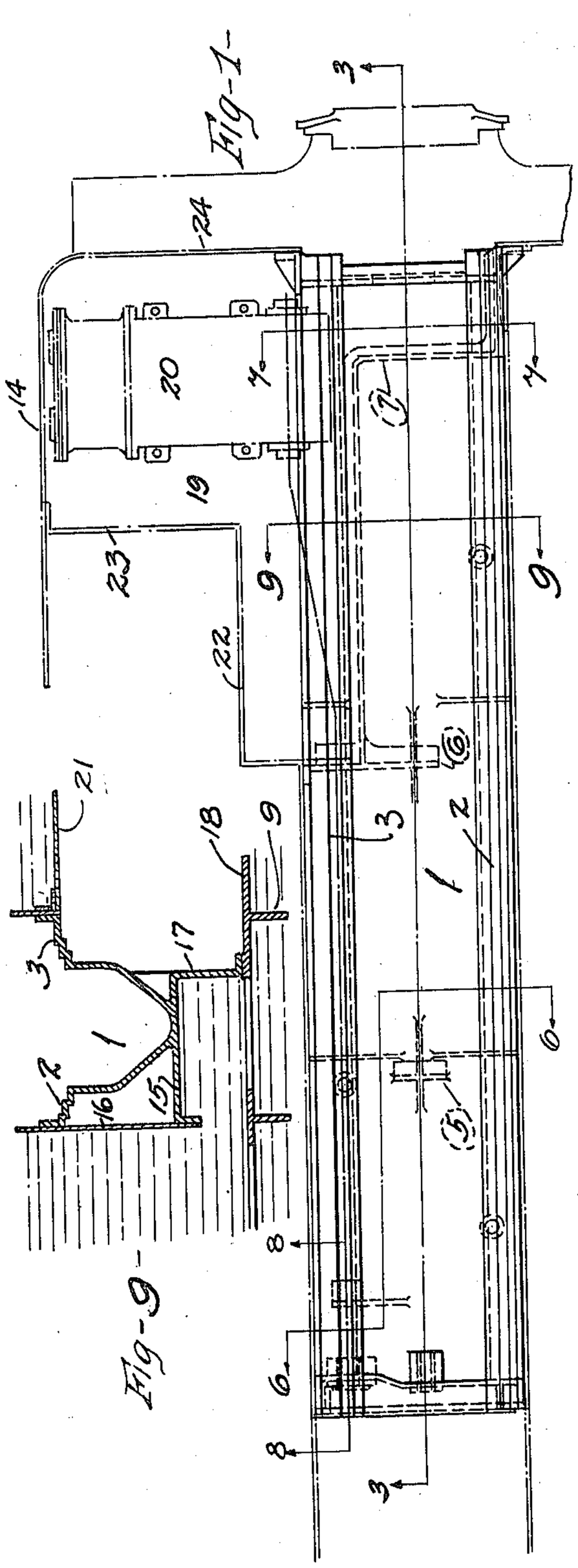
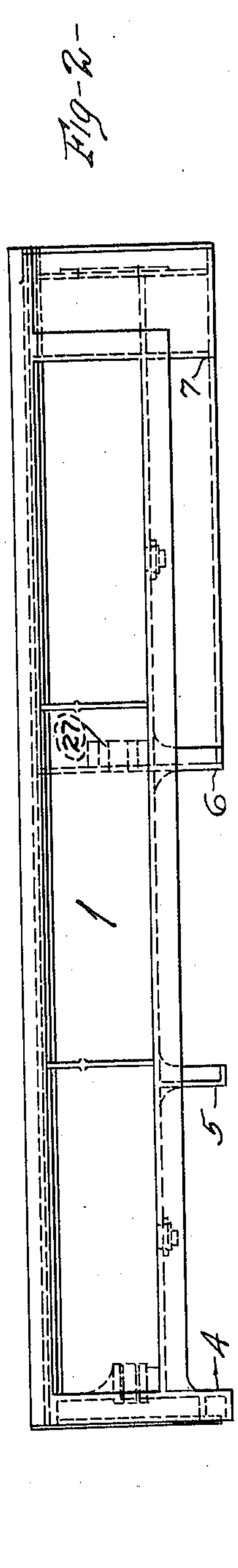
Aug. 20, 1935. E. G. HALLQUIST ET AL 2,012,043

