May 17, 1927. 1,629,316

W. M. SHEEHAN

LOCOMOTIVE BED AND STEAM PASSAGE

Filed April 30, 1926 2 Sheets-Sheet 1

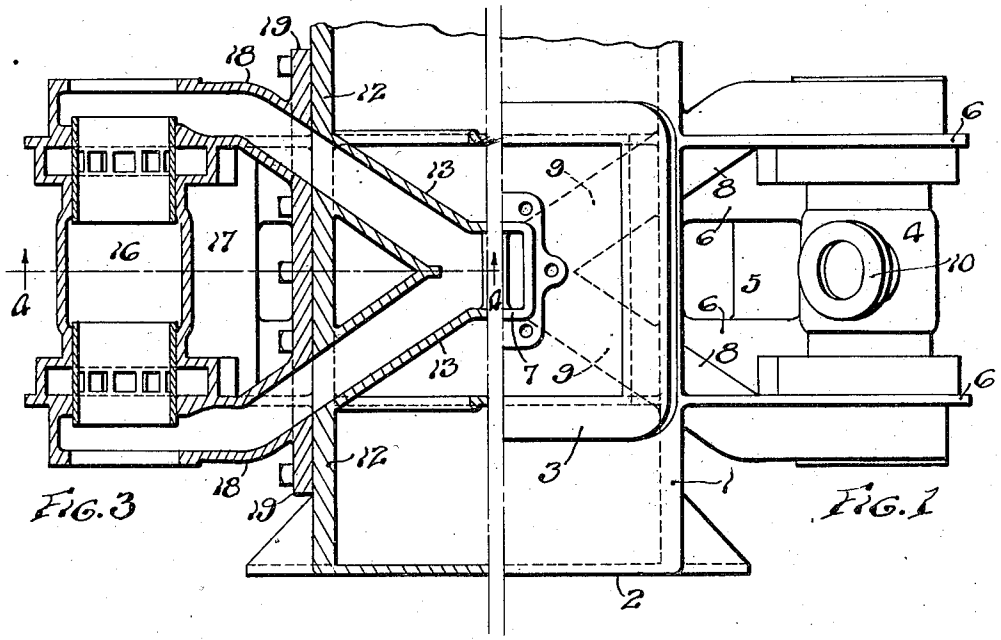


FIG. 3

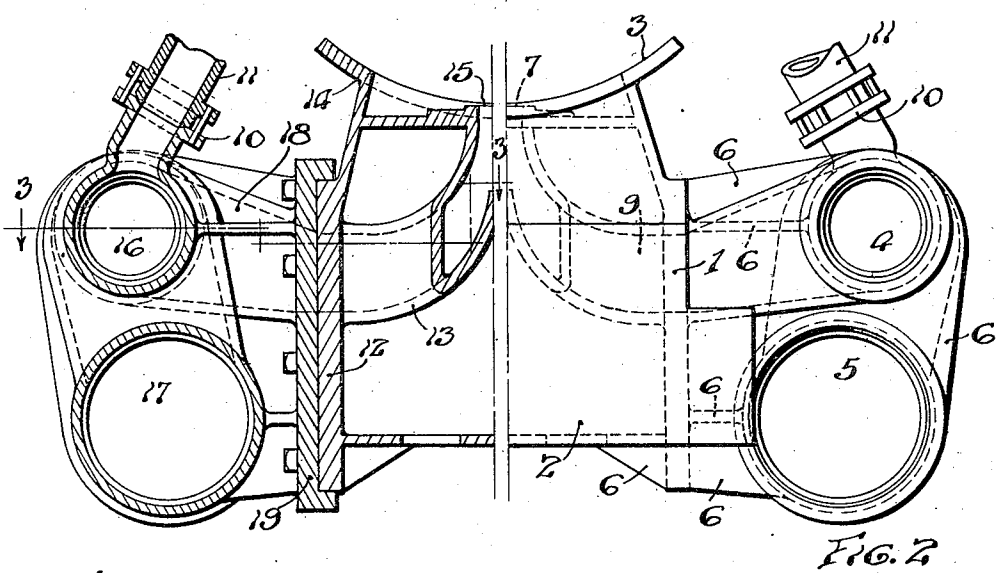


FIG. 1

FIG. 4

FIG. 2

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FIG. 5

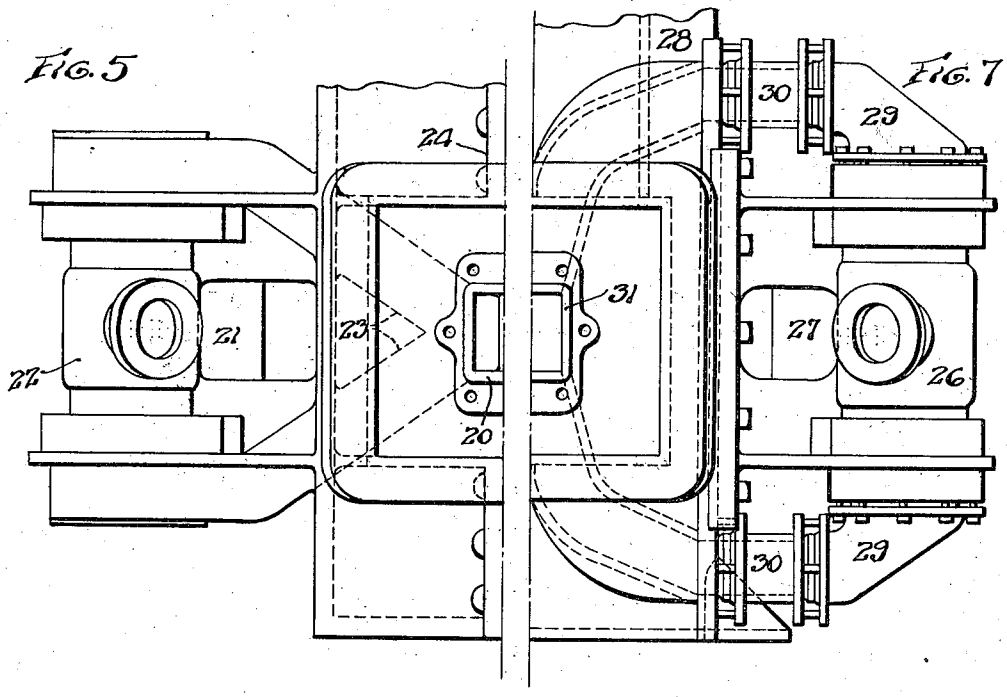


FIG. 7

FIG. 6

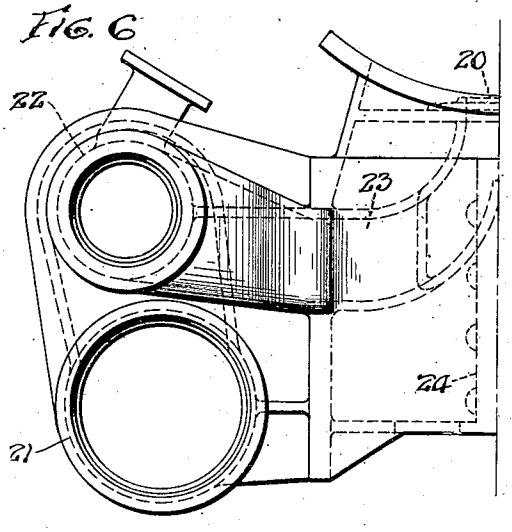
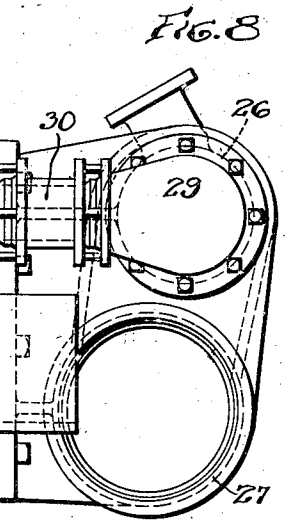


FIG. 8



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UNITED STATES PATENT OFFICE.

WILLIAM M. SHEEHAN, OF ST. LOUIS, MISSOURI, ASSIGNOR TO COMMONWEALTH STEEL COMPANY, OF GRANITE CITY, ILLINOIS, A CORPORATION OF NEW JERSEY.

LOCOMOTIVE BED AND STEAM PASSAGE.

Application filed April 30, 1926. Serial No. 105,789.

My invention relates to railway rolling stock and particularly to the construction of steam locomotives.

The object of my invention is to form the locomotive bed, steam cylinders, steam supply chambers, steam exhaust passageways, and boiler saddle in such manner as to facilitate the construction, and, where necessary, the assembly of the above-mentioned elements, and also to reduce to a minimum the space requirements for these parts.

