Feb. 22, 1938. C. G. QUICK ET AL 2,109,050

MECHANISM FOR DELIVERING ARTICLES IN COUNTED BUNDLES

Filed April 17, 1935 4 Sheets-Sheet 1

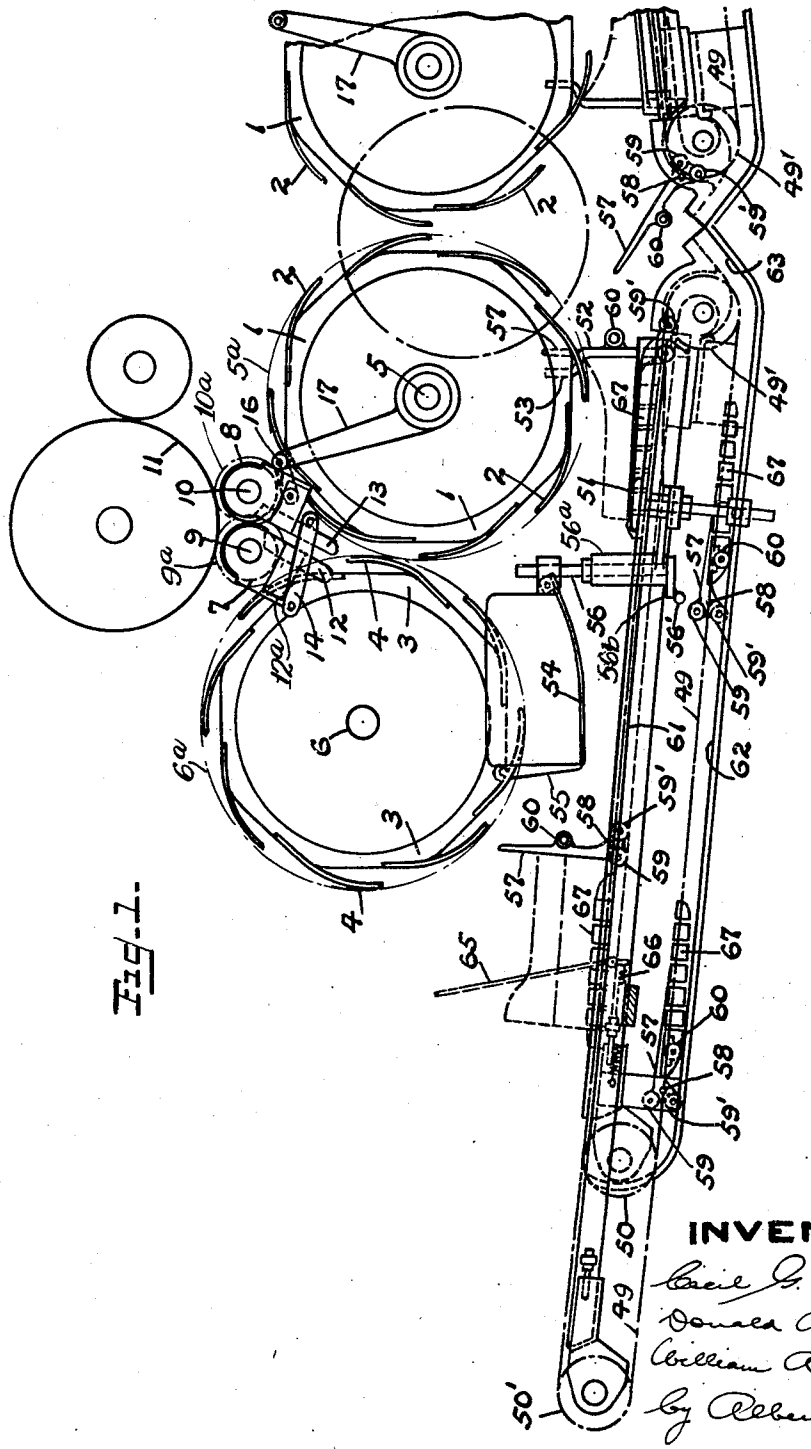


Fig. 1.

