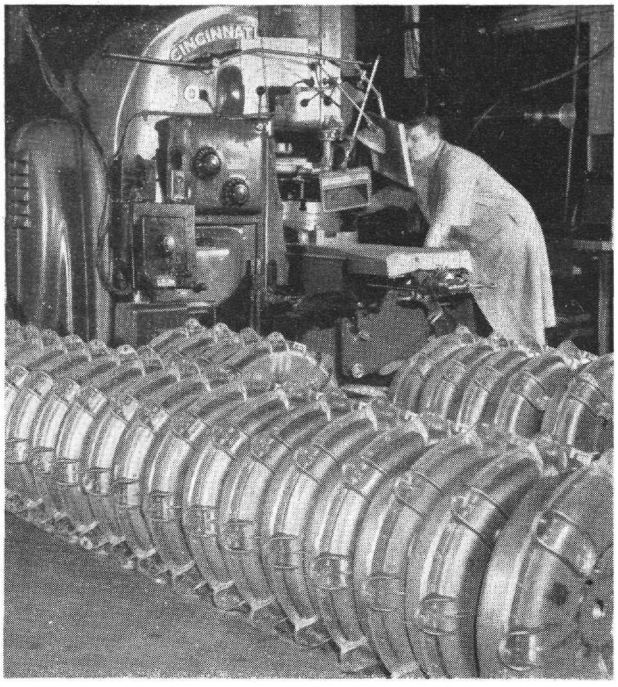

Courtesy General Electric Co.

Milling the Overlap on Supercharger Compressor Casings

THE TURBOSUPERCHARGER

War in the stratosphere is made possible by a device known as a turbosupercharger. This device permits airplane engines to have full power in the thin air of high altitudes. At high altitudes each stroke of the engine draws in a lesser weight of oxygen than at sea level. At an altitude of 25,000 feet, the power loss may be as much as 50 per cent.

The turbosupercharger consists of two main elements, a turbine and a compressor, with the rotating shafts mounted on a common shaft. The turbine wheel is driven by the exhaust gas from the engine.

The turbine drives the compressor, which takes in atmospheric air and compresses it and feeds it to the carburetor. As the plane goes higher, the air pressure on the gas exit side decreases, so the wheel runs faster, driving the compressor faster, and thus gives a greater pressure differential between the atmosphere and the carburetor.

One of the main problems of design was the finding of a metal which could be used in the turbine blades. In the heat of the flaming exhaust gases, they must withstand the centrifugal force that results from rotating more than 20,000 revolutions per minute as well as the push of the exhaust gases. The compressor only a few inches away may be handling atmosphere as low as 75 degrees Fahrenheit below zero.