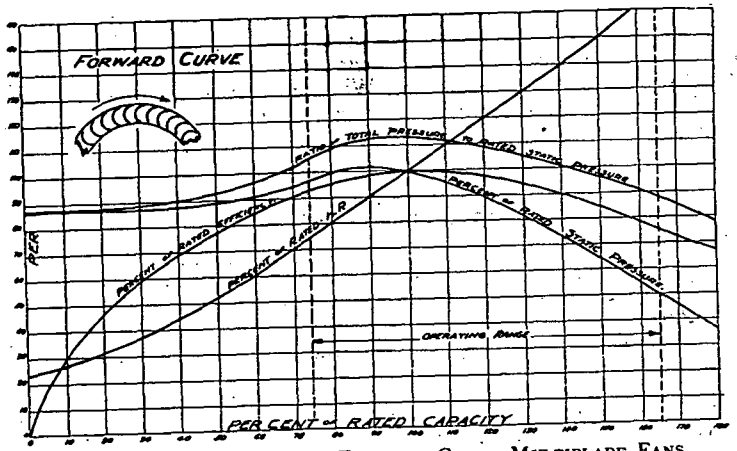

FIG. 3. CHARACTERISTICS OF FORWARD CURVE MULTIBLADE FANS

in heating and ventilating work, as it has a low peripheral speed, a large capacity and is quiet in operation.

The point of maximum efficiency for this fan occurs near the point of maximum static pressure. The static pressure drops consistently from the point of maximum efficiency to full open operation. Fig. 3 shows that this type of fan will have a high and low delivery for a given static pressure at constant speed. Manufacturers' tables ordinarily list only the capacities between the vertical range lines, and selection of fans should be made within this range. The horsepower curve rises continually from low to peak capacity, but if reasonable care be exercised in figuring resistances, there is no danger of overloading the motor.

The multiblade forward curved and partial backward curved fans are good types for general ventilation.

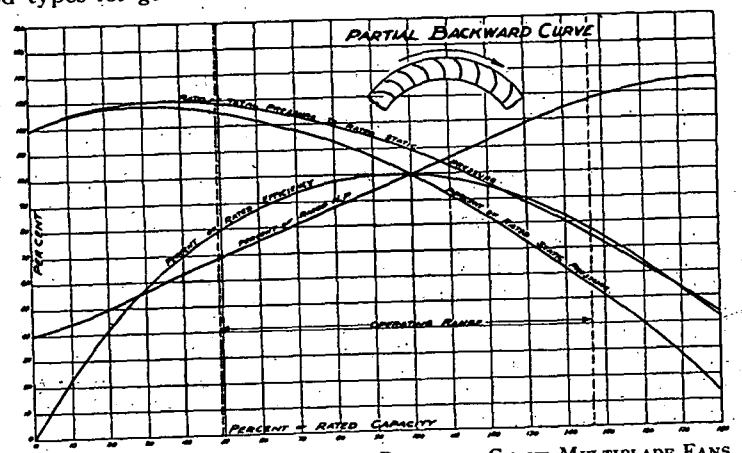

FIG. 4. CHARACTERISTICS OF PARTIAL BACKWARD CURVE MULTIBLADE FANS

The partial backward curved multiblade type of fan lends itself particularly to direct drive through a considerable range of sizes, as this fan must be driven approximately 75 per cent faster than the forward curved multiblade fan for the same results. Fig. 4 shows a continually dropping contour as the quantity of air delivered increases. The horsepower curve gradually increases showing a tendency to flatten at maximum delivery, reducing the probability of motor overloads if the actual resistance is lower than calculated.

As with the paddle wheel fan, the air delivery at a given speed is more constant with varying resistance than is the forward curved multiblade type.

Multiblade fans with radial blades have performance characteristics

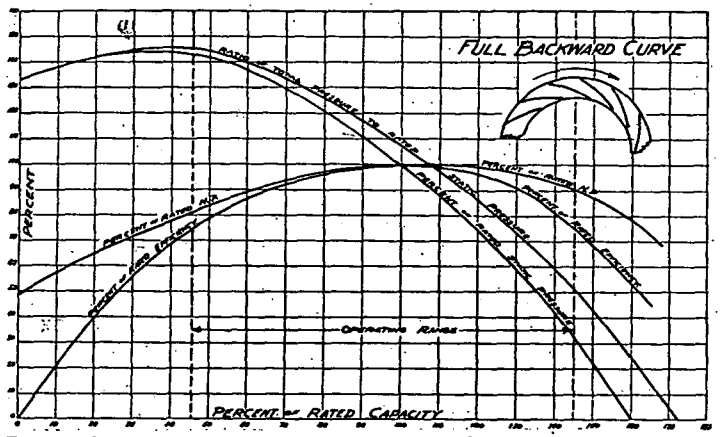

FIG. 5. CHARACTERISTICS OF FULLY BACKWARD CURVED MULTIBLADE FANS

resembling the partially backward curved multiblade fan. The outstanding difference occurs in the revolutions per minute as the radial blade fan must be operated at approximately 80 per cent of the speed of the partial backward curved multiblade fan for like results.

The outstanding characteristics of the fully backward curved multiblade type fan are the steep pressure curves, the non-overloading power curve, and the high revolutions per minute. This fan operates at a peripheral speed of approximately 250 per cent of the forward curved multiblade type for like results. The pressure curves begin to drop at very low capacity and continue to fall rapidly to full opening. This makes it adaptable to parallel operation for such applications as large stoker installations. The steep pressure curves tend to produce constant capacity under changing pressures. Where wide fluctuations in resistance of a system occur, the use of this type of fan is desirable to prevent motor overloading. The maximum horsepower requirements occur at about the maximum efficiency. Consequently, a motor selected to carry the load at this point will be of sufficient capacity to carry the fan over its full range of capacities at a given speed. The speed is high for a given pressure making it adaptable for direct-connected high-speed drives.