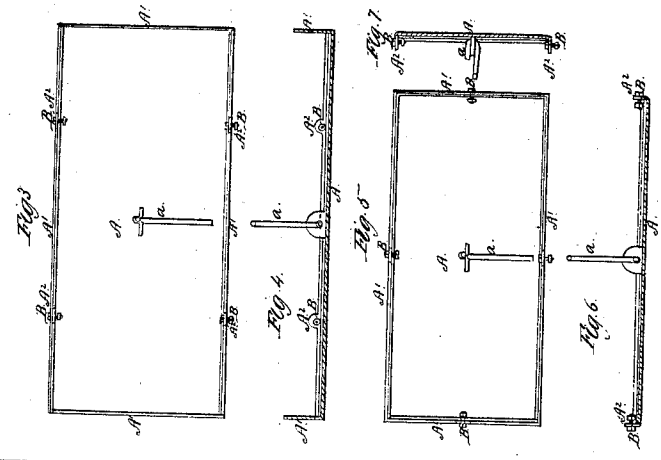
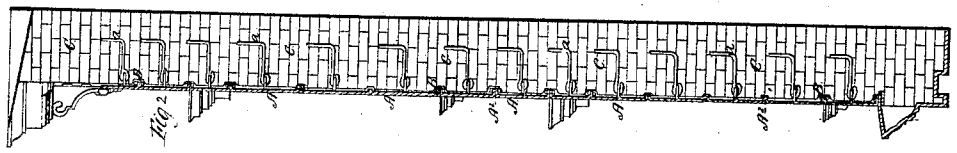
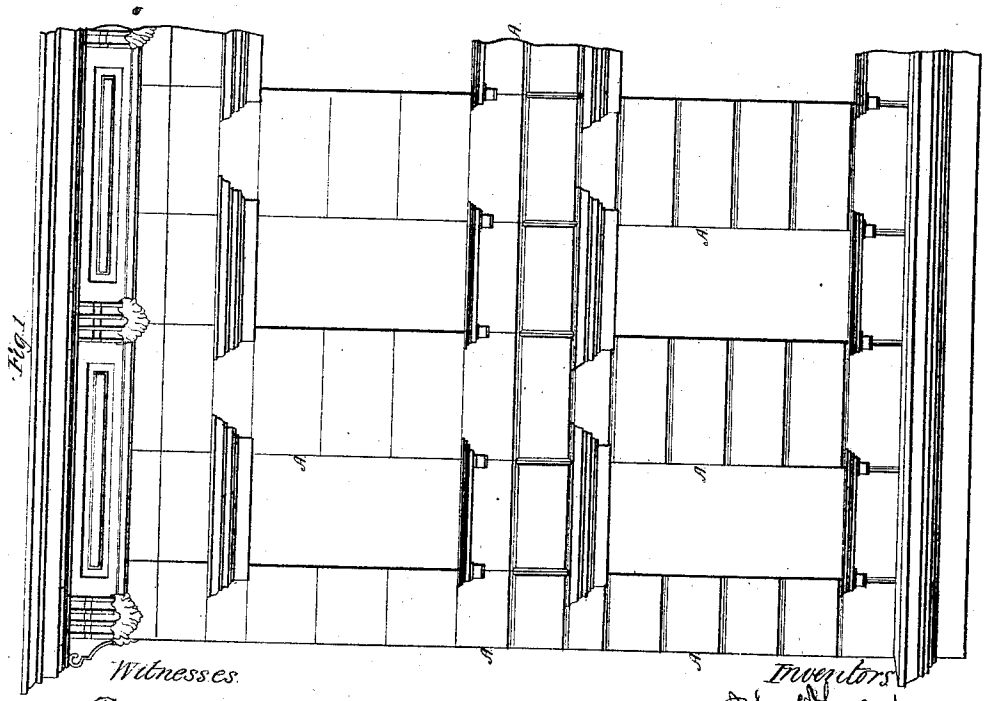
Alexander & Burchell.

Iron Front for Buildings

No. 90,478. Patented May 25, 1869.







Witnesses.
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Letters Patent No. 90,478, *dated May* 25, 1869.

