way business, and sidewalks. The two floors are connected by two trusses of a simple construction, so arranged, that its resisting action operates both ways, up as well as down. The suspenders are 5 feet apart. The beams of the upper and lower floor are connected by posts, arranged in pairs, leaving a space between for the admission of the truss rods. The ends of the posts are secured between the beams in a manner that no part is weakened, and that any amount of strain can be thrown upon them without injuring or loosening their connections. There are no joints to work loose. If the timber should undergo a further shrinkage, the truss rods will simply require tightening. The depressing action of any loads is by these posts transmitted from one floor to the other. From the end of each pair of posts a truss rod extends each way to the 4th pair of posts at an angle of 45 degrees. The rods therefore cross each other and form a diamond work. They are 1 inch diameter, their screw ends 1\(\frac{1}{4}\) inch. The pressure upon any pair of posts is by these rods spread 40 feet apart. The nuts work on cast-iron plates, placed above or below the posts.

Without adding much to the weight of the structure, a surprising degree of stiffness has been obtained by the united action of the girders and trusses. They have fully realized my expectations. The pressure of an Engine and of a whole train of cars is so much distributed, that the depression, caused by a light freight or ordinary passenger train, is not readily observed. A freight train of 12 loaded cars with a 25 ton engine, covers a little more than half the length of the floor. Its effect is more marked and noticed, than either a smaller or