

March 12, 1968

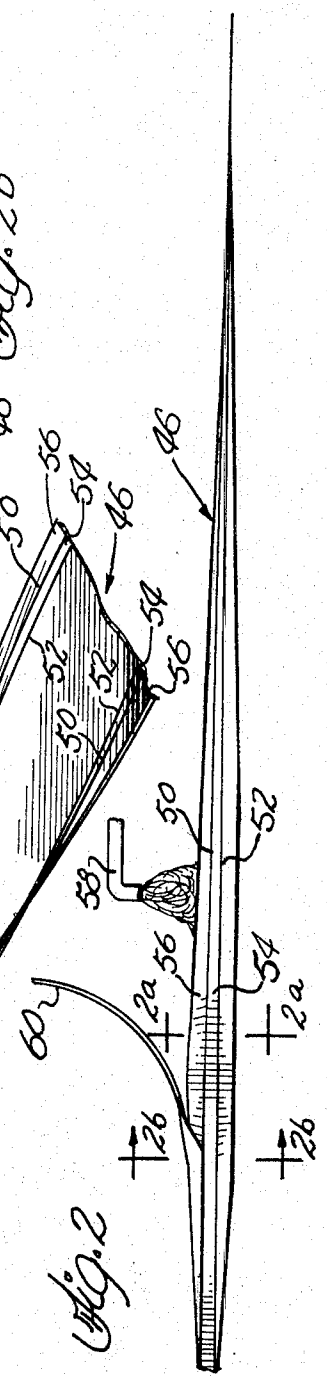
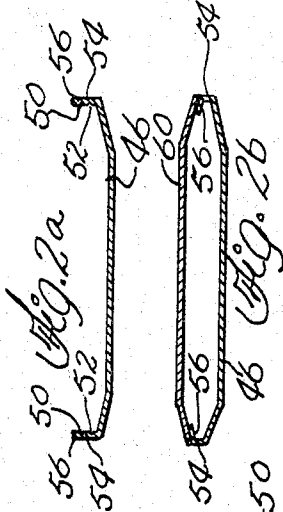
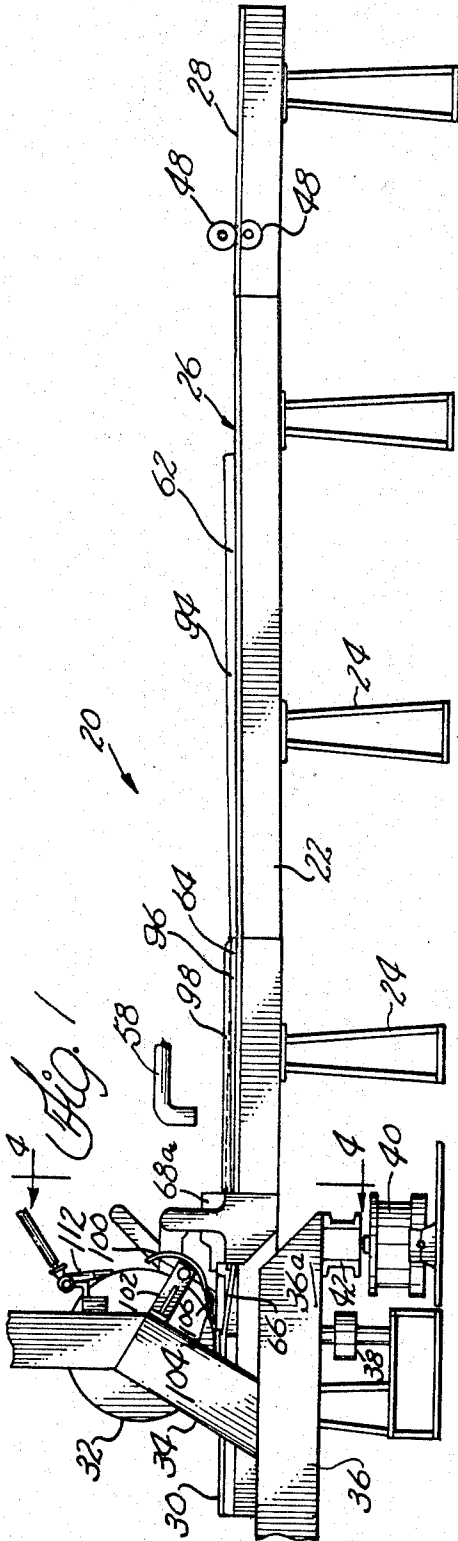
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3,373,065

