June 26, 1956 S. J. HOLTZMAN 2,751,879

WOOD TREATING APPARATUS

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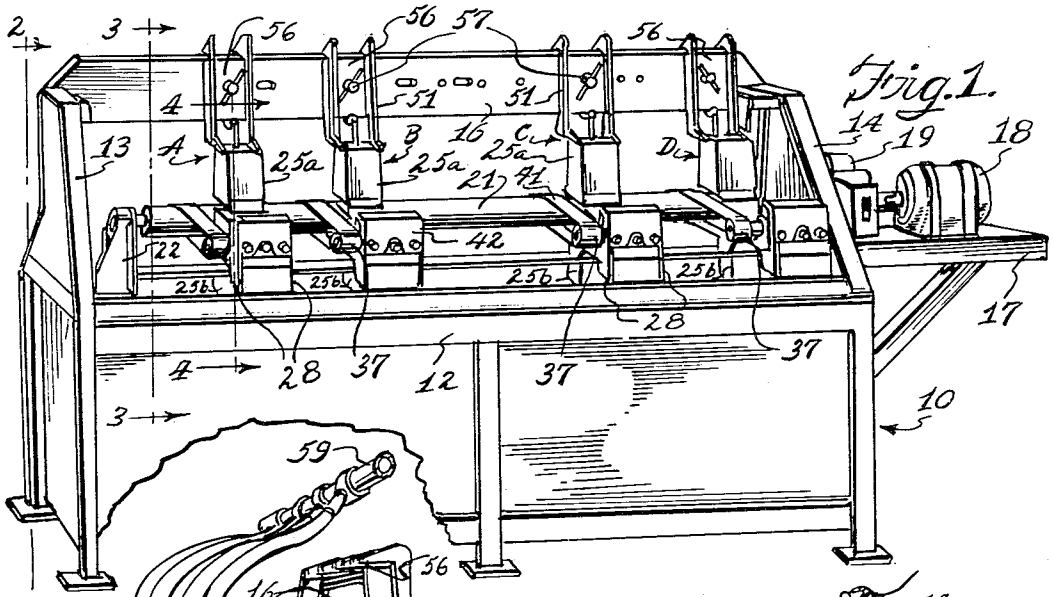


Fig. 1.

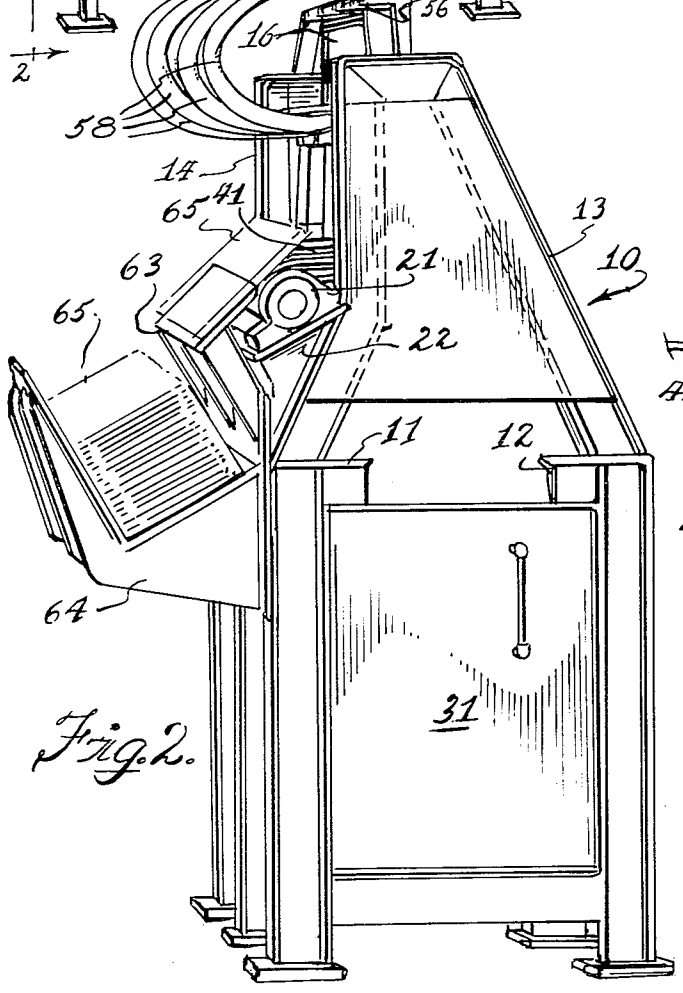


Fig. 2.

