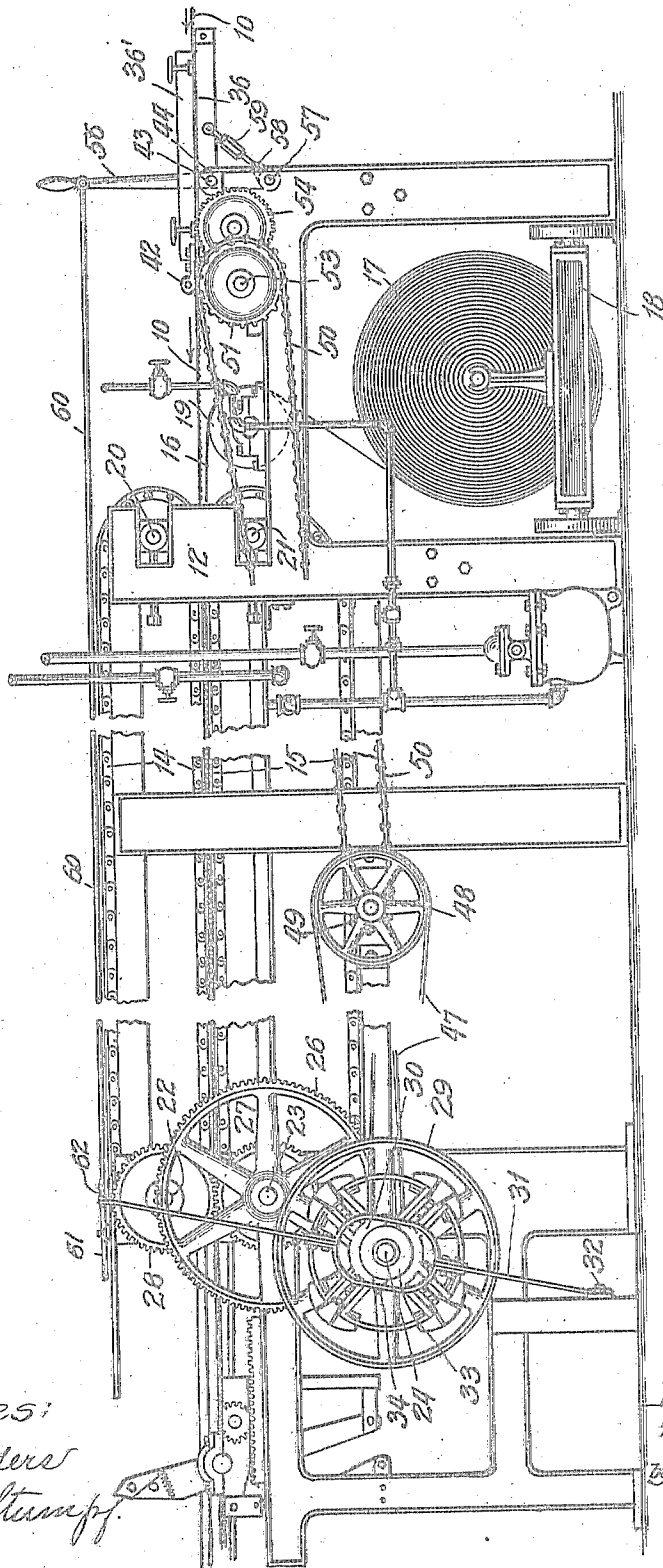


B. HEINRICHS.
MACHINE FOR MAKING CORRUGATED BOARD.
APPLICATION FILED JAN. 18, 1915.

Patented July 23, 1918.
4 SHEETS—SHEET 1.

1,273,367.

Fig. 1.



