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P. H. JACKSON.

BUILDING CONSTRUCTION.

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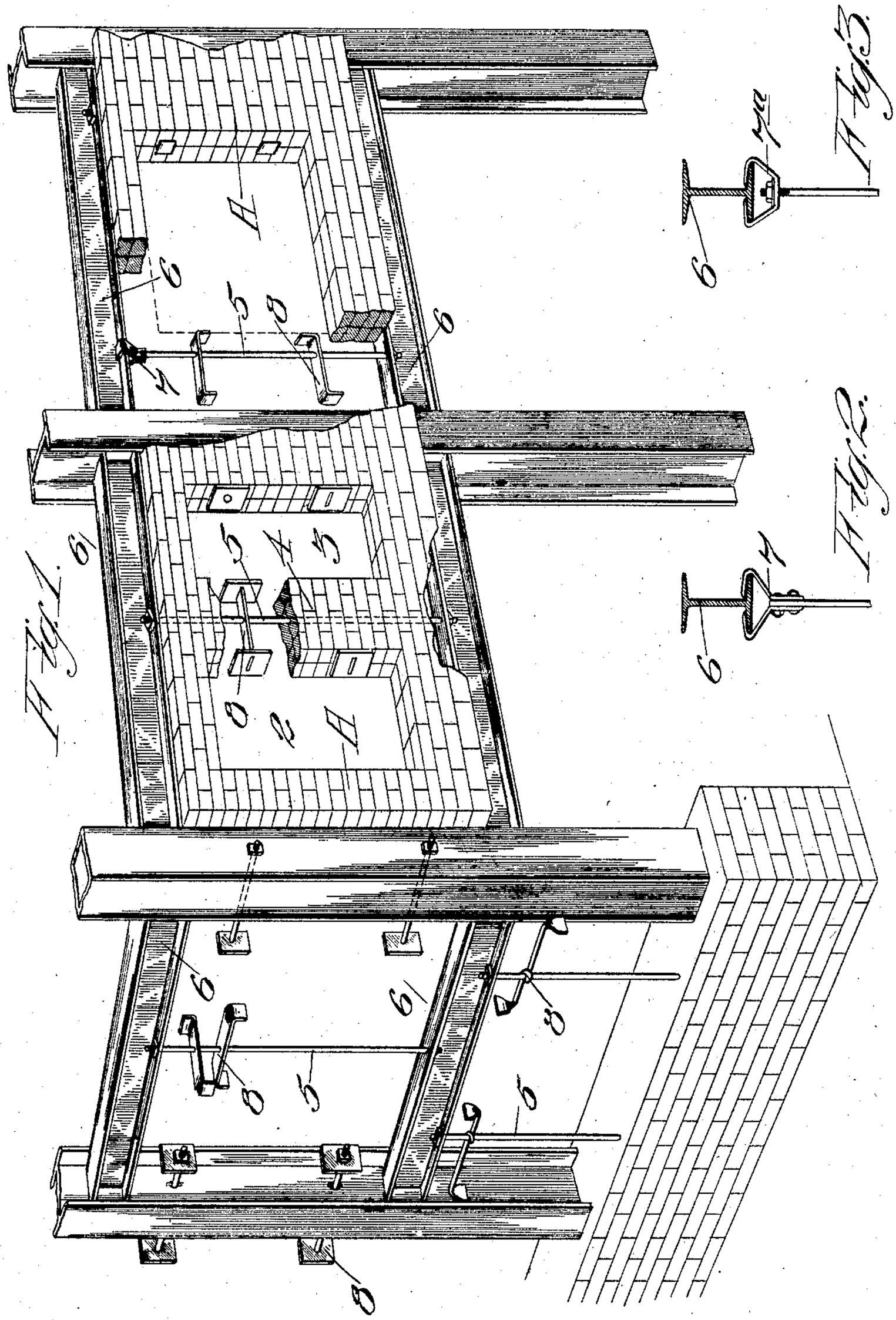

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BUILDING CONSTRUCTION.

No. 859,663. Specification of Letters Patent. Patented July 9, 1907.

Application filed February 2, 1907. Serial No. 355,360.

To all whom it may concern:

Be it known that I, PETER H. JACKSON, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Building Construction, of which the following is a specification.

My invention relates to improvements in the construction of composite walls, piers and mullions and the like between iron and steel columns, and brick, stone, concrete or other materials by which said columns are inclosed, protected and strengthened.

My invention consists of the combination and arrangement of various parts and details of construction, which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a perspective view showing the application of my invention. Figs. 2 and 3 are modified forms of securing the vertical iron rods to the beams.