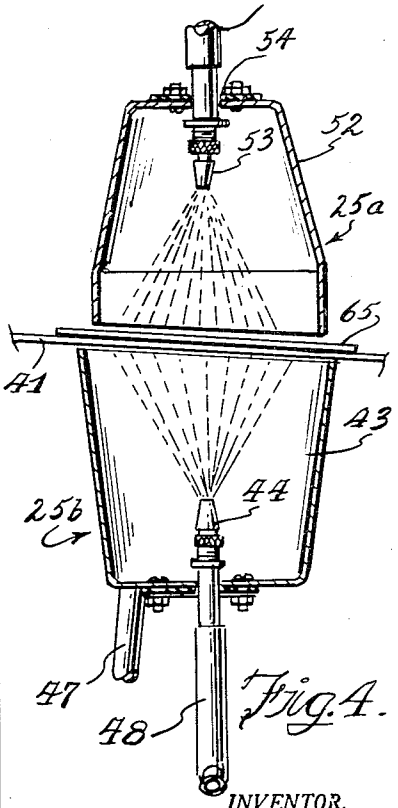


Fig. 4.

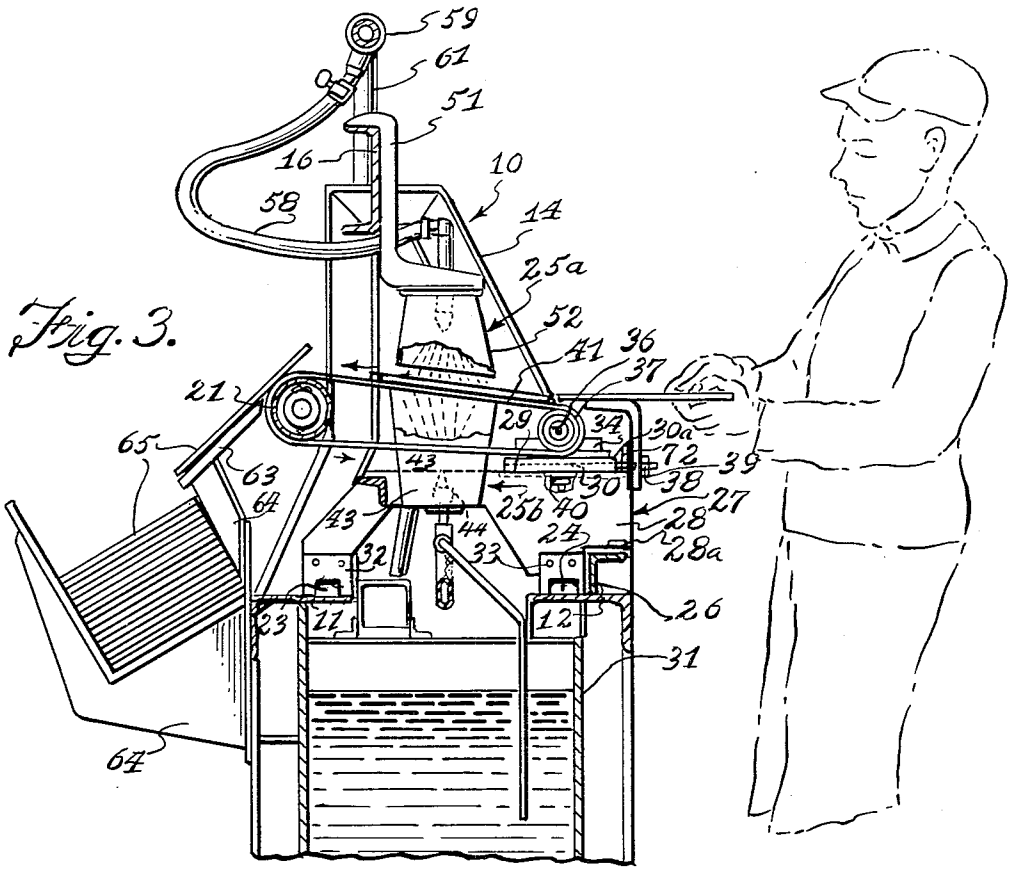
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Fig. 3.



