

No. 700,722.

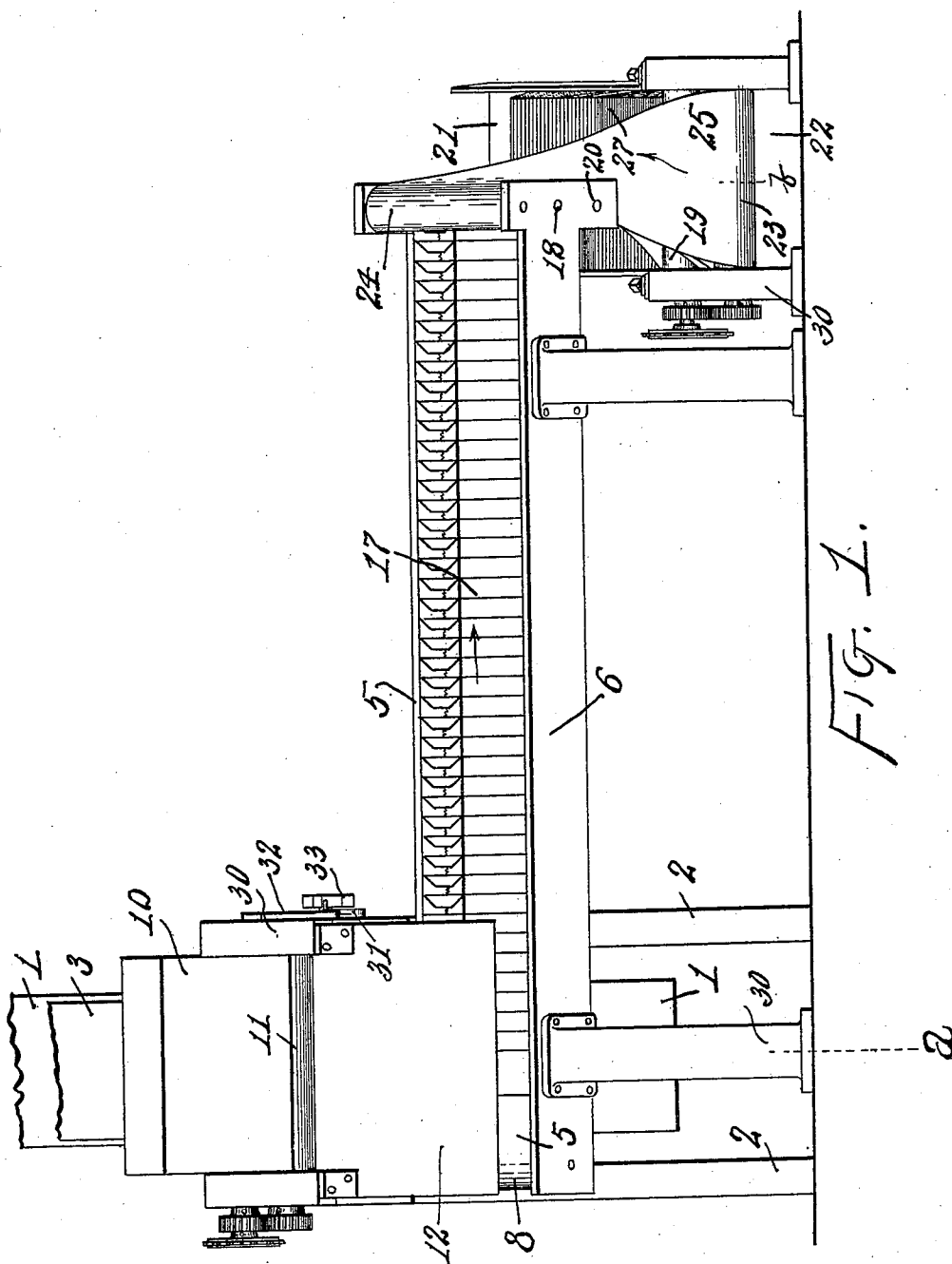
Patented May 27, 1902.

D. APPEL.
PAPER BAG DELIVERY DEVICE.

(Application filed Jan. 13, 1902.)

4 Sheets—Sheet 1.

(No Model.)



