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A Different Type of Lubricator

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How many times have you heard or had to admit "I'll have to come off, the lubricator has packed in." Well, I have suffered this ignominy more than once. More often than not lubrication failure can be laid at the door of a sticking delivery valve evidenced by the tell-tale milky emulsion that appears in the lube oil tank. Now I've always used proprietary ratchet type lubricators, and my main gripe has not been about delivery valves, but the possible periodic unreliability and adjustment of ratchet driven lubricators caused by one or a combination of potential faults - you will know them!

Now I am aware that there are a number of satisfactory alternative designs to a ratchet type lubricator, but these are not generally available on a proprietary basis and therefore require one to manufacture the item. I'm lazy at heart and therefore treat lubricators like sight glasses and pressure gauges – there are enough souls out there making them so why not devote one's time to other aspects of the build rather than making lubricator[s]. However, for my latest engine, a 'Maid of Kent' in 5 inch gauge, I thought about the type of lubricator required and decided to break the habit of purchase at engine number five.

With this in mind and the prospect of a fiddly job of making effective reliable ratchets etc I thought I'd have a go at making something to do the job that was entirely new and untried – that is untried as far as I know, but you may know better. The system I have designed is not 'brain surgery', as the saying goes, and, as such, I cannot believe that someone with more talent than I have has not thought of it previously and put it into practice.

The principle I hit on is quite simple [usually the best method]. The pump and ram are conventional in nature, but the ram is actuated by a moving cone rather than by a ratchet spindle or an eccentric. The general arrangement of my design is shown in the accompanying drawing. This notional drawing is really a glorified sketch and purposely is not dimensioned – the latter will depend on engine gauge, available room, pump stroke & capacity required and so on.

The rod on which the cone is mounted and locked with a grubscrew is driven from the valve gear. In my case on the present build this is achieved by it being connected to the intermediate valve spindle. Clearly the rod and its cone oscillate to and fro with the valve movement. The forward stroke movement of the cone from its minor diameter to its major diameter in the forward direction causes the ram to be depressed into the pump body. A spring under the mushroom head keeps the ram up against the cone as it moves from major diameter to minor diameter under the reverse stroke. Stroke adjustment, and hence amount of oil delivered, is achieved by moving the cone along its rod, the former being locked to the rod by a grubscrew.

The lubricator was first tested with the motion work running on air. The results at that stage encouraged me to continue. The locomotive has now been steamed outside the workshop suitably

propped up and with the lubricator installed. I am pleased to report that during this bench test the pump worked well with more than sufficient oil delivered at the cone diameters and stroke settings/sizes that I had selected.

The in-situ arrangement can be seen in the two accompanying photographs showing the overhead view of the lubricator without its lid. One can just see the pump ram and its domed head in one of the views. All the components [bar the spring] were made in house – tank of brass, ram & plunger bronze, cone bronze and cone rod silver steel.

The benefits of this pump can be summarised thus:

Simple to design to suit a given engine. Simple to machine and assemble. Minimum number of moving parts. Cheap to make – a few pounds compared to £25 upwards for a purchased item. Stroke adjustment easily undertaken. Well, I hope some of you out there will try this style of pump and report back through the Federation's magazine of your success or otherwise. I am confident it will not be the latter.

