C. S. JENNINGS.

CONVEYING APPARATUS FOR NEWSPAPERS AND THE LIKE.

APPLICATION FILED JAN. 8, 1915.

1,285,720. Patented Nov. 26, 1918.

Fig. 3

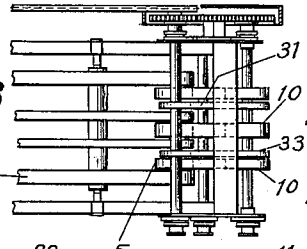


Fig. 2

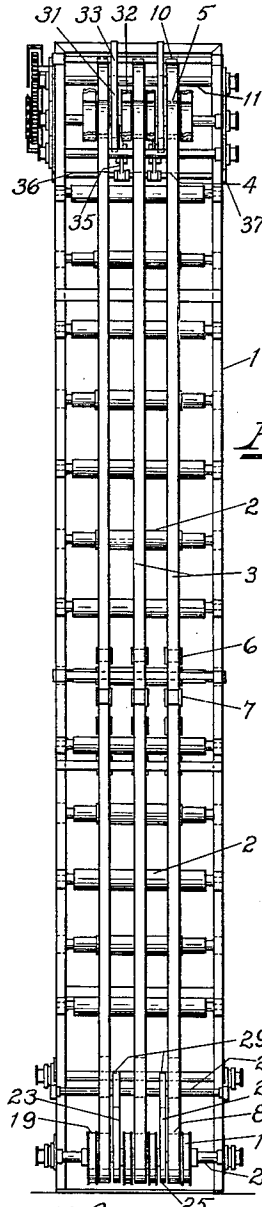


Fig. 1

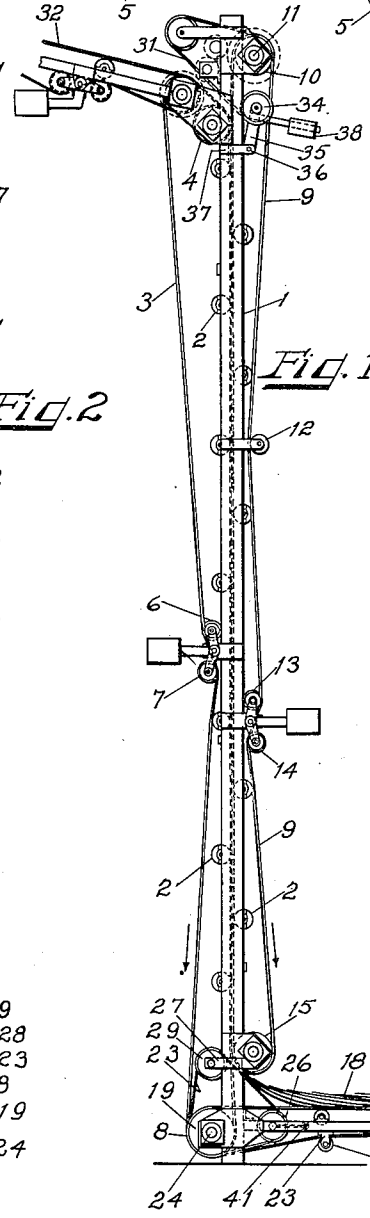


Fig. 4

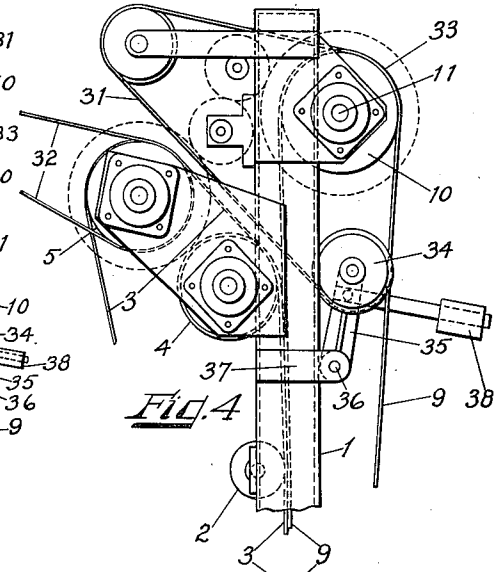
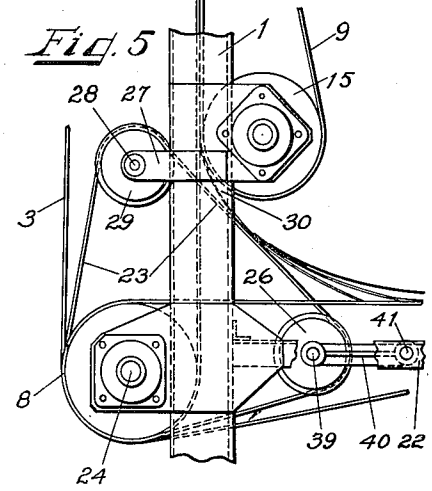
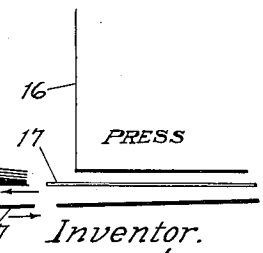