Witnesses:
E. Shipley
M. S. Belden

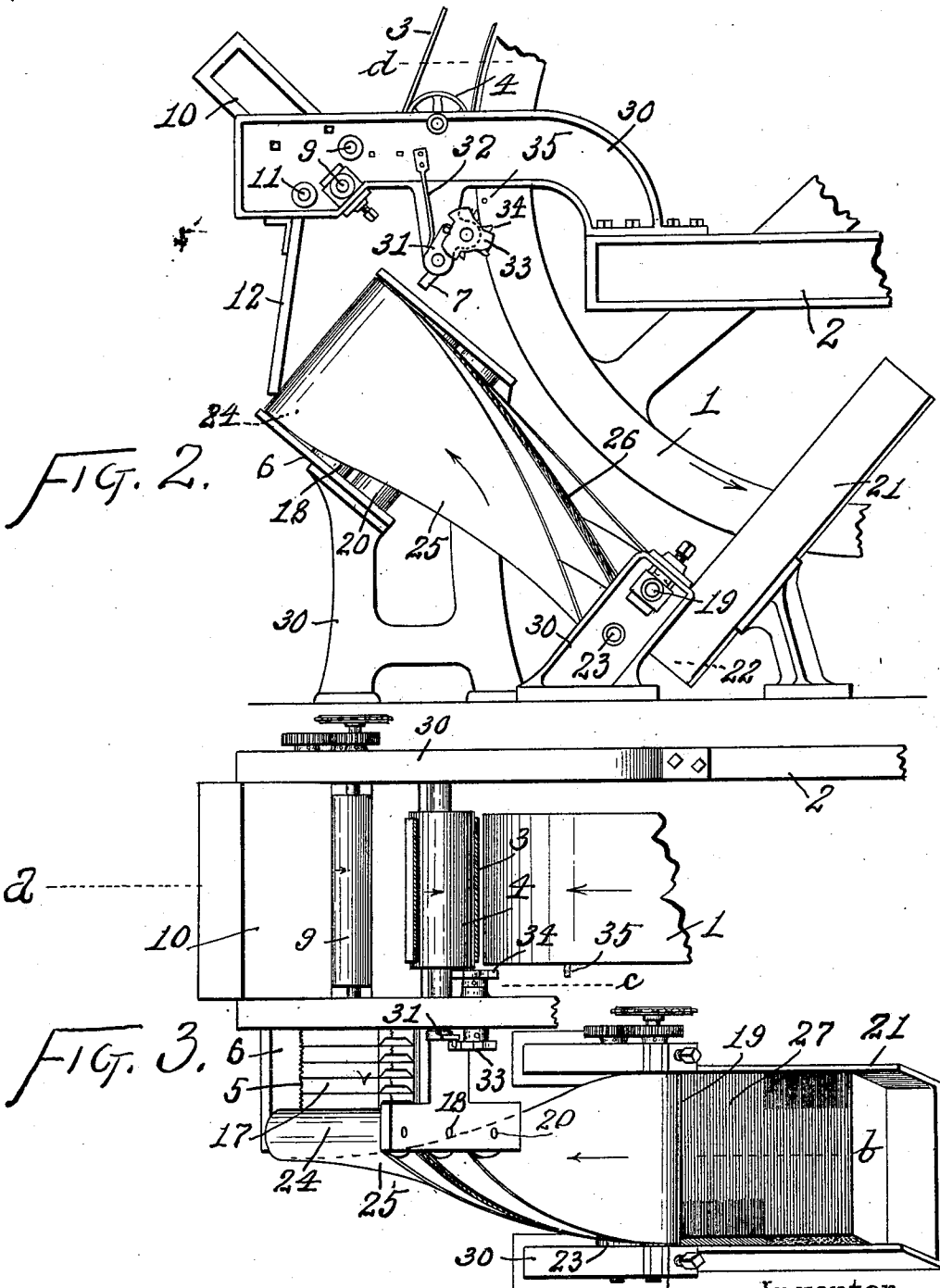
Daniel Appel Inventor
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D. APPEL.
PAPER BAG DELIVERY DEVICE.

(Application filed Jan. 13, 1902.)

4 Sheets—Sheet 2.

(No Model.)



