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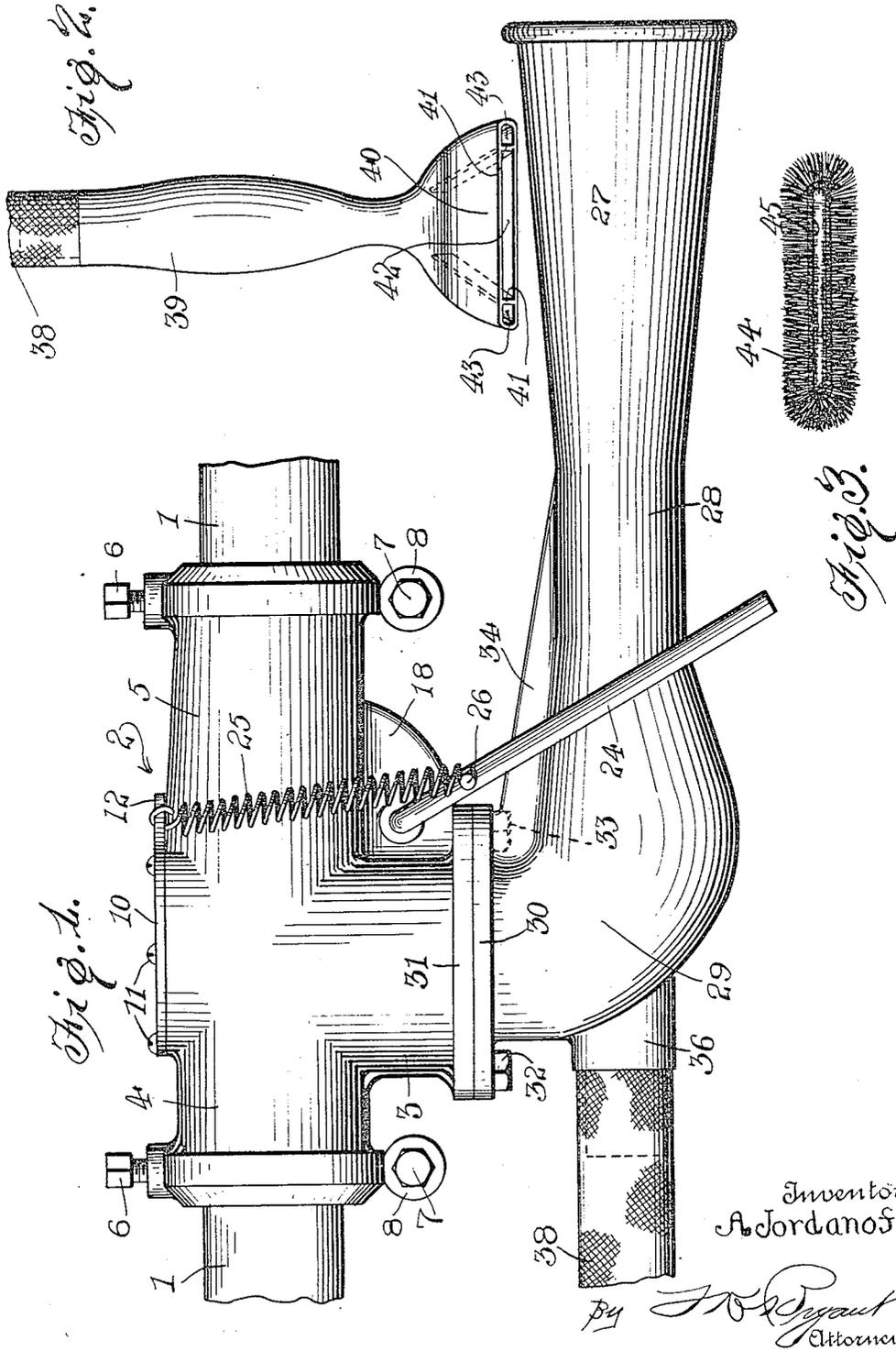
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Filed June 14, 1926

