

(No Model.)

2 Sheets—Sheet 1.

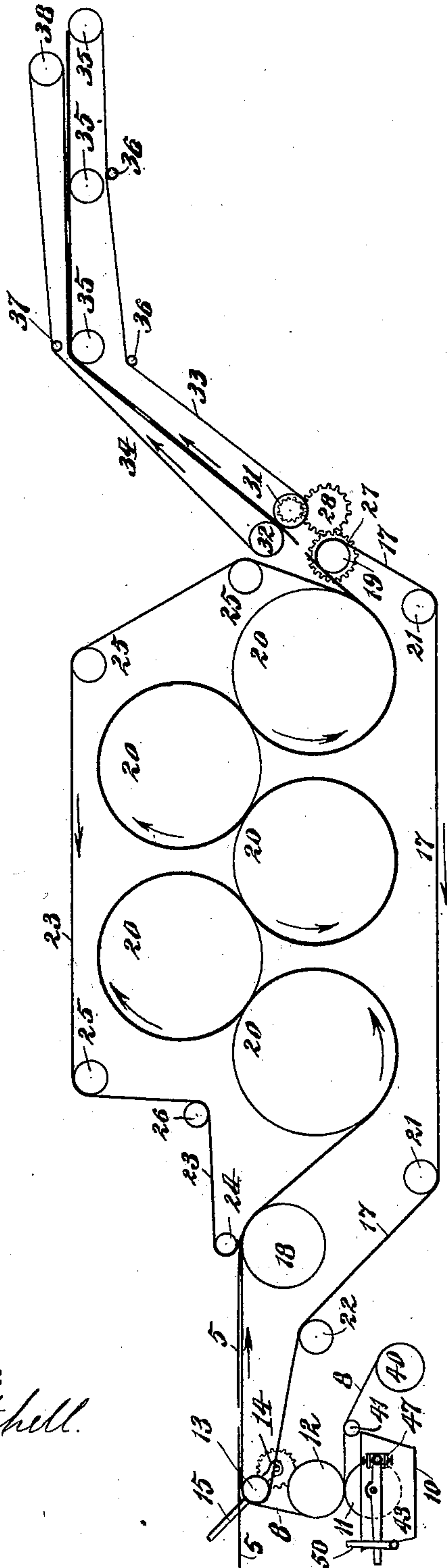
E. SPOONER.

STRAW BOARD LINING MACHINE.

No. 361,094.

Patented Apr. 12, 1887.

Fig. 1.



WITNESSES:

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(No Model.)

