June 25, 1957 E. B. PARKES 2,797,131

VEHICLE-WINDSCREEN WASHERS

Filed July 15, 1954 3 Sheets-Sheet 1

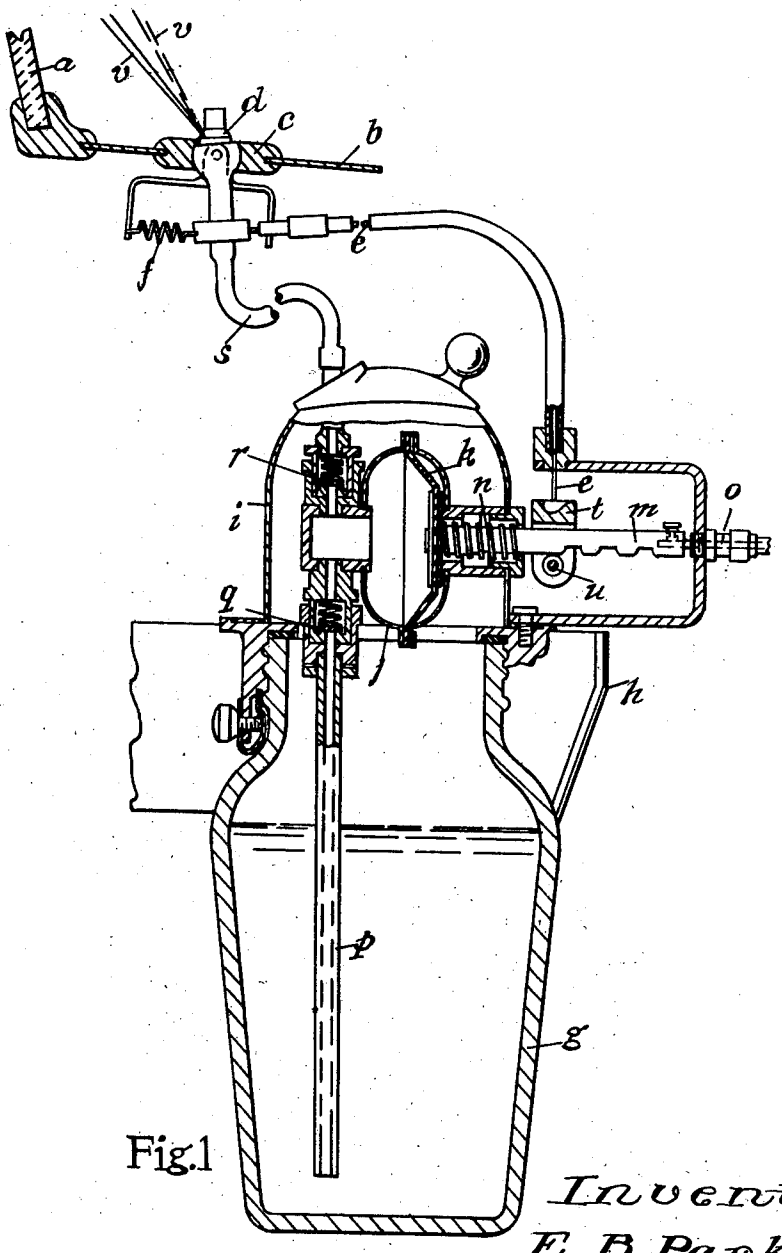


Fig.1

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3 Sheets-Sheet 2

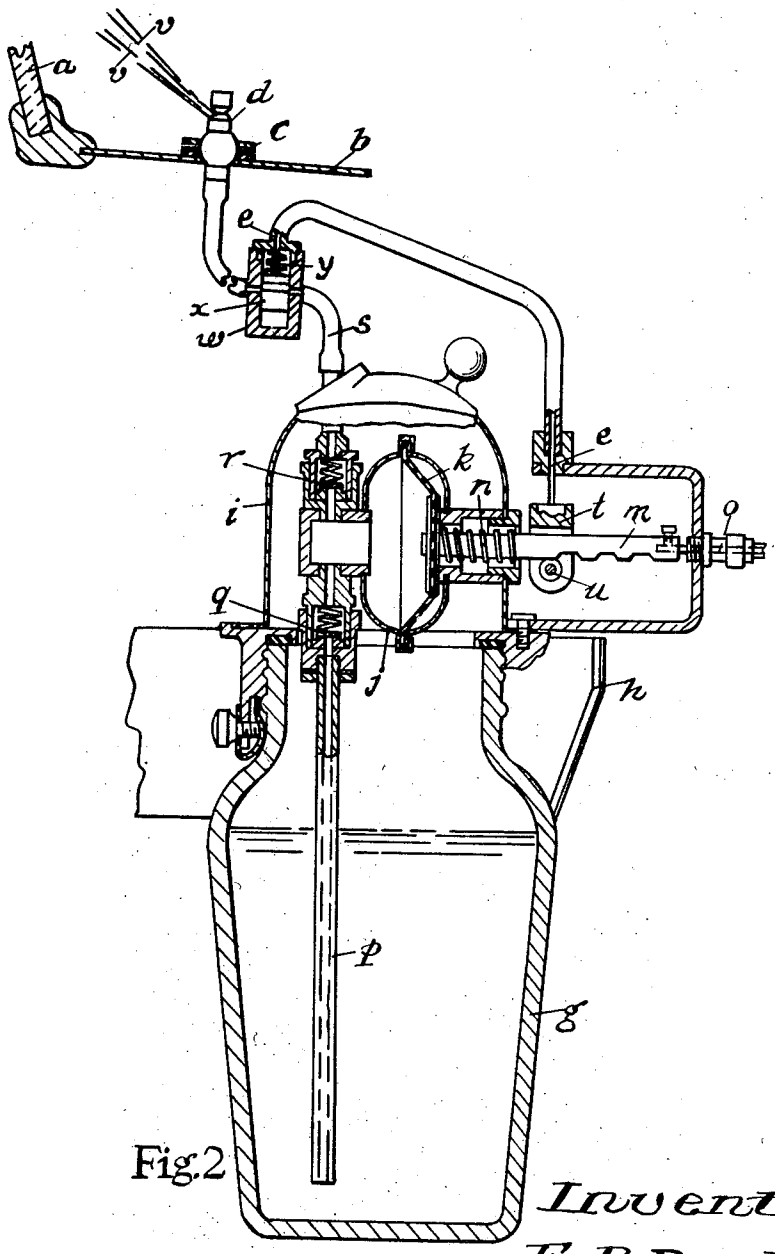


Fig.2

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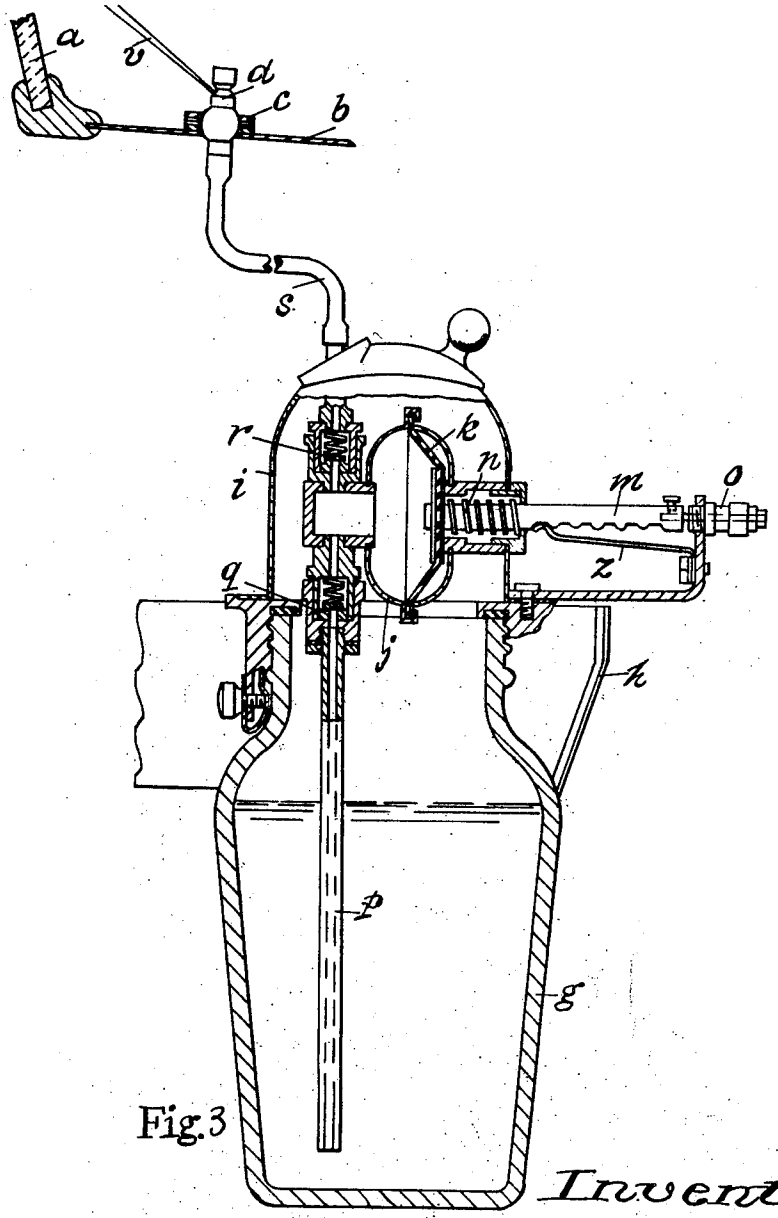


Fig.3

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VEHICLE-WINDSCREEN WASHERS

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Application July 15, 1954, Serial No. 443,681

6 Claims. (Cl. 299—58)

This invention relates to vehicle-windscreen washers of the type comprising a small pump, the suction stroke of which is effected by hand or power means, and the delivery stroke by a spring. The pump is adapted to direct a small jet of water on to the area of the windscreen which is swept by the windscreen wiper, or on to each of two of such areas. In a washer of conventional form, the spreading of the water after the jet has struck the windscreen is relied upon for covering the area to be cleaned.

