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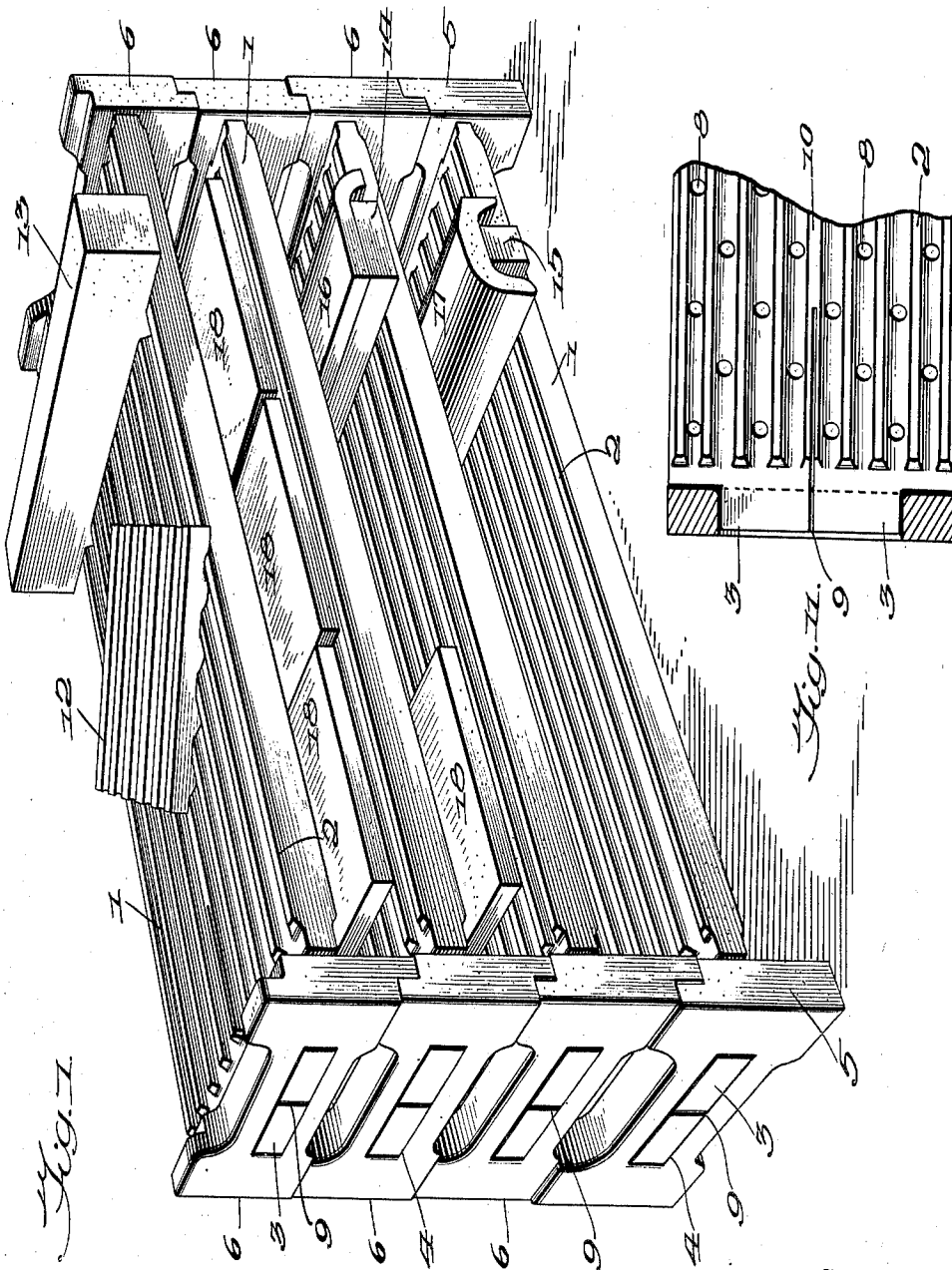
F. H. MAHAN, JR

