

G. S. LANE.
 AUTOMATIC OILER.
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1,360,768.

Patented Nov. 30, 1920.

Fig. 1.

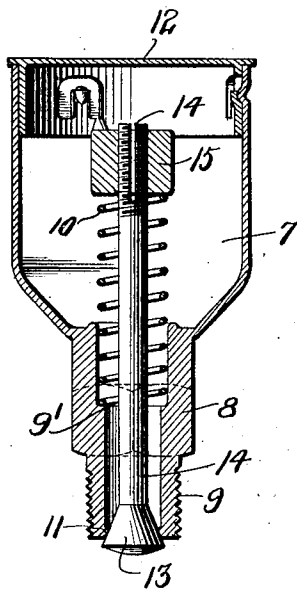


Fig. 2.

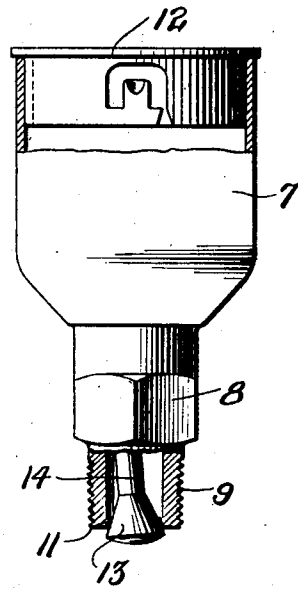
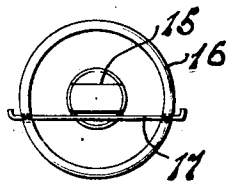


Fig. 3.



WITNESS:

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AUTOMATIC OILER.

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To all whom it may concern:

Be it known that I, GUY S. LANE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Oilers, of which the following is a specification.

This invention relates to automatic oilers, and it has for one of its primary objects the provision of an improved controlled feed oiler for use on automobiles, pneumatic spring or cushion devices, such for example as the Westinghouse air spring, and the like.

Another object of my invention resides in the provision of an improved automatic oiler so constructed that the parts may be readily adjusted without taking the device apart.

Another object of my invention resides in the provision of an improved form of feed control mechanism which is capable of adaptation to standard forms of oil cups, without necessitating alterations thereof.

The foregoing together with such other objects as may hereinafter appear, or are incident to my invention, I obtain by means of a construction which I have illustrated in preferred form in the accompanying drawings, wherein—

Figure 1 is a cross section through an oil cup embodying my improvements; Fig. 2 is a side elevation of Fig. 1, partially in section to illustrate the operation of the control mechanism; and Fig. 3 is a plan view of a modified detail of my invention.

Referring now to the drawing, the oil cup is designated by the reference number 7, the cup being provided with a neck 8 reduced at its lower end and externally threaded as at 9. The feed channel in the neck which communicates with the interior of the cup is reduced in diameter a short distance from the top of the neck leaving an annular shoulder 9 adapted to form a seat for the spring 10, the function of which will hereinafter be set forth. At the bottom the neck is constructed to provide a valve seat 11. The cup is provided with any suitable form of cover, such for example as the bayonet joint lid 12.

The flow from the cup is controlled by means of the valve 13, such valve being preferably conical in shape and being provided with a long stem 14 which has a diameter considerably less than the internal diameter

of the neck 8, particularly with respect to those portions above the valve seat. The valve stem projects well within the cup and it is externally threaded at its upper end, such end being slotted as at 14 and sprung outwardly. A weight 15 is threaded on the upper end of the stem and is held in any desired position of adjustment by the spring action of the slotted portion of the stem. Any suitable member may be used for such weight. The spring 10 is interposed between the shoulder 9 and the weight 15 and serves to hold the valve 13 in closed position. The seat 11 is relatively shallow, that is to say the portions with which the valve 13 comes in contact are relatively very short in depth, the purpose of which will appear.

The operation of the oiler is as follows. Assuming that the oiler is used on an air-spring of an automobile, for example, there is ordinarily no vertical jolting of sufficient sharpness to cause the weight 15 to unseat the valve 13 against the pressure of the spring 10. However, with the car in motion there is sufficient lateral motion or vibration to cause the valve stem 14 and weight 15 to swing somewhat like an inverted pendulum, causing the valve 13 to rock on its seat in the manner illustrated in Fig. 2. This partial unseating of the valve permits oil to flow in sufficient quantities to lubricate the air spring. The peculiar operation of the valve just described is brought about because the valve is made top heavy by virtue of the provision of the weight 15 at the top of the valve stem, and because sufficient space is provided in the neck 8 to permit the valve stem to sway and because the valve seat is relatively shallow. The degree of opening and therefore the rate of oil feed may be adjusted by means of the weight 15 which when shifted not only alters the compression of the spring but also the balance of the valve, the combination of which factors makes it possible to adjust the rate of feed very closely to the amount desired. It will be apparent that when the vibration ceases the valve will be immediately returned to its seat by the action of the spring, thus cutting off the flow of oil and eliminating wastage.