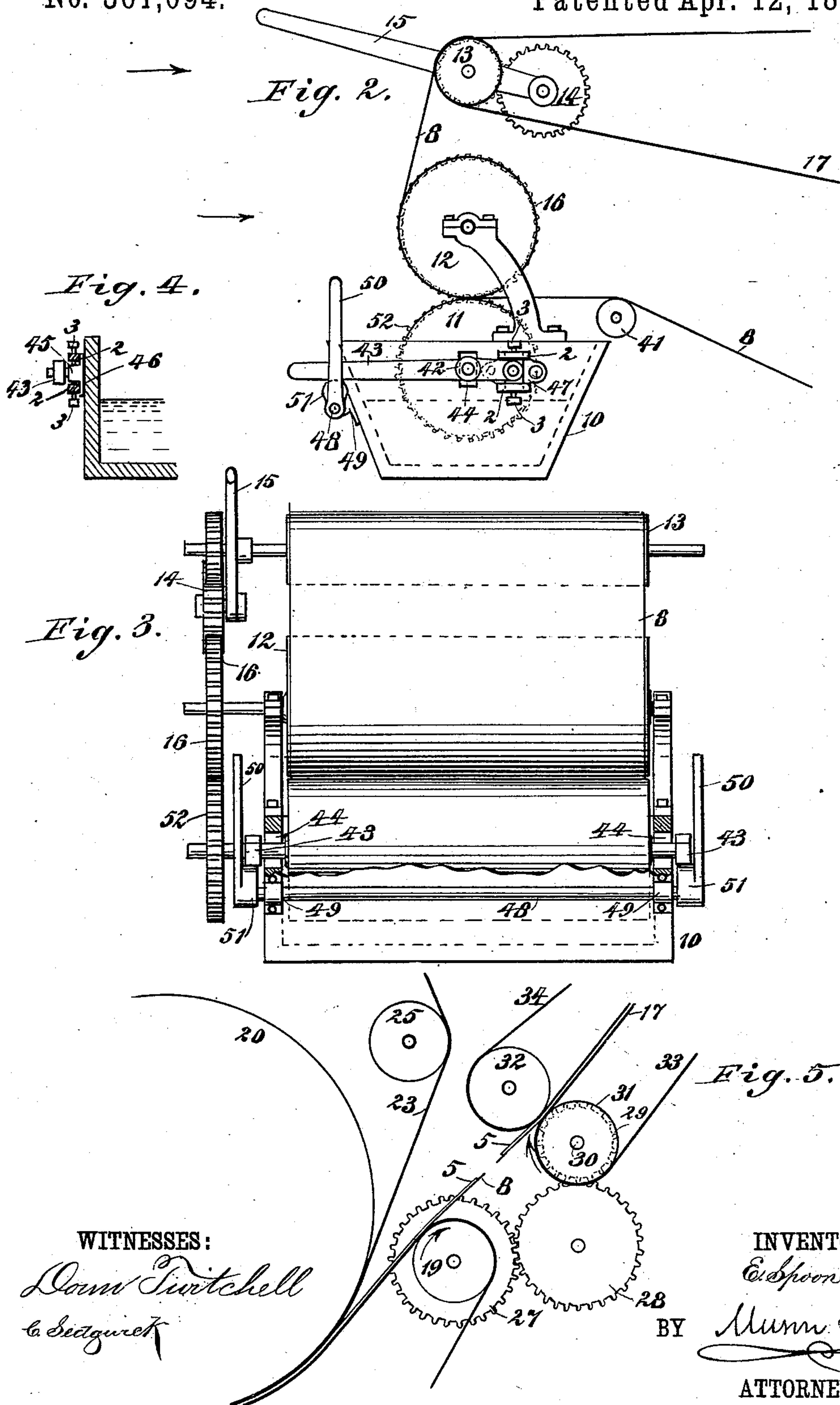
2 Sheets—Sheet 2.

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STRAW BOARD LINING MACHINE.

No. 361,094.

Patented Apr. 12, 1887.



UNITED STATES PATENT OFFICE.

EBENEZER SPOONER, OF NEW YORK, N. Y.

STRAW-BOARD-LINING MACHINE.

SPECIFICATION forming part of Letters Patent No. 361,094, dated April 12, 1887.

Application filed August 13, 1886. Serial No. 210,821. (No model.)

To all whom it may concern:

Be it known that I, EBENEZER SPOONER, of the city, county, and State of New York, have invented a new and Improved Straw-Board-Lining Machine, of which the following is a full, clear, and exact description.

My invention relates to the construction of a machine whereby sheets of straw-board may be lined with thin paper, the several parts of the machine being so constructed and connected that the paste will be automatically applied to the web of paper which is to constitute the lining of the board, and after the paste has been so applied and the straw-board has been placed upon the pasted surface of the lining material the lining material and the straw-board will be carried forward, the excess of moisture will be extracted, and the web constituting the lining will be automatically severed between each sheet of board, after which the boards are carried forward by delivery-tapes, and cooled prior to their being delivered by the fly-boy.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a diagram illustrating the general construction of my improved machine. Fig. 2 is a side view of the paste-trough and its connections. Fig. 3 is an end view taken in the direction of the arrows shown in connection with Fig. 2, portions of the paste-trough being broken away. Fig. 4 is a detail view illustrating the construction of the adjusting devices arranged in connection with the levers which carry the paste-distributing roll, the parts being shown in section; and Fig. 5 is an enlarged detail view representing the construction of the web severing mechanism.