2,246,448

SETTER

Filed Feb. 18, 1937

4 Sheets-Sheet 1



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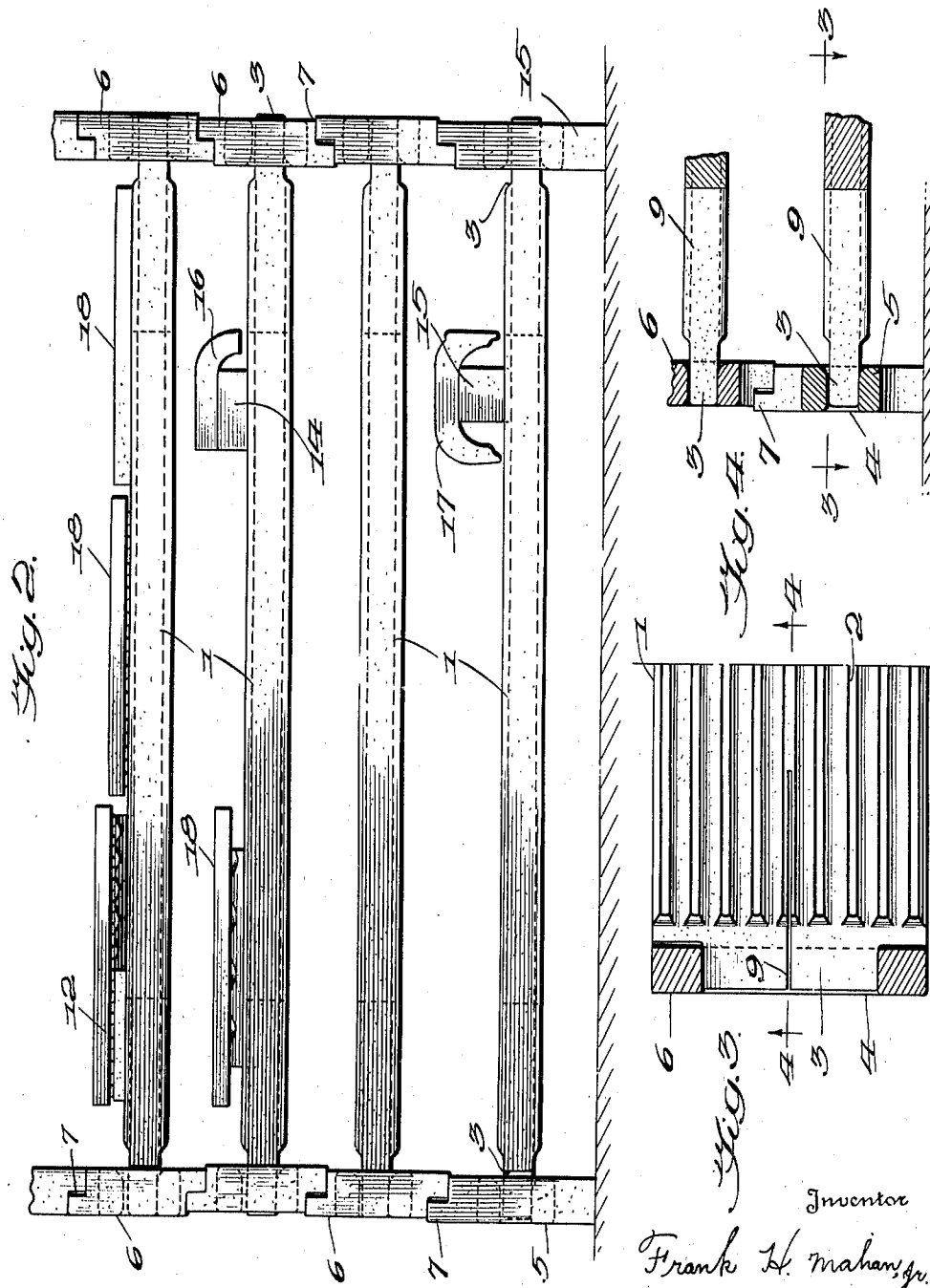
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SETTER