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MECHANISM FOR DELIVERING ARTICLES IN COUNTED BUNDLES

Filed April 17, 1935 4 Sheets-Sheet 2

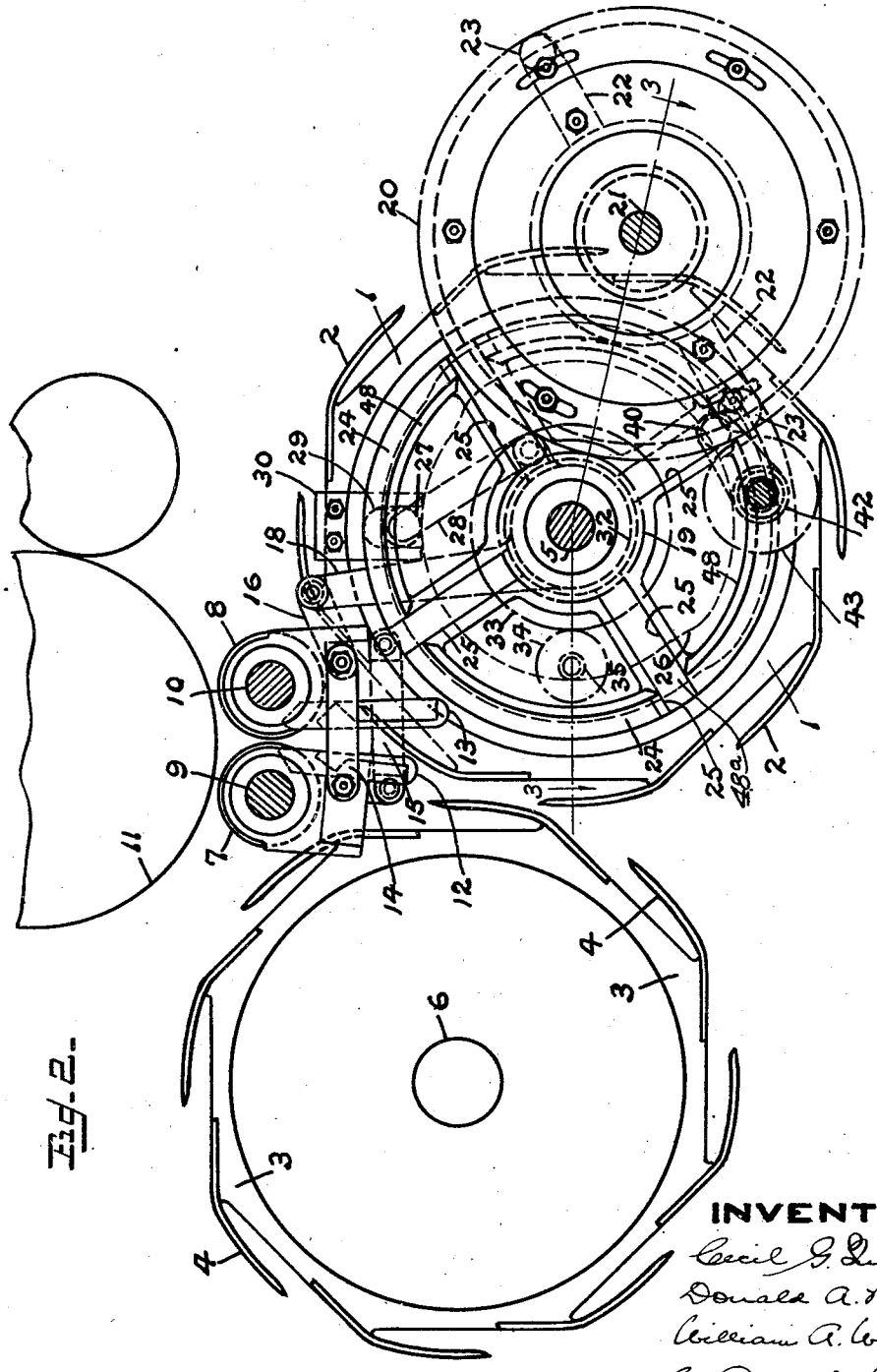


Fig. 2.

