

Feb. 6, 1923.

A. J. DE LATEUR.
STACKING MACHINE.
FILED AUG. 19, 1921.

1,444,595.

5 SHEETS—SHEET 1.

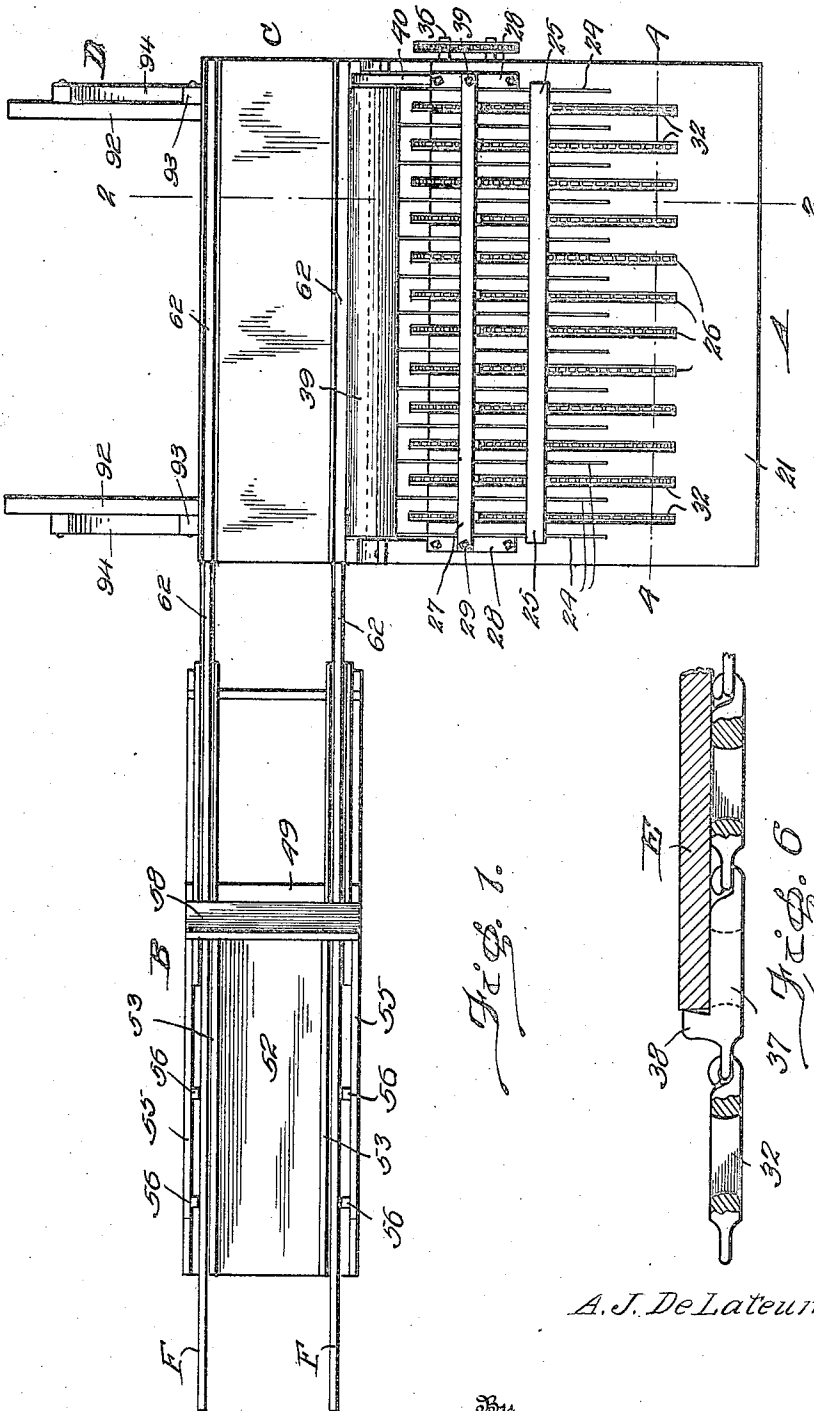


Fig. 1.

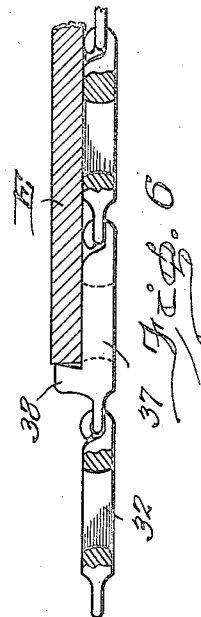


Fig. 6.

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By *Georg Kimmel* Attorney

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5 SHEETS—SHEET 2.

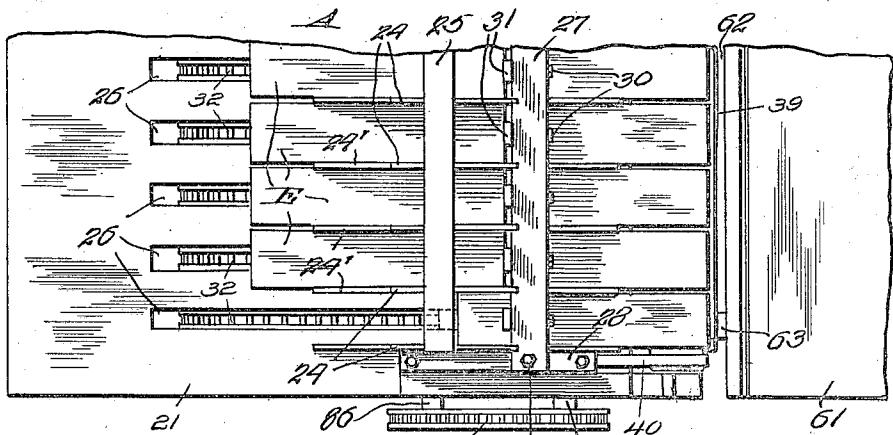


Fig. 2.