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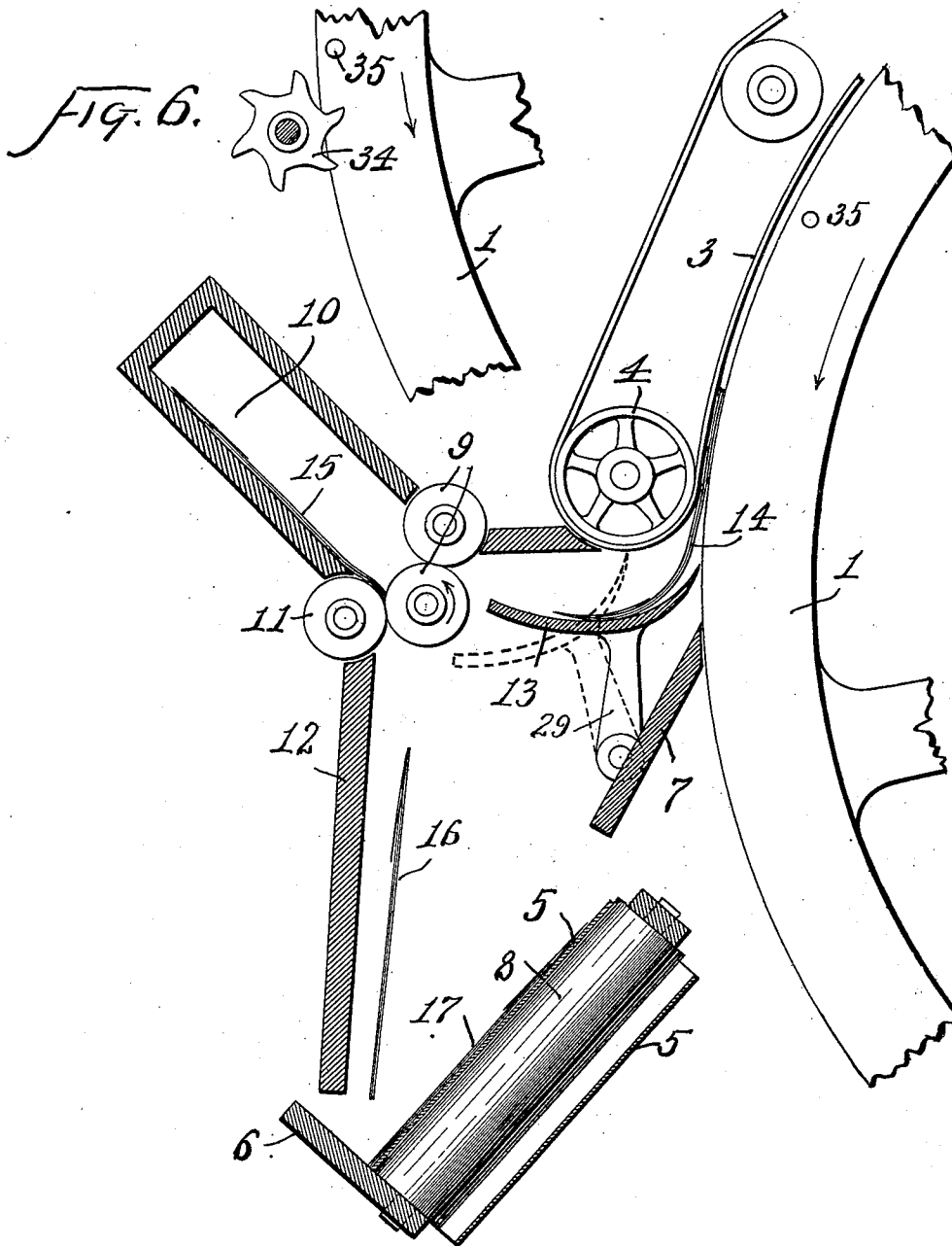
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D. APPEL.
PAPER BAG DELIVERY DEVICE.

(Application filed Jan. 18, 1902.)

(No Model.)

4 Sheets—Sheet 3.



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FIG. 4.

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No. 700,722.

