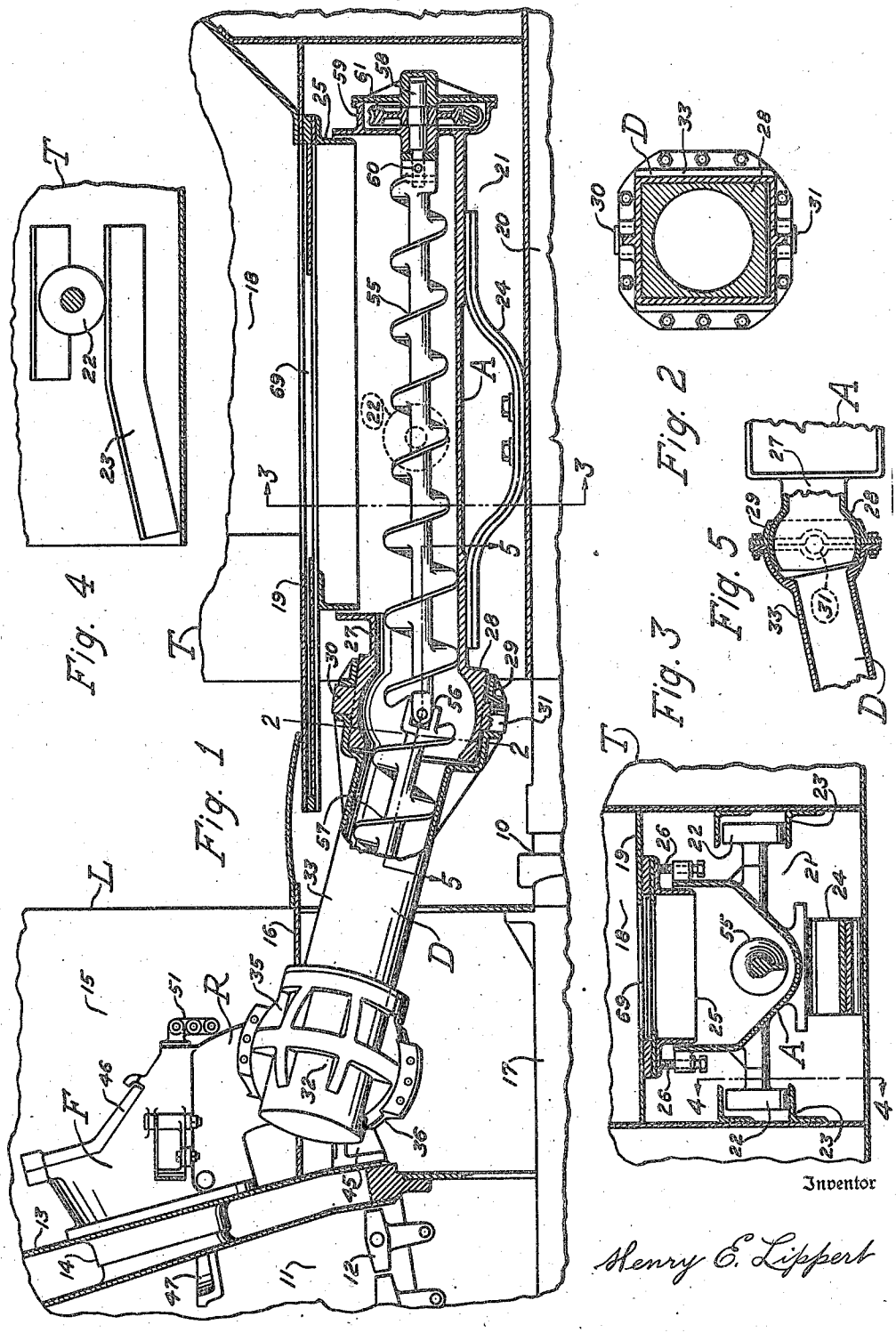
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LOCOMOTIVE FUEL CONVEYER

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LOCOMOTIVE FUEL CONVEYER

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8 Claims. (Cl. 198—15)

This invention relates to the conveying system of locomotive stokers, and is a division of my copending application Serial Number 17,607, filed April 22, 1935 for Locomotive fuel conveyers.

An object of the invention is to provide an improved conduit arrangement for transferring fuel from the tender to the locomotive. The invention resides in the manner of connecting a plurality of conduit sections or conveyer members, and in arranging, mounting and supporting them upon an intercoupled locomotive and tender.

Stated specifically, the improvement consists in providing a conveyer member on the locomotive, a conveyer member on the tender mounted for movement about an axis extending transversely of the tender, and an intermediate conveyer member at one end universally jointed to one of said conveyer members and being flexibly connected to the other of said conveyer members for lateral movement only with respect thereto.

A further object is the provision in the structure above set forth, of resilient means supporting the conduit system by engaging one of the movably mounted conveyer members.