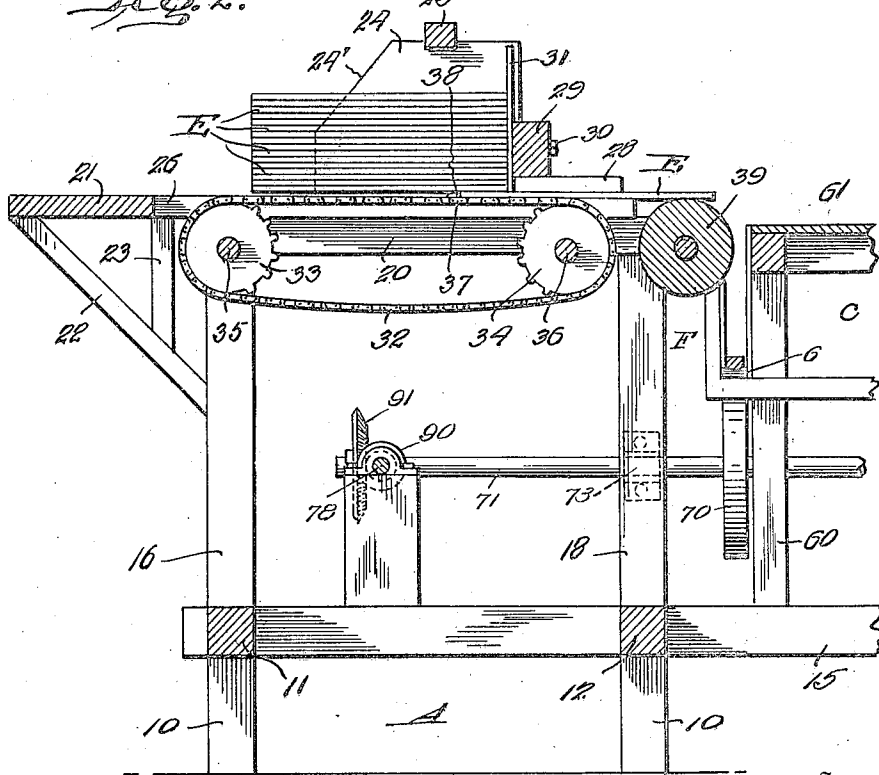


Fig. 5.

Inventor
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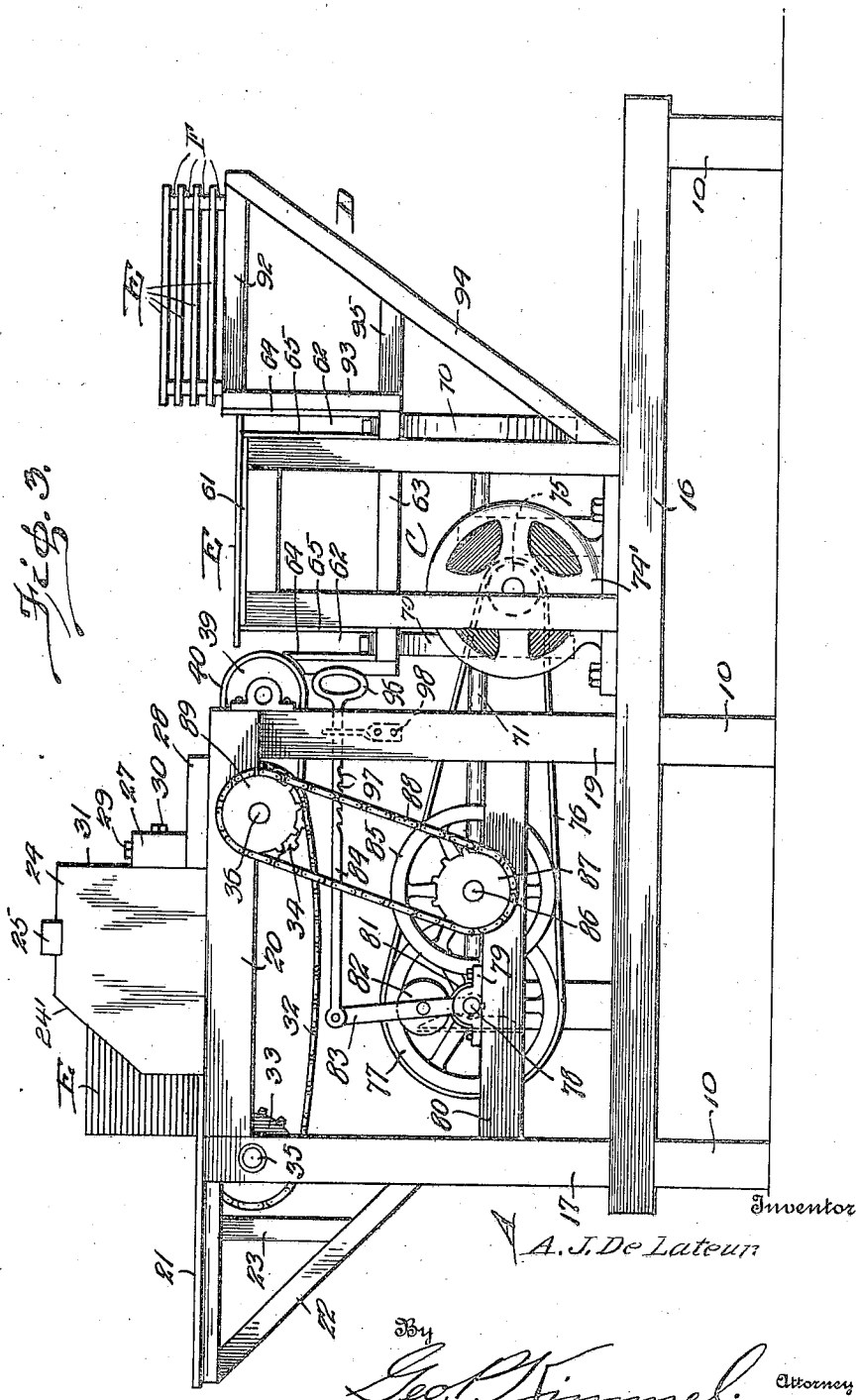
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Geot. Kimmel, Attorney

