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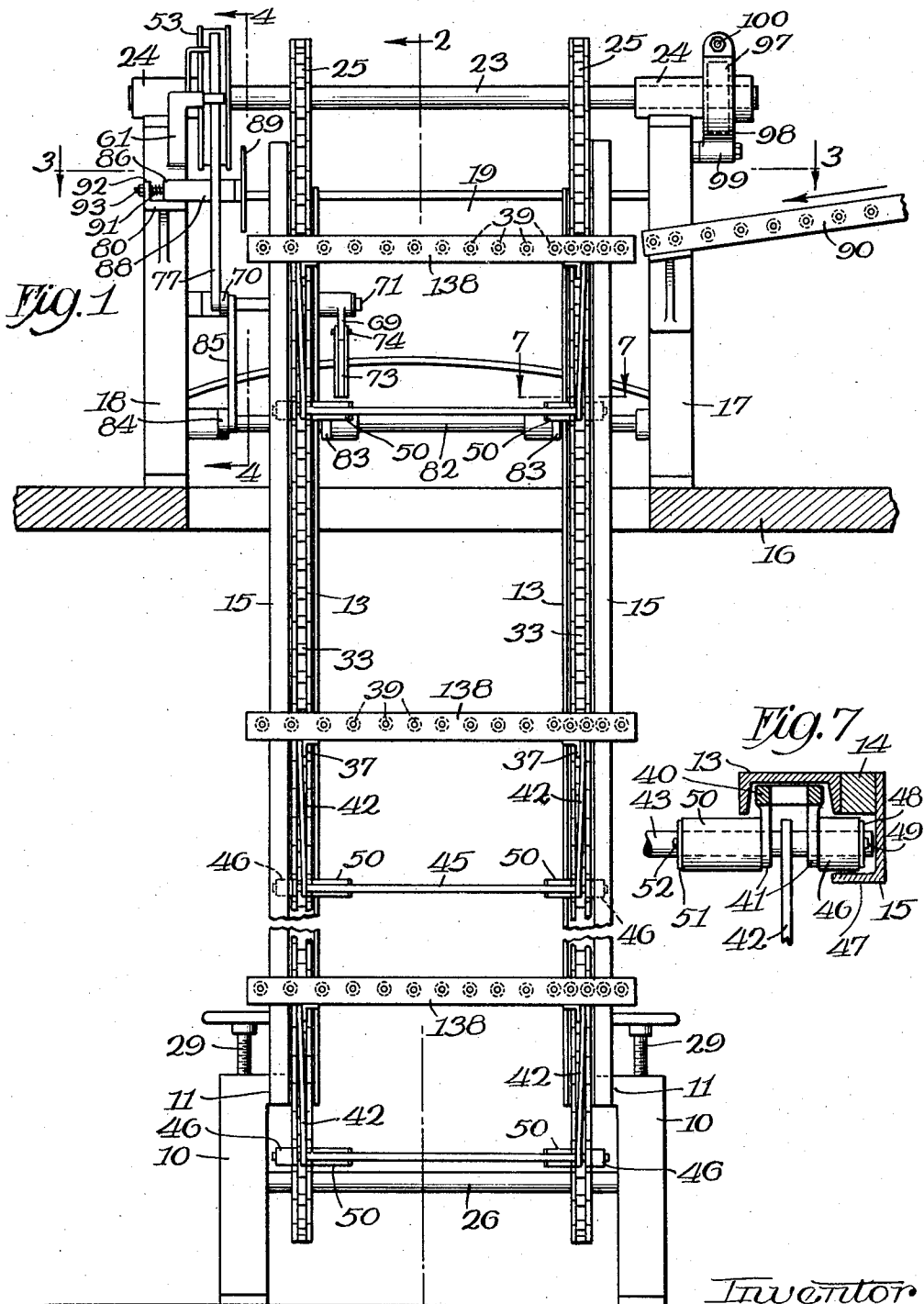
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APPARATUS FOR HANDLING PACKAGES AND THE LIKE

