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APPARATUS FOR DELIVERING IN PACKS THE PRODUCTS OF A ROTARY PRESS

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2 Sheets-Sheet 1

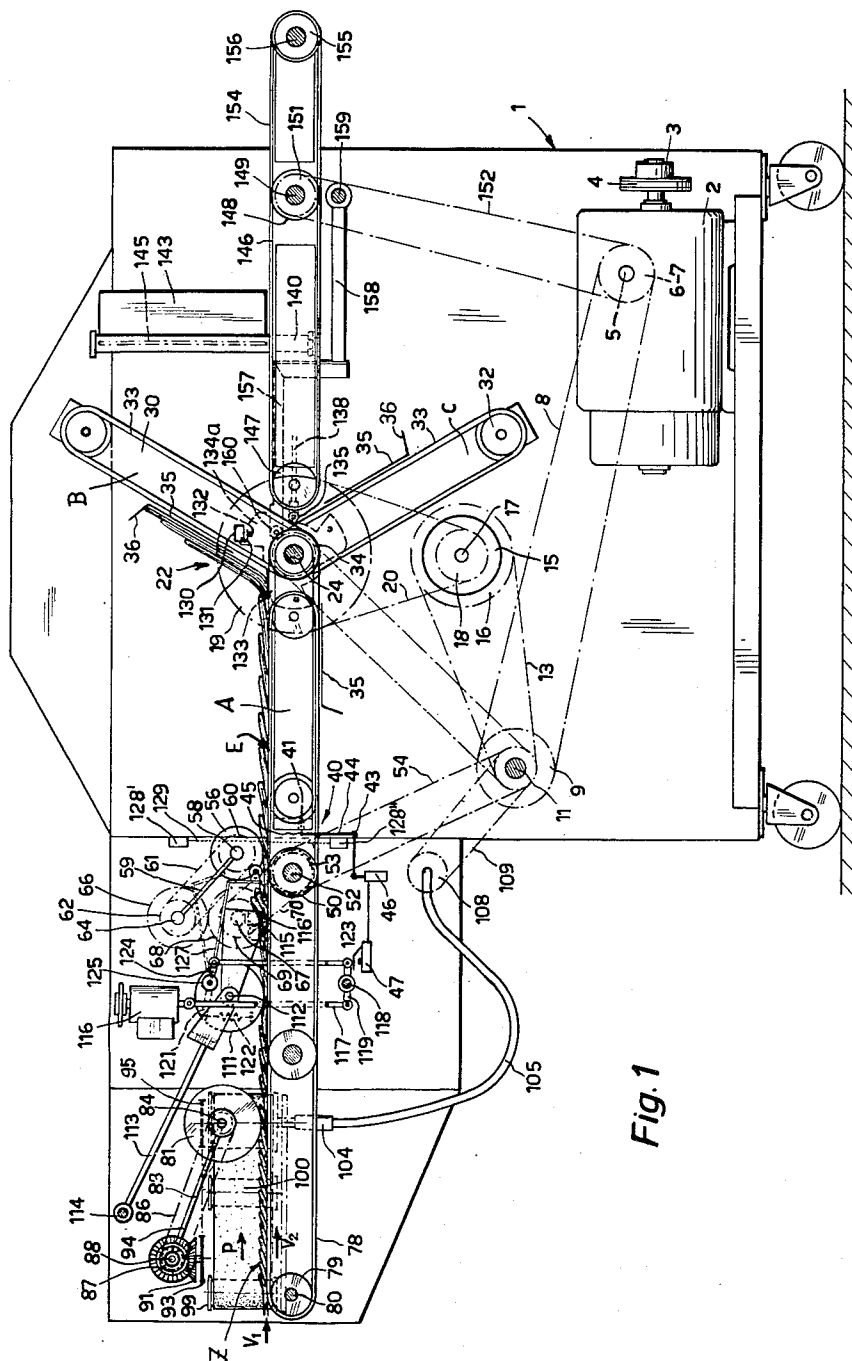


Fig. 1

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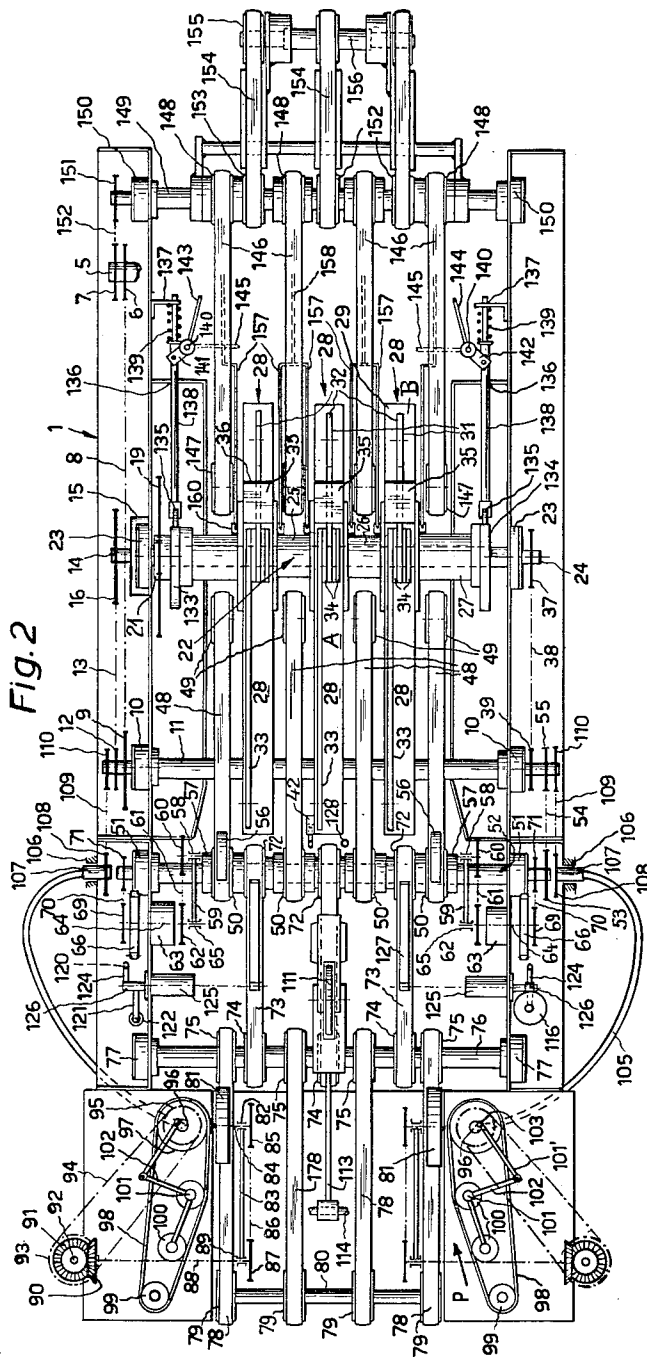
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2 Sheets-Sheet 2



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APPARATUS FOR DELIVERING IN PACKS THE
PRODUCTS OF A ROTARY PRESSHans Rudolf Kuratle, Dietlikon, Zurich, Switzerland, as-
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5,864/62

13 Claims. (Cl. 93—93)

The present invention relates to an apparatus for ar-
ranging in packages the products of a rotary press de-
livered in imbricated succession.

According to the invention, this apparatus comprises
a transfer path receiving and conveying an imbricated suc-
cession of products, movable abutment means disposed
above the transfer path, adjustable counter means for
counting a predetermined number of said succession of
products, means for actuating said abutment means in
response to the predetermined number to which the counter
is set, whereby said abutments means penetrate trans-
versely into the imbricated succession of products on
said transfer path to interrupt the succession, a rotatable
delivery cross mounted in alignment with said transfer
path following said abutment means, a stepping mecha-
nism for intermittently turning said delivery cross, and
means for controlling the operation of said stepping
mechanism upon interruption of said imbricated suc-
cession in response to the last product counted by said
counter means.

The invention will now be described in more detail
with reference to the accompanying diagrammatic draw-
ings illustrating, by way of example, a preferred embod-
iment of the apparatus, and in which:

FIGURE 1 is a longitudinal section through the ap-
paratus according to the invention, and

FIGURE 2 represents a top plan view of the apparatus.

In the following reference is always taken to both
figures, if not otherwise stated.

