

June 25, 1929.

C. R. BIRDSEY

1,718,890

APPARATUS FOR CONSTRUCTING PLASTER WALLBOARD

Filed Aug. 23, 1922

4 Sheets-Sheet 1

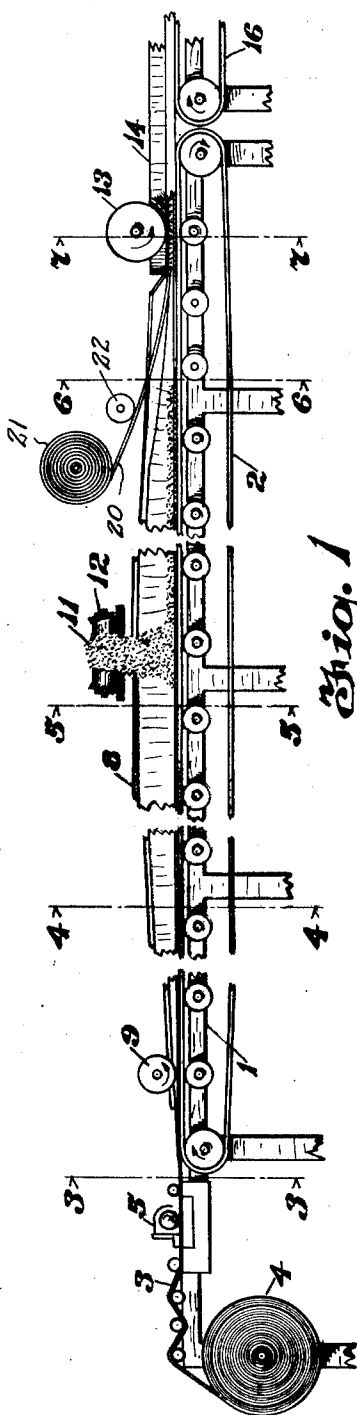


Fig. 1

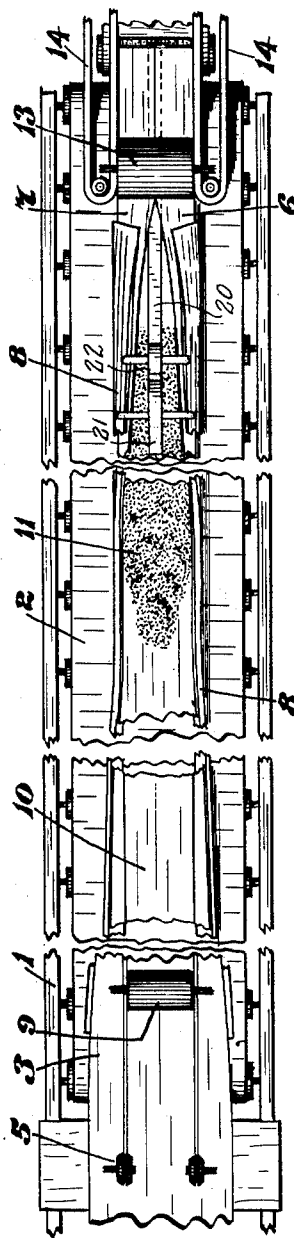


Fig. 2

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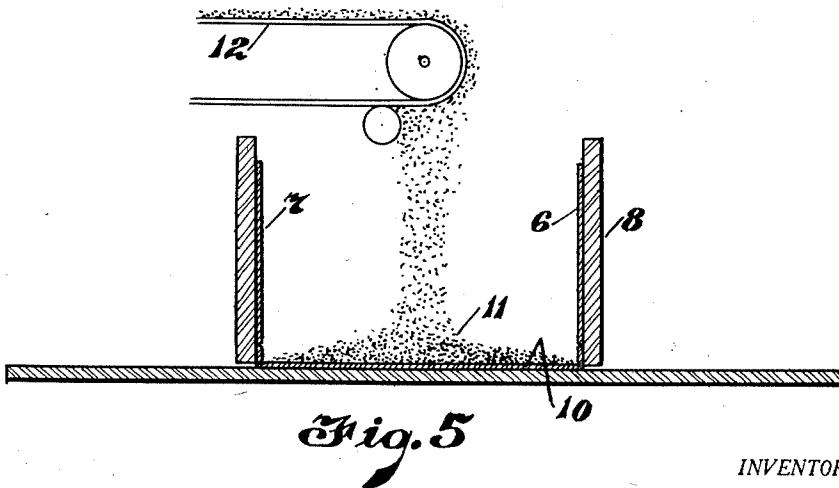
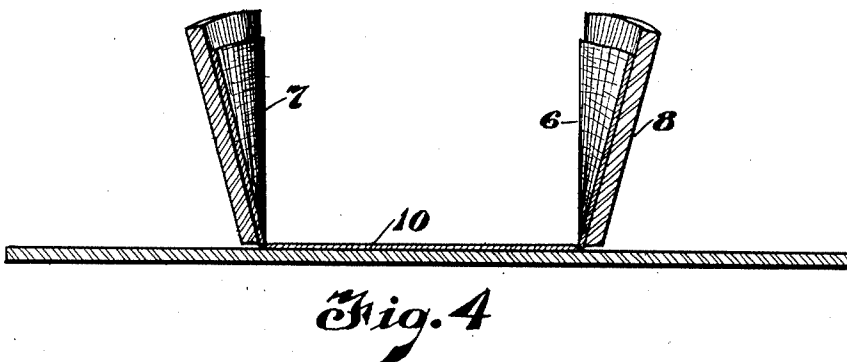
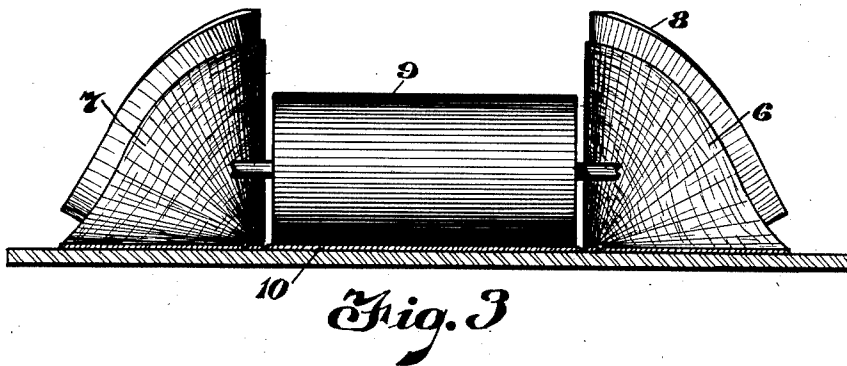
