Feb. 4, 1936. J. C. McLEAN 2,029,781

RECEIVING AND TRANSFERRING DEVICE

Filed Jan. 31, 1934 2 Sheets-Sheet 1

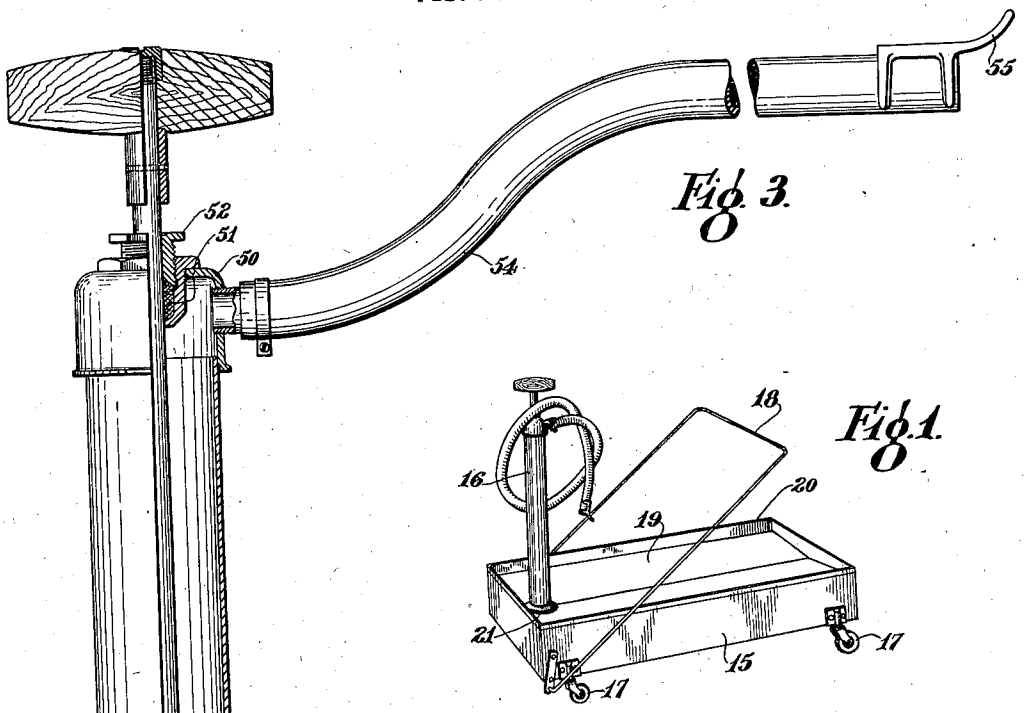
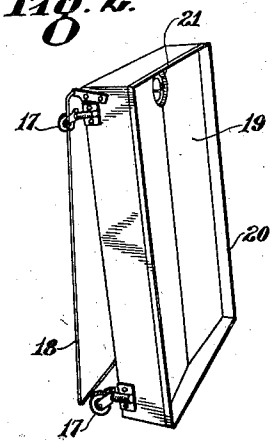


Fig. 3.

Fig. 1.

Fig. 2.



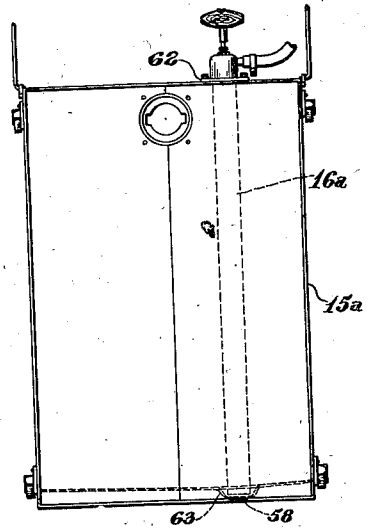


Fig. 5.

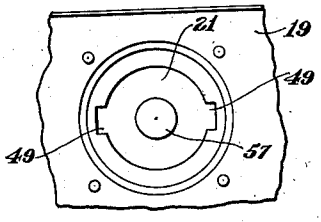


Fig. 4.

