Nov. 22, 1960 A. T. C. DEAR ET AL 2,960,708

ROAD SWEEPING MACHINES

Filed Feb. 27, 1958 4 Sheets-Sheet 1

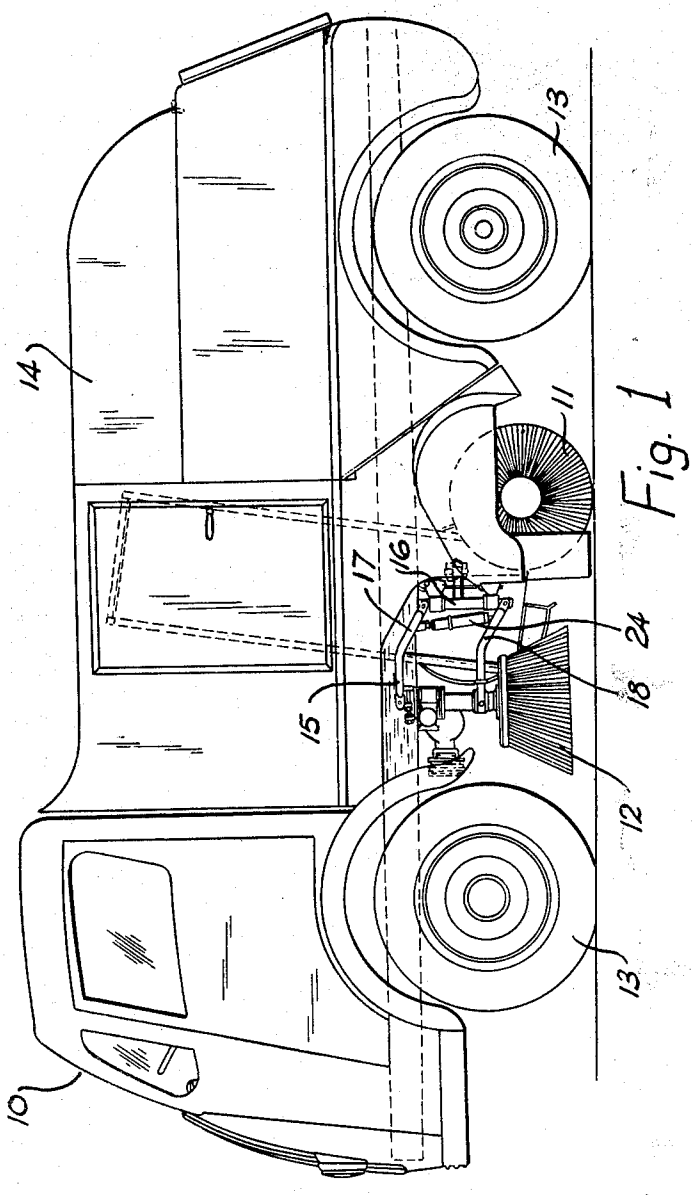


Fig. 1

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ROAD SWEEPING MACHINES