2 Sheets-Sheet 1



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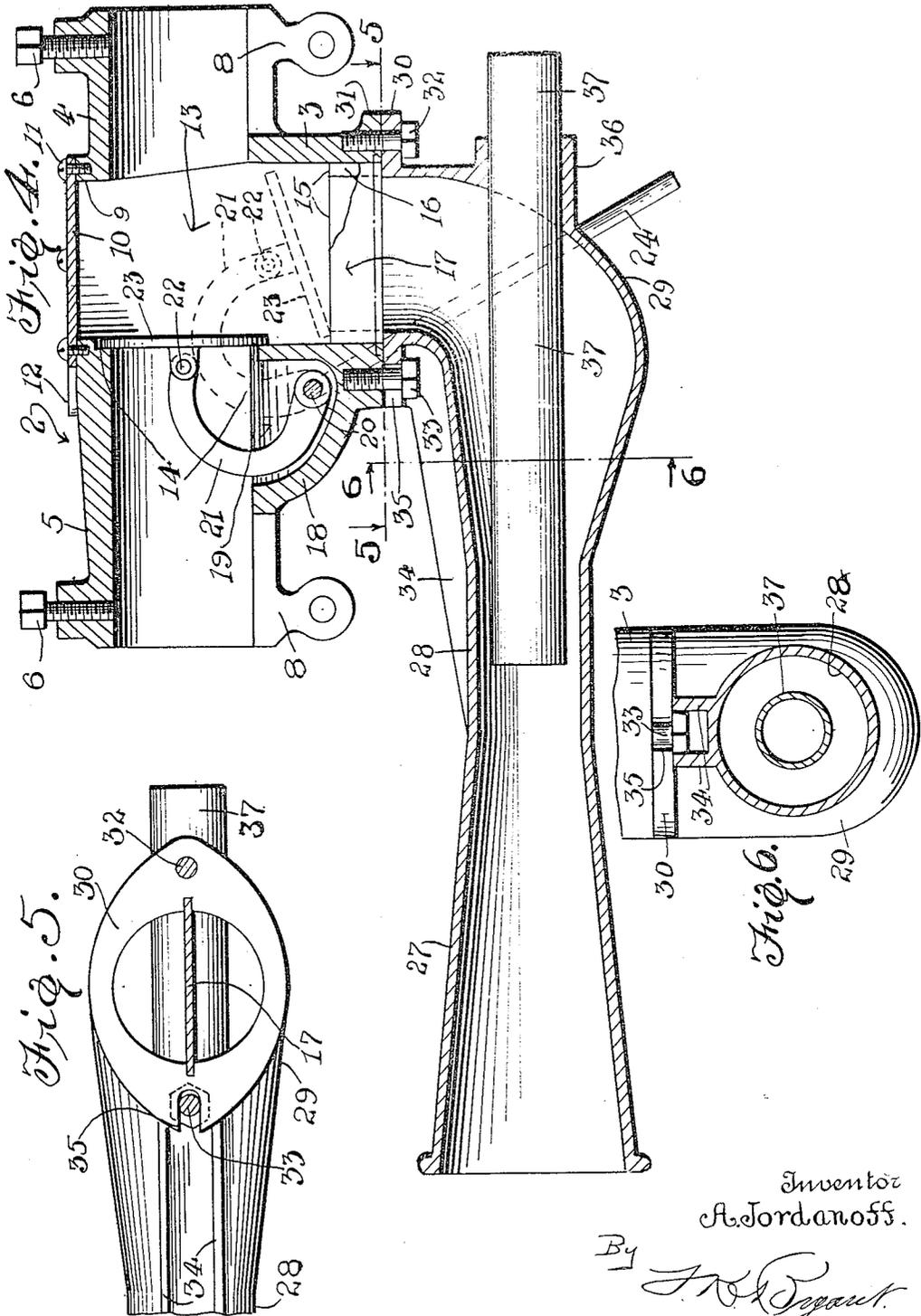
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2 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE.

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## VACUUM-CLEANER ATTACHMENT FOR MOTOR VEHICLES.

Application filed June 14, 1926. Serial No. 115,920.

This invention relates to certain new and useful improvements in vacuum cleaner attachment for motor vehicles and has for one of its objects to utilize the exhaust or suction created in the exhaust pipe of the motor vehicle engine to produce a suction for a vacuum cleaner member.

A further object of the invention is to provide a vacuum cleaner attachment for motor vehicle engines wherein the cleaner attachment is associated with the exhaust pipe and embodying a manually operable valve structure for causing the exhaust gases to flow either directly through the exhaust pipe or be diverted through a Venturi tube with which a vacuum cleaning pipe and nozzle are associated.