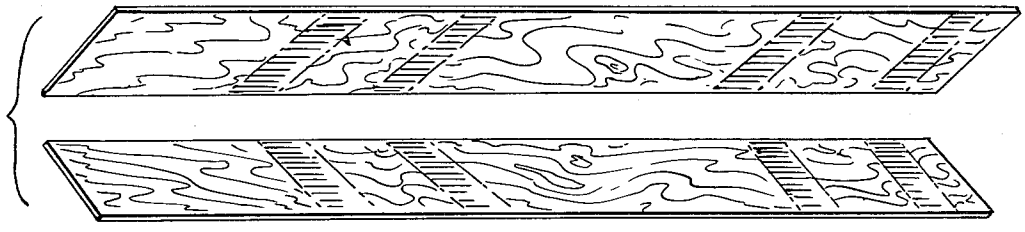


Fig. 5.

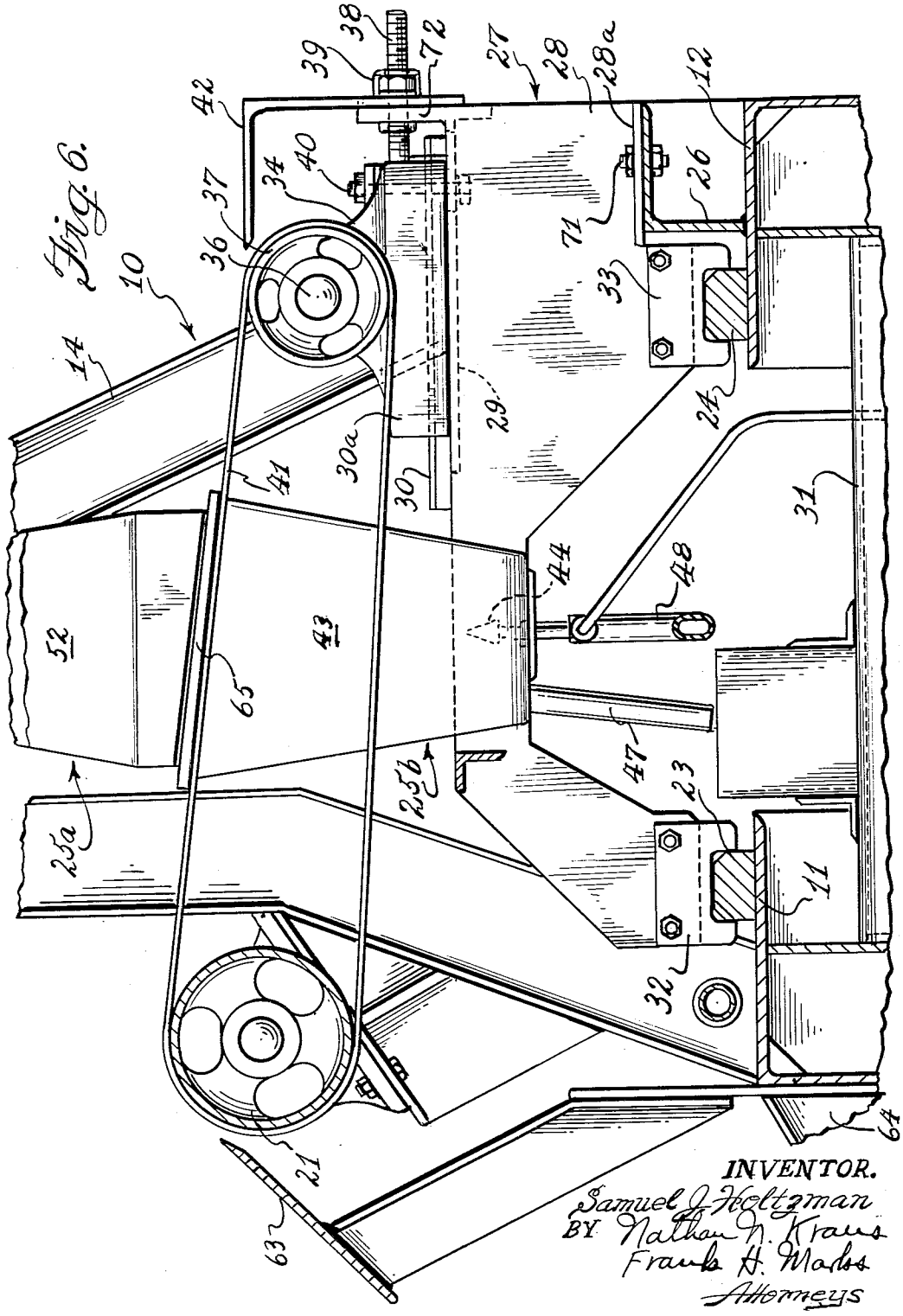
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Fig. 6.



