

sical ear, not possessed by every mechanic. Practically it is impossible to tap nuts so that they correspond with the threads of the screw. The dies will wear, no matter how carefully they may have been hardened, and the hardening process itself must affect the character of the threads.

The *post connection* with a pin is made through the medium of "shoes" or "bases," either of wrought iron or cast, or both combined, depending on the form of post used. The bearing on the pin, or, in other words, the thickness in inches of that portion of the shoe through which the pin passes, should be not less than the compressive strain (as exhibited in the line diagram of strains which ought to accompany all proposals) in pounds, divided by twelve thousand times the diameter of the pin. The sections of posts in ordinary use are exhibited herewith in the order of their relative theoretical merit. The



FIG. 15. SECTIONS OF POSTS OR STRUTS.

first is the Phoenix hollow column; the next four are made from solid rolled sections, and the last and weakest are compounded sections, as shown.\* The resisting power of posts is based upon the ratio of their length divided by their diameter, and also upon the fact of their having *round* or *square* end connections. For the first five sec-

\* The last four sections are the forms of struts used in riveted work, and it needs not the eye of an expert to realize that they are immeasurably inferior to any of the preceding sections.