

(No Model.)

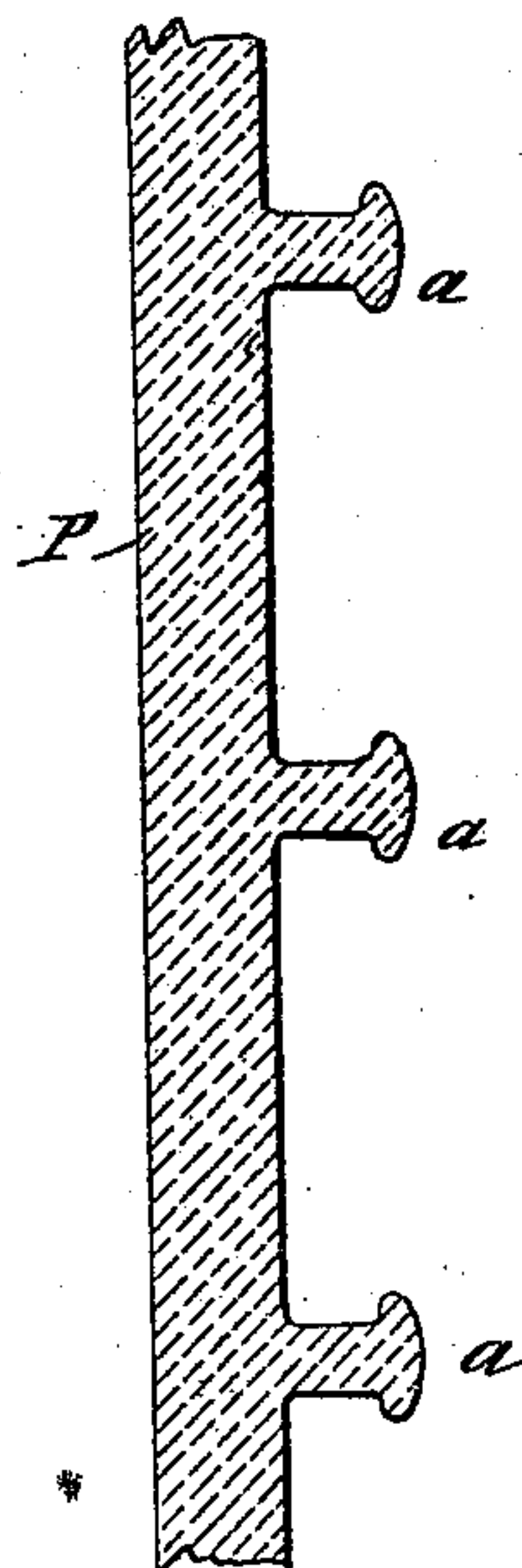
3 Sheets—Sheet 1.

W. BÜSCHE.  
ESPALIER WALL.

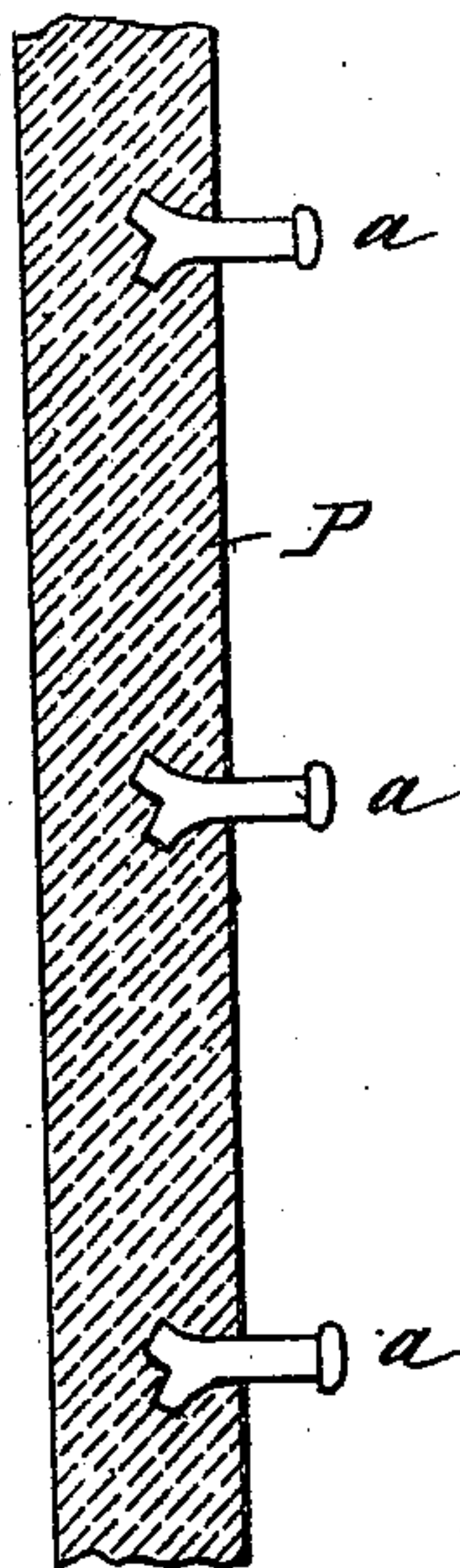
No. 575,024.