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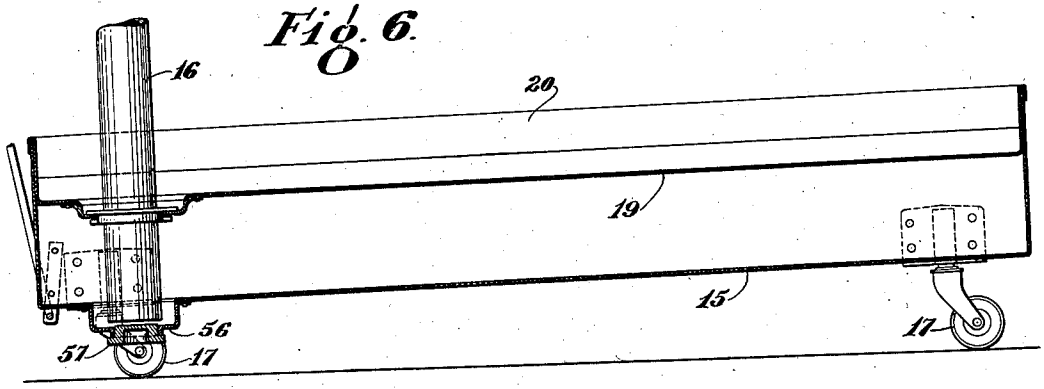
Fig. 6.



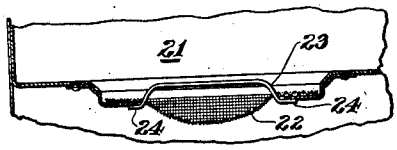


Fig. 7.

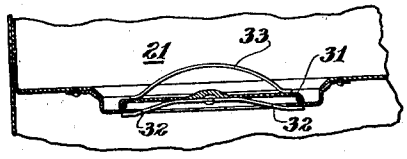


Fig. 8.

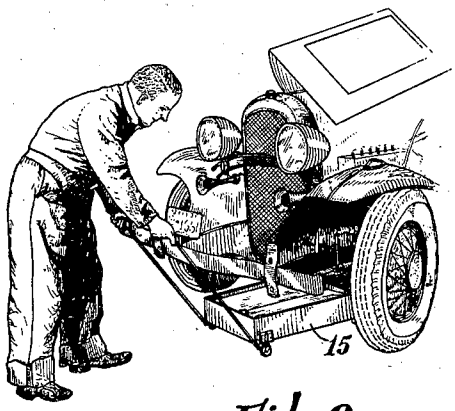


Fig. 9.

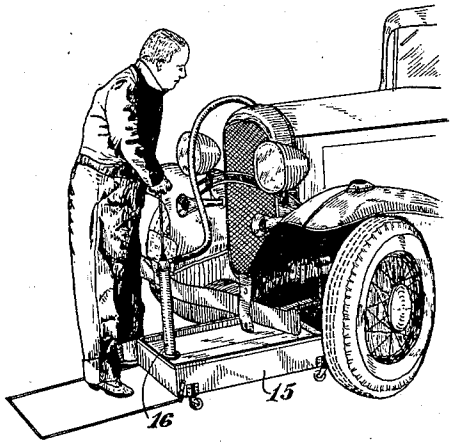


Fig. 10.

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UNITED STATES PATENT OFFICE

2,029,781

RECEIVING AND TRANSFERRING DEVICE

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Application January 31, 1934, Serial No. 709,143

2 Claims. (Cl. 221—69)

My invention relates in general to receiving and transferring devices and more particularly to devices adapted to receive the fluid removed from a fluid system and to transfer the removed fluid either back into the said system or into any other place of disposal.

An object of my invention is the provision of a receptacle adapted to receive the fluid removed from a fluid system, such for example, as from the fluid system of a motor vehicle.

Another object of my invention is the provision of a transfer pump adapted to transfer the fluid contained in my fluid receptacle either back into the fluid system of the motor vohicle or into any other place of disposal.

A further object of my invention is the provision of a receptacle having a deck adapted to receive the fluid from a fluid system, such as from a motor vehicle, and to direct the fluid through a screen into the receptacle.

Another object of my invention is to provide for so constructing the receptacle and the deck thereof that the fluid drained from a fluid system will not splash upon the floor or other surface while the fluid is being drained therefrom.

A still further object of my invention is the provision of a receptacle that can be set up on end and placed out of the way until it is ready for use.

Another object of my invention is the provision of a receptacle for receiving the fluid drained from the fluid system of a motor vehicle, or the like, in which the receptacle may be removed from underneath the motor vehicle without spilling the fluid.

Another object of my invention is the provision of a pump which allows the fluid contained in the cylinder to flow freely therefrom without a vacuum being created in the pump when the pump is held in an elevated and inverted position so as to cause the fluid contained in the cylinder of the pump to flow by means of gravity therefrom.