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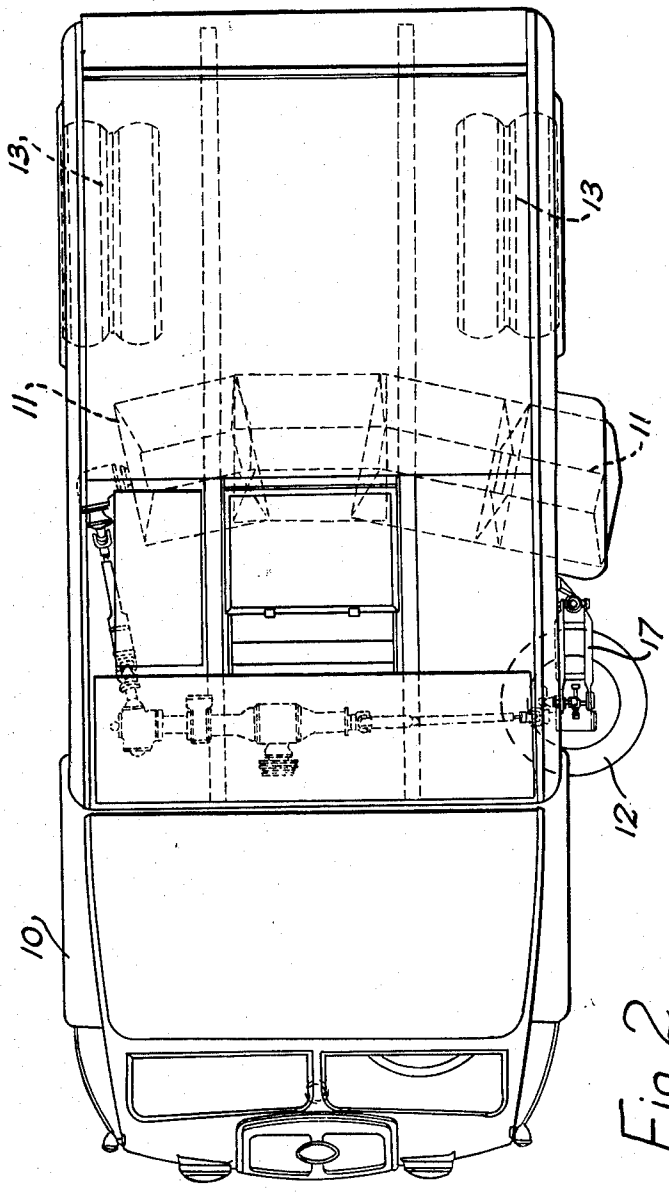


Fig. 2

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ROAD SWEEPING MACHINES

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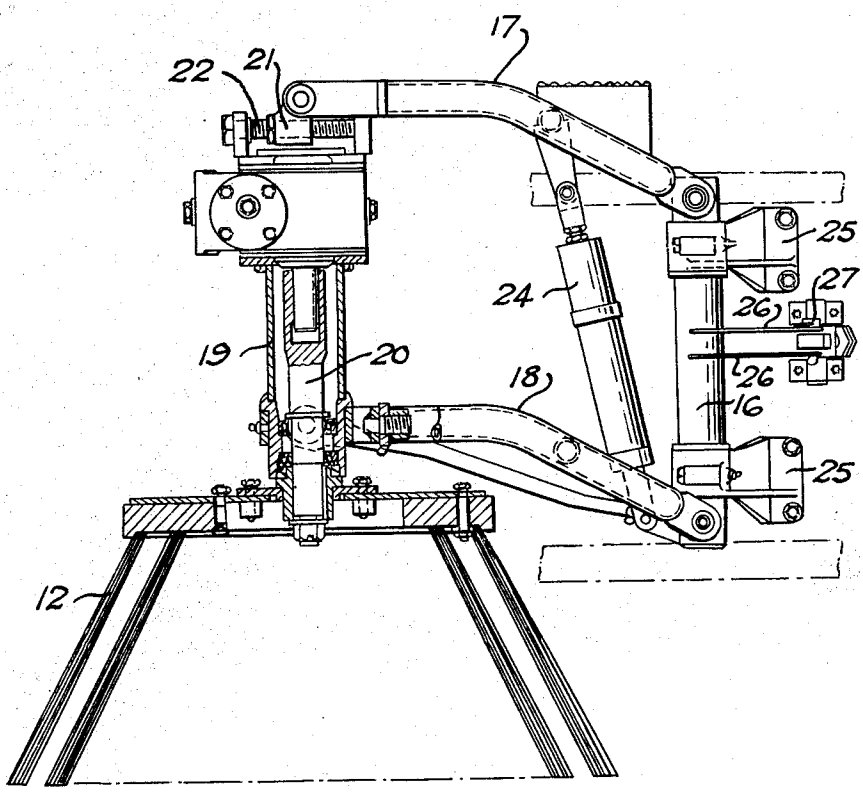


