Oct. 12, 1937. N. T. ALMQUIST ET AL 2,095,948

VACUUM CLEANER TRUCK

Filed Nov. 2, 1935

Fig. 1

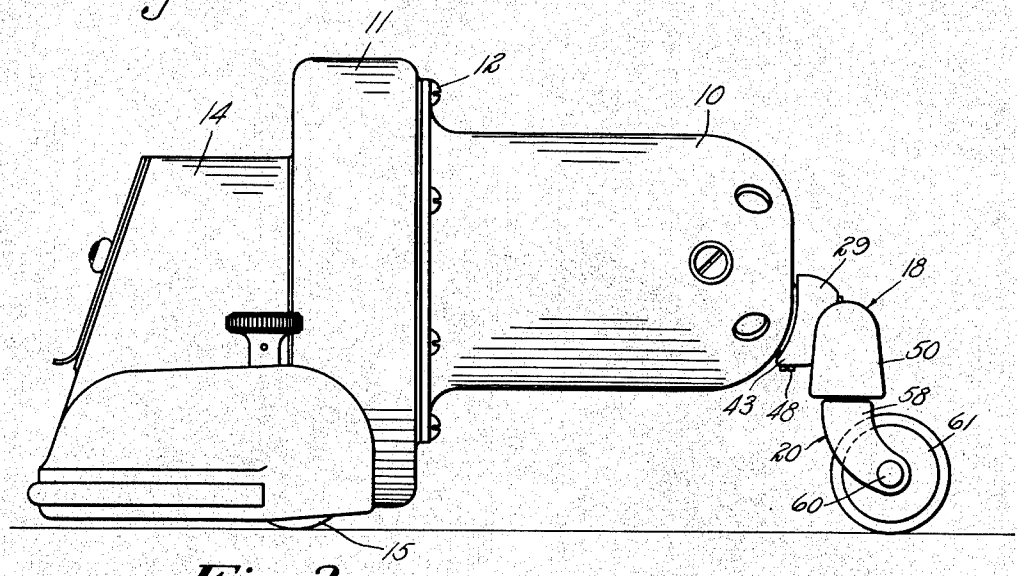


Fig. 2

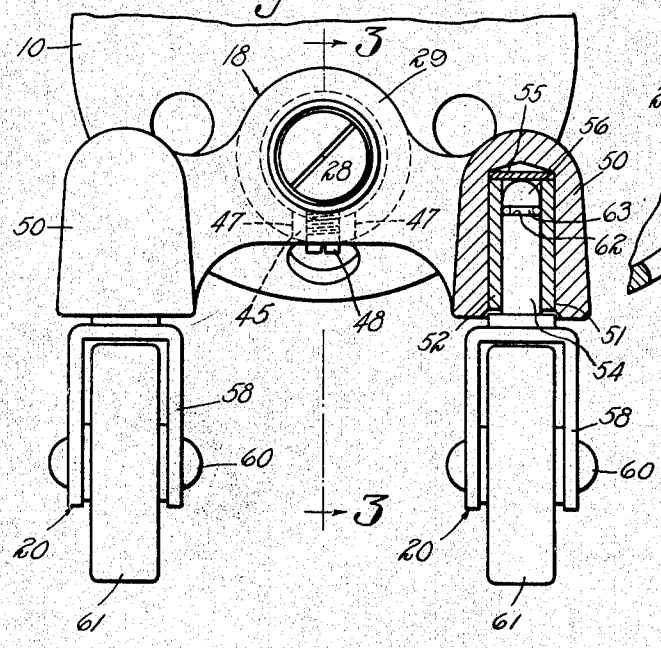
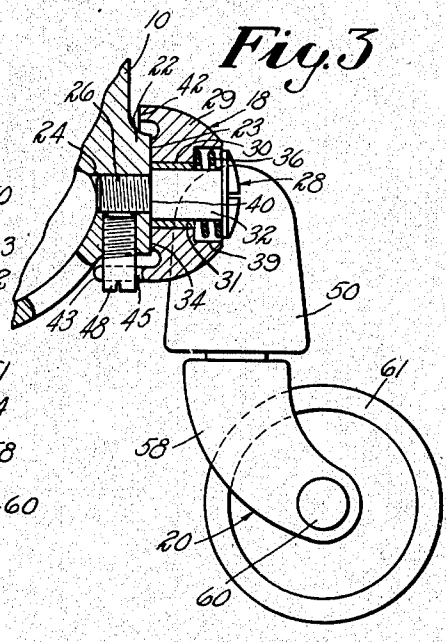


Fig. 3



Inventor

Nils T. Almquist

Oscar M. Anderson

By W. Clay Lindsey.

