

(No Model.)

C. A. PRARAY.
BUILDING.

No. 518,274.

Patented Apr. 17, 1894.

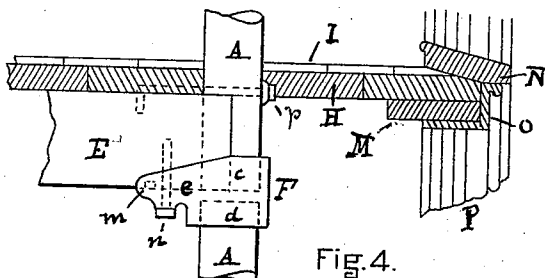


Fig. 4.

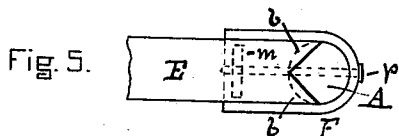


Fig. 5.

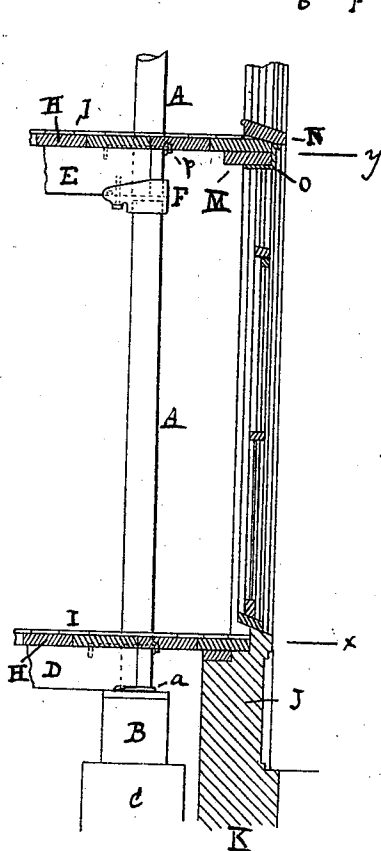


Fig. 3.

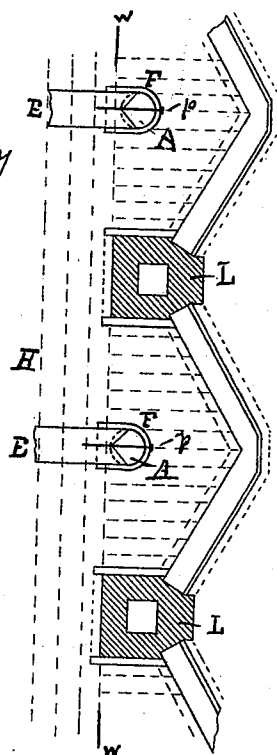


Fig. 2.

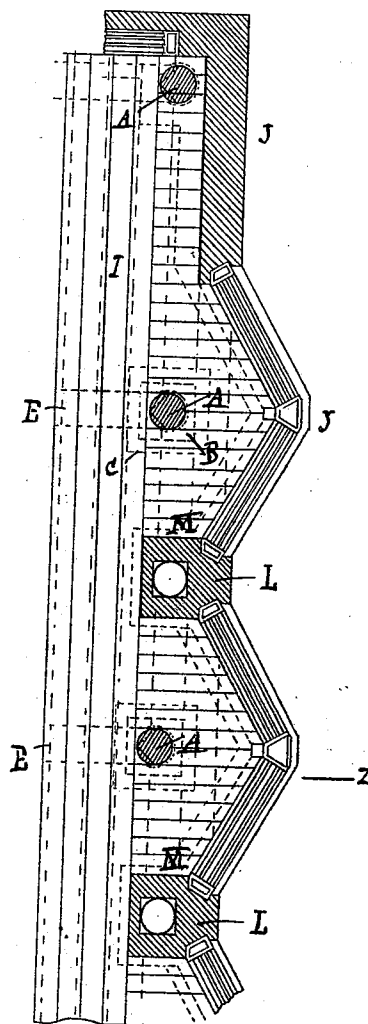


Fig. 1.

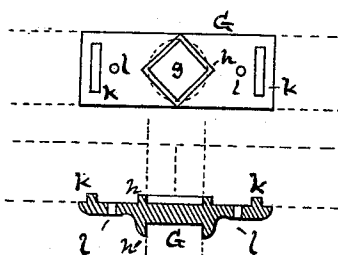


Fig. 6.

WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES A. PRARAY, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-HALF TO CHARLES R. MAKEPEACE, OF SAME PLACE.

BUILDING.