It has been customary to make the above-mentioned elements separately and to secure them together with bolts or rivets, and frequently it is very difficult to get at the parts which receive the securing means because of the slight clearances between adjacent portions of the elements being assembled. It is therefore necessary to increase the distance between the adjacent parts so as to provide the necessary space for workmen to operate, or to provide additional flanges or other surfaces for attaching purposes. By forming two or more of the parts mentioned integrally, I avoid these difficulties and secure a lighter and stronger structure for a given amount of material than is possible with built-up structures.

A detail object of my invention is to provide one or more steam passageways from the cylinders through the side wall of the locomotive bed and this permits a desirable increase in the depth of the side frame and is particularly adapted for embodiment in a cast bed.

In the accompanying drawings which illustrate various forms of my invention—

Figure 1 is a top view of one-half of the forward end of a locomotive bed with the saddle, steam cylinders, steam supply chamber, and exhaust steam passageways all formed integrally. It will be understood that the complete structure includes a left-hand duplicate of the parts shown, the same being formed integrally with the righthand half illustrated.

Figure 2 is a front elevation of the structure shown in Figure 1.

Figures 3 and 4 illustrate a modification in which the bed and inner portion of the exhaust steam passageways and boiler saddle are formed integrally and the cylinder, steam supply chamber, and outer portion of the exhaust steam passageways are formed integrally with each other but separate from the bed, saddle, and inner portions of the passageways, Figure 3 being a vertical section on line 3—3 of Figure 4, and Figure 4 being a horizontal section on line 4—4 of Figure 3.

Figures 5 and 6 illustrate another modification of my invention in which Figure 5 is a top view of a cast unit comprising a cylinder and steam supply chamber and exhaust steam passageway and one-half of the boiler saddle, all formed integrally and adapted to be bolted or otherwise secured to a corresponding unit duplicating that illustrated. Figure 6 is a front elevation of the structure shown in Figure 5.

Figures 7 and 8 illustrate another modification of my invention in which the cylinder and steam supply chamber and the outer portion of the exhaust passageways are not formed as one unit but are adapted to be mounted upon the adjacent side wall of the locomotive bed which includes as integral portions the exhaust steam passageways.

In the embodiment of my invention illustrated in Figures 1 and 2, one side wall of the locomotive bed is indicated at 1, the same terminating at the forward end in the cross member 2 upon which the pilot or other end structure (not shown) may be mounted. It will be understood that the rear portion of the bed forms no part of my present invention and may have any desired form and include as integral parts driver pedestals, valve gear brackets, brake hanger fulcrums, equalizer lugs, boiler support lugs, and other brackets and parts usually provided, either integrally or separately on locomotive frames.

Spaced a short distance from the front end of the bed and elevated above the side wall is a curved boiler saddle forming portion 3. Projecting outwardly from the side wall 1 are the steam supply chamber 4 and cylinder 5, there being suitable ribs 6 provided for reinforcing the chamber and cylinder body portions and forming their connections with the bed.

The chamber and cylinder are located substantially on the same level as the side wall 1 and suitable exhaust steam passageways extend horizontally from the ends of the steam supply chamber inwardly to the side wall and from the side wall inwardly and upwardly to an exhaust outlet 7 in the central portion of the boiler saddle 3. The

outer portions 8 of these passageways preferably converge toward each other from the end of the chamber and the inner portions 9 of these passageways merge before the upwardly curved portions reach the common outlet 7.

The upper portion of the steam supply chamber 4 is provided with a flange nipple 10 by which the chamber may be connected to a suitable steam supply line 11.

All of the above-mentioned parts are formed integrally, preferably in a one-piece steel casting, and by means of such construction a rigid, compact, efficient structure is provided in which all of the parts are permanently assembled and the labor and other expense in connection with assembling operation is eliminated and the necessity of inspection and adjustment for the purpose of maintaining proper assembly of the parts is eliminated.

In the modification illustrated in Figures 3 and 4, the locomotive bed side wall 12 has the inner portions 13 of the exhaust steam passageways formed integrally therewith and also has the boiler saddle 14 with its steam outlet 15 formed integrally. In this structure, however, the steam supply chamber 16, cylinder 17, and the outer portions 18 of exhaust steam passageways are formed integrally in a unit having flanges 19 adapted to be mounted upon finished pads formed on the outside of the side wall 12.

With this structure the steam supply chamber and cylinder may be more conveniently handled for the necessary machining and similar advantages may give preference to this type of structure in some cases.

In the modification shown in Figures 5 and 6, one-half of the boiler saddle and the adjacent bed side wall 20, steam cylinder 21, steam supply chamber 22, and exhaust passageways 23 are formed in one unit and provided with suitable flanges 24 for attachment to a corresponding unit on the other side of the locomotive. The passageways 23, however, are integral from end to end and with each other.