Referring now, generally, to the construction illustrated in the drawings, 10 represents a paste-trough, in which there is mounted a paste-distributing roller, 11, said roller being arranged in a peculiar and novel manner, as will be hereinafter more fully explained. Above the paste-distributing roller 11 there is mounted a drum, 12, which drum is carried by the main shaft of the machine. Above the drum 12 there is mounted a guiding-roller, 13,

in connection with which there is arranged an idler, 14, said idler being carried by a lever, 15, which is pivotally mounted upon the shaft of the roller 13, the arrangement being such that by moving the lever 15 so as to throw the idler 14 into or out of mesh with a gear, 16, carried by the main shaft of the machine at one end of the drum 12, a rotary motion may be imparted to the roller 13; or said roller may be disconnected from the driving mechanism of the machine.

The roller 13 supports an endless felt belt, 17, which passes over a roller, 18, that is mounted in advance of the roller 13, and thence around a series of steam drying-rolls, 20, there being as many of these rollers as may be required to properly dry or extract the moisture from the web constituting the lining of the board, as will be hereinafter more fully explained.

After passing around the steam drying-rolls 20 in the direction of the arrows shown in connection with said rolls in Fig. 1, the felt belt 17 passes over a drum, 19, and then back under guiding-rolls 21, and over a guiding-roll, 22, to the roller 13. A canvas belt, 23, passes over a roller, 24, that is arranged directly above the roller 18, and then forward and about the steam drying-rolls 20, over guiding-rolls 25, under a guiding-roll, 26, and back to the roll 24. The drum 19 is provided with a gear, 27, which engages with a corresponding idle-gear, 28, and this gear 28 in turn engages with a small gear or pinion, 29, that is carried by a shaft, 30, upon which shaft there is mounted a drum, 31, of the same diameter as the drum 19, the arrangement being such that as the drum 19 revolves in the direction of the arrow shown in connection therewith the drum 31 will also be revolved in the direction indicated; but as the two drums are of about the same diameter, it will be readily seen from the construction described that the surface speed of the drum 31 will be much greater than that of the drum 19. In connection with the drum 31 there is arranged a second drum, 32, and the two drums 31 and 32 carry endless carrier-tapes, as 33 and 34, the tapes 33 passing over guiding-rollers 35 and 36, as indicated, while the tapes 34 pass over other guiding-rolls, 37 and 38.

The roll of paper from which the web 8,

which constitutes the lining, is drawn, is shown at 40, and the web passes from this roll over a guiding-roller, 41, beneath the drum 12, over the roller 13, and into the bite of the endless canvas belt 33 and the endless felt belt 17.

The shaft of the paste-distributing roll 11 is mounted in bearings 42, that are carried by two levers, 43, said shaft passing through apertures 44, that are formed in the end walls of the trough 10. The short arms of the levers 43 are pivotally connected to blocks 45, that are formed with flanges 46, said flanges being arranged between the arms 2 of brackets 47 and the end walls of the trough 10, while each of the arms 2 is provided with a set-screw, 3, through the medium of which the blocks 45 may be adjusted as desired. A shaft, 48, is mounted in proper bearings, 49, that are secured to the trough 10, and to either end of this shaft 48 there are secured levers 50, which carry eccentrics 51, the arrangement being such that when the levers 50 are thrown to the position in which they are shown in the drawings the paste-distributing roller will be carried upward, so that it will strike against the under face of the drum 12, or against the web of paper passing beneath said drum, a rotary motion being imparted to the paste-distributing roller 11 through the medium of a gear, 52, that is arranged to engage with the gear 16 of the drum 12. The idea of mounting the levers 43 upon movable fulcrums is to provide for an adjustment of the paste-distributing roller should one end of the roller sag or be too high, for by turning the set-screws 3 the roller may be quickly brought into accurate alignment with the drum 12.

