Figure 7. Typical road friction testers.

ence in the friction of the wheels on either side) can cause it to veer from its intended path. By braking the front wheels only, or a diagonal pair of wheels, the risk of spin-out is significantly reduced (*25*).

It can be argued that not braking all wheels is unrealistic because it does not show how far an automobile would slide in an emergency. This is correct, but even if all four wheels are locked up for the test, it is still not feasible to deduce from the results the stopping distance of vehicles in traffic. The locked-wheel stopping performance among vehicles differs significantly because of differences in vehicle design, suspension design, tire types, vehicle condition (particularly the condition of shock absorbers), tire inflation pressure and tread wear, vehicle payload and load distribution, etc. For this reason it also is impossible, with any degree of accuracy, to estimate from tire tracks the speed a vehicle was traveling prior to an accident.

Nevertheless, if they are made carefully locked-wheel automobile tests can serve well for characterizing and comparing pavement surfaces. To eliminate tires as a variable, such tests are generally made with the ASTM standard pavement test tire (E 249), if only because it is difficult to procure commercial tires of adequate uniformity over long periods of time.

A disadvantage of locked-wheel automobile tests for assessing the skid resistance of wet pavements is that one must depend either on rain or on a sprinkler truck. Neither assures the controlled water film thickness that is obtained with a road friction tester. The cost of a sprinkler truck adds significantly to the apparently low unit cost of automobile tests. For a comparison of the cost of various methods of measuring skid resistance see Kummer and Meyer (*24*).

The tests can be carried out in various ways. One can measure the distance the vehicle travels from the point at which the wheels cease to rotate or from the point at which the vehicle, with wheels locked, passes through a specified speed to the point at which the vehicle stops. One can measure the distance or the time the vehicle requires for decelerating from one speed to another, say from 30 to 20 mph. Deceleration can be measured directly with a suitable instrument and either the deceleration at a certain point in the test cycle or the mean deceleration over a stated portion of the cycle can be used to characterize the pavement tested.