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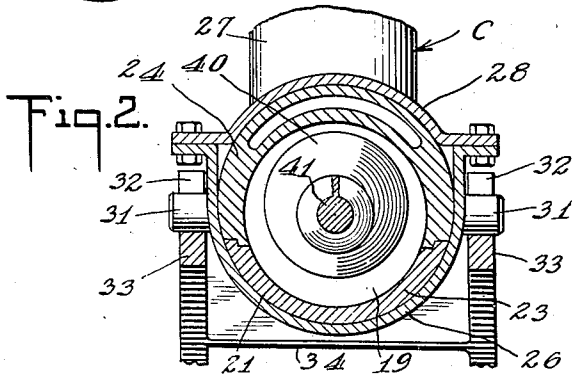
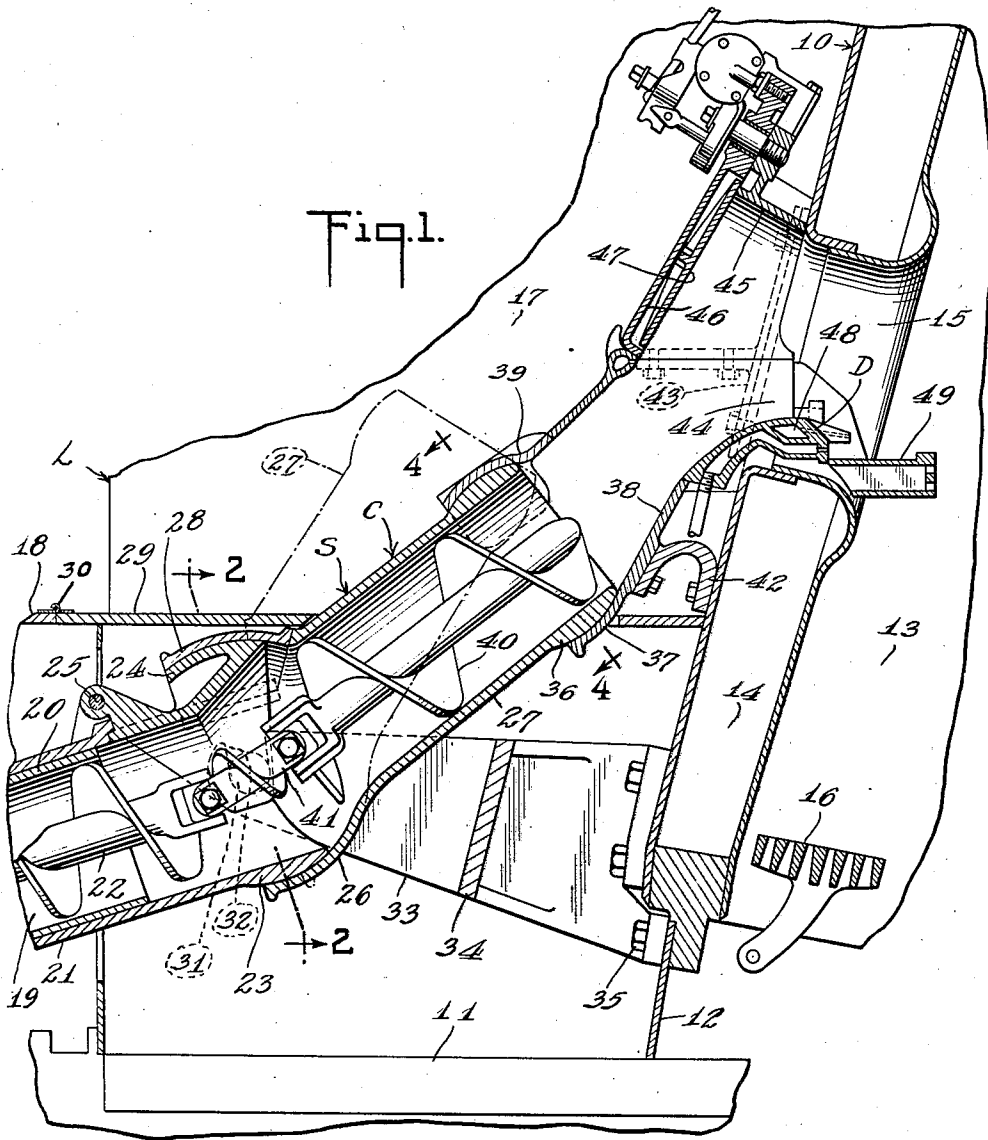
C. J. SURDY

