

POPULAR SCIENCE

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Firsthand performance report on
OUR DEADLIEST BOMBER

Who Are America's
Worst Car Drivers?

McCall

New Eldorado Brougham Is Loaded With Luxuries

BESIDES riding on revolutionary air springs (see page 126), Cadillac's all-new Eldorado Brougham features such other 1957 items as a gleaming roof of brushed stainless steel, safety door locks that operate electrically, ball-bearing door hinges, an automatic power-operated front seat, dual headlamps, a front-end-mounted air conditioner, and a 325-hp. power plant with twin four-barrel carbs.

Cadillac engineers and designers have gone all-out to put every last plush touch into the Eldorado Brougham, even to such curled-pinky details as a vanity fitted with perfume atomizers and built into the rear-seat fold-down armrest and a glove compartment equipped with tissue dispenser and cigarette box.

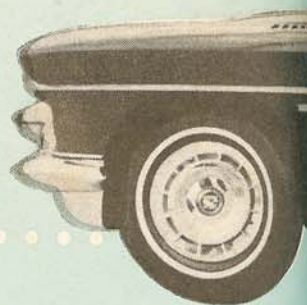
Ball-bearing hinges are another luxury touch. Open a door on the Brougham; it seems feather-light. What's more, you'll find no tall or bulky centerpost between the front and rear doors. The door locks are incorporated in a stubby centerpost that projects only a few feet up from the floor.

Climb into the front seat and your weight sets off a switch that operates the power-operated front seat to move it into your best driving position, which you've previously dialed in on a control panel mounted on the armrest. The controls allow you to dial for tilt either forward or backward as well as for up-and-down and fore-and-aft positions.

The front seat does another trick, too. Push a button on the left-hand side of the seat back, and the seat rolls forward to make it easier for rear-seat passengers to get in or out. Release the button and the seat returns to its original dialed-in position.

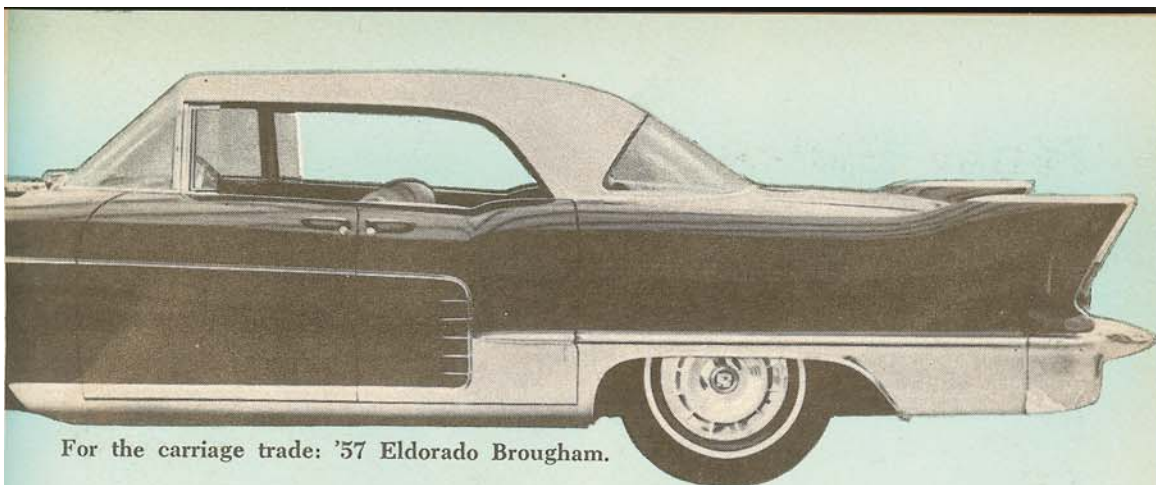
You'll find no battery under the car's front-hinged hood. It is stowed in a special recess in the Brougham's king-sized trunk. Another compartment carries two spare lamps for the dual headlights.

Combine these glamour features with the Brougham's new system of air suspension, a powerful engine, power braking and steering, and Cadillac's new tubular-center X frame, and you have Cadillac's answer to the new Lincoln Continental.



FOLD-DOWN ARMREST houses a complete vanity kit, including perfume atomizers. Grille above armrest is the rear-seat speaker for the radio.

A MASS OF MACHINERY—engine plus auxiliary items—is packed under the front-hinged hood of the Eldorado Brougham. What with space taken up by the air pump for the Brougham's air-suspension system, front-end-mounted air conditioner, and an assortment of power units, the battery has been shifted to a recess all its own in the car's big trunk compartment.



