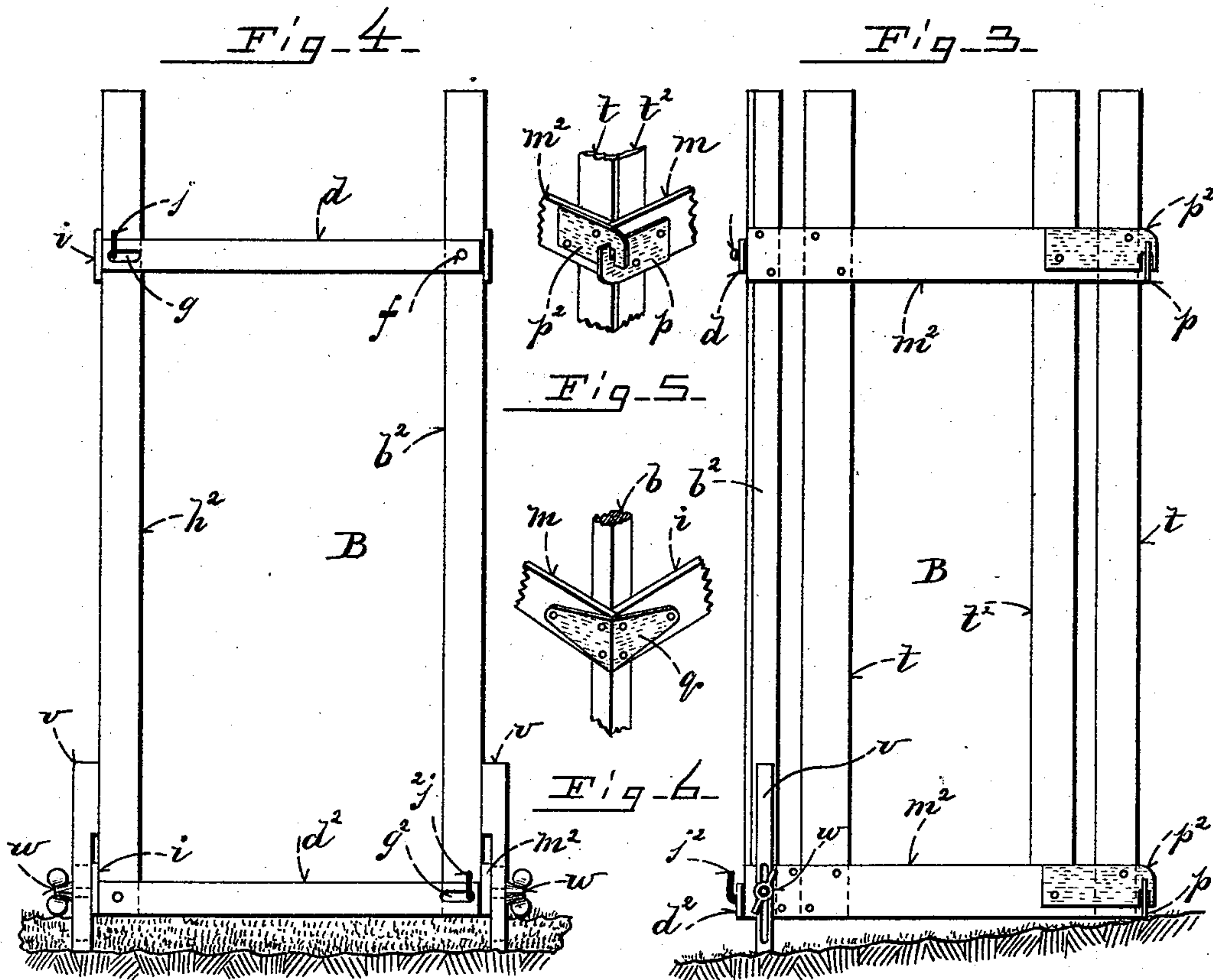
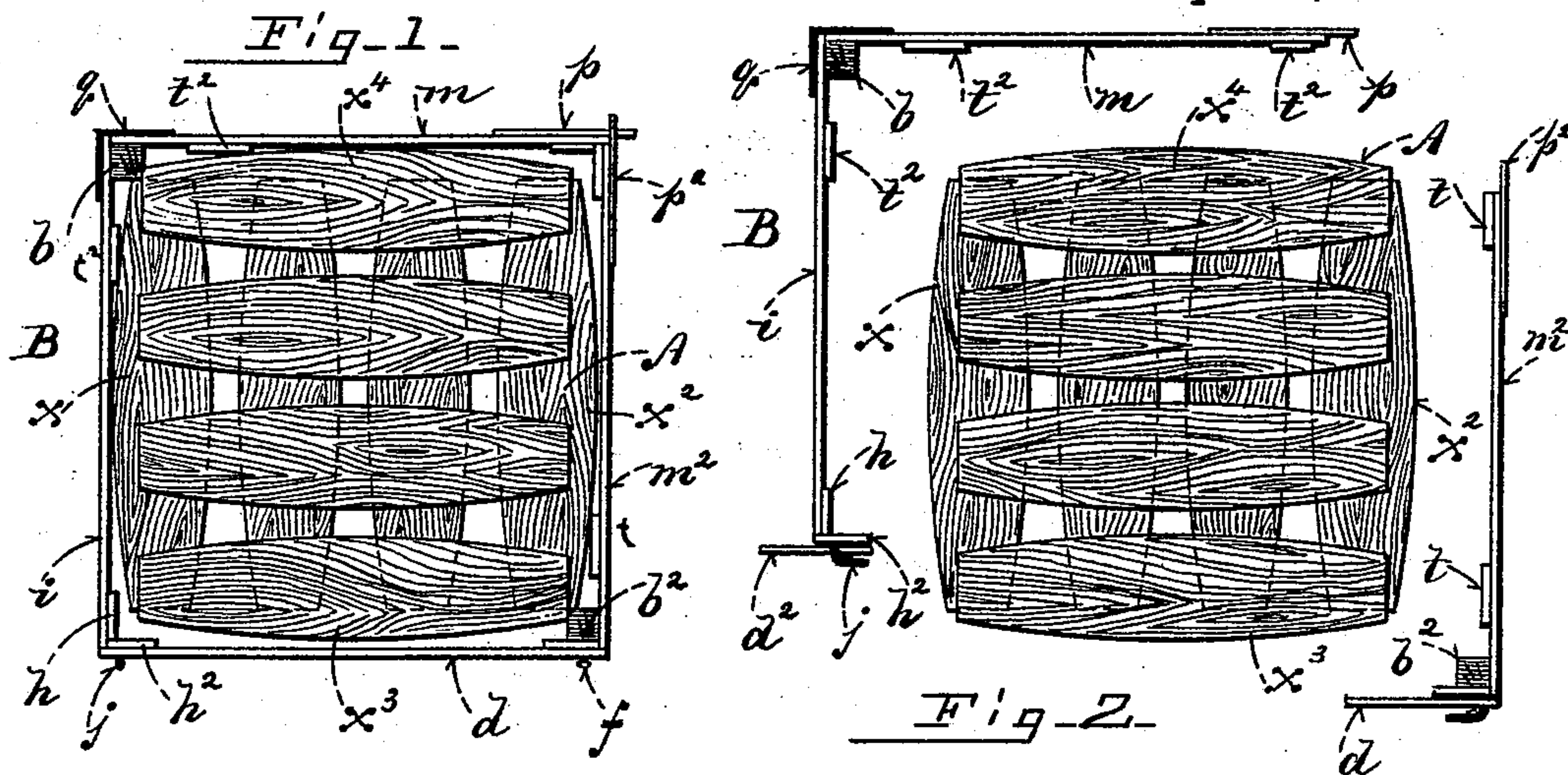