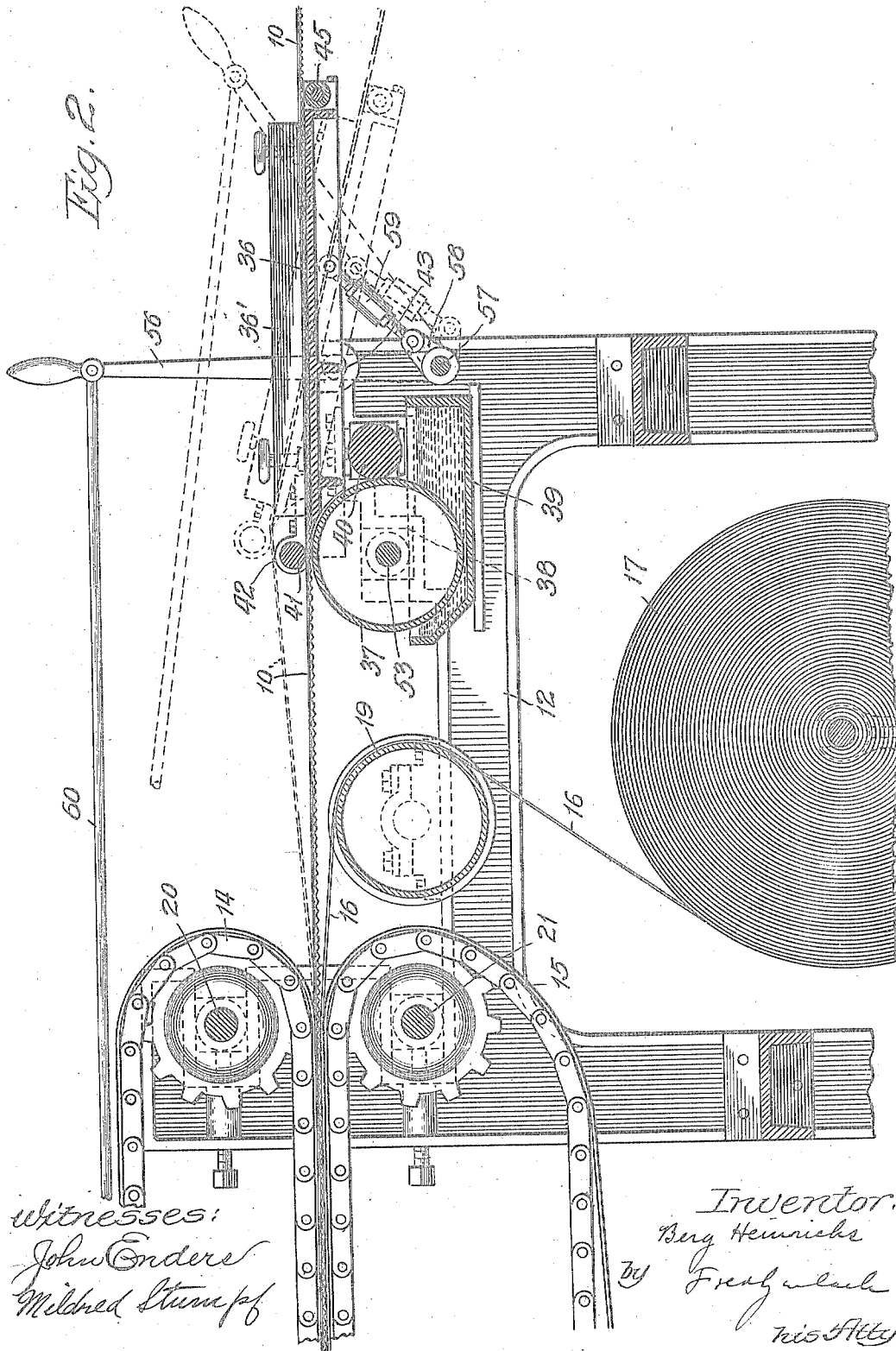
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by Fred Gulack