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WOOD TREATING APPARATUS

Samuel J. Holtzman, Baltimore, Md.

Application June 24, 1953, Serial No. 363,888

4 Claims. (Cl. 118—301)

My invention relates to an apparatus for treating wood.

Certain types of luggage and receptacles are formed with a wood frame which is usually formed from a single relatively thin board, for example, plywood which has been bent into a desired shape. It is known that bending of the wood board may be facilitated by saturating the fibres with water along the areas where bending is to occur. Heretofore, the apparatus and methods used for saturating wood boards prior to bending have been unsatisfactory for a number of reasons chief among which was that they did not lend themselves to modern high-speed production practices.

Accordingly, it is an object of my invention to provide an apparatus for saturating wood boards and the like in predetermined areas so as to facilitate bending thereof into desired shapes.

Another object of my invention is the provision of an apparatus of the foregoing character which is capable of a high rate of production.

A further object of my invention is the provision of an apparatus of the foregoing character in which the board saturating means may be adjustably spaced for varying the spacing of the areas to be saturated so that the same apparatus may be employed in processing boards in a relatively wide range of sizes.

A still further object of my invention is the provision of an apparatus of the foregoing type which is simple in construction, efficient in operation and durable in service.

Other and further objects and advantages of my invention will become apparent from the following description when considered in connection with the accompanying drawings, in which:

Fig. 1 is a front perspective view of an apparatus in accordance with my invention;

Fig. 2 is an end perspective view looking in the direction of the arrows 2—2 of Fig. 1.

Fig. 3 is a cross sectional view taken substantially on line 3—3 of Fig. 1.

Fig. 4 is a cross sectional view on an enlarged scale taken substantially on line 4—4 of Fig. 1.

Fig. 5 is a perspective view of boards showing the same after having been processed by my apparatus and with certain areas thereof saturated preparatory to bending.

Fig. 6 is a fragmentary cross sectional view similar to Fig. 3 but on an enlarged scale.

Referring to the drawings, the numeral **10** indicates, generally, a frame structure formed of structural forms including two spaced parallel longitudinal angle members **11** and **12** providing a bed for supporting the apparatus hereinafter to be described. The frame includes end frame sections **13** and **14** supporting an overhead longitudinal channel member **16**. A platform **17** is suitably supported on frame section **14** and has mounted thereon an electric motor **18** and speed reducer **19**. A driving roller **21** extending substantially the length of the frame structure has one end journaled in the end frame portion **14** and the other end journaled in a bracket **22** supported

on the longitudinal member **11** and is operatively connected to the speed reducer **19**. The frame members **11** and **12** carry track rails **23** and **24**, respectively, said rails being shaped in cross section substantially as illustrated in Fig. 3. An angle member **26** is welded to member **12** and is provided with a series of holes for a purpose as will be hereinafter explained.

