

same. Better perception of basic principles enables writing a patent to have wider scope. Thus, in bygone times the rudder, close-hauled sailship, windvane, windmill, water turbine, propeller, and airplane wing and elevator were eight separate inventions, and very hard at that. But the modern engineer perceives that they all depend on the *vane* (or airfoil, hydrofoil) as their essential element for securing a sideward pressure from relative movement between the vane and a current. So when Flettner in 1923 had improved the Magnus-effect rotating cylinder by adding end disks, he applied for a single patent covering its substitution for the vane in all those eight inventions, for a rotorship, a rotor windmill, etc., and was granted it¹⁴⁷ with 55 claims, under American law which permits a patent to cover only one invention.

[121] A related consequence of more understanding science is an enlarging perception that other people's ideas in the prior art have, logically, wider ramifications than used to be perceived, so that they cover our own idea and should prevent its patenting, because modern technologists are so well grounded in perfected concepts and theory that they can and will perceive the applicability of the old principle to the different technic purpose, without need of our own perception and patenting. In these ways, therefore, the advance of science would tend strongly to make the lower grade patents less justified and less often granted, while not reducing invention, but only its difficulty. But by the same token, this more rational, scientific insight should lead to many other, novel and difficult inventions, which would merit and receive patents.

[122] The growth of corporate size,¹⁴⁸ which has been so marked since the 1880's, might tend to shrink or to expand patenting, more likely the latter. Growth lightens the burdens of inventing, and of patenting with its costly infringement suits. A laboratory of its own can hardly be afforded by a firm which can budget for it less than \$120,000 a year¹⁴⁹ (though it can use the research institutes and other services). Manufacturing companies having 8 to 499 employees, though they contributed about 35% of the employment, put up only 10% of the R&D cost, whereas those employing 5,000 or more hired 40% and contributed 70% of the R&D.¹⁵⁰ The larger the firm the more use it can make of its suitable discoveries, whether patented, kept secret, or freely disclosed. Kettering said at the TNEC hearings when he was chief of GM's inventing: "So far as patents concern an organization like ours, I think they are only important from one standpoint." This is to prevent other people from patenting the same thing. But with other systems than patenting they could not. "I think patents still have an enormous value from the standpoint of the inspirational effect they have on people, and certainly for the small concern they are vital."¹⁵¹ Indeed, the old-style, isolated inventor, whether a freelancer or a petty enterpriser, has hardly any other instrument to secure a good reward for his creativeness, save patents.¹⁵² Cf. ¶ 73, 131.

¹⁴⁸ Sanders finds, "that of the initially assigned patents, the larger companies obtain something like 65%; the smaller companies obtain about 35%. But of patents which were initially unassigned, but subsequently became assigned, over 88% became assigned to these smaller companies." The larger companies never worked 49% of their patents, but the smaller companies never worked only 24.5%, and those they worked they oftener worked intensively. Variations in Pat. Utilization by Different Types of Companies, *PTCJRE* 3: 56-60, 110-4; pp. 57 & 111, 3 cited.

¹⁵² Little connection has been found between outlays for R&D, and number of patents taken. N 87.