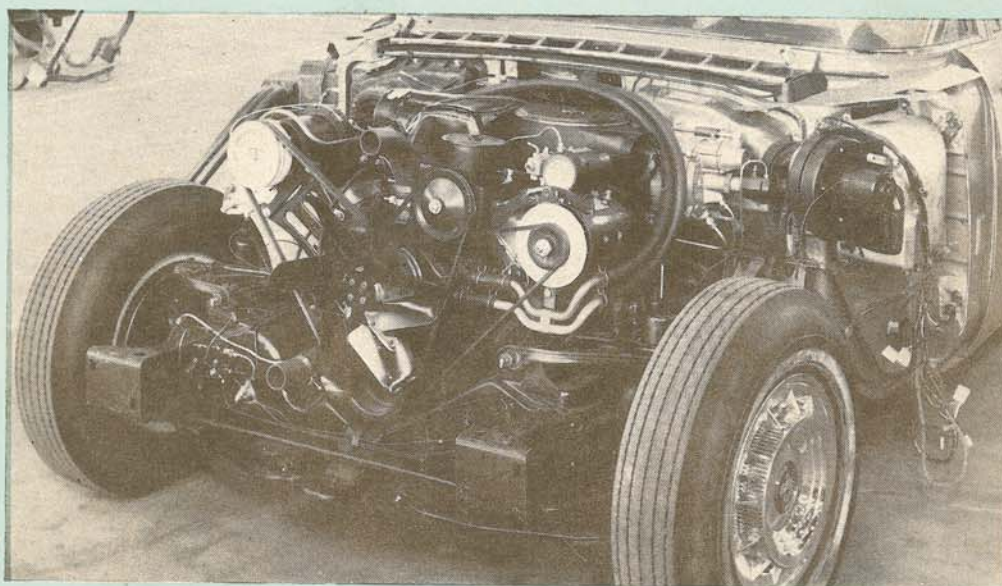
For the carriage trade: '57 Eldorado Brougham.



SET THESE DIALS on left-front door armrest and front seat will adjust itself to your dimensions every time you sit down. Buttons above dial operate windows.

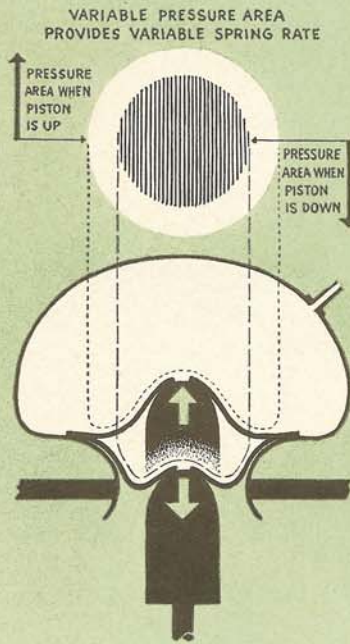
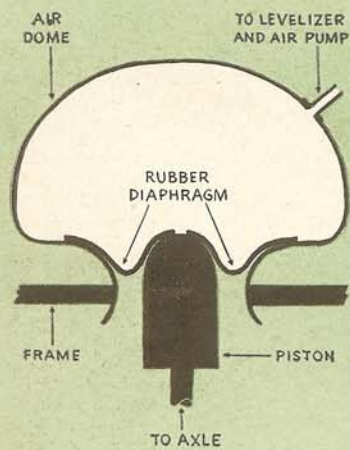


FULLY PADDED INSTRUMENT PANEL has turn-light indicators built into design at the upper right- and left-hand corners. Among other refinements in the new Eldorado are electrically controlled door locks in the centerposts—neither rear door can be opened from the inside if the automatic transmission is in gear.