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4 Sheets-Sheet 2



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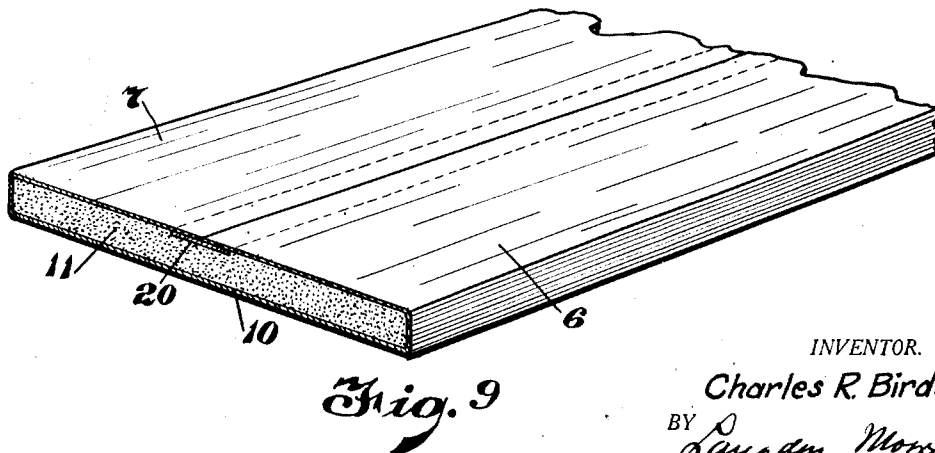
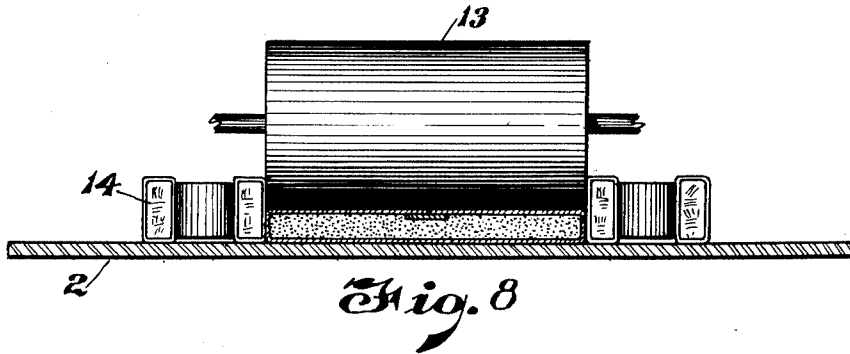
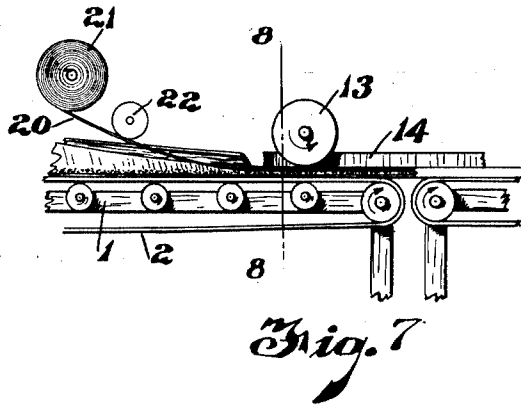
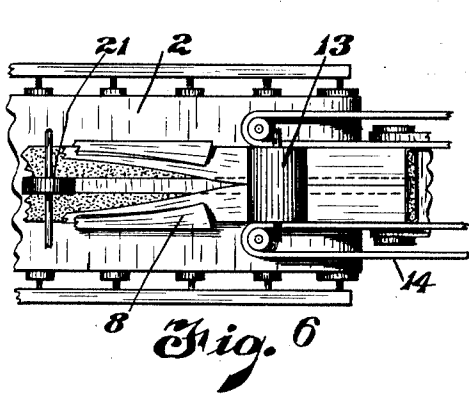
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APPARATUS FOR CONSTRUCTING PLASTER WALLBOARD