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5 SHEETS—SHEET 3.

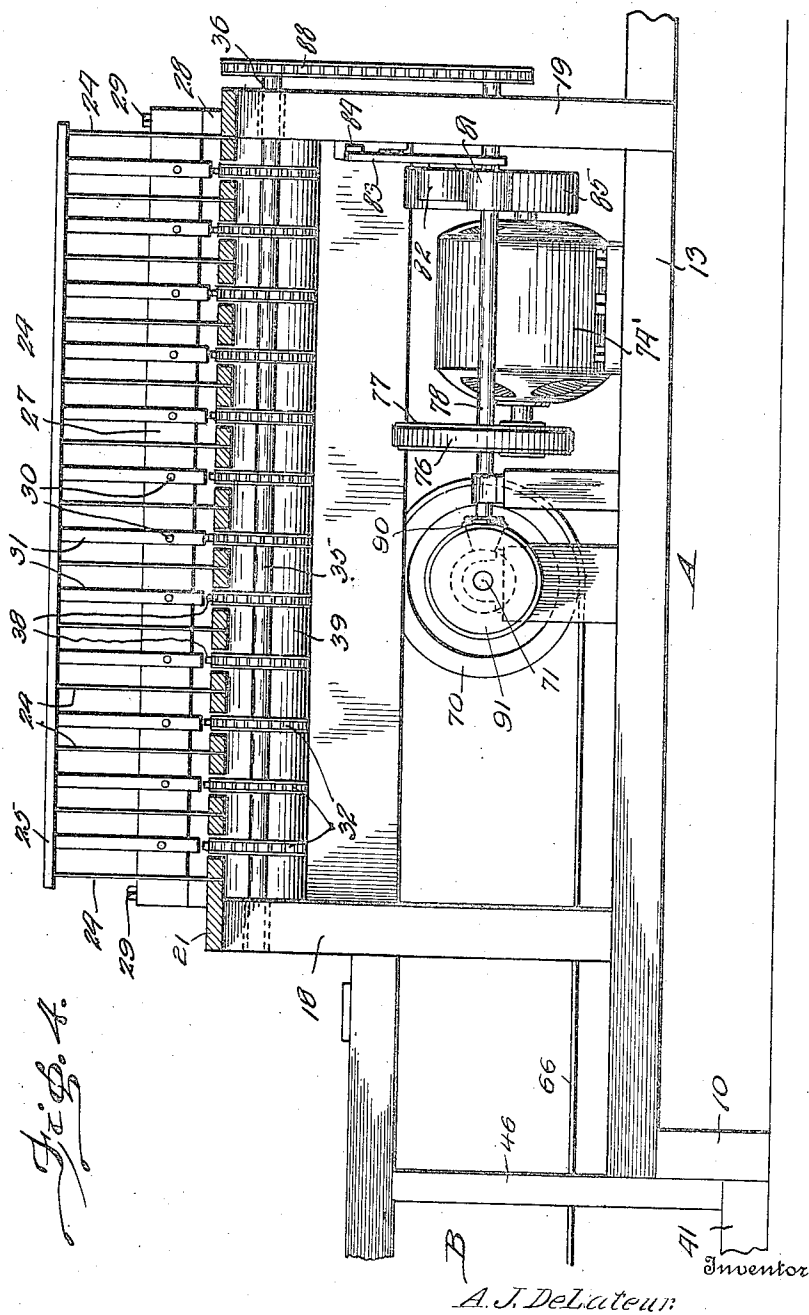


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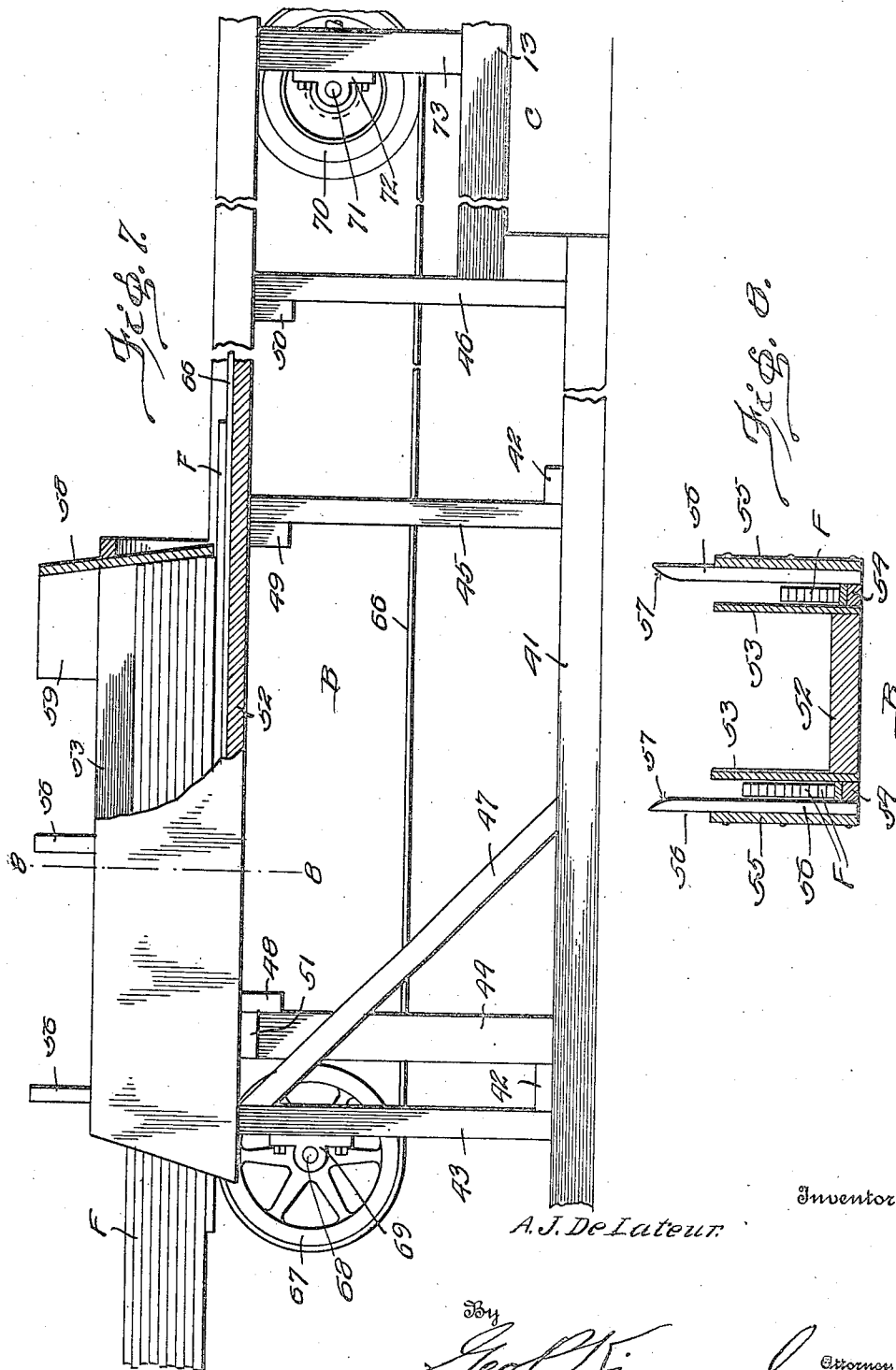


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5 SHEETS—SHEET 5.



Inventor

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UNITED STATES PATENT OFFICE.

ALPHONSE J. DE LATEUR, OF RAYMOND, WASHINGTON, ASSIGNOR TO RAYMOND VENEER COMPANY, OF RAYMOND, WASHINGTON, A CORPORATION OF WASHINGTON.

STACKING MACHINE.

Application filed August 19, 1921. Serial No. 493,623.

To all whom it may concern:

Be it known that I, ALPHONSE J. DE LATEUR, a citizen of the United States, residing at Raymond, in the county of Pacific and State of Washington, have invented certain new and useful Improvements in Stacking Machines, of which the following is a specification.

This invention appertains to improvements in stacking machines or mechanisms, and more particularly to a type of the same adapted for the stacking of lumber, preferably in the form of relatively narrow strips, such as slats of veneer, and the like, preparatory to the drying or seasoning of the same.

The principal object of the invention is to provide for a machine of the class mentioned, and one adapted for effecting the automatic feeding of a number of slats of veneer into position for the engagement therewith of a pair of spaced kiln sticks, whereby the stacking of the slats and sticks in tiers on to dry kiln trucks is greatly facilitated, the kiln sticks also being set automatically into position for the lifting of the same into engagement with the automatically fed and positioned slats.

Another object of the invention is to provide for a machine of the type mentioned, and one embodying a novel means for automatically feeding a number of slats of veneer or the like, one singly from each of a plurality of feed hoppers into proper position, whereby to be engaged by a pair of spaced kiln sticks for the removal and transfer of the same from the stacking table of the machine onto a dry kiln truck brought to a convenient point adjacent to the stacking table for the purpose.

A further object of the invention is to provide for a machine as characterized, and one embodied in a comparatively simple and inexpensive construction and arrangement of parts, due regard being had for the important features of extreme ease, reliability, and efficiency in operation, and durability and long life in the general make up and design of the same.

With the foregoing and other objects in view, the invention resides in the certain novel and useful construction, arrangement and operation of the parts of the same as will be hereinafter more fully described, set

forth in the appended claims, and illustrated in the accompanying drawings, in which:—

Figure 1 is a top plan view of a preferred embodiment of the machine in its entirety.