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MECHANISM FOR DELIVERING ARTICLES IN COUNTED BUNDLES

Filed April 17, 1935 4 Sheets-Sheet 3

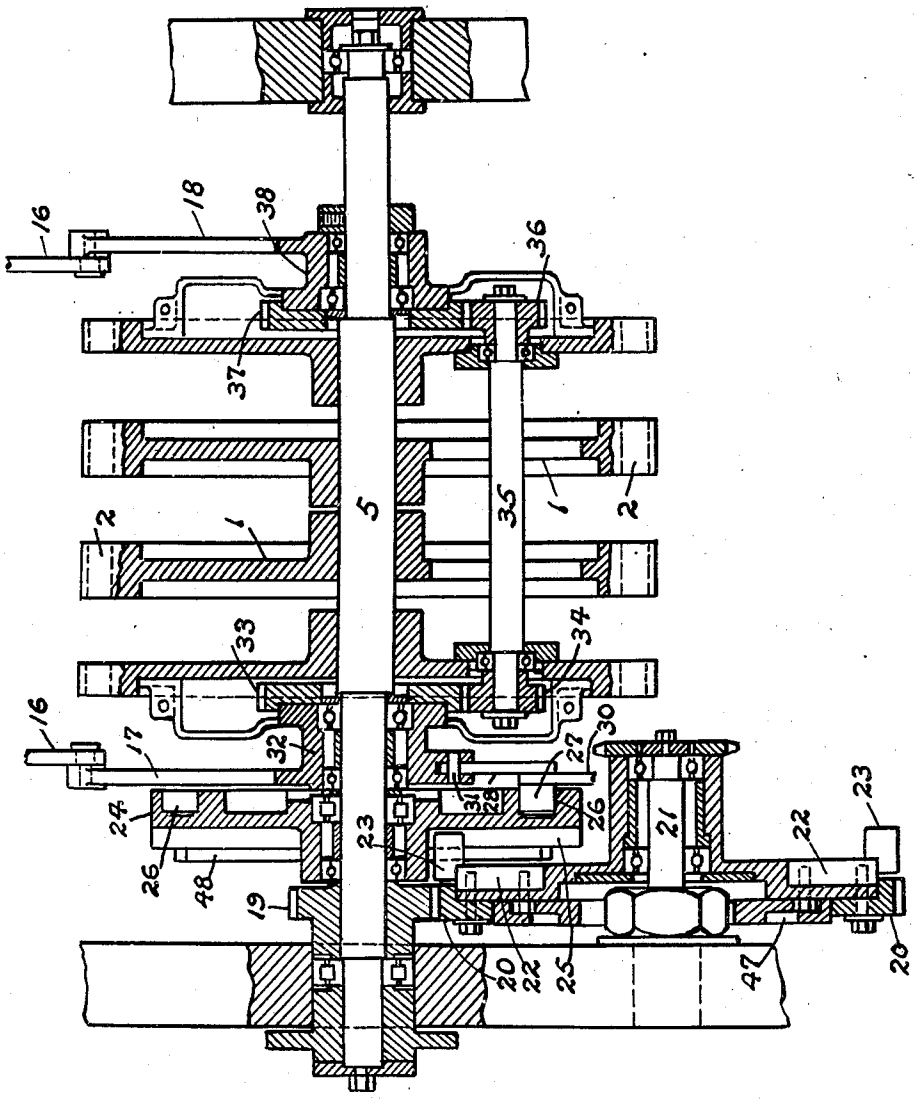


Fig. 3.

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MECHANISM FOR DELIVERING ARTICLES IN COUNTED BUNDLES

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Fig. 4.

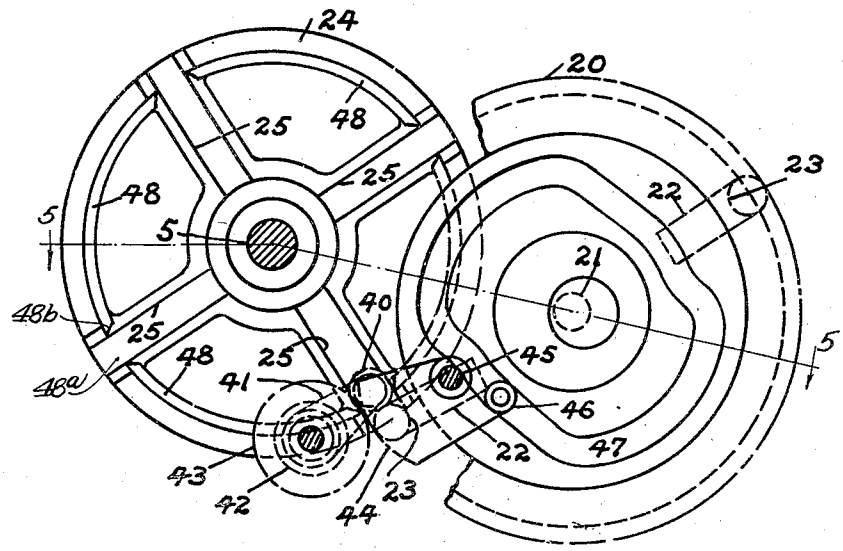
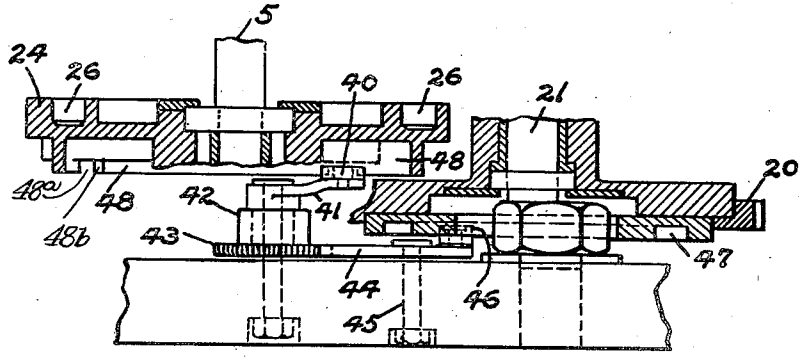


Fig. 5.



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Patented Feb. 22, 1938 2,109,050

UNITED STATES PATENT OFFICE

2,109,050

MECHANISM FOR DELIVERING ARTICLES IN COUNTED BUNDLES

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Application April 17, 1935, Serial No. 16,802
In Great Britain April 19, 1934

19 Claims. (Cl. 93—93)

This invention relates to a new or improved mechanism for delivering copies, constituting the product of a printing machine, in counted bundles.