It has been found that a washer operating as above described is not entirely satisfactory, for the reason that it does not result in uniform cleaning of a sufficiently wide area, and the object of the present invention is to provide a more effective washer.

The invention comprises a washer having combined therewith means for effecting oscillation of the jet, and thereby causing it to sweep over an adequate area of the windscreen.

In the accompanying drawings:

Figure 1 is a sectional view illustrating one embodiment of the invention.

Figure 2 is a similar view to Figure 1 illustrating another embodiment of the invention.

Figure 3 is another similar view to Figure 1 illustrating a further embodiment of the invention.

Referring to Figure 1, a portion of the windscreen of a vehicle is indicated by *a*, and a portion of the adjacent engine bonnet is indicated by *b*. On the bonnet is secured a bearing piece *c* of any convenient construction on which a nozzle *d* is swivelled to oscillate about a horizontal axis. Angular movement of the nozzle in one direction is effected by a flexible cable *e* and in the opposite direction by a spring *f*.

The water or other cleansing liquid is contained in a bottle *g* which is carried in any convenient position within the engine bonnet by a bracket *h*, the upper end of the bottle having a screw-thread or other detachable connection with the bracket. On the bracket and above the neck of the bottle is mounted a housing *i* for the pump.

The pump in the example shown is of the diaphragm type and comprises a working chamber *j* containing a flexible and movable diaphragm *k*. Actuation of the diaphragm is effected by a reciprocatory rod *m* which is movable in one direction by a spring *n* and in the other direction by a flexible cable *o*, the cable *o* being operable by hand or mechanical means for effecting the suction-movement of the diaphragm, the discharge movement being effected by the spring. To the pump chamber *j* is secured a pipe *p* which extends into the bottle and is provided with spring-loaded suction and delivery valves *q*, *r*. The upper end of the pipe is connected by a flexible tube *s* to the inlet end of the oscillator nozzle *d*.