SPECIFICATION forming part of Letters Patent No. 518,274, dated April 17, 1894.

Application filed January 16, 1894. Serial No. 497,035. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. PRARAY, of the city and county of Providence, in the State of Rhode Island, have invented a certain new and useful Improvement in Buildings; and I declare the following to be a specification thereof, reference being had to the accompanying drawings.

Like letters indicate like parts.

Figure 1 is a plan of the ground floor, with the walls and columns in horizontal section on line *x* of Fig. 3. Fig. 2 is a plan of the second floor, with the pilasters in cross section on line *y* of Fig. 2. Fig. 3 shows in side elevation one of the columns, the floor beams and the manner in which they are supported, the piers, and foundations, on which the column rests. In this figure the floor planking, girts, window-cap and sill, and the wall foundation are shown in cross section on line 2 of Fig. 1 and it is seen how a continuous bearing is made from pier to roof. Figs. 4 and 5 are, respectively, a side elevation and a top plan of a floor-beam and a column, to show how the former is supported by and secured to the latter. Fig. 6 shows, in side elevation and in central longitudinal section, a tie-plate to connect the ends of two abutting floor-beams and to hold them in position upon the column.

My invention is especially applicable to the construction of mills and other large buildings and consists of the combination in a building, of a series of columns, resting upon piers, floor-beams, wholly supported by said columns, and outer walls, which are independent of said floor-beams, and erected upon separate foundations of their own, which walls serve as a shell or outer covering, but are provided with windows to furnish light, all said parts being constructed and arranged as I will now particularly specify.

In the drawings, A A represent columns or posts, preferably of iron. Each column rests upon a metallic plate *a*, which lies upon a pier B. Each pier B has its own proper foundation C.

The floor-beams D, E, at their ends, have a rectangular notch, best seen in Fig. 5, and the column A is cut away to have two plane faces of corresponding dimensions and angle,

against which faces said notched ends of the floor-beams snugly abut. The ground floor-beam D, rests upon the plate *a*, and pier B, as seen in Fig. 3. The floor-beam E, rests upon the segmental lips *b b*, of the column A, adjacent to the bottom of the plane faces, cut away as aforesaid, and is also supported by the metallic capital or cap F, which has a circular opening of the same diameter as that of the column, with flanges *c*, *d*, and bracket plate *e*, shown enlarged in Figs. 4 and 5. Said cap F also has a projection or lug *m*, which fits into a corresponding mortise, cut in the under side of the beam E. A screw bolt *n*, passes through the bracket plate *e* and a dog-iron *p*, which passes through the column A, extends along the upper surface of the beam E, and has its end bent down, at a right angle, to enter a corresponding socket in the beam, as shown in Fig. 4. By these means the end of the beam E, is firmly held in place upon the lips *b b* of the column, and in close abutment with the plane faces of the column. The inner ends of floor-beams, which abut each other, are tied, as shown in Fig. 6, in which the two long vertical lines, which are dotted, indicate a column or post, and the short vertical dotted line indicates the abutting edges of the ends of two beams, the latter being represented by the parallel dotted horizontal lines. The beams are notched at their ends, as above described, so that only their edges abut each other. At this place, the column is cut away to form four rectangularly disposed plane faces, the cylindrical surface of the column below being shown in dotted lines. The tie-plate G, has a square central aperture *g* which fits upon the squared top of the column and a ledge *h*, *h'*, upon the top and bottom thereof, give it a larger contact with the column. Said plate also has the lugs *k*, to enter corresponding mortises in the beams, respectively, and the holes *l*, through which screw-bolts pass up into the beams.

The floor-planking H, is laid upon the beams, preferably at right angles thereto, and the floor I is laid upon the planking, as usual.

In Fig. 1 the solid lines of the flooring represent the floor proper and the dotted lines, parallel therewith, represent the planking.

The wall is shown at J. It rests upon a

foundation K of its own. Pilasters L, preferably of masonry, are erected at intervals. These also have their own foundation, as shown by the parallel dotted lines surrounding them in Fig. 1. The pilasters L if made hollow, as shown in Figs. 1 and 2, afford spaces and flues for heating or ventilating purposes. Between the pilasters L are the window spaces. In Fig. 1, the window sashes are seen in position.

That part of the flooring outside of the flooring H I can be laid at a right angle thereto. The planking, upon which said part of the flooring is laid, rests upon girts M, which project from the walls and around the pilasters. These girts are shown in Fig. 1 by dotted lines parallel with said walls and pilasters, respectively, while the said planking is shown by dotted parallel lines extending lengthwise of the building.