LOCOMOTIVE TENDER STRUCTURE

Filed July 11, 1932 4 Sheets-Sheet 1





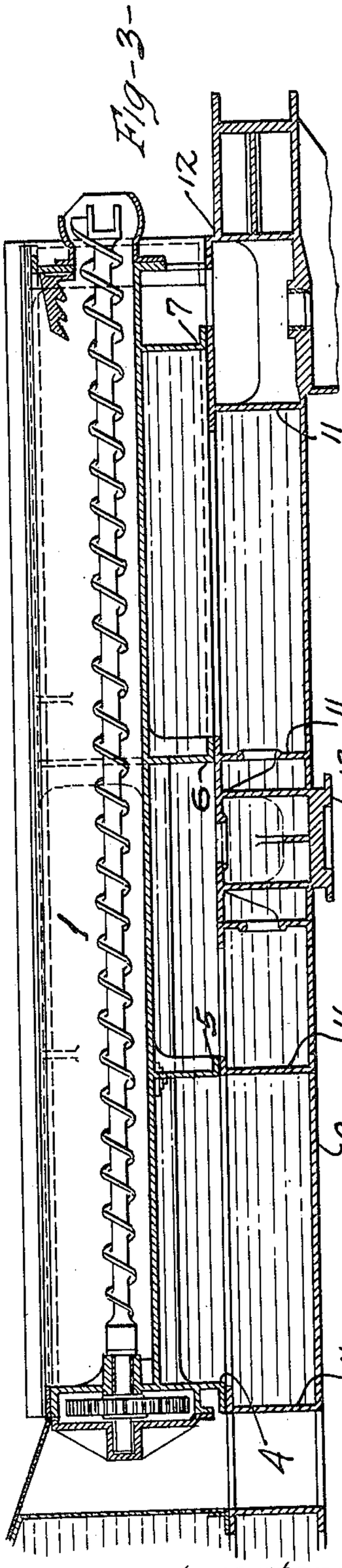


Fig-9-

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LOCOMOTIVE TENDER STRUCTURE

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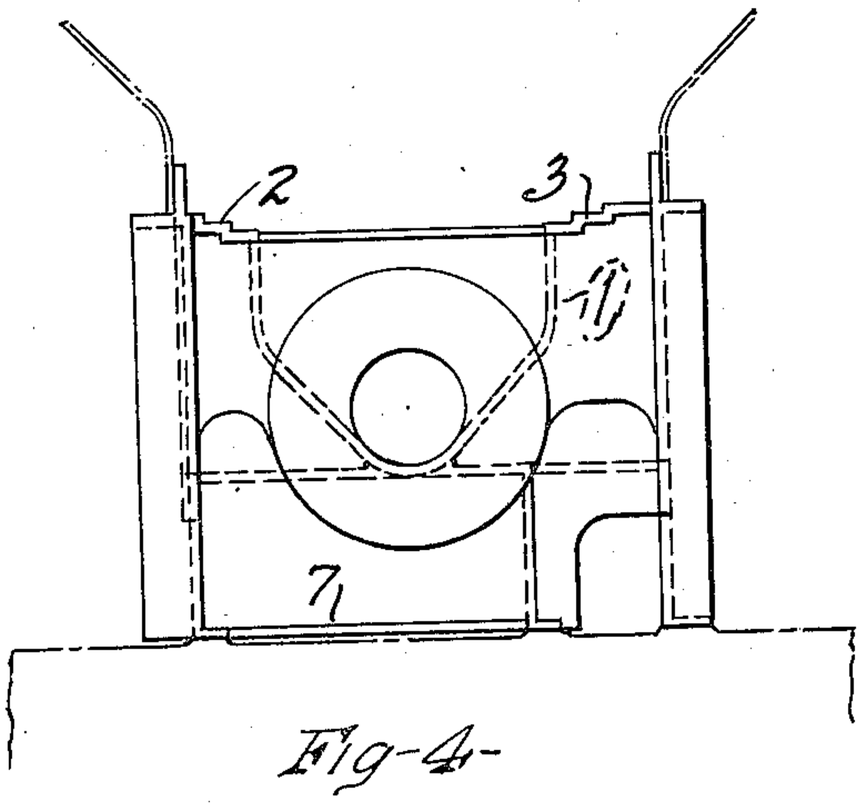

