

Oct. 29, 1957

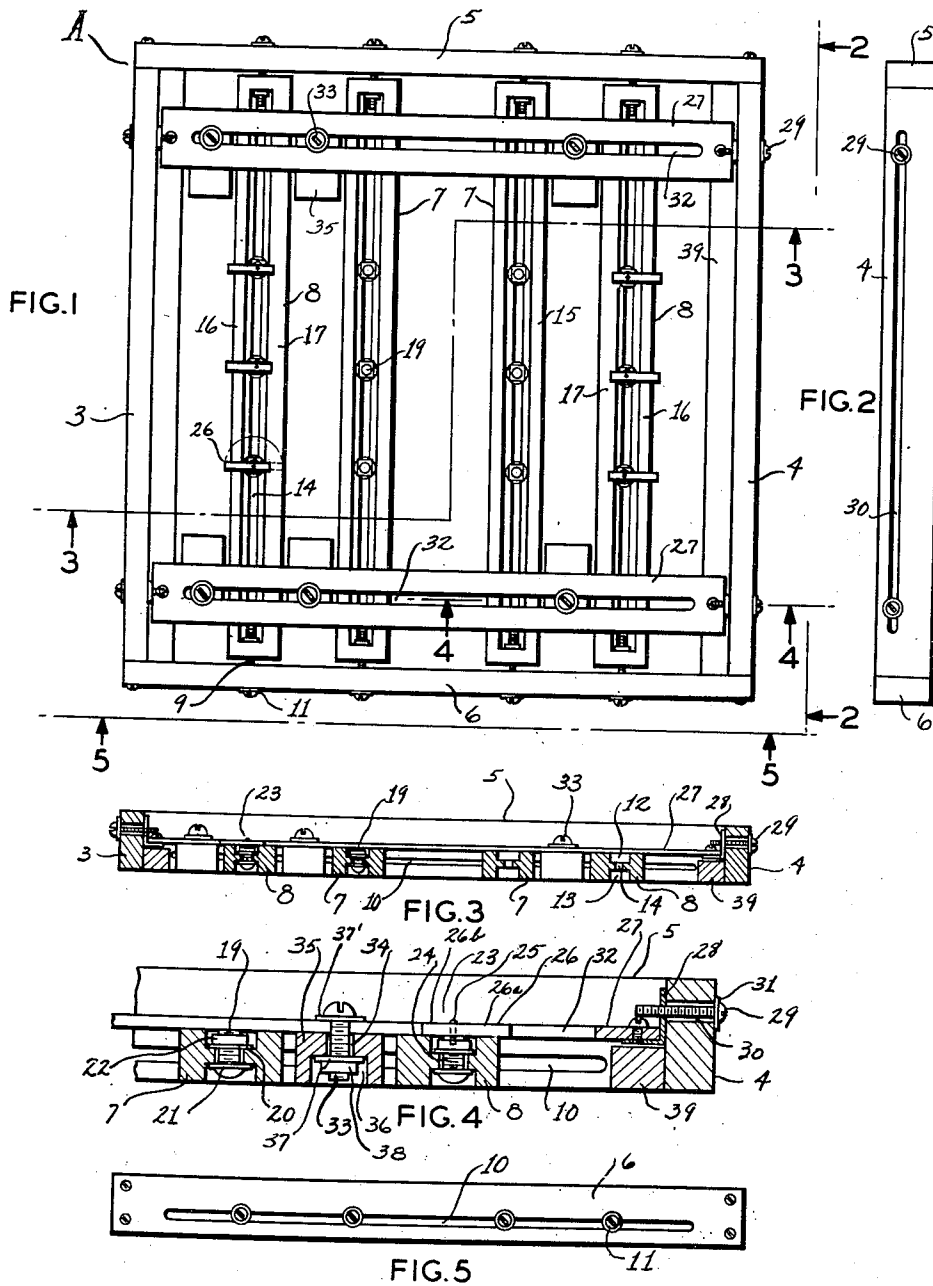
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2,811,186