Patented Jan. 12, 1897.

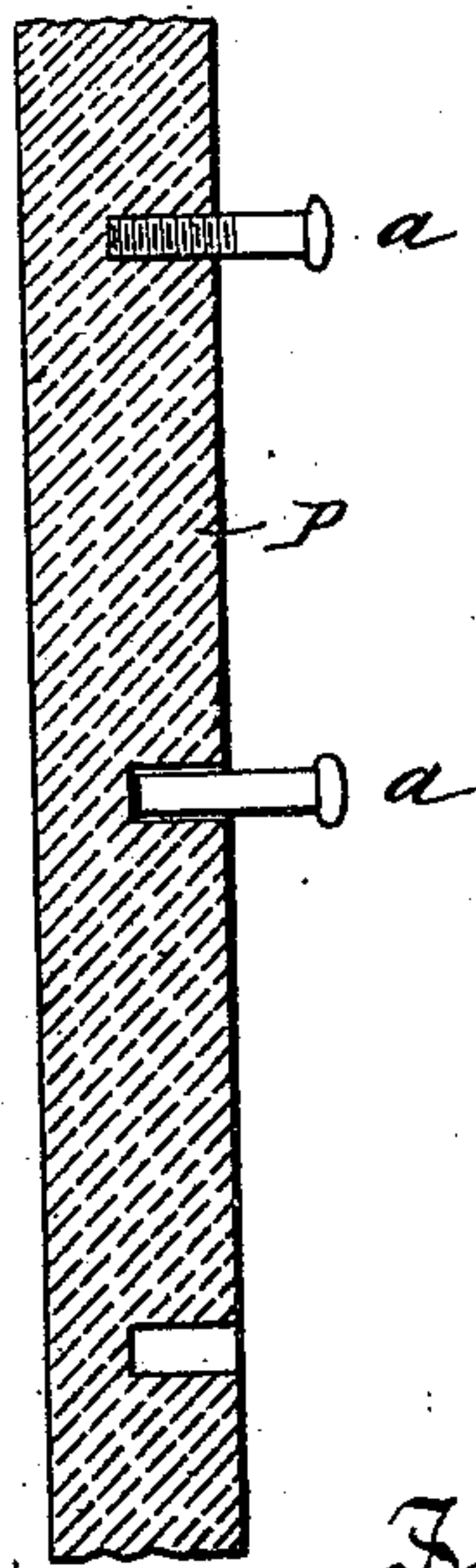
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses.

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Attys.

(No Model.)

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Fig. 5.

