

THE STATE OF TEXAS,
COUNTY OF _____

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Fig. 2.

Fig. 3.

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SHEET-CONVEYING MACHINE.

1,052,007.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, BENJAMIN LEVI, a citizen of the United States, and a resident of New York, county and State of New York, have invented new and useful Improvements in Sheet-Conveying Machines, of which the following is a specification.

The improvements in belt conveyers for sheet material relate particularly to a continuously moving bed or feeding surface composed of separate or independent sections and the arrangement of the belts constituting the sections, whereby the sheet material being carried, in whatever condition it may be, will be properly transferred from one section of the conveyer to another without distortion or injury.

In the application of this invention to machines designed to fix sensitized sheet material or wash and dry the same by passing it through appropriate tanks and chambers each section of the belt conveyer, as it is fitted to act in only one of the parts of the machine, will be submitted to only that part of the process incident to the tank or chamber in which it is located.

Conveyers embodying this invention have a continuously longitudinally moving bed or surface and are practically laterally continuous so as to properly support and convey the material in a moist or softened condition, and each section is composed of a number of narrow belts carried by suitably arranged rollers; the main feature of the invention being the belts carrying and guiding rollers at the adjacent ends of the different sections of the conveyer and the arrangement of the belts thereon. This feature comprises three rollers, arranged parallel, over the central one of which the alternating belts of the two sections pass and the intermediate belts of each section pass over one of the outer rollers, whereby any material carried by a section will before its leading edge leaves said section be on and controlled by the belts of the next section of the conveyer. This with other features of construction will be more fully described by reference had to the accompanying drawings in which:—

Figure 1 illustrates an application of the invention to a two section or two part conveyer, showing one section arranged to carry sheet material, as paper, through a washing tank and the other one arranged to then convey the sheet material through a drying

chamber; Fig. 2 is a front view of the portion of the conveyer showing the rollers which control the adjacent ends of the two sections, omitting the devices in front of the rollers and the conveyer belts, and Fig. 3 is a transverse section on the line 3, 3, Fig. 1, showing a guide and draining device for the belts of the washing section.

Referring to Fig. 2 for a clear understanding of the principal feature of the invention *a*, *b* and *c* represent three rollers constituting the controlling and transmitting means at the adjacent ends of two sections of the conveyer, fitted parallel to rotate in suitable bearings in the frame or case of the apparatus. Over the central roller *b* pass the alternate belts *d* of the washing section of the conveyer, while the interposed belts *e* pass over the roller *c*. The alternate belts *f* of the drying section also pass over the roller *b* between the end of the belts *d*, and the interposed belts *g* of this section pass over the roller *a*. It will be seen that this staggering of the belts of the two sections provide for a practically continuous moving surface consisting of longitudinal sections, so that sheet material will in passing from one of the sections to the other be under control of both sections of belts. The belts *d* and *e* pass from the rollers *b* and *c* to the guide roller *h* located in the tank *i*, and from this roller to the feeding roller *j* at the upper part of the tank, and hence under the guide roller *k*, also in the tank, back to the rollers *b* and *c*. The belts *f* and *g* of the upper section pass into the drying chamber *l* and are therein guided over a roller *m* at the upper part, a roller *n* at the lower part and a roller *o* at the central part of the chamber, and from roller *o* they return to the rollers *a* and *b*. This chamber may be heated by means of a gas stove *p* in its lower end or by suitably arranged steam pipes, as indicated by the dotted circles *q*.

To hold the paper or other sheet material against the belts *d* and *e* of the washing section cords *r* are provided which pass over a roller *s*, forming in conjunction with the roller *j* the feeding end of the system, under the roller *k*, over the roller *t* and back to the roller *s*. The roller *t* is in front of the staggered portions of the belts of the two sections, and around it also pass cords *u*, which press and hold the sheet material against the drying section of the conveyer.

They pass from roller *t* over the roller *m* and down around a roller *v*, hence over guide rollers *w* and *x* back to the roller *t*. The rollers *n* and *v* with the belts and cords traveling with them constitute the discharge end of the system. Rollers *y* and *z* are arranged to flex the ascending and descending parts of the belts *f* and *g* and cords *u* to insure the proper gripping of the sheet material between them.

Located in the path of the belts *d* and *e* as they leave the tank *i* is a guide stripper 1 having grooves 2, whose depth determined by the roller 3 in front of the belts, allows the belts to pass freely through them, the belts being submitted to sufficient pressure to drain or scrape as much as possible the washing fluid from the belts. The narrow tongues 4 between the grooves act as guides for the belts.

Any of the large belts carrying rollers may be connected to any suitable source of power, as for instance the central roller *b*, but the preferred arrangement is to provide the shafts of the rollers *a*, *b* and *c* with gear wheels 5, 6 and 7 respectively, into which mesh the intermediate connecting gears 8 and 9, to one of which a belt driven pulley 10 may be attached.

I claim—

1. A conveyer for sheet material, comprising sets of belts arranged end to end, each set consisting of a plurality of narrow belts, three parallel rollers at the adjacent ends of two sets of belts over the central one of which the alternating belts of two adjoining sets of belts pass, and the intermediate belts of each of the sets passing over one of the outer rollers, thus, longitudinally and laterally, constituting a practically continuous conveying surface.

2. A conveyer for sheet material, com-

prising sets of belts arranged end to end, each set consisting of a plurality of narrow belts, three parallel rollers at the adjacent ends of two sets of belts over the central one of which the alternating belts of two adjoining sets of belts pass, and the intermediate belts of each of the sets passing over one of the outer rollers, thus, longitudinally and laterally, constituting a practically continuous conveying surface, and driving means connecting the three rollers adapted to impart to them a uniformity of peripheral motion.

3. A conveyer for sheet material, comprising two sets of belts arranged end to end, each set consisting of a plurality of narrow belts, three parallel rollers at the adjacent ends of the two sets of belts over the central one of which the alternating belts of the two sets of belts pass, with the intermediate belts of each set passing over one of the outer rollers, and a guide roller controlling the other ends of the belts of each set.

4. A sectional conveyer for sheet material, comprising sets of narrow belts arranged end to end with the belts of the adjacent sets overlapping, three parallel rollers the central one of which carries some of the belts of the two sets, and the outer rollers carry intermediate belts of the two sets of belts, whereby a continuity of the feeding surface between sections of the conveyer is maintained.

In testimony whereof, I have hereunto subscribed my name this 3rd day of May, 1912.

BENJAMIN LEVI.

Witnesses:

ARTHUR E. BLATZ,
ERNEST D. CONDIT.