ADJUSTABLE NAILING FORMS

Filed Feb. 9, 1955

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

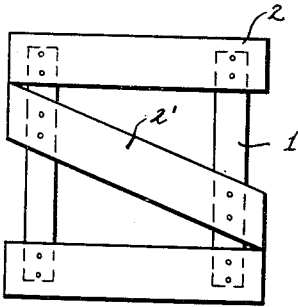


FIG. 6

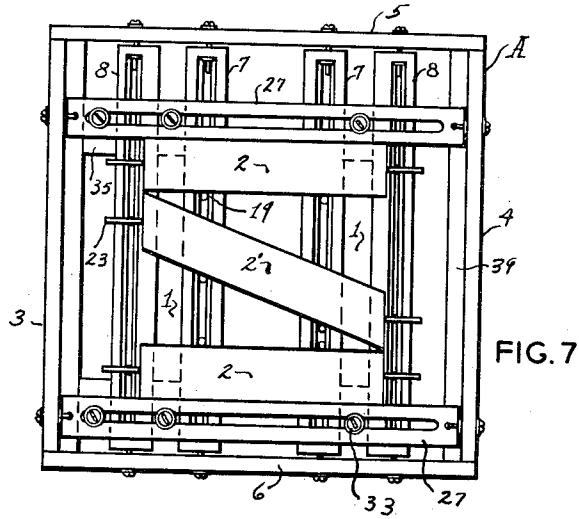


FIG. 7

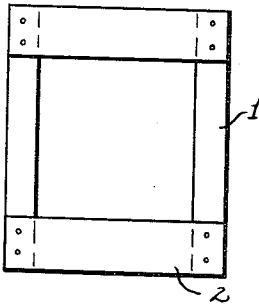


FIG. 8

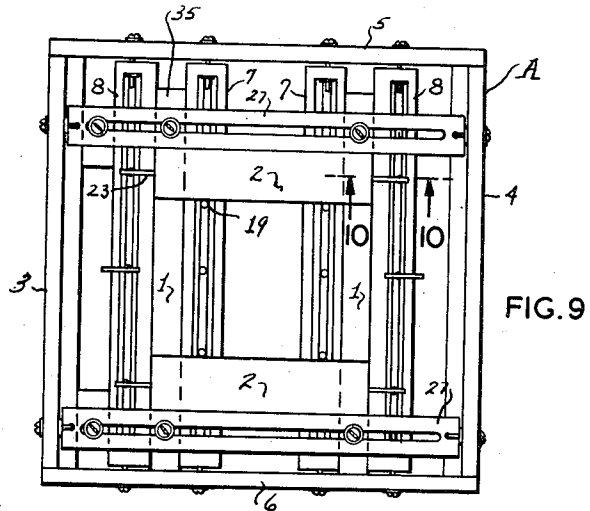


FIG. 9

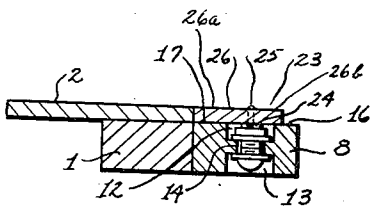


FIG. 10

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ADJUSTABLE NAILING FORMS

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9 Claims. (Cl. 144—288)

This invention relates in general to fixtures, and more particularly, to an adjustable nailing form.

In the construction of shipping crates, the constituent elements of the bases and ends thereof are customarily located and held by a suitable form for facilitating the nailing, or other securing, procedure. For example, with crate ends comprised of the customary battens and slats, such forms must be designed to reliably retain the battens and slats in the desired mutual relationship so that during the securing operation said parts will be maintained against inadvertent displacement and thereby relieve the workman from concern as to such possibility.

Heretofore, it has been the widespread practice to make a fixture or form for each size and each design of crate base or end. Such forms are rigid in character, having generally a four-sided frame within which are fixedly disposed the requisite locating members; the latter being so arranged as to present guides, and the like, for reception of the elements to be nailed. With the shipping of equipment and merchandise of varying sizes and weights, a firm will in a short period of time cause a most considerable number of such rigid forms to be made, each being designed for a specific size or design of base or end. Consequently, forms of such single purpose type will represent a substantial investment in labor and material, as well as necessitate adequate storage space, with the attendant need of presenting such forms for ready availability when a specific type is required.

Therefore, it is an object of the present invention to provide an adjustable nailing form which is adapted for use in the construction of crate ends, bases, and the like of varying dimensions, and of any selected arrangement of battens, slats, and other constituent elements.

Another object of this invention is to provide an adjustable nailing form wherein the locating members and guides are easily handled, not requiring the exercise of skilled labor; which is reliable in maintaining the elements to be secured in desired relationship; which is economically manufactured, and durable in construction; and the use of which obviates the need for costly investment in a collection of rigid forms, and the coincidental requirement of extensive storing space.

With the above, and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings (two sheets)—

Figure 1 is a plan view of an adjustable nailing form constructed in accordance with and embodying the present invention.