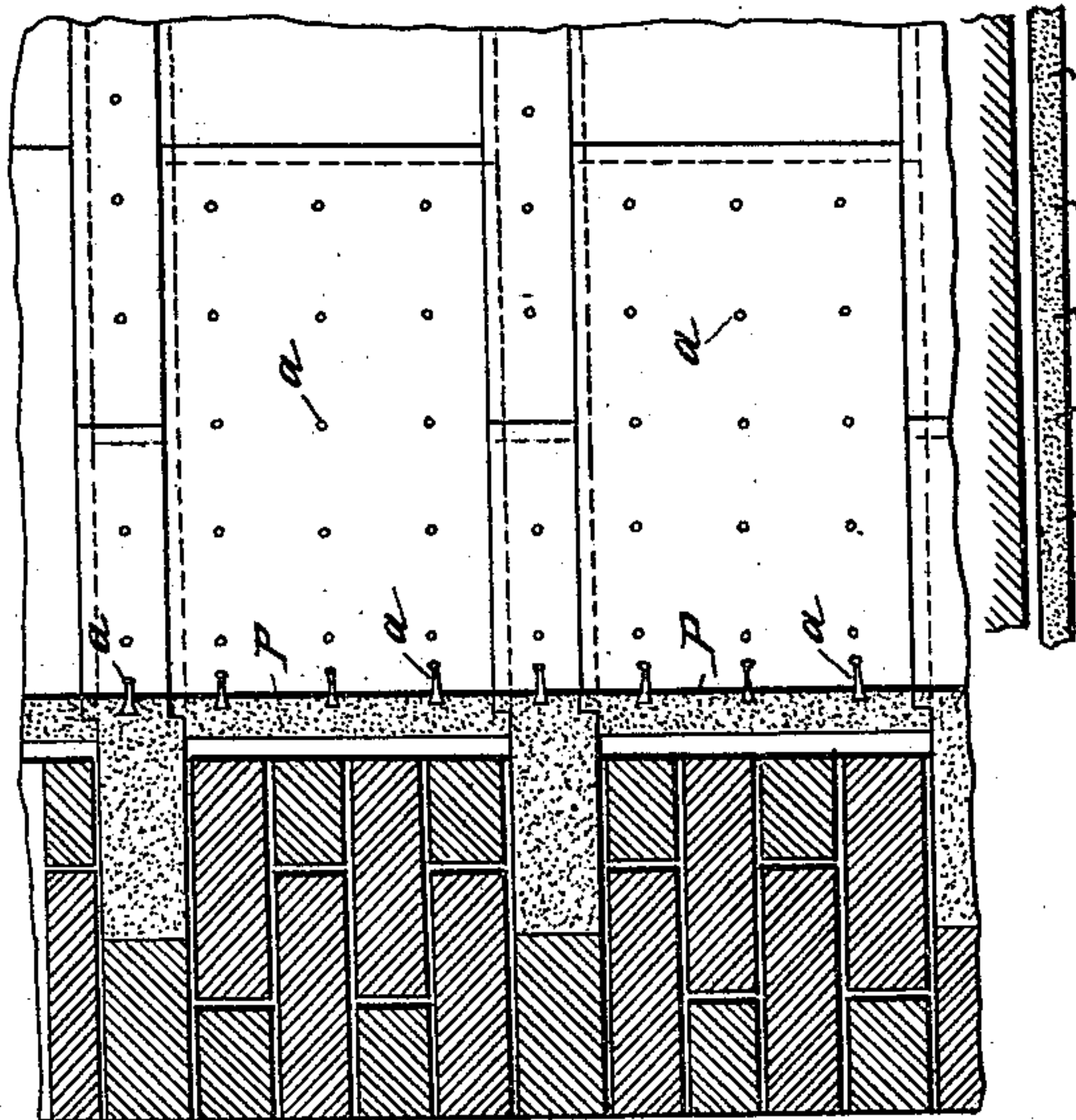


Fig. 5a.

Fig. 4.