Fig-4-

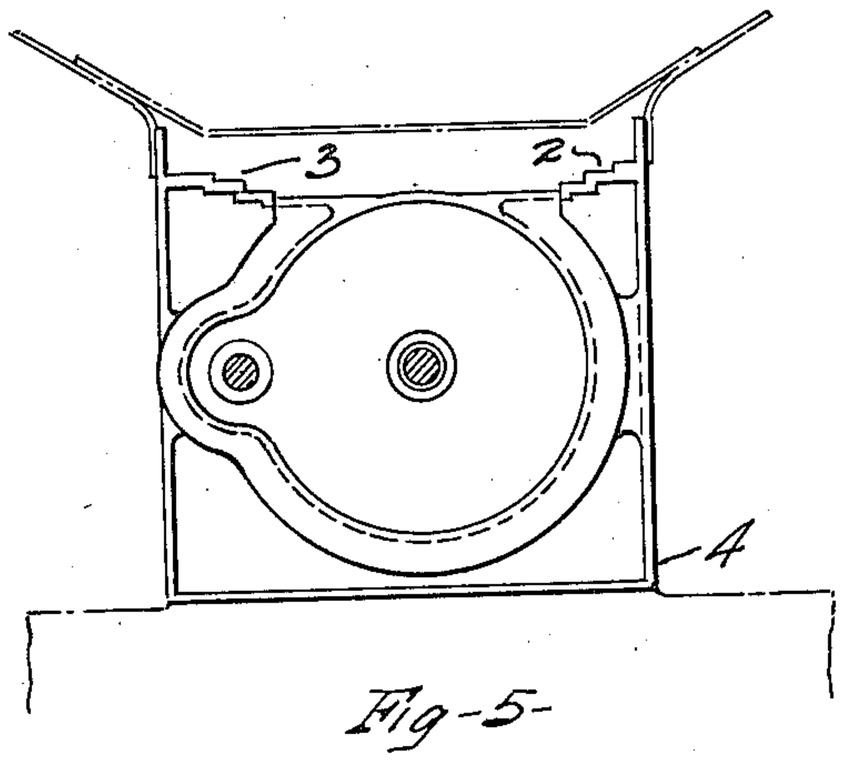

Fig-5-

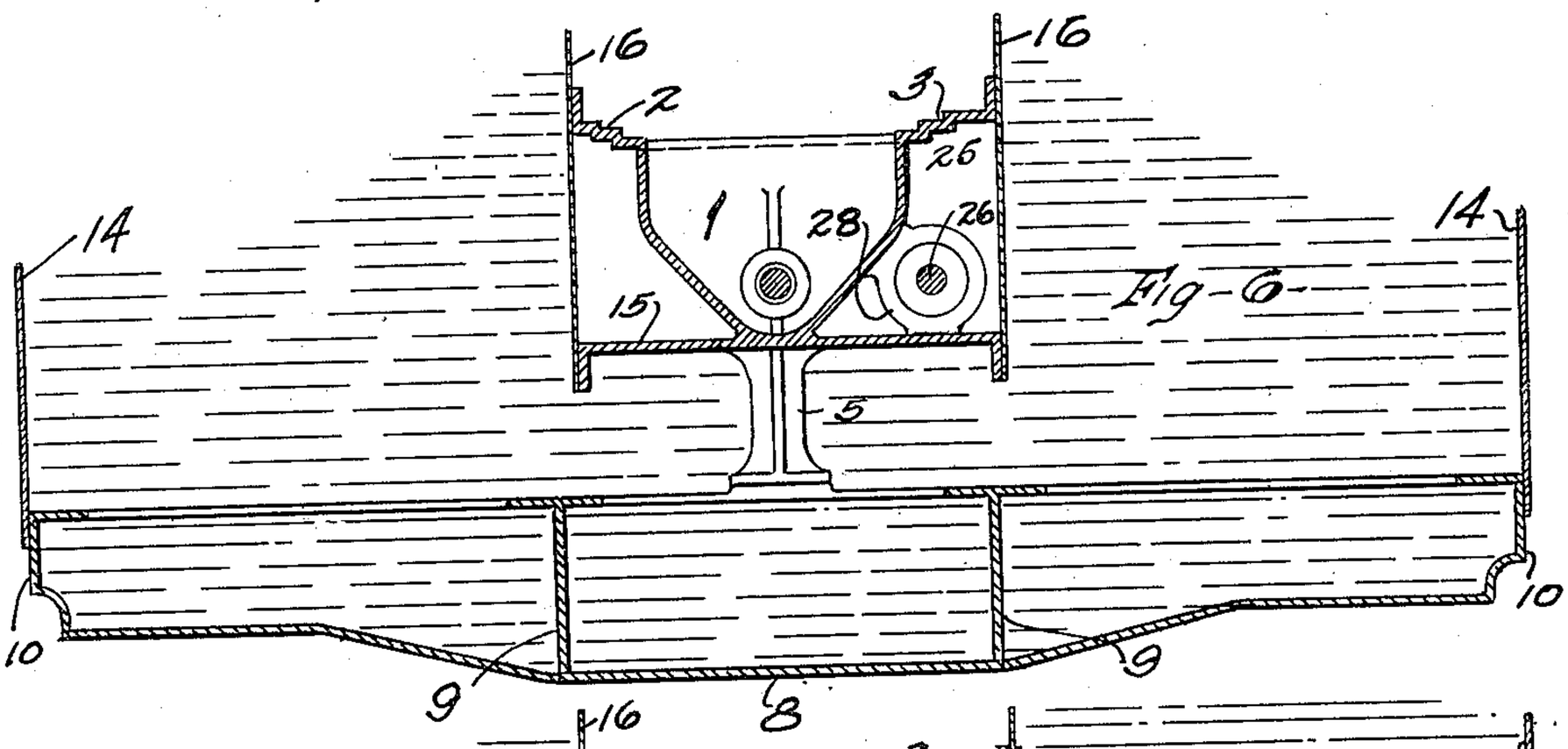

Fig-6-

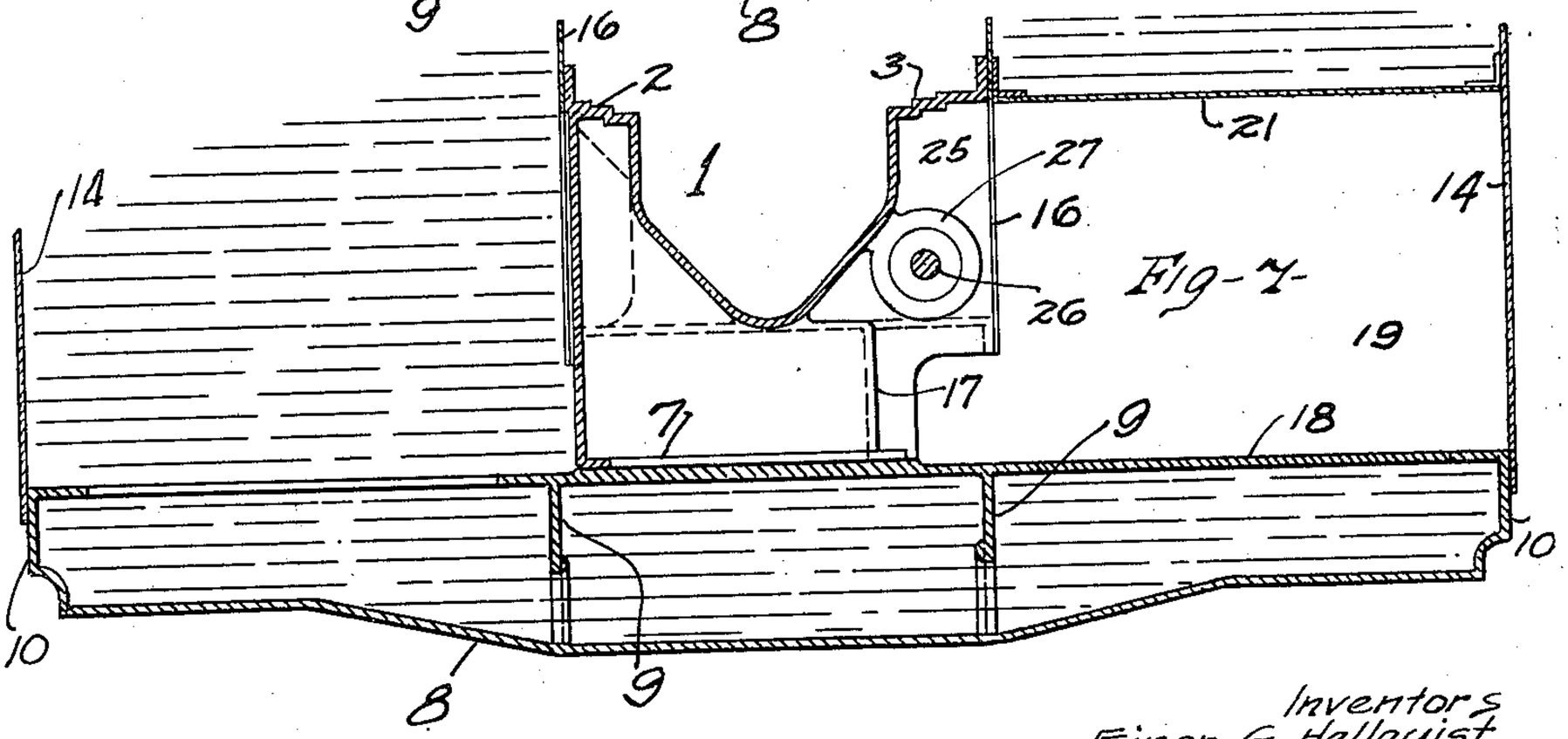

Fig-7-

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LOCOMOTIVE TENDER STRUCTURE