Fig. 5





Witnesses.

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UNITED STATES PATENT OFFICE.

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CONVEYING APPARATUS FOR NEWSPAPERS AND THE LIKE.

1,285,720. Specification of Letters Patent. Patented Nov. 26, 1918.

Application filed January 8, 1915. Serial No. 1,106.

To all whom it may concern:

Be it known that I, CHESTER S. JENNINGS, a citizen of the United States, residing at Forest Hills, Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Conveying Apparatus for Newspapers and the like, of which the following is a specification.

This invention relates to newspaper elevators and the like and has for one of its objects the provision of means in devices of this character for aiding the papers or like articles to turn corners without crumpling or becoming mussed in any way.

It is also aimed to prevent smearing of the fresh ink upon newspapers coming from the press, which frequently occurs in devices similar in character to that herein described, more especially when the papers are directed from the substantially horizontal plane, in which they travel from the press, into the vertical plane in which they travel toward the distributing room, or the like.

These and other objects of my invention will be hereinafter set forth and the novel means and combinations of elements whereby said objects may be attained will be more particularly pointed out in the claims appended hereto.

In the accompanying drawing which forms a part hereof and in which like reference characters designate like parts in the respective views, I have exemplified a preferred embodiment of my invention; but as I am aware of various changes and modifications which may be made herein without departing from the spirit of my invention, I desire to be limited only by the scope of said claims.

In the drawing:—

Figure 1 is a side elevation of an elevator constructed in accordance with the principles of my invention.

Fig. 2 is a front elevation of the same.

Fig. 3 is a plan view of said elevator.

Fig. 4 is a detail elevation of an upper portion of the construction shown in Fig. 1, and

Fig. 5 is a similar view of a lower portion of said elevator.

The elevator comprises a framework 1 which may extend upwardly from the press room floor to a considerably higher level at which it is desired to discharge the papers coming from the press.

Between the uprights of the frame 1 are preferably disposed a series of rollers 2, arranged in staggered relationship in a known manner. Belts 3 or other suitable flexible elements comprehended by the term belts, extend up between the rollers 2 and, as shown in Fig. 1, are flexed forward over idlers 4, and pass thence around idlers or pulleys 5 through nearly 180 degrees and down past the idlers 6 and 7 of pivoted tensioning devices, to the pulleys 8 at the lower level, around which the said elements 3 again bend through substantially 180 degrees, completing the belt circuit.

Similarly between the rollers 2, and if not in actual contact with the belts 3, at least in substantially the same vertical plane thereof, are flexible elements or belts 9, which are passed around the pulleys 10, mounted on the shaft 11 adjacent the upper extremity of the frame 1; each of the elements 9 thereafter passing downwardly past an idler 12 and the pulleys 13 and 14 of a second belt tightener, to one of the pulleys 15, at the lower level, around one of which each of said elements extends, completing the circuit of this second series of belts.

Papers being delivered by the press 16 are deposited upon a horizontal multiple belt 17 or similar conveying device, as indicated at 18, and since the carrying surface of this belt moves in the direction of the arrow adjacent the same, the papers are conveyed toward the vertical plane in which travel the inner sides of the belts 3 and 9.

Heretofore it has been common practice to extend the multiple belt 3 partly around the pulley or pulleys 15 and to use this belt as the means for conveying the papers from the press, or at least to extend it part way theretoward in a substantially horizontal or slightly upwardly inclined plane.

