

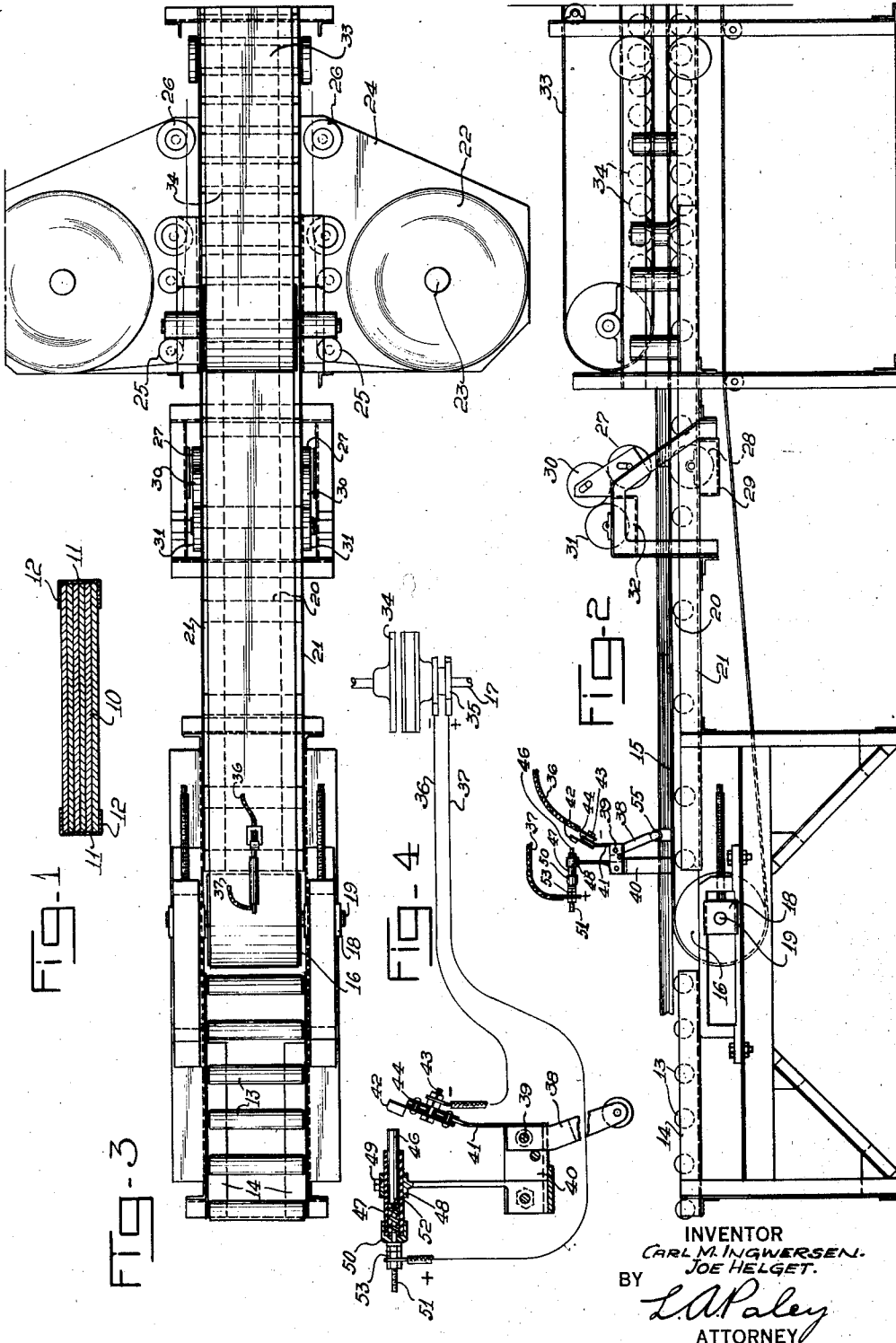
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C. M. INGWERSEN ET AL

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CONTROL DEVICE FOR CONVEYERS.