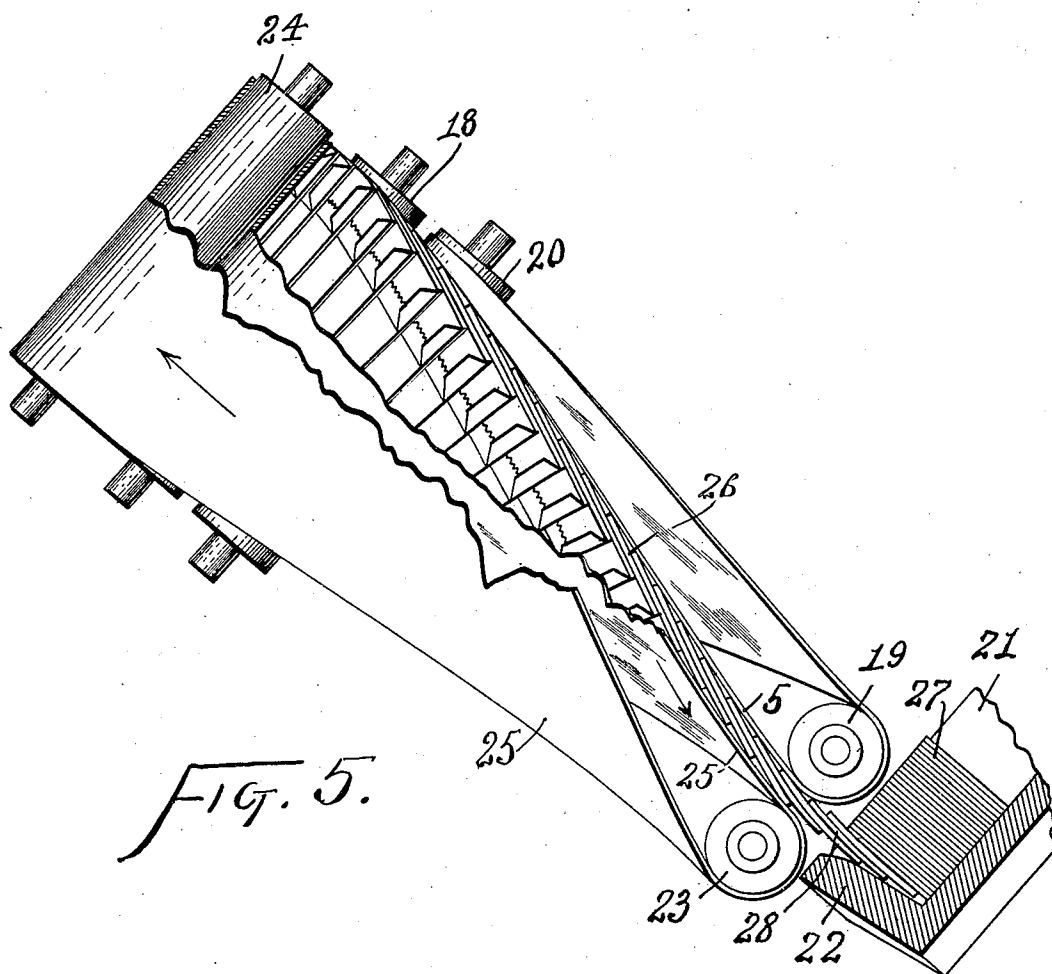
Patented May 27, 1902.

D. APPEL.
PAPER BAG DELIVERY DEVICE.

(Application filed Jan. 13, 1902.)

(No Model.)

4 Sheets—Sheet 4.



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UNITED STATES PATENT OFFICE.

DANIEL APPEL, OF CLEVELAND, OHIO, ASSIGNOR TO THE UNION PAPER BAG MACHINE COMPANY, OF PHILADELPHIA, PENNSYLVANIA.

PAPER-BAG-DELIVERY DEVICE.

SPECIFICATION forming part of Letters Patent No. 700,722, dated May 27, 1902.

Application filed January 13, 1902. Serial No. 89,430. (No model.)

To all whom it may concern:

Be it known that I, DANIEL APPEL, a citizen of the United States, residing at Cleveland, Cuyahoga county, Ohio, (post-office address No. 62 Holyoke Place, Cleveland, Ohio,) have invented certain new and useful Improvements in Paper-Bag-Delivery Devices, (Case D,) of which the following is a specification.

10 In the manufacture of paper bags the finished bags are generally carried from the paper-bag machine by a conveying-apron over a drying-cylinder, after which they are ready for inspection and packaging. As the marketed bags are much thicker at their bottom ends than at their mouth ends, a pile of them takes on a wedge form, and to compensate for this and produce parallel-sided packages it is essential to arrange the bags in groups, the bags of one group presenting their bottoms in one direction and the bags of the next group presenting their bottoms in the other direction, or, in other words, to alternate the direction of the tapering of the wedges formed by the individual groups of bags. In making the bags they come in succession from the paper-bag machine with their bottoms presenting uniformly, and they pass over the drying-cylinder in a similar manner. It is the design of my present apparatus to receive the procession of bags coming uniformly as to direction of presentation of bottoms and to arrange them in groups or piles in such manner that a group or pile with the bottoms of the bags in one direction will come next to a group or pile having the bottoms in reverse direction. The apparatus will lend itself to direct attachment to the usual drying apparatus, receiving therefrom the procession of uniformly-presented bags and arranging them in reverse groups or piles, as above indicated. Provision is made for inspection, also for delivering the reversed piles or groups of bags into a receiver ready for the packers, the apparatus also serving as a counting-machine.

