

March 8, 1955

F. VOEGELIN
APPARATUS FOR DEPOSITING WOUND
YARN PACKAGES INTO A MAGAZINE

2,703,669

Filed Jan. 3, 1951

2 Sheets-Sheet 1

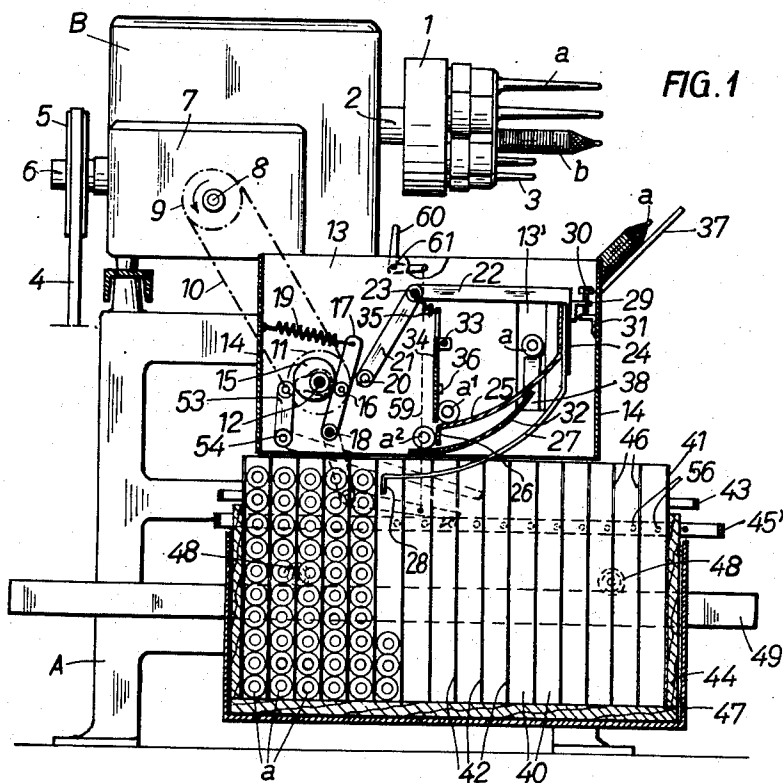


FIG. 2

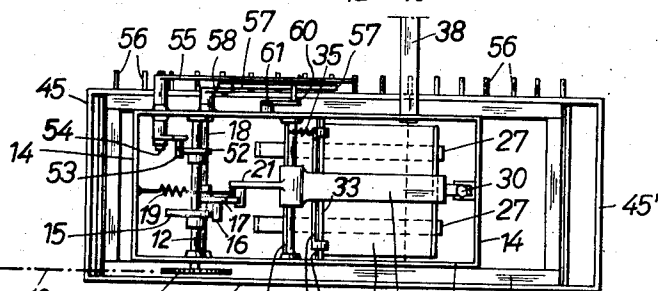


FIG. 8

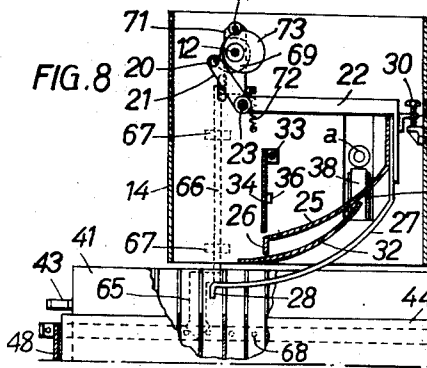
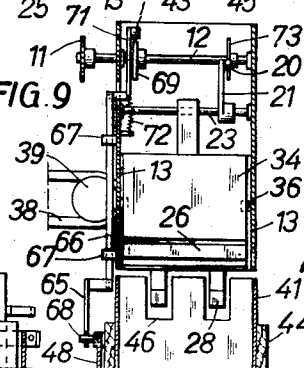