A plurality of spray stations identified generally by the letters A, B, C and D identically constructed and supported as will be hereinafter explained, and are arranged to be movable longitudinally of the frame so that the spacing between the several stations may be varied as desired. The said stations are identical in construction and each comprises upper and lower spray sections **25***a* and **25***b* respectively. Each of the lower spray sections **25***b* includes a base indicated generally by **27** formed of two sheet metal plates **28** shaped substantially as illustrated in Fig. 3 and welded to a top plate member **29** carrying a pair of rails **30**. Each of the bases is arranged to bridge an open tank **31** supported within the frame structure and is provided with a pair of spaced shoes **32** and **33** arranged to slide on the longitudinal rails **23** and **24** respectively. The forward portions of the plates **28** overhang the longitudinal angle member **26** of the frame member and are connected by a plate member **28***a* welded thereto, the said plate member having an aperture therein to receive a bolt **71** passing through one of the registering apertures in the angle member **26** for effecting a locking of the base **27** to the frame. A plate member **72** having a portion extending above to the plane of the top plate **29** in the manner of a flange is welded to the plates **28** and plate member **29**. Supported on rails **30** for movement longitudinally thereof is a pillow block support **30***a* provided on the underside with grooves complementary to the rails **30**. A stud **40** depends from support **30***a* and passes through a slot in plate **29**, the said stud cooperating with a nut to lock the support in a position of adjustment. Bolted to the support **33** are a pair of pillow blocks **34** in which is journaled a shaft **36** on one end of which is mounted a pulley **37**. Secured to the forward end of the support **33** is a tension bolt **38** which projects through an opening in the plate **32**. A nut **39** abutting said flange and cooperating with said bolt serves as a means by which the pillow blocks **34** may be moved so as to effect tightening of the belt **41** which cooperates with the pulley **37** and driving roller **21** as will be observed the belt is inclined upwardly. An angle member **42** is bolted to the plate **28** and serves as a platform for supporting the wooden boards as they are fed into apparatus in a manner which will be hereinafter described. Supported on the base **27** is a hood **43** open at the top and bottom, the top portion of the hood having its edges inclined to coincide substantially with the inclination of the belt **41** as illustrated more clearly in Fig. 3. The hood **43** is provided at the bottom with circular opening through which extends, in an upward direction, a spray nozzle **44**, the said nozzle being provided with an annular flange **46** having a series of perforations arranged to register with corresponding perforations in the marginal edge of the opening of the hood the said perforations receive screws which serve to securely attach the nozzle as illustrated in Fig. 4. A drain pipe **47** is provided so that the spent liquid may drain back into the tank **31**. The noggle **44** is connected by means of a flexible conduit **48** to a suitable header communicating with a water supply line connected to a pump whereby water is delivered to the nozzle under pressure.

The upper spray sections **25***a* are each supported on the overhead channel member **16** by a bracket **51** shaped substantially as illustrated in Fig. 3 and depending from each of brackets is a hood **52** which similarly as hood **43** is provided with a circular opening through which projects

in a downwardly direction a spray nozzle **53** similarly provided with a flange **54** for effecting securement of the nozzle to the hood in the manner previously described. The web **56** of the bracket **51** is provided with an aperture arranged to register with one of the several threaded apertures provided in the channel **16** to receive a screw **57** for effecting securement of the bracket to the channel **16**. The nozzle **53** is connected by means of a flexible conduit **58** to a header **59** communicating with a water supply line **61** connected to a pump for delivering water to the nozzles under pressure. The lower edges of the hood **52** are inclined substantially in parallel relation to the inclination of the belt **41** and, as will be apparent by reference to Fig. 4 the hoods **43** and **52** are intended to be arranged in vertical alinement so that the nozzles **44** and **53** are substantially in coaxial disposition.

The spray stations A, B, C and D may be moved longitudinally of the frame to desired spaced positions and secured in such positions for operating on board sections of various lengths. The openings in the channel **16** and in the frame member **26** are in vertical alinement so that when the upper and lower spray sections **25***a* and **25***b* are moved to positions of adjustment and secured in such positions they will be maintained in the vertical alinement illustrated in Fig. 4.

A guide member **63** extends longitudinally adjacent the driving roller **21** and is supported on a plurality of brackets **64** which are bolted to the frame to provide a cradle for receiving in stacked relation the boards **65** discharged from the apparatus after processing.

The operation of my apparatus should be apparent from the foregoing description but briefly stated it is as follows:

The upper and lower spray sections of the spray stations A, B, C and D are first adjusted longitudinally of the frame for desired spacing and are thereafter secured in position in the manner hereinbefore described. The use of flexible conduits **48** and **58** permits movement of both the upper and lower spray sections **25***a* and **25***b* within a limited range and driving connection of the pulleys **37** with the driving roller **21** is maintained at all times. The boards **65** to be operated on are fed into the apparatus successively as illustrated in Fig. 3, the said boards preferably being first supported on the angular members **42** and then pushed into engagement with the belts **41** which serve to convey the boards between the upper and lower spray sections **25***a* and **25***b* where they are acted upon by the water sprays emanating from the upper and lower spray nozzles. The linear speed of the belts **41** is such that a sufficient interval of time of contact with the spray is provided for adequate saturation of the wood boards. Each board is carried on the belts **41** until it reaches the driving roller **21** and is then guided by the guide member **63** into the brackets **64** where the boards are automatically stacked. The spent water discharged from the nozzles drains back into the tank **31** and is recirculated by pump means to the nozzles so that the same water is used repeatedly. It will be apparent that the operation of the apparatus is continuous and automatic and requires only that an operator successively feed boards into the apparatus in accordance with its speed of operation. It will be found as each board emerges from the apparatus that the portions subjected to the spray are adequately saturated while the remaining portions of the board remain dry and unaffected by the spray.