The invention will be readily understood from the following description, taken in connection with the accompanying drawings, in which—

Figure 1 is a front elevation of an appara-

tus exemplifying my invention; Fig. 2, a side elevation of the same; Fig. 3, a plan of the same. Fig. 4 is a vertical section of parts in the plane of line *a* of Fig. 3; Fig. 5, a side elevation of parts, the receiving-box appearing in vertical section in the plane of line *b* of Figs. 1 and 3, certain apron parts being broken away to expedite the procession of bags being conveyed by them; and Fig. 6, a side elevation of a portion of the drying-cylinder in conjunction with the star-wheel.

Description will first be given of the mechanism by which the bags are received, counted, reversed, and conveyed away and then of the mechanism by means of which the bags are piled in a receiver.

In the drawings, and giving special attention for the present to Fig. 4, 1 indicates the ordinary rotary drying-cylinder, over which the bags are usually carried in continuous uniform procession from the paper-bag machine; 2, fixed framework thereof; 3, the usual apron running in contact with the drying-cylinder and holding the passing bags to the peripheral surface thereof, the bags being carried bottom end first in continuous procession by the apron and drying-cylinder; 4, one of the carrying-rolls of apron 3 at the point where the bags discharge from the operating apron and drying-cylinder; 5, an endless receiving-apron disposed forward of and below roll 4, its upper surface traveling substantially parallel with the axis of roll 4 and being arranged at a transverse declination downward and away from the drying-cylinder, so that bags discharging from drying-apron 3 will fall to receiving-apron 5 and seek to slide transversely down and off of the apron; 6, a shore-board extending along the lower edge of the upper surface of receiving-apron 5 and extending upwardly therefrom, this board serving to arrest the bags as they seek to slide off of the decline receiving-apron and to cause their advanced ends to travel in a common horizontal plane; 7, a fender arranged between roll 4 and apron 5 and serving, if needful, in directing the bags on their downward course to the receiving-apron; 8, the head carrying-roll of receiving-apron 5; 9, a pair of feed-rolls disposed parallel with roll 4 and upward thereof, one of

these rolls being disposed substantially over the other and the plane of their contact being below the lower portion of roll 4; 10, a box presenting an open mouth at the forward side of rolls 9, the floor of this box inclining upwardly from a point forward of and below the contact-point between rolls 9, the floor of this box being the only important part about it; 11, a roll disposed forward of and cooperating with the lower one of rolls 9, this roll 11 being disposed at the foot of the floor-box 10; 12, a fender-board extending downwardly from near roll 11 into the neighborhood of the lower forward edge of receiving-apron 5; 13, a curved switch-plate disposed below roll 4 with its rear edge near the drying-cylinder, so as to act as a stripper thereof, the forward portion of this switch-plate extending to near the lower one of rolls 9 at a point below the point of contact between those rolls, this switch-plate being adapted to be shifted forward, as indicated in dotted lines, so that its rear edge will be away from the drying-cylinder and preferably in stripper relation-ship to roll 4; 14, a bag illustrated as being discharged bottom end first from the drying-cylinder, the advance end of this bag engaging switch-plate 13 and being deflected forwardly thereby, so that it will enter the bite of rolls 9 and be carried thereby bottom end first up into box 10; 15, a bag illustrated as having been thus delivered up into box 10 and lying bottom end upward on the floor of the box, the mouth end of the bag presenting itself to the bite of roll 11 and the lower one of rolls 9, so that this bag will be carried mouth end downward to the rear of board 12; 16, a bag illustrated as having been thus carried downward and discharged mouth end down ready to drop upon receiving-apron 5; 17, a series of bags illustrated as having thus descended mouth end downward and fallen upon receiving-apron 5 with their mouth ends butting against board 6, the rate of forward travel of receiving-apron 5 compared with the rate of delivery of bags from the drying-cylinder being such that the successive bags upon the receiving-apron become arranged as an overlapping series with the last-received bag uppermost, and 18 the tail carrying-roll of receiving-apron 5.

