MECHANISM FOR DELIVERING ARTICLES IN COUNTED BUNDLES

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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 files (i. e. rotatable members having curved arms providing pockets for the reception of copies) arranged side by side and driven in opposite directions and the copies being delivered from the printing machine in quires first to one and then to the other fly. These files lay their copies on trays below the respective files and by reason of the reverse rotation of the files, 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 files, 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 files are arranged side by side with the left hand fly somewhat above the right hand fly and with the zone between the files 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. Pivotedly 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 4, 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 
5 stub shaft 21, the gear wheel 20 having secured to it two brackets 22 each carrying a roller 23. 
The tip of the roller 23 being extended on it a disc 24 in one face of which are formed four radial grooves 25 adapted to receive the rollers 23 and 
10 in the other face of which is formed a cam parts 26 carrying a roller 27 on a link 28, the roller 27 (or its pin) being con- 
strained to follow a radial path by a radial slot 29 formed in a stationary plate 30. The link 28 
15 is pivotally connected at 31 to a sleeve 32 rotat- 
abley 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 aper- 
tures 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 35 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 
15 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 im- 
30 part from the further 50 of 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 
gearings 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 con- 
45 stituting the switch being moved from one ext- 
reme position to the other and the arrangement 
is such that the arms 12, 13 are held in one 
position while a predetermined number of prod- 
ucts passes in succession to one of the flies and 
50 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 defi- 
nite position with a groove 25 in readiness to 
55 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 45 en- 
gaging a cam groove 47 secured to the gear wheel 
20. The roller 40 is adapted to partially enter 
on e n one or another of a series of gaps 48a formed by 
an interrupted flange 48 each of which is in line 
with each of the grooves 25. The roller 40 is 
60 normally in position in the gap, the walls 48b of 
which, are engaged by the roller, so that the 
disc 24 is prevented from rotating and is pos- 
tioned with a groove 25 in readiness to receive 
one of the rollers 23. The timing of the device 
70 is such that just before one of the rollers 23 
enters one of the gaps 48a, the roller 20 effects 
30 85 movement of the roller 40 to move it out of the gap 48a and 
thus frees the disc 24 for rotation by the roller 
23, whereby the cam 47 causes the roller 48 
75 to move partially into the next gap 48b.

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 re- 
mainder of which are fixedly mounted on the 
chain wheels 50', the chain wheels being dis- 
posed so that the chains are inclined upwardly 
towards a delivery zone, the distance between the 
10 right hand fly and the upper peripheric run of 
the chains being less than the distance be- 
tween 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 suit- 
15 able gearing (not shown) but which is drivingly 
connected to the machine drive. Located be- 
tween the right hand fly and the upper run of 
the conveyor is a receiving tray formed by mem- 
bers 51 spaced apart from one another and each 
20 similar and carried by a post 52. Each of the 
members is provided with a stop 53 against which 
products are stopped and carried by the roller 48 
25 carried by the rotation of the fly and which causes 
these products to be deposited on the tray. 
20 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 
254 pivot between 55 associated with it and carried 
by a post 56, the products taken by the 
30 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 
35 seen that by reason of the reverse rotation of 
the 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 
35 have their folded edges at the left hand side of 
the corresponding tray 54 or in other words 
40 the folded edges of the two sets or quires of 
products will be of opposite sense. It is now 
45 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 being accomplished 
45 by setting up at intervals along certain of those 
chains passing around the chain wheels 49', 50 fingers 
55 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 
55 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 
55 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 
55 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 
65 from the tray 54 and deposited upon the 
chains. The products taken from the right hand 
60 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 75
blockage in the region of the tray constituted by the parts 84, the posts 56 carrying these parts are free to turn about a vertical axis in their supporting bracket 58c and the posts are connected to and extending between arms 55b, 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 56 together in product receiving position.

To effect securing 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 to a 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 direction, 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 conjoinly 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.

The description is intended to show 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 files each comprising hub members and arms secured thereto, means rotatably supporting the files in side by side relationship, means rotating the files in opposite directions, a switch device positioned in the zone between the files, 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 files each comprising hub members and arms secured thereto, means rotatably supporting the files in side by side relationship, means rotating the files in opposite directions, a switch device positioned in the zone between the files, 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 caused by the rotation of the first member to move intermittently 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 files 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 files each comprising hub members and arms secured thereto, means rotatably supporting the files in side by side relationship, means rotating the files in opposite directions, a switch device positioned in the zone between the files, 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 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 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 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 further member controlled by the cam member and operated 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 first pile of products.

6. 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 further member controlled by the cam member and 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 first pile of products.

7. A delivery mechanism comprising two delivery flies each comprising hub members and
arms secured thereto, means rotatably supporting the files in side by side relationship, means rotating the files in opposite directions, a switch device positioned in the zone between the files, 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 corresponding plurality of products in succession to the other fly, a receptacle associated with each fly and which causes products carried by the respective files to be deposited in superposed relation in the associated receptacle and forming a pile of products therein, a conveyor device, 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 and which causes products carried by the respective files 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 files each comprising hub members and arms secured thereto, means rotatably supporting the files in side by side relationship, means rotating the files in opposite directions, a switch device positioned in the zone between the files, 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 files 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.

9. A delivery mechanism comprising two delivery files each comprising hub members and arms secured thereto, means rotatably supporting the files in side by side relationship, means rotating the files in opposite directions, a switch device positioned in the zone between the files, 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 and which causes products carried by the respective files 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, 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 files each comprising hub members and arms secured thereto, means rotatably supporting the files in side by side relationship, means rotating the files in opposite directions, a switch device positioned in the zone between the files, 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 files 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 files each including hub members and arms secured thereto, means rotatably supporting the files in side by side relationship, means rotating the files in opposite directions, a switch device positioned in the zone between the files, 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. In a delivery mechanism comprising two delivery files each including hub members and arms secured thereto, means rotatably supporting the files in side by side relationship, means rotating the files in opposite directions, a switch device positioned in the zone between the files, 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 files each including hub members and arms secured thereto, means rotatably supporting the files in side by side relationship, means rotating the files in opposite directions, a switch device positioned in the zone between the files, 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 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.

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 fingers into, and to maintain it in, product engaging position, and means to swing said fingers 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, and means to have removed products from said supporting member.

Cecil George Quick, Donald Arthur Ball, William Arnold Whitehead.