Other objects, advantages and details of the invention will appear from a reading of the following description, taken in connection with the accompanying drawing, forming a part hereof, in which:

Fig. 1 is a vertical longitudinal sectional view of a rear portion of a locomotive and a forward portion of a tender, with the improved conveyer applied thereto. Parts of the conveyer are broken away and removed.

Fig. 2 is a transverse section taken on line 2—2 of Fig. 1.

Fig. 3 is a vertical transverse sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a longitudinal vertical section taken on line 4—4 of Fig. 3.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 1. This view is on a reduced scale and omits the fuel transfer screws.

Referring to the drawing, a locomotive designated generally by the letter L is coupled at 10 to a tender T. The locomotive has a firebox 11 provided with grates 12, a backhead 13 having a firing opening 14 therein, a cab 15 provided with a cab deck 16, and a frame 17. The tender has a fuel bin or bunker 18, a deck 19, a frame 20, and compartment 21 between the bunker 18 and the tender frame 20 for receiving the rear end of the fuel conveyer.

The conduit system of the conveyer comprises three conveyer members, namely, an upwardly open trough A mounted on the tender in compartment 21, a tubular intermediate conduit D extending between the tender and the locomotive, and a riser conduit R on the locomotive.

Mounted on each side of the trough A approximately equidistant from the ends thereof is a roller 22 arranged to turn about a common transverse axis and move fore and aft a slight distance on angle irons 23 attached to the side walls of compartment 21. The trough can rock slightly in a vertical plane about the axis of rollers 22 when the locomotive and tender pass over turntables and crossovers. To prevent loss of fuel between the tender deck 19 and trough A, the usual sealing frame 25 is provided, and it is supported by adjustable screws 26 on the trough.

A tubular extension 27 on the forward end of the trough is provided with an enlargement 28 on which the rear end of the intermediate conduit D is seated. Trough A and intermediate conduit D are pivotally connected together by means of a clamp 29 which engages circular projections 30 and 31 on the top and bottom faces, respectively, of the enlargement 28. The outer surface of enlargement 28 and the inner surface of the portion of conduit D overlapping this enlargement are substantially square in vertical transverse section (Fig. 2) and arcuate in horizontal transverse section (Fig. 5). The intermediate conduit can swing laterally only with reference to the trough about the upstanding axis of projections 30 and 31, since the pivotal connection prevents movement of one conduit section with respect to the other in a vertical plane.

The intermediate conduit D slopes upwardly from beneath the tender deck 19 to the cab deck 16. The conduit D is inextensible in length and comprises a short forward section 32 and a longer rearward section 33 rigidly secured together. A ball element 35, which constitutes one part of a ball and socket joint between the intermediate conduit D and the riser conduit R, is formed on the forward section 32 and is received by a spherical seat 36 formed on the lower end of the riser conduit. Conduits D and R are universally connected together by means of a ball joint clamp which has been removed for clarity.

The riser conduit R extends upwardly from the conduit D to the firing opening 14, and it is rigidly secured to the backhead in any desirable manner by means including a bracket 45. A firedoor casing F formed on the upper end of the riser conduit communicates with the firing opening 14 and supports a firedoor 46. This casing also carries a fuel distributing plate 47 and a

distributor head 51. Fuel delivered through the conduit system is discharged over the plate 47 into the firebox by pressure fluid blasts which issue from the head 51. The distributing apparatus forms no part of the present invention and need not be shown or described in detail.

The fuel in bunker 18 falls through an aperture 69 in the tender deck 19 into trough A and is transferred through the conveyer to the distributing means by a pair of helical screws 55 and 57. Screw 55 mounted in trough A is connected by a universal joint 56 to screw 57 mounted in intermediate conduit D. The trough screw 55 is fixed by pins 60 to a drive shaft 58 journalled in gear case 59. The screws 55 and 57 are rotated in the conventional manner by a driving motor (not shown) operatively connected to a gear 61 fixed on drive shaft 58. Telescopic joints in the conduit system and between the helical screws have been purposely eliminated. Since the conduits and helical screws are not extensible, and the screw 55 is fixed with respect to longitudinal movement of trough A by means of pins 60, screw 57 is also fixed with reference to longitudinal movement of intermediate conduit D.

As above set forth, conduit D is universally connected at its forward end to the locomotive and has a fixed vertical relation with trough A. Hence, the intermediate conduit and the trough will move slightly in a vertical plane about the axis of rollers 22 when the locomotive and tender travel over turntables and crossovers, because the elevation of the vehicles with reference to one another varies slightly. The conduit system can also flex laterally to facilitate lateral displacement between the vehicles when they negotiate curved tracks.