When the parts are in the condition indicated in Fig. 4, the procession of bags coming bottom end first from the drying-cylinder become reversed and arranged upon the receiving-apron as an overlapping series, with their mouth ends at the lower edge of the receiving-apron. If this action continued indefinitely and the bags were piled directly as taken from the receiving-apron, then the pile would form a wedge of constantly-increasing taper as bags were added to the pile, thus producing a condition undesirable in packaging the bags. Let it be assumed that packaging will be satisfactory if the pile be formed of alternatively-reversed lots or groups of bags containing fifty each—that is to say, fifty bags

arranged in the pile bottom end one way and then fifty bags with the bottom end the other way, and so on. It is the purpose of this apparatus to reverse the direction of delivery of the bags upon the receiving-apron at proper times. Assume the parts as in Fig. 4 and that fifty bags have been delivered upon the receiving-apron by following the course indicated by the illustrated bags 14, 15, 16, and 17. Switch-plate 13 is now to be moved forward to the position indicated in dotted lines, its rear edge then ceasing to act as a stripper for the drying-cylinder and becoming a stripper for roll 4. Under these conditions the bags from the drying-cylinder instead of making a detour and becoming reversed endwise pass directly downward, bottom end first, to the receiving-apron and are received thereon in overlapping series, with their bottom ends butting against board 6. After fifty bags have been thus delivered bottom end down upon the receiving-apron then the switch is again to be thrown, after which fifty bags will make the detour and be delivered mouth end downward upon the receiving-apron, and so on, the receiving-apron thus carrying continuously forward a series of transversely-overlapping bags, the series consisting of, first, a lot of bags with their bottom ends in one direction and then a similar lot with their bottom ends in the reverse direction, and so on alternately. The switch 13 may be thrown from one position to the other by hand when the reversal of bags is to take place; but provision is made for accomplishing this shifting of the switch automatically, as will be later described. The continuous series of bags thus carried off by receiving-apron 5 may be inspected and substitutes supplied for the defective ones upon the apron, which apron may be extended as far as desired to facilitate this work of inspection. In Fig. 3 the receiving-apron is shown as rather short, while in Fig. 1 it is given a much greater length.

I will now describe means by which the bags carried forward by the receiving-apron are delivered in a pile in a receptacle ready for packaging, and in this connection attention may well be given to all of the figures of the drawings.

19 indicates a carrying-roll for receiving-apron 5, this roll having its axis disposed at right angles to the axis of carrying-roll 18 and in a plane parallel with the carrying portion of the apron, the tail portion of the receiving-apron engaging this roll 19, whereby the receiving-apron is given a quarter-twist; 20, a carrying-roll disposed below roll 18 and serving to support the downward turn of the lower member of the receiving-apron; 21, a receiving-box for the paper bags, this box being disposed below and forward of roll 19, which roll is at the discharge-point of receiving-apron 5, this box having a width adapted to the length of the bags and having a depth adapted to the width of the bags and having a length adapted for any desired number of

the bags in a pile, the box being inclined in the direction of its length and also in the direction of its width, so that a pile of bags in it will tend to settle toward the lower end of the box and against one of the side walls; 22, the lower end wall of the receiving-box, the same being arranged substantially tangent to the discharge side of roller 19; 23, a carrying-roll disposed parallel with roll 19 near the discharge side of that roll; 24, a carrying-roll disposed over and parallel with roll 18; 25, an endless retaining-apron engaging rolls 23 and 24 and having its inner member lying over and pressing toward the downwardly-carrying member of receiving-apron 5; 26, the procession of bags which having been carried forward by the horizontal portion of receiving-apron 5 are carried downward in a quarter-twist course between the contiguous layers of the receiving-apron and the retaining-apron; 27, the pile of paper bags which have accumulated in the receiving-box; 28, the overlapping bags being continuously discharged from the aprons and inserted in the receiving-box under the accumulated pile, which latter becomes thereby pushed upwardly in the box to make room for the incoming bags. As the bags are advanced by the aprons in alternatively-reversed groups, as has been described, it is obvious that they become similarly disposed in the receiving-box, so that the pile of bags in the box will consist of a lot with the bottoms in one direction and then a similar lot with the bottoms in the reverse direction. In case all of the carrying-rolls of the aprons were parallel with each other then the receiving-box would project in an undesired direction, having general convenience in view; but the quarter-twist arrangement of the carriers permits of the receiving-box being conveniently disposed at the tail-point of the receiving-apron and to project in a direction convenient for accessibility to the box and its contents.

The carrying-rolls of the aprons may be driven through any appropriate mechanism usual for such purposes, and the switch 13, which reverses the bags, may be automatically operated by a variety of devices under the control of the moving mechanism which advances the bags; but the simple device illustrated in the drawings may well be employed and will now be described.

