

Shock Absorbers for Bicycles

New System of Damping Out Road Shocks—Important Advance in Bicycle Design

By F. J. CAMM

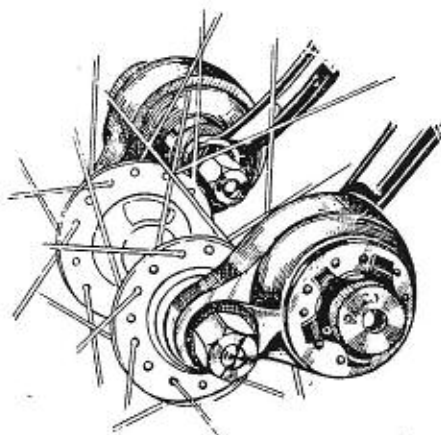
Editor of "The Cyclist," "Practical Mechanics" and "Practical Engineering"

THE bad roads, the solid tyres, the bad design, the weight and the unwieldiness of bicycles in the early days of the safety, set the minds of many inventors to work on the subject of reducing road shocks to the rider. Many attempts were made to market devices which claimed to do this. There were sprung seats, sprung front forks, leaf-spring handlebars, divided wheel spokes with springs between, spring tyres, and even rubber suspension. They all failed for one or more of a variety of reasons. The chief of these was that they did not damp the shock at the point at which it is generated, but transmitted it almost in full to the hands and body of the rider.

To-day we have sprung saddles and rubber handlebar grips as standard equipment, but every cyclist knows that they do not eliminate or damp shock. Rubber handlebar grips help and so do saddle springs, but they are not the complete answer, any more than the sprung cushions of a motor-car would in themselves be sufficient. In the early days of the motor-car, when the latter were made without road springs of any sort, this point was soon realised and so leaf-springs were introduced. This, however, did not completely answer the problem of shockproof driving, because it was found that the springs continued to bounce for some seconds after the road shock had been imparted to them.

It was many years later that the problem was finally solved by means of shock absorbers so called, but which are properly described as shock dampers. These take various forms, but they generally fall into two classes—frictional and hydraulic.

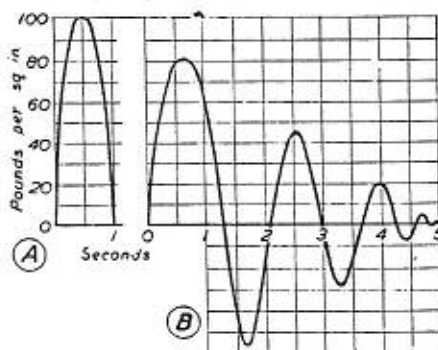
Surprisingly enough, until comparatively recently bicycle manufacturers have not taken advantage of the research which has made the motor-car of to-day the comfortable vehicle that it is. Now, however, Palco, of 221, Knightsbridge, London, S.W.7, have marketed the Palco shock absorber at £1.50 per pair for the light weight, and £2.50 per pair for the heavy duty type. Weighing only about 4oz. each, and being adjustable to the rider's weight, they vastly improve the comfort of cycling, especially over rough roads



The Palco Shock Damper, which can be fitted in a few moments to any make of bicycle.

and on long tours. Apart from the comfort to the rider they prevent crystallization of the frame due to shock inertia, they prevent broken spokes, protect the filaments of the bulbs, increase the life of tyres and chains, and enable one to ride more miles with less fatigue.

They are of aircraft-alloy construction; the front and rear absorbers are interchangeable; they may be fitted in a few minutes



Shock diagrams, showing effect of unsprung bicycle compared with Palco-damped bicycle.

by an unskilled person; they are noiseless in action, and are suitable for all types of braking. The producers of the Palco shock absorber have been associated with devices for absorbing or rather damping road shocks for many years, and they claim that their device improves the efficiency of the brakes, relieves the stresses imposed upon the bicycle itself, in addition to transforming the bicycle from a jolt transmitter to a comfortable vehicle. I support these claims.

The bicycle fitted with them is more stable on wet roads. Tyres can be inflated to a higher pressure, thus improving their life. They can be fitted to any make of bicycle.

The diagrams on this page show that the wheel is removed from the forks and the shock absorber is fitted in its place. The wheel is then secured to the forward limbs. This slightly increases the wheel base, and thus improves steering as well as stability. The other diagram shows what happens when a road shock is received on an unsprung bicycle. It will be observed that the whole shock, sometimes of great intensity, is transmitted to the body in full over a short period of, say, 1 second. With the shock absorbers the initial blow, due to, say, riding into a pothole, is received by the rider at a much lower intensity and it is damped out over a longer period as shown in the right-hand part of the diagram.

It seems such an obvious item of equipment that one wonders why it has not been thought of before. It certainly improves not only riding comfort, but the appearance of the bicycle. Four of them only weigh 1lb. One should not have to rely upon special handlebar grips and saddle springs, which receive the road shocks at the wrong point. They should be damped out at their point of generation, namely, between the road and the wheel hub, and this is what the Palco shock absorber so successfully does.



The Palco Shock Damper undergoing a severe test.

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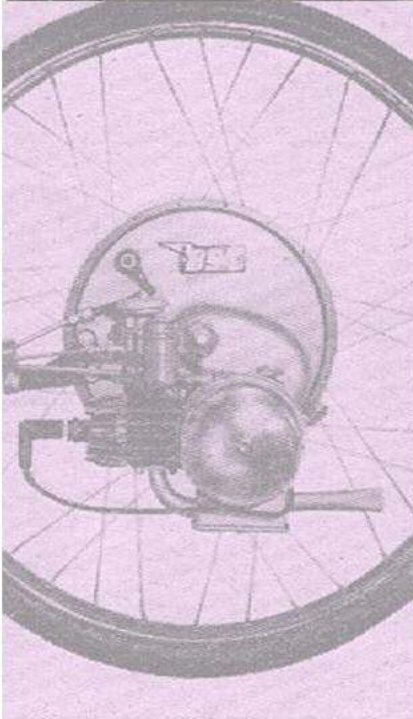
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