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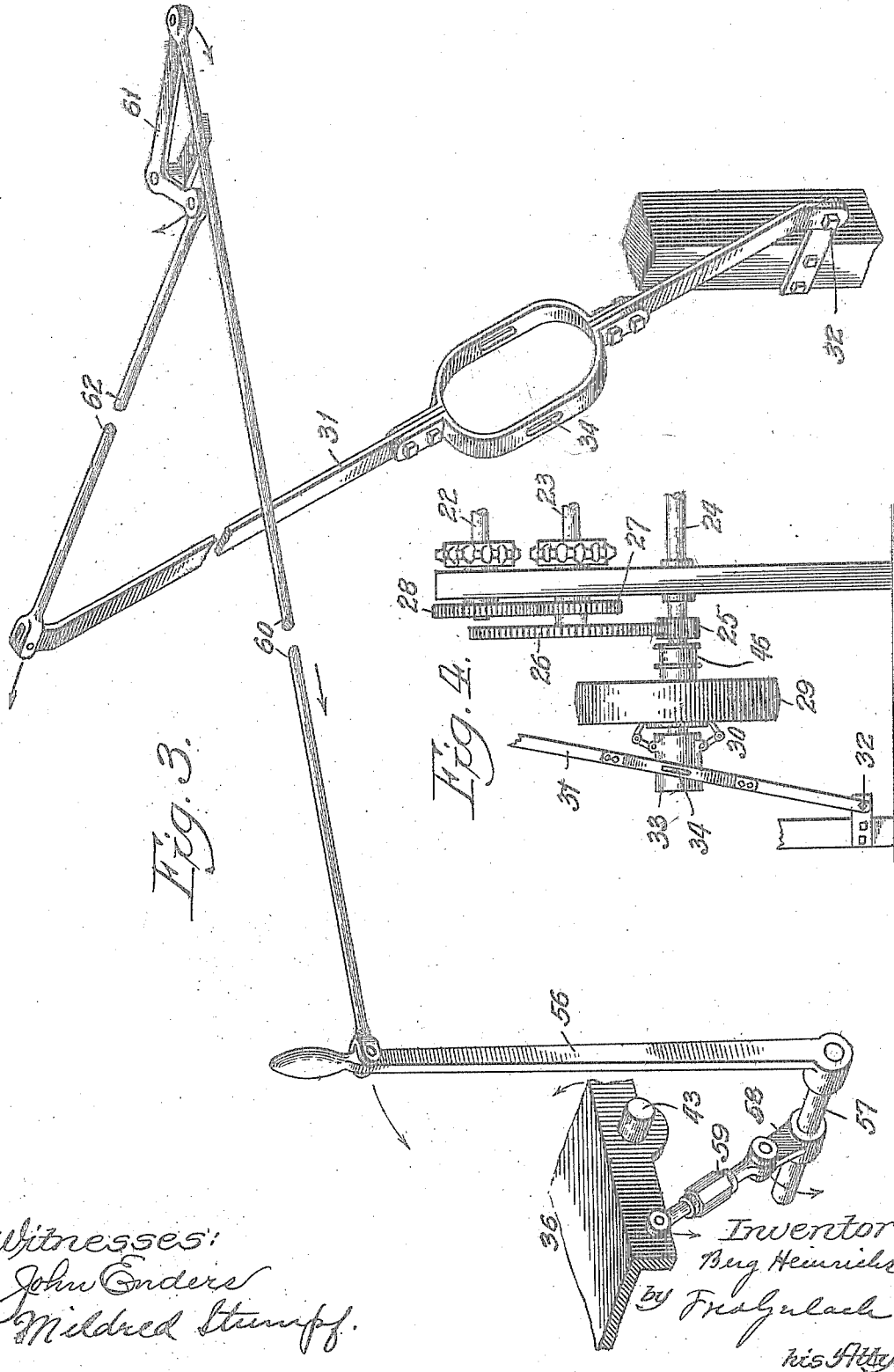
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