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INVENTOR
CARL M. INGWERSEN.
JOE HELGET.
BY
L. A. Paley
ATTORNEY

UNITED STATES PATENT OFFICE

CARL M. INGWERSEN, OF HAMMOND, INDIANA, AND JOE HELGET, OF PORT CLINTON, OHIO, ASSIGNORS TO UNITED STATES GYPSUM COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS

CONTROL DEVICE FOR CONVEYERS

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This invention relates to control devices for conveyers, and has reference more particularly to an electrical switch suitable for controlling the movements of the conveyer in a plaster board bundling machine.

In the patent of C. R. Birdsey, No. 1,730,113 of October 1, 1929, a machine is described for forming plaster board into bundles having a binding tape along the two opposite edges thereof. This machine is arranged to form 6 plaster boards into a bundle, but it sometimes happens that a workman inadvertently places 5 or less boards in a bundle, with the result that a bundle goes to a customer which is short of boards. In such a machine it is also desirable that the bundles be kept in a closely abutting end to end position, in order to insure a maximum efficiency of the machine.

An object of this invention, therefore, is to provide a mechanism for controlling the movement of the belt passing through the bundling machine so that the movement of said belt does not begin unless a bundle is presented which contains the required 6 boards.

Another object of the invention is to provide a control mechanism for a bundling machine belt so that the bundles of plaster board will be kept in closely abutting end to end position; also to improve conveying mechanisms in other respects hereinafter specified and claimed.

Reference is to be had to the accompanying drawings forming a part of this specification, in which

Fig. 1 is an end view of the bundle of plaster board made by the bundling machine,

Fig. 2 is an elevation of the feed end of the bundling machine, showing our improved control mechanism in position,

Fig. 3 is a plan view of the bundling machine shown in Fig. 2, and

Fig. 4 is a partly diagrammatic sectional elevation of our improved control mechanism.

As seen in Fig. 1, the bundle of plaster board made by the machine consists of a stack of preferably six boards 10, having a binding strip 11 of kraft paper or other suitable fibrous material on each opposite edge thereof. These binding strips have flaps 12 which are adhesively secured to the outer boards of the bundle.

The stack of boards 10 to be bundled, is laid by the workman on the rollers 13 of a roller conveyer 14, and pushed forwardly onto a conveyer belt 15 which passes around idler pulley 16 at one end of the machine, and around a similar drive pulley, not shown, at the opposite end of the machine, the latter being driven by a shaft 17 connected to a source of power, such as an electric motor. Take-up bearings 18 are provided for shaft 19, which supports the pulley 16 so that a uniform tension in the belt 15 may be maintained. The upper reach of the belt 15 is supported on rollers 20, which in turn are rotatably supported on the bundling machine. The strips of paper 10 are unwound from rolls of paper 22 which are supported on pins 23 mounted on brackets 24 of the machine. The strips of paper pass inwardly around rollers 25 and engage the bundle of plaster board passing through the machine. The bundles are guided in their movement by suitable guide rollers 26. Prior to the application of strip 11, paste or other adhesive is applied to the outer edge of the board by an upper paste roller 27, and a lower paste roller 28, the latter rotating in an adhesive pan 29. Adhesive is applied to the periphery of roll 27 by idler roll 30 in friction contact with roll 27 and with a roll 31, which rotates in an adhesive pan 32. A suitable belt 33 operates against the upper face of the bundles as they pass through the machine, so as to press the flaps 12 downwardly under the action of pressure rollers 34 which press on the lower reach of belt 33. It should be understood that the adhesive may be applied to

the paper strip before contacting with the bundle if it is desired, instead of applying the paste to the outer edges of the plaster-board.

In order to insure that no bundles having less than 6 boards, or other predetermined number of boards, pass through the bundling machine, we have provided a mechanism for moving the belt 15 with an intermittent motion. This mechanism consists of a clutch 34 mounted on the drive shaft 17, said clutch being provided with magnetic release mechanism 35 of standard design. Electric conductors 36 and 37 lead from the release mechanism 35 to an electrical switch. This switch consists of a lever 38 which is pivotally mounted on a pivot pin 39 secured to a bracket 40. An upper arm 41 of lever 38 is provided with a carbon or other block 42, which is electrically connected to the connector 36 by means of a bolt 43 which passes through the lever arm 41 and through insulating strip 44 which serves to insulate the bolt and block 42 from the lever arm 41.