Another object of my invention is the provision of so constructing the receptacle and the pump that the pump may be detachably connected to the receptacle, in which case a single pump may be used with a relatively large number of receptacles.

A still further object of my invention is the provision of a pump permanently mounted within my receptacle for transferring the fluid contained in the receptacle back into the fluid system of a motor vehicle or into any other place of disposal.

Other objects and a fuller understanding of my invention may be had by referring to the following description and claims, taken in combination with the accompanying drawings, in which like parts are designated by like reference characters, and in which:

Figure 1 is a perspective view of my receptacle and detachable pump adapted to receive the fluid drained from the fluid system of a motor vehicle and to transfer it back into the said system;

Figure 2 is a perspective view of my receptacle set up on one end, and shows the manner in which it may be placed or stored out of the way until ready for use;

Figure 3 is an enlarged view of the detachable pump, parts being shown in section to illustrate the detailed construction thereof;

Figure 4 shows a plan, and an enlarged view of the opening in the deck of the receptacle;

Figure 5 shows a modified arrangement of my invention, in that the pump is mounted within, and longitudinally of, the receptacle;

Figure 6 represents an enlarged cross-sectional view of my receptacle, taken through the longitudinal center thereof, and shows, in addition thereto, a fragmentary view of the lower end of the detachable pump;

Figure 7 shows an enlarged cross-sectional view of the screen that is removably adapted to fit into the opening through which the fluid flows as it passes from the deck into the receptacle;

Figure 8 is an enlarged cross-sectional view of a closure removably adapted to fit the opening of the receptacle and disposed to prevent the fluid contained in the receptacle from spilling;

Figure 9 is a view showing the easy manner in which the receptacle may be positioned beneath a motor vehicle, and

Figure 10 shows the manner in which the fluid in the receptacle may be pumped back into the fluid system of the motor vehicle.

With particular reference to the drawings, my invention comprises a receptacle 15 and a cooperatively associated detachable pump 16.

The receptacle 15 may be constructed of heavy gage, galvanized iron, or other suitable material, equipped with four sets of casters 17 suitably swiveled to the receptacle 15 so that the receptacle 15 may be easily moved about or pushed beneath a motor vehicle by means of the bail handle 18, which is pivotally connected to the front end of the receptacle 15. The height, length and width of the receptacle 15 depends primarily upon the use to which it is employed. Thus, when the receptacle 15 is used to drain the water or oil

from a motor vehicle, being the embodiment of my invention illustrated in the drawings, the receptacle is constructed low enough to be positioned underneath a motor vehicle of any make, even though one or more of the tires may be deflated. Also, the length and width of the receptacle 15 is large enough to catch the water or the oil drained from the drain outlet on a motor vehicle of any make without needlessly shifting the receptacle under the motor vehicle, see Figure 9. This means that when using the receptacle 15 it is only necessary for the operator to push the receptacle 15 under the motor vehicle without taking very much pains, or without considering particularly whether the drain outlet is near the front or rear, or to either side of the engine because, in any event, the receptacle 15 is large enough to accommodate the drain outlets upon any motor vehicles. Often the drain outlet is so located that the water from the cooling system of the motor vehicle will drain on a front axle or upon the tie-rod, thus splashing the water in all directions, in which case it is impossible to catch all of the water in an ordinary container such as, for example, a small pan or bucket. However, because of the size of my receptacle 15 it is possible to catch all of the water drained from the fluid system of a motor vehicle notwithstanding the fact that the water may drain on the front axle or upon the tie-rod.

To prevent the possibility of the fluid which is drained from the fluid system of a motor vehicle from splashing over the edge of the receptacle 15 I provide for constructing the deck 19 with an inwardly sloping surface so that the water is caused to run towards the center of the deck 19 and thence flow through an opening 21 into the receptacle 15. The inwardly sloping surface of the deck 19 is such that very little fluid is permitted to splash over the edge of the receptacle 15, except for a very small amount which may splash over in some cases when the stream initially strikes the deck 19 before the deck 19 has a chance to become wet. After the deck 19 becomes wet, and because of the affinity of the falling stream of fluid to the wet surface of the deck 19, there is no splashing whatsoever and the fluid calmly flows over the deck 19 and through the opening 21 into the receptacle 15.