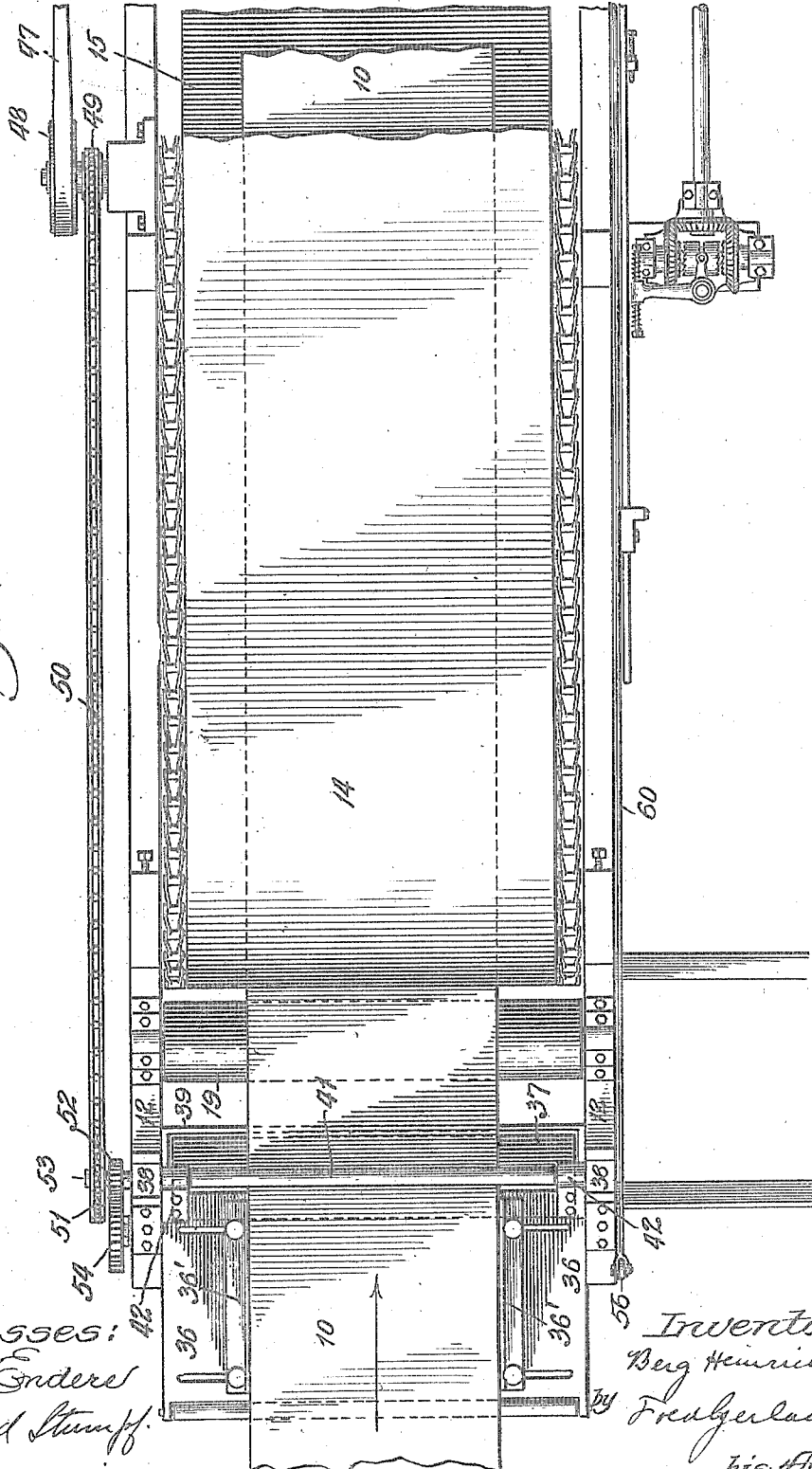
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4 SHEETS—SHEET 4.

