ROAD SWEEPER SUCTION AND DIRT CHAMBER CONNECTION

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ABSTRACT

In a road sweeper of the type employing an open bottom suction hood exposed to the road surface and connected by jointed conduits to a debris hopper carried by the sweeper frame for tilting dumping movements in response to which the conduit joints open and close, maintenance of the joints in closed condition during sweeping is assured by spring urging of the lower movable joint sections upwardly against the upper sections while maintaining the sections in axial alignment.

14 Claims, 4 Drawing Figures
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SUMMARY OF THE INVENTION

This invention has to do with vehicular road sweepers of the type employing an open bottom suction hood receiving debris as it is carried along the road surface and from which the debris is carried and elevated through one or more suction conduits into a dumpyable debris chamber. The conduit arrangement and construction is such that the debris chamber tilts for rear dumping, an upper conduit length or section carried by the chamber separates from the lower conduit length and the conduit sections in effect reengage as the debris chamber is returned to normal position.

The invention has for its general object to provide an improved structure and mounting for the conduit joint sections so as to assure against air and dust leakage during sweeping operations. More particularly the invention aims to achieve uniformity in assured closure of the joint sections when used for the interconnection of plural aligned conduit assemblies interconnecting the suction hood and debris chamber.

Structurally the invention contemplates yieldable mountings for the lower conduit sections and which are compressible by the debris chamber weight normally to maintain the seals.

As in the later description embodiment of the invention the lower joint sections may be formed in conjunction with a stabilizing member extending transversely of the sweeper and serving to carry and maintain proper spacing and alignment of the lower joint sections. In accordance with the invention the stabilizing member is accommodated for bodily downward displacement against the thrust of springs which resist such displacement and therefore act to urge the member against the upper conduit sections and thus maintain the suction seals.

I1 the various features and objects of the invention as well as the details of an illustrative embodiment will be apparent from the following description of the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a view showing the sweeper vehicle in said elevation;

FIG. 2 is a fragmentary enlarged section taken on line 2-2 of FIG. 1;

FIG. 3 is an end elevation as viewed from line 3-3 of FIG. 2; and

FIG. 4 is a fragmentary showing similar to FIG. 3 of the joint structure in disengaged condition.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In accordance with the general sweeper construction and arrangement appearing in FIG. 1, the main four-wheel truck carries on its frame 10 an engine depicted by the exposed radiator 11 which drives a suction blower communicating at 12 by way of joint 13 with conduit 14 through which the blower suction is communicated to the debris hopper 15 pivotally mounted at 16 to the frame for rearward tilting and dumping as depicted by the broken lines. The conduit 14 is supported to the debris chamber by brace 17 and as illustrated, by opening of the joint at 13 the conduit 14 and brace assembly swing rearwardly with the chamber 15.

Suspended from and below the frame 10 for travel along the road surface 18 is an open bottom suction hood 19 having draft connections at 20 with the truck frame and containing means for receiving suction-induced entrainment of debris from the road surface. Merely as illustrative, such means may include a pickup broom 21 hydraulically driven by motor M and which displaces the debris forwardly for reception and passage through conduits 22 and 23 for delivery to the debris chamber. As illustrative of the construction of the suction hood and related components, reference may be had to my copending application Ser. No. 876,464 filed on RUNWAY OR STREET SWEEPER having common assignee with this application. For present purposes it will suffice to functionally re-

late the conduits 22 and 23 as serving respectively to receive and conduct smaller and larger swept debris particles and objects from the hood 19.

As best illustrated in FIG. 2 the conduits 22 and 23 have flexible hose connections 24 and 25 with a common transverse stabilizing member 26 terminally carrying gussets 261, see FIG. 4, by way of rigid couplings 27 integral with the member. As will be understood, though different in size the connections between the flexible conduit extents 24 and 25 to member 26 are the same. Referring again to FIG. 4, the top 29 of the member 26 is inclined to approximate normalcy to the movement path of rigid conduit lengths 30 connected to and extending angularly downward from the chamber 15 as illustrated in FIG. 3. For purposes of description 30 and 24, 25 may be regarded as rigid and flexible lengths respectively of the conduits above and below the member 26, and the member and couplings 27 may be regarded as constituting the lower section or sections of a joint structure, the upper section of which is engageable against the face 29. The upper joint sections associated with the rigid conduit lengths 30 are shown to include a plate or flange 32 carrying seal ring 33 engageable against the plenum face 29.