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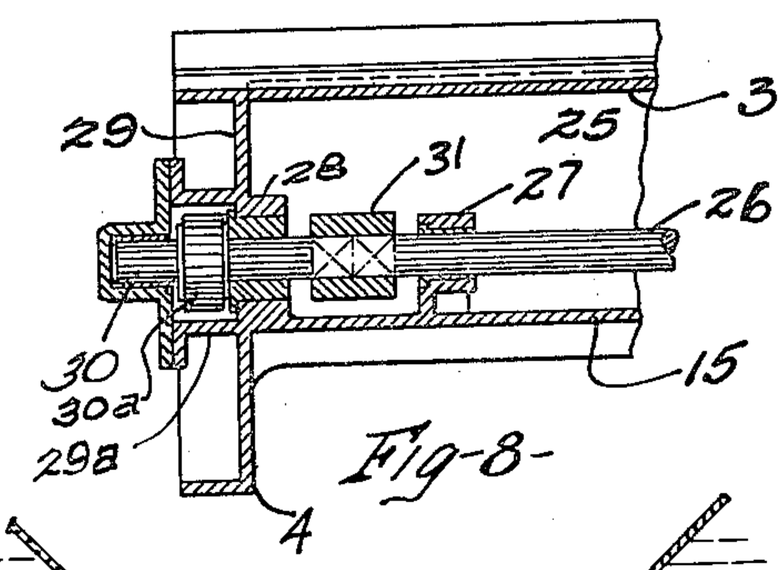


Fig-8-

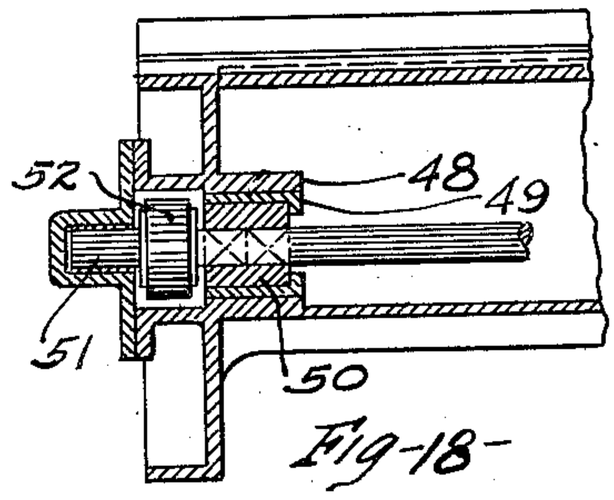
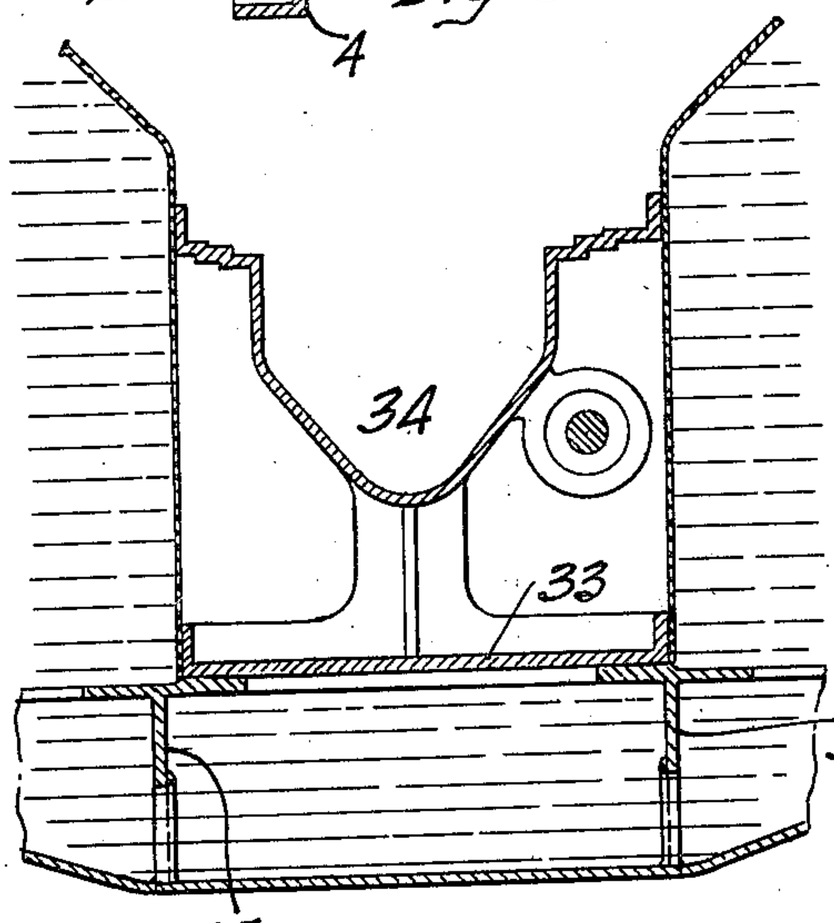