Fig. 5.



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UNITED STATES PATENT OFFICE.

BERG HEINRICH, OF ANDERSON, INDIANA, ASSIGNOR TO MID-WEST BOX COMPANY,
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MACHINE FOR MAKING CORRUGATED BOARD.

1,273,367.

Specification of Letters Patent.

Patented July 23, 1918.

Application filed January 18, 1915. Serial No. 2,774.

To all whom it may concern:

Be it known that I, BERG HEINRICH, a resident of Anderson, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Machines for Making Corrugated Board, of which the following is a full, clear, and exact description.

The invention relates to machines for making corrugated board, and more particularly to mechanism for applying agglutinant to cause a second facing to adhere to the crowns of the corrugated web or sheet.

In practice, it has been found desirable to use a quick-setting agglutinant, *e. g.*, silicate of soda, for securing a facing to a corrugated web or sheet. In the operation of a machine for making corrugated board, it is sometimes necessary to stop the machine in event of breakage of the web or when the end of the web is reached or for other reasons. When a quick-setting agglutinant is used and the machine is stopped with the agglutinant applying roller in contact with the web, the agglutinant will quickly set and cause the web to adhere to the roll, thus necessitating separation of the web from the roll and cleaning the roll before restarting the machine. In double-facing corrugated board machines, the agglutinant is usually applied on a straight reach of the web after the first facing has been secured to the corrugated web while the agglutinant in the single facer is applied to the corrugated web while it is on a corrugated roll.

A primary object of the invention is to provide a corrugated board machine with means for separating the web from the agglutinant applying roll when the feed of the web is discontinued as a result of the stoppage of the machine and to provide for the operation of said roll while the remaining mechanism is idle and thus avoid adhesion of the paste roll to the corrugated web and the setting of the agglutinant on the paste roll.

A further object of the invention is to provide means for conjointly controlling the operation of the mechanism for separating the web from the paste-roll and the operation of the remainder of the machine, so that whenever the machine is stopped to discontinue the feed of the web, the latter will simultaneously be separated from the paste-roll, and the paste-roll will continue to ro-

tate while the remainder of the machine is idle.

Lastly, the invention is designed to provide an improved machine for making corrugated board.

In the drawings: Figure 1 is a side elevation of a machine embodying the invention, parts being broken away. Fig. 2 is a vertical section of the agglutinant applying mechanism. Fig. 3 is a perspective of the connections for conjointly controlling the clutch for driving the conveyers and operating the table over which the web travels to separate the web from the agglutinant applying roll when the feed of the web is discontinued. Fig. 4 is a detail end elevation of the power pulley and its connections. Fig. 5 is a plan.

The invention is shown as applied to a machine for making double faced corrugated board in which a single faced corrugated web 10 is drawn or fed into the machine for the purpose of applying a facing to the other face of the web.

The machine comprises a frame 12 of any suitable construction, an upper endless conveyer 14 and a co-acting lower endless conveyer 15 between which the web passes to cause the second facing 16 to be heated and applied thereto after agglutinant has been applied to the crowns of the exposed or lower face of the corrugated web. The second facing web 16 is taken from a roll 17 which is mounted on a truck 18 and passes over the heated idler roll 19 which is suitably journaled on the frame of the machine. Conveyers 14 and 15 are mounted at one end on sprocket wheels on shafts 20, 21, respectively, and at the other end on the driven shafts 22 and 23. Suitable apparatus is provided for heating the underside of the web while held between the conveyers 14 and 15 as well understood in the art. These endless conveyers are driven to feed the web through the machine, by mechanism comprising a shaft 24, a pinion 25 secured to said shaft and meshing with a gear 26 on shaft 23, a gear 27, also secured to shaft 23 and meshing with a gear 28 on the upper conveyer shaft 22. A power-pulley 29 is loosely mounted on shaft 24 and is adapted to drive said shaft through a clutch 30 which may be of any suitable construction. The operation of the clutch to drive shaft 24 is controlled by a lever 31 which has its

lower end pivoted to the frame at 32 and is suitably connected to the clutch-controlling collar 33 by a stud-and-slot connection 34. This clutch may be of any suitable construction whereby the power pulley 29 may be coupled to or uncoupled from the shaft 24, so that the power pulley 29, driven by a belt from a suitable source of power, will be continuously operated while the conveyers will be operated or permitted to remain idle, under the control of the clutch 30.