The apparatus disclosed comprises a wheeled machine
frame 1, upon which a driving motor 2 (FIGURE 1)
is mounted. This driving motor 2 carries a pulley 3
which by means of a V-belt 4 is in driving engagement
with the driving shaft of a preferably infinitely variable
gear. In FIGURE 1 this gear is concealed behind the
driving motor 2, while in FIGURE 2 this gear and the
motor are not shown for the sake of clarity. The driven
shaft 5 of the gear carries two sprocket wheels 6 and 7
which are fixed to the shaft. The sprocket wheel 6 is
operatively connected with a chain sprocket 9 which is
keyed to a main shaft 11 rotatably mounted in bearings
10 of the machine frame 1 (FIG. 2). In addition to the
gear wheel 9 the shaft 11 carries another gear wheel 12
which is connected by a chain 13 with a gear wheel 16
keyed to the driving shaft 14 of an electromagnetic cou-
pling 15. The casing of this electromagnetic coupling
15 is secured to the machine frame 1 at the level as it
is shown in FIGURE 1. The driven shaft 17 (FIG. 1)
of the coupling 15 carries a gear wheel 18 shown by way
of indication in FIGURE 1, while in FIGURE 2 it is
concealed by an overlying gear wheel 19, with which it
is operatively connected through a chain 20. The gear
wheel 19 is fixed for rotation with a hub member 21 of
a three-armed delivery cross 22 which is mounted for
rotation on a cross-shaft 24 rotatably supported in bear-
ings 23 on the machine frame 1 (see FIG. 2). Apart
from the hub member 21 the delivery cross 22 contains
further hub members 25, 26 and 27. Each of the arms
of the delivery cross 22, designated in FIGURE 1 by A,
B and C, consists of three strutting members 28 which
are disposed each between two adjacent hub members

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and firmly connected to the latter. Each strutting mem-
ber 28 comprises a guide plate 29, the guide plates 29
of the struts of the same arm extending in the same axial
plane of the delivery cross 22, and also a web 30 posi-
tioned at right angles to the guide plate. The guide
plates 29 are best visible at the arm B in FIGURE 2,
while the webs are clearly appearing at the arm A in the
same figure, and at the arm B in FIGURE 1, respectively.
It is evident in connection with the arm B in FIGURE 2,
that each of the guide plates 29 is provided with a ra-
dial longitudinal slot 31, wherein a V-belt pulley 32 is
arranged in the outer end portion of the particular strut-
ting members. These V-belt pulleys are mounted for
rotation each on a transverse shaft with respect to the
web 30 secured in this web. Each of these pulleys 32
is surrounded by a V-belt 33, as this is evident in FIG-
URE 2 in connection with the arm A, and in FIGURE 1
at all three arms. Each V-belt 33 additionally passes
over a further pulley keyed to the shaft 24, these last-
named V-belt pulleys being designated all by 34. The
arrangement is made so that the length of the particular
V-belt 33 which passes through the slot 31 of the guide
plates 29, projects slightly beyond the forward face of
the guide plate 29. However, at each strutting member
a section of this length is covered by a cover plate 35
(also see arm B in FIGURE 2), an abutting web 36
extruding from the radially outer end of said plate. The
drive of the V-belt pulleys 34 and thus of the V-belts
33 is effected from the cross-shaft 24 by means of a gear
wheel 37 and a chain 38 through a gear wheel 39 keyed
to the shaft 11, independently of the drive of the delivery
cross 22, the drive of which—as previously described—
is derived from the cross-shaft 11 by the intermediary of
the electromagnetic coupling 15.

By means of an arresting device 40 (FIGURE 1), to
be described in more detail later on, the delivery cross 22
can be arrested in three possible positions in which one
of the arms A, B or C extends horizontally and directed
toward the left in the drawings. For this purpose a lock-
ing member 42 provided with a recess 41 (FIGURE 1)
is secured to the free end of the middle strut 28 of each
arm, and the arresting device is provided with a cranked
lever 44 pivotally supported at 43 (FIGURE 1), which
lever carries at the end of its vertical arm a bolt 45 (FIG-
URE 1) which engages into the recess 41 under the in-
fluence of a spring which is not shown in the drawings.
The locking member 42 is beveled to such an extent that
the bolt 45 automatically and resiliently snaps into the re-
cess 41 when the delivery cross 22 is rotated in clockwise
direction. For the disengagement of the delivery cross
22 the crank lever 44 is pivoted in counter-clockwise di-
rection by means of an electromagnet 46. The electro-
magnet is excited by a switch 47 (FIGURE 1).

The strutting members 28 of an arrested arm of the
delivery cross 22 engage each between spaced conveying
belts 48 extending parallel to each other in horizontal di-
rection. There are altogether provided four such con-
veying belts. The upper portion of these conveying belts
and the upper portion of the V-belts 33 of the arrested
arm are situated in a common horizontal plane which in
FIGURE 1 is designated by E and subsequently is called
transfer plane for the sake of clarity. The conveying or
feed belts 48 are guided on the one hand on rolls 49
which are rotatably supported on the machine frame 1 in
proximity to the hub of the delivery cross, and on the
other hand on additional rolls 50 which in turn are keyed
to a cross-shaft 52 (also see FIGURE 1) rotatably mount-
ed in bearings 51 of the machine frame 1 (FIGURE 2).
At one end this cross-shaft 52 carries a gear wheel 53
which is in driving connection with a gear wheel 55 keyed
to the cross-shaft 11 by means of a chain 54.

