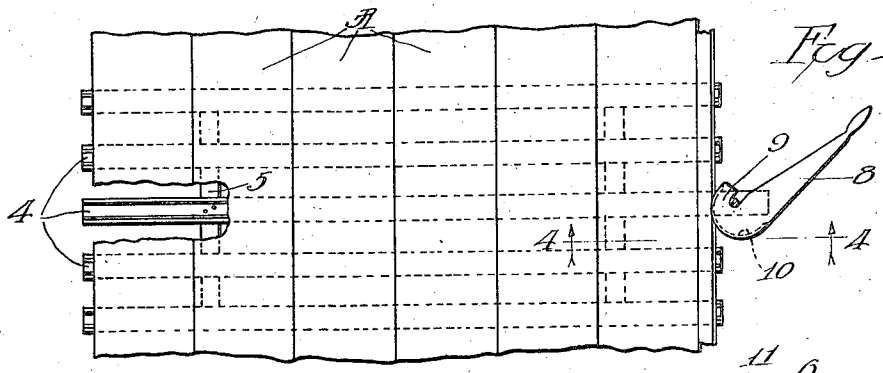
A. ELMENDORF.

METHOD OF AND APPARATUS FOR GLUING SHEETS EDGE TO EDGE.

APPLICATION FILED JUNE 1, 1920.

1,428,765. Patented Sept. 12, 1922.

Fig 1



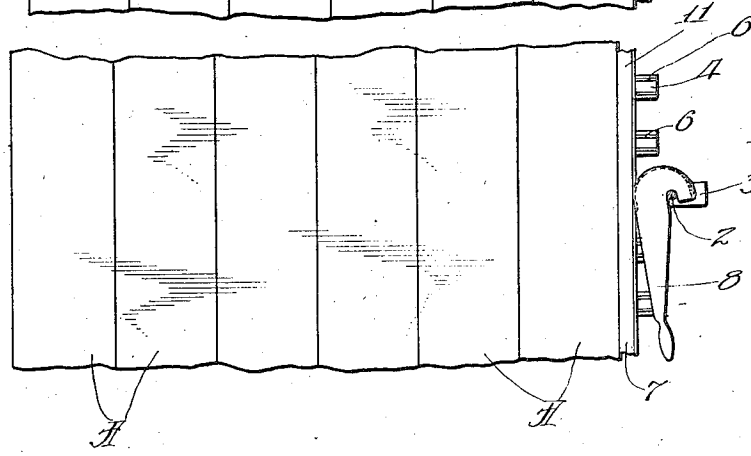


Fig 2

Fig 3

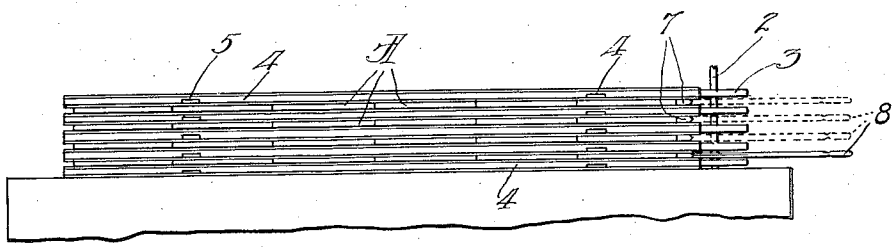


Fig 4

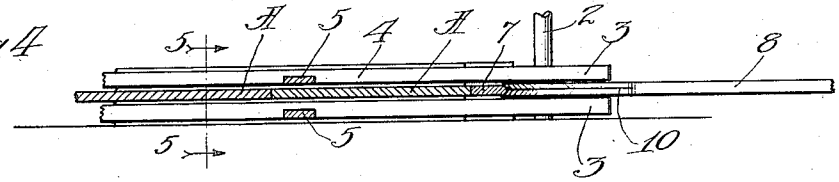
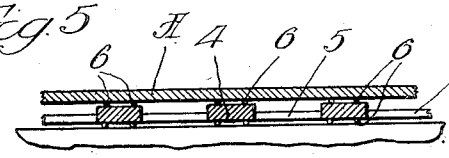


Fig 5



Witness:

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UNITED STATES PATENT OFFICE.

