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Knight

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(54) **BUILDINGS, STORES, &C.**

(76) Inventor: **Isaac Knight**

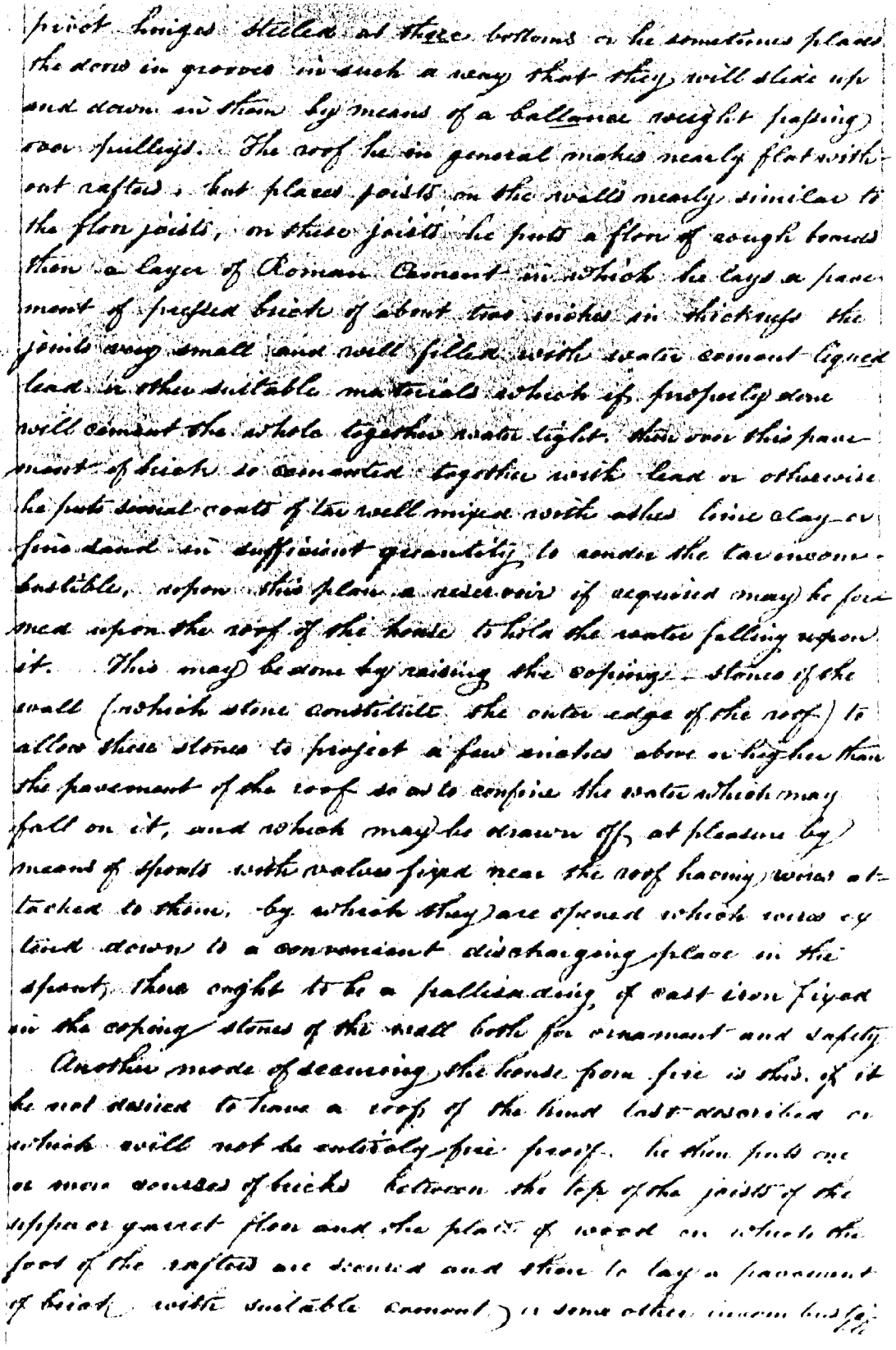
Isaac Knight
Letters Patent

The schedule referred to in these Letters Patent and making part of the same containing a description in the words of the said Isaac Knight himself of his improvement in the mode of constructing stores and other buildings —

A Specification of an improvement in building stores invented by Isaac Knight of the City of Baltimore which improvement he believes to be new and useful and which he asks a patent. The leading object is to introduce a mode of building more suited to the present state of our cities; by rendering the exterior of the building really fire proof. The means he proposes for doing this is to construct the front principally of cast iron, with an earthen roof, or an incombustible covering for the attick floor. Such building being so constructed that the cost will be little or no more than upon the present plan. The principle objection made to cast iron in connection with masonry has been the expansion and contraction of the metals. To prevent it is beyond the reach of art. all that can be done is to abate the bad effects of it which he proposes to do. Granite pillars are found not to endure in case of fire as when they become hot they burst asunder, and the building falls.

