

Sept. 22, 1936.

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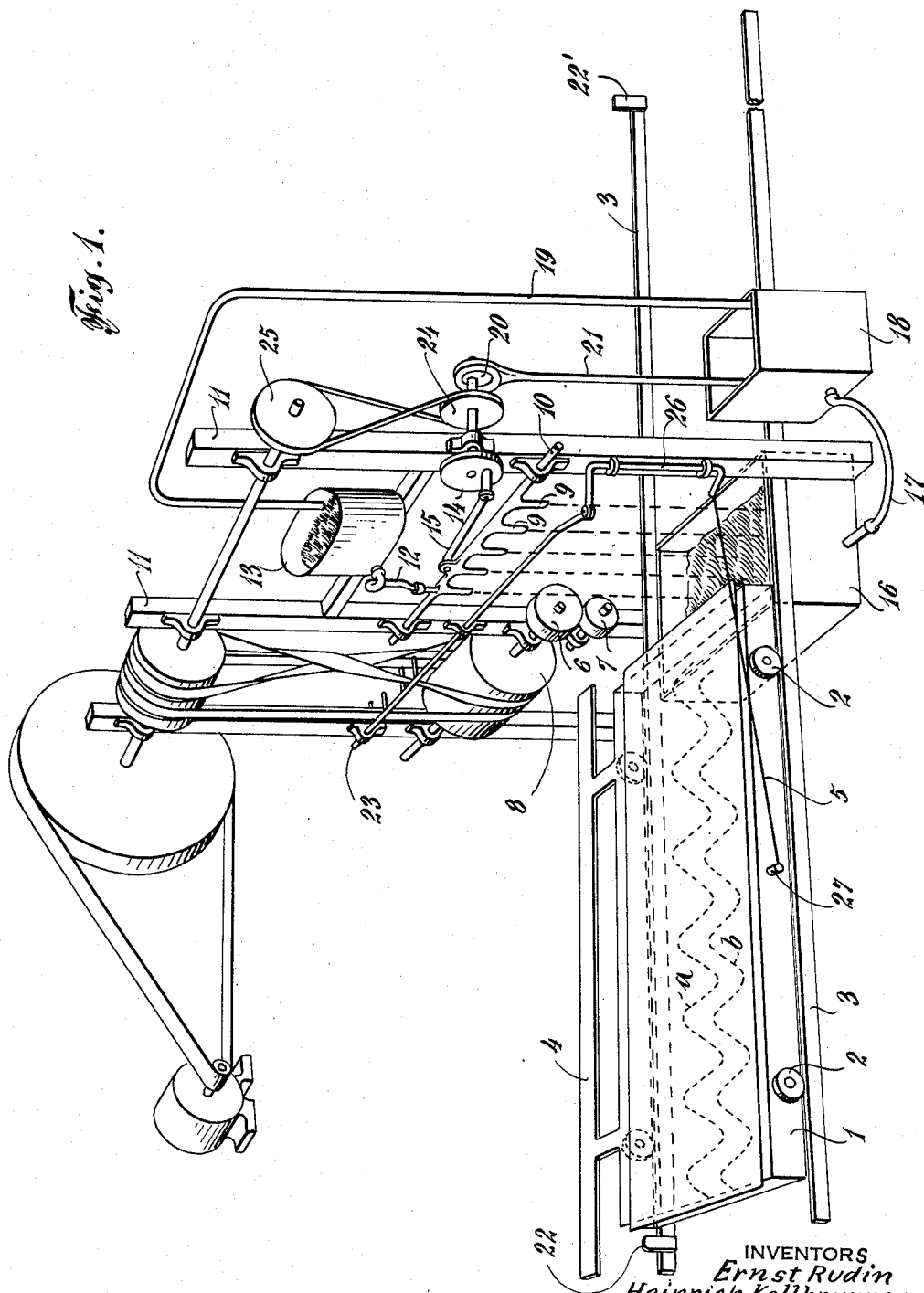
2,054,867

ASSEMBLED BOARD

Filed March 31, 1933

2 Sheets-Sheet 1

Fig. 1.



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2 Sheets-Sheet 2

Fig. 2.

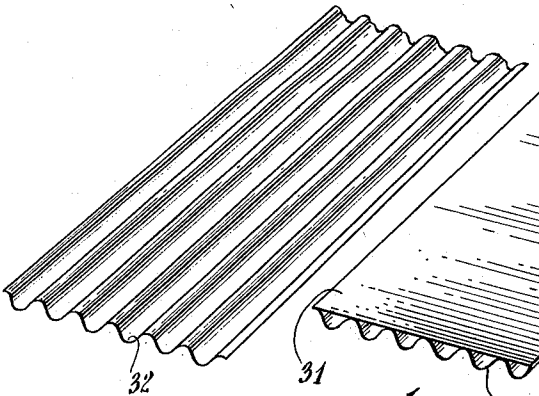


Fig. 3.

