each case, and a separate steam engine was used for swinging the derrick. The comparison made was between a crude cableway and a derrick of the most modern type, the latter operated by a high speed engine and swung by steam. The recent improvements in cableways would probably make a still more favourable showing for the cableway, possibly 25 per cent.

On this plant, chain connected fall rope carriers (Fig. 3) were used to support the hoist rope between the towers, and the carriage, which consisted of a series of blocks, with 8 in. or 10 in. wheels to run on

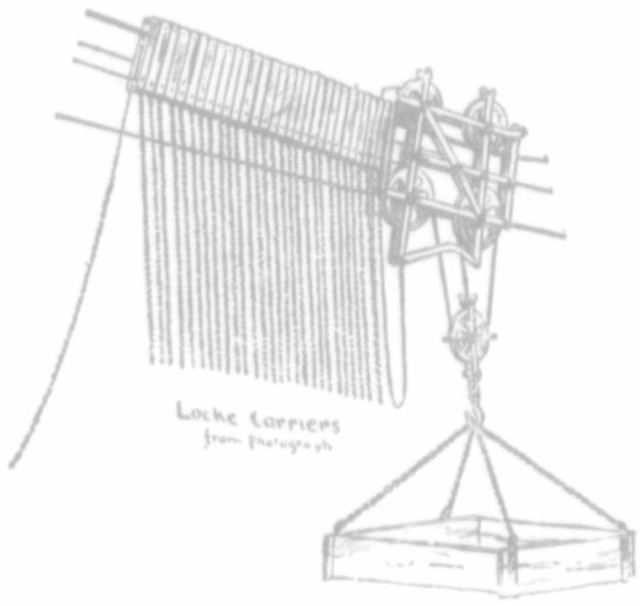

FIG. 3.—Chain Connected Fall Rope Carriers.

the main cable, spaced about every fifty feet, connected with ½ in. chains. These heavy and cumbersome fall rope carriers were the source of much annoyance. The hoisting rope does not need supporting oftener than every 100 feet, but with the chain connected carriers, the chains themselves must be supported so as to be out of the way of obstructions below, in fact the chains must not hang lower than the skips, say 15 feet. This brings the carriers 20 to 30 feet apart. The weight of the chains and carriers used on this plant was about a ton. The chains would swing about and get entangled in the fall block, and with each other; they limited the speed, and wore the cable, added to its strain and increased the power required in conveying the load fully 40 per cent.

Long and high speed cableways were not practicable with the chain connected fall rope carriers Figure 4 shows the first departure