Part of the weight of conduit D is carried by the locomotive indirectly through the riser conduit, and the portion of the weight of conduit D not supported by the locomotive is carried by the tender indirectly through trough A. The weight of the entire trough is supported solely by the tender. Should the axis of rollers 22 not be contained in the vertical transverse plane through the center of gravity of the portion of the conduit system carried by the tender, or in proximity thereto, there would be undue strain and binding at the pivotal connection between conduit D and trough A. The longitudinal position of rollers 22 is determined by other factors. Therefore, to eliminate the possibility of undue stresses on the pivotal joint an additional support for the conduit system is provided. This support comprises a spring 24 secured to the tender frame 20 and arranged to slidably engage the underside of the trough for maintaining the trough in a horizontal position under normal operating conditions should there be any tendency for it to tilt. Binding on the projections 30 and 31 caused by an unbalanced conduit system is relieved by the lifting force of the spring. The spring 24 is composed of a pair of spring steel plates and is capable of flexure in a vertical direction.

I claim:

1. In an intercoupled locomotive and tender, means for transferring fuel from the tender to the locomotive comprising a conveyer member mounted on one of said intercoupled vehicles, a conveyer member mounted on the other of said intercoupled vehicles for movement fore and aft with respect thereto and for movement about an axis extending transversely of such vehicle, and an intermediate conveyer member at one end being universally connected to one of said conveyer members, said intermediate conveyer member at its opposite end being flexibly connected to the other of said conveyer members for lateral movement only with respect thereto.

2. In an intercoupled locomotive and tender, means for transferring fuel from the tender to the locomotive comprising a conveyer member mounted on one of said intercoupled vehicles, a conveyer member mounted on the other of said intercoupled vehicles for movement about an axis extending transversely of such vehicle, an intermediate conveyer member at one end being universally connected to the conveyer member on the locomotive, said intermediate conveyer member at its opposite end being flexibly connected to the conveyer member on the tender for lateral movement only with respect thereto.

3. In an intercoupled locomotive and tender, means for transferring fuel from the tender to the locomotive comprising a conveyer member mounted on one of said intercoupled vehicles, a conveyer member mounted on the other of said intercoupled vehicles for movement about an axis extending transversely of such vehicle, and an intermediate conveyer member at one end being universally connected to one of said conveyer members, said intermediate conveyer member at its opposite end being flexibly connected to the other of said conveyer members for lateral movement only with respect thereto.

4. In an intercoupled locomotive and tender, means for transferring fuel from the tender to the locomotive comprising a conveyer member mounted on one of said intercoupled vehicles, a conveyer member mounted on the other of said intercoupled vehicles for movement about an axis extending transversely of such vehicle, an intermediate conveyer member at one end being universally connected to one of said conveyer members, said intermediate conveyer member at its opposite end being flexibly connected to the other of said conveyer members for lateral movement only with respect thereto, and resilient means supporting one of said movably mounted conveyer members on one of said intercoupled vehicles.

5. In an intercoupled locomotive and tender, means for transferring fuel from the tender to the locomotive comprising a conveyer member mounted on one of said intercoupled vehicles, a conveyer member mounted on the other of said intercoupled vehicles for movement about an axis extending transversely of such vehicle, an intermediate conveyer member at one end being universally connected to one of said conveyer members, said intermediate conveyer member at its opposite end being flexibly connected to the other of said conveyer members for lateral movement only with respect thereto, and means supporting one of said movably mounted conveyer members between the ends thereof.

6. In an intercoupled locomotive and tender, means for transferring fuel from the tender to the locomotive comprising a conveyer member mounted on the locomotive, a conveyer member mounted on the tender for movement about an axis extending transversely of the tender, and an intermediate conveyer member at one end being universally connected to one of said conveyer members, said intermediate conveyer member at its opposite end being flexibly connected to the other of said conveyer members for lateral movement only with respect thereto.

7. In an intercoupled locomotive and tender, a conduit system for transferring fuel from the tender to the locomotive comprising a conveyer

member mounted on one of said intercoupled vehicles, a conveyer member mounted on the other of said intercoupled vehicles for movement about an axis extending transversely of such vehicle, an intermediate conveyer member at one end being universally connected to one of said conveyer members, said intermediate conveyer member at its opposite end being flexibly connected to the other of said conveyer members for lateral movement only with respect thereto, and resilient means supporting the movable portion of said conduit system on the tender.

8. In an intercoupled locomotive and tender, a conduit system for transferring fuel from the tender to the locomotive comprising a conveyer member mounted on one of said intercoupled vehicles, a conveyer member mounted on the other of said intercoupled vehicles for movement about an axis extending transversely of such vehicle, an intermediate conveyer member at one end being universally connected to one of said conveyer members, said intermediate conveyer member at its opposite end being flexibly connected to the other of said conveyer members for lateral movement only with respect thereto, and means on the tender supporting the movable portion of said conduit system.

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