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LOCOMOTIVE STOKER

Filed March 16, 1938

2 Sheets-Sheet 1



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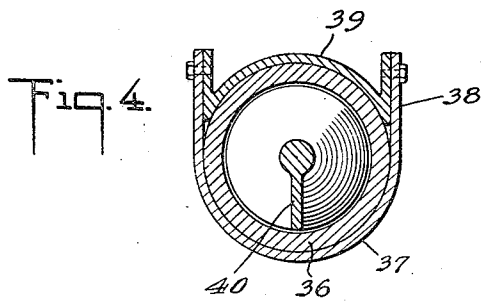
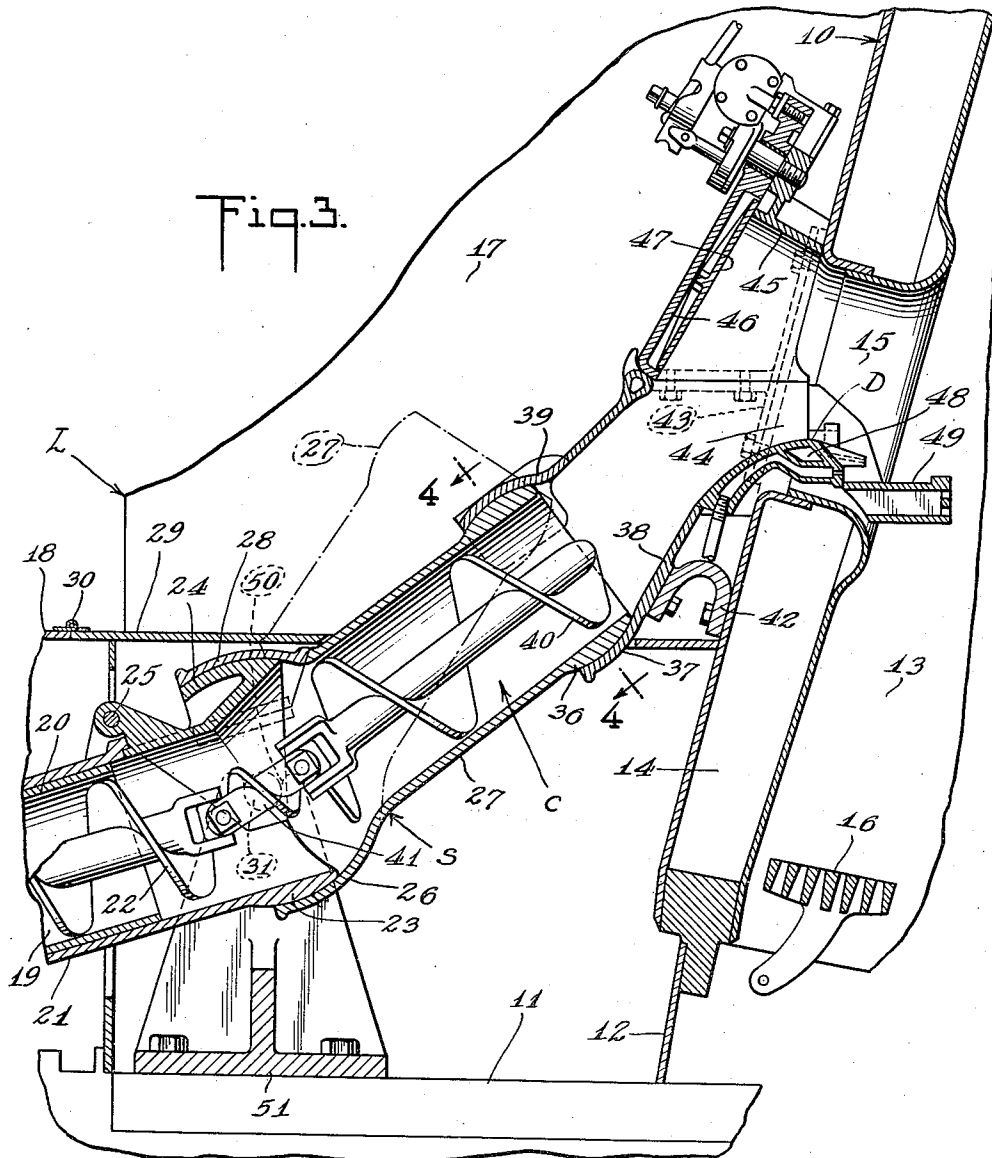
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2 Sheets-Sheet 2



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2,219,083

LOCOMOTIVE STOKER

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Application March 16, 1938, Serial No. 196,113

8 Claims. (Cl. 198—15)

This invention relates to locomotive stokers of the type employing several flexibly connected conveyors leading from the fuel supply on the tender to the locomotive firebox.