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4 Sheets-Sheet 3



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APPARATUS FOR CONSTRUCTING PLASTER WALLBOARD

Filed Aug. 23, 1922

4 Sheets-Sheet 4

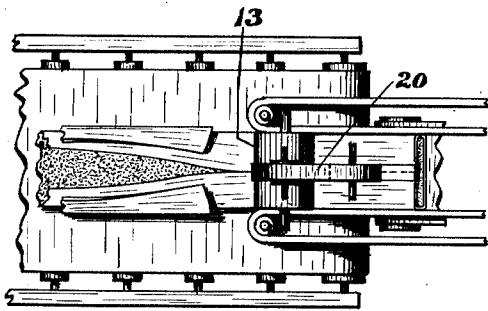


Fig. 10

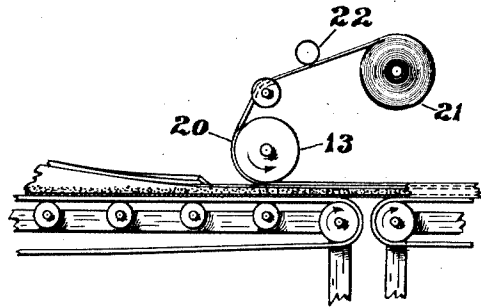


Fig. 11

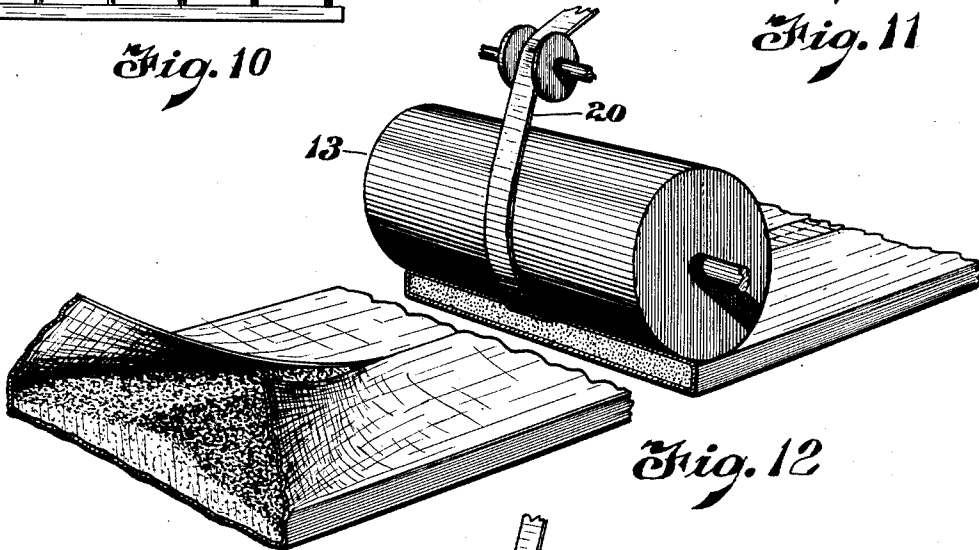


Fig. 12

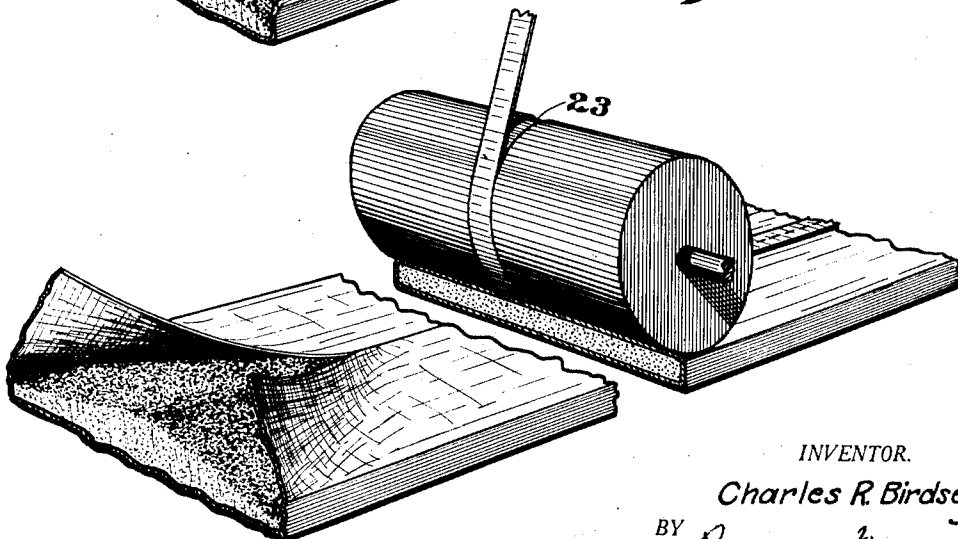


Fig. 13

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UNITED STATES PATENT OFFICE.

CHARLES R. BIRDSEY, OF HINSDALE, ILLINOIS, ASSIGNOR TO UNITED STATES GYPSUM COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

APPARATUS FOR CONSTRUCTING PLASTER WALL BOARD.

Application filed August 23, 1922. Serial No. 583,795.

This invention relates to improvements in the production of building materials and in particular to an apparatus and method of constructing wall board, particularly designed to construct the plaster wallboards described in my Patent No. 1,428,624 of September 12, 1922, and which with but slight changes and without departing from the original invention is adapted to producing the plaster wallboard as disclosed in my prior Patent No. 1,406,967 of February 21, 1922.

Since it is old in the art to produce plaster wall board of this general character on a continuously operating apparatus which usually includes a continuous belt conveyor extending from the wet end, or board forming portion, a distance to allow the plaster material to partially set and bond to the fibrous covering so that at the end of the conveyor the strip of plaster board so