

W. H. FRANCIS.
BRICK HANDLING METHOD AND STACK.
APPLICATION FILED JULY 8, 1911.

1,030,397.

Patented June 25, 1912.

2 SHEETS-SHEET 1.

Fig. 1.

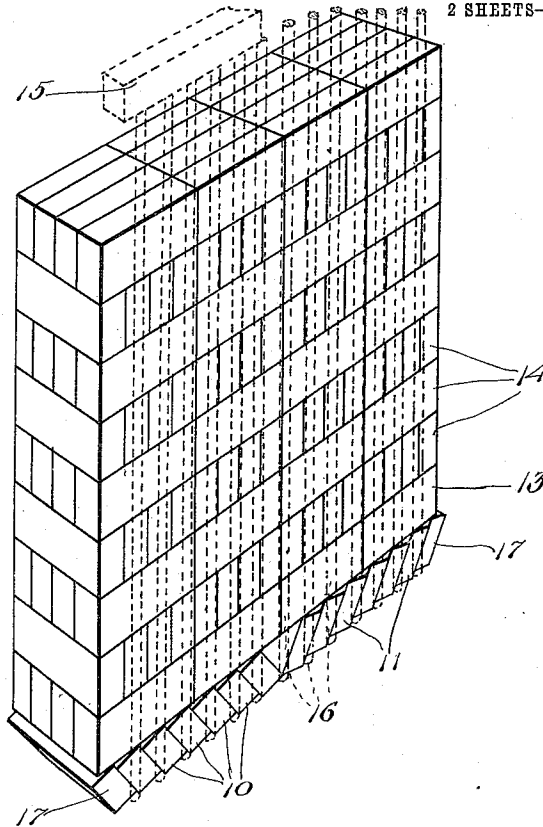
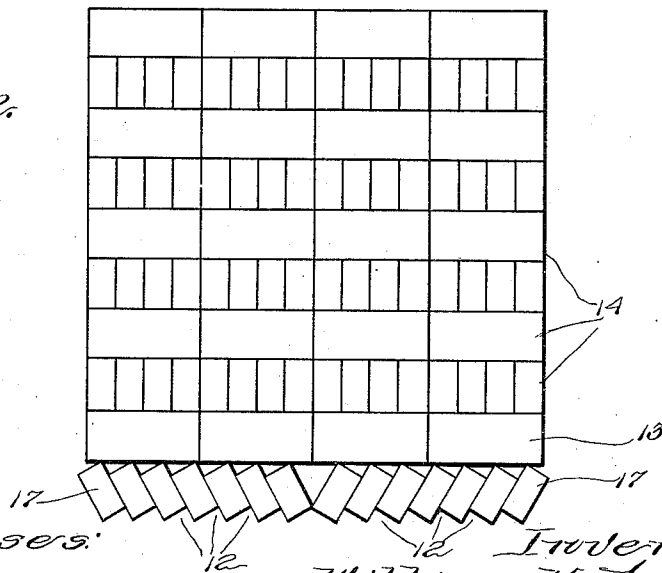


Fig. 2.



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2 SHEETS-SHEET 2.

Fig. 3.

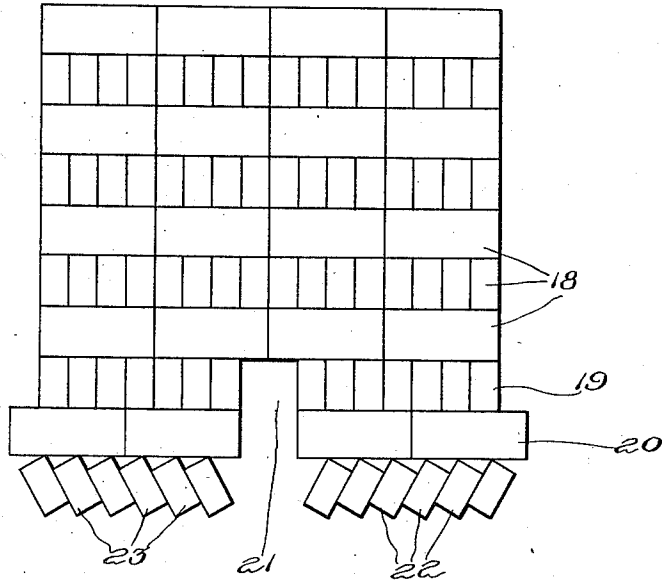
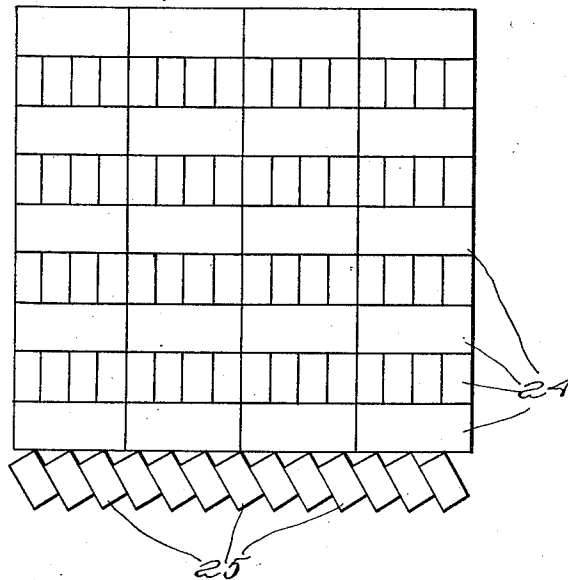