Adjacent the rolls 50 a feeding roll 56 which is provided with a gripping peripheral surface, is mounted above each of the two outer feed belts 48. The feeding rolls 56 are fixed for rotation each on a stub shaft 57 which extends parallel to the cross-shaft 52 and in turn is rotatably supported at 58 so as to pass through the free end of a pivoting arm 59. The stub shaft 57 carries at its opposite end a gear wheel 60. By means of a chain 61 each of the gear wheels 60 is connected with a gear wheel 62 which is fixed for rotation with a rotatable shaft 64 mounted in the machine frame at 63. Besides the gear wheel 62, the shaft 64 carries the pivotal bearing 65 of the arm 59. A gear wheel 66 is keyed to the other end of each shaft 64 and meshes with a gear wheel 68 which is arranged underneath it and rotatably mounted in the machine frame by means of a shaft 67 (FIGURE 1). The shaft 67 carries a sprocket wheel 69 which is connected by a chain 70 to a sprocket wheel 71 keyed to the cross-shaft 52. This arrangement provides that the feeding rolls 56 are driven by the cross-shaft 52, the direction of rotation being changed by the gear pair 66-68, while the feeding rolls 56 can be pivoted by means of the arms 59 without impairing the drive.

Between the rolls 50 of the transverse shaft 52, this latter carries rolls 72 keyed to it and which serve each for guiding and driving a conveyer belt 73 additionally guided also on rolls 74. These rolls 74, in combination with rolls 75 and in alternating sequence, are mounted on a transverse shaft 76 which is mounted for rotation in bearings 77 of the machine frame 1. A further conveyer belt 78 is guided on each roll 75 and passes over a further roll 79. The rolls 79 are rotatably supported in the machine frame 1 by means of a transverse shaft 80. As evident from the drawings, the conveyer belts 78 are driven from the cross-shaft 52 by means of the belts 73. In studying the drawings it further appears that the strand of the conveyer belts 73 and 78 is situated in the transfer plane E.

Above each of the two outer conveyer belts 78 a feeding roll 81 is arranged, which is provided with a gripping circumferential surface and which is keyed to one end of a shaft 84 rotatably supported at 82 in a pivoting arm 83. At the other end the shaft carries a chain wheel 85 which is connected to a chain wheel 87 by a chain 86. The chain wheel 87 is secured to one end of a shaft 88 which is mounted for rotation in the machine frame in a manner not shown in detail and which carries close to the chain wheel 87 the pivotal bearing 89 of the arm 83 and at its opposite end a bevel gear 90. The bevel gear 90 meshes with a further bevel gear 91 (the arrangement is symmetrical with respect to both accelerating or feeding rolls 81) which gear is arranged on a shaft 92 rotatably supported in the machine frame, and mounted for rotation together with a sprocket wheel 93 disposed on the same shaft 92. This sprocket wheel 93 is connected by a chain 94 with a sprocket wheel 95 which is keyed to a vertical shaft 96 rotatably supported in the machine frame and which in turn carries a guide roll 97 for rotation therewith. Around each of the guide rolls 97 arranged on either side of the machine, an endless guiding belt 98 is passed, which in addition is guided by a deflecting roller 99. Against the sections of the guiding belts 98 facing each other, two deflecting rolls 100 abut, which are rotatably supported on one arm of a cranked lever 102 pivotally mounted at 101 in the machine frame. The other arm of the lever 102 is eccentric and anchored at 103 on the shaft 96. Upon rotation of this shaft 96, the respective guide belt 98 will be driven in the direction of the arrow P, and the two deflecting rolls 100 carry out an oscillating transverse movement with respect to the particular section of the guiding belt 98. The purpose of this provision will be explained in detail later on. Apart from that, the arrangement is made so that the two guiding belts 98 form lateral

walls which converge near the feeding belts 78 and—as mentioned—also oscillate.

The vertical shafts 96 are rotatably mounted at 104 (FIGURE 1) in the machine frame and are connected for rotation with a stub shaft 107 rotatably supported at 106 in the machine frame, by the intermediary of a flexible shaft 105. Each stub shaft 107 carries a chain wheel 108 which is connected by a chain 109 to a chain wheel 110 keyed to the main shaft 11. By the drive connection described last the two acceleration rolls 81, pivotable without any impairment of the drive, and in addition both guiding belts 98 thus are set in motion, whereby at the same time an oscillating movement is imparted to the guiding belts.