ARMIN ELMENDORF, OF MADISON, WISCONSIN, ASSIGNOR TO HASKELITE MANUFACTURING CORPORATION, A CORPORATION OF NEW YORK.

METHOD OF AND APPARATUS FOR GLUING SHEETS EDGE TO EDGE.

Application filed June 1, 1920. Serial No. 385,530.

To all whom it may concern:

Be it known that I, ARMIN ELMENDORF, a citizen of the United States, residing at Madison, county of Dane, State of Wisconsin, have invented a certain new and useful Improvement in Methods of and Apparatus for Gluing Sheets Edge to Edge, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention has for its object to produce a simple and novel method by means of which sheets made out of a plurality of strips glued edge to edge may be effectively produced in a cheap and simple manner without requiring apparatus except of the simplest kind, and without taking up a large floor space in making quantity production.

Viewed in another of its aspects, my invention may be said to have for its object to produce a simple and novel apparatus for gluing sheets edge to edge.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawing, wherein:

Figure 1 is a top plan view of a fragment of a stack of composite sheets in the process of being glued, the parts being broken away to expose other parts;

Fig. 2 is a view similar to Fig. 1, illustrating a condition which exists at a later stage in the process than that represented by Fig. 1;

Fig. 3 is an edge view of the stack as it appears in Fig. 1;

Fig. 4 is a section on an enlarged scale taken approximately on line 4—4 of Fig. 1, and showing only a fragment of the lower end of the stack; and

Fig. 5 is a section on line 5—5 of Fig. 4, the upper grill being omitted.

In carrying out my invention I build up a stack in which composite sheets of pieces laid edge to edge alternate with spacing devices which will permit the sheets to slide thereon when pressure is applied to the edges of the sheets in directions parallel with the planes of the sheets; glue having first been placed on the edges to be joined together; and, after the stack has been completed, pressure being applied to each sheet at one or more points in a direction transverse to the joints, so as to tend to push the sheet laterally out of the stack and thus force together the edges to be joined.

Referring to the drawing, 1 represents a suitable platform or support to which are fixed any desired number of vertical rods of which one, indicated at 2, is shown. The spacing elements are conveniently made in the form of grids having projecting ends, 3, perforated so that they may be slipped down over the rod or rods, and they are constructed in any suitable way so as to permit an engaged sheet to slide readily thereon. In the arrangement shown, each grid is made up of a series of parallel bars, 4, fastened together by suitable cross bars, 5, set into the bars 4 so as to have their exposed faces flush with the corresponding faces of the latter. The part 3 may be simply an extension of one of the bars, 4, which is made longer than the rest of the corresponding bars, for this purpose. On the upper and under side of each of the bars 4 are placed one or more small rods or wires, 6, extending longitudinally of the same; these small rods or wires serving as rails on which the work rests and permitting the work to slide thereon without meeting too much frictional resistance. It will of course be understood that the spacers may be made in any other suitable way so as to permit a circulation of air through the same and leave the work free to slide easily thereon.

In order to prduce the glued sheets, one of the grids, or a plurality thereof arranged side by side, is laid on the base or support, with its extension, 3 engaged with the corresponding upright rod, 2. On the grid or grids are then laid a plurality of pieces, A, out of which a sheet is to be formed; glue having first been applied in any suitable way to the edges to be joined. The pieces are laid so as to extend across the supporting rails. Between the piece nearest the stationary upright rod and the rod is placed a metal bar, 7, having a thickness not greater than the thickness of the work out of which the sheet is to be formed. After the number of pieces required for one sheet have been

