

munity is situated in a valley on one side of which rises a hill composed principally of quartz rock. When the county authorities desired to have a place for confining prisoners, it was decided to make an excavation in the hillside, which was done by blowing out the rock with explosives. The opening was made merely large enough for one man to pass through without difficulty, while the interior was excavated like a coal mine, and divided by natural partitions into four cells. No effort was made to finish the interior of the cells, the roof and sides being left in the jagged condition caused by the blasting. To admit air and light, several holes were made in the hillside, also by means of explosives, and the openings secured by bars of steel about an inch in diameter, driven into holes in the rock and cemented.

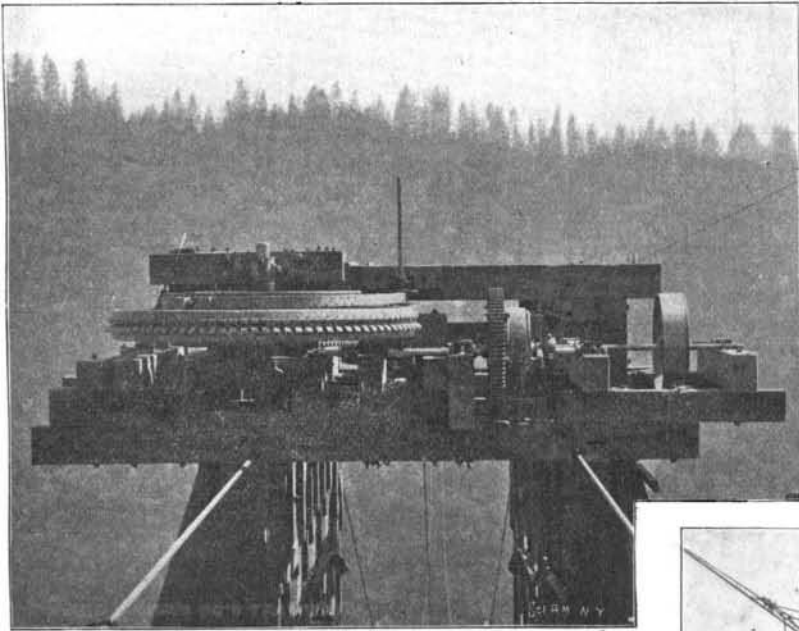
The entrance was fastened by means of a door also composed of steel bars; but as a means of further protection and to provide accommodation for the sheriff and his officers, an artificial wing or vestibule

#### TRANSPORTING LUMBER ACROSS DEEP GORGES.

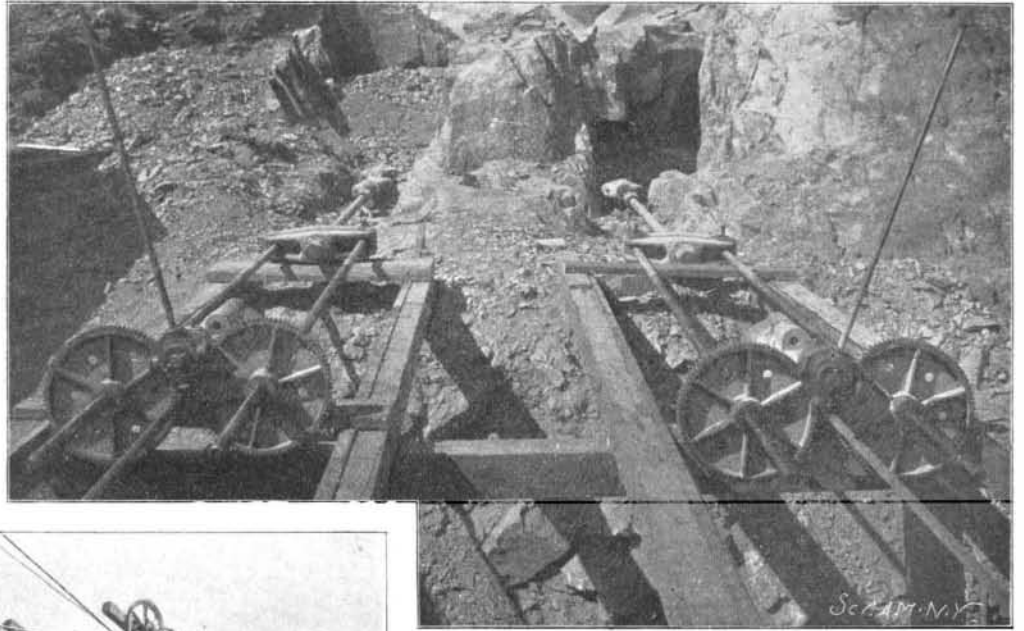
In the higher altitudes of the Sierra Nevadas in California are some of the most magnificent forests of sugar pine to be found on the western continent. The difficulty of marketing the product is intensified by the many natural obstructions which are characteristic of this region. The timber lands are intersected by deep and precipitous cañons or gorges over which the timber has to be carried before the railroad is reached, an operation expensive and extremely liable to accident. An instance is the case of the Eldorado Lumber Company, a San Francisco corporation owning an immense tract including thousands of acres of splendid timber on the South Fork of the American River in Placer County. This river is the largest affluent of the Sacramento. Years ago the lands were owned by a company which expended a million dollars in building dams on the river and constructing railroads to connect with the main lines at Placerville, but floods carried away the dams and obstructed the railroad.

constructed with a solid wire core  $\frac{1}{2}$  inch in diameter, around which 57 wires, each 0.154 inch in diameter, are twisted in opposite layers of 13, 19 and 25 strands respectively. The cables have an ultimate strength of 125 tons and are anchored in solid rock. Two tunnels were driven for over twenty feet into the solid granite and at the end the cables are fastened into heavy castings and anchored into tons of solid concrete. Connecting rods are threaded throughout their entire length, so as to regulate the slack and restore the equilibrium of the cables when disturbed, thus maintaining at all times a constant level. Though the velocity of the wind in exposed places in the high Sierras is often great, yet the cables are but little affected.