A wheel 111 is supported by the middle conveyer belt 73 and has its axle 112 pivotally supported at 114 in the machine frame 1 by a link rod 113. A pivotable yoke member 115 is linked to the axis 112 of the wheel 111, in which yoke member supporting wheels 116 and also the pulse emitter of a counting device, not shown, are accommodated. The wheel 111 and the yoke member 115—the latter by the intermediary of wheels 116—are supported by the imbricated articles Z moved along the transfer plane E—as will subsequently appear, whereby the pulse emitter releases a counting impulse for each imbricated article passing underneath the wheel 111. In this case a counting device known per se is involved, which is described in more detail in U.S. patent application No. 183,173. The portion of the counting device not illustrated is adjustable so that an actuating pulse will be emitted after completion of a predetermined number of counting pulses and after a certain lapse of time, a shut-off pulse is given, for example after completion of a predetermined number of counting pulses. Both pulses are introduced into an electromagnet 116 mounted in the machine frame for the purpose of energizing and de-energizing the latter. The armature of this electromagnetic is connected to one of the arms of a tilting lever 119 keyed to a tilting shaft 118 by means of a link rod 117. The tilting shaft 118 formed as cross-shaft is rotatably supported in the machine frame in a manner not shown in detail and carries on its opposite end a tilting arm 120 corresponding to the second arm of the tilting lever 119, and also a further arm 121 to which is secured the end of a tension spring 122 tending to pivot the tilting shaft 118 in counterclockwise direction according to FIGURE 1. The arm 120 and the corresponding second arm of the tilting lever 119 are each connected by a link rod 123 with a pivoting arm 124 which in turn is pivotally supported at 125 in the machine frame 1. The pivoting shaft 126 of each pivoting arm 124 then extends through the bearing means 125, and carries at its opposite end in the manner of a cantilever a bent-off separating arm 127 which is disposed above an outer conveyer belt 73 and which, by turning the shaft 126, can be pivoted with its free end downwardly until close to the feeding belt 73 (in FIGURE 1 indicated by a solid line), or may be upwardly turned in counterclockwise direction into a position indicated in FIGURE 1 by dot and dash lines. The arrangement is made so that upon pivoting the separating arms into their position indicated by solid lines, the free end thereof engages into the imbricated formation and serves as a separating abutment for the delivered printed articles Z, whereby, however, the free ends of the separating arms do not arrive at or engage the particular conveying belt 73, so that one or several printed articles remaining underneath the ends during the downward movement of the separating arms may still be withdrawn without damaging them. The object of this provision will be explained later in more detail. Simultaneously with the downward movement of the separating arms 127, as evident from FIGURE 1, the switch 47 of the magnet 46 is actuated by the tilting lever 119 and the arresting device 40 is influenced in the sense of releasing the delivery cross

22. Upon lifting the separating arms 127, the arresting device 40 becomes operative again.

The switch 47, moreover, controls photoelectric switching devices 128' and 128'' (particularly see FIGURE 1), the vertical control ray 129 of which traverses the transfer plane E adjacent to the end of the just arrested arm of the delivery cross (also see FIGURE 2). The arrangement is made so that the photoelectric switching device 128', 128'' is also activated in the downwardly pivoted position of the separating arms 127. This photoelectric switching device imparts a switching pulse, when the previously interrupted control beam 129 is able to pass from the emitter to the photoelectric cell. The control pulse of the photoelectric switching device energizes the electromagnetic coupling 15 which is engaged and connects the chain wheel 16 for rotation with the chain wheel 18, and thus operatively connects the delivery cross 22 with the driving motor 2. An additional switch 130 is connected in the circuit of the electromagnetic coupling 15 in parallel with the photoelectric switching device 128, the switch 130 being visible only in FIGURE 1. Three circumferentially spaced pins 132 secured to the delivery cross 22 cooperate with the switch arm 131 in such a manner that in the locked position of the delivery cross 22 according to FIGURE 1, the switch arm 131 is lifted by a pin 132 and the switch 130 thus will be opened. The pins 132 may be provided for example on a control cam 133 which is arranged on the hub portion 21 and connected for rotation therewith. An additional similar control cam 134 (FIGURE 2) is located on the hub portion 27 of the delivery cross 22. Each of these control cams comprises three lobes 134a which are angularly displaced with respect to each other through 120° (FIGURE 1) and coact with a cam follower 135. Each of the followers 135 is rotatably supported on the end of a tappet 138 movably guided in the machine frame at 136 and 137 (FIGURE 2), which tappets are urged towards the associated control cam 134 under the influence of a spring 139, so that the followers 135 always abut against the peripheral face of the cam. Pivoting levers 141 and 142 are mounted at 140, are linked to each tappet 138 in such a manner that upon movement of the tappet against the action of the spring 139, the pivoting lever 141 is turned in clockwise direction, while the pivoting lever 142 is turned in counterclockwise direction. A vertical wing 143 is secured to the pivoting lever 141, and a further such wing 144 is fastened to the pivoting lever 142. Upon turning the pivoting levers 141, 142, when the associated cam follower climbs upon one of the lobes of the control cams 134 or 133, the wings 143 and 144 are turned against each other and into the common plane of their pivoting axes, as this is indicated by dot and dash lines at 145 in FIGURE 2.