GYP SUM BOARD-FORMING METHODS AND MACHINES

Filed April 29, 1964

4 Sheets-Sheet 1



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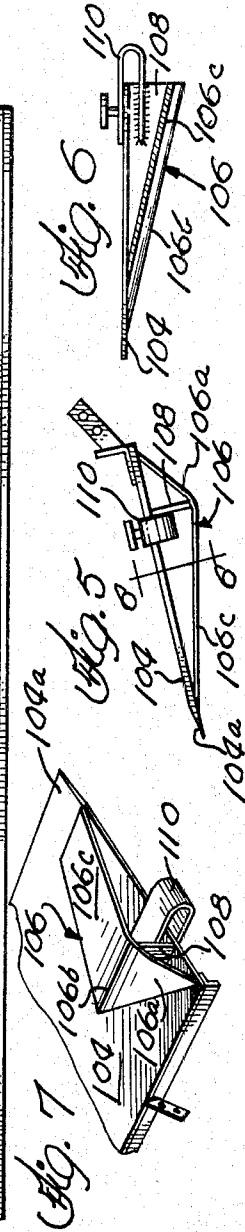
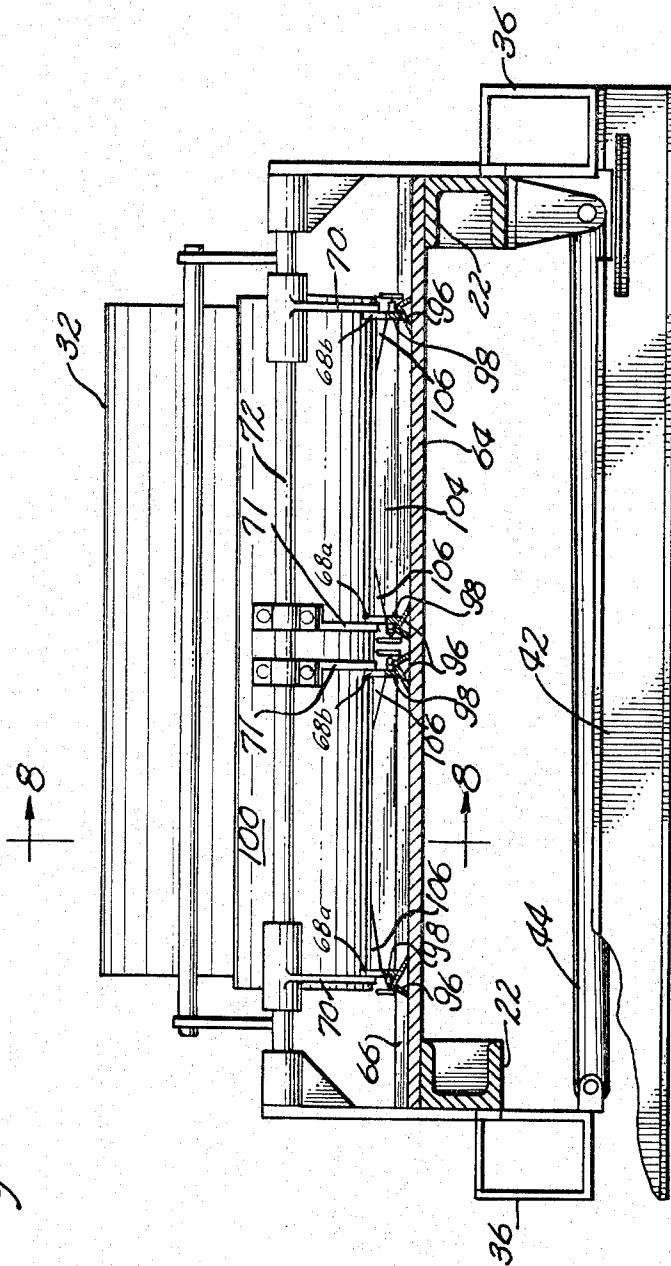
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GYP SUM BOARD-FORMING METHODS AND MACHINES