Fig. 2 is an enlarged, fragmentary top plan view thereof,

Fig. 3 is a side elevation,

Fig. 4 is a vertical transverse section taken on the line 4—4 of Fig. 1,

Fig. 5 is a vertical section taken on the line 5—5 of Fig. 1,

Fig. 6 is a fragmentary sectional detail of one of the veneer slat feed chains,

Fig. 7 is a side elevation, partly in section, of the kiln stick feeding mechanism and the hopper thereof, and,

Fig. 8 is a vertical transverse section taken on the line 8—8 of Fig. 7.

Referring to the drawings, wherein similar characters of reference designate corresponding parts in the several views thereof, the machine consists generally of a veneer slat receiving and feeding mechanism A; a kiln stick receiving and feeding mechanism B arranged at right angles with respect to the rear end of the veneer slat receiving and feeding mechanism A; an assembly stand or table C directly in rear of both the veneer slat and kiln stick receiving and feeding mechanisms A and B and on the juncture of one of the same with the other, and a stacking stand or table D disposed directly in rear of the assembly stand or table and between the same and the track or runway of the trucks on which the assembled stacks or tiers of veneer slats and kiln sticks are to be placed for transportation to and from the drying chamber, compartment or kiln.

The several mechanisms and tables of the machine are assembled on a main base comprising a main frame made up of foot portions 10 suitably secured at the corners at intermediate points of transversely disposed frame members or bars 11, 12, and 13, and longitudinally extending frame members or bars 14 and 15. Rising from the forward end of the main base, at the corners of the same as formed by the points of connection of the transverse bars 11 and 12 with the longitudinal bars 14 and 15, are a set of four uprights or stands 16, 17, 18 and 19, at the upper ends of each pair 16, 18 and 17, 19 of which are secured longitudi-

nally extending bars 20, and secured upon the upper ends of the same and the top edges of the bars 20 is a table 21, the forward edge portion of which is projected for a distance beyond the front end of the frame as formed by the standards 16 and 17, and is supported on a bracket formed by the diagonal members or bars 22 and the vertical brace members or bars 23. This table 21 constitutes the support for the veneer slat feeding mechanism of the machine.

Rising from the top of the table 21 and intermediately thereof from front to rear, is a series of hopper partitions or walls 24 which are equidistantly spaced one from the other in a direction transversely of the table, and the same are secured together in said spaced relation at their top edges by means of a transversely extending bar or brace 25. Formed in the surface of the table 21 and in parallel relation to and medially between each pair of the adjacent partition walls 24, are longitudinally extending slotways 26, which are of a length to extend from points in a common plane transversely of the table at a distance forwardly of the front edges of the hopper walls 24 to points near a common plane at a distance in rear of the rear edges of the latter. Extending across the rear vertical edges of the several hopper walls 24 is a beam 27, which is spaced above the top face of the table 21 by being supported at its opposite ends on blocks 28, and is secured to the latter by means of bolts 29, the front vertical face of the beam 27 being mortised to receive the rear vertical edges of the hopper walls 24, substantially as is shown in Fig. 2, and bolted, as at 30, to the face of the beam 27 and in vertical position medially between the latter walls are stop bars or strips 31. In the present construction of the machine, twelve hoppers are shown, and each are adapted to have stacked within the same, by an operator standing at the front of the table, the requisite number of veneer slats E, as for instance, fifty slats to each hopper, and the hoppers may be kept supplied with the slats continuously throughout the operation of the machine. The veneer slats E are inserted inwardly of the forward open ends of the hoppers and are correctly positioned therein, when the inner end of the same abuts the vertical stop bars or strips 31, the forward upper corner portions of the hopper walls 24 being beveled or cut away on diagonal lines as at 24' to facilitate such insertion and positioning of the slats. For feeding the veneer slats E singly from each of the hoppers, the upper horizontal stretches of a corresponding number of endless chains 32 are operably disposed in the slotways 26, in the table 21, and these chains 32 are trained over and extend between complementary sets of sprocket gears 33 and 34, the gears 33 being

secured in properly spaced relation on a transversely disposed shaft 35 which is journaled at its opposite ends in the upper ends of the front standards 16 and 17, and at a point immediately below and inward of the forward ends of the slotways 26, and the gears 34 are mounted on a similarly disposed shaft 36 journaled at its opposite ends in the standards 18 and 19, and at a point immediately below and inwardly of the rear ends of the said slotways 26. Each of the chains 32 are provided with a single link 37 which has an upstanding projection or lug 38, which is adapted to engage the forward end of the lowermost veneer slat E and feed the same one simultaneously from the rear ends of each of the hoppers, which feeding action is facilitated and continued by a roller 39 journaled transversely of the rear edge of the table 21, and is driven in the proper direction for such purpose from the sprocket gear shaft 36 by means of a belt driven connection 40.

Extending in right angular relation to the main base and frame, formed in part by the longitudinally extending frame members or bars 15 and 16, and in rear of the veneer slat feeding mechanism as above described, and substantially as is shown either wholly or in part as in Figs. 1, 4, 7 and 8, is the kiln stick receiving hopper and feeding mechanism, and the base of the same comprises longitudinally extending lower or floor engaging members or bars 41 which connect at their inner ends certain of the foot pieces 10 of the main base, and are secured in spaced parallel relation one with respect to the other by means of transversely extending members or braces 42. Rising from the bars 41 are a series of standards 43, 44, 45, and 46, arranged in pairs, the standards 43 being braced in vertical position by means of diagonally extending braces 47 connecting the same to the bars 41, as is shown in Fig. 7, and the upper ends of each pair of the standards 44, 45 and 46, are connected together by means of transversely extending bars 48, 49, and 50, respectively, the standards 44 being further connected together by means of a plate bar 51 being secured on the top ends thereof, the upper face of the plate bar 51 being disposed in the plane of the top ends of the standards 43, 45 and 46, and the braces or cross bars 48, 49 and 50, the whole being arranged to form a solid and substantial support for a feed table 52 which is laid on the upper face of the frame for a portion of the length thereof and inwardly from the outer end of the same. As shown in Fig. 8, the table 52 is provided with vertically rising plates 53 forming the inner walls of a pair of relatively narrow hoppers having their bottoms formed of narrow strips 54, of a less thickness than that of the table proper 52, and their outer walls 55 ex-