The bottom edge of the wings 143 and 144 is situated in immediate proximity to the plane E. In this plane E are situated the upper strands of four additional conveyer belts 146 which are arranged beyond the axis of the delivery cross 22 in alignment with the belts 48. The belts 146 are passing over rolls 147 and over rolls 148. The latter are keyed to a shaft 149 which in turn is mounted in bearings 150 in the machine frame 1 and carries on one of its ends a chain sprocket 151 which is in driving connection with the gear wheel 7 by a chain 152. The shaft 159 carries further rolls 153 by means of which three additional conveyer belts 154 each engaging between two belts 146, are driven. The belts 154, moreover, are guided on rolls 155 which are rotatably supported in the machine frame by means of a shaft 156. The upper strand is also situated in the plane E.

Cranked webs 157 are disposed between the feed belts 146, the top edge of these webs being situated in one abutment position (shown in FIGURE 1) somewhat below the plane E, i.e. underneath the upper strand of the belts 146. These webs 157 are secured each at the end of a link rod 158 (FIGURE 2) which is hinged to

a shaft 159 shown only in FIGURE 1. On the end of each web 157, facing the hub of the delivery cross 22, a follower roll 160 (FIGURE 1) is rotatably supported which, under the weight of the web, rests upon one of the hub portions 21, 25, 26 and 27, respectively. These hub portions, in a manner not shown in detail, are provided with control faces by which the follower rolls 160 and thus the webs 157 are lifted always at the moment when the tappets 138 are shifted against the action of the spring 139.

From the rotary press the printed articles Z for example newspapers, pass in the imbricated formation onto the feed belts 78 at a certain velocity which in FIGURE 1 is indicated by V_1 . However, the peripheral speed of the conveyer belts 78 is somewhat increased in comparison with the speed V_1 . This increased speed is designated by V_2 in FIGURE 1. The two acceleration rolls 81 are also driven at this same peripheral speed. Owing to this increased speed V_2 , the newspapers first lying close together in imbricated formation on the feed belts 78, are then individually accelerated particularly while passing underneath the acceleration rolls 81, whereby the imbricated formation is gradually drawn apart, so that the spacing of the forward edges of the successive newspapers Z will be increased—as also indicated in FIGURE 1. In this loosened imbricated formation the newspapers are laterally aligned with respect to each other, since the side walls of the intake corridor which is formed by the belts 98 and is narrowing in transfer direction—as already mentioned—carry out a lateral oscillatory movement and thereby move the newspapers in the imbricated formation into correct laterally aligned position.

The loosened imbricated formation is now taken over by the conveyer belts 73 and travels—still at the speed V_2 —underneath the support wheel 111 and also below the yoke member 115 of the counter, which member is supported upon the newspapers by the wheels 116, and passes then below the raised separating arms 127 and below the feed rolls 56 to the conveyer belts 48 which transfer the imbricated formation to the arm A of the delivery cross 22 locked in horizontal position. By the action of the belts 48, but also by the action of the V-belts 33 of the arm A, the imbricated formation is guided towards the arm B of the delivery cross, which arm is upwardly inclined towards the right hand as seen in FIGURE 1, where the formation is gripped by the V-belts 33 of this last-named arm and pushed onto the cover plate 35. Under the action of the mentioned conveyer belts and V-belts the newspapers situated at the front of the imbricated formation are gradually moved into the inclined position indicated in FIGURE 1. The number of the newspapers passing underneath the counter are reported by the pulse emitter to the counting device not shown, which device, after a predetermined number of control pulses received from the pulse emitter, emits an actuating impulse which causes the excitation of the electromagnet 116. The armature of this electromagnet is attracted. This movement of the armature is transferred by the already described connection to the separating arms 127 which are downwardly pivoted and penetrate into the imbricated formation. The following newspapers climb against the abutment formed by the bent-off end of the separating arms 127, as it is indicated in FIGURE 1, whereby the last newspapers of the previously counted group are withdrawn from the imbricated formation by means of the feeding rolls 56 and are transferred to the feed belts 48.