Filed April 29, 1964

4 Sheets-Sheet 2

Fig. 4



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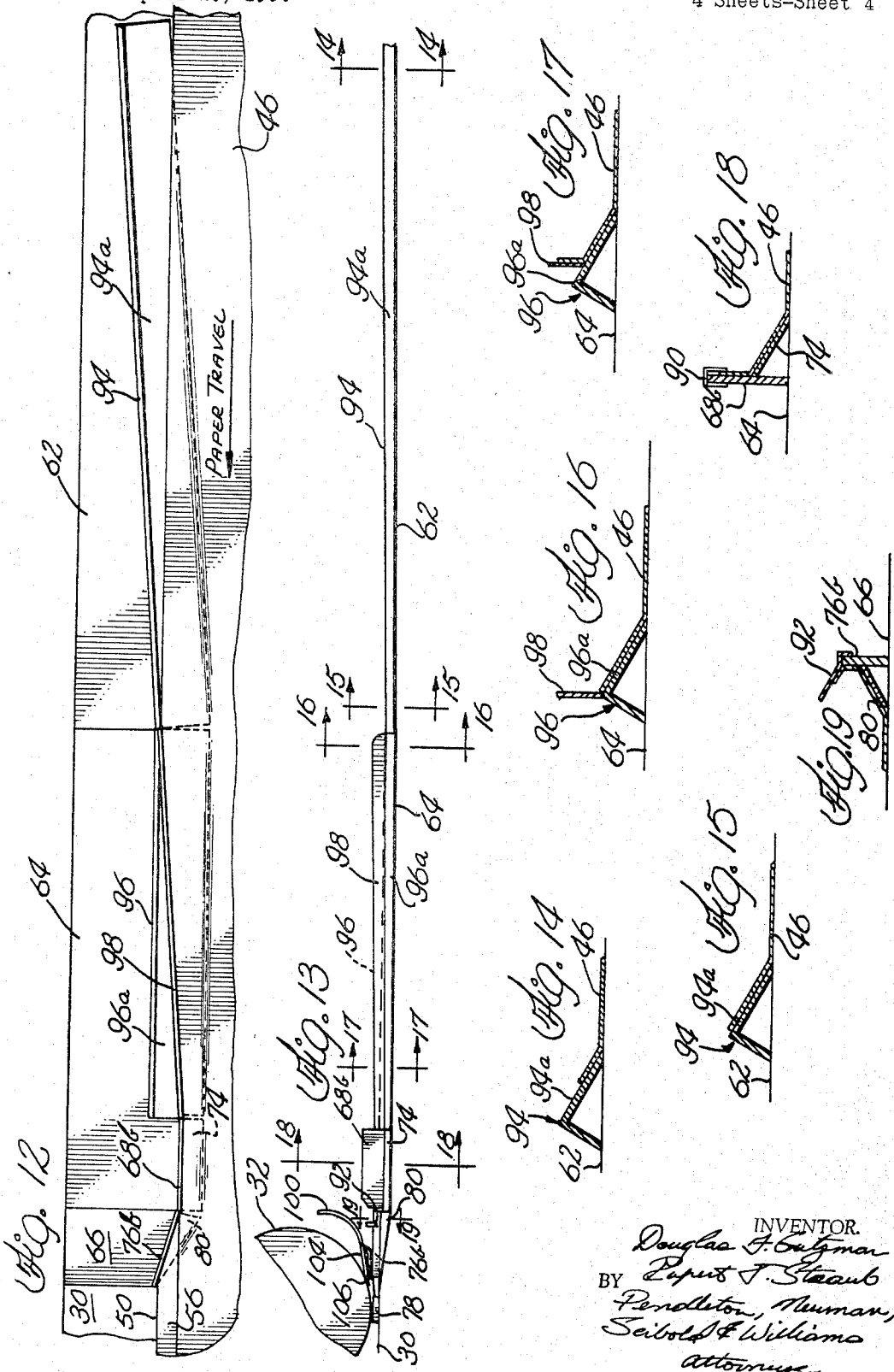
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3,373,065

GYPSUM BOARD-FORMING METHODS AND MACHINES

Filed April 29, 1964

4 Sheets-Sheet 4



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GYPSUM BOARD-FORMING METHODS AND MACHINES

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 Filed Apr. 29, 1964, Ser. No. 363,497
 18 Claims. (Cl. 156-40)

ABSTRACT OF THE DISCLOSURE

Sealed edge gypsum board of the type having the edge portions of the bottom cover sheet underlapping and adhered to the edge portions of the top cover sheet is formed with the slurry being confined entirely by the cover sheets throughout the formation of the board. Support guides on the support bed of the machine raise the edge portions of the bottom cover sheet to form a trough which is of a depth substantially greater than the clearance in the throat. The slurry is deposited in this trough. The top cover sheet is guided onto the raised edge portions of the bottom sheet, with these edge portions contacting the underside of the top sheet to form an envelope of the cover sheets. Support guides maintain the contact between the cover sheets to confine the slurry, including the slurry head accumulated at the entrance to the throat, as the sheets and the slurry are moved to and through the throat and are thereby formed into board.

This invention pertains to methods and machines for forming cementitious board, and more particularly to improvements in methods and machines for forming folded edge gypsum board of the type comprising a core of set gypsum plaster covered by top and bottom laminae of fibrous sheets, the bottom sheet extending over the opposite edges of the board and the two sheets overlapping along such opposite edges.

Various methods and machines are known for forming folded edge gypsum board. Typical machines include a forming table designed to support a continuous moving web of paper as it is formed into the bottom cover sheet of board being produced in the machine. A gauging element, such as a master roll, is positioned above the bottom sheet support to define a throat or passageway in which the board is actually formed. Gypsum slurry is deposited on the bottom cover sheet before it passes through the passageway beneath the gauging element, and a top cover sheet is applied in the passageway to encase the gypsum core as it is formed to its board-forming configuration beneath the gauging element.

Previously known machines in common use for forming folded edge board include folder or hopper members at the entrance to the passageway beneath the master element. These folders or hopper members confine the slurry at this point, including the "head" of slurry which is normally accumulated at the entrance to the board-forming throat. The side edges of the bottom cover sheet are normally turned upward by folding guides, about scored or kerfed fold lines adapted to form the lower outside corners of the board. The outermost edge portions of the bottom sheet are then turned over, beneath the folders, to define the board edges and to provide distal edge strips of the bottom cover sheet on the top side of the gypsum core where these strips are overlapped by and adhered to the top cover sheet applied in the board-forming passageway. The folders are thus normally in contact with the gypsum slurry at the entrance to the board-forming passageway.

Many efforts have been made toward minimizing or eliminating sticking of the slurry to the folders or formers in these machines. However, these efforts have not

been entirely successful. As a result, the slurry commonly sticks to and is built up on these devices. If this build-up of slurry is not cleaned off frequently, a large lump forms which will create a groove in the formed gypsum core and result in so-called hollow-edge board. Eventually such a lump will break loose from the folder and may cause a break in the paper as it passes beneath the master or forming roll. To avoid this result a machine attendant spends a good deal of time cleaning the folders.