Filed March 19, 1928

3 Sheets-Sheet 1



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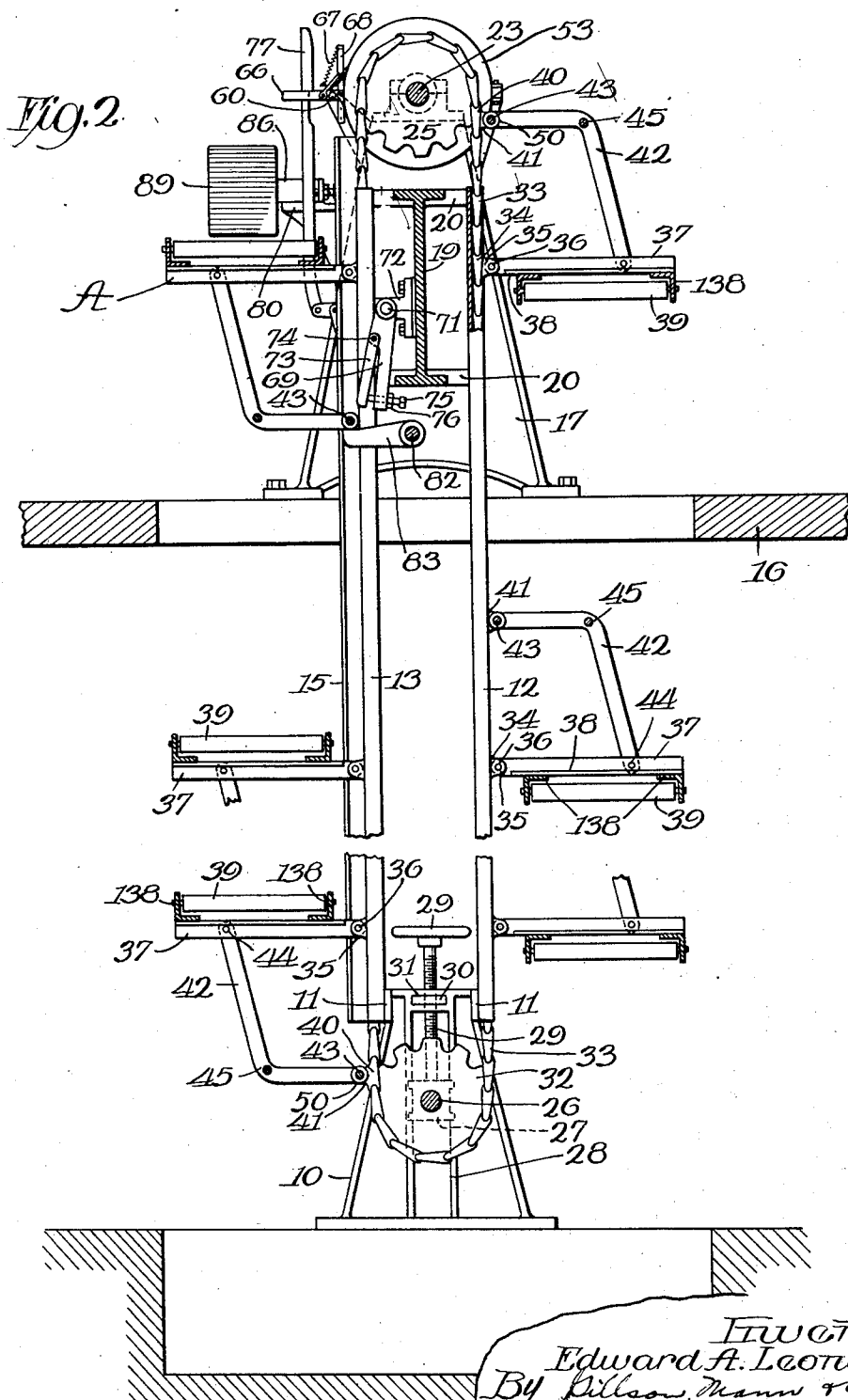
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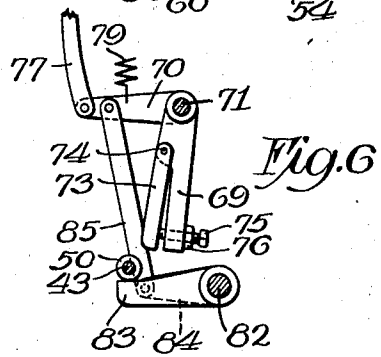
