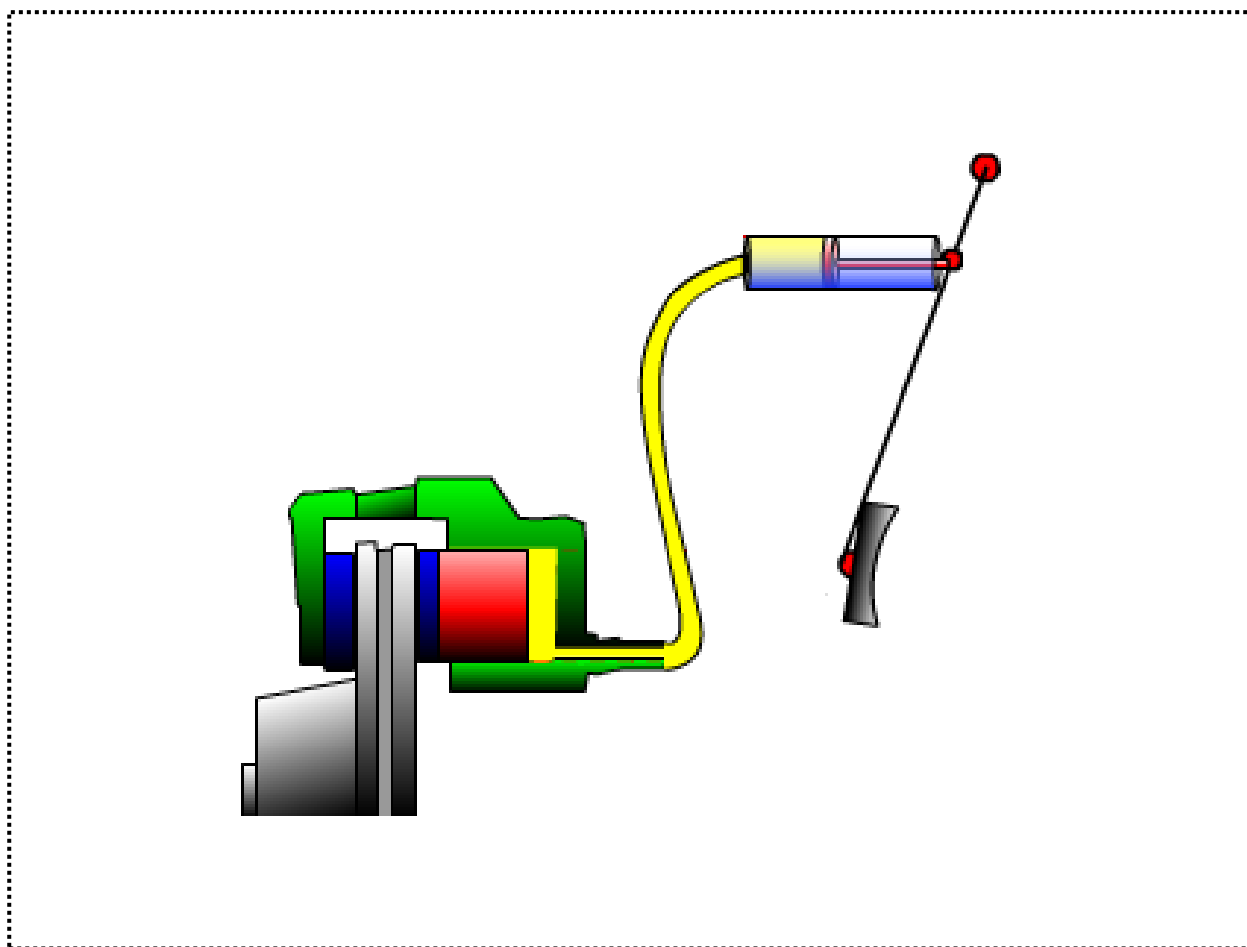


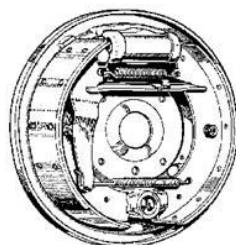
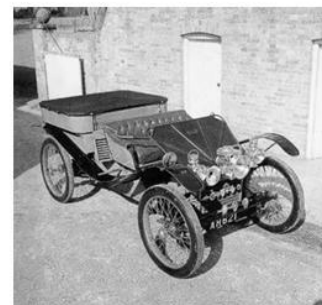
Brake System 1



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Introduction



A major test of brake systems took place in 1902 on an unpaved road in New York City called Riverside Drive. Ransom E. Olds had arranged to test a new brake system against the tire brake of a four-horse coach and the internal drum brake of a Victoria horseless carriage. His Oldsmobile sported a single flexible stainless-steel band, wrapped around a drum on the rear axle. When the brake pedal was applied, the band contracted to grip the drum. The car's braking system made such a big impression on other manufacturers that by 1903 most had adopted it. By 1904, practically all car makers were building cars with an external brake on each rear wheel. Almost at once, the external brake demonstrated some serious flaws in everyday use. On hills, for example, the brake unwrapped and gave way after several seconds. A driver unlucky enough to stall on a grade soon found himself rolling backward. For this reason, chocks were an important piece of on-board equipment. It was a common sight to see a passenger scurrying from inside the car with wood in his hands to block the wheels. There was another drawback to the external brake. It had no protection from dirt so its bands and drums quickly wore. A brake job every 200 to 300 miles was considered normal. The problems associated with the external brake were overcome by the internal brake. As long as the brake shoes were under pressure, they stayed against the drums to keep the car from rolling backward on hills. And, since brake parts were inside drums and protected from dirt, drivers could go over 1,000 miles between brake overhauls. The drum brake, as it is now known, became all-dominant in the United States. Disc brakes became more or less standard on European cars during the '50s, about 20 years before they were adopted by American manufacturers in 1973.