(No Model.)

F. O. HAVENER.  
STAVE FRAME.

No. 525,343.

Patented Sept. 4, 1894.



WITNESSES:  
Amos  
S. Durfee

INVENTOR-  
Frank O. Havener,  
By C. A. Shawlee,  
ATTY-S.



# UNITED STATES PATENT OFFICE.

FRANK O. HAVENER, OF GAULEY BRIDGE, WEST VIRGINIA, ASSIGNOR OF  
ONE-HALF TO WILLIAM E. DOUGLASS, OF ROME, OHIO.

## STAVE-FRAME.

SPECIFICATION forming part of Letters Patent No. 525,343, dated September 4, 1894.

Application filed January 4, 1894. Serial No. 495,645. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK O. HAVENER, of Gauley Bridge, in the county of Fayette, State of West Virginia, have invented certain  
5 new and useful Improvements in Stave-Frames, of which the following is a description, sufficiently full, clear, and exact to enable  
10 any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this  
specification, in which—

Figure 1 is a top plan view of my improved  
15 stave-frame showing the staves in position; Fig. 2 a like view showing the frame-members separated from the stave pile; Fig. 3 a  
side elevation of the frame; Fig. 4 a front elevation looking from the left in Fig. 3; and  
20 Figs. 5 and 6 respective views illustrating details of construction.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates especially to a device  
25 for facilitating the piling of barrel-staves, the object being to supply a guide so that the staves may be arranged in a symmetrical pile with each succeeding layer of staves overlapping the ends of the preceding layer to protect  
30 them from the sun and prevent checking. To pile staves and accomplish this result requires skilled labor.