29 indicates pivoted arms supporting the switch-plate 13; 30, framing for the support of the reversing mechanism over the receiving-apron; 31, an arm fast on one of the pivot-journals of switch-plate 13; 32, a spring acting upon this arm and tending to urge and hold the switch-plate to one of its two positions, but permitting it to be moved to the other position; 33, a cam mounted on the framing and having lobes adapted to engage arm 31 and move and hold the switch to one position against the resistance of spring 32, the spaces between the lobes permitting the switch to go to its other position, the result

being that the turning of the cam to bring a lobe into action brings about one position of the switch, while the turning of the cam to bring a space between lobes into action brings about the other position of the switch; 34, a star-wheel turning with cam 33 and having twice as many prongs as there are lobes upon the cam, and 35 a pin carried by drying-cylinder 1 and adapted as it passes the star-wheel to turn the cam from one of its switch-controlling positions to the other. When a cam-lobe is acting on arm 31, it holds the switch to one position and the partial turn brought about by the action of the pin on the star-wheel will bring a cam-space into action and put the switch to the other position, the position of the switch thus changing at each passage of the pin. With one pin in the drying-cylinder then the switch will be shifted at each turn of the drying-cylinder corresponding with the number of bags discharged from the drying-cylinder at each turn. There may be as many of the pins as desired.

Analyzing Fig. 4 it will at once be obvious that the drying-cylinder 1 in conjunction with roll 4 form a pair of coöperating rolls adapted to feed forward and discharge the bags, and it is a mere matter of preference that one of these coöperating rolls be a drying-cylinder.

I claim as my invention—

1. The combination, substantially as set forth, of a first pair of coöperating rolls adapted to advance and discharge a succession of paper bags end foremost, a second pair of rolls disposed to one side of the normal path of the bags discharged by the first rolls, and a movable switch disposed between said two pairs of rolls and adapted in one position to be out of the normal path of the bags discharged by the first rolls and in another position to be in that path and deflect the bags out of the normal path and into the bite of the second rolls.

2. The combination, substantially as set forth, of a first pair of coöperating rolls adapted to advance and discharge a succession of paper bags end foremost, a second pair of rolls disposed to one side of the normal path of the bags discharged by the first rolls, a movable switch disposed between said two pairs of rolls and adapted in one position to be out of the normal path of the bags discharged by the first rolls and in another position to be in that path and deflect the bags out of the normal path and into the bite of the second rolls, and mechanism for automatically shifting said switch from one to the other of its positions.

3. The combination, substantially as set forth, of a first pair of coöperating rolls adapted to advance and discharge a succession of paper bags end foremost, a second pair of rolls disposed to one side of the normal path of the bags discharged by the first rolls, a movable switch disposed between said two pairs of rolls and adapted in one position to

be out of the normal path of the bags discharged by the first rolls and in another position to be in that path and deflect the bags out of the normal path and into the bite of the second rolls, and a surface adapted to receive the bags from the second pair of rolls and having a discharging declination toward the normal path of bags discharged by the first pair of rolls.

4. The combination, substantially as set forth, of a first pair of cooperating rolls adapted to advance and discharge a succession of paper bags end foremost, a second pair of rolls disposed to one side of the normal path of the bags discharged by the first rolls, a movable switch disposed between said two pairs of rolls and adapted in one position to be out of the normal path of the bags discharged by the first rolls and in another position to be in that path and deflect the bags out of the normal path and into the bite of the second rolls, and a fifth roll cooperating with a roll and adapted to discharge bags toward the normal path of discharge from the first pair of rolls, and means for receiving bags from the second pair of rolls and delivering them opposite end forward to the action of the fifth roll.

5. The combination, substantially as set forth, of a first pair of cooperating rolls adapted to advance and discharge a succession of paper bags end foremost, a second pair of rolls disposed to one side of the normal path of the bags discharged by the first rolls, a movable switch disposed between said two pairs of rolls and adapted in one position to be out of the normal path of the bags discharged by the first rolls and in another position to be in that path and deflect the bags out of the normal path and into the bite of the second rolls, and a fifth roll cooperating with a roll and adapted to discharge bags toward the normal path of discharge from the first pair of rolls, and a surface adapted to receive bags from the second pair of rolls and having a discharging declination to the bite of the fifth roll.

6. The combination, substantially as set forth, of a first pair of cooperating rolls adapted to advance and discharge a succession of paper bags end foremost, a second pair of rolls disposed to one side of the normal path of the bags discharged by the first rolls, a movable switch disposed between said two pairs of rolls and adapted in one position to be out of the normal path of the bags discharged by the first rolls and in another position to be in that path and deflect the bags out of the normal path and into the bite of the second rolls, and a fifth roll cooperating with one of the rolls of the second pair and adapted to discharge bags toward the normal path of discharge of the first pair of rolls, and means for receiving bags from the second pair of rolls and delivering them opposite end forward by the action of the fifth roll.