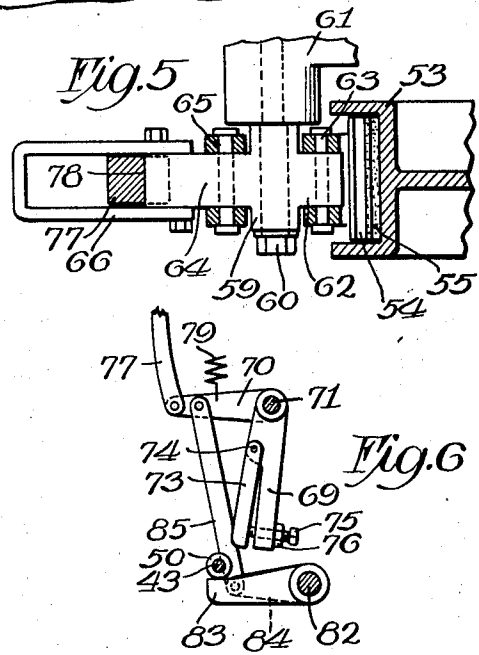
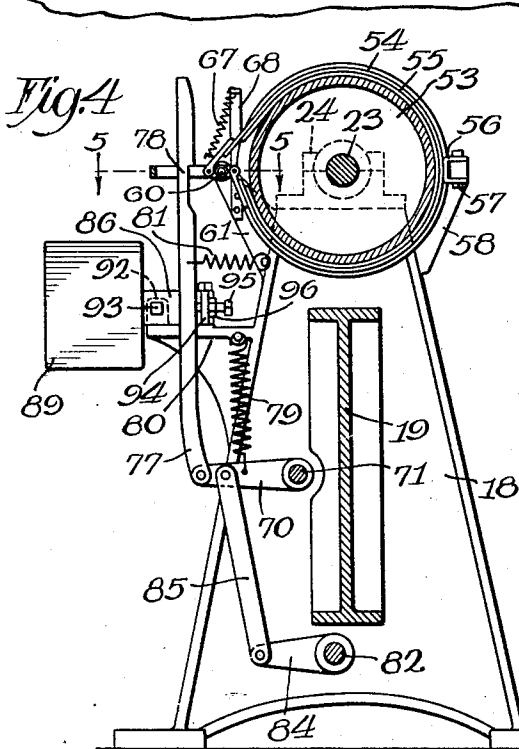
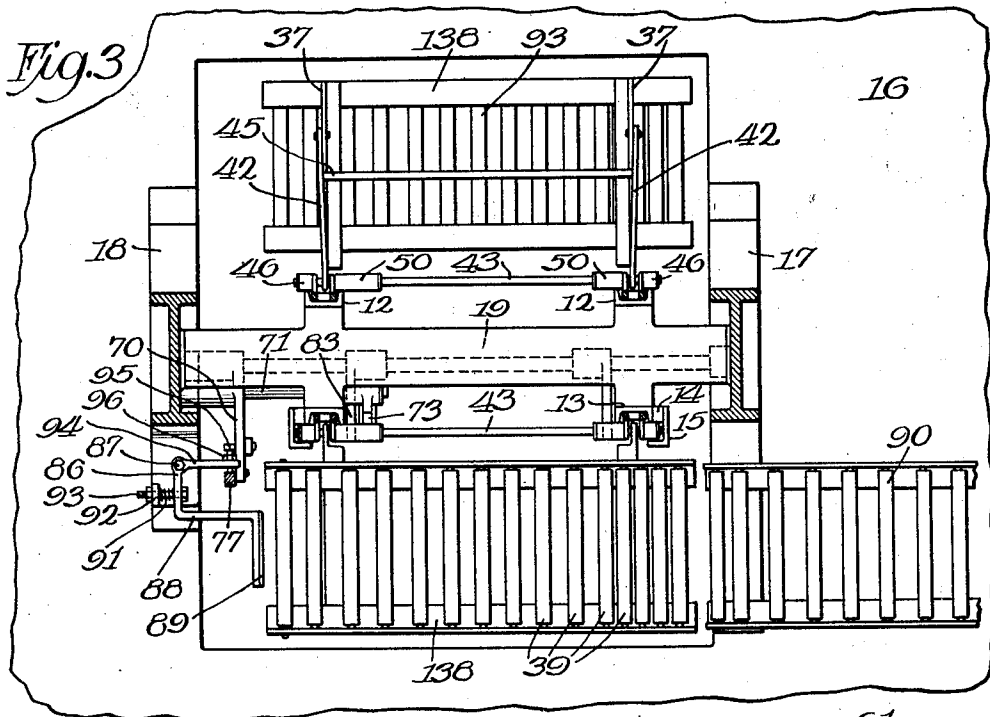
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