Attorney

Patented Oct. 12, 1937

2,095,948

UNITED STATES PATENT OFFICE

2,095,948

VACUUM CLEANER TRUCK

Nils T. Almquist and Oscar M. Anderson, New Britain, Conn., assignors to Landers, Frary & Clark, New Britain, Conn., a corporation of Connecticut

Application November 2, 1935, Serial No. 48,003

7 Claims. (Cl. 280—61)

This invention relates to trucks and, more particularly, to a truck especially adapted to pivotally and rotatably support the rear end of a vacuum cleaner so that it may be easily moved across the surface being cleaned.

It is the primary object of this invention to provide a vacuum cleaner supporting truck adapted to evenly support the cleaner and compensate for irregularities in the surface being cleaned.

It is a further object of this invention to provide a truck support having a plurality of rotatable wheels arranged for individual movement about vertical axes and to conform with uneven portions of a surface being cleaned and yet uniformly support one end of a vacuum cleaner.

It is a still further object of this invention to provide a truck arranged to pivotally support the rearward end of a vacuum cleaner in such a manner that it may be tilted to lift the nozzle of the cleaner from the surface being cleaned whenever desired.

With these and other objects in view, the present invention resides in a novel construction and the combination of members hereinafter described, illustrated in the accompanying drawing, and referred to in the claims appended hereto; it being understood that various changes in the general form, proportion, and size, as well as other minor details of construction lying within the scope of the claims, may be resorted to without deviating from the spirit of the invention or sacrificing any of its advantages.

To the accomplishments of these and other objects which will be apparent from the following description, we have provided a truck for rotatably and pivotally supporting the rearward end of a cleaner mechanism in such a manner that the cleaner may be freely moved and easily turned in any direction as well as uniformly supported even when it is rolled over a rough portion of a floor. Our truck also serves the further purpose of providing a convenient pivotal support about which the entire cleaner mechanism may be quickly and easily tilted so that the nozzle of the cleaner may be lifted from the floor to aid the cleaner in moving onto a thick rug or in moving onto a rug having a fringed edge.

In the drawing, wherein like parts are indicated by like numerals:

Figure 1 is a side elevation of a vacuum cleaner having a rear pivotally mounted rotatable support constructed in accordance with our invention;

Fig. 2 is a rear view of our invention; and

Fig. 3 is a view taken along the line 3—3 of Fig. 2.

Referring to the drawing illustrating the preferred type of our invention, we have provided a substantially horizontal suitably shaped motor casing 10 rigidly secured to a fan casing 11 as by screws 12, or other suitable fastening means. The front of the fan casing is provided with a downwardly projecting nozzle 14 which may be suitably supported slightly above the surface to be cleaned as by wheels 15 journalled thereto. The above parts are not described in detail in view of the fact that they do not constitute a novel part of the invention. Hence, it will be understood that our invention, which relates to a truck for supporting the rear portion of a vacuum cleaner, may be arranged to be associated with any vacuum cleaner mechanism which is intended to be supported by wheels and to be freely moved over a surface.