It is customary to deliver copies in succession and, to separate the succession of copies into quires by what is known as a "count" copy which is displaced from normal position in the succession of copies. The copies are then bundled by an operator who, in order to provide for the division of a bundle in separate quires takes the copies constituting successive quires and turns every other quire through 180° so that, in bundling the quires, the cut edges of the copies of one quire are presented with the folded edges of the copies of adjacent quires.

The main object of the present invention is to provide improved means whereby copies may be delivered by the machine in bundles already separated into quires by arranging the folded edges of the copies of one quire to be in line with the cut or opening edges of the copies of an adjacent quire, and thus to obtain the quire separation which is at present normally obtained by an operator.

In carrying out the present invention there are provided two delivery flies (i. e. rotatable members having curved arms providing pockets for the reception of copies) arranged side by side and driven in opposite directions the copies being delivered from the printing machine in quires first to one and then to the other fly. These flies lay their copies on trays below the respective flies and by reason of the reverse rotation of the flies, the copies laid in one tray by one fly will have their cut edges at one side of the tray and the copies laid in the other tray by the other fly will have their folded edges at the corresponding side of its tray.

The quires of copies are ejected or taken from the trays and the whole arrangement is such that while copies are being delivered to one tray the quire delivered to the other tray is ejected and traversed to a position in which, when a quire has been delivered to the said one tray, this latter quire is ejected having two quires one with its cut edges at one side of the bundle and the other with its folded edges at the same side of the bundle.

The invention is illustrated in the accompanying drawings in which:

Figure 1 is an elevational view showing the general arrangement of a delivery mechanism embodying the features of this invention;

Figure 2 is an enlarged elevational view of part of the mechanism shown in Figure 1, certain parts being omitted for the sake of clearness, to show details of the structure;

Figure 3 is a section generally on line 3—3 of Figure 2, but with certain parts in another position;

Figure 4 is an elevational view of parts of the mechanism shown in Figure 2, but having further parts removed to show further details; and

Figure 5 is a section generally on line 5—5 of Figure 4.

The drawings illustrate the invention as applied to a printing machine having a double folder and therefore two mechanisms in accordance with the invention are provided: only one of these mechanisms is shown completely, the other mechanism being indicated in part only, it being understood that this other mechanism would be similar to the first but extending in the opposite direction thereto.

There are provided two flies, one of which comprises hubs 1 and blades 2 fixedly secured thereto and the other of which similarly comprises hubs 3 and blades 4 fixedly secured thereto. The hubs 1 and 3 are secured respectively to shafts 5, 6 which are constantly rotated in opposite directions by means of gears 5a and 6a, which are in mesh, one of which is drivingly connected to the machine drive (not shown) in the usual manner. The flies are arranged side by side with the left hand fly somewhat above the right hand fly and with the zone between the flies disposed below rollers 7, 8 carried on shafts 9, 10 which are driven in the usual manner by meshed gears 9a and 10a, one of which is drivingly connected to the machine drive (not shown). The rollers 7, 8 constitute the usual folding off rollers into which products are delivered by folding blades carried by a cylinder 11, this folding off mechanism being well known and therefore requiring no further description: it will be understood that the folded edges of the products lead their cut edges. Pivotally mounted on the shaft 9 is a bracket 12a upon which is a product guiding arm 12 and pivotally mounted on the shaft 10 is a bracket 13a upon which is another product guiding arm 13, these two arms providing between them a path for the products issuing from the rollers 7, 8. The two brackets 12a and 13a are interconnected by links 14, 15 and to the bracket 13a are connected further links 16 which are also connected to the outer ends of each of arms 17, 18 which are pivotally mounted on the shaft 5 of the fly 1 at the opposite ends thereof. The arms 12, 13 together constitute a switch device which in one extreme position directs products to the pockets formed by the blades 4 of the fly 3 and in the other extreme position directs products to the pockets formed by the blades 2 of the other fly 1, and the reversing of the arms 12, 13 is effected by imparting to the arms 17, 18, and hence through the links 16 to brackets 12a and 13a supporting the arms 12, 13, respec-

tively, a periodic rocking movement by the mechanism now to be described.

In mesh with a gear wheel 19, fixedly secured on the shaft 5, is a gear wheel 20 carried on a stub shaft 21, the gear wheel 20 having secured to it two brackets 22 each carrying a roller 23. The shaft 5 has rotatably mounted on it a disc 24 in one face of which are formed four radial grooves 25 adapted to receive the rollers 23 and in the other face of which is formed a cam groove 26 into which extends a roller 27 on a link 28, the roller 27 (or its pin) being constrained to follow a radial path by a radial slot 29 formed in a stationary plate 30. The link 28 is pivotally connected at 31 to a sleeve 32 rotatably carried by the shaft 5 and carrying the arm 17. The sleeve 32 is also formed with a gear wheel 33 in mesh with a gear wheel 34 fast on one end of a shaft 35 extending through apertures in the hubs 1 and having at its other end a gear wheel 36 in mesh with a gear wheel 37 formed on a sleeve 38 rotatably carried by the shaft 5 and having fast with it the other arm 18.