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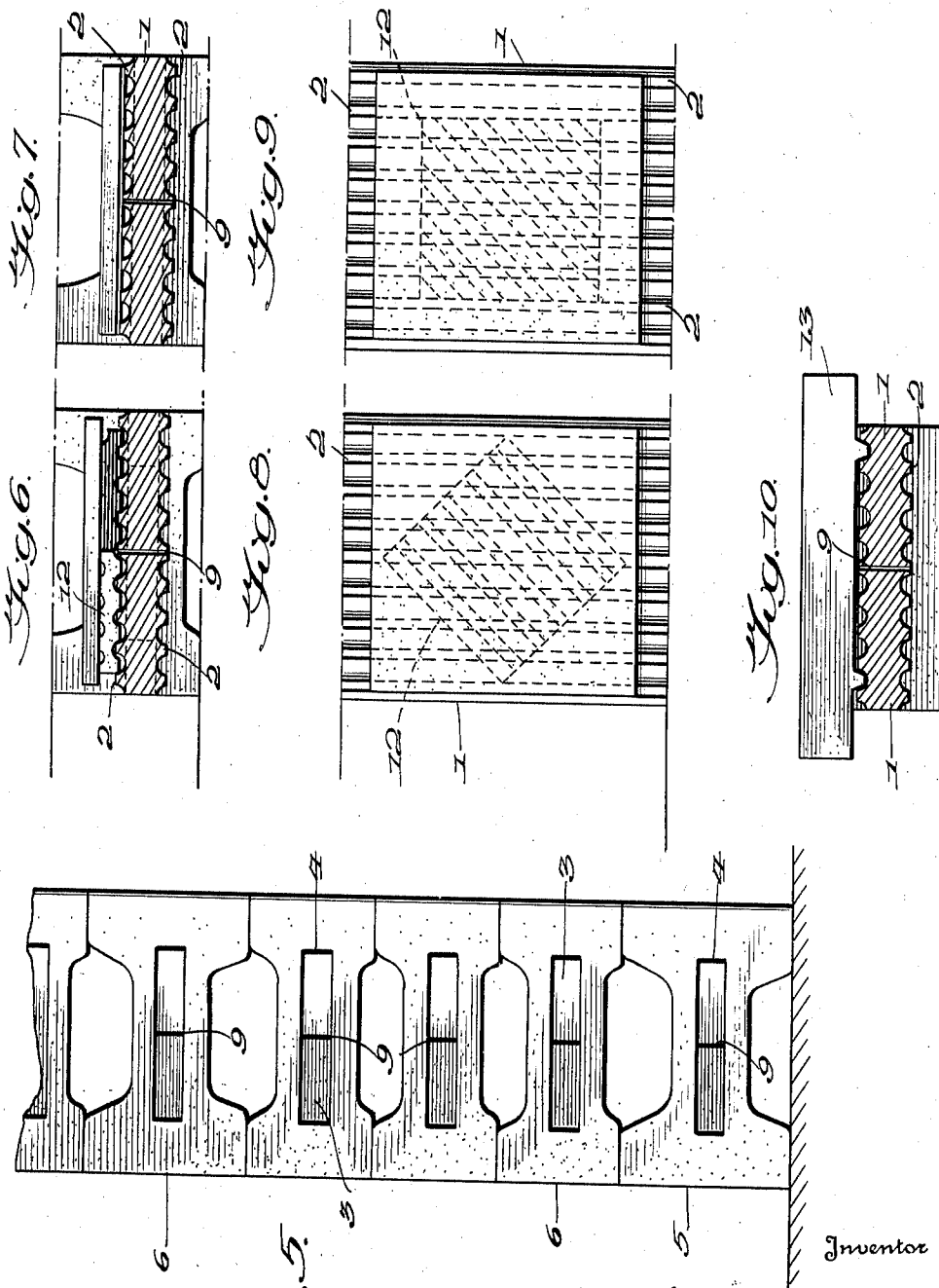
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4 Sheets-Sheet 3