This caused the papers to be somewhat over firmly gripped between the belt surfaces on opposite sides thereof, as said papers passed the pulleys 15, with the result that the papers, being stacked against each other, were apt to be shifted slightly laterally with respect to each other while so under pressure and when passing around these pulleys, which caused the fresh ink thereon to smear or smudge.

In the present construction, however, the belts or elements 3 are preferably extended downwardly directly toward and around the

pulleys 8, as above described, while the entirely separate and distinct conveying elements 17, may extend forwardly and pass around pulleys 19; the latter preferably alternating with the pulleys 8 upon which ride the belts 3.

The respective sides of the belts 17, preferably ride upon rolls 20 in a known manner; but since the construction of belt conveyers of this description is well known, no further attempt will be made herein to describe the framework 22 nor brackets 23 thereof in which are journaled the rolls 20 above referred to. Similar remarks apply to the journal brackets and like parts of the vertical conveyer, the belts of which have been designated 3 and 9.

I do desire, however, to direct particular attention to the auxiliary belts 23 shown in Figs. 1 and 2, since these more directly concern the present invention. These belts 23 are preferably quite narrow and there may be but few of them. In the present case I have shown but two which are disposed immediately adjacent the inner edges of the outer belts 3.

The shaft 24 which carries the pulleys 8 and 19 also preferably carries pulleys 25, around which belts 23 pass.

The horizontal conveyer frame elements 22 carry pivotally mounted idlers 26, hereinafter referred to, and the uprights of the vertical frame 1 are provided with brackets 27 in which is journaled the shaft 28 upon which pulleys 29 are mounted; the belts 23 passing around the idlers 26 and also around the said pulleys 25 and 29. All of the pulleys upon the shaft 24 are of the same diameter and are fixedly secured thereto and this shaft may be driven either by the belts 17 or by the belts 3.

It results, therefore, that the belts 17, 3 and 23 move with equal linear velocity, and when the papers 18, which are being conveyed by the belts 17, reach the oblique sides of the belts 23, the forward edges of said papers are gently and evenly directed upwardly at an angle to the uprights 1; this angle preferably being about 45°.

When the forward edges of these papers reach the belts 3 there is a further change of direction in the course of travel of said papers, preferably again of about 45°

In this manner the papers which formerly had traveled in a substantially horizontal plane are now caused to move upwardly in a vertical plane; the papers being held with sufficient firmness between the adjacent sides of the belts 3 and 9 to prevent them from slipping downwardly with respect to each other; but, nevertheless, not being subjected at any time to sufficient compressive effort to cause them to slide upon each other and smear the ink; the wet ink obviously acting more or less as a lubricant to permit of such lateral movement of papers with respect to each other when undue pressure is applied.

Particular attention is directed to the space 30, best shown in Fig. 5, which is provided between the belts 23 and the pulleys 15, and further to the fact that the pulleys 26 and 29 which support these oblique sides of the belt 23 are each spaced sufficiently far from the pulleys 15 to permit the said oblique sides to yield quite freely when a considerable thickness or pile of newspapers passes into engagement with the ascending limbs of the belts 3; the portions of these latter belts, opposite the pulleys 15, also being free to yield forwardly and thus relieve any excessive pressure on the papers; the space between the pulleys 8 and 15 permitting of this yielding or lateral movement of said belts 3.

A somewhat similar arrangement is provided at the upper end of the elevator, auxiliary belts 31 (preferably disposed, with respect to the belts 3, in correspondence with the belts 23) presenting oblique sides thereof to the upper edges of the ascending papers, whereby to divert these papers into a plane disposed at an angle of about 45° from plumb.

The belts 3 of course support the papers as they travel through this oblique plane and belts 32, corresponding to the belts 17, above described, serve to convey said papers from the pulleys 5 forwardly to the desired unloading point.

The belts 31 are driven by pulleys 33 fixedly mounted upon the shaft 11 which carries the pulleys 10, above referred to, and move at the same speed as belts 3 and 9; the pulleys 10 and 33 being preferably of the same diameter.