assembled edge to edge, a second grid or series of grids is placed on top of it in interlocked relation with the vertical rod or rods. The pieces out of which the second sheet is to be made then have glue applied to their edges and are laid edge to edge on top of the second grid or series of grids, a bar of metal, 7, being laid as the final element beside the sheet as heretofore described. In this way a stack of any desired height may be built up, containing the component parts of fifty or more sheets, if desired. After the stack has been completed, pressure is applied to the edge of each layer of pieces, through the metal bar, in a direction tending to force the layer laterally out of the stack in a direction at right angles to the joints in the layer; the metal bars serving simply to distribute the pressure so that it will not be localized at a single point and cause the edge of the layer or rudimentary sheet to be crushed. The pressure may conveniently be applied by placing a lever between the upright rod and one of the pressure distributing bars after another and, using the upright rod as a fulcrum, forcing one layer after another away from the upright rod. In the arrangement shown the pressure-creating element is a lever, 8, having on one end a hook, 9, the hook increasing gradually in width from the free end toward the base where it is joined to the lever. When the stack is formed, the parts are so positioned that the small end of the hook may be inserted between the rod 2 and any one of the pressure-distributing bars as indicated in Figs. 1 and 3. Beginning with the lowermost layer of pieces or rudimentary sheet, as illustrated in Fig. 3, the lever, after being hooked upon the upright rod, is swung on this rod as an axis into the position indicated in Fig. 2, the hook acting as a wedge which gradually forces its way in between the upright rod and the adjacent pressure bar and forces the latter bar inwardly. As the pressure-distributing bar moves inwardly it of course pushes the work ahead of it. In order to insure that the joints in a layer will all be perfectly closed it is desirable that at least all of the pieces except the one farthest removed from the stationary upright rod be caused to move when the pressure is applied and, while it is not essential, it will probably be desirable that even the most remote piece be moved somewhat in order to insure that the pieces behind it have traveled far enough to close all of the joints. Since the pieces forming each layer will be laid in contact with each other as the stack is being built, no very large movement of any layer or its constituent elements is required in order to secure the desired tightness of the joints and therefore the cam lever need only be designed to produce a movement of an inch or two in the nearest element of a layer five or six feet long. Where there are a plurality of stationary upright rods there should be a cam lever for each rod and all of the cam levers should be operated in unison. After the first layer has been acted on the operation is repeated in connection with one layer after the other until the top of the stack is reached.

The weight of the stack is sufficient to produce the frictional resistance to movement of the layers in the lower portion of the stack sufficiently to insure closed joints. As the top of the stack is approached, it may be found desirable to lay weights on top of the stack so that the several upper layers will not respond so freely to the action of the cam levers as to leave joints partially open where the edges to be joined do not originally contact with each other at all points.

After the operations heretofore described have been completed, the stack is permitted to stand until the glue has set and it is then torn down and the apparatus employed in the building thereof may be utilized to form another stack.

If desired, the working face of the cam lever may be grooved in the longitudinal or circumferential direction as indicated at 10 while the edges of the pressure-distributing bars which are adapted to be engaged by the lever are shaped, as indicated at 11, to fit into the groove. By this means the cam lever is interlocked with the pressure-distributing bars so as to prevent relative vertical displacement and prevent the lever from jumping up and wedging itself between the top of the pressure-distributing bar with which it is co-operating and the overlying portion of the stack.

While I have illustrated and described with particularity only a single preferred form of my invention, I do not desire to be limited to the exact structural details thus illustrated and described; but intend to cover all forms and arrangements which come within the terms employed in the definitions of my invention constituting the appended claims.

I claim:

1. The method of producing sheets out of pieces glued edge to edge, which consists in applying glue to the edges of such pieces to be joined together, forming a stack of layers out of such pieces placed edge to edge, alternating said layers with spacing devices, and then applying sufficient pressure to one edge only of each of said layers in a direction at right angles to the joint therein to move them bodily along the spacers.

2. The method of producing sheets out of pieces glued edge to edge, which consists in placing glue on the edges to be joined, form-

ing a stack of layers of such pieces placed edge to edge, said layers alternating with spacing devices anchored against movement in a direction transverse to the joints in said pieces, and then applying pressure to one edge only of each layer in a direction transverse to said joints so as to push said layer along the spacing devices bodily.

3. The method of producing sheets out of pieces glued edge to edge, which consists in placing glue on the edges to be joined, forming a stack of layers of such pieces placed edge to edge, alternating said layers with spacing devices having narrow spaced supporting surfaces extending transversely of said joints and anchored against movement lengthwise of said supporting surfaces, and applying pressure to one edge only of each of said layers in a direction parallel with said supporting surfaces sufficient to cause each piece constituting the layer to be pressed firmly in contact with the adjacent piece or pieces.

In testimony whereof, I sign this specification.

ARMIN ELMENDORF.