Figure 2 is an end view taken on line 2—2 of Figure 1.

Figure 3 is a horizontal transverse sectional view taken on the line 3—3 of Figure 1.

Figure 4 is a fragmentary horizontal transverse sectional view taken on line 4—4 of Figure 1.

Figure 5 is a side elevational view taken on the line 5—5 of Figure 1.

Figure 6 is a plan view of a crate end of the type wherein the slats overhang the battens.

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Figure 7 is a plan view of the form showing the same arranged for formation of a crate end of the type shown in Figure 6.

Figure 8 is a plan view of a crate end wherein the slats are flush with the battens.

Figure 9 is a plan view of the form showing the same arranged for construction of a crate end of the type shown in Figure 8.

Figure 10 is a horizontal transverse, sectional view taken on the line 10—10 of Figure 9.

Referring now by reference characters to the drawings, A generally designates an adjustable nailing form for use in the construction of the ends, bases, and the like of shipping crates. Crate ends of the character to be fabricated by form A customarily comprise battens 1 and slats 2, which may be of any particular size thickness, or design as the requirements of the particular shipment in question may dictate. Figure 6 illustrates a crate end of the so-called overhanging type, wherein the ends of slats 2 extend beyond battens 1, while Figure 8 shows an end of the flush type, wherein the edges of slats 2 and battens 1 are in surface alignment. The crate end designs shown in Figures 6 and 8 are but exemplary of a seemingly infinite variety of well known and widely used designs. It is apparent that any number of battens or slats, may be incorporated and arranged to provide the strength desired.

Nailing form A comprises a rigid rectangular or square frame consisting of ends 3, 4, and sides 5, 6. Extending between sides 5, 6, in axial parallel relation to ends 3, 4, is a pair of inner and a pair of outer relatively narrow batten guides 7, 8, having each of their ends tapped for engagement with an adjusting bolt 9, which projects freely through elongated slot-like openings 10 provided in each side 5, 6, proximate the lower margins thereof. The heads of said bolts 9 are presented outwardly of the related sides 5, 6, and disposed thereagainst are preferably metallic washers 11. By loosening of the related bolts 9, each batten guide 7, 8 may be readily shifted transversely of form A into selected relative position, after which inward threading or tightening of bolts 9 will bring washers 11 into snug abutment against the adjacent outer face of the associated sides 5, 6 for reliable maintenance of batten guides 7, 8 in such position. On their upper and lower surfaces, each batten guide 7, 8 is provided with corresponding elongated recesses 12, 13, respectively, which inter-communicate through a narrow aperture 14, formed in the bases of said recesses 12, 13. Recesses 12, 13 of batten guides 7 are axially aligned therewith, whereby the adjacent upper surface portions 15, which provide slat supports, are of equal width; whereas the said recesses 12, 13 in batten guides 8 are located off-center so as to provide a narrow outer and relatively wide inner upper surface, slat-like supporting portions 16, 17, respectively. Projecting upwardly through aperture 14 of each batten guide 7 is a plurality of locator bolts or pins 19 upon the threaded stems of which are engaged, above and below aperture 14, washers 20, 21, respectively, with a nut 22 being threadedly engaged above washer 20. Thus, by tightening of the associated nut 22, said locator bolts 19 can be securely fixed along the length of the related aperture 14 for purposes presently appearing.

Similarly extending upwardly through aperture 14 of batten guides 8 is a plurality of slat stops 23 which comprise a bolt 24, tapped at its upper end for receiving a screw 25 to which is secured a flat arm 26 for overlying relation upon surface portions 16, 17 and adapted for radial positionment within a plane normal to the axis of bolts 24 by suitable threading of screws 25. Arm 26 is eccentrically engaged to screw 25, having a long section

26a and a short section 26b. Said long section 26a is of suitable length to extend to a point aligned with the outer edge of surface portion 17. Recesses 13 on the under side of batten guides 7, 8 serve as countersinks preventing projection of the bolt heads beyond the under surface of said batten guides.

Extending transversely between ends 3, 4 of the frame, immediately above batten guides 7, 8, and in axially normal relation thereto, is a pair of parallel, bar-like slat guides 27 which are relatively thin so as to be presented downwardly of the upper surface of the frame. Said slat guides 27 at their ends are engaged to L-shaped brackets 28 which are threadably engaged to adjusting bolts 29. Sail bolts 29 extend through slot-like openings 30 formed in, and extending substantially the length of, ends 3, 4 for rendering slat guides 27 slideable between sides 5, 6. Washers 31 are disposed upon the outer head-carrying ends of bolts 29. Thus, upon loosening of bolts 29, slat guides 27 may be easily shifted into desired position and secured therein upon tightening of said bolts 29.