It will now be seen that in the rotation of the gear wheel 20 a roller 23 thereon will move idly with the gear wheel until it enters one of the radial grooves 25 whereupon the rotation of the gear wheel 20 will be imparted to the disc 24 until the roller leaves the groove at which time the roller will have turned the disc through 90° and in so doing will have placed the trailing groove 25 in position to receive the other roller 23 which will move idly with the gear wheel until it enters the said trailing groove and imparts a further 90° of rotation to the disc 24. Due to the turning of the disc 24 in the manner described the roller 27 will be caused by the cam track 26 first to move upwardly in the slot 29 and then later in the cycle downwardly and this motion is imparted through the link 28 and sleeve 32 to the arm 17 and additionally through the gears 33, 34, 36, and 37 and sleeve 38 to the arm 18. The movements imparted, as above described, to the arms 17, 18 results in the arms 12, 13 constituting the switch being moved from one extreme position to the other and the arrangement is such that the arms 12, 13 are held in one position while a predetermined number of products passes in succession to one of the flies and then the arms are reversed to cause the same predetermined number of products to pass in succession to the other fly.

In order to bring the disc 24 to rest in a definite position with a groove 25 in readiness to receive one of the rollers 23, there is provided a locating device comprising a roller 40 carried by an arm 41 fast with a sleeve 42 having thereon a gear 43 in mesh with a gear sector 44 pivotally mounted at 45 and provided with a roller 46 engaging a cam groove 47 secured to the gear wheel 20. The roller 40 is adapted to partially enter one or another of a series of gaps 48*a* formed by an interrupted flange 48 each of which is in line with each of the grooves 25. The roller 40 is normally in position in the gap, the walls 48*b* of which, are engaged by the roller, so that the disc 24 is prevented from rotating and is positioned with a groove 25 in readiness to receive one of the rollers 23. The timing of the device is such that just before one of the rollers 23 enters one of the grooves 25, the cam 47 operates the roller 40 to move it out of the gap 48*a* and thus frees the disc 24 for rotation by the roller 23, whereafter the cam 47 causes the roller 48 to move partially into the next gap 48*a*.

To collect the copies taken by the two flies, the following mechanism is provided. Located below the flies is an endless conveyor comprising a series of parallel chains 49, all of which pass at one end around chain wheels 49', certain of which pass around chain wheels 50 and the remainder of which are extended and pass around chain wheels 50', the chain wheels being disposed so that the chains are inclined upwardly towards a delivery zone, the distance between the right hand fly and the upper or operative run of the chains being less than the distance between the left hand fly and the operative run. It will be understood that the chain wheels 49' are driven in the usual manner by means of suitable gearing (not shown) but which is drivingly connected to the machine drive. Located between the right hand fly and the upper run of the conveyor is a receiving tray formed by members 51 spaced apart from one another and each similar and carried by a post 52. Each of the members is provided with a stop 53 against which products delivered to the right hand fly are carried by the rotation of the fly and which causes these products to be deposited on the tray. Located between the left hand fly and the conveyor and above the level of the first tray is a second tray also formed by spaced parts 54 having a pivoted stop 55 associated with it and each carried by a post 56, the products taken by the left hand fly being carried against this stop 55 which causes the products to be deposited upon the tray constituted by the parts 54. It will be seen that by reason of the reverse rotation of the two flies, the products deposited by the right hand fly will have its folded edge at the right hand end of the corresponding tray 51, while the products deposited by the left hand fly will have their folded edges at the left hand side of the corresponding tray 54 or in other words the folded edges of the two sets or quires of products will be of opposite sense. It is now merely necessary to transfer the quires on to the chains and in superposed relationship to obtain a delivery of a bundle consisting of two quires distinguished from one another by the reversal of their folded edges: this is effected by providing at intervals along certain of those chains passing around the chain wheels 49', 50 fingers 57 which can pass between the spaced parts of the trays 51, 54 and carry the products from the trays and on to the chains. The disposition of the fingers 57 is such that when the switch device 12, 13 has operated to direct products to the left hand fly, the fingers 57 engage the products in the tray 51 below the right hand fly and move them on to the chains and by the time that a quire of products has been delivered to the left hand fly (at which time the switch device 12, 13 is reversed to direct products to the right hand fly) the products taken by the chains from the tray 51 are below the products deposited by the left hand fly in the tray 54, the height of tray 54 above the chains being sufficient to allow the passage below it of the products on the chains. At this time, the fingers 57 are in engagement with the right hand edges of the products in the tray 54 and hence movement of the fingers due to continued movement of the chains 49 causes the products to be removed from the tray and to be deposited on the products taken from the right hand tray, thus providing the bundle of two superposed quires of products which are finally taken from the extended chains.

In order to prevent damage in the event of a

blockage in the region of the tray constituted by the parts 54, the posts 56 carrying these parts are free to turn about a vertical axis in their supporting bracket 56a and the parts are connected by a spring 56' connected to and extending between arms 56b, one of which is secured to each of the posts 56 and which enables the two parts to swing apart to enable the obstruction to be cleared and normally holds the parts 54 together in product receiving position.