As the belts 31 should be kept moderately taut in order to exert the desired light pressure upon the upper sides of the papers as they pass through the oblique plane above referred to, it is desirable to provide some means for tensioning them. This may be conveniently done by passing said belts 31 around idlers 34 each mounted upon an arm 35 loosely pivoted upon a shaft 36 which extends between brackets 37 carried by the uprights 1; suitable weights 38 being connected to these arms and being adjustable thereon in order to afford the requisite tension.

Here again it will be noted that even though an unduly great thickness of papers be passed up between the belts 3 and 31, still, by reason of the laterally displaceable, oblique sides of the belts 31 which contact with the upper sides of such papers, undue pressure is avoided; the belts 31 merely yielding sufficiently to accommodate the increased thickness of papers therebeneath and the weights 38 being correspondingly moved slightly counter-clockwise.

For the lower oblique belts 23, in place of using a weighted take-up such as that used in connection with the belts 31, it has been found that sufficient tension may be given to said belts 23 by simply mounting the idlers 26 thereof loosely upon a shaft 39 which extends between arms 40, one upon either side of the horizontal conveyer; said arms 40 being pivoted to the framework 22 of this conveyer as at 41. When, therefore, an excessively thick bundle of papers passes between the oblique belts 23 and the pulleys 15, the arms 40 are rotated clockwise slightly and the weight of the pulleys 26 is sufficient to cause said arms to drop back to their normal positions and to thereby straighten out the oblique sides of the belts 23 when such papers have moved into the vertical plane.

In general the operation of the device is as follows:—

Papers are delivered from the press on to the horizontal conveyer or belt 17 and are carried by this latter toward the elevator until their forward edges either bear directly against the oblique belts 23, or are, through the intermediacy of papers therebeneath, pressed upwardly by belts 23 until these papers are caused to move in an oblique plane toward the under sides of the pulleys 15. When these forward edges of the papers encounter the ascending limbs of the belts 3 their direction of movement is again changed; this time into a vertical plane and said papers thereafter move upwardly, pressed moderately well together between the belts 3 and 9; the staggered rollers 2 coacting with these belts in a known manner to prevent downward slippage of the papers.

When said papers have been elevated until their forward edges are brought into engagement with the under or oblique sides of the belts 31, the papers are gently but firmly again turned through 45° and are then allowed to pass from between belts 3 and 31 on to the upper conveyer belts 32.

There is, hence, practically no likelihood of the papers becoming mussed or rumpled as their direction of movement is successively changed during their course through the apparatus; this freedom from the likelihood of injuring the papers being due to the provision of the auxiliary and yielding guide elements 23 and 31.

Furthermore, it has been found that by using a conveyer constructed in the manner described smearing or smudging of the printed matter is practically eliminated.

In this connection it may be added that even a very slight smearing of the fresh ink upon newspapers is sufficient to render it rather difficult to read the printed matter and such blurring of the print is of course a feature which the publishers of newspapers seriously object to. While, therefore, modern newspaper presses have been developed to a high state of efficiency and are capable of turning out printed matter which is clean and quite free from blur or other imperfections, the elevating or lowering apparatus for handling papers as they come from the presses has in many cases proven a source of annoyance, and the present invention is therefore believed to mark a distinct step forward in this art.

Having thus described my invention what I claim is:—

1. A conveyer for elevating and delivering freshly printed newspapers or like articles in the undisturbed arrangement in which the articles are received as from the press, having therein a lateral conveyer upon which the articles rest by gravity in their arranged relation, and a vertical elevating conveyer comprising opposed belts and means for holding the belts toward each other to hold and lift the articles therebetween by friction, and delivery means receiving from the elevating conveyer, in combination with one or more auxiliary belts and means for driving them in a direction crossing the angle between the lateral and elevating conveyer, whereby to enter the articles as delivered by the lateral conveyer into the elevating conveyer without disturbing their arrangement and without causing them to be bent around a circular path of travel under the pressure applied in the elevating conveyer.