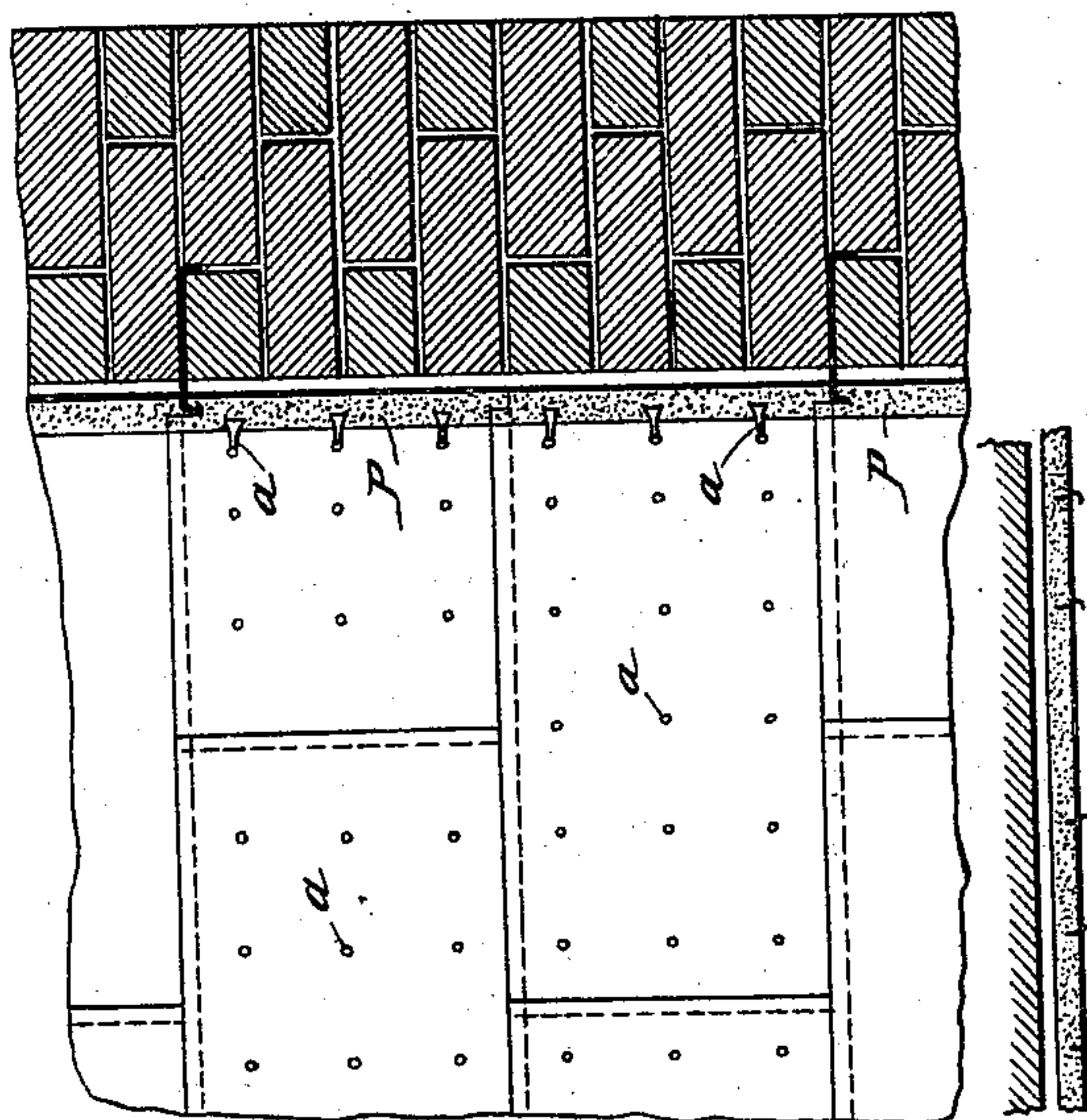


Fig. 4a.