Further, with these prior art machines and methods, there is a continuing problem of the slurry or "stucco" leaking out beneath the folders, over the inturned edges of the bottom sheet, and interfering with or preventing the forming of a satisfactory adhesive bond between the overlapped portions of the cover sheets. This is commonly known as a stucco edge and results either in a hidden weakness of the paper bond or, if observable, in the rejection of such board as being unsatisfactory.

The folders of course represent an element of cost of the machine. Further, considerable skill and time are required to obtain proper settings and maintain correct adjustments of the folders for satisfactory board-forming operation, thereby increasing the cost of operation of these prior board-forming machines.

It is an object of this invention to overcome the difficulties encountered in the forming of folded edge board in the aforescribed prior machine.

It is another object of this invention to provide improved methods and machines for forming folded edge gypsum board.

It is another object of this invention to provide simplified methods and machines for forming folded edge gypsum board.

It is another object of this invention to provide an improved machine for forming folded edge gypsum board which eliminates stationary folding mechanism in contact with the gypsum slurry.

It is another object of this invention to provide improved methods and machines for forming gypsum board which will insure forming of clean areas of overlapping contact between the two cover sheets and facilitate the formation of a good bond therebetween.

In carrying out this invention in one illustrative form, a web of paper which is scored along the edges to form the bottom cover sheet of gypsum board is passed over a support bed and beneath a master forming element. Folding devices are positioned on the entrance side of the forming element and spaced apart a distance less than the width of the board to be formed by the machine whereby the opposite side portions of the web are continuously turned up about lines disposed inward of said web from the scored edge lines to form a trough of such bottom cover sheet in which a gypsum slurry is deposited. Edge forming guides extend from said folding devices to the board-forming passage beneath the master forming element in mutually diverging relation, and the trough formed by said web is thus permitted to widen to the final board width as it passes from said folding devices to said passageway. The side portions of said web are simultaneously formed to their board edge defining positions, and a top cover sheet is passed over a guide and into contact with said side portions above the edge forming guides. The web and top cover sheet confine the slurry throughout the steps of formation of the board thereby eliminating any contact of the slurry with stationary machine elements. The support bed is formed with a depressed portion on the entrance side of the master forming element, and includes a ramp which is inclined upward to said passageway from the depressed portion, to permit the afore-described forming of the paper without undue stretching or tearing of the edge portions.

For a more complete understanding of this invention

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reference should now be had to the examples illustrated in the drawings wherein:

FIG. 1 is a side elevation view of the board-forming section of a machine employing teachings of this invention;

FIG. 2 is a partial side elevation view of continuous webs of cover sheet material, with gypsum slurry being fed therebetween, illustrating the forming of foiled edge gypsum board in the machine of FIG. 1;

FIG. 2a is a cross-sectional view of the bottom cover sheet of FIG. 2 taken along line 2a—2a of FIG. 2 and looking in the direction of the arrows;

FIG. 2b is a cross-sectional view of the cover sheets of FIG. 2 taken along line 2b—2b of FIG. 2 and looking in the direction of the arrows;

FIG. 3 is a perspective view of a portion of the webs as in FIG. 2;

FIG. 4 is an enlarged cross-sectional view taken along line 4—4 of FIG. 1 and looking in the direction of the arrows;

FIG. 5 is an enlarged end elevation view of the top guide plate and an edge shim of the machine in FIG. 1;

FIG. 6 is a partial cross-sectional view taken along line 6—6 of FIG. 5 and looking in the direction of the arrows;

FIG. 7 is a partial perspective view of the bottom side of the guide plate and edge shim of FIG. 5;

FIG. 8 is an enlarged cross-sectional view taken on line 8—8 of FIG. 4 and looking in the direction of the arrows, when the machine is in operation;

FIG. 9 is an enlarged top plan view of one arrangement of the folder and edge guide units for the simultaneous formation of two boards on a machine as in FIG. 1;

FIG. 10 is an enlarged top plan view of one of the folder and guide units of FIG. 9;

FIG. 11 is an elevation view of the folder and guide unit of FIG. 10;

FIG. 12 is a diagrammatic plan view of a portion of the support bed of the machine in FIG. 1, with a paper web thereon for forming a bottom cover sheet;

FIG. 13 is a diagrammatic side elevation view of the bed portion of FIG. 12 and including the master roll and top guide plate of the machine in FIG. 1; and

FIGS. 14, 15, 16, 17, 18 and 19 are partial cross-sectional views taken along the correspondingly identified lines in FIG. 13 and looking in the direction of the respective arrows.

Referring now to the drawings and particularly to FIGS. 1, 4 and 8 the illustrated board-forming machine 20 includes a generally horizontally disposed bed frame 22 mounted on pedestals 24 and supporting a forming table 26, generally as in a conventional machine of this type. The table 26 is adapted to support a web of material to be moved thereover, from right to left in FIG. 1, for forming the bottom lamina of folded edge board. A first table section 28 extends horizontally at the web receiving end of the machine and is coplanar with a board support section 30 which receives and supports wet board that is formed beneath a master roll 32 disposed above the receiving end of section 30 as illustrated. The remainder of table 26 and related mechanism, between sections 28 and 30, serves to form the bottom lamina or cover sheet from the moving web in accordance with teachings of this invention, to be more fully described below.