Fig. 3

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ROAD SWEEPING MACHINES

Filed Feb. 27, 1958 4 Sheets-Sheet 4

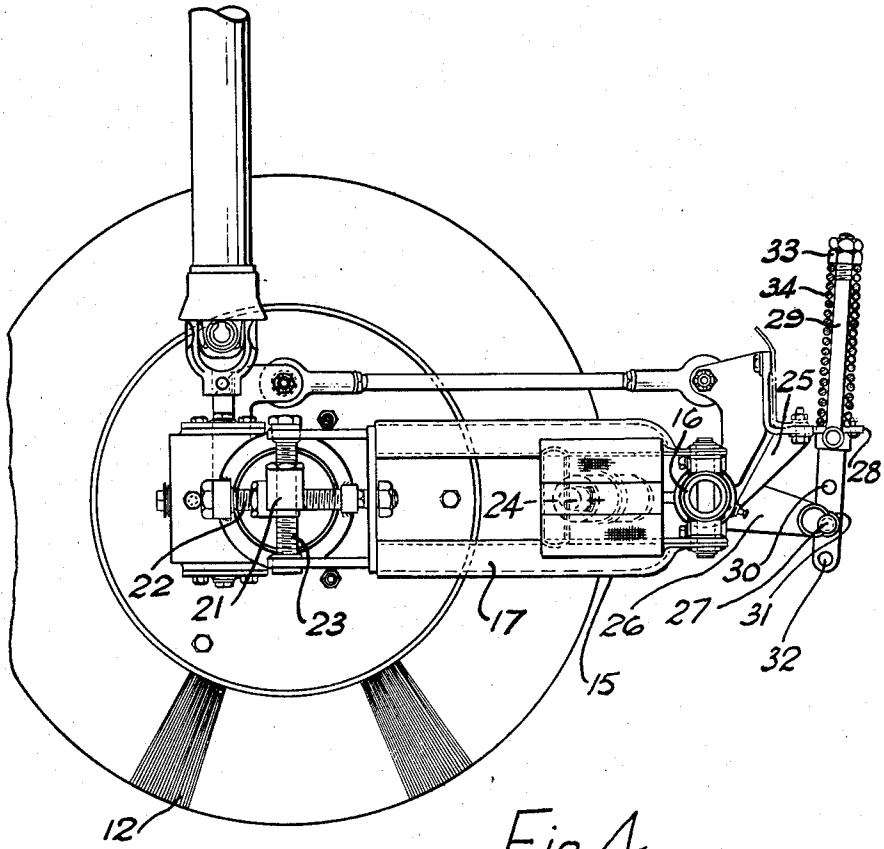


Fig. 4

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2,960,708

ROAD SWEEPING MACHINES

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Claims priority, application Great Britain Mar. 5, 1957

2 Claims. (Cl. 15—87)

The present invention relates to road sweeping machines having road wheels and one or more road sweeping brushes arranged to be rotated about horizontal or substantially horizontal axes in addition to a gutter or channel sweeping brush which is arranged for rotation about a vertical or substantially vertical axis.

Such road sweeping machines or vehicles having gutter or channel sweeping brushes are known in which the gutter sweeping brushes are so arranged as to be carried by supports which are pivotally connected to the machines about vertical or substantially vertical axes so as to allow the brushes to be disposed in an outwardly spaced position with respect to the machines. In these machines it is desirable to arrange that the gutter or channel sweeping brush is brought into pressure engagement with the kerb of the gutter or the side of the channel which is being swept in order to produce a more efficient sweeping action. Further, it is also desirable to arrange that if the brush meets with any obstacle such as, for example, might be provided by a heavy object or other obstruction in the gutter, said brush is able to yield in order to avoid or reduce possible damage thereto and afterwards return to its former sweeping position.

One of the objects of the present invention is to provide a road sweeping machine having a new or improved mounting for the gutter or channel sweeping brush.

A further object of the present invention is to provide a road sweeping machine in which the gutter sweeping brush can be adjusted to any one of a plurality of lateral positions relative to the machine in accordance with prevailing conditions.

In accordance with the present invention we provide a road sweeping machine having a gutter sweeping brush, a brush-carrying shaft arranged to be rotated about a substantially vertical axis and on which said gutter sweeping brush is mounted, a support pivotally connected to the machine about a substantially vertical axis and carrying said brush-carrying shaft and gutter sweeping brush, and resilient means connected between the machine and the support for urging said support and brush outwardly away from the machine, said resilient means permitting inward movement of the support and brush towards the machine on said brush meeting an obstacle in its path.