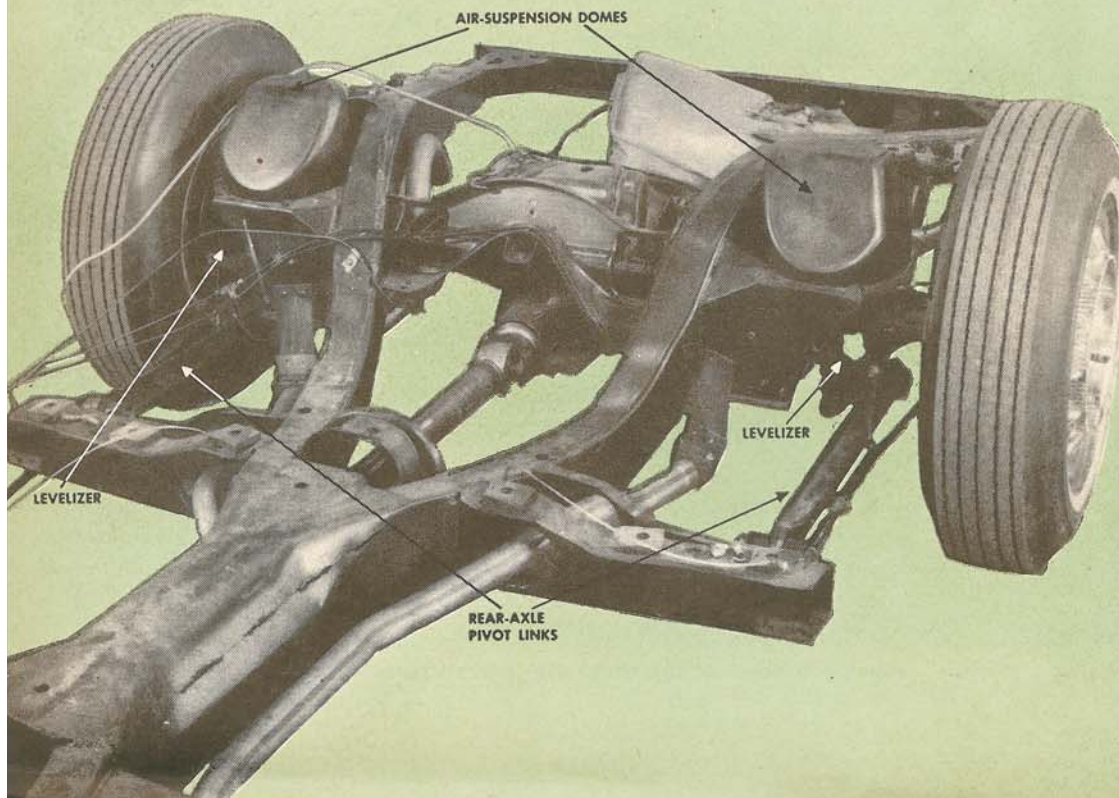
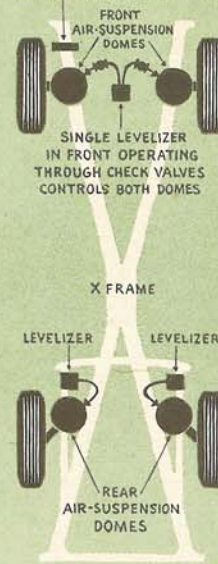


How it works: Eldorado's

**Air-suspension domes
create springs that
adjust to load and road**



MAIN CONTROL TAKES OVER
WHENEVER CAR DOOR IS
OPENED, TO COMPENSATE FOR
CHANGING PASSENGER LOAD



New Air Suspension

***Hit a bump or drop in a hole,
travel light or load 'er down,
the car's ride never varies.***

By George H. Waltz Jr.

WHEN Cadillac lifted the wraps from its brand-new Eldorado Brougham at the recent New York Auto Show, an old advertising cliché—"it's like riding on air"—became a now-you-can-buy-it reality.

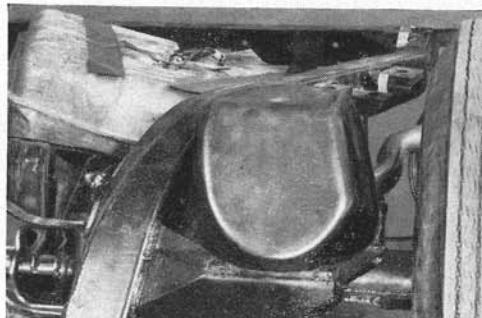
Cadillac's new Eldorado Brougham actually does ride on air, and that doesn't mean just the air in the tires. Equipped with the first true air-suspension system ever installed on a passenger automobile, the Brougham rides on unique air springs. (For a look at the new Brougham's many other features, see page 124.)

The springiness of air, in the Cadillac air-suspension system, has replaced the springiness of steel. On cars equipped with conventional metal springs, the car's overall height, and the overall effectiveness of the springs, is related directly to the total load. Pile more and more people into the car and the car settles down lower on the springs. This not only reduces the height of the car, but also reduces the springing action of the springs. Being depressed, they have less room in which to flex their metal muscles.

You've probably found that your car rides best when there are just yourself and one passenger aboard. That's just about the average load that the metal springs were designed for. Increase the load and springing tends to get mushier.