Each slat guide 27 is provided with elongated opening 32 progressing almost from end to end thereof. Projecting downwardly through openings 32 of each slat guide 27 is a plurality of bolts 33, the lower ends of each of which extend through an opening 34 in a batten stop block 35 disposed beneath slat guides 27, and which is provided on its under surface with an enlarged, counter-sink type recess 36 for reception of the lower stem portions of bolts 33, together with washers 37 and nuts 38 engaged thereon. A washer 37' is disposed upon each bolt 33 between the head thereof and the related slat guide 27. Openings 34 are of slot-like formation so that stop blocks 35 may be shifted with respect to the associated bolt 33 for maintenance in desired relationship to the adjacent slat guide 27. Said stop blocks 35 are of like thickness as batten guides 7, 8, and in length are greater than the width of slat guides 27 so that the same may be shifted so as to prevent a portion of same inwardly of slat guides 27. Also by means of bolts 33, the said batten stop blocks 35 may be positioned along the related slat guide for requisite relationship to batten guides 7, 8. Said stop blocks 35 are arranged so that one of each will be located between each pair of inner and outer batten guides 7, 8 to present their inner surfaces for abutment against the ends of battens 1 received between such batten guides 7, 8. As shown in the drawing, a stop block 35 may also be located between a batten guide 8 and a fixed end strip member 39 secured to each end 3, 4. Said end strip members 39 are of like height as batten guides 8, so that the upper surfaces of the same will be substantially aligned with the upper surfaces of batten guides 8 for cooperation therewith in supporting slats as the case may be.

In the use of nailing form A, the adjacent pairs of batten guides 7, 8 are positioned so that the intervening space will define a recess for receiving a batten 1 to be incorporated in the particular end or the like to be made. Slat guides 27 are moved toward and away from the related sides 5, 6, of form A, whereby the distance between their inwardly directed margins will represent the height of the end or base, and will abut against the normally outer margins of the end slats 2 which will be supported upon the surface 15 of batten guides 7, as well as upon battens 1. As will be shown in more detail hereinbelow, locator bolts 19 are positioned along their associated batten guides 7 for defining the position of any intermediate slats, as well as for abutting against the normally inner margins of end slats 2 to cooperate with end slat guides 27 to hold firmly said end slats 2. Batten stop blocks 35 are thus designed to abut against the end of battens 1 which are held between the batten guide pairs 7, 8 to prevent axial displacement of the same.

The usage of form A will become more apparent by reference to Figure 7, wherein the arrangement of parts thereof for construction of a crate end of the overhanging

type with a bracing diagonal slat 2' is shown. In this arrangement each pair of inner and outer batten guides 7, 8 is located with respect to the other, so that battens 1 are separated by the desired distance. Batten guides 7, 8 of each pair are spaced from each other a distance equivalent to the width of each batten 1 which is placed therebetween with its sides surfacewise engaging the sides of said batten guides 7, 8. Stop blocks 35 located between batten guides 7, 8, on each slat guide 27 are suitably shifted for extension inwardly of the related slat guide 27 to abut against the ends of battens 1. End slats 2 are then placed in form A with one edge against the related slat guide 27 and supported on surface portions 15, 17 of batten guides 7, 8, respectively, and thus, overlying battens 1. The end, or adjacent locator bolts 19 are then secured for presentment against the opposite edge of end slats 2 while the central locator bolts 19 are fixed for delineating a path or way for receiving a diagonal intermediate slat 2'. Arms 26 of slat stops 23 of batten guides 8 are adjusted so that short sections 26b abut the edges of slats 2, 2' since the extent of overhang is less than the width of surface portion 17. Slat support surfaces 17 of batten guides 8 thus receive end portions of slats 2, 2' which extend transversely beyond or overhang, battens 1. It will be noted that with stop blocks 35 shifted inwardly of their associated slat guides 27, the upper surfaces of same will support the end portions of slats 2 which overhang the ends of battens 1, the latter being spacedly maintained from slat guides 27 by stop blocks 35. Thus, with battens 1 and slats 2, 2' so located and held by form A in the manner described, a workman can readily nail the same together in rapid fashion without danger of inadvertent dislocation.