The illustrated master roll and the receiving end of section 30 define the upper and lower limits of the throat or passageway in which the board is formed. The master roll is vertically adjustably mounted to permit selectively varying the clearance in the passageway therebeneath and hence to provide control of the board thickness in a known manner. For instance, the illustrated roll 32 is mounted on arms 34 supported on beams 36 pivotally mounted on the bed frame at one end (not shown) and having the opposite end 36a supported by adjustable sup-

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port members 38 and 40. A selectively adjustable support 38 is provided for each beam 36 and may comprise a jack screw driven by a motor through a reduction gear (not shown) to permit accurate control of the board thickness. Support 40 engages a beam 42 extending beneath beam 36 and may comprise a hydraulic cylinder jack for emergency raising of the master roll 32. Other means of adjustably supporting a master roll or other master elements are known in the art.

With reference to FIG. 4, a link 44 is pivotally joined to one beam 36 and to a bed frame member at the opposite side of the machine to laterally stabilize the support frame on which the master roll is mounted.

Referring now to FIGS. 1, 2 and 3, in the general operation of the illustrated type of machine a paper web 46 for forming a bottom lamina is passed over table 26 and beneath master roll 32. Scoring wheels or, usually, kerfing wheels 48 are placed to form pairs of spaced parallel fold lines 50 and 52 spaced inward of the opposite edges of the web. The portions 54 of the web between the score lines are adapted to cover the edges of the board, and the edge strips 56, outward of the outer edge score lines 50, normally underlap a top cover sheet. A gypsum slurry is deposited on web 46 from supply means such as a pipe or pipes 58. The slurry accumulates in a pile or head at the entrance to the passageway beneath roller 32 where it spreads out and is metered by the master element 32.

Referring now more particularly to FIGS. 2, 2a, 2b and 3, which illustrate the novel and improved method of the present invention as practiced with the machine of FIG. 1, the two lateral edge portions of the web are progressively raised and turned upward about lines disposed inwardly of the edge score lines 52 to form a trough of the web, on the entrance side of the board-forming passageway. A portion of this trough adjacent the passageway, is of a width somewhat less than the width of the board to be formed and of a depth substantially greater than the combined width of strips 54 and 56 (see FIGS. 2 and 2a). This is obtained by raising the edge portions of the web and turning the edge portions, including portions 54 and 56, to a vertical position about lines disposed inwardly of score lines 52 (see FIG. 2a). Thus, at its deepest point, a short distance "upstream" from roll 32, the illustrated bottom web forms a trough as seen in FIG. 2a, including a generally flat, horizontal center portion, opposite portions, both inwardly of the respective portions 54, extending outward and upward from the center portion, and edge portions comprising strips 54 and 56 and contiguous portions of the web extending upward from fold lines inward of lines 52. In vertical depth, this trough extends both above and below the edge portions 54 to provide a deep trough with minimum stretching of the web. From the area of maximum depth of the trough to the nip of roll 32, the edge portions 54 are supported in vertical positions but in mutually diverging relation, and the edge portions 56 are turned in (see FIG. 2b) to pass beneath the roll in generally horizontal positions so that the trough widens and collapses to the width and thickness of the board to be formed as the web approaches and passes through the passageway beneath the master element (see FIG. 3).

The gypsum slurry is deposited in the trough as illustrated. Due to the depth of the trough, i.e. the height of the upwardly extending lateral edge portions of the web, the head of slurry which accumulates at the entrance to the board-forming passageway is laterally confined by the lower web 46. A web 60 for forming the top cover sheet is brought into contact with the upstanding edge portions 56 of web 46 approximately at the deepest part of the trough and maintained in contact with these edge portions during the widening and collapse of the trough to the final board dimensions whereby the slurry is entirely confined by the two webs of fibrous material during the board-forming process. Web 60 is ad-

hered to the horizontal edge portions 56 beneath the master element 32 so that a board of the selected width and thickness is formed.

It has been found that the outermost edges of underlap portions 56 remain in contact with the cover sheet from initial contact throughout the folding process. This insures containment of the slurry and provision of a clean bonding surface on portions 56 in parallel face-to-face contact with the cover 60 to effect a good bond between the cover sheets.

With further reference now to FIGS. 1 and 12, the machine 20 is adapted to carry out the abovedescribed process, and includes a depressed section in the table 26 on the entrance side of the master roll 28. This depressed section includes a declining section 62 which extends from the first section 28 downward to a bottom horizontal section 64. A short inclined ramp section 66 extends from the lower section 64 up to the level of the adjacent end of the board support section 30 at the nip of master roll 32. Edge supports and folding guides for the lower web are provided along sections 62, 64 and 66 to insure uniform and positive control of this web as it progresses through the machine 20.