FIG. 9



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FIG. 3

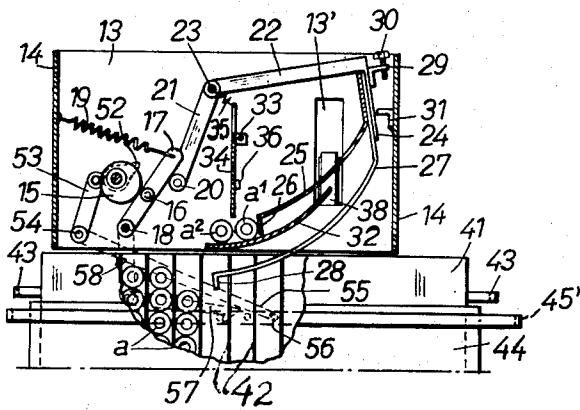


FIG. 4

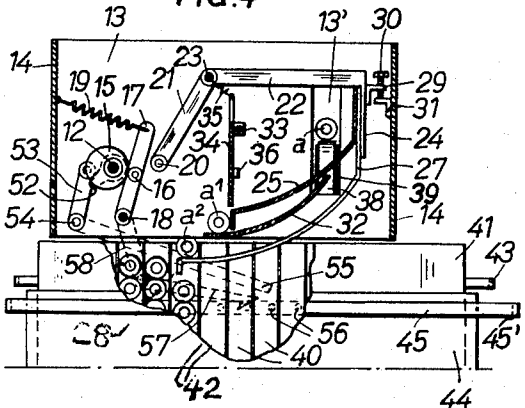


FIG. 5

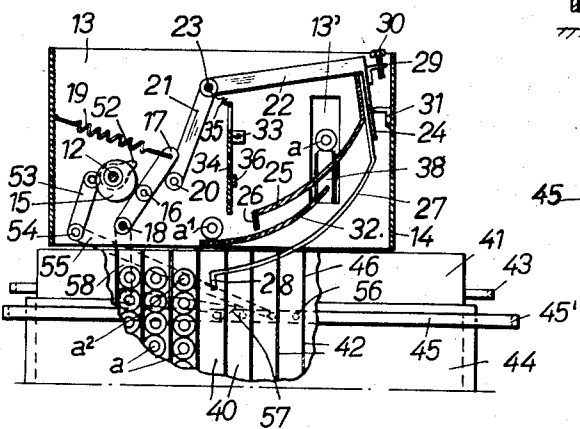


FIG. 6

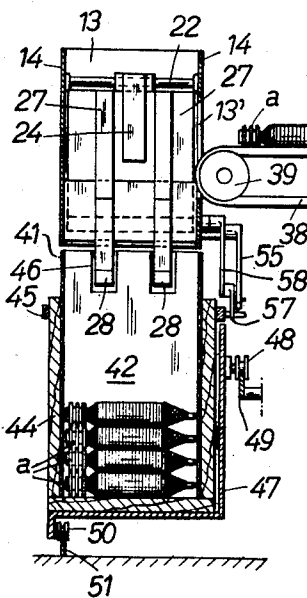
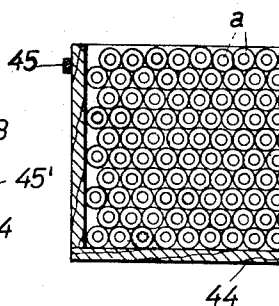


FIG. 7



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2,703,669

APPARATUS FOR DEPOSITING WOUND YARN
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Claims priority, application Switzerland April 4, 1950

4 Claims. (Cl. 226—3)

My invention relates to improvements in apparatus for depositing wound yarn packages into a magazine which is supplied through a conveyor.

The apparatus according to my invention comprises a carriage which receives the magazine, and a bottomless box which is removably inserted in the magazine. The bottomless box is subdivided into compartments parallel to each other for storing the wound packages to be deposited. The latter are supplied by the conveyor to an automatically moved chute which guides them toward the respective compartment and causes the magazine and carriage to move step by step in accordance with the spacing of the compartments, when a compartment has been filled.