Figure 9 illustrates the adjustment of form A for construction of a flush type crate end. Basically the arrangement is similar to that shown in Figure 7, with the exception that stop blocks 35 have been shifted outwardly so that their inwardly directed surfaces are substantially aligned with the inner edges of the related slat guide 27, whereby the battens 1 of the crate end to be formed will extend a distance equal to that between slat guides 27. Since slats 2 will not overhang battens 1 in this type construction, the same will be supported entirely by surface portions 15 of batten guides 7, as well as by battens 1. Arms 26 of slat stops 23 will be presented in inwardly swung position for engaging slats 2 on their edges for holding same against movement. With battens 1 and slats 2 so located, the nailing operation may be readily accomplished.

In common practice there are variations in the extent of overhang of the slats. However, in most cases such overhang is either $\frac{1}{8}$ or $\frac{3}{8}$ inch. To achieve the former measurement with nailing form A, arms 26 are presented in substantially axial alignment with the related batten guides 8 so that the edges of the slats will overlie the full extent of surface portions 17. If the other, or shorter, measurement is desired, arms 26 are swung so that short sections 26b overlie surface portions 17 for abutting the slat end edges. This arrangement is shown in Figure 7. Thus, with the latter arrangement, the slats 2, 2' will extend on to the surface portions 17 and be supported thereby. It is apparent that to provide for the aforesaid two degrees of overhang, long section 26a would be preferably $\frac{1}{2}$ inch longer than short section 26b.

If it is desired to have intermediate slats which are presented in parallel relation to end slats 2, it would only be necessary to provide the requisite number of central locator pins 19 so as to engage said intermediate slats on their opposite edges. If it is desired to construct a crate end or base which may consist of three spaced, parallel battens 1, one of the end strips 39 will serve as a batten guide with a stop block 35 being presented between same and the adjacent batten guide 8 for cooperation therewith.

In view of the foregoing, it is manifest that form A is

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endowed with marked versatility, being adapted for locating and holding battens and slats for any desired mutual relationship for the rapid construction of a crate end, base or the like of any chosen design. The elements of form A are easily shifted and secured in position so that the portion of the same does not require skilled labor. Firms which have heretofore expended considerable amounts in materials and labor for the construction of myriad rigid forms which are usable for the formation of but a single type crate member, can effect substantial economy by the usage of present invention. Also the adoption of form A will relieve such firms of the necessity of providing costly, non-productive, storage space for the multiplicity of fixed forms which are in general use.

It is of course obvious that nailing form A may be readily used for formation of crate sections which, in lieu of slats, utilize solid wooden sheets, as in box ends, which are reinforced with battens. To use a nailing form for this purpose the locator pins 19 would be removed and the sheet merely placed between slat guides 27 and supported upon batten guides 7 and/or 8, depending upon the style of end. It should be recognized that crate tops, as well as other sections of the same, can be easily produced by use of the present invention.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the adjustable nailing form may be made and substituted for those herein shown and described without departing from the nature and principle of the present invention.

What I claim and desire to secure by Letters Patent is:

1. An adjustable fixture for forming batten and slat constructed crate sections comprising a four-sided frame having parallel end members and parallel side members, at least three parallel batten guides mounted slidably at their ends in said side members for shiftable movement transversely of said frame, said batten guides having their upper surfaces presented for slat-support, a plurality of parallel slat guides disposed above said batten guides and in planar parallel and axial perpendicular relation thereto, said slat guides being shiftable mounted at their ends in said frame end members, means for maintaining said batten guides and slat guides in selected shifted position, and slat contacting members provided on said batten guides.

2. An adjustable fixture for forming batten and slat constructed crate sections comprising a four-sided frame, a plurality of parallel batten guides mounted for shiftable movement transversely of said frame, a plurality of parallel slat guides disposed above said batten guides and in planar parallel and axial perpendicular relation thereto, said slat guides being shiftable mounted in said frame for movement along a path axially parallel to said batten guides, a plurality of stop block members carried suspendingly by each slat guide for engaging the ends of battens positioned by said batten guides, said stop block members being adapted for shiftable movement with respect to their related slat guide in paths axially parallel and axially normal to the related slat guides, means associated with said batten guides, slat guides, and stop block members for rendering the same stable in selected shifted position, and slat locating members provided on said batten guides.