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APPARATUS FOR HANDLING PACKAGES AND THE LIKE

Application filed March 19, 1928. Serial No. 262,702.

This invention relates to apparatus for handling packages, and has for its principal objects to provide a gravity conveyor that will start automatically upon the receipt of the load and stop automatically after a selected movement, in which the operation will be smooth and the stops will be made easily and in correct position.

Further objects and advantages of the invention will become apparent as the disclosure proceeds and the description is read in connection with the accompanying drawings showing the preferred embodiment of the invention for handling bundles of shingles under the particular conditions existing at the plant where such installation has proved to be of great reliability and effected much economy.

In the drawings,

Fig. 1 is a front elevation of the apparatus, the upper floor or deck being shown in section;

Fig. 2 is a vertical sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a vertical sectional view taken on the line 4—4 of Fig. 1;

Fig. 5 is a horizontal sectional view taken on the line 5—5 of Fig. 4;

Fig. 6 is a side elevation of a part of a brake-applying mechanism, other parts of which are shown in Fig. 4; and

Fig. 7 is an enlarged sectional view taken on the line 7—7 of Fig. 1.

This specific illustration and the correspondingly specific description are used for the purpose of disclosure only and not intended to indicate that the invention is limited to the particular form or arrangement, or the particular use, the term package being used herein in a broad sense and it is contemplated that the apparatus will be embodied in other forms suited to the conditions under which other packages are to be handled.

The supporting structure of the apparatus includes two cast frames 10—10 (Fig. 1) each having inwardly directed arms 11—11. Secured to and extending upwardly from these arms are four columns. The two rear col-

umns are formed by channels 12—12 (Fig. 3) and the two front columns are formed by similar channels 13—13, bars 14—14 and angles 15—15.

On the top deck or floor 16 are two other cast frames 17—18 connected by an I-shaped web 19 (Fig. 2) to the flanges 20 of which the upper ends of the columns are secured.

A brake shaft 23 (Figs. 1, 2 and 4) is journaled in pillow blocks 24 at the top of the frames 17 and 18, and a pair of sprockets 25 are fixed on the shaft in spaced relation to each other and the pillow blocks 24.

An idle shaft 26 (Figs. 1 and 2) is journaled in bearings 27 slidable in guides 28 in the frames 10—10, and adjusted to position by screws 29 swiveled to the bearings and threaded in nuts 30 mounted in slots 31 in the frames 10—10. Sprockets 32 are fixed to the shaft 26 in alignment with the sprockets 25. The conveyor belt is of the link variety composed of two chains 33 running on the sprockets 25 and 32.

Selected links 34 (Fig. 2) of the chains are equipped with perforated lugs 35 through which the shafts 36 extend. Angle bars 37 each having one flange cut away at 38 are pivoted on the shafts 36 and connected by other angle bars 138 to form flight frames equipped with rollers 39.

Other selected links 40 of the chains are provided with lugs 41 to which bent braces 42 are pivoted by a shaft 43, the opposite ends of the braces being pivoted to the angle bars 37 by bolts 44. Rods 45 extending between the corresponding braces serve as stays.

Guide rollers 46 (Fig. 7) on the ends of shafts 43 cooperate with one flange of the channels 12 and 13 and with the flange 47 on the angle 15 to guide the belt. These rollers 46 are held in place on the shaft by washers 48 and pins 49.