Cadillac's new system of air suspension was designed to eliminate all of this.

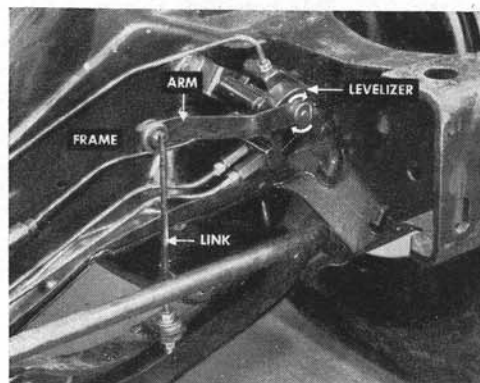
When the car is empty, pressure in the air system hovers around 80 pounds per square inch. As passengers and luggage enter, pressure goes up. In other words, the springing system reacts to maintain



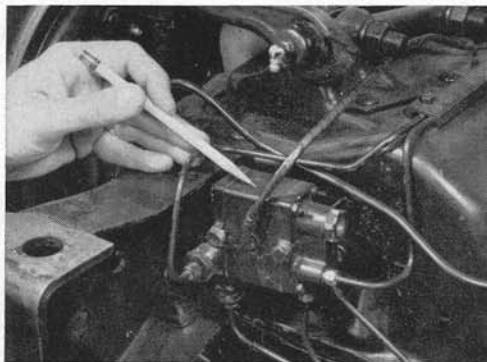
AIR SPRING consisting of an air dome, rubber diaphragm and piston is mounted at each corner of the frame. The dome is fastened to the frame, the piston to the wheel support.



AIR PUMP mounted on top of the car's generator provides air for the air-suspension system. Its operation is automatically controlled by three levelizers and a master control.



THREE LEVELIZERS, two for the rear air springs and one for the two front air springs, control the flow of air to the springs. They react to changes in the car height, not weight.



MASTER CONTROL TAKES OVER whenever a car door is opened, to compensate immediately for any change in overall car height caused by passengers getting in or out of the car.

car height regardless of load. It operates on the principle that air is a compressible, easily controlled medium. And it puts that principle to work to provide a variable spring whose action is altered automatically to meet moment-to-moment changes in road or load conditions.

How is this done?

Basically, the air-suspension system consists of four independent air domes, or modified air cylinders, which replace the conventional metal springs at the four corners of the car. Into each air dome fit a bulletlike piston and a tough rubber diaphragm (see diagram on page 126). The body of the air dome is fastened to the main frame of the car; the piston is fastened to the axle or wheel support. The air in the dome, acting on the rubber diaphragm, serves as the "spring" between the two. Air for the system is provided by an electric pump mounted on the car's 12-volt generator.

The system's "brains" consist of three levelizers: one for each of the two rear air springs, and one which, through a system of check valves, serves the two front-end air domes. These control the springing characteristics of each air spring by controlling the flow of air. Each levelizer consists of a mechanical

valve, operated by an arm and a link that react to the relative up-and-down movements of the frame and the wheel support. It thus feeds air to each dome, as needed, to provide a level, bump-free ride. To make the response smooth, a time delay is built into the system.

Open any one of the car's four doors, however, and a master control takes over. An electrical interlock on the doors does the trick. This master control overrides the levelizers with their built-in time delay and monitors the flow of air into or out of the four air springs to compensate immediately for the slightest change in car height caused by someone getting in or out of the car. Close the car doors and the levelizers take over again. As a result, no matter how you load or unload the Eldorado Brougham, its roof is always just 55½ inches above the road.

The key to the system, however, is the design of the air dome with its rubber diaphragm and piston.

The rubber diaphragm provides a pressure area that is varied automatically. It provides, in effect, an expanding and contracting head for the piston, creating a larger pressure area (and therefore a greater downward pressure) when the piston is pushed up into the dome by a bump in the road, and a smaller area when the piston is moved down as the wheel sinks into a depression in the road.

Engineers anticipate no difficulties so far as the service life of the diaphragms is concerned. They expect these to last indefinitely.

As for the possibility of "leak-down" overnight, Cadillac says that the system will hold air pressure for several weeks without leakage. Even if it did leak down after a long period of disuse, it would not be disastrous—when the ignition switch was flipped the car would pump itself up off its haunches. END

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NEXT MONTH: Annual Buyer's Guide to the New Cars
Plus Color Photos of the 1957 Station Wagons.