Fig-18-



35 Fig-10-

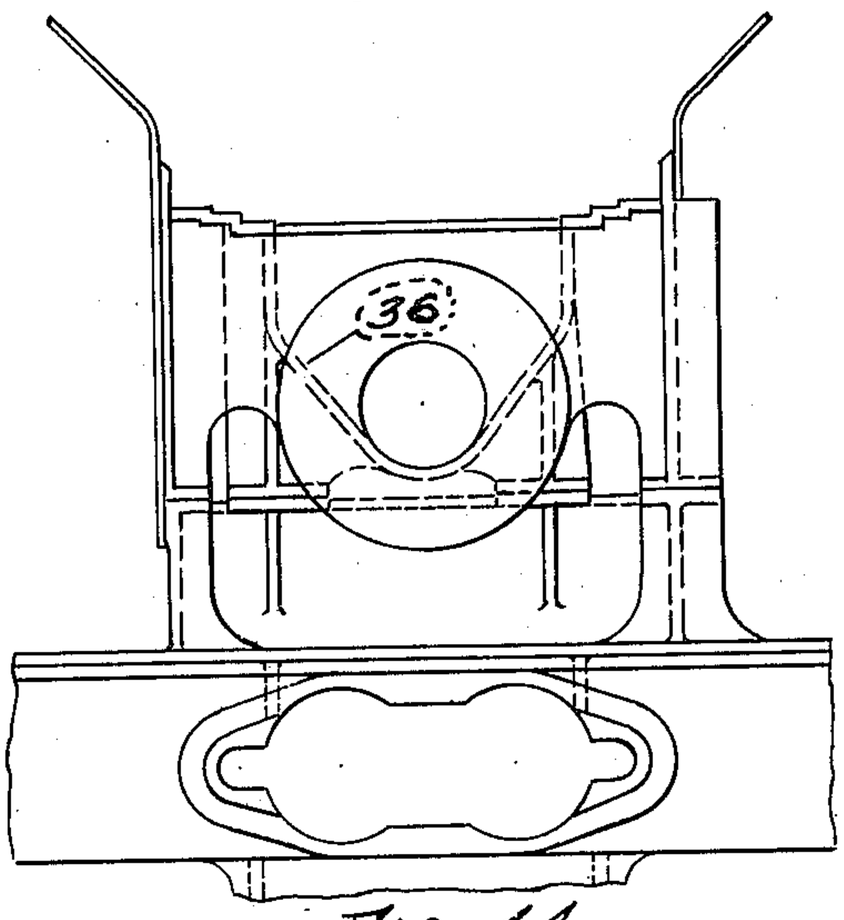


Fig-14

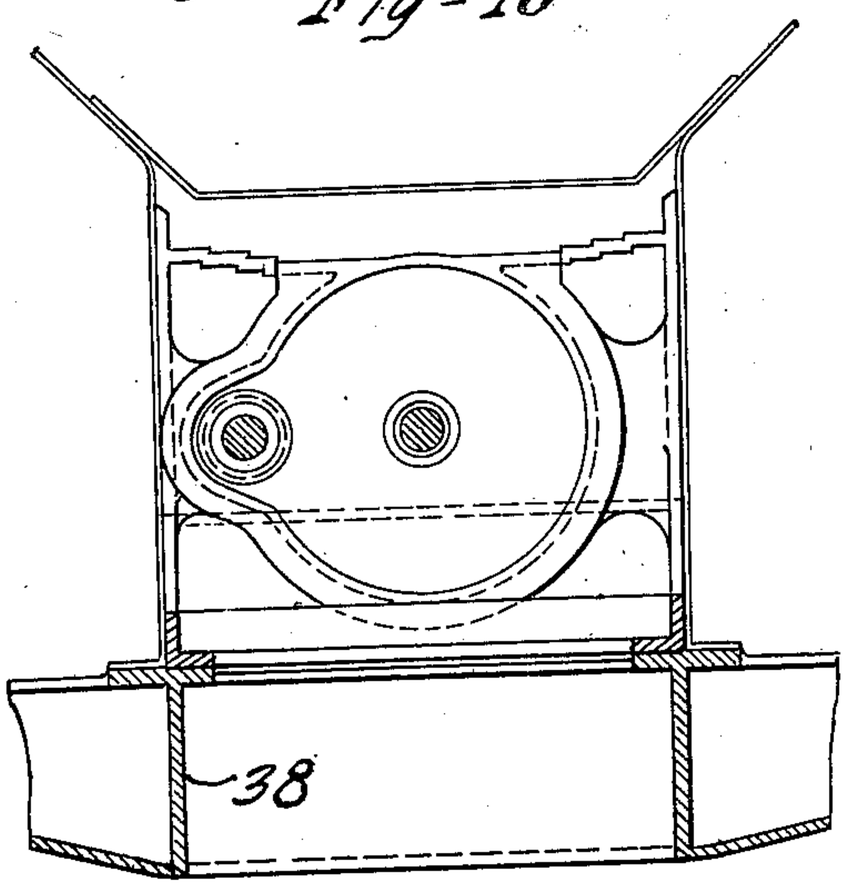


Fig-15-

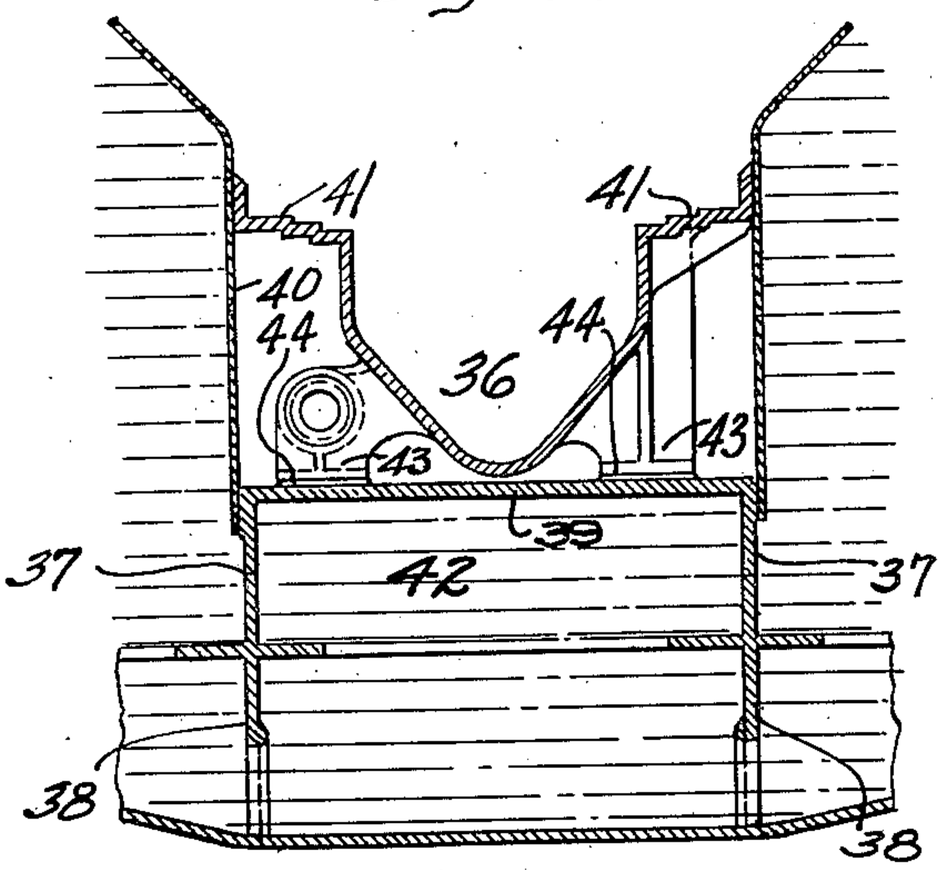


Fig-16-