5 It is an object of this invention to improve such locomotive stokers whereby assembly or disassembly of the conveyors may be conveniently carried out.

10 Specifically, it is an object of this invention to improve that portion of the stoker which is carried on the locomotive whereby assembly or disassembly of a conveyor may be conveniently carried out from a position in the locomotive cab.

15 Other and further objects of the invention reside in feature of construction and in their combination with one another as illustrated in the drawings, in which

Fig. 1 is a vertical medial section through the rearward portion of the locomotive showing the 20 invention in similar section;

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 1 illustrating a modification; and

25 Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1 or 3.

Referring now to Figs. 1, 2 and 4, L represents a locomotive which has a boiler 10 supported above the frame 11 by means which includes a plate element 12. The boiler 10 consists of a firebox 13 closed on its rear by a backwall 14 which is provided with a firing opening 15 above the grates 16. Rearward of the backwall 14 is a cab 17 having a deck 18 disposed below the 30 level of the firing opening 15.

40 Leading forwardly from the tender (not shown) is a conduit 19 of the stoker S, said conduit comprising a pair of telescoped conduit sections 20, 21 housing a conveyor screw 22 therein. The forward conduit section 21 is provided on its forward end with a spherical member 23, the upper portion 24 of which is hinged at 25 to the main part of the conduit section 21. The spherical member 23 is received in a spherical seat 26 45 formed in the lower end of an inclined conduit section 27 which comprises one part of a fuel elevating conveyor C. As shown in Fig. 2, the rearward end of the conduit section 27 is U-shaped in transverse cross-section in order to 50 permit upward and rearward swinging movement of said upper portion 24 upon removal of the clamp 28. For this purpose, the portion 29 of cab deck 18 immediately above the clamp 28 is hinged as at 30.

55 From each side of the U-shaped rearward end

of the conduit section 27 a pintle 31 extends outward and fits into an upwardly opening recess 32 formed in each side wall 33 of a bracket 34. The bracket 34 is secured to the locomotive L by bolts 35 which extend into the firebox backwall 14. At its forward end the conduit section 27 is preferably provided with a spherical member 36 which fits into a seat 37 of the discharge conduit section 38, the latter forming a part of the fuel elevating conveyor C. The rearward end of the 10 conduit section 38 is also U-shaped in transverse cross section (Fig. 4) and a detachable clamp 39 is used to hold the parts in operative relation. Fuel is conveyed through the conveyor C by means which includes a screw 40 disposed with- 15 in the conduit section 27. A link 41 universally connects the screws 22 and 40.

The discharge conduit section 38 is secured to the backwall 14 by means of bolts which pass through a strap 42 and flanges such as 43 extending laterally from the discharge mouth 44 20 of the conduit section 38. Above the conduit section 38 is a casing 45 which embraces that portion of the firing opening 15 immediately above that portion of such opening with which said discharge mouth 44 communicates. On the rear- 25 ward side of the casing 45 is a firedoor 46 which normally closes an aperture 47 opposite said firing opening 15.

Fuel is conveyed from the tender by the screw 30 22 and thence through the conduit 27 by the screw 40. This screw 40 pushes the fuel in an axial direction through the discharge mouth 44 and into the zone of action of a distributor D which projects the fuel to all parts of the fire- 35 bed. The distributor D comprises a jet member 48 which issues blasts of pressure fluid over a plate 49 from which the fuel is blown forwardly and laterally in aerial paths.

Whenever it is desirable to renew or repair the 40 conveyor screw 40, the stoker S is first operated in reverse so that fuel in the elevating conveyor C is moved rearwardly. Then the portion 29 of the cab deck 18 is swung rearwardly and clamps 28 and 39 are removed whereupon it is possible 45 to swing upwardly and rearwardly the upper portion 24 of spherical member 23. With the upper portion 24 in such position, the link 41 of the universal joint between screws 22 and 40 is ex- 50 posed and readily removed. In order to remove the screw 40 from a position in the cab 17, the conduit section 27 is swung upwardly about the axis of the pintles 31 to the position indicated by the dot and dash lines in Fig. 1. It is also possible to replace the screw 40 with the conduit 55

section 27 in this position. The re-assembly of the other parts is obvious.