Before passing to the conveyers, the single faced corrugated web 10 passes over a table 36 with the applied or first facing up- permost, so that the crowns of the corrugated web will be exposed downwardly to contact with an agglutinant-applying roll 37 which is mounted in bearings 38 on the frame. A pan or reservoir 39 contains the agglutinant to be applied to the web and the lower portion of roll 37 rotates in this agglutinant. A scraper or squeeze-roll 40 is provided to remove the excess agglutinant from the periphery of roller 37 so that agglutinant, in the desired amount, will be applied to the crowns of the corrugations on the web. A roller 41 is mounted in bearings 42 which are secured to the table 36 to hold the web in contact with roller 37. Suitable web-guides 36' are provided on table 36. Table 36 is provided with pintles or studs 43 which are pivotally held in bearings 44 on the frame, so that the table can be tilted as indicated by dotted lines in Fig. 2 to raise the web and roller 41, and separate the web from applying-roll 37. The purpose of this separation is to prevent the web from adhering to the quick-setting agglutinant on roll 37 when the operation of the conveyers is discontinued. A guide-roller 45 is provided at one end of the table 36 to prevent the corrugated web from being caught on the end of the table 36.

The mechanism for driving the applying-roll 37, comprises a belt-pulley 46 on or secured to rotate with the power-pulley 29 so that it will be constantly driven, a crossed belt 47, a pulley 48, driven by said belt, a sprocket wheel 49, rotating with pulley 48, a sprocket-chain 50 and a sprocket-wheel 51 secured to the shaft 53 of roll 37. Roll 40 is also constantly driven by a pinion 52 on shaft 53 which meshes with a gear 54 on the shaft of roll 40.

The mechanism for tilting the table 36 to raise the web away from roll 37, comprises a lever 56, which is secured to a cross-shaft 57 which is journaled in the frame and is provided with arms 58 which are connected to the table by adjustable links 59. Shaft 57, arms 58, links 59 and their connections are relatively disposed so they will be approximately in dead-center relation to automatically lock the table in position to guide the web to roll 37.

To insure the separation of the web and tilting of the table 36 every time the machine is stopped, lever 56 is connected to the clutch-controlling lever 31 so that the clutch which controls the operation of the feeding mechanism for the web will be conjointly controlled with the table 36 so that when the clutch is disconnected from the power-wheel, the table 36 will, at all times, be in position to hold the web away from the agglutinant-applying roll 37 and when the clutch is operative and the web is moving through the machine, the table will be in position to cause the crowns of the corrugated webs to contact with the agglutinant on roll 37. The connection between the clutch-lever 31 and lever 56 comprises a link 60 which is pivoted to lever 56 and to a bell-crank lever 61 which is pivoted to the frame and is also connected by means of a link 62 to the clutch-lever 31. When lever 56 is shifted (assuming the parts to be in position shown in full lines in Fig. 2) it will, through connection 60, 61, 62 and 31 uncouple the clutch 30 to disconnect the driving mechanism for the conveyers from the power-wheel 29 and will simultaneously operate rock-shaft 57, arms 58 and links 59, to tilt the table 36 so that its end, adjacent roll 37 will be lifted to clear roller 37 so that no agglutinant will be applied to the web. Roller 41 holds the web in contact with roll 37 and will be lifted with the table and web. Reverse shift of lever 56 will simultaneously render the clutch 30 operative to drive the conveyers and tilt the table 36 to restore the web into contact with the agglutinant applying roll 37. The separate driving-connection between the agglutinant-applying roll and the power-pulley causes said roll to be rotated continuously, both when the conveyers are operative and when they are inoperative, at which time the web is held away from said roll by table 36. As a result of this continuous operation, a quick-setting agglutinant will not harden on the roll.