A still further object of the invention is to provide a vacuum cleaner attachment of the type above set forth wherein a single valve is movable into engagement with a pair of valve seats arranged at right angles to each other for controlling the direction or flow of exhaust gases either directly through the exhaust pipe or through a Venturi tube with which the vacuum cleaner attachment is associated with means cooperating with the valve and acting in opposition to the force of the exhaust gases to ensure heating movement of the valve upon one of its seats.

A still further object of the invention is to provide an improved type of cleaner nozzle wherein the nozzle head or mouth is provided with partitions forming a relatively wide intermediate mouth opening and relatively narrow end mouth openings with a brush element removably attached to the nozzle head.

With the above and other general objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts herein-after more fully described, shown in the accompanying drawings and claimed.

In the accompanying drawings wherein like reference characters are employed to designate corresponding parts throughout the several views,

Figure 1 is a side elevational view of a suction creating device connected with the exhaust pipe of a motor vehicle engine,

Figure 2 is a plan view of the vacuum

or suction nozzle associated with the suction device showing the three passages in the mouth of the nozzle,

Figure 3 is a plan view of a brush element associated with the mouth of the vacuum nozzle;

Figure 4 is a vertical longitudinal sectional view of the suction creating device detached from the exhaust pipe and showing the single valve cooperating with the two valve seats for directing the flow of exhaust gases either through the exhaust pipe or the Venturi tube, the valve being illustrated as engaging one seat and further movement toward the other seat with the rib adjacent the other seat engaging the peripheral edge of the valve to ensure movement thereof toward its closing position against the pressure of exhaust gas,

Figure 5 is a detail sectional view taken on line 5—5 of Figure 4 showing the valve engaging rib extending across the valve seat through which the exhaust gas flows to the Venturi tube, and

Figure 6 is a detail sectional view taken on line 6—6 of Figure 4.

As shown more clearly in Figs. 1 and 4 to 6, the vacuum cleaner attachment and suction creating device is associated with the exhaust pipe 1 of the motor vehicle engine and may be interposed in the exhaust pipe at the desired point with respect to the muffler and said suction creating device comprises a T-fitting having a cross head 2 and a depending leg 3. The cross head 2 embodies an inlet end 4 and an outlet end 5 into which sections of the exhaust pipe 1 are inserted and retained by the stud screws 6 and clamping screws 7 associated with split portions and ears 8 at the lower sides of the cross head 2 as shown in Figure 4.

The upper end of the cross head 2 is provided with an opening 9 aligned with the passage through the depending leg 3 of the T-fitting, the opening 9 being closed by the cover plate 10 fastened in position by the screws 11 and said cover plate carries an outwardly directed ear 12 extending laterally of the T-fitting as shown in Fig. 1 for purposes presently to appear. The T-fitting defines the central area 13 in which a valve is movable and the valve controls the flow of exhaust gases entering the inlet end 4 and

area 13 by causing the same to pass into the outlet end 5 of the cross head or through the depending leg 3. A circular valve seat 14 is disposed between the area 13 and the outlet end 5 of the cross head while a circular valve seat 15 formed by the provision of an annular shoulder is located at the lower end of the depending leg 3. The shoulder forming the annular valve seat 15 is provided with diametrically opposite grooves 16 that receive opposite ends of the blade or rib 17 for purposes presently to appear.

As shown in Figs. 1 and 4 a web 18 extends between the depending leg 3 and outlet end 5 of the T-fitting cross head and having a socket 19 therein provides side walls for the journal bearing of the shaft 20 upon which the curved link 21 is fixed within the socket. The other end of the curved link 20 pivotally supports as at 22 the disk valve 23. The shaft 20 projecting through the side walls of the web 18 has an elongated angularly extending handle 24 upon one end thereof for the manual operation of the disk valve 23. As shown in Fig. 4, the valve 23 is movable into engagement with either of the seats 14 or 15 and as shown by dotted lines in Fig. 3, the exhaust gases entering the T-fitting are diverged through the depending leg 3 and into a Venturi tube now to be described. The valve is illustrated by dotted lines in a position assumed during movement thereof toward the valve seat 13. The coiled spring 25 is attached to the ear 12 of the cover plate 10 and also to the pin 26 carried by the lever 24 and said spring being disposed to exert closing movement for the valve 23 at opposite sides of the bearing shaft 20 carrying the valve and curved link.