Fig. 4.



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UNITED STATES PATENT OFFICE.

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BRICK-HANDLING METHOD AND STACK.

1,030,397.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed July 8, 1911. Serial No. 637,576.

To all whom it may concern:

Be it known that I, WILLIAM H. FRANCIS, a citizen of the United States, and resident of Cherryvale, county of Montgomery, State of Kansas, have invented an Improvement in Brick-Handling Methods and Stacks, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

In the handling of bricks through the various stages in their manufacture, it is becoming recognized as a requisite for economical and rapid production to meet the demands of present day practice, that provision be made for handling the bricks in units or stacks for transfer in considerable numbers *en masse* by a mechanical lifter and setter, capable of lifting a considerable pile or stack of brick built up in hacking relation, or other stacked formation, and depositing them as required without disturbing such formation. A serious difficulty which has been encountered in the use of mechanical lifters has been to make provision for engaging the lifting fingers underneath the bottom of the stack at intervals along the sides thereof to effect the lifting. In arranging the stack to permit this insertion of lifting fingers underneath the stack, where the bottom row of bricks has been spaced apart to leave apertures to receive the fingers, it has been further necessary to provide some special kind of lateral gripping devices or jaws in connection with the fingers to grip and engage the sides of the bottom row, so as to lift these along with the stack, or else the bottom row is left behind, so that when the stack is next set down there are no spaces thereunder to again receive the lifters.

The present invention provides a method whereby the bottom row of bricks is specially arranged so as to leave spaces at frequent intervals along the bottom of the stack to receive the lifting fingers, the bricks being so arranged with relation to these spaces that the entire stack, including the bottom row, may be lifted without disarrangement of any of the bricks by simple, straight-up lifting fingers, the arrangement permitting the stack so formed to be set down and again lifted in this manner as many times as desired, while still maintaining undisturbed the setting of the bricks in the bottom row whereby the spaces for the

lifting fingers are provided. In the preferred embodiment shown, this special arrangement of the bottom row of bricks consists in placing the same in tilted edgewise position, the bricks on either side of the stack being preferably tilted with their tops leaning toward their respective ends.

The invention will be more fully understood from the following detailed description, taken in connection with the accompanying drawings, and will thereafter be pointed out in the appended claims.

Referring to the drawings: Figure 1 shows in perspective a stack of bricks arranged in accordance with my invention, the fingers of an illustrative form of mechanical lifter being shown in dotted lines in position to engage and raise the stack. Fig. 2 is a side elevation of the stack formed in accordance with my improved method. Figs. 3 and 4 are side elevations showing possible modified arrangements of the stack.

In the preferred embodiment shown for carrying out the method of the present invention, the bricks which are to form the bottom row of the stack are set side by side edgewise and tilted, those at one side as shown at 10 having their tops leaning toward the adjacent end, and those at the other side, 11, leaning in the opposite direction toward the other end. The angular inclination at which the bricks in this row are set may be varied within considerable limits, the particular inclination shown, *i. e.*, in the neighborhood of 30° to the vertical, being found in practice to be a specially suitable one. It is, however, only essential that the bricks in this row be inclined so as to have their bottom corner edges form a series of triangular spaces 12 large enough to receive the lifting fingers, while at the same time holding each brick with its side resting upon the diagonal side of the brick next to it, and presenting a continuous and stable support for the rest of the stack. Upon the top edges of the row thus laid, the next row 13 is set crosswise, or in a rectangular direction relative to the bottom row, and the succeeding rows 14 are built up in any usual or desired manner.

A mechanical lifter shown at 15 provided with a series of depending fingers 16 may now have such fingers engaged underneath the stack in the spaces 12 so that the entire stack may be lifted thereby. This is possible because the lifting action of the several

fingers vertically upward is imparted to the sloping surfaces of the adjacent bricks forming the sides of the grooves 12, and all these bricks are mutually intergripped and held so that they are lifted along with the stack without any disturbance in their formation, the bricks being set near enough vertical so that the outer ones 17 grip the lower surface of the next row to exert a lifting action thereon without slipping outward. It is apparent that this inclined formation of the lower row may thus be maintained undisturbed as the stack is set on a level base or floor and the fingers withdrawn so that the stack may be lifted and transported as many times as required in this manner.