The reciprocatory rod *m* is embraced by a stirrup *t* which is attached to the above mentioned cable *e*, and is provided with a roller *u* which co-operates with cam-like notches formed in the underside of the rod.

The arrangement is such, that when the pump is actuated the interaction of the rod *m* and the roller *u* of the stirrup *t* causes an oscillatory motion to be transmitted to the nozzle *d* through the cable *e*, so causing the emergent liquid jet *v* to sweep in a vertical plane over the part of the windscreen to be washed.

In the construction shown in Figure 2 the nozzle *d* is fixed, and between the inlet end of the nozzle and the outlet end of the pipe *p* is arranged a throttle valve which is connected to the pipe *p* and the nozzle by flexible tubes *s*. The valve comprises a fixedly mounted hollow cylinder *w* and a grooved piston-like part *x* which is loaded by a spring *y*, the said part *x* being movable in one direction by the stirrup-actuated cable *e*, and in the opposite direction by the spring *y*. The arrangement is such that while the pump is in action, the throttle causes successive fluctuations in the velocity of the liquid supplied to the nozzle, and consequent deviations of direction of the emergent jet in a vertical plane, so causing the jet to sweep over the area of the windscreen to be washed.

In the construction shown in Figure 3, the notches in the rod *m* co-operate with a spring pawl *z* which by its intermittent retarding action on the rod *m* when the latter is moved by the spring *n* causes the pump diaphragm to move in a jerky manner and so causes the jet to issue at a fluctuating rate and with consequent changes of direction in a vertical plane.

The invention is not, however, restricted to the examples above described, as the required oscillation of the jet may be produced by other means whose action is co-ordinated with that of the pump. Further instead of a diaphragm-type pump, a reciprocatory piston pump may be used.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. A vehicle windscreen washer of the type specified, comprising in combination a small liquid pump having spring-loaded suction and delivery means through the medium of which the delivery stroke of the pump is performed under spring action, a nozzle for directing a jet of liquid from the pump on to the windscreen, and control means including a reciprocating rod having a plurality of cam-like notches for causing the liquid jet to oscillate in a vertical plane during discharge of the pump.

2. A vehicle windscreen washer of the type specified, comprising in combination a small liquid pump having spring-loaded suction and delivery means through the medium of which the delivery stroke of the pump is performed under spring action, an oscillatory nozzle for directing a jet of liquid from the pump on to the windscreen, and control means for oscillating the nozzle about a horizontal axis to cause oscillation of the emergent liquid jet in a vertical plane during the action of the pump.

3. A vehicle windscreen washer according to claim 2, in which the control means comprises in combination a reciprocatory member through which the pump is operable, and which is formed with a plurality of cam-like notches, and means connected to the oscillatory nozzle and arranged to co-operate with the said notches for effecting oscillation of the nozzle.

4. A vehicle windscreen washer of the type specified, comprising in combination a small liquid pump having spring-loaded suction and delivery means through the medium of which the delivery stroke of the pump is performed under spring action, a fixed nozzle for directing a jet of liquid from the pump on to the windscreen, and control means including a reciprocating rod having a plurality of cam-like notches for producing fluctuations in the delivery rate of the pump to cause oscillation of the emergent liquid jet in a vertical plane.

5. A vehicle windscreen washer according to claim 4, in which the control means comprise in combination a reciprocatory member through which the pump is operable, a spring-loaded reciprocatory valve for controlling liquid flow from the pump to the nozzle, and means for co-operating with the notches to actuate the valve and thereby cause oscillation of the liquid jet emerging from the nozzle.

6. A vehicle windscreen washer according to claim 4, in which the control means comprise in combination a reciprocatory member through which the pump is operable, and spring means for co-operating with the notches to cause oscillation of the liquid jet emerging from the nozzle.

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