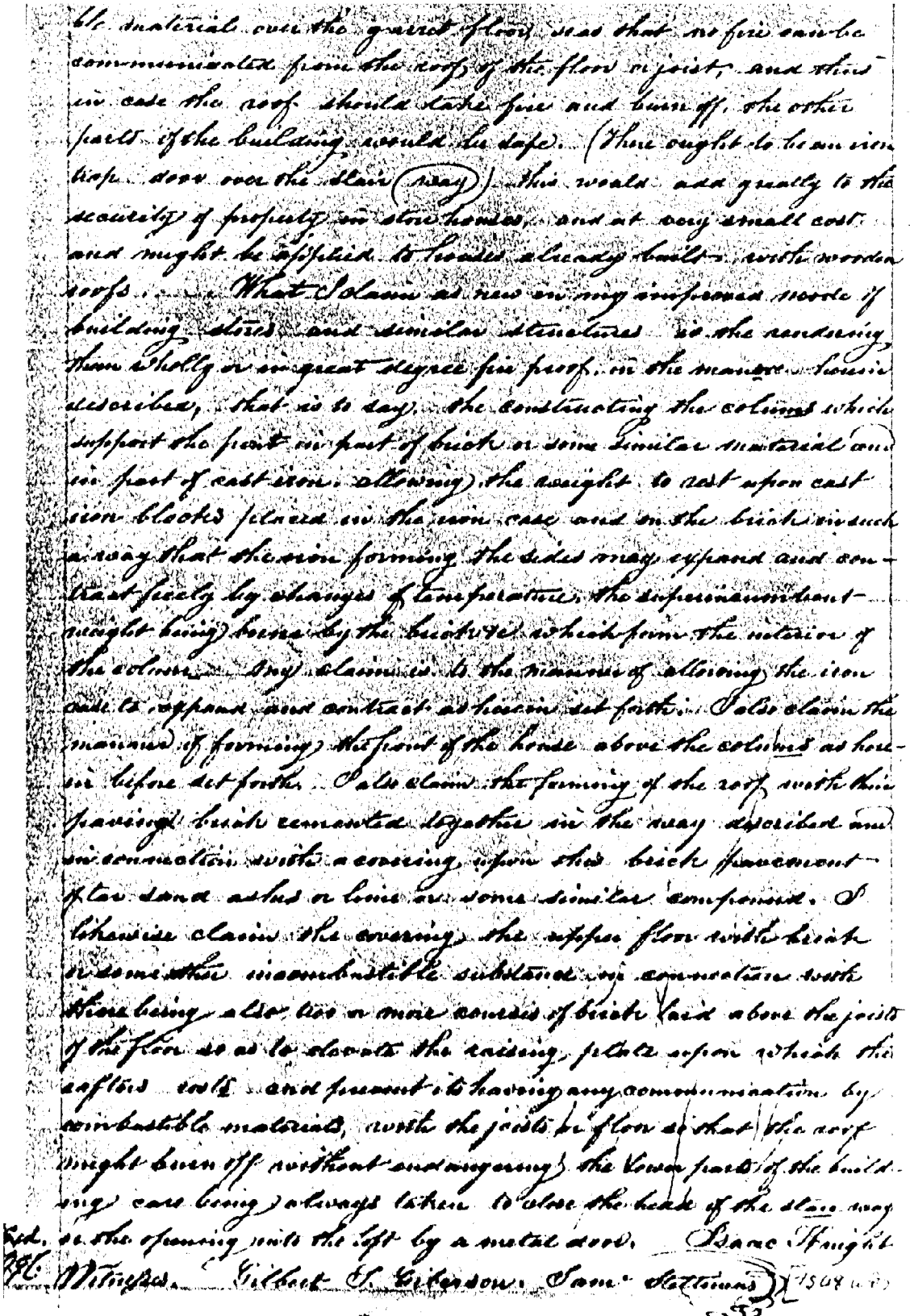
Instead of granite he makes the pillars of cast iron hollow with three sides generally about ¾ of an inch thick, the inner side to be open but with flanges, or the corners turned nearly in the form of the letter B. so that they may be built into, or filled with brick or soap stone to within one inch of the top of the cast iron case. then he places a block of cast iron which may be about two inches in thickness made to fit the inside of the top of the case and on the brick work so the whole weight will rest upon the brick within the pillar.