A Venturi tube and suction pipe carried thereby is associated with the lower end of the depending leg 3 and comprises a tube section 27 having a reduced Venturi portion 28 with an elbow 29 at the opposite end of the tube. The open end of the elbow 29 is provided with a flange 30 mating with the flange 31 upon the lower end of the depending leg 3 and said flanges are secured together by the screw bolts 32 and 33, passing through openings in the flange 30 and entering the flange 31. To accommodate mounting of the stud screw 33 in view of the relative positions of the adjacent edge of the elbow flange 30 and elbow body, said Venturi tube and elbow are provided with spaced reinforcing ribs 34 to provide a sliding clearance for the head of the stud screw 33 as shown in Fig. 4, the opening 35 in the elbow flange 30 being an end opening slot which permits positioning of the stud screw 33 in the leg flange 31 and the subsequent sliding of the flange 30 into position, after which the stud screw 32 is passed through the opening in the flange 30 to be

threaded into the flange 31. This construction and operation for connecting the T-fitting to the Venturi tube is clearly illustrated in Figs. 4 and 6. A bearing ring 36 is formed at the closed end of the elbow 29 in line with the tube 27 and in which the suction pipe 37 is mounted, one end of the suction pipe projecting slightly outwardly of the bearing 36 for the reception of the flexible tube 38 while the other end of the suction pipe terminates within the Venturi portion 28 of the tube. It will therefore be seen from an inspection of Figure 4 that exhaust gas flowing through the exhaust pipe 1 will be diverted by the valve 23 engaging the valve seat 14 at the outlet end 5 of the T-fitting to cause the exhaust gas to flow through the depending leg 3 and tube 27 to create a suction in the pipe 37 to which the flexible hose 38 is connected that carries a vacuum nozzle 39 at its other end. When the valve 23 is operated by the lever 24 to be shifted to a position to engage the valve seat 15, action of the suction device is terminated and the exhaust gas flows directly through the T-fitting and outlet end of the exhaust pipe 1. When the valve 23 is moved toward the valve seat 15 from its position as shown by full lines in Fig. 4, the exhaust gases entering the T-fitting and contacting the valve disk 23 will have a tendency to cause the valve 23 to assume a perpendicular position relative to the valve seat 15 and to ensure seating movement of the valve 23, the lower edge thereof is engaged by the upper edge of the rib 17 to cause a tilting action of the valve against the action of the exhaust gases to move the valve to a horizontal position as indicated during the act of closing movement as shown by dotted lines in Figure 4.

The nozzle 39 shown in Fig. 2 embodies a widened and flattened mouth 40 having an inclined partition 41 adjacent each end of the mouth to provide a relatively wide intermediate entrance opening 42 and restricted end opening 43. A nozzle mouth of this character permits a more thorough cleaning of the interior of a motor vehicle, especially at the edges of floor mats or rugs as the entire suction of the entrance opening of the nozzle mouth may be closed except one of the end passages 41 which may be disposed over the edge of a mat to exhaust dirt or other foreign matter from the floor or other places. The brush element 44 shown in Figure 3 comprises a twisted core 45 that may be placed in enclosing relations with respect to the widened and flattened mouth 40 for loosening the dust and dirt and provide for a more thorough cleaning operation.

While there is herein described the preferred embodiment of the present invention, it is, nevertheless, to be understood that

minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

Having thus described my invention, I claim:—

1. In suction producing mechanism of the type described, a T-fitting having the cross head in communication with an exhaust pipe, a valve seat at the outlet end of the cross head and a valve seat at the lower end of the T-fitting leg, a single valve selectively cooperating with the two valve seats, manually operable means for moving the valve into engagement with either seat, a Venturi tube attached to the lower end of the T-fitting leg, a suction pipe extending into the Venturi tube, a support for the valve including a curved link with the valve pivotally attached to one end of the link, a pivotal mounting for the other end of the link, a handle for operating the link and valve and a spring associated with the handle and T-fitting for holding the valve in engagement with either seat.