tending parallel to the inner walls 53. Extending vertically of the inner faces of the outer walls 55 of the hopper, and projecting for a distance above the same are pairs of guide bars 56 which have their upper free ends inwardly curved as at 57 to facilitate the stacking within the hoppers of the desired number of kiln sticks F. The inner end of the table 51 is provided with an upwardly disposed wall 58 which extends entirely across the same and incloses the inner ends of the hoppers, the wall being slightly inclined in a forward direction, whereby the inner ends of the kiln sticks F, when positioned within the hoppers, have the inner ends of the lowermost thereof advanced one beyond the other in the direction of the feed of the same from the hoppers. The end plate or wall 58 is preferably of a height equal to that of the guide bars 56, and is provided with oppositely disposed side plates 59 extending forwardly therefrom along the outer sides of the hoppers so as to act as guides for the extreme inner end portions of the kiln sticks F, when the same are being placed in position within the latter. The end plate 58 is positioned on the table 52 at the inner ends of the hoppers, and at a point approximately on the transverse center of the supporting frame of the table 52, the hoppers being of a length to receive a major portion of the length of the kiln sticks sufficient to allow the engagement of the second lowermost of the same with the feeding devices thereof after the first lowermost sticks have been fed from the hoppers.

Rising from the longitudinal bars 15 and 16 of the main frame of the machine in rear of the veneer slat receiving and feeding mechanism A, and the kiln stick receiving and feeding mechanism B, in substantial alinement with both and at the point of juncture one with the other, is an assembling table C which is formed of standards 60, supporting on the upper ends of the same the table 61 proper, the level of which is in the plane of or slightly below that of the table 21 and the feed roller 39 carried at the rear end of the latter, and upon the upper face of the same is to be received the veneer slates E fed thereto from the hoppers of the mechanism A. The assembling table is spaced from the other parts of the machine to provide longitudinally extending slotways 62 to either side thereof and in alinement with the kiln stick hoppers at the opposite sides of the table 52 of the mechanism B. Extending transversely of each pair of the standards 60, are bars 63 to the opposite ends of which are secured plates 64, which have the outer vertical walls of the slotways 62, while similar plates 65 are secured against the opposite outer side faces of the standards 60 to form the inner vertical side walls of the said slotways 62, the

bottoms of the latter being spaced at a distance below the plane of the upper surface of the table, and in the same plane as that of the bottoms of the kiln stick hoppers of the mechanism B.

For feeding a kiln stick F from each of the hoppers of the mechanism B into position within the slotways 62 of the assembling table C, a pair of endless belts 66 are provided and the upper stretches of the same extend over the table 52 along the bottom bars 54 of the kiln stick hoppers and to a point intermediate the opposite ends of the assembling table C, the same being trained over pulleys 67 mounted on a shaft 68 which is journaled in bearings 69 secured in position on the outer faces of standards 43 and over pulleys 70 carried on a shaft 71 mounted in bearings 72 secured in position on a pair of standards 73 rising from the rear transverse bars 13 of the main base of the machine. Upon movement in the proper direction of the belts 66, the outer surfaces of the same engage the under faces of the lowermost of the kiln sticks in the hoppers of the mechanism B and carry the same rearwardly under the lower edge of the plate 58 substantially as is shown in Fig. 7, and until the forward ends of the same abut the stop members or blocks 74 secured at the outer ends of the slotways 62 of the assembling table C. Just as soon as the outer end of the first of the kiln stick clears the plate 58, the next of the lowermost of the kiln sticks falls onto the belt 66 and are carried along in rear of the first of the same.

For operating the veneer slat feed mechanism A and the kiln stick mechanism B, a suitable source of power is provided, and the same is preferably in the form of an electric motor 74', which is conveniently located on the main base of the machine, substantially as is shown in Figs. 3 and 4. In this instance, one end of the motor shaft is provided with a pulley 75 which is connected by means of a belt 76 to a larger pulley 77 mounted on a shaft 78, which is journaled in bearings 75 secured on the upper faces of a pair of oppositely disposed cross bars 80 extending between the complementary pairs of standards 16, 18, and 17, 19, of the frame of the veneer slat receiving and feeding mechanism A. Mounted on the shaft 78 to one side of the pulley 77 is a friction roller 81, which is contacted by a roller 82 carried on a lever arm 83, which is pivoted on the shaft 78, and is movable, upon the manipulation of the lever arm 83 in proper direction by a hand operated reach rod 84, into contact with the peripheral face of a pulley or wheel 85 mounted on a stub shaft 86, which, in turn, is journaled in suitable bearings on one of the cross bars 80. The outer end of the shaft 86 is provided with a sprocket gear 87 over which is trained a sprocket chain 88 leading to and