7. The combination, substantially as set

forth, of a first pair of cooperating rolls adapted to advance and discharge a succession of paper bags end foremost, a second pair of rolls disposed to one side of the normal path of the bags discharged by the first rolls, a movable switch disposed between said two pairs of rolls and adapted in one position to be out of the normal path of the bags discharged by the first rolls and in another position to be in that path and deflect the bags out of the normal path and into the bite of the second rolls, and a fifth roll cooperating with one of the rolls of the second pair and adapted to discharge bags toward the normal path of discharge of the first pair of rolls, and a surface adapted to receive bags from the second pair of rolls and having a discharging declination to the bite of the fifth roll.

8. The combination, substantially as set forth, of a first pair of cooperating rolls adapted to advance and discharge a succession of paper bags end foremost, a traveling apron having its inner surface engaging one of said rolls and its outer surface engaging the other of said rolls, a second pair of rolls disposed to one side of the normal path of the bags discharged by the first rolls, and a movable switch disposed between said two pairs of rolls and adapted in one position to be out of the normal path of the bags discharged by the first rolls and in another position to be in that path and deflect the bags out of the normal path and into the bite of the second rolls.

9. The combination, substantially as set forth, of roll mechanism adapted to advance and discharge a succession of paper bags in a downward direction end foremost, an endless receiving-apron disposed below said roll mechanism and having a declination transverse to its line of travel and adapted to receive the bags coming from the roll mechanism, and an upwardly-projecting wall extending along the lower edge of said receiving-apron and adapted to be engaged by the foremost ends of the bags and to maintain the bags upon the apron.

10. The combination, substantially as set forth, of roll mechanism adapted to advance and discharge a succession of paper bags end foremost, an endless horizontal receiving-apron adapted to receive the bags and having a downward course at the portion where the bags are to be discharged, and an endless retaining-apron running contiguous to the downwardly-disposed portion of the receiving-apron and adapted to hold the descending bags to the receiving-apron.

11. The combination, substantially as set forth, of roll mechanism adapted to advance and discharge a succession of paper bags end foremost, an endless horizontal receiving-apron adapted to receive the bags and having a downward course at the portion where the bags are to be discharged, an endless retaining-apron running contiguous to the downwardly-disposed portion of the receiving-apron and adapted to hold the descending

bags to the receiving-apron, the retaining-apron and the cooperating portion of the receiving-apron having a quarter-twist, and a receiving-box at the discharge-point of the two aprons.

12. The combination, substantially as set forth, of roll mechanism adapted to advance and discharge a succession of paper bags end foremost, carrying-rolls for endless aprons, a receiving-apron adapted to receive the paper bags from the roll mechanism as an overlapping series of bags disposed transversely on the apron, a receiving-box disposed at the discharge-point of said receiving-apron and having an end wall substantially tangent to the tail roll of the apron at the point of bag discharge therefrom, and a retaining-apron cooperating with the discharge portion of the receiving-apron.

13. The combination, substantially as set forth, of a first pair of cooperating rolls adapted to advance and discharge a succession of paper bags end foremost, a second pair of rolls disposed to one side of the normal path of the bags discharged by the first rolls, a movable switch disposed between said two pairs of rolls and adapted in one position to be out of the normal path of the bags discharged by the first rolls and in another position to be in that path and deflect the bags out of the normal path and into the bite of the second roll, and a receiving-apron adapted to receive the bags in succession as they

come either from the second pair of rolls or direct from the first pair of rolls.

14. The combination, substantially as set forth, of a first pair of cooperating rolls adapted to advance and discharge a succession of paper bags end foremost, a second pair of rolls disposed to one side of the normal path of the bags discharged by the first rolls, a movable switch disposed between said two pairs of rolls and adapted in one position to be out of the normal path of the bags discharged by the first rolls and in another position to be in that path and deflect the bags out of the normal path and into the bite of the second roll, a receiving-apron adapted to receive the bags in succession as they come either from the second pair of rolls or direct from the first pair of rolls, and mechanism for automatically moving said switch.

15. The combination, substantially as set forth, of an inclined receiving-box adapted to receive a pile of paper bags, a lower end wall for said box adapted to support the pile of bags, and roller and apron mechanism adapted to advance a succession of bags end foremost and then side edge foremost and deliver them side edge foremost upon said end wall under the pile of bags in said box.

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