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LOCOMOTIVE TENDER STRUCTURE

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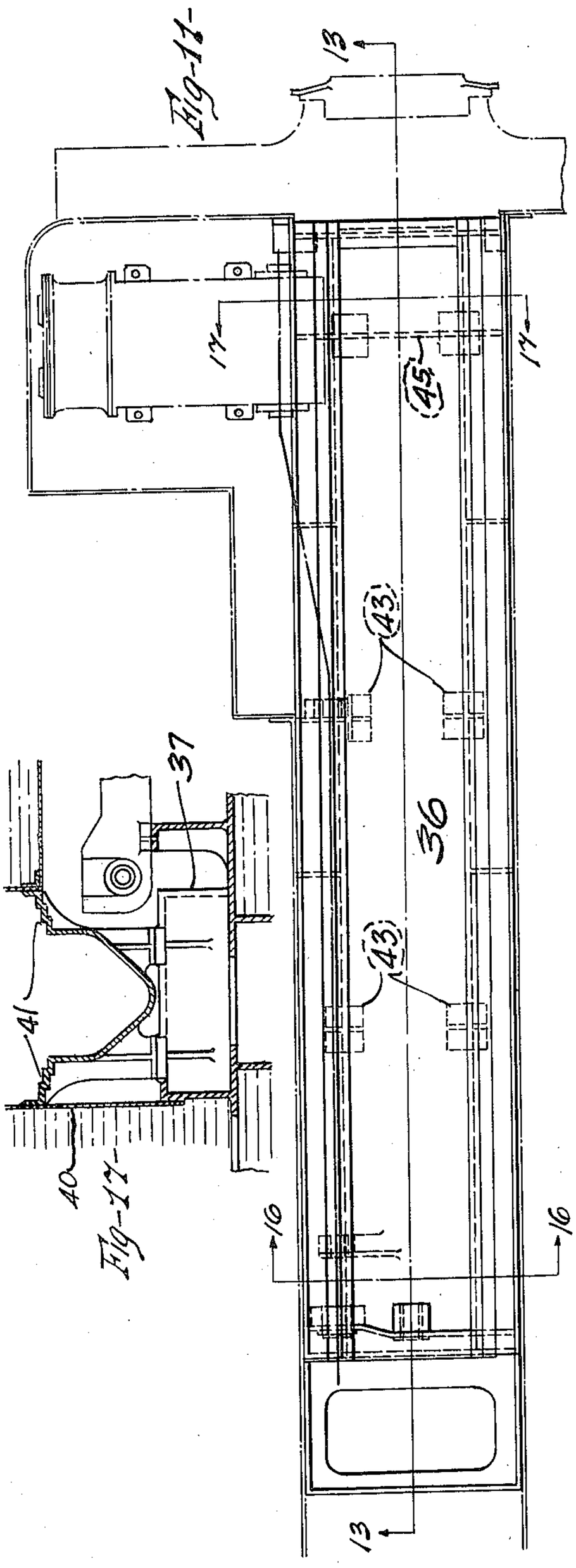