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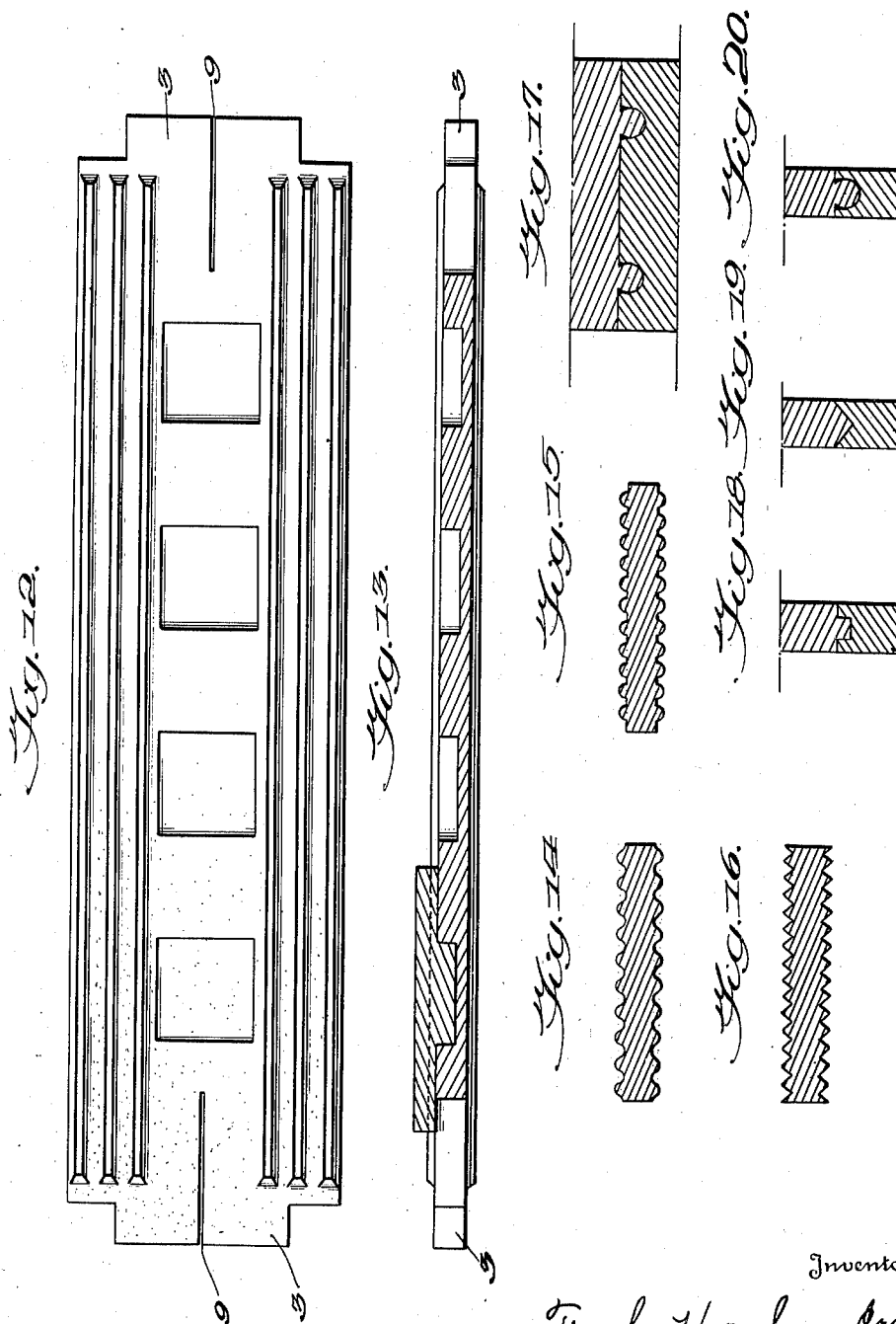
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UNITED STATES PATENT OFFICE

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SETTER

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8 Claims. (Cl. 25—153)

This invention relates to an improvement in setters or sagger which terms are frequently used interchangeably in the industry and herein are so used.

These setters or sagger are used in the manufacture of glazed or unglazed tile or any ceramic shapes.

One object is to provide a setter or sagger on which tiles may be placed directly or on intermediate supports on which tiles may be placed while undergoing the process of being fired.

This invention constitutes a manufacturing convenience for use while these units are in production and permits of the placing of the tile on the setter and unloading the tile from the latter without the necessity of handling the individual setters.

An object is to provide a construction in which any one or more of the units can be salvaged without a total loss of the entire unit.