pillars and leave a space of about one inch from the
the inside of the case to expand and contract. The cap of the
pillars must have flanges expanding down the outside of the
pillars two or three inches so as to receive the tops of the
cast iron case or pillars. The lintels or beginnings which
rests on the cap of the pillars be also forms of cast iron with a
front and bottom nearly in the form of the letter L. the
front
above 4 inches in width and one inch in thickness. the bot-
tom one inch thick and one foot wide. There must be a
flange at the top to throw the water off. This may also be
filled with bricks and when it is intended that the joists
are to rest on these lintels or beginnings and run from front-
to back of the house let them cast a staple or chain on the in-
side of the lintels to secure and hold the joists and tie the build-
ing. The second story be formed in the same manner as the
first, if it is intended to have the whole space between the
pillars taken up with doors and windows as below; but if
not the three inches the pillars of about one half the size of
those in the first story. say six inches front by 12 or 18 in
depth; and flanges two above for one below, also filled with
bricks, and with a block of cast iron on their top to
accomodate the expansion as before stated and so arrang-
ed as that they will answer for the door and window frames
and the space between these pillars, and doors or considers
which are called piers, and the space below the windows
be also closed up with plates of cast iron of about ½ inch in
thickness and of sufficient length and breadth to fit in
grooves which are cast for that purpose in the pillars,
these cast iron plates may be made to give the appearance
of panel work or other ornamental according to fancy.
The 3rd & 4th story, is also formed of cast iron in the same
manner. The window shutters ought to be of cast iron
as also the doors which should be made to move upon
pivots



privot hinges fitted at their bottoms or be sometimes placed the down in grooves in such a way that they will slide up and down as them by means of a tackle weight passing over pulleys. The roof be in general makes nearly flat without rafters but placed joists on the walls nearly similar to the floor joists, on these joists be puts a floor of rough boards then a layer of Roman Cement in which he lays a pavement of pressed bricks of about two inches in thickness the joints very small and well filled with stone cement liquid lead or other suitable material which if properly done will cement the whole together quite light. Over this pavement of bricks be cements together with lead or otherwise he puts several coats of the well mixed with other lime clay or fine sand in sufficient quantity to render the pavement bottible, upon this floor a reservoir of required many be formed upon the roof of the house to hold the water falling upon it. This may be done by raising the coping stones of the wall (which stone constitute the outer edge of the roof) to allow these stones to project a few inches above or higher than the pavement of the roof so as to confine the water which may fall on it, and which may be drawn off at pleasure by means of spouts with valves fixed near the roof having pipes attached to them, by which they are opened which pipes may be led down to a convenient discharging place in the apartment there ought to be a trellis work of cast iron fixed on the coping stones of the wall both for ornament and safety.

Another mode of preserving the house from fire is this. If it be not desired to have a roof of the kind last described or which will not be entirely fire proof. he then puts one or more courses of bricks between the tops of the joists of the upper or garret floor and the place of wood on which the foot of the rafters are secured and there he lays a pavement of brick with suitable cement) or some other known kind of



the material over the garret floor and that no fire can be communicated from the roof to the floor joist, and thus in case the roof should take fire and burn off, the other parts of the building would be safe. (There ought to be an iron hasp over the clair (stay) This would add greatly to the security of property in stone houses, and at very small cost and might be applied to houses already built with wooden roofs.) What I claim as new in my improved mode of building stores and similar structures is the rendering them wholly or in great degree fire proof in the manner herein described, that is to say, the constructing the columns which support the front or part of brick or some similar material and in part of cast iron, allowing the weight to rest upon cast iron blocks placed in the iron case and on the brick in such a way that the iron forming the sides may expand and contract freely by changes of temperature, the superincumbent weight being borne by the brick work which forms the interior of the column. Any claim I do the manner of allowing the iron sides to expand and contract as herein set forth. I also claim the manner of forming the front of the house above the columns as herein before set forth. I also claim the forming of the roof with the framing of brick cemented together in the way described and in connection with a covering upon the brick framework of tar and sand or lime or some similar compound. I likewise claim the covering the upper floor with brick or some other incombustible substance in connection with stone being also laid on more courses of brick laid above the joists of the floor so as to elevate the casing joists upon which the cast iron roof and frame is to bear, having any communication by combustible materials with the joists of the floor so that the roof might burn off without endangering the lower parts of the building, care being always taken to close the head of the stair way or the opening with the light by a metal door. Isaac Knight

Witnesses Gilbert E. Gibson Jas. Hastings