Various changes coming within the spirit of my invention may suggest themselves to those skilled in the art. Hence I do not wish to be limited to the specific embodiments described or uses mentioned, but intend the same to be merely exemplary, the scope of my invention being limited only by the appended claims.

I claim:

1. A board wetting apparatus of the character described comprising a frame including a pair of spaced longitudinal members and an overhead frame member arranged above said pair of members in substantially parallel relation thereto, a plurality of upper and lower spray sections each adjustable longitudinally of said frame for variable relative spacing, said lower spray sections each comprising supporting means adjustably supported on said longitudinal frame members, and an upwardly directed spray nozzle carried on said supporting means, said upper spray sections each comprising a bracket adjustably supported on said upper longitudinal frame member, and a downwardly directed spray nozzle carried on each of said brackets, an elongated driving roller extended longitudinally substantially the length of the frame, a pulley supported for rotation on each of said supporting means, and a plurality of conveyor belts cooperating with said driving roller and said pulleys for conveying boards to be wetted between corresponding upper and lower nozzles, said belts being adjustable longitudinally of said roller for alinement with respective supporting means.

2. A board wetting apparatus of the character described comprising a frame including a pair of spaced longitudinal members and an overhead frame member arranged above said pair of members in substantially parallel relation thereto, a plurality of upper and lower spray sections each adjustable longitudinally of said frame for variable relative spacing, said lower spray sections each comprising supporting means adjustably supported on said longitudinal frame members, and an upwardly directed spray nozzle carried on said supporting means, said upper spray sections each comprising a bracket adjustably supported on said upper longitudinal frame member, and a downwardly directed spray nozzle carried on each of said brackets, an elongated driving roller extended longitudinally substantially the length of the frame, a pulley supported for rotation on each of said supporting means, a plurality of conveyor belts co-operating with said driving roller and said pulleys, said belts being adjustable longitudinally of said roller for alinement with respective supporting means, means for conveying boards to be wetted between corresponding upper and lower nozzles, and means for effecting tensioning of each of said belts.

3. A board wetting apparatus of the character described comprising a frame including a pair of spaced longitudinal members and an overhead frame member arranged above said pair of members in substantially parallel relation thereto, a plurality of upper and lower spray sections each adjustable longitudinally of said frame for variable relative spacing, said lower spray sections each comprising supporting means adjustably supported on said longitudinal frame members, and an upwardly directed spray nozzle carried on said supporting means, said upper spray sections each comprising a bracket adjustably supported on said upper longitudinal frame member, and a downwardly directed spray nozzle carried on each of said brackets, and means for conveying boards to be wetted between corresponding upper and lower nozzles, said means including an elongated driving roller extending longitudinally substantially the length of the frame, a pulley supported for rotation on each of said supporting means, a plurality of conveyor belts cooperating with said driving roller and said pulleys, said belts being adjustable longitudinally of said roller for alinement with respective supporting surfaces, a hood surrounding each of said nozzles to confine the spray, said hoods being arranged substantially in vertical alinement, and a flexible conduit connecting each of said nozzles with a supply of liquid.

4. A board wetting apparatus of the character described comprising a frame including a pair of spaced longitudinal members and an overhead frame member arranged above said pair of members, an elongated driving roller extending longitudinally substantially the length of the frame, a plurality of upper and lower spray sec-

tions each adjustable longitudinally of said frame for variable relative spacing, said lower spray sections each comprising supporting means adjustably supported on said longitudinal frame members, a shaft journaled in said supporting means, a pulley carried on said shaft, a conveyor belt co-operating with said driving roller and said pulley, said belts being adjustable longitudinally of said roller for alinement with respective supporting means, an upwardly directed spray nozzle carried on said supporting means, and a hood surrounding said nozzle and supported on said supporting means, said upper spray sections each comprising a bracket adjustably supported on said upper longitudinal frame member, a downwardly directed spray nozzle carried on said bracket, a hood depending from said bracket and surrounding said nozzle, and means for effecting tensioning of each of said belts.

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