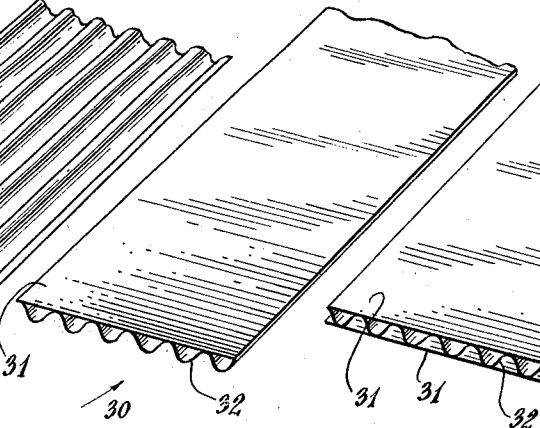


Fig. 4.

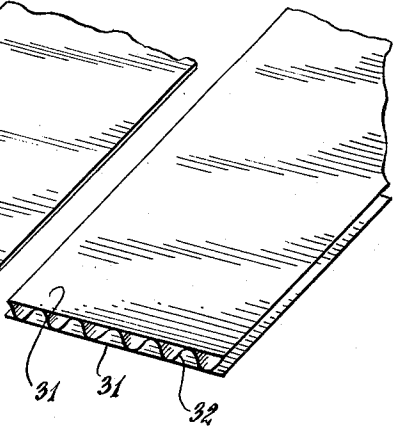


Fig. 5.

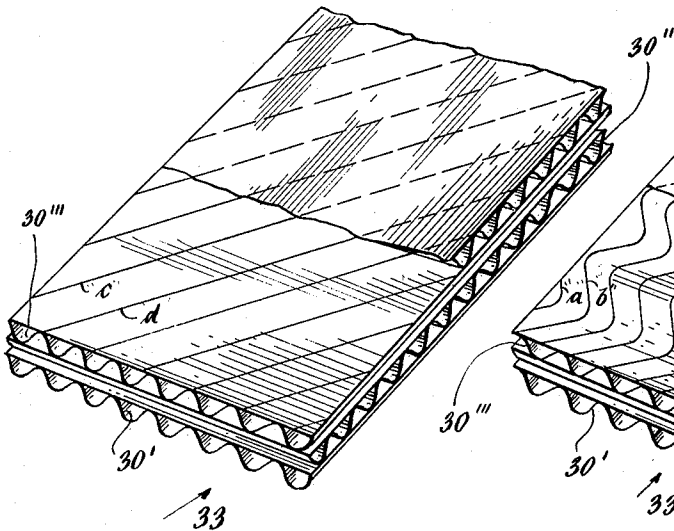
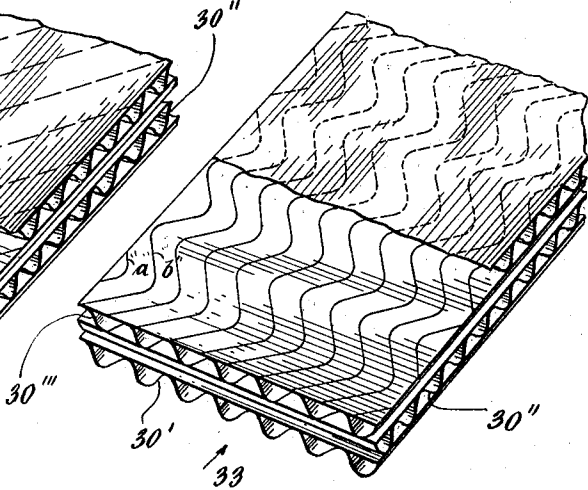


Fig. 6.



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ASSEMBLED BOARD

Ernst Rudin and Heinrich Kollbrunner,
Rapperswil, SwitzerlandApplication March 31, 1933, Serial No. 663,730
In Switzerland August 2, 1932

3 Claims. (Cl. 154—55)

This invention relates to assembled board used for insulation in building construction, and more particularly to the type of laminated board made up of sheets or boards of corrugated paper, as well as to the method for the manufacture of such product.

The principal object of this invention is to provide an assembled board of improved and novel construction and to provide a new and improved method for producing same.

