layed. The lower elevator is only delayed while the upper elevator is loading or unloading, which, in a two minute schedule, would be about 14 seconds.

"Not only are these elevators protected by the ordinary means, in case of accident, by safety clamps, but they have mechanism, simple and effective, which, when these elevators get within a predetermined distance of each other, slows down the elevators, and at a closer point absolutely stops them; also in case of either non-operating of machinery or breaking of cables, have positive clamps which make it impossible for them to come closer together than a predetermined distance. Any type of elevator can be used."

SOME FIRE TESTS ON IRON COLUMNS.

The authorities of the city of Hamburg, Germany, recently had some interesting and valuable experiments made to show the effect of fire on cast iron columns. The tests are thus described in a recent issue of the Deutsche Banzeitung:

The columns were 8 feet long, 10 inches in diameter, and of one-thirteenth of an inch metal. They were loaded centrally and eccentrically and some were cased with a fireproof covering. A hydraulic press was placed below the column with its crosshead above it, and then a hinged oven containing twelve large gas burners was clamped above the column.

The oven was furnished with apparatus for measuring heat, with peep holes and with a measuring jet. On an average a load of three tons per square inch, with a heat of 1,400 degrees Fahrenheit, produced deformation in 35 minutes in a centrally loaded column without casing. This showed itself by bulging all around in the middle of the heated part, especially where the metal happened to be thinner. Fracture occurred finally in the middle of the thickest point of the bulge. If the load was less, this occurred at a higher temperature. Jets of water had no effect until deformation heat was reached. The casings had the effect of increasing the time before deformation began from half an hour to four or five hours.