

fifteen-inch beam, weighing 200 lbs. per yard. These beams, however, are more expensive than the compound riveted girder, made with plates and angle irons, but are 10 per cent stronger. The riveted girder can be made of any depth, and is therefore adapted for much longer spans than the rolled beams.

Fig. 5 shows the simplest form of truss, and consists of a post and two inclined

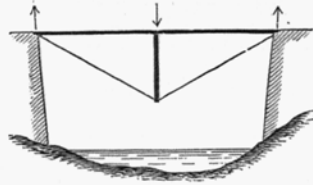


FIG. 5. KING POST TRUSS.

ties supporting the middle of a beam, that would otherwise be too weak to sustain a load. This supporting system in effect halves the span, the post performing the office of a pier, carrying one half the load of both subdivisions of the beam. Now, since all the load must finally rest on the two end supports or abutments, that portion that rests on the post can only reach them through the medium of the inclined ties, intersecting at its foot, each tie taking up half the load carried by the post. These ties are strained in excess of the load they transmit to the abutments in proportion to their deviation from a vertical line ; or, in other words, an inclined pull requires greater effort than a direct one, as almost every one has experienced. Whenever a force is exerted at an angle, a *horizontal effect* is *always* produced, and in proportion to the angle at which it is applied. The flatter the angle, the greater the horizontal effect, and *vice versa*. In the truss before us, the abutment ends of the inclined ties, by virtue of