The lower joint sections are yieldably supported by coil springs 34 mounted on the frame members 35, upward thrust of the springs being limited by cable 36 connected to one of the frame members 37. One end of member 26 is pivotally connected at 38 and 39 to the sweeper frame by way of link 40, and at its opposite end by arm 401 fixed to member 26 at 402 and pivoted to the frame at 403, the effect of which is to hold the member 26 against axial turning in its swinging movement and compression of springs 34.

In operations involving engagement and disengagement of the conduit joints, assume first that the debris chamber 15 is in raised or tilted condition, opening the conduit joints as in the FIG. 4 condition. As the chamber is returned to normal debris receiving position, the rigid upper conduit sections 30 swing downwardly to engage and compress the seal rings 33 against the surface 29 and to compress the springs 34 in accordance with loading by the chamber weight in advance of its seating on the frame at 151. Being maintained under compression with cable 36 slackened as shown in FIG. 3, springs 34 constantly urge the lower joint section upwardly to assure sealing by the compressed seal rings 33. As previously indicated, the arms 40 and 401 in swinging about pivots 39 and 403 in response to the movements of member 26, afford bodily stabilization of the member and maintenance of its alignment of the rigid conduit lengths 30 with the corresponding openings 42 in the plenum.

Claims:

1. A road sweeper according to claim 1, in which said conduit 14 and conduit 15 are spherical in configuration.

2. A road sweeper according to claim 1, in which said conduit 14 and conduit 15 have annular cross sections.

3. A road sweeper according to claim 1, including a substantially rigid conduit for engagement with a road surface.

4. A road sweeper according to claim 1, including a substantially rigid conduit for engagement with a road surface.

5. A road sweeper according to claim 1, in which said conduit 14 and conduit 15 are of the same cross-sectional configuration.

6. A road sweeper according to claim 1, in which said conduit 14 and conduit 15 are of the same cross-sectional configuration.

7. A road sweeper according to claim 1, in which said conduit 14 and conduit 15 are of the same cross-sectional configuration.

8. A road sweeper according to claim 1, in which said conduit 14 and conduit 15 are of the same cross-sectional configuration.

9. A road sweeper according to claim 1, in which said conduit 14 and conduit 15 are of the same cross-sectional configuration.

10. A road sweeper according to claim 1, in which said conduit 14 and conduit 15 are of the same cross-sectional configuration.
3,634,904

3. A road sweeper according to claim 1, including means limiting upward displacement of said lower joint section by said spring.

7. A road sweeper according to claim 1, including also a pivoted link connecting said lower joint section to the sweeper frame.

8. A road sweeper according to claim 1, in which said joint sections interengage in an inclined plane, said yieldable supporting means including a spring interposed between said lower section and the sweeper frame, and a pivoted link connecting the lower section to the frame.

9. A road sweeper according to claim 1, in which a suction hood beneath the vehicle frame is connected with the debris hopper by an aligned plurality of said conduits and joints, the lower joint sections including an interconnecting elongated bodily movable member.

4. A road sweeper according to claim 9, in which said upper sections and member interengage in an inclined plane.

10. A road sweeper according to claim 9, in which said upper sections and member interengage in an inclined plane.

11. A road sweeper according to claim 10, in which said yieldable support includes springs interposed between said member and the sweeper frame.

12. A road sweeper according to claim 11, including movable means interconnecting said member and frame.

13. A road sweeper according to claim 12, in which the hopper compresses said springs.

14. A road sweeper according to claim 13, in which said upper conduit extents are rigid and the lower extents are flexible.