connecting a sprocket gear 89 mounted on the free end of the shaft 36. With the contact of the movable friction roller 82 with the pulley 85, motion will be transmitted to the sprocket chain 88 for the driving of the shaft 36, and the feed chains 32 connected with the sprocket gears carried thereon, then the lugs 38 of the links 37 of the chains 32, will act to simultaneously push the lowermost of the veneer slats of the several feed hoppers rearwardly over the roller 59, which, in turn is rotated, by reason of the belt connection 40 of the same with the shaft 36, and acts to deliver the veneer slats E onto the assembling table top 61, in which position the opposite ends of the slats E project to either side of the table top 61 and overlay the slotways 62. For delivering or feeding the kiln sticks F into position, as hereinbefore stated, the shaft 78 has its inner end provided with a beveled gear 90 arranged in mesh with a beveled gear 91 carried on the shaft 71 which carries the inner pair of belt pulleys 70, so that upon the rotation of the shafts 78 and 71, the belts 66 are driven for such purpose.

In the operation of the machine thus provided, when a set of the veneer slats E have been fed onto the assembling table C and a pair of the kiln sticks F are positioned within the slotways 62 of the latter, operators at either end of the table C will grasp the adjacent ends of the kiln sticks M and raise the same upwardly of the slotways 62 against the overlying ends of the veneer slats E, when the same will be lifted from their delivered positions on the table C and be deposited onto a stacking table D, which operation will be repeated throughout the continued operation of the machine as a whole, the successive layers of kiln sticks and veneer slats being stacked one upon the other until a tier of a desired height is formed, when the latter as a whole is to be lifted onto a kiln truck for transportation to the drying kiln. In the operation of the machine, one operator will take the position in front of the veneer slat receiving table 21 for the filling of the hoppers thereon; a second operator will take position in front of the outer end of the kiln stick receiving table 52, for the filling of the hoppers thereon; two operators will take position one at either end of the assembling table 61 for the lifting of the kiln sticks and veneer slats therefrom and placing of the same onto the stacking table D; and two other operators will take position at either end of the stacking table D for lifting the formed tiers of kiln sticks and veneer slats onto the kiln trucks (not shown).

The stacking table D comprises a table 92 supported at its inner edge from bars 93 secured to the outer face of the walls 64 of the adjacent slotway 62 of the assembling table C, and at its outer edge by diagonally

disposed members or bars 94 connecting the lower ends of the outer adjacent of the standards 60, substantially as is shown in Fig. 3, suitable braces or bars 95 being arranged to connect the lower ends of the bars 93 to points intermediate of the brace 95, whereby to lend rigidity to the structure.

The hand reach rod 84 is provided with a hand grip 96, which is disposed at a point convenient for the manipulation of the same by one of the operators at the assembling table C, and is further provided with a series of ratchet teeth 97 adapted for engagement with a latch bracket 98 secured in proper position on the standard 19, so that the friction roller 82 carried on the lever arm 83 may be held in either of its operative or inoperative positions with respect to the veneer slat feeding mechanism A.

From the foregoing description and illustration of a preferred embodiment of the machine, and of the specific construction, arrangement and operation of the several parts and mechanisms thereof, the important advantages, objects and purposes of the same will be readily apparent to those skilled in the art to which it appertains, and it will be understood that various changes in and modifications of such embodiment may be resorted to without departing from the spirit of the invention involved therein, or from the scope of the claims appended hereto.

Having thus fully described the invention, what is claimed, is:—

1. In a stacking machine for the purpose set forth, a plurality of hopper-like containers disposed in parallelism and each adapted to receive a stack of veneer slats, means for feeding veneer slats from the bottoms of said stacks to position them parallel one to the other, an assembling table for receiving said parallel slats with the opposite ends of these latter projecting beyond the side edges of the table, means for feeding a pair of kiln sticks to position them one at each side of and below the table and beneath the projecting ends of said parallel slats to provide for the successive raising of the sticks with said parallel slats thereon, and supports for the kiln sticks arranged at the sides of and below the top of the table.

2. In a stacking machine for the purpose set forth, a plurality of hopper-like containers disposed in parallelism and each adapted to receive a stack of veneer slats, means for feeding veneer slats from the bottoms of said stacks to position them parallel one to the other, an assembling table for receiving said parallel slats with the opposite ends of these latter projecting beyond the side edges of the table, means for simultaneously feeding a pair of kiln sticks to position them one at each side of and be-

low the table and beneath the projecting ends of said parallel slats to provide for the successive raising of the sticks with said parallel slats thereon, and supports for the kiln sticks arranged at the sides of and below the top of the table.

3. In a stacking machine for the purpose set forth, a plurality of hopper-like containers disposed in parallelism and each adapted to receive a stack of veneer slats, means for feeding veneer slats from the bottoms of said stacks to position them parallel one to the other, an assembling table for receiving said parallel slats with the opposite ends of these latter projecting beyond the side edges of the table, means for feeding a pair of kiln sticks to position them one at each side of and below the table and beneath the projecting ends of said parallel slats to provide for the successive raising of the sticks with said parallel slats thereon, supports for the kiln sticks arranged at the sides of and below the top of the table, the feeding means for the kiln sticks being disposed at right angles with respect to the feeding means for the veneer slats.

4. In a stacking machine for the purpose set forth, a plurality of hopper-like containers disposed in parallelism and each adapted to receive a stack of veneer slats, means for feeding veneer slats from the bottoms of said stacks to position them parallel one to the other, an assembling table for receiving said parallel slats with the opposite ends of these latter projecting beyond the side edges of the table, means for feeding a pair of kiln sticks to position them one at each side of and below the table and beneath the projecting ends of said parallel slats to provide for the successive raising of the sticks with said parallel slats thereon, supports for the kiln sticks arranged at the sides of and below the top of the table, the feeding means for the kiln sticks being disposed at right angles with respect to the feeding means for the veneer slats, and an operating means common to said stick and slat feeding means.