In operation the idler 14 is thrown down into engagement with the gear 16 and the paste-distributing roller is raised, so that its gear 52 will engage with the gear 16 of the drum 12. The web 8 is then carried forward, as heretofore described, and, receiving a supply of paste from the roller 11, the sheets of straw or other form of board 5 may be applied to the pasted surface of the web as the web passes from the roller 13 to the roller 18. It will be understood that at this time, when the parts have been adjusted as described, the canvas belt and the felt will travel in the direction of the arrow shown in connection therewith in Fig. 1, so that immediately after the sheets 5 have been applied to the pasted web they will be carried forward between the canvas and the felt, and as the said canvas and felt advance, the sheets 5 and the web will pass between and over the rolls 20, and in so passing over the rolls will be thoroughly dried. Upon leaving the last roll, 20, the web and the sheets pasted thereto will pass into the bite of the rollers 31 and 32; but, as before stated, the roller 31 travels at a higher rate of speed than does the roller 19, over which the felt passes, so that immediately after entering the bite of the rollers 31 and 32 the lining-web is subjected to a strain, which results in the severing of the web at a point between the approach-

ing edges of the sheets 5, this operation being indicated in Fig. 5. Heretofore the sheets delivered from the drying-rollers were taken directly from said rollers; but as the said sheets are at this time exceedingly hot I have found it advisable to advance them some distance by means of such carrier-tapes as are shown at 33 and 34, thereby giving the sheets a chance to cool before they are taken by the fly-boy.

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

1. The combination, with the trough and the roller revolving therein, of two levers pivotally connected at their inner ends to the trough, having bearings between their ends for the shaft of the said roller and projecting at their free ends beyond the trough, and eccentrics having bearings on the trough and forming supports for the free ends of the said two levers, and means for operating the said eccentrics, substantially as set forth.

2. The combination, with the trough, the roller therein having a shaft projecting beyond the ends of the trough, of the two levers having bearings between their ends for the projecting ends of said shaft, vertically-adjustable bearings or blocks on the ends of the trough, the short arms of said levers pivoting on said bearings or blocks, and eccentrics on which the free ends of the levers rest, whereby both ends of the levers may be adjusted, or either pivoted end adjusted to keep the paste-roller perfectly true, substantially as set forth.

3. The combination, with the trough, the roller, and its shaft projecting beyond the ends of the trough, of the brackets 47, having arms 2 extending outward therefrom, and having the set-screws 3 3, the blocks or bearings 45 between the set-screws, and having vertical flanges 46 46, guided by the said arms 2, the levers 42, pivotally connected at their inner ends to the blocks or bearings, and having intermediate bearings, 42, for the ends of the roller-shaft, and means for adjusting the outer or free ends of the levers, substantially as set forth.

4. In a board-lining machine, the combination, with a paste-distributing mechanism, a drying and advancing mechanism consisting of guiding-rolls, drying-rolls, and endless belts, of a severing mechanism consisting of drums 31 and 32, that are arranged to be driven at a higher rate of speed than that imparted to the endless belts of the drying and advancing mechanism, substantially as described.

5. In a board-lining machine, the combination, with a paste-distributing mechanism, of a board and web associating, advancing, and drying mechanism consisting of endless belts, drying-rolls, and guiding-rolls, and a severing and cooling mechanism consisting of drums 31 and 32, arranged to be driven at a higher rate of speed than that imparted to the belts of the associating, advancing, and drying mechanism, and carrier-tapes that are mounted on

proper guiding rolls or pulleys and driven by the drums 31 and 32, substantially as described.

5 6. The combination, in a board-lining machine, of a paste-distributing mechanism, an associating, drying, and advancing mechanism consisting of endless belts, drying-rolls, and guiding-rolls, with a severing and cooling mechanism consisting of the following elements: gears 27 and 28, a smaller gear, 29, drums 31 and 32, tapes 33 and 34, guiding rolls or pulleys over which the tapes pass, the gear 27 being driven through the medium of one of the belts of the associating, drying, and

advancing mechanism, substantially as described. 15

7. In a board-lining machine, the combination, with a paste-distributing mechanism and an associating, advancing, and drying mechanism consisting of endless carrier-belts, drying-rolls, and guiding-rolls, of an idler, 14, arranged to connect the paste-distributing mechanism and the associating, advancing, and drying mechanism, substantially as described. 20

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Witnesses:

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