In Fig. 3, the pintles 31 are each received in an upwardly opening recess such as 50 formed in the support bracket 51 which is secured to the locomotive frame 11. This construction will be found to be of particular advantage in supporting the rearward end of an unusually long conduit section 27. In all other respects, this form of the invention is identical to the form shown in Fig. 1.

Those familiar with the art will readily understand that by the present construction, the screw 22 and conduit section 27 can be readily removed or installed from a convenient position in the locomotive cab 17. At the same time, the supporting means for the conduit section 27 allows this section to adjust itself in operative position without setting up any strains in the various parts of the stoker due to wearing or other movements of the locomotive.

I claim:

1. In a locomotive comprising a frame, a fire-box having a firing opening in the backwall thereof and a cab having a deck extending rearward of said backwall, the combination comprising a discharge conduit section secured to said backwall and being in communication with said fire-box through the firing opening in said backwall, an inclined conduit section extending rearwardly from said discharge conduit section, means on the locomotive providing a pivotal support for the rearward end of said inclined conduit section whereby said inclined conduit section may be moved vertically about a transversely extending horizontal axis, the forward end of said inclined conduit section being supported by said discharge conduit section by a flexible joint providing for movement about a transversely extending horizontal axis, and a third conduit section extending rearwardly from said inclined conduit section and being universally connected therewith, the center of articulation of the universal joint between said third conduit section and said inclined conduit section lying approximately on the transversely extending horizontal axis of said pivotal support, said inclined conduit section being movable vertically about the transversely extending horizontal axis of said pivotal support and about the center of articulation of the universal joint between the third conduit section and the inclined conduit section to a position wherein said inclined conduit section opens axially into the cab rearward of said discharge conduit section.

2. In a locomotive comprising a frame, a fire-box having a firing opening in the backwall thereof and a cab having a deck extending rearward of said backwall, the combination comprising a discharge conduit section secured to said backwall and being in communication with said firebox through the firing opening in said backwall, an inclined conduit section extending rearwardly from said discharge conduit section, means carried by the backwall providing a pivotal support for the rearward end of said inclined conduit section whereby said inclined conduit section may be moved vertically about a transversely extending horizontal axis, the forward end of said inclined conduit section being supported by said discharge conduit section by a flexible joint providing for movement about a transversely extending horizontal axis, and a third conduit section extending rearwardly from said inclined conduit section and being universal-

ly connected therewith, the center of articulation of the universal joint between said third conduit section and said inclined conduit section lying approximately on the transversely extending horizontal axis of said pivotal support, said inclined conduit section being movable vertically about the transversely extending horizontal axis of said pivotal support and about the center of articulation of the universal joint between the third conduit section and the inclined conduit section to a position wherein said inclined conduit section opens axially into the cab rearward of said discharge conduit section.

3. In a locomotive comprising a frame, a fire-box having a firing opening in the backwall thereof and a cab having a deck extending rearward of said backwall, the combination comprising a discharge conduit section secured to said backwall and being in communication with said fire-box through the firing opening in said backwall, an inclined conduit section extending rearwardly from said discharge conduit section, means carried by the locomotive frame providing a pivotal support for the rearward end of said inclined conduit section whereby said inclined conduit section may be moved vertically about a transversely extending horizontal axis, the forward end of said inclined conduit section being supported by said discharge conduit section by a flexible joint providing for movement about a transversely extending horizontal axis, and a third conduit section extending rearwardly from said inclined conduit section and being universally connected therewith, the center of articulation of the universal joint between said third conduit section and said inclined conduit section lying approximately on the transversely extending horizontal axis of said pivotal support, said inclined conduit section being movable vertically about the transversely extending horizontal axis of said pivotal support and about the center of articulation of the universal joint between the third conduit section and the inclined conduit section to a position wherein said inclined conduit section opens axially into the cab rearward of said discharge conduit section.