The block 42 is arranged to swing into electrical contact with a metallic rod 46, which is slidably received in a fiber or other insulating tube 47, the latter being adjustably secured in a bracket bearing 48 by means of an adjusting screw 49. A cap 50 is secured to the rear end of fiber tube 47, and a stud 51 passes through said cap, said stud being secured integrally and concentrically with the rod 46. The tube 47 forms a spring cylinder for a spring 52 which surrounds the stud 51, and tends to urge rod 46 to the right, as seen in Fig. 4. The motion of stud 51 and rod 46 to the right under the action of spring 52 is limited by nuts 53, which also serve as a connecting and binding means for the end of connector 37.

The lower end of lever arm 38 has preferably a small diameter roller 55 which is adapted to drop down slightly below the level of the top board when disengaged from the stack of boards, and is also adapted to occupy a minimum space between bundles. Ordinarily a new stack of boards is pushed under the roller 55 into abutting position with the last stack of boards, the elevation of the roller causing the continued movement of the belt 15. If one board is missing from the stack of boards, the lever 38 will not be moved in a counter-clockwise direction as seen in Figs. 2 and 4 sufficiently to cause the block 42 to contact with block 46, and the belt 15 will, therefore, not start to move until the missing board has been supplied. Furthermore, since the distance between the ends of the stacks of boards is so small, very little of the binding tape 11 will be wasted between the bundles, and an efficient operation of the bundling machine will result.

We would state in conclusion that while

the illustrated example constitutes a practical embodiment of our invention, we do not wish to limit ourselves precisely to these details, since manifestly, the same may be considerably varied without departing from the spirit of the invention as defined in the appended claims.

Having thus described our invention, we claim as new and desire to secure Letters Patent:—

1. In a conveying system, an endless conveyer belt adapted to move stacks of flat elements, means for causing the intermittent movement of said conveyer belt, and automatic means for preventing the movement of said conveyer belt when said stacks contain less than the predetermined number of elements.

2. In a bundling machine adapted to bind stacks of flat elements into bundles, an endless conveyer adapted to move said stacks of elements with an intermittent motion, driving means for causing the movement of said conveyer, a lever pivotally mounted adjacent said stacks of elements, and means associated with said lever adapted to prevent the actuation of said driving means and the motion of said conveyer when the stack of elements contains less than a predetermined number of elements.

3. In a bundling machine, an endless conveyer adapted to move with an intermittent motion and convey stacks of flat elements, means for applying binding strips to said stacks of elements to bind said stacks into bundles, an electrical switch arm pivoted to swing into contact with the surfaces of said stacks of elements, driving means for said conveyer, and means connecting said switch arm to said driving means and adapted to prevent the motion of said conveyer and stacks of elements when said stacks contain less than the predetermined number of elements.

4. In a conveyer mechanism, an endless conveyer adapted to move stacks of flat elements, means for driving said conveyer, a lever pivotally mounted for frictional contact with said stacks of elements, and connecting means between said lever and said driving means, said lever being adapted to be actuated when a stack of elements is presented thereto so as to start the movement of said stacks of elements and conveyer.

5. In a bundling machine for plaster boards, means for moving stacks of plaster boards along a path, means for applying binding strips to the edges of said stacks of plaster boards to form bundles, and automatic means for stopping the movement of said stacks of plaster boards, when a stack of plaster board contains less than a predetermined number of plaster boards.

6. In a bundling machine, means for moving stacks of plaster boards along a path

and applying binding strip to said stacks of plaster boards to form bundles, a switch arm pivotally mounted to swing into the path of travel of said stacks of plaster boards and to contact therewith, an electrical contactor associated with said switch arm, and means associated with said contactor for stopping the movement of said stacks of plaster boards when a stack contains less than a predetermined number of plaster boards.

CARL M. INGWERSEN.
JOE HELGET.

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