N represents the window-sills, O the window-sash caps and P the window jambs.

The walls may be straight and plane surfaces if desired but preferably they are bayed or angularly disposed as in Figs. 1 and 2.

Having thus specifically described the several parts of my improved construction, I will proceed to explain the advantages obtained thereby.

In buildings, as commonly constructed, the floor-beams and rafters are supported, at their outer ends, wholly by the walls. It is therefore necessary that the walls be built massive and strong enough to sustain the weight of the floors and the loads upon them, as well as the weight of the roof, and especially in building mills, these walls must be very thick and massive, on account of the heavy machinery upon the floors and the great and constant vibration caused by the operation of such machinery. To insure the strength and rigidity of the walls, the number, size and location of the windows must be limited. These walls are very expensive in construction, and, in case of fire, they are so weakened and injured, that they are generally pulled down and entirely demolished, because rendered unsafe to again support the floors, &c., in case of the reconstruction of the factory.

In my improved method of construction, it is seen that the walls do not support the floors at all, nor the weight upon the floors, but are wholly independent thereof. They serve simply to cover in or inclose the structure. They rest upon their own foundation, and serve to support the windows and to carry their own weight and no more. Four great advantages result from this plan of construction. First, the walls are very much cheaper, requiring less material. Secondly, they afford much greater window space as the entire surface between the pilasters may be used for that purpose, thus providing a much greater amount of light to the apartments within. Thirdly, in case of fire they are more easily removed than the usual massive walls and the loss caused by their destruction is much

smaller than that of the walls as at present built. Fourthly, the walls are entirely free from all strain from within the building.

It is to facilitate the separation of the walls from the structure in case of conflagration, that I arrange the planking and floors, as shown in the drawings, so that there will be a natural line of cleavage *ww*, when the walls fall, and thereby, the walls will not, in falling, carry down the main floors, as is now common, but will be released therefrom.

By making the walls with a series of bays or angular projections between the pilasters, they are much strengthened to resist wind-pressure, the said pressure being thereby divided and distributed laterally, so as to be largely received upon and resisted by the pilasters. The angular surfaces of the wall thus become practically horizontal trusses. The pilasters may be dispensed with, and columns or posts substituted for them, if desired. In case of such bayed construction of the walls, I prefer that the pilasters L, and the columns, A, should be substantially in line with each other.

My invention has the merit of great simplicity of construction and with a less quantity of material than heretofore necessary a stronger and more rigid building is secured.

The entire weight of the floors and roof and of the machinery, or other load upon the floors, is supported upon a series of columns, each firmly resting upon a suitable and substantial foundation.

In buildings made of brick or masonry by the present method of construction, the moisture, contained and held by the mortar and material, is apt to cause the decay or rotting of the beam-ends. In a building constructed as I have above specified, this liability of rot and decay is wholly obviated.

I claim as a novel and useful invention and desire to secure by Letters Patent—

1. In a building, a series of columns, resting upon proper foundations and adapted to sustain the floor-beams, in combination with floors and floor-beams wholly supported upon said columns, and an outer wall, inclosing said structure, but wholly independent thereof, and having a separate foundation substantially as described.

2. In a building, the combination of the columns A, each resting upon its proper foundation, the beams D, E, resting upon ledges or flanges of said columns and wholly supported thereby, the capital or bracket F, upon each column, provided with bolts to fasten the beams to the columns, respectively, and the wall J, having its own foundation K, but wholly independent of said beams, substantially as specified.

3. The combination of the beam E, having the notched end, the columns, A, cut away with plane faces to receive said notched beam-end and having ledges or lips *b, b*, to support said beam, the capital F, mounted upon the column and having a lug *m*, which enters a

mortise in the beam, and also having a bolt *n*, passing through it into the beam and the dog-iron *p*, extending through the column and entering the beam, substantially as shown.

5 4. In a building, an outer wall, whose surface is made in a series of bays or angular projections, in combination with pilasters, located at the entering angles of said bays and columns located midway between the pilasters, respectively, and in line therewith adapted to support beams, substantially as described.

10 5. The improved building herein described, consisting of the columns A, resting upon

piers B, and pier-foundations C, the floor 15 beams D, E, adapted to rest upon ledges or flanges of the columns A, the capitals F, upon the columns, provided with means of fastening the beams E to the columns, the flooring H, I, the wall J, resting upon a foundation K, 20 and having pilasters L, resting upon suitable foundations, said wall J, being made with angular bays and entirely independent of the floor beams, substantially as specified.

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Witnesses:

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