The main object of my invention is to provide relatively simple automatic means for properly pigeonholing wound packages in a magazine in a number corresponding to the capacity thereof, with a view of facilitating the transport of the packages for further textile operations. Such orientated pigeonholing is not disturbed when the bottomless box, for the purpose of re-inserting it into an empty magazine, is lifted from the full magazine, since the packages released by the box from adjacent compartments, simply close up.

One form of my invention as applied to a winder, and a detail modification thereof are shown in the accompanying drawings in which—

Fig. 1 shows the apparatus in sectional elevation,

Fig. 2 a part top plan view,

Figs. 3-5 show part elevations for explaining the mode of operation of the chute and other elements,

Fig. 6 is a cross-section of Fig. 4, involving further elements,

Fig. 7 shows the full magazine after the bottomless box has been removed,

Fig. 8 shows a portion of the apparatus in sectional elevation, involving a detail modification, and

Fig. 9 is a cross-section of Fig. 8.

In Fig. 1 is shown one end face of an elongated machine frame A on which for example ten like winders B are arranged in line. Each winder B comprises a round rotary element 1 which is disposed on the winder casing by means of a central shaft 2 and on the circumference of which for example seven uniformly spaced winding pegs 3 are mounted, each peg being adapted to receive a bobbin or pirn *a*. The pirns are moved in succession to a working station by virtue of an automatic stepwise rotation of the element 1. At the said station, the respective peg 3 is automatically coupled to a driving spindle (not shown) which is axially movable in the winder casing. When the package *b* on pirn *a* which later is to be used in a shuttle, has reached a predetermined length, the element 1 is indexed through one step so as to move an empty pirn *a* to said station. The wound package then is stripped, in known manner, from its peg 3 by automatically operating means. The winders B are driven from a common motor via an endless belt 4 which runs over two reversing rollers disposed at the ends of the machine frame A. Intermediary of said rollers, the belt 4 drives the main shaft of each winder B through a friction roller each (not shown).

The reversing roller 5 shown in Fig. 1 through its shaft 6 transmits the drive via an intermediary gearing disposed in a housing 7 onto a cross shaft 8 to which is keyed a sprocket wheel 9 outside the housing 7. From the latter, a control shaft 12 is driven via an endless

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chain 10 and a sprocket wheel 11. The shaft 12 is journaled in the two longitudinal walls 13 of the rectangular bottomless pirn-supply box of which the narrow sides are designated by 14. The box 13, 14 is attached, in a manner not shown, to the adjacent end of the machine frame A.

In the form shown in Figs. 1-6, an eccentric disc 15 rigidly secured to shaft 12 actuates a swing arm 17 via a lateral roller 16. The axle 18 of arm 17 is journaled in the box walls 13, and the arm 17 through a spring 19 is held in contact with the eccentric disc 15. The arm 17 periodically actuates a lateral roller 20 of a bell-crank lever 21, 22 of which the axle pin 23 is journaled in the box walls 13. The said lever 21, 22 on its arm 22 has an angularly bent end leg 24 to which is secured one end of a chute 25 which serves as package chute and at its free end comprises a downwardly pointing leg 26. Two auxiliary arms 27 with their respective ends are secured to the holding-down part of chute 25 which substantially occupies the entire width of the bottomless box 13, 14. The said arms 27 also terminate in a downwardly-pointing leg 28 each. An angle iron 29 is secured to the end leg 24 of the said bell crank and carries a set screw 30 which co-operates with a stop 31 fixed to the respective cross-wall 14 of box 13, 14. An apron 32 is fixed to the box walls 13 intermediary of the chute 25 and the auxiliary arms 27. A clack 34 which normally through a spring 35 is held against stops 36 secured to the box walls 14, is suspended in the bottomless box 13, 14 from a cross-pin 33.