In order also to effect economy in the space required the fingers 57 are controlled by cam tracks so as to lie upwardly when required to propel products and to lie only slightly beyond the boundary of the chains when on their return run. To effect this, the fingers are pivotally mounted at 58 to the chain 49 and are provided with rollers 59, 59' and 60 adapted respectively to engage cam tracks 61, 62. Considering one finger when the finger is on its operative run, the rollers 59, 59' engage the cam track 61 which prevents the finger 57 from turning in a clockwise direction due to the pressure thereon of the products during the propulsion thereof. When, however, the chain on which the finger 57 is carried reaches the chain wheel 50, the rollers 59, 59' pass out of the cam track 61 and the finger due to the pressure thereon of the products being moved thereby, is allowed to move in a clockwise direction until the roller 60 comes into engagement with the cam track 62 which prevents further clockwise movement. The chain has now commenced its return run so that the finger is moved along its return run in a position which is only slightly inclined with respect to the return run of the chain. The track 62 terminates near the chain wheel 49 and is shaped at 63 to cause the finger to turn on its pivot and to move into position so that the rollers 59, 59' can re-engage the track 61 which again supports it in a vertical position in readiness for propelling products.

It will be seen that when the rollers 59, 59' on the finger leave the cam track 61, the finger moves down between the chains. In order to prevent damage which might be caused by an obstruction being in the path of the fingers 57 as they move downwardly, there are provided arms 65 which are lowered by projections on the chains to lie below the upper run of the chains until one bunch of products has passed their extremities whereupon the arms 65 are caused by springs 66 to sweep upwardly just as or before the fingers 57 propelling the bunch commences to move downwardly, this movement of the arms 65 removing any obstruction which may be present.

As is indicated at 67 the chains are provided with sections which conjointly provide supports for the quires of products when received on the chains, these sections being shaped so as to provide a horizontal support which merges into a shape conforming to the natural shape of a quire, the sections thus preventing or tending to prevent the upsetting of a quire which might occur if the quire were supported upon a plane surface parallel with or carried by the chains: the sectional formation of the support also of course enables it to pass with the chains around the chain wheels.

It will be understood that the invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, and it will be further understood that each and every novel feature and combination present in or possessed by the mechanism herein disclosed forms a part of the invention included in this application.

What we claim is:—

1. A delivery mechanism comprising two delivery flies each comprising hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, a drive transmitting member, means moving the member in a constant path, a second member, abutments on the second member and which are intermittently engaged by the drive transmitting member whereby the second member is intermittently displaced, a further member, means whereby the displacement of the second member is transmitted to the further member first in one direction and then in the other direction, means interconnecting the further member and the switch device which is caused by the further member to direct a succession of products first to one fly and then a succession of products to the other fly, a receptacle associated with each fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, and means depositing the pile of products in one receptacle on to the conveyor and then the pile of products in the other receptacle on to the first pile of products.

2. A delivery mechanism comprising two delivery flies each comprising hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, a first member, means rotating the member at a constant speed, a second member having radial grooves, means rotatably supporting the second member, a projection on the first member and caused by the rotation of the first member to move intermittently into and then out of a groove and operating thereby partially to rotate the second member, a cam member, means operatively associating the cam member and the second member, a further member controlled by the cam member and caused thereby to move intermittently first in one and then in the other direction, means interconnecting the further member and the switch device which is caused by the further member to direct a succession of products first to one fly and then a succession of products to the other fly, a receptacle associated with each fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, and means depositing the pile of products in one receptacle on to the conveyor and then the pile of products in the other receptacle on to the first pile of products.

3. A delivery mechanism comprising two delivery flies each comprising hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, a drive transmitting member, means moving the

member in a constant path, a second member, abutments on the second member and which are intermittently engaged by the drive transmitting member whereby the second member is intermittently displaced, a further member, means whereby the displacement of the second member is transmitted to the further member first in one direction and then in the other direction, a link connecting the further member and one end of the switch device, a shaft extending through one of the flies, a gear at each end of the shaft, a third gear in mesh with the gear at one end of the shaft, means connecting the third gear to the further member, a fourth gear in mesh with the gear at the other end of the shaft, the third and fourth gears being concentric with the axis of rotation of the fly, means linking the fourth gear to the other end of the switch device which is caused by the further member to direct a succession of products first to one fly and then a succession of products to the other fly, a receptacle associated with each fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, and means depositing the pile of products in one receptacle on to the conveyor and then the pile of products in the other receptacle on to the first pile of products.