The invention thus exemplifies an improved machine for making corrugated board in which provision is made for separating the web from the agglutinant-applying roll when the web-feed mechanism is idle and in which the web-feed is controlled conjointly with the driving-mechanism for the conveying-mechanism, so that, whenever the conveying mechanism is operating, the web will be held or guided so that agglutinant will be applied thereto and when the conveying mechanism is idle, the web will be held away from the roll to prevent adhesion of the roll and web.

The invention also exemplifies a machine for applying the second facing upon corrugated board, in which the agglutinant applying roll is constantly operated both

when the web is moving and to prevent the agglutinant from hardening upon the roll in connection with means for separating the web from the roll when the web is stationary.

The invention is not to be understood as restricted to the details set forth, since these may be modified within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a machine for making corrugated board, the combination of feeding mechanism for a corrugated web, a roll for applying agglutinant to the crowns of the corrugations on the web, fixed bearings in which the roll is mounted, means comprising elements adapted to engage the faces of the web respectively for guiding the web adjacent the roll and conjointly movable to positively shift the web away from the roll, means for shifting said guide-means to hold the web away from the roll and means for applying a facing to the web.

2. In a machine for making corrugated board, the combination of corrugated web-feeding mechanism, a roll for applying agglutinant to the crowns of the corrugations on the web, a table for the web adjacent the roll movable away from the roll, a lever for manually shifting the table to hold the web away from the roll when the feed of the web is discontinued, and means for applying a facing to the web.

3. In a machine for making corrugated board, the combination of corrugated web-feeding mechanism, a roll for applying agglutinant to the crowns of the corrugations on the corrugated web, a tilting table for the web adjacent the roll, means for shifting the table to hold the web away from the roll when the feed of the web is discontinued, comprising a lever, a shaft and links, and means for applying a facing to the web.

4. In a machine for making corrugated board, the combination of feeding-mechanism for a corrugated web, a roll for applying agglutinant to the crowns of the corrugations on the web, a table over which the web passes to said roll, movable away from the roll, a roller for holding the web in contact with said roll carried by and movable with the table, means for shifting the table to hold the web away from the roll when the feed of the web is discontinued, and means for applying a facing to the web.

5. In a machine for making corrugated board, the combination of feeding-mechanism for a corrugated web, a roll for applying agglutinant to the crowns of the corrugations on the web, a table over which the web passes to said roll movable away from the roll, a roller for holding the web in contact with said roll carried by and movable with the table, a lever for shifting the table to hold the web away from the roll when the feed of the web is discontinued, and means for applying a facing to the web.

6. In a machine for making corrugated board, the combination of feeding mechanism for a corrugated web, driving mechanism for the feeding mechanism comprising a clutch, a roll for applying agglutinant to the crowns of the corrugations on the web, a table for guiding the web to said roll, movable to positively shift the web away from said roll, a lever connected to said clutch and to said table to cause the table to move the web away from the roll when the feed-mechanism is idle and to shift the table into position to guide the web on the roll when the clutch is rendered operative, mechanism for driving the agglutinant applying roll independently of the clutch so that it will be driven when the feeding mechanism is idle, and mechanism for applying a facing to the web after the agglutinant has been applied thereto.

7. In a machine for making corrugated board, the combination of feeding-mechanism for a corrugated web, driving-mechanism for the feeding mechanism, comprising a clutch, a roll for applying agglutinant to the crowns of the corrugations on the web, a table for guiding the web to said roll, movable to positively shift the web away from said roll, a roller mounted on and movable with the table for pressing the web against the roll, a lever connected to said clutch and to said table to cause the table to move the web away from the roll when the feed-mechanism is idle and to shift the table into position to guide the web on the roll when the clutch is rendered inoperative, mechanism for driving the agglutinant applying roll independently of the clutch so that it will be driven when the feeding mechanism is idle, and mechanism for applying a facing to the web after the agglutinant has been applied thereto.

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