My invention enables persons without experience to pile the staves in the manner described much more rapidly than a skilled  
35 person can effect without its use.

In the drawings, A represents the stack or pile of staves and B the frame considered as a whole. This frame is rectangular in plan  
40 view when closed and comprises two vertical posts,  $b$ ,  $b^2$ , at opposite corners which afford a projection from the inner face of the frame for purposes hereinafter described.

An arm,  $d$ , is pivoted at,  $f$ , near the top of  
45 the corner-post,  $b^2$ . The free end of said arm is slotted at,  $g$ .

One corner of the frame is made by two upright-boards,  $h$ ,  $h^2$  arranged at right angles to each other, the board,  $h$ , being connected by  
50 horizontal brace-pieces,  $i$ , with the post,  $b$ . The corner-board,  $h$ , is provided with a but-

ton or latch,  $j$ , which will enter the slot,  $g$ , of the swinging-arm,  $d$ , and lock said arm thereto.

At right-angles to the tie-piece,  $i$ , similar horizontal tie-bars,  $m$ , are secured to the post, 55  
 $b$ . The free ends of said bars are provided with a hook-shaped catch,  $p$ . An angle-iron,  $q$ , bolted to the bars,  $i$ ,  $m$ , (see Fig. 6) secures the joint.

To the post,  $b^2$ , bars,  $m^2$ , are secured and 60  
are provided with a hook-catch,  $p^2$ , turned in the opposite direction and adapted to take on the hooks of the companion arms,  $m$ , when the frame is in position.

To the bottom of the corner-board,  $h^2$ , a 65  
swinging-arm,  $d^2$ , is pivoted, the free end of said arm being provided with a slot,  $g^2$ , to receive a button or latch,  $j^2$ , on the corner-post,  $b^2$ .

Vertical guide-boards,  $t$ , for engaging the sides of the staves connect the tie-bars,  $m^2$ . 70  
Similar guides,  $t^2$ , connect the bars,  $m$ , and bars,  $i$ , respectively.

On the post,  $b^2$ , and the corner-board,  $h$ , at their lower ends slotted legs,  $v$ , are adjustable vertically by thumb-screws,  $w$ . These legs 75  
are employed to compensate for variation in the level of the ground upon which the stack of staves is formed.

In the use of my improvement, the frame being set up and its sections being connected 80  
by the hooks,  $p$ ,  $p^2$ , and swinging-arms,  $d$ ,  $d^2$ , the staves are piled within the frame four in a layer, the first stave of the first layer, as  $x$ ,  
being arranged with one end butting against the corner-post,  $b$ , the last stave in the layer, 85  
as  $x^2$ , with its opposite end butting against the corner-post,  $b^2$ . The middle staves are arranged parallel with these two. The first  
stave,  $x^3$ , of the next succeeding layer is arranged to overlap the ends of the staves of 90  
the preceding layer, one end of said stave,  $x^3$ , butting against a side of the corner-post,  $b^2$ , adjacent that which the stave,  $x^2$ , engages.

The opposite stave,  $x^4$ , is arranged in like manner and the middle staves of the layer 95  
inserted. The guide-boards,  $t$ ,  $t^2$ , engage the sides of the outer staves in the layer causing the sides of the pile or stack to be constructed evenly or in the same plane. By this means the ends of the staves are covered as shown 100  
in Figs. 1 and 2. The work can be very quickly effected by the use of the frame and when the

pile is completed by unlatching the swinging arm,  $d, d^2$ , and disconnecting the hooks,  $p, p^2$ , the frame members may be separated leaving the stack, A.

5 Having thus explained my invention, what I claim is—

1. The stave-frame, B, formed in two sections, as described and provided with the corner-posts,  $b, b^2$ , for engaging the stave-ends  
10 and the guides,  $t, t^2$ , for engaging the stave

edges and locking mechanism for said members.

2. The frame, B, comprising two members respectively provided with corner-posts,  $b, b^2$ ; tie-bars,  $i, m, m^2$ ; the guide-boards,  $t, t^2$ , and  
15 mechanism for locking said members together.

FRANK O. HAVENER.

Witnesses:

H. L. CHESTER,

G. R. MCCLAUGHERTY.