Referring particularly to FIGS. 4 and 9-11, suitable folding guides 68a and 68b are positioned over the end of section 64 adjacent the lower end of ramp 66. The folding guides 68 are mounted on support brackets 70 and 71 depending from a transverse bar 72 supported on the bed frame 22. The guides are parallel to the longitudinal axis of bed 25, and are arranged in opposed pairs, one pair 68a-68b being used for each board being formed in the machine 20. The two guides of each pair are spaced apart a distance X (FIG. 9) which is somewhat less than the width Y of the board to be formed whereby the opposite edge portions of the bottom web passing therebetween are folded upward about lines disposed inward of the web 46 from the edge score lines. A support wedge or shim 74 is provided along the lower edge of each guide 68, see also FIG. 18. These wedges extend diagonally across the corners between section 66 and the respective guides 68 to support corresponding opposite portions of the web 46, inward of the edge portions 54, as the web moves between a pair of guides 68.

Edge guides 76a and 76b extend from the respective folding guides 68 up the ramp 66, the edge guides of each opposed pair 76a-76b extending in diverging relation. Each edge guide 76 carries an edge former 78 at its distal end; the edge formers being disposed directly beneath master roll 28 in the board-forming passageway. The edge formers extend generally parallel to the direction of travel of the web 46, and the formers on each pair of guides are spaced apart a distance Y (FIG. 9) equal to the width of the board to be formed. Each edge guide 76 forms a smooth juncture with the inner surface of the respective folding guide 68 and is tapered at its distal end to effect a smooth juncture with the inner surface of the respective edge former 78. A tapered support wedge or shim 80 is provided along the lower edge of each guide 76 in the same general manner as wedges 74 on guides 68, see also FIG. 19. Each wedge 80 conforms generally to the respective wedge 74 at its inner end and tapers to a point at the outer end of the respective guide 76 as illustrated. Referring particularly to FIGS. 9 and 10, the edge guides 76 are pivotally joined to the folding guides as on pins 82 and are spring-biased to their outward or diverging position as by torsion springs 84. A stop bar 86 is welded to each edge guide 76 and extends rearwardly therefrom adjacent the respective folding guide. A thumb screw 88 extends through the distal end of the bar 86 and engages the respective folding guide whereby the angularity and thus the position of each edge guide may be varied.

Clips 90 may also be provided on folding guides 68 to engage over the respective edges of web 46, see FIG. 18. Such clips will insure that the web edges remain upright and spread open, against guides 68, as the bottom

web is drawn through machine 20. Guide fingers 92 may also be provided on the edge guides 76. These fingers extend upward and inward of guides 76 (see FIG. 19), to insure that edges 56 fold inward of the web as the web proceeds from the fully formed and open trough position between guides 68 to the collapsed board-forming position in the throat beneath the master element 32.

With particular reference now to FIGS. 12-17, wedge-shaped supports or shims 94 and 96 progressively lift and form the edge portions of the web 46 to provide a smooth transition of the web from its original flat state to the trough position between guides 68. Each support 94 comprises an elongated, inverted right-angular member including a support surface or ramp 94a extending beneath the path of travel of the respective edge portion of a web 46 in convergent relation to the center axis of the web, whereby the edge of the web is caused to ride up gradually on the supporting surface 94a, see FIGS. 12, 14 and 15. Each support 96 also comprises an elongated, inverted right-angular member, and extends between a support 94 and the respective guide 68, substantially parallel to the direction of movement of the web 46. The support surface or ramp 96a conforms to the adjacent end of ramp 94a and to the adjacent end of the respective wedge 74. It will be noted, particularly from FIG. 12, that each guide 68 is disposed inward of the high point or peak of the respective support surface 96a. A vertical folding bar 98 is positioned atop each surface 96a and extends from the high point of the surface 96a, at the upstream end adjacent support 94, to a position conforming to the adjacent end of the respective guide 68 at the downstream end as illustrated, see FIGS. 12, 13, 16 and 17. This provides a gradual transitional guide for folding the outer edges of the web to their vertical position for passage between guides 68 as aforedescribed.

Referring now to FIGS. 1, and 4-8, an arcuate guide 100 for the top cover sheet web 60 is positioned above the outer end of ramp 66 and is adjustably supported on arms 34 as by suitable mounting brackets 102. A top guide plate 104 is supported on brackets 102 with arcuate guide 100 and extends from the lower edge of guide 100 to the throat beneath roll 32. The guides 100 and 104 extend the full length of the master roll (FIG. 4), or at least the full width of the top web 60. The lower surface of plate 104 defines a plane including the lower edge of guide 100 and tangent to the master roll 32 at the throat, this plane being at an angle to the horizontal which is approximately equal but opposite to the angle by which ramp 66 is inclined to the horizontal. The edge of plate 104 beneath roll 32 may be tapered, as at 104a.

Edge shims 106 are provided at each end of plate 104 as illustrated in FIGS. 5-7. These shims are designed to bring the edge portions of the top and bottom cover sheets into early and firm engagement over ramp 66 to prevent leakage of the slurry between the edges of these sheets as they converge toward the nip or board-forming throat beneath roll 32. Each shim 106 is wedge-shaped or triangular in cross section, taken lateral to the direction of movement of the webs, and presents its deepest area along the respective edge of plate 104. The shims 106 are also triangular in longitudinal cross section, and each includes a cam or ramp surface 106a which rises rather abruptly to a smoothly rounded apex 106b, and a longer, more shallowly inclined rear surface 106c. A support bracket 108 is provided beneath the apex, and an adjustable securing device such as a deep C-clamp 110 is provided for adjustably securing each shim to plate 104. The shims may thus be selectively positioned laterally of the webs to provide preselected effective depths of the shims between the edges of the web 60 and the plate 104.