IMPROVED IRON FRONT FOR BUILDINGS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that we, JOHN ALEXANDER, of Greenpoint, in the county of Kings, and State of New York, and NATHANIEL J. BURCHELL, of New York city, in the same State, have invented certain new and useful Improvements in Fronts for Buildings; and we do hereby declare that the following is a full and exact description thereof.

We will first describe what we consider the best means of carrying out our invention, and will afterwards designate the points which we believe to be new therein.

The accompanying drawings form a part of this specification.

Figure 1 is a front view, and

Figure 2 is vertical section of the front, or, rather, the upper part of the front of a dwelling, constructed according to our invention. The upper story is made with plain joints, and the next below with ashlar joints.

Figure 3 is a rear view, and

Figure 4, a horizontal section of one of the pieces, on a larger scale. This is a piece between the windows.

Figure 5 is a rear, and

Figure 6, a horizontal section of one of the pieces over the windows, or where the pieces form continuous tiers.

Figure 7 is a vertical section of the same.

Similar letters of reference indicate corresponding parts in all the figures.

Our fronts are mainly masonry, laid in mortar, so as to afford the proper thickness and strength, but it is faced with a thin coating of cast-iron.

The iron is made in plates or sections, and fastened together, and also fastened or anchored in the masonry, and is coated, so as to imitate, very perfectly and neatly, stone surface.

Iron buildings have been many years known, and are greatly approved. While possessing very great advantages over any other material, they are open to objections. They are expensive, and conduct heat too freely, transmitting heat from the interior outward in winter, and from the exterior inward in summer, under the influence of the sun.

To remedy this last difficulty, brick-work has been placed within the iron shell, but the expense has been thereby increased, and made almost insupportable for general purposes.

Our invention provides a good non-conductor, while having all the ordinary qualities of masonry walls, with a thin surface of iron.

The latter is not intended to contribute strength, to any great extent.

The masonry constitutes the strength of the wall.

The iron performs simply two functions, protecting and ornamenting the surface.

We make the iron in the form of flanged plates, very broad and thin. The thickness is about equal to ordinary stove-plate, say three-sixteenths of an inch, on an average.

The flanges are a little thicker, and are finished by a planing-machine, or other means, so as to fit nicely together.

The flanges are provided, at intervals, with lugs, in which we core holes, and afterwards introduce small screw-bolts, to hold the plates in place.

We make the faces of a length and height corresponding to blocks of stone.

We can make the surface or faces of each piece plane, or we can make it figured, in imitation of tooled ashlar, or random tooled, or chiselled, or boasted, or pointed.

We can make the work in imitation of rubble, or we can make it rusticated, if preferred, or we can, in case any part of the whole design should require such work for any peculiar effect, or in case it should be desired by any architect or builder, with a view to provide against any expansions and contractions by heat and cold, give the whole the appearance due to rough quarry-stone.

Any walls of stone or brick-work may be imitated in our invention, and a variety of patterns may be provided, so as to make a proper variety in the imitation-stones, but, in all cases, we make the iron as thin as it will flow, so as to economize the metal, and, although badly-broken and irregular brick and stone may be used in the wall behind, it is very important that strong material be there used, and that the thickness, and the mode of laying the stone or brick, be such as will afford a firm and substantial wall without depending upon the iron for strength.

In the drawings—

A A, &c., represent the broad faces of the sections, which represent the stones, and

A^1 A^1 are the flanges.

A^2 A^2 are the eyes, or lugs, which project beyond, and abut together like the flanges, but present broader surfaces.

They form the means of firmly securing together the edges of the thin castings A^1 A^1.

B are the screw-bolts, which hold these blocks together.

We have constructed several fronts and partial fronts of first-class houses by this means, preparing the plates A A^1 A^2 of several sizes and forms, adapted to match together and properly form the entire front, taking care to mark each on the back with letters and numbers indicating their position. We finish the edges so that they fit together accurately, and adapt all to be fastened together by screw-bolts, which may be used indiscriminately in any of the holes.

In putting up a building, we keep the iron-work

just a little ahead of the brick; that is to say, we apply together, and firmly screw-bolt in place, the several iron sections A A^1 A^2, until three or four tiers of such sections have been raised, then the iron-workers continue their work while the bricklayers commence to construct a strong and firm wall, C, close in the rear of the iron shell thus provided. The brick-work is continued, closely following the iron-work, and solidly embedding the anchors *a*, which project backward from centre lugs A^3, cast on the rear faces of the iron sections, as represented.