4. A delivery mechanism comprising two delivery flies each comprising hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, a first member, means rotating the member at a constant speed, a second member having radial grooves, means rotatably supporting the second member, a projection on the first member and caused by the rotation of the first member to move intermittently into and then out of a groove and operating thereby partially to rotate the second member, a cam member, means operatively associating the cam member and the second member, a further member controlled by the cam member and caused thereby to move intermittently first in one and then in the other direction, a link connecting the further member and one end of the switch device, a shaft extending through one of the flies, a gear at each end of the shaft, a third gear in mesh with the gear at one end of the shaft, means connecting the third gear to the further member, a fourth gear in mesh with the gear at the other end of the shaft, the third and fourth gears being concentric with the axis of rotation of the fly, means linking the fourth gear to the other end of the switch device which is caused by the further member to direct a succession of products first to one fly and then a succession of products to the other fly, a receptacle associated with each fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, and means depositing the pile of products in one receptacle on to the conveyor and then the pile of products in the other receptacle on to the first pile of products.

5. A delivery mechanism comprising two delivery flies each comprising hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, a first member, means rotating the member at a constant speed, a second member having radial grooves, means rotatably supporting the second member, a projection on the first member and caused by the rotation of the first member to move intermittently into and then out of a groove and operating thereby partially to rotate the second member, a cam member, means operatively associating the cam member and the second member, a further member controlled by the cam member and caused thereby to move intermittently first in one and then in the other direction, a link connecting the further member and one end of the switch device, a shaft extending through one of the flies, a gear at each end of the shaft, a third gear in mesh with the gear at one end of the shaft, means connecting the third gear to the further member, a fourth gear in mesh with the gear at the other end of the shaft, the third and fourth gears being concentric with the axis of rotation of the fly, means linking the fourth gear to the other end of the switch device which is caused by the further member to direct a succession of products first to one fly and then a succession of products to the other fly, a receptacle associated with each fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, and means depositing the pile of products in one receptacle on to the conveyor and then the pile of products in the other receptacle on to the first pile of products.

6. A delivery mechar'sm comprising two delivery flies each comprising hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, a first member, means rotating the member at a constant speed, a second member having radial grooves, means rotatably supporting the second member, a projection on the first member and caused by the rotation of the first member to move intermittently into and then out of a groove and operating thereby partially to rotate the second member, a cam member, means operatively associating the cam member and the second member, a further member controlled by the cam member and caused thereby to move intermittently first in one and then in the other direction, a positioning member normally engaging the second member, a further cam operatively associated with the first member, means operatively associating the further cam and the positioning member whereby this is moved out of engagement with the second member as the projection enters a radial groove, means interconnecting the further member and the switch device which is caused by the further member to direct a succession of products first to one fly and then a succession of products to the other fly, a receptacle associated with each fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, and means depositing the pile of products in one receptacle on to the conveyor and then the pile of products in the other receptacle on to the first pile of products.

7. A delivery mechanism comprising two delivery flies each comprising hub members and

arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, a drive transmitting member, means moving the member in a constant path, a second member, abutments on the second member and which are intermittently engaged by the drive transmitting member whereby the second member is intermittently displaced, a further member, means whereby the displacement of the second member is transmitted to the further member first in one direction and then in the other direction, means interconnecting the further member and the switch device which is caused by the further member to direct a succession of products first to one fly and then a succession of products to the other fly, a receptacle associated with each fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, and fingers carried by the conveyor device and disposed to sweep first one receptacle and then the other receptacle whereby a pile of products in the first receptacle is deposited upon the conveyor and the pile of products in the second receptacle is deposited upon the first pile of products.

8. A delivery mechanism comprising two delivery flies each comprising hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, a drive transmitting member, means moving the member in a constant path, a second member, abutments on the second member and which are intermittently engaged by the drive transmitting member whereby the second member is intermittently displaced, a further member, means whereby the displacement of the second member is transmitted to the further member first in one direction and then in the other direction, means interconnecting the further member and the switch device which is caused by the further member to direct a succession of products first to one fly and then a succession of products to the other fly, a receptacle associated with each fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, fingers pivotally carried by the conveyor device, followers on the fingers, and cam tracks over which the followers move and which are disposed to rock the fingers to project in one part of their movement from the conveyor and to sweep first one receptacle to deposit the pile of products therein on to the conveyor and then to sweep the other receptacle to deposit the pile of products therein on the first pile, the cam tracks then rocking the fingers into an inoperative non-projecting position.

9. A delivery mechanism comprising two delivery flies each comprising hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, means operating periodically to move the switch device first to switch a plurality of products in succession to one fly and then a corresponding plurality of products in succession to the other fly, a receptacle associated with each fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, fingers pivotally carried by the conveyor device, followers on the fingers, cam tracks over which the followers move and which are disposed to rock the fingers to project in one part of their movement from the conveyor and to sweep first one receptacle to deposit the pile of products therein on to the conveyor and then to sweep the other receptacle to deposit the pile of products therein on the first pile, the cam tracks then rocking the fingers into an inoperative non-projecting position, additional pivotally mounted members, and means operating the additional members to sweep the zone followed by the first fingers just before the first fingers are rocked to their inoperative position.