Another object of this invention is to provide a novel and improved assembled board of the type described, which is free from warping even if impregnated and baked, and which is mechanically strong and firm.

Another object of the present invention is to provide a board of the character mentioned, in which the component sheets thereof are assembled by a novel method.

A further object of our present invention is to provide a product of the class mentioned, consisting of corrugated paper boards which are secured together in a novel manner by gluing alone, avoiding any mechanical binding means as sewing, stitching or nailing.

Another object of this invention is to provide a novel and improved assembled board of the character mentioned, which is cheap to manufacture and which is efficient for its intended use.

To attain these objects, the board is built up of a number of corrugated paper sheets, or corrugated paper boards which are glued to one another in a manner such that glue does not cover the entire surface between adjacent sheets, but rather the glue or other adhesive, as "water glass" is applied in spots, or in spaced lines or lanes, preferably diagonally across the sheets in bias, or in spaced zig-zag or in spaced wave lines or in broken lines along the sheet. To attain a greater mechanical strength, the sheets are placed and glued upon one another so that the corrugations of one are transverse the corrugations of the sheet next to it, and it is preferred that the lines of the glue be transverse to both sets of corrugations.

To further increase the mechanical strength and firmness of the assembled board, the lines of glue are multiplied in number, that is, they are applied closer to one another, and their direction of slope with respect to the corrugations of the individual sheets are altered, or the glue is applied in alternate lines and lanes. It is essential in carrying out this method, that the glue lines, spots or lanes, be never so near as to cause spreading to create a continuous glue film between adjacent sheets or boards, when one is placed onto the other, but the spaced relation of the glue lines must always be maintained, and it is preferred that such lines be crooked.

In the machine to make such assembled board

in accordance with the method described, there is provided essentially a platform or carriage positioned below a multi-nozzled pipe which is mounted transverse the platform. The pipe is fed glue material which is free to drip downward from the series of nozzles onto a corrugated sheet placed on the platform, and means are provided for moving the platform and pipe in a zig-zag relation to one another. After the sheet has been spurted with glue or other adhesive in zig-zag lines along its entire length, a second sheet is set by hand atop the first sheet, and then the glue is caused to be applied onto the second sheet. This is repeated by building up to a board of the required thickness.

The invention herein set forth is capable of numerous forms and various applications without departing from the essential features herein disclosed. It is therefore intended and desired that the embodiment shown herein be deemed illustrative and not restrictive, and that the patent shall cover whatever features of patentable novelty exist in the product, method and means herein disclosed, reference being had to the appended claims rather than to the specific description herein, to indicate the scope of the invention.

In the accompanying drawings, Fig. 1 is a perspective diagrammatic view showing an embodiment of the machine employed in the making of assembled boards in accordance with the method explained herein.

Fig. 2 shows a corrugated paper sheet used in the making of our assembled board.

Figs. 3 and 4 show types of corrugated paper board used in the practice of our invention.

Fig. 5 is a perspective view partly in section showing an assembled board made in accordance with our present invention, wherein the corrugations of adjacent single board components lie transverse one another; said single boards being secured to one another by lines of glue in straight parallel formation and transverse all corrugations.

Fig. 6 is a similar view wherein the glue is spread in crooked or waved lines which are transverse all the corrugations of the individual component boards.

A carriage or platform 1, is provided with rollers 2, which set free to roll along a pair of horizontally mounted rails 3, which rails, in length, are a little greater than twice the length of the platform, and are secured respectively at their mid points to the spaced vertical frame posts 11.

Along one side of the platform 1, is secured an outwardly extending flat track 4, which is adapted to become engaged between the friction rollers 6 and 7, whereupon the platform 1 is slid to one end of the rails 2. This roller 6, mounted on the same shaft as is the pulley 8, derives its rotary motion through a system of pulleys and

belts driven by a motor or from a power shaft, and the direction of its rotation depends upon the position of a slidably mounted belt shifter 23.

Above, and in a position transverse across the platform 1, a pipe 10, having a series of downwardly discharging nozzles 9, is slidably mounted on the frame posts 11, and is adapted to receive a reciprocating motion through action of rod 15, pivotally to it secured and to a pin set eccentric in wheel 14; the latter being mounted on the shaft bearing the pulley 24, which is driven by belt from pulley 25 on the main shaft.

Through a rubber tube 12, the pipe 10 is fed glue material, or other liquid adhesive, from a container 13. Between the frame posts 11, below the platform 1, and directly beneath the nozzles 9, is a container 16 for receiving the glue material which flows or drips from the nozzles 9, during the time when the platform 1 is not under them to intercept the dripping glue. The contents of container 16 is drained through rubber pipe 17 into a container 18, wherefrom it is pumped back into container 13 through pipe 19, by action of a pump driven by rod 21 of eccentric 20, mounted on shaft holding pulley 24.