The support may comprise a four-member parallel motion linkage and the arrangement may be such that the brush and associated support are situated forwardly of the vertical or substantially vertical axis about which the support is adapted to pivot.

Conveniently said resilient means may take the form of one or more coil springs which is or are so connected between the brush carrying support and the side of the machine as to have a tendency to urge said brush carrying support and its associated brush outwardly with respect to said machine.

In one arrangement we may, for example, provide one or more projecting arms which is or are connected to the support and which is or are adapted to pivot therewith about the vertical or substantially vertical axis, said

projecting arm or arms being pivotally connected to a spring loaded member which will have the effect of imparting a turning moment or have a tendency to impart a turning moment to the brush carrying support so as to tend to urge said support and its associated gutter or channel sweeping brush outwardly away from the side of the machine.

We may arrange that the gutter sweeping brush can be disposed in one or more positions (for example, three positions) with respect to the side of the machine, in any of which positions said resilient means are adapted to resist inward movement of the brush so that the brush is arranged to have pressure engagement with the kerb or side of the gutter. Thus, where the gutter sweeping brush can be disposed in three positions, the position in which it is disposed to its maximum extent outwardly with respect to the vehicle would correspond to a case where it is desired to arrange maximum clearance between the vehicle and the gutter in order, for example, to avoid any possible interference with objects such as lamp posts which might be caused by the upper parts of the machine coming into contact with such lamp posts owing to the camber of the road. The centre position would be the one used for normal conditions of sweeping and would provide for a certain amount of overlap between the sweeping effected by the gutter sweeping brush and by the main horizontal brushes. The innermost of the three positions (where no risk of obstructions such as is mentioned above occurs) would provide for the maximum overlap between the sweeping effected by the gutter sweeping brush and the main brushes so that this position would be used under the worst conditions.

We may also provide one or more stop members, which may, for example, be resilient, being formed as a block of rubber or like material, which resilient stop member or members have the effect of limiting the innermost and outermost positions of the gutter sweeping brush with respect to the side of the machine.

The invention will now be described with reference to the accompanying drawings wherein:

Figure 1 is a side elevation of a road sweeping machine constructed in accordance with the present invention.

Figure 2 is a plan view thereof.

Figure 3 is a part sectional side elevation of the mounting for the gutter or channel sweeping brush, this being on a somewhat larger scale than is used in Figures 1 and 2.

Figure 4 is a plan view of the mounting shown in Figure 3.

Referring now to the drawings, a road sweeping machine **10** constructed in accordance with the present invention is provided with a series of horizontally arranged brushes **11** adapted to sweep the surface of a road, together with a gutter or channel sweeping brush **12** arranged to rotate about a vertical or substantially vertical axis. The machine is provided with the usual road wheels **13** and a refuse collecting body **14**.

The gutter or channel sweeping brush is connected to one side of the machine by means of a four-member parallel motion linkage **15**, such linkage comprising a vertical member **16**, a pair of spaced parallel longitudinal members **17** and **18** and a two-part fourth member connected between the outer ends of said two longitudinal members **17** and **18**, said two-part fourth member comprising a housing **19** for the brush carrying shaft **20** (see Figure 3) together with a casting **21** formed with a pair of threaded apertures through which are passed bolts **22** and **23** (see Figure 4) for the purpose of adjusting the inclination of said housing **19** and associated brush **12** in accordance with the manner described in our co-pending application Serial No. 718,041 of even date, such adjustment forming no part of the present invention. There is also provided a hydraulic ram **24** connected between a

fixed support and a part of the upper longitudinal member **17** for the purpose of lifting and lowering the linkage and associated brush **12**.

The vertical member **16** is connected to the side of the machine by a pair of spaced brackets **25** so that said vertical member **16** is rotatable about a vertical or substantially vertical axis.

As will be seen from the drawings, the arrangement is such that the parallel motion linkage **15** extends in a forward direction from the vertical member **16** so that the brush **12** is in a leading position with respect to said vertical member **16**. Further, said vertical member **16** is provided with a pair of projecting arms **26** extending in a generally rearward direction and provided at their outer ends with a pair of aligned holes, through which may be passed a removable pin **27**.