formed may be cut in uniform lengths, removed and transferred to the drying kilns, it is only necessary to illustrate and describe in this application, the particular construction of the board forming mechanism at the wet end of the apparatus.

While the preferred forms of apparatus for carrying out the method described herein are illustrated upon the accompanying sheets of drawings, yet it is to be understood that minor detail changes may be made therein without departing from the scope of the invention.

In the drawings:

Figure 1 is a view partly in side elevation and partly in longitudinal vertical section through the board forming apparatus, as contemplated in this invention.

Figure 2 is a top plan view of the Figure 1 with parts broken away and removed.

Figures 3, 4 and 5 are transverse sectional views taken on the lines 3—3, 4—4 and 5—5 respectively of Figure 1.

Figure 6 is a detail top plan view and Figure 7 is a detail view in side elevation and partly in section of a portion of the construction shown in Figures 2 and 1, respectively.

Figure 8 is a view in transverse section on the line 8—8 of Figure 4.

Figure 9 is a perspective view of the wall board shown in view on Figure 8.

Figures 10 and 11 are views similar to Figures 8 and 7, respectively, illustrating another modified form of that apparatus to

produce a slightly modified form of plaster wallboard.

Figure 12 is a diagrammatical enlarged perspective view illustrating the mode of application of the sealing strip on the type of wallboard produced by the apparatus illustrated in Figures 10 and 11.