Swivelly mounted on a frame post 11, is a crank arm 26, which is pivotally secured to the belt shifter 23. Turning the crank arm 26, one way, the belt shifter is set in position so that the roller 6, will be rotated in one direction, while if said crank arm is turned in the other direction, the rotation of the roller 6 will be reversed. This movement of the arm 26, is accomplished with the aid of a flexible chain 5, secured at one end to said arm 26, and at the other end to a pin 27, secured in the side of the platform 1, midway its ends.

In operation, glue material from container 13, is permitted to flow continuously from the nozzles 9, and the pipe 10, continuously reciprocates. The platform 1, is at first up against one of the stops 22, and a sheet of corrugated paper is placed thereon. Now the operator pushes the platform 1 along the rails 3, until the track 4 is engaged between the rollers 6 and 7, whereupon the platform 1, will automatically ride to the other end of the machine, and although track 4 will become released from the rollers 6 and 7, the momentum of the platform 1, will carry it on until stopped by the stop 22'; however, the chain 5, will by this time have caused the arm 26, to turn, whereby the belt shifter 23 will slide to alter its position, whereupon the roller 6, will be rotated in reverse direction. Now, the operator places another sheet of corrugated paper atop the first, squeezes them together a little by hand pressure, and shifts the platform so that the track 4 shall again become engaged by the rollers 6 and 7, whereby the carriage or platform 1, will again be brought back to its initial position, ready for the operation to be repeated until a board of the required thickness is thus assembled.

It is evident that the intermittent reciprocating motion of the carriage, combined with the transverse reciprocating motion of the pipe 10, will cause the glue material issuing from the nozzles 9, to fall onto the sheets lying on the platform, in lines which are zig-zag or waved, of the type as "a" and "b", the slope and shape of which is determined by the relative speeds of the pipe 10 and the platform 1, which

is taken care of in the design of the machine in choosing the pulleys 24 and 25, and the roller 6. As previously set forth, the glue material dripping into the container 16, is pumped back again into container 13, where it is replenished from time to time with a new supply.

It is of advantage that the glue lines or lanes "a" and "b", be so inset in one another, that there shall exist no straight line across the board in any single direction which would not intercept glue lines. Being that the board is often cut up, this feature becomes of decided importance, since it is essential that the cut edge be not all open. Also, in building this laminated board, we preferably use the ordinary corrugated board designated generally by the numeral 30, which has one smooth surface 31, and the other surface 32, of which is corrugated. In such instance, the board designated generally by the numeral 33, is assembled by placing the first corrugated board 30', with its smooth surface upward to receive the glue material, then the second board 30'', is placed onto the first whereby the corrugated surface of the second is contacted with the smooth surface of the first; the smooth surface of the second being thus uppermost to receive glue material from the nozzles 9, preparatory to placing thereon the third corrugated board 30''', with its corrugated surface downward, and to continue in like manner until a board is assembled of the thickness required. For greater mechanical strength the corrugations of adjacent sheets are set transverse one another, and the glue lines "a", "b", "c" and "d", should be transverse both, as shown in the assembled boards illustrated in the Figs. 5 and 6.

We claim:—

1. An assembled board comprising a flat smooth sheet, a corrugated sheet thereon and an adhesive between the sheets, spread in spaced crooked lines on the flat sheet, in transverse relation with the corrugations of the other sheet, adapted to bind the sheets together at the intersections of the lines of adhesive and the peaks of the corrugated sheet.

2. An assembled board comprising a number of individual boards, each having one smooth surface and one corrugated surface; said boards being superposed with the smooth surface of one adjacent the corrugated surface of the board next to it, and an adhesive between all adjacent surfaces, spread in spaced crooked lines on the smooth surfaces in transverse relation with the corrugations of the corrugated surfaces, adapted to bind the boards together at the intersections of the lines of adhesive and the peaks of the corrugated surfaces.

3. An assembled board comprising a number of individual boards, each having one smooth surface and one corrugated surface; said boards being superposed with the smooth surface of one adjacent the corrugated surface of the board next to it; the corrugations of adjacent boards lying in transverse relation, and an adhesive between all adjacent surfaces, spread in spaced crooked lines on the smooth surfaces in transverse relation with all the corrugations of all the boards, adapted to bind the boards together at the intersections of the lines of adhesive and the peaks of the corrugated surfaces.

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