3. An adjustable fixture for forming batten and slat constructed crate sections comprising a frame, a plurality of parallel batten guides mounted for shiftable movement transversely of said frame, said batten guides having their upper surfaces presented for support of slats restingly disposed thereon, a plurality of parallel slat guides disposed above said batten guides and in axial perpendicular relation thereto, said slat guides being shiftable mounted in said frame, means for maintaining said batten guides and slat guides in selected shifted position, the upper, slat-supporting surface of each of said batten guides having an opening extending lengthwise thereof, a

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plurality of slat locating members disposed in said batten guide openings and projecting upwardly thereof above the slat-support surface, said slat locating members being adapted for selected relative position above the related opening.

4. An adjustable fixture for forming batten and slat constructed crate sections comprising a frame, a plurality of parallel batten guides mounted for shiftable movement transversely of said frame, a plurality of parallel slat guides disposed above said batten guides and in axial perpendicular relation thereto, said slat guides being shiftable mounted in said frame, means for maintaining said batten guides and slat guides in selected shifted position, each of said batten guides having an upwardly opening recess extending lengthwise thereof with the adjacent upper surface portions providing supports for slats disposed restingly thereon, slat contacting members located in said recesses of the batten guides and being adapted for selected positionment therein, said slat contacting members projecting upwardly beyond said slat-supports, and stop blocks carried by said slat guides for disposition between adjacent batten guides.

5. An adjustable nailing form for construction of batten and slat composed crate sections comprising a frame, an inner and an outer pair of batten guides in parallel relation and extending between opposite sides of said frame, said batten guides being slidably mounted for selected positioning within said frame, slat contacting members provided on each of said pair of inner batten guides, slat stop members provided on each of said outer pair of batten guides and having a pair of arms for selectively engaging the edges of the slats, and a plurality of parallel slat guides disposed above said batten guides and in axial normal relationship thereto.

6. An adjustable nailing form for construction of batten and slat composed crate sections comprising a frame, an inner and an outer pair of batten guides in parallel relation and extending between opposite sides of said frame, said batten guides being slideably mounted for selected positioning within said frame, each batten guide being provided with a recess extending lengthwise thereof, slat contacting members provided in the recess of each of said pair of inner batten guides and projecting upwardly of the upper surfaces of said batten guides, slat stop members provided in the recess of each of said pair of outer batten guides and projecting upwardly of the upper surface thereof, said slat stop members having an arm adapted for selected transversely extending position, and a plurality of parallel slat guides disposed above said batten guides in planar alignment with upwardly projecting portions of said slat contacting and slat stop members.

7. An adjustable nailing form for construction of batten and slat composed crate sections comprising a frame, an inner and an outer pair of batten guides in parallel relation and extending between opposite sides of said frame, said batten guides being slideably mounted for selected positioning within said frame, each batten guide of said inner pair being provided with an axially extending recess creating on either side thereof equal width portions of the upper surface for slat support, each batten guide of said outer pair being provided with an eccentric, axially parallel recess creating on opposite sides thereof a relatively narrow and a relatively wide upper surface portion, slat stop members provided in the recess of each of said pair of outer batten guides and projecting upwardly of the upper surface thereof, said slat stop members each having an arm at their upper ends adapted for selected transverse projection, said arms being of a length sufficient for extension to a point above the outer margin of the wide upper surface portions, slat contacting members provided in the recess of each of said pair of inner batten guides and projecting upwardly of the upper surface portion thereof, said slat stop and slat contacting members being mounted in their associated recesses for shiftable

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movement therealong, and a plurality of elongated parallel, slat guides extending transversely of said frame and being disposed above said batten guides in planar alignment with upwardly projecting portions of said slat contacting and slat stop members, said slat guides being mounted in said frame for slideable movement in a path axially parallel with said batten guides.

8. An adjustable nailing form for construction of batten and slat composed crate sections comprising a frame, an inner and an outer pair of batten guides in parallel relation and extending between opposite sides of said frame, said batten guides being slideably mounted for selected positioning within said frame, slat contacting members provided on each of said pair of inner batten guides, slat stop members provided on each of said outer pair of batten guides and having an arm for engaging the edge of the slats, a plurality of elongated, parallel slat guides extending transversely of said frame in axial normal relation to said batten guides, said slat guides being adapted for slideable movement and being disposed above said batten guides in planar alignment with upwardly projecting portions of said slat contacting and slat stop mem-

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bers, and a plurality of batten stop blocks carried by said slat guides for disposition between adjacent batten guides, said batten stop blocks having their upper surfaces in alignment with said batten guides and being further adapted for selected location thereon.

9. An adjustable fixture as described in claim 2 wherein stop block members are carried suspendingly by the slat guides for disposition between said batten guides for abuttingly engaging the end surface of the adjacent batten guides.

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