reduce the available section below one-third of the whole.

It is proper to observe with regard to this splice, and also the succeeding one, that the power being applied upon the reversed shoulder, or hook, out of the line of the unbroken fibres which resist the power, the tendency is to throw the ends outward, and produce a degree of lateral action, which weakens the timber to a somewhat greater degree than in proportion to the amount of fibres severed.

Fig. 57.

With a double lock splice, as in Fig. 57, one-half of the section is available. This requires a lap of 10 times the thickness of the timber.

By three lockings upon the same principle, \( \frac{2}{3} \) of the fibres may be utilized for tension, with a lap of 12 thicknesses (or 12\( \ell \)), and, by a lap 13\( \frac{1}{4} \)\( \ell \), we make two-thirds of the fibres available. Finally, by a lap of 20\( \ell \) and an infinite number of lockings the whole cross-section would be available.

But this, of course, is a point not attainable in practice. From \( \frac{1}{6} \) to \( \frac{2}{3} \)—say an average of \( \frac{1}{2} \), is as much as can be reckoned on, and about as much as can usually be made available for tension, at the end connections of a single timber.

Splicing may also be effected by a plain scarf, with bolting, pinning and spiking, as indicated in Fig. 58. With bolts, pins and spikes properly arranged and proportioned, a strong splice may be formed in this