The engine, clutch wheel and connections are placed at the north end of the cable and the cage is operated from this point by an endless wire cable passing around a sheave at the south terminal which is 35 feet lower than the engine. The transmission cable is



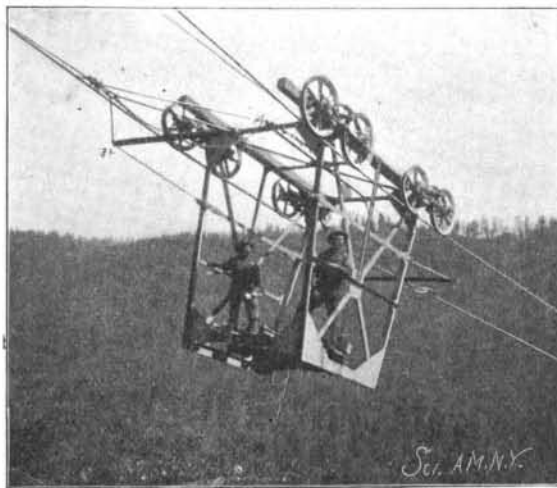
The Large Sheave.



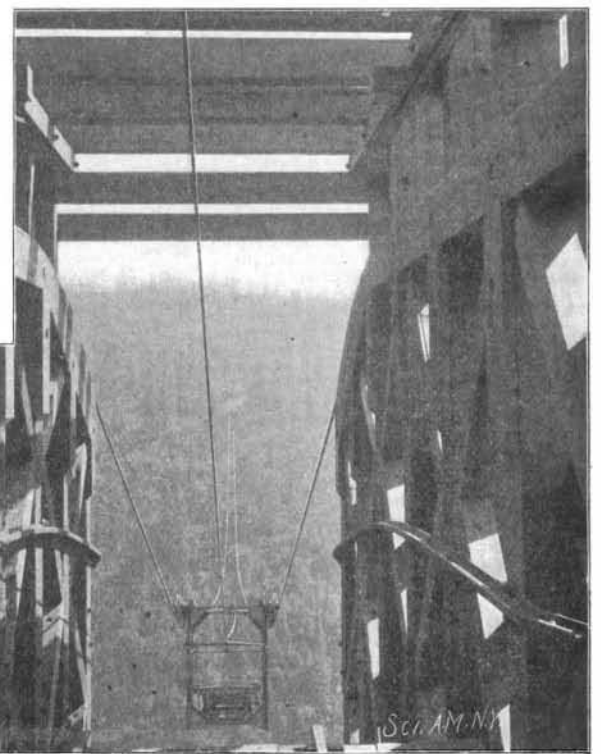
Anchorage and Tightening Devices.



Head House and Cables.



The Carrier in Mid-Air.



View of Tramway Looking Through the Head House.

was constructed of rough masonry, the stone which had been blasted out of the excavation being used for this purpose. The vestibule is divided into two sections, so that, in order to reach the jail proper, one must go through three barred gates. While the cells are but four in number, each is large enough to hold several inmates, and this novel jail can accommodate a score of persons at one time if desired. Although the walls, sides, and roof are composed of rock, the interior is dry, and the inmates suffer far less discomfort than many of those who are placed in artificial structures. The thinnest part of the wall of this jail is over six feet in thickness, so the jail, besides being fireproof, is certainly secure.

In order to prevent the substitution of inferior goods in an original bottle, an inventor who has recently secured a patent on his scheme, proposes to embed a dime or other coin in the body of the bottle, which, he claims, will be sufficient inducement to secure the destruction of the vessel when it has been emptied.

#### TRANSPORTING LUMBER ACROSS DEEP GORGES.

After many years of disaster, the original company succumbed and the present organization succeeded to all its rights and privileges. Some of the most valuable of the timber lands on the tract are separated by a deep gorge of the American, having in this instance a breadth of only 2,650 feet at a height of 1,000 feet above the river bed. Formerly lumber had been transported over this depression by a cable tramway extending up the sides of the mountain and crossing the river by a suspension bridge. This plan, successful for a time, was slow and expensive as well as dangerous in the extreme, and it was determined to abandon it for a less objectionable plan, if engineering talent could be found that could suggest one. Mr. Edward J. Parsons, C. E., of the California Wire Works, devised the method of overcoming the difficulty, which was adopted and has now been installed. All difficulties attending the transportation of lumber in carload lots have been surmounted. Two cables each 3,000 feet long and 1 7-16 inches in diameter were thrown across the cañon. Each weighs 14½ tons. The cables are

held and operated by horizontally placed wheels. In case of accident to the cables these clutches would enable the car to be drawn to the nearest or either terminal.

The skeleton cage in which the car of lumber is transported is of steel and it travels on the cables by eight deeply grooved wheels. The rails upon which the car of lumber rests connect with the road-bed at either terminal.

Clutches hold the car wheel securely in position. The cost of the improvement was less than \$12,000, and the success of the enterprise is assured.

Much interest is manifested in the offer of a \$3,000 cash prize by the World's Fair authorities to any person who shall successfully transmit without wires electrical energy amounting to one-tenth of a horse power 1,000 feet. This achievement, if performed, would mark a new step in the development of electrical science. Many experiments have been made in the direction suggested.