We do not consider it essential to the success of our invention that the masonry be filled out firmly against the rear of this iron, over the whole of the surface; in fact, we rather prefer that the face of the brick-work shall touch the iron only at points, so as to allow a little air-space between the iron and the brick, over a good portion of the surface.

Such spaces make the house warmer in winter and cooler in summer, and also allow the thin iron plates to expand more freely when greatly heated by the sun or by any extraordinary cause, such as a conflagration in an adjacent building.

The back surfaces of the iron sections may be left unprepared, or may be coated with bitumen or paint, or any ordinary preservative, but the front should be carefully prepared in imitation of stone.

The stone, which we prefer as the most tasty and rich, and at the present time most in vogue, is the soft but durable freestone, now known as brown-stone.

The benefit of our invention may be realized, in part, by simply painting the surface with a proper brown color. It may be realized still better by painting it with a proper color, and while the paint is still fresh and sticky, covering it with sand, the grains of which are of the proper color, or with sand, the grains of which are of different colors, so mixed as to produce the proper effect.

We have succeeded in producing a very strong, successful, and evidently-durable coating, by a special course of preparation, which we will now briefly describe.

We stir into good japan varnish about half its weight of the fine earth-colored powder, known in trade as Prince's metallic paint.

If the castings or sections A A^1 A^2 are made with ordinary skill, the composition may be applied thereto without any previous preparation, further than the ordinary brushing with a wire brush. We apply the preparation by means of an ordinary painter's brush, and having thus coated the surface with the semi-fluid compound, we dust upon it powdered brown-stone, or sand of the same color, or mixtures of sand of the proper color, and the particles attach themselves by partially embedding themselves in and adhering to the soft coating. We can apply the dry material with a sieve or dredge, or we can strew it on by hand.

Having thus covered the whole surface with much more than will adhere, we introduce the plates, face upward, into a japanning-kiln or oven, and maintain in it a temperature of some 300° Fahrenheit, for about twelve hours, after which we allow the heat to gradually decline for some twelve hours more. After removing the plates and pouring off the loose, dry material, we vigorously brush the surface with a wire brush, which removes all the loose particles, and the surfacing is then complete, and the plate, thus prepared, ready to be put in its place in the building.

We can pulverize chips or waste pieces of brown-stone, to make the dry material for the surface, by any mechanical process.

In case pulverized material of the right color, or mixtures of sand of such color, are not conveniently accessible, we can employ common white sand, and color it by mixing with it the finely-pulverized red material known as Prince's metallic paint.

It very greatly contributes to the economy due to our invention, to construct a number of buildings exactly alike. We have, in the several blocks now in course of construction, in one instance seven, and in the others nearly as great a number of buildings standing together, side by side, each an exact counterpart of its neighbor, so far, at least, as the front is concerned. In such cases we can correspondingly screw-bolt the edges of the plates forming the facings of one front to the plates which form the faces of the adjacent front, but we do not deem this duplicating or building of fronts in blocks absolutely essential.

It should be observed, as very important, that in preparing the plates which form the angles of any work, especially at the edges of the doors and windows, we increase the width of the flanges A^1, or of the corresponding angular projection, which extends back from the edge of the main part A, so as to form the returns or edge-facing of the apertures for the windows, in other words, the edges of the windows or doors, or of any blank window, in our fronts, should show the same material as the face proper of the building, and should be finished by coating, in the same manner as the other parts.

What we claim, is—

In the ornamentation and protection of the walls of buildings, the plates A A, with their inward-projecting flanges, bolted or riveted together in the manner described, and attached or fastened to the walls, by means of the metallic hooks or rods *a*, and the eyes formed on the inner sides of the outer plates, all constructed and arranged substantially in the manner and for the purpose herein described.

In testimony whereof, we have hereunto set our names, in the presence of two subscribing witnesses.

JOHN ALEXANDER.
NATHL. J. BURCHELL.

Witnesses:
C. C. LIVINGS,
W. C. DEY.