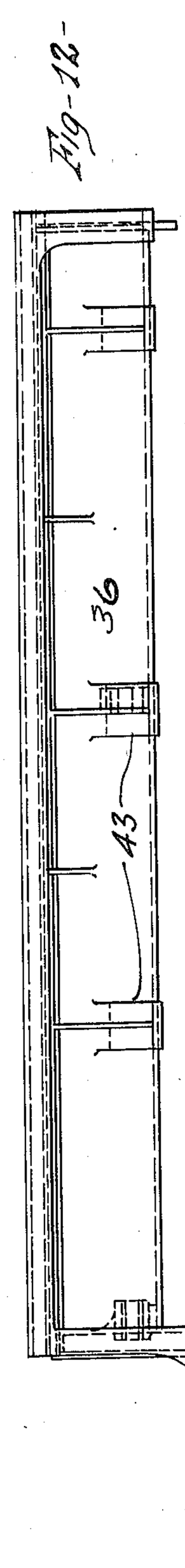

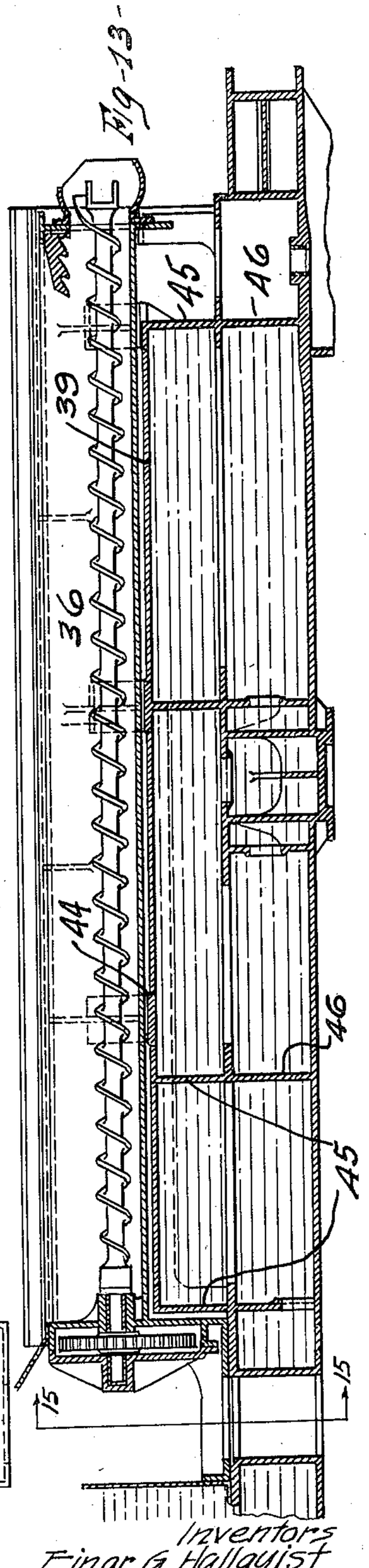

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Patented Aug. 20, 1935 2,012,043

UNITED STATES PATENT OFFICE

2,012,043

LOCOMOTIVE TENDER STRUCTURE

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Application July 11, 1932, Serial No. 621,792

7 Claims. (Cl. 105—234)

The invention relates to railway rolling stock and consists in a novel construction of a locomotive tender underframe and stoker trough with associated parts.

The main objects of the invention are to provide a rigid stoker trough, to mount the same securely upon the tender underframe, and to provide a water compartment at the sides of and below the trough but avoiding the contact of water with the trough walls.

Another object of the invention is to provide adequate compartments for the stoker driving mechanism including preferably a compartment for the stoker engine mounted on the tender.

Another object of the invention is to simplify the assembling of the associated parts of the structure and the elimination of rivets and bolts to a great extent thereby avoiding considerable tendency to leaks and other deterioration in the structure.

In the accompanying drawings illustrating the invention—

Figure 1 is a top view of a stoker trough casting with associated underframe, tank walls, and other parts indicated in dot and dash lines.

Figure 2 is a side elevation of the trough.

Figure 3 is a longitudinal vertical section taken on the center line of the trough and underframe as indicated at 3—3 in Figure 1.

Figure 4 is a front elevation of the trough with associated parts indicated in dot and dash lines.

Figure 5 is a corresponding rear elevation.

Figures 6, 7 and 9 are vertical transverse sections taken on the corresponding section lines of Figure 1.

Figure 8 is a detail longitudinal section taken on the line 8—8 of Figure 1.

Figure 10 corresponds to Figure 6 but illustrates a modification of the invention.

Figures 11, 12 and 13 correspond to Figures 1, 2 and 3 but illustrate a modified form of the invention.

Figures 14 and 15 correspond to Figures 4 and 5 respectively, but illustrate the modification of Figures 11, 12 and 13.

Figures 16 and 17 are vertical transverse sections taken on the corresponding section lines of Figure 11.

Figure 18 is a detailed section corresponding to Figure 8 but illustrating a modified structure.

In the form of the invention illustrated in Figures 1 to 9, inclusive, a stoker trough 1 is formed of a one-piece casting including lateral flanges 2 and 3 projecting outwardly from the upper portions of the side walls and also including depending feet 4, 5, 6, and 7 whereby the trough is supported in a position spaced above the tender underframe upon which it is mounted.