10. A delivery mechanism comprising two delivery flies each comprising hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, a drive transmitting member, means moving the member in a constant path, a second member, abutments on the second member and which are intermittently engaged by the drive transmitting member whereby the second member is intermittently displaced, a further member, means whereby the displacement of the second member is transmitted to the further member first in one direction and then in the other direction, means interconnecting the further member and the switch device which is caused by the further member to direct a succession of products first to one fly and then a succession of products to the other fly, a receptacle associated with each fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, fingers pivotally carried by the conveyor device, followers on the fingers, cam tracks over which the followers move and which are disposed to rock the fingers to project in one part of their movement from the conveyor and to sweep first one receptacle to deposit the pile of products therein on to the conveyor and then to sweep the other receptacle to deposit the pile of products therein on the first pile, the cam tracks then rocking the fingers into an inoperative non-projecting position, additional pivotally mounted members, and means operating the additional members to sweep the zone followed by the first fingers just before the first fingers are rocked to their inoperative position.

11. In a delivery mechanism, a product supporting member, a moving conveyor, means to deliver products to said product supporting member, a swingable member adapted to project beyond said supporting member to engage the products and move them along said supporting member onto said conveyor, means to maintain said swingable member in product engaging and moving position and being adapted to permit swing-

ing of said member when the products being moved thereby are delivered to said moving conveyor, and means to then engage and swing said swingable member and maintain it in non-projecting position.

12. In a delivery mechanism, a rotatable fly, a product receiving member adapted to receive products delivered by said fly, means to engage and remove products from said member, and means to support said member for lateral swinging movement on a vertical axis lengthwise with respect to the axis of said fly.

13. In a delivery mechanism, a product receiving and supporting member, means to deliver products to said product receiving and supporting member, a swingable arm adapted to engage the products on said supporting member and remove them therefrom, means to carry said arm past said member, means to engage, swing, and maintain said arm projecting from said carrying means into product engaging position, and means to engage, swing, and maintain said arm out of its projecting position with respect to said carrying means, after it has passed said member.

14. A delivery mechanism comprising two delivery flies each including hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, means operating periodically to move the switch device first to switch a plurality of products in succession to one fly and then to the other fly, a receptacle associated with each fly, a support upon which one of said receptacles is mounted for lateral swinging movement lengthwise with respect to the axis of its associated fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, and means depositing the pile of products in one receptacle on to the conveyor and then the pile of products in the other receptacle on to the first pile of products.

15. A delivery mechanism comprising two delivery flies each including hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, means operating periodically to move the switch device first to switch a plurality of products in succession to one fly and then a corresponding plurality of products in succession to the other fly, a receptacle associated with each fly, a support upon which one of said receptacles is mounted for lateral swinging movement lengthwise with respect to the axis of its associated fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means moving the conveyor device successively past the receptacles, and fingers carried by the conveyor device and disposed to sweep first one receptacle and then the other receptacle whereby a pile of products in the first receptacle is deposited upon the conveyor and the pile of products in the second receptacle is deposited upon the first pile of products.

16. A delivery mechanism comprising two delivery flies each including hub members and arms secured thereto, means rotatably supporting the flies in side by side relationship, means rotating the flies in opposite directions, a switch device positioned in the zone between the flies, means operating periodically to move the switch device first to switch a plurality of products in succession to one fly and then a corresponding plurality of products in succession to the other fly, a receptacle associated with each fly, a support upon which one of said receptacles is mounted for lateral swinging movement lengthwise with respect to the axis of its associated fly, a stop device associated with each fly and which causes products carried by the respective flies to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, means to move the conveyor device successively past the receptacles, fingers pivotally carried by the conveyor device, followers on the fingers, and cam tracks over which the followers move and which are disposed to rock the fingers to project them in one part of their movement from the conveyor and to sweep first one receptacle to deposit the pile of products therein onto the conveyor and then to sweep the other receptacle to deposit the pile of products therein on the first pile, the cam tracks then rocking the fingers into an inoperative non-projecting position.

17. In a delivery mechanism, a rotatable fly, a product supporting member to receive products from said fly, a moving conveyor, said product supporting member being spaced above the conveyor, a finger swingably mounted on and carried by said conveyor, said finger extending beyond products on the supporting member to engage and remove them therefrom and dispose them upon the conveyor, means to swing said finger into, and to maintain it in, product engaging position, and means to swing said finger out of, and to maintain it out of, product engaging position.

18. In a delivery mechanism, a rotatable fly, a product supporting member associated with said fly to receive products therefrom, a swingably mounted finger to engage and remove products from said supporting member, and a support upon which said member is pivotally mounted for swinging movement lengthwise with respect to the axis of said fly.

19. In a delivery mechanism, a product receiving and supporting member, a rotatable fly adapted to deliver products to said member, a finger mounted for swinging movement into position to engage and remove products from said member and upon which said finger is mounted to be carried thereby past said member, a camming member to swing said finger into and maintain it in product engaging position before it reaches said supporting member, and a camming member to swing said finger out of, and to maintain it out of, product engaging position after it has removed products from said supporting member.

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