The rear of the motor casing is pivotally supported by a transverse equalizer arm, generally indicated by the numeral 18, and arranged to be pivotally secured intermediate of its ends to the motor about a substantially horizontal axis and supported at its outer ends by casters 20 arranged to individually pivot about substantially vertical axes. To accomplish this, the rearward portion of motor casing 10 terminates in an outwardly projecting boss 22 having a substantially flat vertical face 23 and a central threaded hole 24 arranged to receive a reduced screw threaded portion 26 of a stud 28. Intermediate of the opposed ends of the equalizer arm and substantially centrally thereon, we have provided an enlarged cup-shaped boss 29 having a bore 30 therethrough, and a journal sleeve 31 secured therein is arranged to receive the intermediate cylindrical portion 32 of stud 28, whereby said equalizer arm will be pivotally journalled for transverse rocking movement about the substantially horizontal axis of stud 28. It will be appreciated, of course, that the present invention is not limited to the use of bearing sleeve 31 in view of the fact that the stud portion 32 may be journalled directly within bore 30 if desired and accomplish the same result.

As illustrated in Fig. 3, the motor engaging end of boss 29 is provided with a flat faced portion 34 adapted to frictionally engage against face 23 and to be resiliently held thereagainst by a coiled spring 36 mounted on stud 28 and compressed between the head of stud 28 and the bottom of a counterbore 39 within the rearward end of boss 29 and coaxial with hole 31

therethrough. The head of said stud may be provided with a screw driver slot or other suitable tool engaging means, and bearing portion 32 preferably terminates in a shoulder 40 adapted to abut against surface 23 to aid in rigidly positioning stud 28. The forward end of boss 29 is further provided with an outwardly projecting annular portion 42 having a lower protruding portion 43 which is provided with an open end slot 45 having a pair of opposed spaced side faces 47 arranged to receive a locking stud 48 therebetween which in turn is threaded within a lower portion of boss 22.

As will be observed in Figs. 2 and 3, the stud 48 serves a dual purpose; the inner end of said stud being arranged to lock against screw 28 and prevent its loosening from position, and the outer end of said stud being engageable with the opposed side faces 47 of slot 45 to limit the extent of transverse rocking movement of the equalizer arm about its pivot stud 28. The faces 47 are preferably spaced a sufficient distance apart to permit a required rocking movement of equalizer arm and allow casters 20 to easily accommodate themselves to uneven portions within a surface such as a floor over which the vacuum cleaner is being moved.

The opposed ends of the equalizer arm terminate in enlarged downwardly projecting portions 50 to pivotally accommodate casters 20 which may be of any familiar and well-known type of construction. To accomplish this, each enlarged portion 50 is provided with a substantially vertical bore 51 having a bearing sleeve 52 secured therein and arranged to slidably engage the cylindrical shank 54 of caster 20 and permit its free pivotal movement therein. The upper end of bore 51 has a substantially flat circular plate 55 secured therein and pivotally engageable with the upper rounded end 56 of shank 54. The lower end of each shank 54 has a suitable bifurcated member 58 integrally secured thereto and arranged to fixedly support the opposed ends of a pin 60 upon which caster wheels 61 are journalled.

To prevent the casters 20 from falling out of their socketed positions within the equalizer arm, we may employ any convenient device. In the present instance, as illustrated, we provide the upper end of each shank 54 with an annular groove 62 adapted to slidably receive a C-shaped spring member 63. When the shank is forced into position, the spring member 63 is peripherally compressed against the bore of said bearing sleeve and serves to lock the caster in position. In view of the fact that the spring is freely slidable within the groove, it will not hinder any normal vertically pivotal caster movement in its socket as the cleaner is moved.

It is not desired that our invention necessarily be limited to the particular showing of caster mounting herein illustrated since it will be evident that any suitable type of caster which is supported for vertical pivotal movement about a vertical axis would accomplish the essential features of the present invention. For example, it will be evident that the shank 54 may be secured in any suitable manner to an end of the equalizer arm to provide for a vertically pivotal axial movement.

It will thus be apparent that our invention provides a unique type of truck arranged to uniformly support the rearward end of a vacuum cleaner mechanism. The transverse pivotal movement of the equalizer arm will permit each of the truck supporting wheels to engage uneven portions of the surface being cleaned, and the individual vertical pivotal movement of the casters will permit the cleaner to be quickly and easily turned to reach into corners and other normally inaccessible positions. Furthermore, the frictional contact of surfaces 23 and 34 as caused by coiled spring 36 will restrain the pivotal movement of the equalizer arm sufficiently so that the body portion of the cleaner mechanism including the nozzle, fan casing, and motor may be easily tilted about the axis of wheels 61 so that the nozzle may be quickly and easily lifted from the floor whenever desired.