4. In a locomotive comprising a frame, a fire-box having a firing opening in the backwall thereof and a cab having a deck extending rearward of said backwall, the combination comprising a discharge conduit section secured to said backwall and being in communication with said firebox through the firing opening in said backwall, an inclined conduit section extending rearwardly from said discharge conduit section, means on the locomotive providing a pivotal support for the rearward end of said inclined conduit section whereby said inclined conduit section may be moved vertically about a transversely extending horizontal axis, the forward end of said inclined conduit section being supported by said discharge conduit section by a flexible joint providing for movement about a transversely extending horizontal axis, and a third conduit section extending rearwardly from said inclined conduit section and being universally connected therewith, the center of articulation of the universal joint between said third conduit section and said inclined conduit section lying approximately on the transversely extending horizontal axis of said pivotal support, said inclined conduit section being movable vertically about the transversely extending horizontal axis of said pivotal support and about the center of articulation of the universal joint between the third conduit section and the inclined

conduit section to a position wherein said inclined conduit section opens axially into the cab rearward of said discharge conduit section, and a screw in said inclined conduit section, said screw being removable from said inclined conduit section when the latter is moved in a position to open axially into the cab rearward of said discharge conduit section.

5. In a locomotive comprising a frame, a firebox having a firing opening in the backwall thereof and a cab having a deck extending rearward of said backwall, the combination comprising a discharge conduit section secured to said backwall and being in communication with said firebox through the firing opening in said backwall, an inclined conduit section extending rearwardly from said discharge conduit section, means carried by the backwall providing a pivotal support for the rearward end of said inclined conduit section whereby said inclined conduit section may be moved vertically about a transversely extending horizontal axis, the forward end of said inclined conduit section being supported by said discharge conduit section by a flexible joint providing for movement about a transversely extending horizontal axis, and a third conduit section extending rearwardly from said inclined conduit section and being universally connected therewith, the center of articulation of the universal joint between said third conduit section and said inclined conduit section lying approximately on the transversely extending horizontal axis of said pivotal support, said inclined conduit section being movable vertically about the transversely extending horizontal axis of said pivotal support and about the center of articulation of the universal joint between the third conduit section and the inclined conduit section to a position wherein said inclined conduit section opens axially into the cab rearward of said discharge conduit section, and a screw in said inclined conduit section, said screw being removable from said inclined conduit section when the latter is moved in a position to open axially into the cab rearward of said discharge conduit section.

6. In a locomotive comprising a frame, a firebox having a firing opening in the backwall thereof and a cab having a deck extending rearward of said backwall, the combination comprising a discharge conduit section secured to said backwall and being in communication with said firebox through the firing opening in said backwall, an inclined conduit section extending rearwardly from said discharge conduit section, means carried by the locomotive frame providing a pivotal support for the rearward end of said inclined conduit section whereby said inclined conduit section may be moved vertically about a transversely extending horizontal axis, the forward end of said inclined conduit section being supported by said discharge conduit section by a flexible joint providing for movement about a transversely extending horizontal axis, and a third conduit section extending rearwardly from said inclined

conduit section and being universally connected therewith, the center of articulation of the universal joint between said third conduit section and said inclined conduit section lying approximately on the transversely extending horizontal axis of said pivotal support, said inclined conduit section being movable vertically about the transversely extending horizontal axis of said pivotal support and about the center of articulation of the universal joint between the third conduit section and the inclined conduit section to a position wherein said inclined conduit section opens axially into the cab rearward of said discharge conduit section, and a screw in said inclined conduit section, said screw being removable from said inclined conduit section when the latter is moved in a position to open axially into the cab rearward of said discharge conduit section.

7. In a locomotive comprising a frame, a firebox having a firing opening in the backwall thereof and a cab having a deck extending rearward of said backwall, the combination comprising a fuel elevating conveyor mounted on the locomotive and including a discharge conduit section in communication with said firebox and a conduit section extending rearwardly from said discharge conduit section, means on the locomotive providing a pivotal support for the rearward end of said conduit section, and a conduit section flexibly connected to the rearward end of said second-named conduit section, the forward end of said second-named conduit section being flexibly supported by said discharge conduit section, a screw in the second-named conduit section, and a screw in the third-named conduit section, said screws being universally connected at the flexible connection between the second and third-named conduit sections, said discharge conduit section having a removable portion over the forward end of the second-named conduit section, said second-named conduit section having a removable portion over the forward end of the third-named conduit section, the forward end of the third-named conduit section having a removable portion over the universal joint between said screws.

8. In a locomotive comprising a frame, a firebox structure mounted above said frame and having a backwall provided with a firing opening therein, a fuel elevating conveyor carried solely by said backwall comprising a discharge conduit section rigidly secured at its forward end to said backwall and communicating with said firebox through said firing opening, and an inclined conduit section extending rearwardly of said discharge conduit section, means carried by said backwall for supporting the second conduit section therefrom, and means forming a universal connection between said discharge conduit section and the second conduit section providing substantial relative angular movement between said discharge conduit and said inclined conduit.

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