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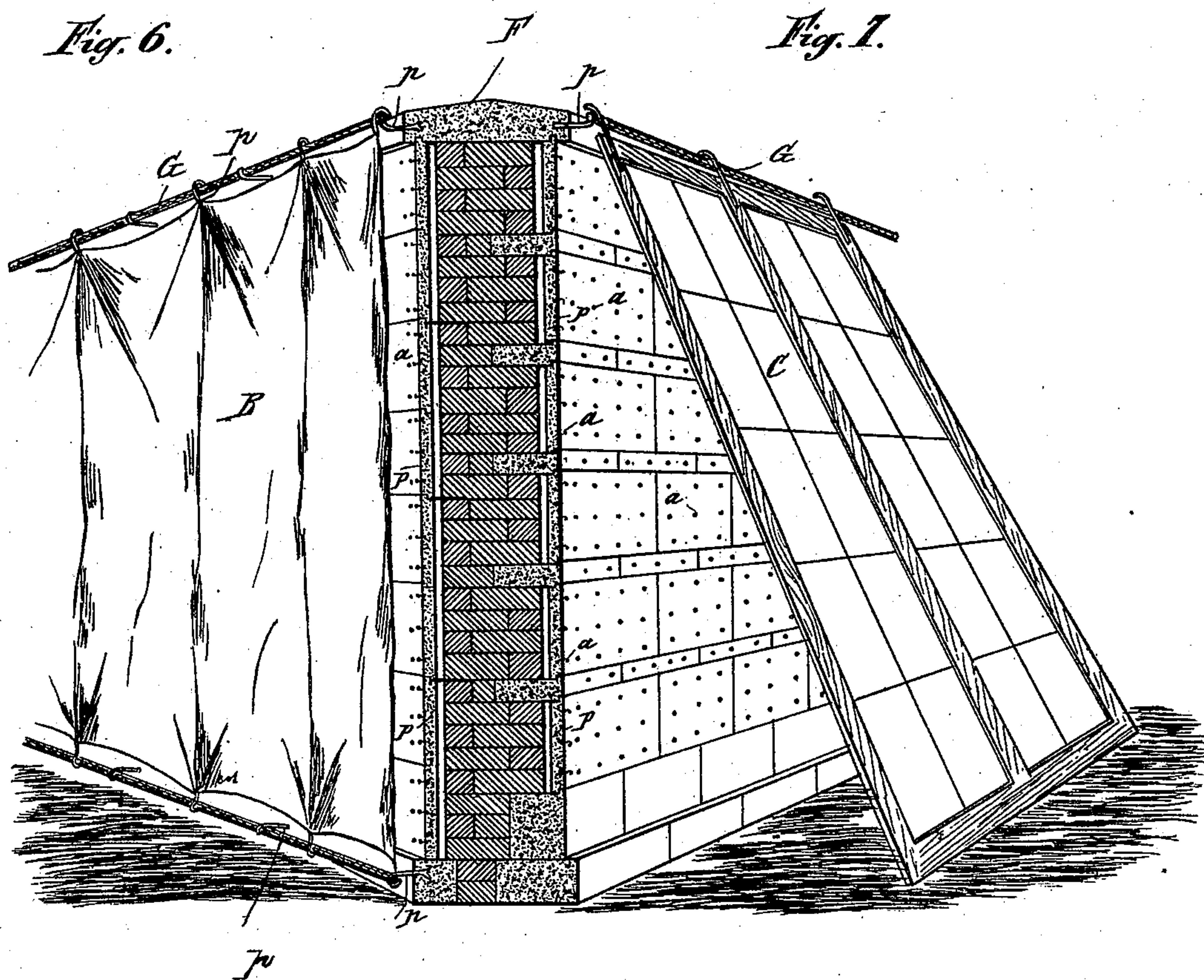
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# UNITED STATES PATENT OFFICE.

WILLIAM BÜSCHE, OF BRUSSELS, BELGIUM.

## ESPALIER-WALL.

**SPECIFICATION** forming part of Letters Patent No. 575,024, dated January 12, 1897.

Application filed April 14, 1896. Serial No. 587,502. (No model.) Patented in Belgium December 11, 1895, No. 91,259; in England December 17, 1895, No. 24,200, and in Germany December 18, 1895, No. 26,118.