5. In a stacking machine for the purpose set forth, a series of hopper-like containers disposed in parallelism and each adapted to receive a stack of veneer slats, a feed mechanism for feeding veneer slats from the bottom of said stacks in parallelism, an assembling table for receiving the slats in parallelism with the opposite ends of the slats projecting beyond the side edges of the table, said table of less width than the length of the slats, a pair of hoppers disposed in parallelism and each adapted to receive a stack of kiln sticks, a feed mechanism for feeding a pair of kiln sticks from the bottoms of the stacks thereof to position said sticks one at each side of and below the

top of said table and beneath the projecting ends of said slats on the table for the subsequent raising of the sticks with the parallel slats thereon, and supports for the pair of kiln sticks, said supports positioned below the top of and at each side of the table.

6. In a stacking machine for the purpose set forth, a series of hopper-like containers disposed in parallelism and each adapted to receive a stack of veneer slats, a feed mechanism for feeding veneer slats from the bottom of said stacks in parallelism, an assembling table for receiving the slats in parallelism with the opposite ends of the slats projecting beyond the side edges of the table, said table of less width than the length of the slats, a pair of hoppers disposed in parallelism and each adapted to receive a stack of kiln sticks, a feed mechanism for feeding a pair of kiln sticks from the bottoms of the stacks thereof to position said sticks one at each side of and below the top of said table and beneath the projecting ends of said slats on the table for the subsequent raising of the sticks with the parallel slats thereon, supports for the pair of kiln sticks, said supports positioned below the top and at each side of the table, and stops below the top of the table for arresting the feeding movement of the pair of kiln sticks.

7. In a stacking machine for the purpose set forth, a series of hopper-like containers disposed in parallelism and each adapted to receive a stack of veneer slats, a feed mechanism for feeding veneer slats from the bottom of said stacks in parallelism, an assembling table for receiving the slats in parallelism with the opposite ends of the slats projecting beyond the side edges of the table, said table of less width than the length of the slats, a pair of hoppers disposed in parallelism and each adapted to receive a stack of kiln sticks, a feed mechanism for feeding a pair of kiln sticks from the bottoms of the stacks thereof to position said sticks one at each side of and below the top of said table and beneath the projecting ends of said slats on the table for the subsequent raising of the sticks with the parallel slats thereon, supports for the pair of kiln sticks, said supports positioned below the top of and at each side of the table, said pair of hoppers disposed at right-angles with respect to said series of hoppers.

8. In a stacking machine for the purpose set forth, a series of hopper-like containers disposed in parallelism and each adapted to receive a stack of veneer slats, a feed mechanism for feeding veneer slats from the bottom of said stacks in parallelism, an assembling table for receiving the slats in parallelism with the opposite ends of the slats projecting beyond the side edges of the table, said table of less width than the length of the slats, a pair of hoppers disposed in

parallelism and each adapted to receive a stack of kiln sticks, a feed mechanism for feeding a pair of kiln sticks from the bottoms of the stacks thereof to position said sticks one at each side of and below the top of said table and beneath the projecting ends of said slats on the table for the subsequent raising of the sticks with the parallel slats thereon, supports for the pair of kiln sticks, said supports positioned below the top of and at each side of the table, and an operating means common to said feed mechanisms.

9. In a stacking machine for the purpose set forth, a series of hopper-like containers disposed in parallelism and each adapted to receive a stack of veneer slats, a feed mechanism for feeding veneer slats from the bottom of said stacks in parallelism, an assembling table for receiving the slats in parallelism with the opposite ends of the slats projecting beyond the side edges of the table, said table of less width than the length of the slats, a pair of hoppers disposed in parallelism and each adapted to receive a stack of kiln sticks, a feed mechanism for feeding a pair of kiln sticks from the bottoms of the stacks thereof to position said sticks one at each side of and below the top of said table and beneath the projecting ends of said slats on the table for the subsequent raising of the sticks with the parallel slats thereon, supports for the pair of kiln sticks, said supports positioned below the top and at each side of the table, stops below the top of the table for arresting the feeding move-

ment of the pair of kiln sticks, said feed mechanisms disposed at right-angles with respect thereto, and an operating means common to said feed mechanisms.

10. In a stacking machine for the purpose set forth, a series of hopper-like containers disposed in parallelism and each adapted to receive a stack of veneer slats, a feed mechanism for feeding veneer slats from the bottom of said stacks in parallelism, an assembling table for receiving the slats in parallelism with the opposite ends of the slats projecting beyond the side edges of the table, said table of less width than the length of the slats, a pair of hoppers disposed in parallelism and each adapted to receive a stack of kiln sticks, a feed mechanism for feeding a pair of kiln sticks from the bottoms of the stacks thereof to position said sticks one at each side of and below the top of said table and beneath the projecting ends of said slats on the table for the subsequent raising of the sticks with the parallel slats thereon, supports for the pair of kiln sticks, said supports positioned below the top of and at each side of the table, said pair of hoppers disposed at right-angles with respect to said series of hoppers, said feed mechanisms disposed at right-angles with respect thereto, and an operating means common to said feed mechanisms.

In testimony whereof, I affix my signature hereto.

ALPHONSE J. DE LATEUR.