perfect but in engines in good condition it should range between 20″ and 26″ of mercury. For satisfactory brake operation a vacuum booster system should show a reading of 16″ on the test gauge. On a truck or bus installation the vacuum leakage when tested should not exceed 3″ per minute. In the case of a tractor-trailer combination which must conform to trailer breakaway laws the leakage should not exceed ⅓″ per minute. (1″ in 3 minutes.)

Vacuum power units of the piston-cylinder type should be lubricated with about 2 ounces of vacuum cylinder oil for every 5,000 miles of operation.

Vacuum power units of the diaphragm-chamber type require no lubrication but the diaphragm and seal should be inspected regularly and replaced if necessary.

In cold weather, there is always danger of moisture condensing and freezing in the lines and other parts of a vacuum power brake system. In order to prevent freezing, we recommend placing a small amount of permanent type anti-freeze in the lines and a small amount in the power unit. In diaphragm-chamber type units about ½ ounce of anti-freeze is sufficient, while in the piston-cylinder type units, it is best to place about 2 ounces on each side of the piston.

The air cleaners used at different points on a vacuum power system should be cleaned regularly to insure efficient operation of the brakes.

AIR BRAKE SYSTEM

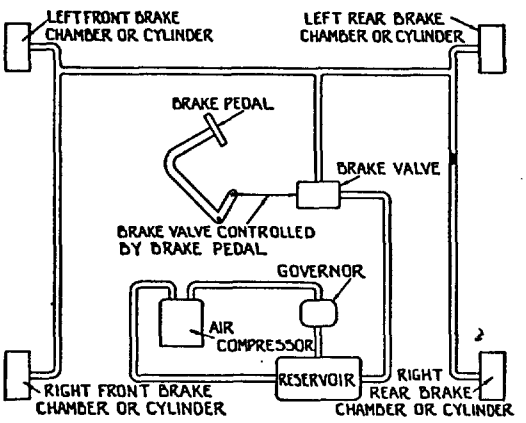

Figure 19

Layout of Typical Automotive Air Brake System

The layout of a typical air brake system is shown in Figure 19. This layout shows what is commonly called a "straight air" system. It will be noted that a power unit is used at each wheel brake and that these power units may be either the diaphragm—chamber type—or the piston-cylinder type. The power units in this straight air system are attached to levers which operate the brake cams of mechanical brakes. These levers are usually referred to as "slack adjusters" since the brake adjusting mechanism is built into these levers.

Some air brake systems operating mechanical brakes have a hydraulic cam brake actuator in place of the slack adjuster. The air from the compressor is used to operate an air piston which in turn operates a hydraulic master cylinder. The pressure from the hydraulic master cylinder is then transmitted through the hydraulic fluid lines to the hydraulic cam brake actuators at each wheel brake. The hydraulic cam brake actuators then turn the cams of the mechanical brakes. Thus, it can be seen that this system is a combination