When the armature of the magnet 116 is attracted, the switch 47 is also actuated and the magnet 46 will be excited. According to FIGURE 1 the cranked lever 44 is then pivoted in counterclockwise direction and the arm A of the delivery cross 22 is released. Moreover, the photoelectric switching device 128', 128'' is energized at the same time. Accordingly, an actuating pulse is emitted by this switching device, as soon as the last news-

paper of the counted group is moved on the arm A of the delivery cross 22, and thereby clears the path of the control beam of the photoelectric switching device, until then interrupted by the imbricated formation of newspapers. The switching pulse delivered by this switching device causes the engagement of the electromagnetic coupling 15, whereby the delivery cross 22 is rotated in clockwise direction according to FIGURE 1. This rotary movement of the delivery cross supports the action of the V-belts 33 of the arm A, so that a pile is formed of the counted newspapers, the weight of which pile is displaced onto the arm B of the delivery cross 22 when the latter rotates. Upon rotation of the delivery cross 22 the follower rolls 135 run upon the lobes of the control cam 134, arranged adjacent to the arm B, whereby the tappet 138 is moved and the wings 143 are pivoted towards each other into their position indicated at 145. Simultaneously the webs 157 are slightly raised above the plane E, i.e. above the belts 146. The pile of newspapers lying upon the arm B is first deposited upon these raised webs 157, and upon further rotation of the delivery cross 22 the pile is forced by the arm A, passing to its vertical position, against the barrier formed by the wings 143 and thus is aligned. Immediately after the arm A of the delivery cross 22 has arrived at its vertical position and slightly urges the newspapers against the wings 143, the follower rolls 135 arrives at the end of the respective lobe of the control cams 134 so that the wings 143 turn back into their opened position under the influence of the spring 139. At the same time the webs 157 are lowered below the transfer plane E, the pile comes to rest upon the conveyor belt 146 and will be discharged by the latter and the conveyor belts 154. The speed of the feed belts 14 and 154 designated by V_3 (FIGURE 1) is lower than the velocity V_2 .

As already mentioned the first few newspapers which are situated behind the point of interruption of the imbricated succession, first are banked up by the abutment formed by the bent-off ends of the separating arms 127, whereby, a course, they are still continuously counted by the pulse emitter. After a selectively adjustable number of counting pulses the magnet 116 is shut off. Under the action of the spring 122 the separating arms 127 are upwardly tilted and the temporarily stopped imbricated formation can continue its travel along the transfer plane. It passes under the feeding rolls 56 to the conveyor belts 48, whereby the forwardly lying newspapers pass under the arm A, shortly after the latter has left its horizontal position. Simultaneously with de-energizing the magnet 116, the magnet 46 is also de-energised and the arresting device 40 becomes operative, while the photoelectric switching device 128', 128'' is rendered inoperative. This last provision is required to prevent emitting of a pulse by this switching device, when the imbricated formation should be interrupted for another reason than that resulting from the downward tilting of the separating arms 127. In spite of the disconnection of the photoelectric switching device, the electromagnetic coupling remains in operative engagement, since the maintenance of its current circuit is taken over by the switch 130 shortly after the delivery cross 22 has been set in motion. This circuit is only interrupted again, when the arm A reaches the position of the arm B according to FIGURE 1 and the corresponding pin 132 operates the switch 130. At the same time the arm C reaches the horizontal position of the arm A according to FIGURE 1, in which position it is locked by engagement of the bolt 45. In the meantime the first newspapers have already been moved upon the cover plate 35 of the arm A and shortly afterwards the described operative cycle is repeated, namely the interruption of the imbricated formation, the rotation of the delivery cross 22, the formation of the pile and the release of the stopped imbricated formation. The separated section of newspapers is then taken over by the arm B. The described cycle is repeated after each counting

of the packs containing a predetermined number of newspapers.