2. In suction producing mechanism of the type described, a T-fitting having the cross head in communication with an exhaust pipe, a valve seat at the outlet end of the cross head and a valve seat at the lower end of the T-fitting leg, a single valve selectively cooperating with the two valve seats, manually operable means for moving the valve into engagement with either seat, a Venturi tube attached to the lower end of the T-fitting leg, a suction pipe extending into the Venturi tube, and a rib associated with the valve seat at the lower end of the T-fitting leg to be engaged by the edge of the valve during movement of the valve toward the same to tilt the valve against exhaust pressure and insure closing movement thereof.

3. In suction producing mechanism of the type described, a T-fitting having the cross head in communication with an exhaust pipe, a valve seat at the outlet end of the cross head and a valve seat at the lower end of the T-fitting leg, a single valve selectively cooperating with the two valve seats, manually operable means for moving the valve into engagement with either seat, a Venturi tube attached to the lower end of the T-fitting leg, a suction pipe extending into the Venturi tube, a support for the valve including a curved link with the valve pivotally attached to one end of the link, a pivotal mounting for the other end of the link, a handle for operating the link and valve and a spring associated with the handle and T-fitting for holding the valve in engagement with either seat, and a rib associated with the valve seat at the lower end of the T-fitting leg to be engaged by the edge of the valve during movement of the valve toward the same to tilt the valve against exhaust

pressure and insure closing movement thereof.

4. In suction producing mechanism of the type described, a T-fitting having the cross head in communication with an exhaust pipe, a valve seat at the outlet end of the cross head and a valve seat at the lower end of the T-fitting leg, a single valve selectively cooperating with the two valve seats, manually operable means for moving the valve into engagement with either seat, a Venturi tube attached to the lower end of the T-fitting leg, a suction pipe extending into the Venturi tube, the connection between the fitting leg and Venturi tube including abutting flanges, a headed screw stud secured to the T-fitting flange, spaced ribs carried by the Venturi tube between which the stud head is received, and a second screw stud threaded through the mating flanges.

5. In suction producing mechanism of the type described, a T-fitting having the cross head in communication with an exhaust pipe, a valve seat at the outlet end of the cross head and a valve seat at the lower end of the T-fitting leg, a single valve selectively cooperating with the two valve seats, manually operable means for moving the valve into engagement with either seat, a Venturi tube attached to the lower end of the T-fitting leg, a suction pipe extending into the Venturi tube, a support for the valve including a curved link with the valve pivotally attached to one end of the link, a pivotal mounting for the other end of the link, a handle for operating the link and valve and a spring associated with the handle and T-fitting for holding the valve in engagement with either seat, the connection between the T-fitting leg and Venturi tube including abutting flanges, a headed screw stud secured to the fitting flange, spaced ribs carried by the Venturi tube between which the stud head is received, and a second screw stud threaded through the mating flanges.

6. In suction producing mechanism of the type described, a T-fitting having the cross head in communication with an exhaust pipe, a valve seat at the outlet end of the cross head and a valve seat at the lower end of the T-fitting leg, a single valve selectively cooperating with the two valve seats, manually operable means for moving the valve into engagement with either seat, a Venturi tube attached to the lower end of the T-fitting leg, a suction pipe extending into the Venturi tube, a rib associated with the valve seat at the lower end of the T-fitting leg to be engaged by the edge of the valve during movement of the valve toward the same to tilt the valve against exhaust pressure and insure closing movement thereof, and a hollow web connecting the outlet end of the cross head and T-fitting leg in which the valve link is pivotally mounted.

7. In suction producing mechanism of the type described, a T-fitting having the cross head in communication with an exhaust pipe, a valve seat at the outlet end of the cross head and a valve seat at the lower end of the T-fitting leg, a single valve selectively cooperating with the two valve seats, manually operable means for moving the valve into engagement with either seat, a Venturi tube attached to the lower end of the T-fitting leg, a suction pipe extending into the Venturi tube, a support for the valve including a curved link with the valve pivotally attached to one end of the link, a pivotal mounting for the other end of the link, a handle attached to the pivoted end of the link for operating the link, valve and a spring attached to the handle and T-fitting for holding the handle at its limit of movement in opposite directions with the valve in engagement with either seat, and a rib associated with the valve seat at the lower end of the T-fitting leg to be engaged by the edge of the valve during movement of the valve toward the same to tilt the valve against exhaust pressure and insure closing movement thereof.

In testimony whereof I affix my signature.

ASSEN JORDANOFF.