The underframe is of the "water bottom" type including a horizontally disposed bottom web 8, center sills 9, side sills 10, transverse transoms 11, an end sill 12, and a center plate 13. The underframe preferably comprises a single casting forming the bottom of the tender tank and utilizing the depth of the underframe as part of the water storage tank as disclosed in Ashe & Pflager Patent #1,663,036. Tender side plates 14 are secured to the underframe side sills 10 by welding or riveting.

Throughout a substantial portion of its length the trough casting includes a horizontal web 15 (Figure 6) projecting outwardly from the lower portion of the trough to points below the outer edges of flanges 2 and 3. Plates 16 are secured to the outer portions of flanges 2 and 3 and web 15 and extend upwardly from the trough to form walls of the water compartment of the tender.

At the forward portion of the trough, web 15 turns downwardly, as indicated at 17 (Figure 9), to be secured to a horizontal web 18 provided on the underframe casting and forming the top wall of a water chamber in the underframe and the bottom wall of a compartment 19 (Figure 7) for housing the stoker engine 20. This engine compartment is completed by the plates 21, 22, 23, 24 and 14 which are secured to the underframe, to the trough, and to each other. The space between the trough and plate 22 and plate 16 on the right-hand side of the trough forms a closed compartment 25 for the conveyor drive shaft 26 journaled in bearings formed by brackets 27 extending between the body of the trough and web 15.

Figure 8 illustrates the mounting and drive connection for the rear portion of the drive shaft 26. One of the bearings 27 is spaced inwardly from the rear end of the device and the rear wall 29 is provided with an integral bearing 28 and a rearwardly opening housing 29*a* for the gear 30*a* attached to stub shaft 30. The adjacent ends of shafts 26 and 30 are squared and a connecting collar 31 couples these shafts together.

Figure 18 illustrates a modified arrangement utilizing a single bearing and housing member 48 integral with the trough side wall and provided with a renewable bushing 49 in which the collar 50 rotates. This arrangement facilitates the removal of the shaft portion 51 and the gear

52 mounted thereon without necessitating access to the interior of the chamber in which the forward shaft portion 53 is mounted. This avoids any difficulty which might be experienced in connecting the ends of the shafts usually located intermediate of spaced bearings and also facilitates the renewal of the rear bushing since this is readily accessible.

Figure 10 illustrates a modified structure in which a horizontal web 33 of the trough casting is spaced a substantial distance below the trough 34 and extends directly between the upper flanges of the underframe center sills 35. This arrangement decreases the water capacity somewhat but provides a wider base for the trough casting and an increased mechanism compartment.

In the modification illustrated in the remaining figures, the portion of the underframe beneath the trough 36 includes upward extensions 37 of the center sills 38 and upward extensions 45 of the transoms 46 and a horizontal web 39 adjacent to the bottom of the trough. The tank plates 40 are secured to the flanges 41 of the trough and to the upper portions of the extensions 37 and 45. This construction provides the underframe with an upwardly extending water compartment 42, the top and side walls of which are integral with the remainder of the underframe casting. The trough casting is provided with pairs of laterally spaced feet 43 resting on pads 44 on the horizontal web 39 and is substantially lighter than the troughs previously described.

Various other modifications in the details of the construction may be made without departing from the spirit of the invention and exclusive use of all structures coming within the scope of the appended claims is contemplated.

What is claimed is:

1. In a locomotive tender, an underframe, a stoker trough, depending elements on said trough supporting it on and in an elevated position above said underframe, and tank wall elements spaced from the sides of the trough and extending from the level of the upper edges of said trough downwardly and beneath the same and above said underframe to form walls of a water compartment at the sides of said trough and extending beneath the latter above the top of said underframe.

2. In a locomotive tender, a water bottom underframe including vertical longitudinal sills and vertical transverse members, a stoker trough having depending feet mounted on certain of said members, a web disposed substantially horizontally intermediate said trough and members, and tank wall plates extending from said web upwardly and secured to the sides of said trough, said web forming an upper wall for a portion of a water compartment extending substantially above said sills and members and at the sides of but spaced from said trough.

3. In a locomotive tender, an underframe having longitudinal center sills, upward extensions on portions of said sills, a horizontal web between the tops of said extensions, a stoker trough spaced above said horizontal web, and tender water tank plates secured to said extensions and cooperating with said web to form a water compartment extending above said sills and beneath and spaced from said trough.

4. In a locomotive tender, an underframe having longitudinal center sills and transverse transoms, upward extensions on portions of said sills and transoms, a horizontal web joining the upper edges of said extensions and forming therewith the top and side walls of a water receiving compartment extending above said sills and transoms, a stoker trough above said compartment and spaced from the walls thereof, and tender tank plates connected to said walls and extending upwardly at the sides of said trough.

5. A stoker device casting comprising a V-shaped trough body and a horizontal web beneath the same to provide the top wall of a water compartment below the stoker device, and relatively narrow supporting feet projecting downwardly from the central portion of said body and web for mounting the casting on an underframe.

6. In a locomotive tender, an underframe, a stoker trough applied to said underframe and having centrally located depending feet, of restricted width mounted on said underframe, and having a member above the lower portions of said feet forming a water compartment top wall spaced above said underframe and extending throughout the width of said trough.

7. In a locomotive tender structure, an underframe including a horizontal bottom web forming a tank bottom, upright webs extending longitudinally and transversely of said web and forming sills and transoms, two of said longitudinal webs adjacent the center of the car being extended upwardly a substantial distance above the level of the remainder of said webs, a horizontal web extending between the upper portions of said two webs and forming with the same and with said bottom web a box-section structure, a stoker trough having lateral flanges at its upper edges and supporting feet resting upon said box structure and spacing the trough proper from the same, and partition plates extending from the sides of said box structure to said lateral flanges and forming with said box structure the walls of a water compartment.

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