It will be understood, that the operation of the apparatus, particularly in view of the feeding speeds V_2 and V_3 , and also of the rotary speed of the delivery cross 22, can be adjusted so that the imbricated formation behind the point of separation is maintained stationary for a short time only and at any rate only until the end of the respective arm of the delivery cross 22 just frees the passage of the articles Z to the belts 48, the arm being gradually lifted out of the transfer track of the newspapers. In this manner a practically continuous operation can be obtained. In the described embodiment the time interval during which the imbricated formation is stopped, is also controlled by the counting device, the releasing pulse being emitted in adjustable manner following the counting of e.g. two, three or four newspapers after the locking pulse. It is clear that this time interval could also be determined by a time control.

In the described preferred construction of the apparatus according to the invention the newspapers in the imbricated formation are drawn apart from each other by applying an increased feeding speed. This extension of the imbricated formation is of significance insofar as it gives the possibility for holding up and approaching the newspapers when the imbricated formation is stopped. However, it will be understood that the apparatus could be operated also without this preferred provision, since the imbricated formation in itself already offers this possibility.

The use of the webs 157 also represents an optional provision, the purpose of it being that the pile of newspapers which is temporarily stopped and aligned between the wings 143 and one arm of the delivery cross 22, does not rest upon the conveyor belts 154 during this short time, whereby the lowermost newspaper is saved from damage.

I claim:

1. Apparatus for arranging in packages the products of a rotary press delivered in imbricated succession, comprising a transfer path receiving and conveying an imbricated succession of products, movable abutment means disposed above the transfer path, adjustable counter means for counting a predetermined number of said succession of products, means for actuating said abutment means in response to the predetermined number to which the counter is set, whereby said abutments means penetrate transversely into the imbricated succession of products on said transfer path to interrupt the succession, a rotatable delivery cross mounted in alignment with said transfer path following said abutment means, a stepping mechanism for intermittently turning said delivery cross, and means for controlling the operation of said stepping mechanism upon interruption of said imbricated succession in response to the last product counted by said counter means.

2. Apparatus according to claim 1, in which said means for actuating the abutment means are disconnectable in an adjustable, time dependent manner.

3. Apparatus according to claim 2, in which said counter is in operative connection with said actuating means by switching means which, following the adjustable numerical value are responsive to an additional adjustable numerical value, and based on the additional numerical value, render said abutment means inoperative.

4. Apparatus according to claim 3, and comprising an electromagnet which, upon energization moves the abutment means into their engaging positions against the action of a return spring, the magnet being excited by the switching means between the first and the second numerical value.

5. Apparatus according to claim 1, in which one arm of the delivery cross extends in the transfer direction after each switching step and forms a portion of the transfer path, whereby the delivery cross is always retained in this

position by an arresting device which is actuated simultaneously with the abutment means, but in opposite direction.

6. Apparatus according to claim 1, in which feeding means acting on the top and the bottom of the imbricated formation on the transfer path, said feeding means being positioned after the abutment means but ahead of the delivery cross.

7. Apparatus according to claim 6, in which a photoelectric switching device is arranged so that its control beam extends transversely across the transfer path and after said feeding means, in transfer direction, this switching device being operable for the duration of the effectiveness of the abutment means by switching means responsive to the insertion of the abutment means into the imbricated formation.

8. Apparatus according to claim 7, in which the photoelectric switching device controls an electromagnetic coupling in such manner that the coupling will be engaged when the control beam is released.

9. Apparatus according to claim 8, in which a holding switch is arranged in the circuit of the electromagnetic coupling parallel to the photoelectric switching device, which holding switch can be operated to interrupt the circuit at each position of rest of the cross by cam means disposed on the cross.

10. Apparatus according to claim 5, in which each arm of the delivery cross comprises at least one conveying belt revolving in a radial plane, the top section of said conveying belt being flush with the plane of the transfer path,

when the arm extending horizontally in the arrested position of the cross, and moving in transfer direction, while the other section of said belt at the rear side of the arms forms a supporting surface.

11. Apparatus according to claim 1, in which a barrier is arranged in the course of the transfer path following the delivery cross and adapted to be brought into a position perpendicular to the transfer path and can be actuated synchronously with the cross in such a manner that it is brought into operative position before an arm of the cross arrives at its vertical position, and is brought into position of rest immediately after this position of the arm has been passed.

12. Apparatus according to claim 1, in which the abutment means are arranged in the zone of a section of the transfer path having an increased transfer speed in comparison to the other sections.

13. Apparatus according to claim 12, in which feeding means are arranged ahead of the abutment means and are destined to engage the imbricated formation from the bottom and from the top.

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