To prevent the splashing of the fluid over the edge of the receptacle 15, which occurs when the stream initially strikes the deck 19, there is provided a marginal wall 20 which is high enough to prevent the splashing over of the fluid, and still not too high to prevent the receptacle 15 from being pushed under motor vehicles of all types, even though one or more of the tires may be deflated.

The sets of casters 17 are so equipped that the front end of the receptacle 15 is slightly lower than the rear end. This inclination causes the fluid contained in the receptacle 15 to flow towards the front end of the receptacle 15 into a sump 56 in which the suction end of the pump 16 is positioned, see Figure 6. Accordingly, substantially all of the fluid contained in the receptacle 15 may be removed from the receptacle for the reason that the sump 56 is the lowest point to which the fluid contained in the receptacle 15 may flow, and from which the pump 16 is able to pump out substantially all of the fluid except for a very small amount which lies below the bottom of the suction end of the pump 16.

The pump 16 is particularly adaptable to my receptacle 15 for pumping the fluid contained in the receptacle 15 back into the fluid system of the motor vehicle, see Figure 10. The pump 16 is arranged to be detachably connected to the opening 21 of the receptacle 15. To this end the lower end of the cylinder 34 of the pump 16 is provided with a flange 47 which rests upon the peripheral edge of the opening 21. Beneath the flange 47 are two oppositely disposed engaging lugs 48 which align with the two oppositely disposed notches 49. Therefore, to attach the pump 16 within the opening 21 it is only necessary for the operator to align the two engaging lugs 48 with the two notches 49 and then turn the pump 16 until the pump pulls tight, at which point the pump 16 is rigidly secured in an upright position to the receptacle 15.

The suction valve assembly 38 is located in the lowermost end of the cylinder 34 of the pump 16 and comprises, generally, an annular sleeve 39 having openings 41, a suction valve 42 which rests upon the upper surface of the annular sleeve 39, and a valve guide 43 which is suitably connected to the central portion of the annular sleeve 39. The entire suction valve assembly 38 may be held within the end of the pump 16 by means of a pin 40. To limit the amount that the suction valve 42 may be raised from the upper surface of the annular sleeve 39 there is provided on the upper end of the valve guide 43 an enlarged portion, which constitutes a stop for the suction valve 42. Accordingly, when the fluid is drawn into the pump 16 upon the suction stroke of the pump the suction valve 42 is raised and allows the fluid to flow through the openings 41, and when the suction stroke is terminated the suction valve 42 is constrained to press against the upper surface of the annular sleeve 39 and thus closes the openings 41, which prevents any of the fluid contained in the cylinder 34 of the pump 16 from flowing back into the sump 56 of the receptacle 15.

The valve assembly for the piston 35 is similar to the suction valve assembly 38, and comprises a piston valve 45 which rests upon the upper surface of the piston 35 for closing the openings 44 which extend through the piston 35. In order to limit the amount that the piston valve 45 may be raised there is provided a pin 46 within the stem 37 of the pump 16. The pin 46, in this manner, constitutes a stop for the upper limit of travel for the piston valve 45. During the suction stroke of the piston 35 the piston valve 45 is constrained against the upper surface of the piston 35, and thus closes the openings 44 which extend through the piston 35, and upon the downward stroke of the piston 35 the piston valve 45 is raised and allows the fluid beneath the piston 35 to flow through the openings 44 in the piston 35 to the cylinder 34 of the pump 16, which is above the piston 35. As illustrated, the piston 35 is provided with two annular grooves 36, which during the pumping operation become filled with the fluid being pumped. In this manner the fluid which is contained between the grooves 36 and the inner walls of the cylinder 34 of the pump 16 constitutes a good seal, and thus very little fluid, if any, is allowed to leak between the piston 35 and the inner wall of the cylinder 34. I find, in actual operation, that the fluid such as the anti-freeze solutions for the radiator attacks leather and rubber, or any other gasket material, and for this reason I have obviated the use of such packing material to provide a seal between the piston 35 and the inner wall of the cylinder 34 of the pump 16. Therefore, my pump 16, as it is constructed solely of metal parts needs no at-

tention whatsoever as would be the case if rubber, leather, or other packing material were used to provide a seal between the piston 35 and the inner wall of the cylinder 34 of the pump 16.