Mounted on the side of the machine so as to project through the bracket **28** provided thereon is a member **29** provided at its outer end with three apertures **30**, **31**, and **32**. The inner end of said member **29** is provided with a nut **33** so as to form an abutment and disposed between said nut **33** and the bracket **28** is a coil spring **34**.

As shown in Figure 4, the arrangement is such that the linkage supporting the brush **12** is connected to the spring loaded member **29** through the intermediary of the pair of arms **26** and the removable pin **27**. The spring **34** is a compression spring so that the member **29** tends to be withdrawn inwardly into the machine so as to cause the linkage **15** to rotate in a generally anticlockwise direction as viewed in Figure 4, thus tending to move the brush **12** outwardly away from the side of the machine.

Thus the road sweeping machine may be driven along the road with the gutter sweeping brush **12** in contact with the side of the gutter and pressure will be exerted on said side if the brush **12** is urged inwardly towards the machine, such pressure being in fact provided by virtue of the coil spring **34**.

If, as seen in Figure 4, the pin **27** is placed in the innermost hole **30** of the spring loaded member **29**, the brush **12** will be so positioned that it will normally lie in its outermost position with respect to the side of the machine. This enables the machine itself to be spaced away from the gutter by the greatest possible distance so as to avoid any possibility of collision between an object such as, for example, a lamp-post positioned near the gutter and the body of the machine, particularly where the camber of the road causes the machine to lean inwardly towards the gutter.

With the pin **27** in the hole **31**, the gutter sweeping brush **12** will overlap to some extent the sweeping provided by the main brushes **11** so as to increase the efficiency of sweeping in bad conditions and this will be the normal sweeping position.

With the pin **27** in the hole **32**, the brush **12** will be disposed at its innermost position and in this position it will overlap the sweeping effected by the main brushes **11** to the maximum extent and will thus provide for the worst conditions where there is no likelihood of interference by standing obstructions such as lamp posts. In any of these three positions the actual sweeping pressure exerted by the brush **12** will be controlled by hydraulic means as described in our co-pending application Serial No. 718,041 of even date.

It will be realised that owing to the resilient form of connection provided by reason of said coil spring **34**, if the gutter sweeping brush **12** meets any obstruction in its path such as would be caused by a heavy or immovable object, then the arrangement is such that the brush will be able to yield and move inwardly towards the side of the machine in order to avoid damage being caused to said brush, the brush springing back into its original position once the obstruction has been passed.

What we claim is:

1. A road sweeping machine having a gutter sweeping brush, a brush-carrying shaft arranged to be rotated about a substantially vertical axis and on which said gutter sweeping brush is mounted, a support pivotally connected to the machine about a substantially vertical axis and carrying said brush-carrying shaft and gutter sweeping brush, a spring loaded member connected to the support and slidably carried by a bracket secured to the machine, said spring loaded member being outwardly displaceable with respect to the machine but being normally urged inwardly of the machine under the influence of its spring loading, said spring loaded member being connected to the support at one of a plurality of laterally spaced positions whereby the lateral position of the brush with respect to the machine may be varied.

2. A road sweeping machine having a gutter sweeping brush, a brush-carrying shaft arranged to be rotated about a substantially vertical axis and on which said gutter sweeping brush is mounted, a four-member parallel motion linkage embodying a vertical member pivotally connected to the machine about a substantially vertical axis, said linkage carrying said brush-carrying shaft and gutter sweeping brush, an arm fixed to said vertical member, projecting therefrom in the opposite direction to the said linkage and provided with an aperture adjacent its free and outer end, a member having a plurality of laterally spaced apertures, releasable fastening means for connecting said projecting arm through the aperture provided therein to any one of the plurality of laterally spaced apertures provided in said member, a bracket secured to the machine, said member extending through said bracket, an abutment on the end of the member remote from the said arm, and a compression spring located about said member and extending between the bracket and the abutment so as to urge the arm inwardly of the machine and urge the parallel motion linkage and associated brush outwardly away from the side of the machine.

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