Suitable paste applicators 112 (FIGS. 1 and 8) are positioned adjacent roll 32 to apply paste or other adhesives to web 60 along the edge areas thereof which ultimately overlap the edge portions 56. After the edge por-

tions 56 are turned inward by the guides as aforedescribed, they are contacted by the adhesive carrying edges of top web 60. An adhesive bond is then effected between the top and bottom cover sheets of the finished board when web 60 is pressed down upon the inturned strips 56 by the master roll 32.

In the machine 20, the dimension by which any given portion of bed sections 62, 64 and 66 is depressed below the plane of sections 28 and 30 approximates the vertical displacement of the central portion of web 46 from edge portions 54 at a corresponding point in forming the web trough. For instance section 64 is spaced beneath the plane of sections 28 and 30 by a dimension approximating the sum of the vertical rise of the web 46 on supports 96 and the height of portions 54 on the folding bar 98 at any cross section therethrough. As a result, edge portions 54 extend approximately horizontally through the machine, note FIG. 2. This construction minimizes the tensioning and stretching of the upwardly folded distal edges 56 and thereby minimizes the risk of tearing of the web 46, or of wrinkling, which otherwise would be attributable to the vertical displacement of the edges relative to the center portion of the web.

Referring particularly to FIG. 8, it will be observed that the head or pile-up of slurry which tends to occur at the entrance to the board-forming passageway is illustrated as distributed from the nip of master roll 32 back along guides 76 and, to some extent, along guides 68. The operator normally observes this head as the prime indicator of whether adequate slurry is being supplied to the machine 20 and properly distributed to form satisfactory board. For this reason he feeds adequate slurry to obtain formation of the head a sufficient distance upstream from the throat to insure ready visibility. With machine 20, and the described method, the slurry head is confined within the paper webs at all points and does not contact any stationary mechanism of the board-forming machine. Also, the outer surfaces of strips 56 are not exposed to the slurry and little or no opportunity is afforded for slurry to leak out of the web envelope and into contact with these edges, thereby avoiding stucco edges and insuring good bonds between the two cover sheets.

In one specific embodiment of a machine according to the illustration herein, the receiving section 28 and the board support section 30 were disposed horizontally and in coplanar relationship. The bottom table section 64 was 4' long and depressed 1½" below the level of the section 30. The declining section 62 was 8' long, whereas the ramp 66 was 12¾" long and was disposed at an angle of about 7° to the horizontal. This machine was arranged for forming two 2' wide boards ½" thick. The dimension between the respective folding guides 68a and 68b was 1'11" and the dimension between the respective edge formers, was 2', with the edge guides 74 extending therebetween as illustrated in FIG. 9. Supports 74 were 1¼" high at the guides 68, and 2¾" wide as seen in FIG. 18. The remaining supports and fold bars were dimensioned and positioned accordingly as described above and illustrated in the drawings. Arcuate guide 100 was formed with a radius of curvature of 6" and was positioned above the outer end of ramp 66 as illustrated in FIG. 8. Plate 104 was 9" long and extended from the lower edge of the guide along a plane tangent to master roll 32 at the board-forming passageway, and defined an angle of about 7° to the horizontal. Each shim 106 was about 8" in maximum width (as seen in FIG. 5), ¾" in maximum depth at the apex, which was about 2" back of the leading corner, and about 5" in length (lateral to the direction of web movement). Surface 106c was thus at an angle of about 7° to the plate 104, or horizontal, with surface 106a at an angle of about 20° to plate 104 or 27° to the horizontal.

It will be obvious that certain other modifications of the specific embodiment shown and described may be

made by those skilled in this art without departing from the spirit and scope of this invention. For instance, the entire receiving end of the table may be coplanar with the lower table section 64, thereby eliminating the declining section 62. Also, various master elements, such as stationary arcuate plates may be substituted for the master roll 32, various support bed elements such as rollers or conveyors may be substituted, edge formers of various configurations may be utilized, such as for forming tongue and groove board, and various support arrangements may be substituted for supporting the master element. Various folding and forming guides and supports may be utilized to control the movement and forming of the webs and, in some instances, part or all of the supports or shims, clips and fingers may be eliminated, depending to a substantial degree upon the condition and uniformity of the web product and particularly its edge portions.

The method of this invention, in its broader aspects, can be carried out with other machines than that disclosed, as has been noted above, and may be carried out on machines having conventional flat web supporting beds provided due care is exercised in folding and manipulating the edge portions of the sheet, though the risk of tearing of the edge portions would be significantly increased thereby.

It will be seen that an improved method and an improved machine for forming folded edge gypsum board have been provided. In following the teachings of this invention, the slurry is entirely confined within the fibrous webs forming the top and bottom cover sheets whereby contact between stationary folding mechanism and the gypsum slurry is eliminated. Further, the slurry is confined within the fibrous sheets in a manner to prevent contacting of the overlapping edges of the sheet by the slurry whereby the risks of obtaining stucco edges are greatly reduced or eliminated. The overlapping sheet portions are positioned parallel, and in full face-to-face contact to permit formation of a satisfactory bond with minimum overlap, thus permitting use of narrower paperwebs. These results can be obtained by relatively inexpensive rebuilding of previously used machines. In addition, the disclosed improvements in board-forming machines provide an advantageous arrangement for practicing the novel method set forth herein.