If the oiler be placed on the car at points where there is jolting in a vertical direction, as for instance on the axles, in addition to the unseating of the valve resulting from the swaying of the valve stem, before described,

the valve may be opened by reason of the fact that the inertia of the valve, valve stem and weight, when in motion may be sufficient to overcome the pressure of the spring 10.

5 In assembling the device the stem 14 is passed through the neck, the spring 10 slipped into position and the weight 15 turned on the stem. With the parts in assembled position, if it be desired to adjust
10 the tension of the spring, this may be accomplished by grasping the weight by the hand or with a tool and turning the stem by inserting a screw driver, or the like, in the slot 14. It is thus not necessary to re-
15 move the cup for purposes of adjustment. It will be seen from the foregoing that oil cups of standard design may be readily equipped with the automatic control valve mechanism, in which connection it is to be
20 observed that with the possible exception of the valve seat 11 the standard forms of oil cups respond very closely to the structure shown and described. If desired a seat could be provided in the standard types by
25 a suitable reaming tool. It will be apparent that the cup may be used on any apparatus subject to sufficient vibration to unseat or partially unseat the valve.

30 Another advantage incident to the arrangement is that the cup may be readily flushed.

In Fig. 3, instead of slotting the valve stem, I flat the upper end on both sides, as at 15, and provide the weight 15 with an
35 annular lip 16 which is slotted to receive the wire 17 adapted to yieldingly bear against the flattened portions of the stem and thus releasably hold the weight in positions of adjustment. In order to retain the wire,
40 the metal adjacent the slots may be peened with a suitable tool.

I claim.

1. The combination with an oil cup having a tubular neck, of a valve seat in the
45 bottom portion of said neck, an upwardly seating valve controlling the flow of oil through said neck and having a stem of smaller diameter than the internal diameter of the neck extending upwardly there-
50 through into the cup, yielding means seated above the plane of the valve seat normally pressing the valve upwardly against the valve seat, said stem being capable of lateral swinging to partially unseat the valve.

55 2. The combination with an oil cup having a tubular neck, of a valve seat in the

bottom portion of said neck, an upwardly seating valve controlling the flow of oil through said neck and having a stem of smaller diameter than the internal diameter
60 of the neck extending upwardly there-through into the cup, yielding means seated above the plane of the valve seat normally pressing the valve upwardly against the valve seat, said stem being provided with
65 an adjustable weight at the upper end thereof and being capable of lateral swinging to partially unseat the valve, and the upper end of said yielding means bearing on said weight.

70 3. The combination with an oil cup having a tubular neck, of a valve seat in the bottom portion of said neck, an upwardly seating conically shaped valve controlling the flow of oil through said neck and having a stem of
75 smaller diameter than the internal diameter of the neck extending upwardly there-through into the cup, yielding means seated above the plane of the valve seat normally pressing the valve upwardly against the
80 valve seat, said stem being capable of lateral swinging to partially unseat the valve.

4. The combination with an oil cup having a tubular neck, of a valve seat in the bottom portion of said neck, an upwardly
85 seating valve controlling the flow of oil through said neck and having a stem of smaller diameter than the internal diameter of the neck extending upwardly there-through into the cup, a shoulder in said
90 neck above the plane of the valve seat, a spring about the stem having a seat on said shoulder, and means on the stem with which the spring coöperates to yieldingly seat the valve, said stem being capable of lateral
95 swinging movement to partially unseat the valve.

5. The combination with an oil cup having a tubular neck provided with a valve seat in the bottom thereof, of an upwardly
100 seating valve having a stem extending upwardly through the neck, a spring on said stem housed in the neck, and means in the stem against which the spring bears to normally press the valve upwardly to its seat,
105 said stem being sufficiently smaller in diameter than the neck to permit of its lateral swaying to partially unseat the valve.

In testimony whereof I have hereunto
110 signed my name.

GUY S. LANE.