As the swing arm 17 is actuated by the eccentric disc 15, and the bell crank 21, 22 is rocked thereby, the chute 25 and the auxiliary arms 27 are swung from the position of rest (Figs. 1 and 4) as shown in Figs. 3 and 5, and then by gravity swing back into the position of rest which is adjustable by means of the set screw 30. In one of the box-walls 13 a slit 13' is provided for the passage of the wound packages *a* arriving from the winders B. The package released or stripped from a winder B drops by gravity onto a chute 37 which conducts it to an endless conveyor band 38. The latter extends across all the winders B which are arranged in line, and runs over a reversing-roller 39 as shown in Fig. 6. The chute 37 and conveyor band 38 are shown more or less schematically. It will be understood, however, that when the package exemplified by the wound bobbin *a* slides endwise down the chute its forward end will come against the upper side of the conveyor band, and this band moving laterally of such bobbin will tilt it and cause it to be placed on the band with the longitudinal axis of the bobbin extending in the direction of the length of the band. The packages *a*, head on, are moved by the conveyor 38 in the sense of Fig. 3 through the slit 13' into the bottomless box 13, 14 in which they are caught by the chute 25 and led downwardly thereon towards the clack 34 to be stopped thereby when the bell crank 21, 22 is in the position of rest as shown in Figs. 1 and 4. When the bell crank 21, 22 swings into the position shown in Figs. 3 and 5, the path in box 13, 14 is cleared for the said package *a* which then drops from chute 25 onto the stationary apron 32 which is curved in the same sense as chute 25. When the package *a* arrives at a point beyond the respective end portion of the apron 32, it drops into a compartment 40 of a second bottomless box 41 which is disposed directly below the first bottomless box 13, 14 and in which a plurality of open-ended compartments 40 are formed by means of vertical parallel cross-walls 42. The metallic box 41 is provided with two handles 43 and is disposed in a wooden magazine 44 which has a metallic frame 45 on top. The frame 45 has handles 45' on the narrow sides of magazine 44. When the package *a* fed from chute 25 to apron 32, does not drop directly into the appurtenant compartment 40 of box 41, but is stopped short thereof as shown in Fig. 4, a second package *a* drops onto the apron 32 as shown in Fig. 3, and the first package is positively moved into the respective compartment 40 by the leg 26 of chute 25 which swings back into the position of rest, the said compartment being directly adjacent the corresponding free edge of apron 32. The packages are prevented

from jamming or seizing between chute 25 and clack 34 in that the latter may swing out on its pin 33 under a certain pressure against the action of spring 35. The package *a* dropping from apron 32 into the box 41 first is caught by the two auxiliary arms 27 which swing together with the chute 25 and project into the box 41 in which they are accommodated in openings 46 in the cross-walls 42 thereof. The said package through the arms 27 first is held in a horizontal position, but is tripped when the arms 27 swing from their position of rest, and drops in the compartment 40 down to the bottom of magazine 44 or, respectively, down onto the packages already present in said compartment.

After a compartment 40 of box 41 has been filled with packages up to a predetermined level, the magazine 44 and box 41 are indexed or moved in the operating direction of the swinging chute 25 through a distance corresponding to that between two adjacent compartments.

For such purpose, the magazine 44 which on top is encircled by the metallic frame 45 having two handles 45', is inserted in a carriage 47 which (as shown in Figs. 1 and 6) is movable on a rail 49 by means of idling rollers 48 pivoted to a longitudinal side wall thereof, and also on a rail 51 by means of idling rollers 50 (Fig. 6). The carriage 47 is open on top and on the longitudinal wall opposite that to which the rollers 48 are pivoted, and the magazine 44 thus may be readily inserted into and withdrawn from said carriage at any track point thereof.

During operation of the mechanical portion of the pigeonholing apparatus of our present invention, a roller arm 53 is rocked back and forth by a cam 52 fixed to control shaft 12, the pin 54 of said arm being pivoted to one of the longitudinal walls 13 of box 13, 14. On the end of pin 54 outside the box 13, 14 a ratching arm 55 is fixed, which is intended for co-operation with a series of studs 56 fixed to the metal frame 45 of magazine 44. The spacing of the bolts corresponds to that of the compartments 40 in box 41. A second ratching arm 57 pivoted to an intermediary arm 58 fixed to the axle 18 of swing arm 17, serves for the same purpose as the ratching arm 55. After a compartment 40 in box 41 has been supplied with a predetermined number of wound packages, the two auxiliary arms 27 on swinging forward abut against the topmost package in said compartment, whereby the movement of carriage 47 with magazine 44 is initiated in the respective direction. The hook of ratching arm 57 then engages that stud 56 of frame 45 which hitherto has supported it, whereupon the arm 57 (which has been correspondingly moved by the swing arm 17) continues and completes the said movement of magazine 44. The distance covered in such movement is defined in accordance with the said spacing of the compartments 40 and of the studs 56 in that a stud 56 contacts the arm 55, while the arm 57 on swinging backwards engages that stud 56 which is sequential to the stud 56 engaged thereby before.