While a particular embodiment of this invention is shown, it will be understood, of course, that the invention is not to be limited thereto since many modifications may be made by those skilled in this art, particularly in light of the teachings provided by the applicants. It is contemplated therefore by the appended claims to cover any such modifications as come within the true spirit and scope of this invention.

We claim:

1. A method of forming folded edge board including a core, which is formed from a slurry, a bottom cover sheet which extends over the bottom of said core and includes side portions extending over the side edges and the marginal portions of the top of said core, and a top cover sheet which extends over the top of said core and overlaps said bottom sheet over said top marginal portions, comprising the steps of moving an elongated bottom cover sheet generally horizontally through a board-forming throat, continuously elevating opposite marginal portions of said bottom sheet with respect to the center portion of said bottom sheet, in an area upstream from said throat, to form a trough thereof having a depth greater than the thickness of the board to be formed in such throat, depositing such slurry in said trough, advancing a top cover sheet over said trough and onto the elevated marginal portions of said bottom cover sheet, upstream from said throat, to form an envelope of said cover sheets which is of a depth greater than the thickness of the board to be formed in said throat, collapsing said envelope and forming said cover sheets and slurry to the desired cross-

sectional configuration for such board while advancing said cover sheets from the area of initial contact therebetween to and through said throat, and maintaining contact between said marginal portions of said bottom cover sheet and the underside of said top cover sheet during such advancement, thereby confining said slurry within said sheets as said sheets and slurry are formed into such board.

2. A method as in claim 1 wherein said side portions are turned upward to generally vertical positions in forming said trough.

3. A method as in claim 2 wherein said side portions are turned upward about lines disposed inward of the respective side portions.

4. A method as in claim 1 wherein said step of elevating opposite marginal portions of said bottom sheet to form said trough comprises raising said side portions and adjacent portions of said bottom cover sheet with respect to the center portion of said bottom cover sheet.

5. A method as in claim 4 wherein said side portions are turned upward with respect to said adjacent portions.

6. A method as in claim 1 wherein, when said top sheet is advanced onto said elevated marginal portions, each of such marginal portions contacts said top cover sheet inward of the respective edge of said top cover sheet.

7. A method as in claim 1 wherein each of the outermost edges of said bottom cover sheet contacts said top cover sheet inward of the respective edge of said top cover sheet throughout such contact between said sheets, and said sheets are subsequently bonded to one another in the areas outward of such contacts.

8. A method as in claim 1 wherein said center portion of said bottom sheet is formed downward, with respect to a horizontal plane through said throat, in forming said trough.

9. A method as in claim 8 wherein the portions of said bottom sheet for covering said side edges are moved substantially horizontally in forming such board.

10. A method as in claim 1 wherein said slurry is a gypsum slurry and said cover sheets are webs of paper.

11. A machine for forming board having a core encased by bottom and top laminae of fibrous material comprising a generally horizontally disposed support bed over which a continuous bottom lamina is moved as a slurry of core material is deposited thereon and such slurry and laminae are formed into board, an upper forming element positioned above said bed and defining a passageway therewith for forming such board, said passageway having an entrance and exit, spaced supports over said bed on the entrance side of said passageway for elevating and supporting opposite marginal portions of such lamina to form a trough of such bottom lamina for receiving such slurry,

a top lamina guide disposed over said bed and spaced from said passageway on the entrance side thereof, said guide being positioned to guide a continuous top lamina onto the elevated marginal portions of a bottom lamina supported by said spaced supports, and further supports extending from said spaced supports and from said guide to said passageway and disposed to support said laminae and maintain contact therebetween to confine such slurry therein as such laminae and slurry are moved to said passageway and formed into board.

12. A machine as in claim 11 wherein each of said spaced supports includes a wedge-shaped element for raising a marginal portion of such bottom lamina.

13. A machine as in claim 12 wherein each of said spaced supports includes a side folder for turning a marginal portion of such bottom lamina upward, said side folders being in opposed relation to one another and spaced apart a distance less than the width of the board to be formed in such machine.

14. A machine as in claim 11 wherein said top lamina guide includes an elongated arcuate guide member disposed above said spaced supports, and a guide plate extending from said arcuate guide to said passageway.

15. A machine as in claim 14 wherein the lower edge of said top lamina guide, over said spaced supports, is disposed above a horizontal plane through the top of said passageway.

16. A machine as in claim 14 and including a wedge-shaped element at each edge of said plate for urging the marginal portions of such top lamina downward.

17. A machine as in claim 11 including a guide element associated with each of said spaced supports and disposed to turn the respective distal edge portion of such bottom lamina inward.

18. A machine as in claim 11 wherein said support bed includes a bottom section disposed below a horizontal plane through the bottom of said passageway, and a ramp section extending from said bottom section upward to said passageway, said spaced supports being disposed over said bottom section.

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