I consider the arrangement of the bottom row of bricks, whereby the upward lifting action of the fingers on each brick is resolved into two components, one of which is directly exerted through that brick upon the rest of the stack, and the other of which is indirectly applied to the stack through succeeding bricks in a manner to intergrip the whole for simultaneous lifting, to be broadly new, and I desire to cover this, irrespective of any particular inclinations or direction, or manner of tilting of the individual bricks, since all these can be considerably varied without departing from the spirit of the invention. Likewise, while in the preferred embodiment shown, only the bottom row of bricks is specially arranged for the reception of the lifting fingers, it is to be understood that the invention is not limited in this particular, since the succeeding portions of the stack above the bottom row may be arranged in a variety of ways as may be found most suitable for keeping the stack intact and held together against premature disassemblage.

In the modified form shown in Fig. 3 the upper rows 18 of the stack are arranged similarly to the form just described, but the two rows 19, 20 next above the bottom tilted row are arranged to leave a central space 21, this being effected as shown by leaving out the two center bricks in the transversely set row 19 and setting out the bricks of the row 20. The bricks of the tilted bottom row are arranged similarly to the first described form as shown at 22, 23 at either side of the center, the middle bricks being omitted so that the center space 21 is continued to the bottom. This arrangement is desirable for carrying out certain stacking operations, and the mechanical lifter can be applied and removed with equal facility as in the first described form.

A further possible modification is illustrated in Fig. 4 wherein the rows 24 above the bottom tilted row may be arranged similarly to the first described form, the bricks in the bottom tilted row 25 in this case being all tilted in the same direction, the angular

spaces along the bottom for the lifter fingers being presented in this form the same as in the other forms.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The herein described method of lifting bricks, which consists in forming a brick stack with the bottom row arranged to leave spaces for lifting fingers, and with individual bricks of said bottom row arranged to interengage so as to be lifted by vertical lifting action of a mechanical lifter applied beneath the same, and bodily lifting the stack so formed by a lifter engaging beneath said bottom row in said spaces and acting to hold the bricks thereof intergripped for lifting without disarrangement.

2. The herein described method of lifting bricks, which consists in forming a brick stack with the bottom row arranged to leave "V" shaped spaces along the bottom of the stack to receive the fingers of a mechanical lifter, the individual bricks of said bottom row being arranged to interengage so as to be lifted with the stack by vertical lifting fingers, and in bodily lifting the stack so formed, by means of vertically acting lifting fingers engaging beneath said bottom row in said spaces and operative to hold the bricks thereof intergripped for lifting without disarrangement.

3. The herein described method of lifting bricks, which consists in forming a brick stack with the bricks at the bottom thereof tilted to leave finger spaces along the base of the stack, engaging the stack by the fingers of the mechanical lifter applied at said spaces in a manner to lift the entire stack vertically and to intergrip the bottom row of bricks with each other, and lifting the stack so engaged by the mechanical lifter.

4. The herein described method of lifting bricks, which consists in forming a brick stack with the bricks of the bottom row tilted against one another and resting on their edges to leave "V" spaces along the bottom, engaging the fingers of a mechanical lifter with said spaces to lift the stack bodily and cause intergripping of the bricks in the bottom row with one another and with the next row, and lifting the stack so engaged by the mechanical lifter.

5. The herein described method of lifting bricks, which consists in forming a brick stack, with the bottom row of bricks tilted against one another and resting on their edges, the bricks at either side being tilted oppositely, depositing the next layer at right angles to the bottom layer, completing the stack, and bodily lifting the stack so formed by engagement of the fingers of a mechanical lifter underneath the same.

6. A stacked unit of rectangular bricks of a size adapted for handling by a mechanical

lifter, comprising a bottom row with the bricks therein tilted to lap over and rest upon one another leaving spaces thereunder to receive lifting fingers, and the remainder
5 of the stack resting thereupon.

7. A stacked unit of rectangular bricks of a size adapted for handling by a mechanical
lifter, comprising a bottom row with the bricks therein tilted to lap over and rest
10 upon one another in opposite directions at either side, and a second layer with the

bricks therein laid at right angles to said first layer with the rest of the stack built thereon.

In testimony whereof, I have signed my 15 name to this specification, in the presence of two subscribing witnesses.

WILLIAM H. FRANCIS.

Witnesses:

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G. E. MOSHER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