*To all whom it may concern:*

Be it known that I, WILLIAM BÜSCHE, manufacturer, a subject of the King of Belgium, residing at Brussels, in the Kingdom of Belgium, have invented new and useful Improvements in Espalier-Walls, (for which patents have been obtained in Belgium December 11, 1895, No. 91,259 of certificate; in Great Britain December 17, 1895, No. 24,200, and in Germany December 18, 1895, No. 26,118 of certificate,) of which the following is a full, clear, and exact description.

In order that my invention may be fully understood, I will proceed to describe it with reference to the accompanying drawings, in which—

Figure 1 is a section of one of my improved espalier-wall plates having the supporting studs or knobs formed in one piece therewith. Fig. 2 is a section of a wall-plate in which separate immovable supporting-studs are anchored in the substance of the wall-plate. Fig. 3 is a section of a wall-plate in which holes are formed for the reception of the shanks of plain or screw studs or knobs. Fig. 4 is an elevation of one form of my espalier-wall applied to a supporting-wall. Fig. 4<sup>a</sup> is a horizontal section thereof. Fig. 5 is an elevation of another form of espalier-wall applied to a supporting-wall. Fig. 5<sup>a</sup> is a horizontal section thereof. Fig. 6 is an elevation similar to that shown in Fig. 4, having a curtain suspended from the coping of the supporting-wall. Fig. 7 is an elevation similar to that shown in Fig. 5, having a frame suspended from the coping of the supporting-wall.

The espalier-wall which forms the subject-matter of this invention is characterized by an improved system of applying the espalier-binders, the consequence of which is to permit of the realization of all of those conditions which are indispensable for this system of arboriculture in view of its maximum yield.

In the presence of the always-increasing development of the culture of fine fruits or table fruits and of the delicate care which such culture requires from the budding time up to the maturity of the products the attention of the fruit-grower must be principally directed toward such soil as is most suitable for the

quality and flavor of the fruits, that is to say, the walling-espalier. Its constitution and arrangement are of a great importance for the obtention of exemplary specimens. From this point of view the essential conditions are indispensable, namely, a surface favoring as much as possible the reflection of the heat of the sun and the keeping of the fruit in an immediate proximity of this surface of reflection. For the purpose of realizing the first condition the wall-surfaces must not be constructed of material which absorbs the sun heat, such as ordinary terra-cotta bricks and the like, but of harder ceramic products, such as slabs or bricks of artificial stone, porcelain, glazed stoneware, glass, and the like, which, by reason of their greater density, will reflect the heat instead of absorbing the same and will favor the radiation by their natural white tint as well as by the smooth nature of their surface. Moreover, the joints must not be made with ordinary soft mortar, which again constitutes rather a considerable heat-absorbing element, but by the aid of a hard and dry mortar presenting the same density as the stone slabs or bricks, so that the surface be uniform and smooth all over its extent, a condition which can, moreover, be favored by the use of joint-plates with tenon fastening. However, on the one hand an espalier-wall thus constructed presents the indicated advantages, but has, on the other hand, the difficulty which is opposed to keeping the branches of the trees, and consequently the fruits, at an immediate proximity of the surface, because it is not possible to fix therein, as in an ordinary wall, the usual fastening or binding means, which in their simplest form consist of nails inserted into the joints, and one is obliged to have recourse to this other means of fastening or attaching, which consists in erecting in front of the wall a ledge trellis-work, which on its part presents this still greater inconvenience of considerably removing the fruits from the radiating-surface and of causing them to thus lose, as it were, the whole benefit of the reflected heat.

It is because of the absence of acceptable binding or connecting means that the im-