Guide rollers 50 somewhat longer than the rollers 46 mounted on the shafts 43 inwardly from the lugs 35, are held in place by washers 51 and pins 52 and cooperate with another flange of the channels 12 and 13 to guide the belt.

A flanged brake drum 53 (Figs. 1, 2 and 4) is fixed to the shaft 23 just inside the left

frame 18 in Fig. 1. A band brake 54 equipped with suitable friction lining 55, cooperates with the brake and is supported by a clip 56 secured by a bolt 57 to an arm 58 on the left frame 18.

5 A brake lever 59 (Figs. 4 and 5) fulcrumed on the shaft 60, carried by the arm 61 on the left frame 18 has one arm 62 pivoted by a bolt 63 to one end of the band brake and the other arm 64 pivoted by the bolt 65 to the other end of the band brake. The arm 64 is equipped with a loop 66, and a spring 67 extending between the arm 64 and an arm 68 on the left frame 18 tends constantly to release the brake.

10 The brake applying means includes a lever composed of an arm 69 and an arm 70 (Figs. 2, 4 and 6) mounted on a shaft 71, journaled in brackets 72, bolted to the web 19. The arm 69 is equipped with a contact piece 73 pivoted at 74 and adjusted by a bolt 75 held in position by check nut 76. A link 77, pivoted at one end to the arm 70, has a catch 78 projecting through the loop 66 and adapted to engage the arm 64 of the brake lever 59. A spring 79 connected with the arm 70 and a bracket 80 on the left frame 18 tends to constantly rotate the arm 70 in a clockwise direction in Figs. 2, 4 and 6. A spring 81 connected with the link 77 and the left frame 18, tends to rotate the link 77 in a clockwise direction in these same figures.

A shaft 82 journaled in the side frames 18 carries two arms 83 and a third arm 84, the latter being connected with the arm 70 by a link 85.

40 A lever 86 (Fig. 3) fulcrumed at 87 on the bracket 80 has a bent arm 88 equipped with a contact piece 89 presented to a package traveling to the left on the elevator flight in Figs. 1 and 3, being delivered in this instance by an inclined way 90.

45 A spring 91 between the arm 88 and a lug 92 on the bracket 80 tends to hold the lever in the position shown in Fig. 3. The spring 91 is held in place by a bolt 93 extending through the lug and the arm 88. Another arm 94 of the lever 86 is equipped with a bolt 95 locked in position by a nut 96 and adapted to engage the link 77. A second brake drum 97 is fixed to the right end of the brake shaft 23. A band brake 98 pivoted at 99 is adjustably clamped on the drum by a bolt 100.

Operation

55 Assume the parts to be in the position shown in Fig. 2. When a package is delivered onto the flight in the position marked A against the contact piece 89 it rotates the lever 86 about the fulcrum 87 and causes the bolt 95 to swing the link 77 to the left in Fig. 4, releasing the brake lever 59 and permitting the spring 67 to release the brake. The weight of the package causes the conveyor to travel in a counter-clockwise direction in Fig.

2. As it descends the striker rollers 50 will rotate the arms 83 counter-clockwise until they escape, when the spring 79 will rotate them in a clockwise direction lifting the link 77 and causing the catch 78 to re-engage with the arm 64 of the brake lever 59.

70 As the movement of the conveyor continues another striker roller 50 will strike the contact piece 73 rotating the arms 69 and 70 counter-clockwise and causing the link 77 to give the brake lever a similar movement and gradually apply the brake. As this roller 50 passes beyond the contact piece 73 both the rollers 50 of that set engage the arms 83 and thus cause the brake to be set hard and stop the conveyor, which remains in position until the lever 86 is again operated by a package being delivered upon the conveyor to swing the catch 78 and release the brake lever.

85 As the flights reach the lower level they reverse and pass upwardly on the opposite side. The packages can either be removed as the flights reach a suitable position or allowed to be automatically discharged as the flights reverse. Variations in the weight of packages and other conditions will make it necessary from time to time to adjust the pressure of the band brake 98 so that the band brake 54 will stop the flights in the desired relation to the incline 90, or other means for delivering packages.