Figure 13 is a view similar to Figure 12 illustrating a slightly modified apparatus for applying the sealing strip above the flat surface of the wallboard.

The apparatus illustrated by the first eight figures of the drawings is designed to produce the wallboard disclosed in my said Patent No. 1,428,624 and shown in perspective in Figure 4 of this patent, from which it is seen that a single cover sheet of fibrous material is employed to embrace the plaster core or body of the board by folding the margins at both sides of the cover sheet about the longitudinal edges of the board and bringing the folded portions together but not in overlapping relation upon the opposite surface of the plaster body, the edge portions of said sheet being secured together by a sealing or joining strip.

The preferred form of this apparatus includes a table 1 supporting a continuous belt conveyor 2 to which is advanced the cover sheet 3 of fibrous material from a roll 4 supported preferably below the table on an extension thereof. This cover sheet is of sufficient width so that when the side margins are folded over the plaster body of the completed board the longitudinal edges will overlap each other. The cover sheet is advanced from its roll to the conveyor on the table and before passing to the table the sheet preferably passes beneath two scoring devices 5 which produce lines of reduced thickness in the sheet parallel to each other, which lines are arranged in pairs the distance between each pair of lines being equal to the thickness of the completed board and the distance between the innermost lines of the two pairs being equal to the width of the completed board.

These scoring devices are so arranged that the margins 6 and 7 along the longitudinal edges outside the scored lines will overlap at the edges when folded about the completed board. As the cover sheet advances on the conveyor the margins are engaged by pick up and folding members 8 arranged on each side of the table which are adapted to engage the

under side of the margins and gradually bend them upward to a perpendicular position along the innermost scored lines as shown in Figures 3, 4 and 5. It is preferable to provide a holding roller 9 on the upper side of the central portion 10 of cover sheet between the innermost scored lines slightly beyond the point where the pick up and folding members engage the margins to insure the bending of the margin along these scored lines and also insure the central portion of the sheet contacting with the conveyor.

It is preferable to deposit the plaster body of the board upon the central portion of the cover sheet approximately at the point where the margins are caused to assume the perpendicular position by the pick up and folders as illustrated in Figure 5. The plaster body 11, preferably of calcined gypsum, with or without aggregates, is deposited in plastic state preferably from a belt conveyor 12 as illustrated. Beyond this point the pick ups and folders impart a bend to each margin of the cover sheet along the outermost scored lines on each side, as illustrated in Figure 6, and then bring these margins downward upon the upper surface of the plastic mass as shown in Figure 2. The longitudinal edges of the covering sheet abut each other, and are secured together by a joining strip 20. The advancing of the plastic body completely embraced by the folded cover sheet then causes the partially formed board to pass beneath a forming or pressure roll 13, which is of the same width as the completed board and which imparts to the partially formed board the desired thickness of the completed board. To insure rectangular squared edges to the completed product it is preferable to provide vertical belts 14 on each side of the forming roll passing over vertical pulleys 15 contacting with the longitudinal edges of the board being formed. After leaving the forming roll 13 the board passes on to a conveyor 16 of great length as previously described and only partially illustrated in these drawings. If desired, the vertical edge engaging belts 14 may be continued a distance along this second conveyor.

The sealing or joining strip 20 is supplied from a roll 21 mounted above the partially formed board which strip is led between the pick up and folding members 8 and applied to the upper surface of the plastic body 11, so that as it passes under the forming roll 13 it will engage the underside of the edges of the folded down margins 6 and 7. Ordinarily the forming roll will exert enough pressure to cause sufficient of the plastic body to enter between upper surface of the strip of the edges of the margins to bond the edges to the strip in the completed board. However, if desired, silicate of soda or other bonding substances may be applied to the upper surface of the strip before the margins are

folded over it, as shown by the device 22 in Figure 1, to insure the complete sealing.

As shown in Figure 9 the longitudinal edges of the folded over margins meet at the longitudinal center of the board and are secured to each other on the underside by the sealing strip between them which is depressed into the body of the board and presents a flat surface on that side of the completed board.

When desired to apply the sealing strip on the exterior of the board, as shown in Fig. 3 of my said patent No. 1,428,624, it is only necessary to apply this sealing strip after margins of the cover sheets have been brought together and, as shown in Figures 10, 11 and 12, the strip 20 may be applied by passing it over the board forming pressure roll 13. In this case, it is preferable to apply silicate of soda or other bonding solution to the underside of the sealing strip before it is passed above the pressure roll.