We claim as our invention:

1. A truck for supporting the rearward portion of a vacuum cleaner frame comprising a transversely disposed equalizer arm, a substantially cup-shaped enlarged portion on said arm intermediate of its ends and having a face which is frictionally engageable with a boss on said frame, a horizontally disposed pivot stud rigidly secured at one end within said boss and journalled at its other end within said cup-shaped portion to permit a transverse rocking movement of the equalizer arm, resilient means on the stud and engaging the arm to secure it in desired pivotal position, a locking member in the frame arranged to lock the pivot stud in operative position, means on the cup-shaped portion engageable with said member to limit the extent of rocking movement of the arm, and individually pivotal means rotatably supporting each end of said arm.

2. A truck for supporting an end of a vacuum cleaner frame comprising a transversely disposed equalizer arm, a horizontally disposed, rearwardly extending pivot pin removably secured in said frame, said arm having a bearing portion intermediate of its ends and journalled on the pin, abutting contacting faces on the frame and bearing disposed at right angles to the axis of the pin, resilient means tending to maintain said faces in contact, a locking member removably secured within the frame and arranged to lock against the pivot pin, means on the arm engageable with the locking pin to limit the extent of pivotal movement of said arm, and a wheel pivotally supported beneath each of the opposed ends of said arm.

3. A truck for supporting an end of a vacuum cleaner frame comprising a transversely disposed member, means intermediate of the ends of said member pivotally securing it to the frame for a rocking movement about an axis disposed longitudinally of the frame, resilient means surrounding said axis and frictionally restraining said rocking movement, means limiting the extent of rocking movement, and supporting casters respectively located beneath and supporting the ends of the transverse member.

4. A vacuum cleaner truck for supporting the end of a vacuum cleaner frame and comprising a transversely disposed arm, means intermediate of the ends of the arm pivotally securing it to the frame for rocking movement about a substantially horizontally disposed axis, resilient means coaxial with said axis to frictionally restrain said rocking movement, means limiting the extent of the rocking movement, supporting casters respectively located beneath and supporting the ends of the arms, and means pivotally connecting each caster to said member for individually free, substantially vertical, pivotal movement.

5. A truck for supporting the rearward end of a vacuum cleaner frame comprising a transverse-

ly disposed arm, pivotal means intermediate of the ends of the arm and securing it to the frame for rocking movement about a substantially horizontal axis disposed longitudinally of the frame, means coaxial with said axis for resiliently and frictionally restraining the rocking movement, means limiting the extent of said rocking movement, a supporting wheel beneath each of the opposed ends of said arm, a member supported by each of the wheels at its lower end and journalled at its upper end within the arm for substantially vertical pivotal movement whereby the truck may uniformly support the frame when it is moved over an uneven surface.

6. A truck for supporting an end of a vacuum cleaner frame comprising a transversely disposed equalizer arm at the back of the frame, a pivot stud securing said arm intermediate of its ends to the frame for a rocking movement, means engageable between the frame and arm to limit the extent of said rocking movement, means resiliently engaged between said stud and arm frictionally restraining the rocking movement, and casters respectively mounted beneath the ends of said arms and secured thereto for pivotal movement about substantially vertical axes.

7. A truck for supporting an end of a vacuum cleaner frame comprising an equalizer arm transversely disposed to the rearward portion of the frame, a pivot stud longitudinally extending from the rearward end of the frame and pivotally mounted in said arm intermediate of its ends to provide for rocking movement of the arm, a coiled spring compressively mounted between said stud and the arm to frictionally restrain the rocking movement, means limiting the extent of rocking movement, supporting casters respectively located beneath each of the opposed ends of the arm, and means pivotally connecting each caster for free movement about a substantially vertical axis.

NILS T. ALMQUIST.
OSCAR M. ANDERSON.