In the modification illustrated in Figures 7 and 8 the steam supply chamber 26 and cylinder 27 are formed separately from the bed 28 and are applied thereto similarly to the application indicated in Figures 3 and 4, but in this modification the outer portion 29 of the exhaust passageways are formed separately from the cylinder and chamber and from the locomotive bed and are connected thereto by suitable elements 30. In this structure, however, the passageway leads through the side wall of the bed similarly to the corresponding features in the other forms of my invention. The inner passageways 31 are formed integrally with the bed 28 and these inner passageway portions are of a somewhat different shape from passageways 9, 13, and 23 in the other forms of my invention due to the different location of the passage through the side wall of the bed.

Various other modifications of my invention may be made without departing from the spirit thereof which contemplates the use of a locomotive bed having side walls provided with passageways for the exhaust steam from the cylinders leading from the end of the steam supply chambers through the bed side wall to an exhaust outlet located between the side walls. I contemplate the exclusive use of all such modifications as are included in the scope of my claims.

I claim:

1. In combination, a locomotive bed, a boiler saddle with a centrally located exhaust steam outlet, a steam supply chamber, and an exhaust steam passage extending directly from the end of said chamber diagonally through a side wall of said bed to a point beneath said outlet.

2. In combination, a locomotive bed, a boiler saddle with a centrally located exhaust steam outlet, a steam supply chamber, and steam passageways extending directly from each end of said chamber diagonally through a side wall of said bed and toward each other to a point beneath said outlet.

3. A one-piece casting comprising a locomotive bed side wall and a cylinder exhaust steam passageway formed integrally with said wall and extending laterally on both sides of the same.

4. A one-piece casting comprising a locomotive bed, a boiler saddle with an exhaust steam outlet, and exhaust steam passageways extending diagonally through the side walls of said bed to said outlet.

5. A one-piece casting comprising a locomotive bed and a plurality of cylinder exhaust steam passageways extending diagonally through each of the side walls of said bed toward an exhaust outlet between said walls.

6. A one-piece casting comprising a locomotive bed and a plurality of cylinder exhaust steam passageways extending diagonally through each of the side walls of said bed toward an exhaust outlet between said walls, said passageways merging with each other beneath said outlet.

7. A one-piece casting comprising a locomotive bed with side walls, steam supply chambers formed integrally with each of said walls, individual exhaust steam passageways extending laterally from said chambers through said walls and united with each other between said walls.

8. A one-piece casting comprising a locomotive bed with side walls, an individual steam supply chamber formed integrally with each of said walls, a plurality of exhaust steam passageways extending from

each of said chambers through the respective walls and toward each other and united with each other intermediate said walls.

9. In combination, a locomotive bed, a steam supply chamber, and a steam passageway extending transversely from the end of said chamber through a side wall of said bed.

10. In combination, a locomotive bed, a steam supply chamber, and a steam passageway extending transversely from the end of said chamber through a side wall of said bed and passing through said side wall at a point intermediate the ends of said chamber.

11. In combination, a locomotive bed, a steam supply chamber, and steam passageways extending transversely from both ends of said chamber through a side wall of said bed.

12. In combination, a locomotive bed, a steam supply chamber, and steam passageways extending transversely from both ends of said chamber through a side wall of said bed and passing through said side wall at points intermediate the ends of said chamber and merging with each other.

13. In combination, a locomotive bed, and a steam supply chamber formed integrally with said bed, there being a steam passageway extending transversely from the end of said chamber through a side wall of said bed to an exhaust port located intermediate the side walls of said bed.

14. In combination, a locomotive bed, and a steam supply chamber formed integrally with said bed, there being steam passageways extending transversely from both ends of said chamber through a side wall of said bed to a common exhaust port located intermediate the side walls of said bed, the portions of said passageways between said walls being formed integrally therewith.

15. In combination, a locomotive bed, a boiler saddle with a centrally located exhaust steam outlet, a steam supply chamber, and a steam passageway extending transversely from the end of said chamber and passing through the side walls of said bed intermediate the ends of said chamber to said outlet.

16. A one-piece casting comprising a locomotive bed, a boiler saddle with a centrally located exhaust steam outlet, a steam supply chamber, and a steam passageway extending transversely, from the end of said chamber to said outlet and passing through said bed intermediate the ends of said chamber.

In testimony whereof I hereunto affix my signature this 27th day of April, 1926.

WILLIAM M. SHEEHAN.