The upper end of the cylinder 34 of the pump 16 is provided with a pump header 50, which may be welded or otherwise suitably connected to the cylinder 34. In accordance with the general construction of pumps the header 50 is provided with a packing 51, which is constrained to press inwardly against the pump stem 37 by means of a packing nut 52 threadably engaged within the header 50. Attached to the pump header 50 is a hose 54 having a hook 55 attached to the end thereof. The hook 55 is particularly adaptable with the new radiators for motor vehicles in which there is a baffle plate positioned above the tubes of the radiator, in which case the upturned and extended portion of the hook 55 is allowed to hook under the ledge of the neck of the radiator to prevent the hose 54 from being detached from the radiator during the pumping operation.

The complete operation of my invention may be described as follows: Let it be assumed that it is necessary to drain the fluid from the cooling system of a motor vehicle, which occasion may arise in putting on a hot water heater, installing a new hose or repairing the radiator for any other purpose. If the motor vehicle contains an antifreeze solution it may be drained into the receptacle 15 until the repairs are made and then pumped back into the motor vehicle after the repairs are made. To carry out this operation the receptacle 15 is pushed beneath the motor vehicle for catching the fluid drained from the motor vehicle, see Figure 9. After the receptacle 15 is placed beneath the motor vehicle the operator operates the drain outlet and allows the water to drain into the receptacle 15. In order to keep the fluid clean there is provided in the opening 21 of the receptacle 15 a screen 22 having a handle 23 and engaging lugs 24, which holds the screen 22 within the opening 21. In some cases the motor vehicles may be parked quite close together, or may be parked near the wall of the building, and in these cases the operator edges the receptacle 15 in an upright manner between the closely spaced cars, or between the car and the wall, and gradually works the bottom end of the receptacle 15 under the motor vehicle as the upper end of the receptacle 15 clears the adjacently placed car or the closely spaced wall. After the fluid is then drained into the receptacle 15 the operator may grasp the bail handle of the receptacle 15 and withdraw the receptacle 15 from beneath the motor vehicle at the same time lifting the front end of the receptacle 15 to clear the adjacent motor vehicles, or the closely spaced wall. Therefore, it is noted that the deck 19 constitutes an enclosure for the receptacle 15 so that the receptacle 15 may be withdrawn from beneath a motor vehicle without any of the fluid surging or spilling on the floor, or other surface beneath the car. When the receptacle 15 is withdrawn from beneath the motor vehicle it may be set up on end out of the way until the fluid is to be pumped back into the fluid system of the motor vehicle, see Figure 2. In this upturned position the bail handle 18 may act as a prop to prevent the receptacle 15 from falling over.

After the repairs are made, or when it is time to transfer the fluid contained in the receptacle 15 back into the fluid system of a motor vehicle the pump 16 is then attached to the receptacle 15 and the end of the hose 54 is inserted within the fluid system of the motor vehicle, see Figure 10. Upon the suction stroke of the pump 16 the fluid is drawn into the cylinder 34 through the openings 41 and past the suction valve 42. Upon the downward stroke of the pump 16 the fluid contained beneath the piston 35 is forced through the openings 44 and past the piston valve 45 into the space above the piston 35. Upon the return suction stroke the fluid that is contained in the pump 16 above the piston 35 is forced through the hose 54 into the fluid system of the motor vehicle, during which suction stroke another supply of fluid is withdrawn from the receptacle 15 into the suction pump beneath the valve 35. The pumping operation is then continued until all of the fluid is withdrawn from the receptacle 15 leaving only a very small amount within the sump 56.

As for the fluid which remains in the pump 16 after all the fluid is substantially withdrawn from the sump 56, this fluid may be likewise discharged into the fluid system of the motor vehicle. This may be done in the following manner. After the pumping operation is completed the operator disconnects the pump 16 from the receptacle 15 and then elevates the pump 16 at the same time gradually tilting the pump so that the fluid contained in the pump 16 will run, by means of gravity, into the fluid system of the motor vehicle. Inasmuch as both the suction valve 42 and the piston valve 45 are open when the pump 16 is tilted to its inverted position, the fluid contained within the pump 16 will freely flow into the fluid system of the motor vehicle without causing any vacuum being created in the pump, which vacuum if allowed to exist would tend to retard the free flow of the fluid contained in the pump 16 to the cooling system of the motor vehicle. The operator when elevating and tilting the pump 16 to discharge the fluid contained in the pump 16 to the fluid system of the motor vehicle may so elevate and tilt the pump 16 as to cause the rate at which the fluid flows into the fluid system to be rather gradual without causing any of the fluid to run over the neck of the radiator of the motor vehicle.