As seen in Figure 12, the sealing strip 20 applied in this manner will depress the edges of the folded over margin into the plastic body 11 and as the pressure forming roll is cylindrical throughout, the surface of the finished board on the side of the sealing strip will be completely flat.

If it is desired to apply sealing strip 20 without depressing the edges of the overlapped margins, as shown in Fig. 2 of my said patent, that portion of the pressure forming roll over which the sealing strip passes may be provided with an indentation 23 equaling in width and depth the width and depth of the sealing strip as shown in Figure 13.

What I claim is:

1. An apparatus for constructing plaster-board comprising means for advancing a fibrous cover sheet of sufficient width to completely embrace the finished board, means for folding up the margins of said cover sheet, means for depositing plaster body in a plastic mass upon the cover sheet, means to fold down the upturned margin upon the plastic mass with the edges of the margins adjacent one of the other, means for applying a sealing strip of fibrous material covering the adjacent edges of the margins, and board forming means, including a pressure roll arranged to apply the folded over margins on the plastic mass and cover the adjacent edges with the sealing strip.
2. An apparatus for constructing plaster-board, comprising means for advancing a fibrous cover sheet of sufficient width to completely embrace the finished board, means for folding up the margins of said cover sheet, means for depositing the plaster body in a plastic mass upon the cover sheet, means to fold down the upturned margins upon the plastic mass with the edges of the margins adjacent one to the other, means for applying

a sealing strip of fibrous material adapted to cover the adjacent edges of the margins upon the plaster body after the folding down of said margins, and board forming means including a pressure roll arranged to apply the folded over margins upon the plastic mass to cover the adjacent edges with the sealing strip.

3. Apparatus for constructing plaster-board comprising means for advancing a fibrous cover sheet of sufficient width to completely embrace the finished board, means for folding up the margins of said cover sheet, means for depositing the plaster body in a plastic mass upon the cover sheet, means to fold down the upturned margins upon the plastic mass with the edges of the margins adjacent one to the other, means for applying a sealing strip of fibrous material covering the adjacent edges of the margins, means for providing adhesive between the cover strip and the portions of the margin covered thereby, and board forming means including a pressure roll arranged to apply the folded over margin upon the plastic mass, and cover the adjacent edges with the sealing strip.

4. An apparatus for constructing plaster-board, comprising means for advancing a fibrous cover sheet of sufficient width to completely embrace the finished board, means for folding up the margins of said cover sheet, means for depositing the plaster body in a plastic mass upon the cover sheet, means to fold down the upturned margins upon the plastic mass with the edges of the margins adjacent one to the other, means for applying a sealing strip of fibrous material covering the adjacent edges of the margins, and a board forming means including pressure roll arranged to apply the folded over margins on the plastic mass to cover the adjacent edges

with the sealing strip, and to press the strip in the plastic body so the board on that face, provides a flat surface.

5. An apparatus for constructing plaster-board, comprising means for advancing a fibrous cover sheet of sufficient width to completely embrace the finished board, means for folding up the margins of said cover sheet, means for depositing the plaster body in a plastic mass upon the cover sheet, means to fold down the upturned margin upon the plastic mass with the edges of the margins adjacent one to the other, means for applying a sealing strip of fibrous material covering the adjacent edges of the margins on the exterior thereof, and board forming means including a pressure roll arranged to apply the folded over margins upon the plastic mass and cover the adjacent edges with the sealing strip.

6. An apparatus for constructing plaster-board, comprising means for advancing a fibrous cover sheet of sufficient width to completely embrace the finished board, means for folding up the margins of said cover sheet, means for depositing the plaster body in a plastic mass upon the cover sheet, means to fold down the upturned margins upon the plastic mass with the edges of the margins adjacent one to the other, means for applying a sealing strip of fibrous material covering the adjacent edges of the margins of the exterior thereof, and board forming means, including a pressure roll arranged to apply the folded over margins upon the plaster mass and cover the adjacent edges with the sealing strip, and to press the portions of the margins under the sealing strips so that the board on that side provides a flat surface.

CHARLES R. BIRDSEY.

CERTIFICATE OF CORRECTION.

Patent No. 1,718,890.

Granted June 25, 1929, to

CHARLES R. BIRDSEY.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 1, line 49, for "Figure 4" read "Figure 7"; page 2, line 114, claim 1; for the word "of" read "to"; page 3, line 39, claim 4, for the misspelled word "bord" read "board"; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 10th day of September, A. D. 1929.

(Seal)

M. J. Moore,
Acting Commissioner of Patents.