In severe convulsions of the earth, high buildings which are constructed with structural metal columns and front, rear and division walls, suffer by reason of these parts being cracked and ruined and thrown to the ground, while the structural steel and iron columns retained their vertical position and may be used again to be inclosed and built between with either brick or concrete walls; such destruction may take place by reason of earthquake, vibrations, or by fire.

In a former patent I have shown a means for strengthening long continuous walls.

The object of this invention is to strengthen the weak portions of so-called "fire proof buildings", particularly at the window and door openings, so that the brick or concrete wall portion surrounding the structural steel columns, will better adhere and cling to the columns and cross-beams and will remain intact, as the brick or concrete work is kept in vertical or plumb line with the columns to which it is adapted and clamped transversely.

A represents a wall of a building showing a front with two window openings as at 2 and 3, having a mullion or pier 4 between them; also a single window having similar piers at the sides. In order to strengthen these small bodies of masonry which have not the endurance of long continuous walls, I employ rods 5. These rods have their ends attached to the horizontal metal beams 6 extending vertically between such beams and in the line of the piers or columns. The ends of the rods may be secured in any suitable or desired manner. Thus the beam flanges may be bored to receive the ends of the rods which are screw threaded, and nuts are afterwards screwed upon these ends to produce the proper tension and rigidity and hold the rods in place.

In some cases it may be found desirable to employ clamps 7, which are so constructed as to hook over the lower flanges of the upper beams and the upper flanges of the lower beams, and these clamps are bolted or riveted together upon the ends of the vertically disposed rods. Where it is possible to do so, I find it desirable to make these clamps in a single piece, shaped as shown at 7^a, and the upper portions of the clamps slipping over the flanges of the beams and the lower portion of the clamps being punched or perforated so that the ends of the rods will pass through the holes where they may be secured and drawn tight by nuts. Upon these tie-rods are fitted clamps 8 of any suitable or description which may have holes centrally in them to fit the rods, or in some cases they may be made in the form of rods bent around the vertical rods 5 with the ends extending in each direction to the exterior of the piers or columns. These rods or bars may have the ends bent, either both in the same direction or in opposite directions, or plates may be secured to the ends where the clamps are in the form of transversely disposed rods attached to the vertical rods. These plates are fitted to clamp against the opposite sides of the masonry piers or columns within which the vertical rods are inclosed; and they may be applied either to the front or rear, or to the sides of said columns, or if found desirable, at both points.

The structural iron or steel columns may have oblong or round holes punched in the web portions and extending through each hole, an anchor consisting of a flat bar or round rod, with a transverse plate riveted on one end, and the other end tenoned, with a screw thread cut on it, after being passed through the column a plate put on and riveted or it may be screwed up with a nut.

By this construction the comparatively slender support for the structure, which occurs in the form of piers or columns and their openings, are so strengthened as to resist shocks or the disintegrating effect of fires so that the masonry or concrete columns will be maintained intact and prevented from being thrown down.

Having thus described my invention, what I claim and desire to secure by Letters Patent, is—

1. The combination in a building construction of structural vertical and horizontal beams with masonry or concrete filling, separate vertical piers or columns, and means for retaining the columns in position, said means including vertical tie-rods extending between the horizontal beams and embedded within the masonry columns, and clamps carried by the rods and arranged to compress the opposite sides of the columns.

2. In a building construction having structural vertical and horizontal beams with masonry or concrete filling and separate vertical piers or columns, rods extending between the horizontal beams and within the substance of the piers, and clamps adjustably carried upon said rods, said clamps having the outer ends compressed against the front or rear sides of the columns.

3. In a building construction composed of structural steel or iron vertical and transverse beams, and a filling of masonry or concrete, and piers or columns forming window or other openings, rods extending vertically through said piers or columns, clamps with means by which the rods are secured to the horizontal beams, the rods extending between said clamps, means by which tension may

be applied to the rods, and transverse clamps adjustable upon the vertical rods having their outer plates arranged to compress the opposite sides of the columns.

4. A building structure including vertical and horizontal structural steel columns with intermediate open spaces, and vertical piers or columns, vertical and horizontal rods inclosed within the masonry and intersecting each other within said columns, said rods being united at their intersection and having transversely disposed and adjustable clamps extending outwardly from the said vertical and horizontal rods and adapted to compress the opposite sides of the piers or columns.

5. In a building construction, the combination of vertical and horizontal beams, vertical masonry piers, columns and mullions extending between the horizontal beams, rods embedded in the substance of the piers and extending through the vertical beams, and means for connecting the ends of the rods to said beams, transverse ties adjustable on the rods, and clamping plates or ends between which the sides of the piers may be clamped.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

PETER H. JACKSON.

Witnesses:
S. H. NOURSE,
GEO. H. STRONG.