2. In apparatus for handling superposed freshly printed newspapers and the like, a substantially vertical elevator comprising opposed elevating belts, adjacent article engaging parts of which move upwardly together with the same linear velocity, and means to apply lateral pressure to said parts to prevent displacement of said articles out of the relationship established therebetween, while said articles are being carried up between said parts, in combination with means for receiving and moving said articles away from said parts while maintaining said established relationship between said articles, said elevator having a set of obliquely disposed guiding parts which travel along with the articles being delivered to said receiving means and gradually separate laterally therefrom, said guiding parts where they are in contact with said articles, being above the latter and being separated therefrom in part at least by the action of gravity on the articles therebeneath and means, mounted for movement to and fro in a determined path, to yieldingly support said set of guiding parts at one end thereof, to accommodate variations in thickness of said articles.

3. A conveyer for freshly printed papers or like articles, having therein an elevating conveyer adapted to lift the articles in arranged position by pressure upon the articles of opposed elements of the elevating con-

veyer, a laterally moving delivering conveyer and auxiliary conveyer means, and means for moving said auxiliary conveyer means in a direction crossing the angle between the elevating conveyer and the delivery conveyer near the delivery end of the elevating conveyer, whereby to direct said articles in their arranged relation from their upward path to their lateral path without subjecting them to being bent while under said pressure.

4. In conveyers for newspapers and the like, an elevating conveyer comprising opposed belts between which material to be elevated is frictionally held and conveyed, and pulleys upon which said belts ride, the lower pulley of one of said belts, which engages one side of a mass of the material to be elevated, being at a lower level than the corresponding pulley of an opposing one of said belts which engages the other side of said mass, to afford a laterally yielding part in said first mentioned belt, and means to convey said material toward said elevating conveyer and deliver it against said laterally yielding belt part, said conveying means having a portion thereof which supports said material disposed substantially directly under and adjacent to said corresponding pulley of the opposing belt, to facilitate the operative emplacement of said material in said elevating conveyer.

5. In conveyers for newspapers and the like, an elevating conveyer comprising opposed belts between which material to be elevated is frictionally held and conveyed, and pulleys upon which said belts ride, the lower pulley of one of said belts, which engages one side of a mass of the material to be elevated, being at a lower level than the corresponding pulley of an opposing one of said belts which engages the other side of said mass, to afford a laterally yielding part in said first mentioned belt, and means to convey said material toward said elevating conveyer and deliver it against said laterally yielding belt part, said conveying means also having a laterally yielding belt part disposed substantially directly under and adjacent to said corresponding pulley of the opposing belt, both of the yielding parts aforesaid being laterally displaceable in accordance with the varying thickness of the material being passed around said last mentioned pulley.

6. In conveyers for newspapers and the like, an elevating conveyer comprising opposed belts between which material to be elevated is frictionally held and conveyed and pulleys upon which said belts ride, the lower pulley of one of said belts, which engages one side of a mass of the material to be elevated, being at a lower level than the corresponding pulley of an opposing one of said belts which engages the other side of said mass, to afford a laterally yielding part in said first mentioned belt, and means to convey said material toward said elevating conveyer and deliver it against said laterally yielding belt part, said conveying means also having a laterally yielding and obliquely disposed belt part substantially directly under and adjacent to said corresponding pulley of the opposing belt, both of the yielding parts aforesaid being laterally displaceable in accordance with the varying thickness of the material being passed around said last mentioned pulley.

7. In conveyers for newspapers and the like, opposed sets of narrow belts between which material to be conveyed is frictionally held and advanced by the movement of said belts, auxiliary belts interposed between the belts of one of said sets and having sides thereof angularly disposed with respect to the line of travel of said opposed belts, and yieldingly mounted means in contact with said auxiliary belts, for holding said auxiliary belts under tension, said means being movable out of the position which it normally occupies substantially in proportion to the thickness of the material being delivered from said auxiliary belts to said opposing belts.

8. In conveyers for newspapers and the like, opposed sets of narrow belts between which material to be conveyed is frictionally held and advanced by the movement of said belts, auxiliary belts interposed between the belts of one of said sets and having sides thereof angularly disposed with respect to the line of travel of said opposed belts, and yieldingly mounted rotatable means in contact with said auxiliary belts, for holding said auxiliary belts under tension, said means being movable out of the position which it normally occupies substantially in proportion to the thickness of the material being delivered from said auxiliary belts to said opposed belts.

In testimony whereof I have affixed my signature in the presence of two witnesses.

CHESTER S. JENNINGS.

Witnesses:
ETHEL M. JORDAN,
MAUD K. PORTER.