proved form of espalier-wall hereinbefore indicated has remained unknown up to the present time and that brick walls with ordinary soft mortar have been generally used, enabling numerous nails to be inserted into the joints. However, apart from the loss of heat by absorption, it presents a great number of other disadvantages. First, the nails, finding only a slight holding medium in the mortar, become detached under the increase of the weight of the fruits, which nails then fall out, or at least become loosened, and the holes thus formed in the mortar by the shrinkage thereof, as well as the cavities resulting from its decay, form refuges for the rapid increase of vermin, destroying the good effects of the culture. Moreover, the walls can only with difficulty be whitewashed or lime-washed, and in so doing the branches are liable to be injured and the buds knocked off, as this work is usually accomplished during the time that the buds are opening. All these inconveniences totally disappear when the naturally-white form of wall is used, to which dirt and the like do not adhere and can be removed with the greatest facility by a jet of water passed over the surface, which is thus entirely restored by simple washing and without the deteriorating brushing operation. In view, therefore, of adapting the present form of espalier-wall for general use in arboriculture it is necessary to provide special and appropriate fastening or binding means, realizing all conditions for perfect culture without involving any of the inconveniences inherent to the systems in use. This perfect result is obtained in a radical manner by employing stone slabs or bricks in such a manner that the fastening or binding means are in direct connection therewith in manufacturing the same—that is to say, they form a rigid part with the material constituting the stone slabs or bricks before their being united to form a wall. In fact, in this manner the joints of the masonry remain intact, since the binding or fastening means project over the stone proper between the joints, which can thus be arranged by the aid of a white, very hard, and dry mortar which does not become deteriorated and which can be smoothed at will, so as to constitute a surface even with the surfaces of the stone slabs, made of a very dense and white material for the purpose of favoring as much as possible the action of the sun heat.

The fastening bolts or knobs may be made of the same material as the bricks or plates P, and the whole can consequently undergo the burning process, as it constitutes one single stone, as shown, for example, in Fig. 1, while Fig. 2 shows the application of bolts or knobs of different material to that of the plate. In this case the fastening devices *a* are inserted into the paste of the plate P either directly or in holes provided beforehand in order to

subsequently pass the whole to the kiln and thus fix the fastening means in the material of the plate.

A third means of fixing consists in providing in the plates simply a number of holes equal to that of the fastening or binding means and to subsequently fix the same in these holes by simply driving them by the aid of a hammer or by screwing them into the plates with one of their extremities, as shown in Fig. 3, provided that the fastening or binding devices are applied to the plate before it is built into the wall.

In certain cases, for example, when non-fructiferous tree-plants are in question, such as ivy and the like, the fastening means would be superfluous and one might employ plates or bricks simply provided with holes in which these plants find sufficient holding and for which such holes can serve because they do not give rise to the development of vermin.

The supporting-wall is preferably provided with an exterior cover of plates, as shown, respectively, in elevation and in vertical section in Figs. 4 and 5 and in horizontal section in Figs. 4<sup>a</sup> and 5<sup>a</sup>, which represent two forms of espalier-walls having plates of great dimensions and with tenon-joints. These joints may be omitted when the plates or slabs receive the shape of simple bricks.

By applying the described system likewise to the coping F of the wall, Figs. 6 and 7, by fixing thereto eyebolts *p*, supporting rods G, it is evident that it is very easy to provide means for protecting the espalier against the frost by frames C or curtains B, which are suspended from hooks or eyebolts connected with the rods G, on which they are rapidly and easily placed.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. An espalier-wall facing-plate, of hard ceramic composition having a heat-reflecting surface, provided with knobs projecting therefrom, substantially as described.

2. An espalier-wall facing-plate, of hard ceramic composition having a heat-reflecting surface provided with knobs molded in one piece therewith and projecting therefrom; substantially as described.

3. The combination with a supporting-wall; of a facing secured thereto and comprising a series of plates of hard ceramic composition having heat-reflecting surfaces provided with means whereby a plant can engage therewith; substantially as described.

4. The combination, with a supporting-wall; of a facing secured thereto and comprising a series of plates of hard ceramic composition having a heat-reflecting surface provided with knobs projecting therefrom; substantially as described.

5. The combination, with a supporting-

wall, of a coping of hard ceramic composition having a heat-reflecting surface, a rod secured to the coping for supporting a curtain or frame, and a facing secured to the supporting-wall and comprising a series of plates of hard ceramic composition having a heat-reflecting surface provided with means where-  
5 by a plant can engage therewith; substantially as described.

WILLIAM BÜSCHE.

Witnesses:

AUG. JOERISSEN,  
GREGORY PHELAN.