In the accompanying drawings:

Fig. 1 is a view in perspective;

Fig. 2 is a view in side elevation;

Fig. 3 is a fragmentary view in horizontal section, taken on the line 3—3, of Fig. 4;

Fig. 4 is a fragmentary view in vertical longitudinal section cut through the line 4—4, in Fig. 3, looking in the direction of the arrows;

Fig. 5 is an end elevation;

Figs. 6 and 7 are cross sections;

Fig. 8 is a plan view of a construction shown in Fig. 6;

Fig. 9 is a plan view of the construction shown in Fig. 6, with the support 12 turned over and through forty-five degrees;

Fig. 10 is a transverse section;

Fig. 11 is a modification; and

Figs. 12, 13, 14, 15, 16, 17, 18, 19 and 20 are views showing slight modifications.

The numeral 1 represents the setters. These are preferably provided with ribs 2, throughout their length, as shown in Fig. 1, and these ribs 2 are preferably formed on both the top and bottom sides, as shown in Figs. 6 and 7.

The ends of the setters are reduced in size to form tenons 3, which are adapted to be inserted in the mortises 4, formed in each end support 5 and 6.

The lower end supports 5 are provided with feet upon which they rest. The other end supports 6 are all just alike and are reversible, so that they are interchangeable from end to end.

The end supports 6 are all shiplapped on opposite edges to form interlocking and self-aligning joints 7. This shiplapped formation on the

end supports makes it possible to reverse the unit should any of them sink after passing several times through the kiln, without disassembling the unit. In this manner, it is possible to correct the occasional warpage that takes place or turn the individual setters. The bottom end supports 5 are shiplapped on their upper edges only, since they have supporting feet on their lower edges as previously stated.

The cross-sectional shape of the ribs 2, and the grooves or valleys therebetween may be varied. As illustrated, the ribs may be flat, rounded or pointed, see Figs. 14, 15 and 16, on the upper surface with flat or rounded intervening grooves or valleys, and instead of the grooves being U-shaped, they might be V-shaped, or of some other satisfactory contour.

In the modification shown in Fig. 11, holes 8 are formed at intervals in the grooves or valleys, in order to increase and facilitate the circulation of heat and reduce the weight of the member.

In some forms, a saw kerf 9 is preferably made through the centrally located rib 10, which latter is preferably made wider than the rest of the ribs, in order that this saw kerf may be formed.

In Fig. 1, several different forms of plates are illustrated under the tiles or other articles. The numeral 12 shows one form of plate, as illustrated in Fig. 1, and this is ribbed longitudinally on one surface and diagonally on the other. This is shown in perspective in Fig. 1, and in side elevation in Fig. 2, and this is also shown in full lines in Fig. 6, and in dotted lines in Fig. 8. The purpose of this is to form a support for a tile of ceramic product in which the corners are deflected out of the plane of the center. This plate 12 may be inverted, if desired, and placed as indicated in dotted lines in Fig. 9, for the support of a tile or other article in which one or more of the four edges are bent out of the plane of the center.

Other forms of plates for different articles being fired are shown at 13, 14 and 15, in Fig. 1, and 14 and 15 are likewise shown in side elevation in Fig. 2, as form 13 is so shown in Fig. 10. These are a few of many forms of plates which might be employed according to the shape of the article being fired, such for instance, as the shapes 16 and 17, as viewed in Figs. 1 and 2.

Obviously, various forms of articles might be placed directly on the setters 1, or on the plates, and just a few of these are illustrated, such as represented by numerals 16, 17 and 18.

All of the elements are obviously made of refractory ceramic material.

All of the parts may, of course, be made in various dimensions, in order to fire different sized products.

While it is desirable to provide the setters with ribs since they have the effect of flues, nevertheless, these setters could be perfectly flat and smooth on opposite surfaces.

As constructed, they are easily ground and shaped and they greatly strengthen the parts to which the ribs and grooves are applied, affording a maximum of strength and at the same time a minimum of weight.

Each upper setter prevents dropping of dirt and dust to the tiles below.

The slotting of the ends by means of the kerf 9 are employed to relieve any strain in the unit. They also prevent unnecessary cracking and determine the direction of a crack in the event one should occur.

The shiplapped joint of the end supports is purposely made with a loose fit as also the mortise and tenon joints, to provide for expansion and contraction, and also to facilitate the building up and formation of the several units.

