out of the duct will need to be 80 μ thick. It is known that ink films split unevenly between materials of varying surface characteristics, but if we assume for the purpose of utmost simplicity that the film splits in half, then to deliver a film of 2 μ to a printing surface already holding a 2 μ film, a train of rollers in contact will distribute the ink as indicated in Figure 8.16 curve A. The rollers in equilibrium are unevenly inked from top to bottom, and in the ideal case the 2 μ film is carried in this way from roller to roller along the train, giving a wedge-shaped ink profile. In practice, even in the simplest printing machines, the forme is inked by several "forme rollers," the ink film on which must be fairly uniform if uneven inking is to be avoided. Where large solids are to be printed, this condition is frequently difficult to achieve, and various forms of "bar marking" or "ghosting" result. Fortunately, the printing of large solids is not common, and type set solid, for instance, covers only about 10 per cent. of the area of a page, so that with most jobs, the distribution of very large amounts of ink is avoided.

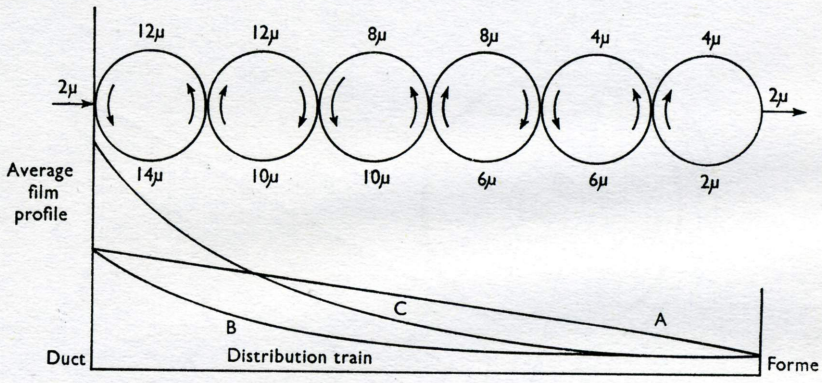

Fig. 8.16—Profile of ink distribution by rollers in contact.

The ink distribution mechanism must furthermore deal with a very thick film of ink at the duct, which initially covers only a small area of the first distribution roller. To distribute a thick film of ink with rollers assembled as in Figure 8.16 would require a very large distribution system, and to reduce the ink profile from the wedge to a curve as indicated by B in Figure 8.16, ink drums and riders of varying diameters and compositions are introduced on all rotary machines. These have the effect of transforming the wedge-shaped profile into an hyperbola. The basic validity of the argument has been demonstrated by Bradford (Proc. 6th Ann. Tech. Mtg. T.A.G.A., May, 1954). More precise data for the distribution of ink on a newspaper press has been given by Mill (Proc. PATRA Newspaper and Rotary Letterpress Conf., 1955, 171).

With flat-bed machines, the reciprocating ink slab acts as a drum of very large diameter, and together with riders spreads the ink film very rapidly.