Therefore, by means of my invention the antifreeze solution in motor vehicles may be withdrawn into my receptacle while making repairs, and then pumped back into the motor vehicle without wasting any of the antifreeze solution.

In some of the service stations which service a great many motor vehicles, there is a necessity for a large number of the receptacles 15, in which case one pump may serve several receptacles. Also, in some cases, it is desirable to close the opening 21 to prevent any evaporation or any accidental spilling of the fluid contained in the receptacle 15 through the opening by accidentally knocking over the receptacle 15 when it is set up on one end out of the way. To guard against the wasting of the fluid contained in the receptacle 15 there is provided a lid 31 for the opening 21, see Figure 8. As illustrated, the lid 31 has a handle 33 and two engaging fingers 32, which securely hold the lid 31 within the opening 21.

In Figure 5 I show a modification of my invention in that a pump 16*a* is mounted within a receptacle 15*a*, by means of a pump flange 62 bolted or otherwise connected to the front end of the receptacle 15*a*. As illustrated, the suction end of the pump 16*a* is positioned within a sump

63 provided in the rear end of the receptacle 15*a* so that by setting up the receptacle 15*a* in an upright manner the sump 63 becomes the lowest point within the receptacle 15*a* so that substantially all of the fluid may be withdrawn therefrom by means of the pump 16*a*. In both of the receptacles 15 and 15*a* there is provided a drain plug 57 and 58 respectively for draining the fluid from the receptacles.

While I have explained the operation of my invention in connection with principally draining the fluid from the cooling system of a motor vehicle it is to be clearly understood that my invention may likewise be used in connection with withdrawing the oil from the engine, or for withdrawing the fluid from any other fluid system whether or not it is related to a motor vehicle.

Although I have described my invention with a certain degree of particularity, it is understood that the present disclosure has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

I claim as my invention:

1. A combined receptacle and pump device adapted to receive the fluid removed from a fluid system of a motor vehicle having a drain outlet located relatively close to a floor or other surface and adapted to transfer the removed fluid back into the said system comprising in combination, a relatively long and low receptacle adapted to fit between the said drain outlet and the relatively close spaced floor or other surface, said receptacle having a deck adapted to receive the fluid from the drain outlet and to direct the fluid into the receptacle, the said deck constituting an enclosure for the receptacle so that the receptacle may be removed from between the said drain outlet and the relatively close spaced floor or other surface without spilling or wasting the fluid contained in the receptacle, marginal means projecting upwardly from the deck to prevent splashing of the removed fluid upon the floor or other surface, said deck having an opening in one end thereof through which the removed fluid passes as it flows from the deck into the receptacle, sump means arranged in the bottom of said receptacle and positioned beneath and substantially in alignment with the said opening, a drain plug for said sump, a detachable pump having a cylinder adapted to extend through said opening and extend into said sump means, means for removably supporting the pump in an upright position within said opening, said supporting means including engaging means connected to said cylinder and adapted to extend out and engage the deck portion adjacent the opening, and a conduit attached to the pump for transmitting the fluid from the pump directly back into the fluid system of the motor vehicle.

2. A fluid transferring device adapted to receive the fluid from the opened drain outlet of the fluid cooling system of a motor vehicle and to transfer the said fluid into the inlet of the said fluid system, comprising in combination, a receptacle having an upper portion for receiving the fluid as it flows from the motor vehicle and a lower portion for containing the said fluid, the receptacle having an inwardly sloping deck between the upper portion and lower portion and having marginal means around the said deck for preventing the splashing of fluid off the deck, the said deck having an opening located at substantially the lowest level thereof to provide an open passageway between the upper portion and the lower portion of the receptacle to permit the flow of fluid from the deck into the lower portion, sump means in the lower portion of the receptacle directly below the said opening in the deck, a detachable pump adapted to be inserted through the said opening and extend into the said sump means, a bayonet socket secured to said deck and adapted to detachably engage the said pump and to detachably support the said pump in an upright position, a flange and lugs attached to said pump adapted to engage said bayonet socket, and a flexible conduit attached to the pump adapted to transfer fluid from the pump, the combination of the receptacle, the pump and the conduit being such that fluid from the opened drain outlet of the fluid system falls upon the deck of the receptacle, flows down the deck through the opening thereof and into the lower portion of the receptacle, and thence is pumped back up into the inlet of the fluid system of the motor vehicle through the opening by means of the pump and the conduit.

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