100 From this description it will be clear that the apparatus permits packages to be received one at a time at an upper level and automatically delivered one at a time at a lower level and it will be clear to those skilled in the art that various embodiments may be made to suit the particular conditions at different places where such work is to be done, and it will be observed that in making other embodiments the features of construction may be changed to better adapt the apparatus to the particular work or to meet the individual preference of particular persons.

I claim as my invention:

110 1. In apparatus of the class described, a conveyor having a flight thereon, a brake for stopping the conveyor, lever mechanism operated by the conveyor for giving the brake a graduated application and other lever mechanism mounted independently of the conveyor and in the path of and operated by a package being delivered upon the flight for releasing the brake.

120 2. In apparatus of the class described, a conveyor having a flight thereon, a brake for stopping the conveyor, means for releasing the brake including a contact member mounted independently of the conveyor adjacent to the path thereof and in the path of and to be moved by a package delivered to and traveling along the flight, means to apply the brake including a contact member adjacent to the path of the conveyor and a striker on the conveyor adapted to cooperate

with the last mentioned contact member during the movement of the conveyor.

3. In apparatus of the class described, a conveyor having a flight thereon, a brake constantly resisting movement of the conveyor, a second brake for stopping the conveyor, means operated by movement of the conveyor for setting the second brake and means mounted at one side of the conveyor and in the path of and operated by a package delivered on the conveyor for releasing the second brake.

4. In apparatus of the class described, a conveyor having a flight thereon, a brake for stopping the conveyor, means for releasing the brake including a contact member mounted at one side of the conveyor and in the path of and adapted to receive power from a package delivered on the flight, and a lever operated by the contact member cooperating with the brake and means for applying the brake operated by movement of the conveyor.

5. In apparatus of the class described, a conveyor having a flight thereon, a brake for stopping the conveyor and means for applying the brake including a lever disposed for actuation by the conveyor to begin the brake application and a second lever disposed for actuation by the conveyor to complete the brake application.

6. In apparatus of the class described, a conveyor having a flight thereon, a brake for stopping the conveyor, a brake lever for operating the brake, a catch cooperating with the brake lever, lever mechanism operated by movement of the conveyor for causing the catch to rotate the brake lever and means operated by a package on the conveyor to release the catch.

7. In apparatus of the class described, a conveyor having a flight thereon, a constantly acting brake for the conveyor, an intermittently acting brake for the conveyor, means operated by movement of the conveyor for applying the intermittently acting brake and brake-releasing means operated by the load for releasing the intermittently acting brake said means being independently of the flight and in the path of a package delivered upon the flight.

8. In apparatus of the class described, a conveyor having a flight thereon, a brake for stopping the conveyor, means for delivering a package to the flight in a direction transverse to the movement of the conveyor, a contact member mounted independently of the flight and in the path of the package and at one side of the conveyor, means operated by the contact member for releasing the brake, and automatic means for applying the brake after a selected movement of the conveyor.

9. In an apparatus of the class described, the combination of an upright conveyor having a flight, brake mechanism for the con-

veyor, a catch detachably associated with the brake mechanism to hold the same in operative condition, catch releasing means including a trip mounted independently of the moving parts of the conveyor and in the path of an article being delivered upon the flight, brake re-setting means associated with the catch and mounted independently of the conveyor, a striker upon the conveyor for contact with the catch re-setting means to actuate the same, and another striker upon the conveyor for contact with the brake re-setting means to actuate the same and apply the brake to stop the conveyor.

10. In an apparatus of the class described, the combination of an upright conveyor having a flight, brake mechanism for the conveyor, a catch to hold the brake mechanism in operative condition, catch releasing means including a trip mounted independently of the moving parts of the conveyor and in the path of an article being delivered upon the flight, catch re-setting means mounted independently of the conveyor, a lower striker upon the conveyor for contact with the catch re-setting means to actuate the same, an upper striker upon the conveyor, means in the path of the upper striker for actuation thereby to gradually apply the brake, said catch re-setting means being in the path of the upper striker for actuation thereby to strongly apply the brake and stop the conveyor subsequent to the actuation of the means for gradually applying the brake.

In testimony whereof I affix my signature.
EDWARD A. LEONARD.

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