One of the special reasons for employing and utilizing the shiplapped joint 7, at the contiguous edges of the end supports is to prevent the setters, in case of breakage, from falling on the articles supported below, for by the use of this shiplapped joint and the weight of the super-structure, as the end supports are stacked one upon another, and the setters are loaded with their wares, the setters are thus well supported from opposite ends in case of breakage against sagging and dropping upon and injuring the articles placed therebeneath.

My improved setter is of such a nature that it is open or round, that is to say, at the ends and sides and where ribs are employed, through the grooves or valleys therebetween, so that a complete circulation of heat current is provided as through flues, all of which facilitate the process of firing and also to avoid chipping of sharp edges.

By reason of my improved construction it may be built to different heights to suit the requirements, or end supports of different sizes, as illustrated in Fig. 5, may be employed where larger articles are to be fired.

Also it is understood that the article may be easily placed or removed without the necessity of removing, dismantling or knocking-down the sagger and without unnecessarily handling the individual setters.

The ribs and grooves when used not only permit the circulation of heat under the tiles but also assist in cooling.

By making the end supports separate from the setters, provision is made for a slight adjustment of the assembled unit for any variation of size which might take place or be required.

In Figs. 17, 18, 19 and 20, different forms of joints are shown for the edges of the supports 6, and instead of the shiplap joints as shown in Figs. 1, 2 and 4, a mortise and tenon joint may be used, as illustrated in Fig. 18, a V-shaped joint as in Fig. 19, and a stud and recess joint as shown in Figs. 17 and 20.

Reference is again made to the auxiliary supports 12, 13, 14 and 15 since their importance in exercising this method should not be minimized. The real purpose of these auxiliary supports is to maintain or support particularly what is known as the trim shapes, as well as certain types of flat shapes during the firing process. During

such process, the clay bodies are in a soft state almost the consistency of soft butter and the weight of the material tends to distort and warp the shape of the tile being fired, rendering it commercially unusable. In the cooling part of the firing process, after the high heat has been reached, the material assumes a rigid form, and if it has fallen due to its own weight, or has otherwise become distorted during the high point of the firing process, during which it is extremely plastic as mentioned above, the piece is commercially unusable. The purpose of the lugs or ridges and the method of holding the auxiliary supports in place is to insure keeping the pieces of tile isolated or separated, for if pieces of tile touch each other during the firing process, the fluid nature of the glaze causes them to stick together, and, consequently, when the material comes out these pieces are rigidly fastened together and to such an extent that they are absolutely useless and become a waste product.

I claim:

1. The combination of supports, ribbed setters detachably connected therewith and members ribbed longitudinally and diagonally on opposite surfaces, whereby they are adapted to assume different positions on the setters according to the surface placed on the setters.

2. The combination comprising ribbed setters, supports therefor and plates resting on the setters for supporting the material being fired, said plates having means formed on the surface to prevent them from slipping crosswise upon the setters.

3. The combination comprising ribbed setters, supports therefor, and plates resting on the setters, said plates ribbed longitudinally and diagonally on opposite surfaces, whereby they are made to assume different positions accordingly as they are placed with one side or the other upon the surface of the ribbed setters.

4. A structure of the character described including sectional ends shiplapped and interlocked against movement in a direction away from each other, and ribbed setters removably mortised to the end sections.

5. A structure of the character described including sectional ends shiplapped and interlocked against movement in a direction away from each other, ribbed setters removably mortised to the end sections, and auxiliary supports ribbed on at least one of their surfaces to fit and interlock with the ribs of the setters.

6. A structure of the character described including sectional ends shiplapped and interlocked against movement in a direction away from each other, ribbed setters removably mortised to the end sections, and auxiliary supports ribbed in different directions on opposite sides to correspond with and fit the ribs of the setters.

7. A structure of the character described including sectional ends having interlocking contiguous edges, setters removably mortised to said sections, the setters having depressions in at least one of their surfaces, and auxiliary supports fashioned on one side at least to interfit with said depressions, whereby they are removably rested upon the setters.

8. A sagger including end supports and setters having mortise and tenon connection therewith, the tenons being on the setters, the setters having a kerf extending longitudinally through the tenons thereof.

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