The carriage 47 and magazine 44 thus are moved step by step, until all the compartments 40 in box 41 have been supplied with wound packages *a*. If desired, the carriage 47 on reaching the respective end of its stroke, may actuate an electrical contact means for the purpose either of throwing the winder driving-motor out of operation or of tripping an acoustical or optical signaling device. The carriage 47 with magazine 44 may be run back by hand into its starting position, for which purpose the arm 57 has to be removed from the path of the studs 56. For this purpose, the arm 57 (as shown in Fig. 1) through a wire 59 is connected to a bell-crank lever 60 pivoted on a pin 61 to one of the longitudinal walls 13 of box 13, 14. The arm 57 thus may be swung high into a non-operative position by correspondingly rocking the bell crank 60, whereby the arm 55 also is swung upwardly by a transverse stud. Locking means may be provided for securing the bell crank 60 in the respective terminal position.

The magazine 44, having been filled with packages, may be readily removed from carriage 47 on the free longitudinal side thereof, in order to be replaced by an empty magazine. The box 41 then is lifted from the magazine 44 by the handles 43, whereby the packages pigeonholed in the compartments 40 of box 41 and now released therefrom, close up as shown in Fig. 7 without in any way disturbing their mutual parallel and orientated position in magazine 44. The box 41 then may be inserted into an empty magazine which again is to be supplied with wound yarn packages.

In the operation of the machine the wound bobbins by known mechanism are stripped one by one from the pegs 3 (Fig. 1) of the winder 1 and fall on the chute 37 as shown by the wound bobbin *a* thereon. The bobbins slide from the chute onto the conveyor belt 38 (Figs. 1 and 6), and because the belt is moving they are orientated to lie lengthwise on the belt as shown in Fig. 6. When the parts are in their positions shown by Fig. 1 the bobbin *a* when it reaches the belt pulley 39 (Fig. 6) is discharged from the belt and is received by and rolls down the part 25 to come against the "clack" or stop 34 as shown by the bobbin *a*¹ in Fig. 1. When the bell crank lever 21, 22 then is swung by operation of the cam disc 15 to move the parts into their positions shown by Fig. 3 the bobbin *a*¹ falls from the part 25 and rests upon the stationary apron 32 behind the bobbin *a*², which bobbin *a*² is already resting upon said apron. When the bell crank lever is swung back to its position shown by Fig. 1 the downturned end 26 of the part 25 during such swinging will engage the bobbin *a*¹ and move it to its position shown in Fig. 4, and while being so moved the bobbin *a*¹ pushes the bobbin *a*² off the apron and lets it fall to and rest on the end of the part 27 also as shown in Fig. 4, and when the bell crank lever then is again swung back to its position shown by Fig. 3 the bobbin *a*² will be swept by the adjacent partition 42 of the receptacle 41 from the part 27 and be added to the adjacent stack of bobbins in said receptacle as shown in Fig. 5. When the bobbin *a*² added to the stack in the receptacle completes that stack and the bell crank lever swings again to its position shown by Fig. 4 the downturned end 28 of the part 27 will engage such bobbin and move the receptacle to place the next compartment 40 of the receptacle to be filled with bobbins into operative position with respect to the ratching mechanism.

The modification shown in Figs. 8 and 9 differs from the example set out above, by a partly modified construction of the means for automatically indexing or ratching the carriage 47 and magazine 44 in accordance with the degree of filling of the compartments 40 in box 41. The said indexing or ratching feed motion is initiated in a manner similar to that described in connection with the first example, viz. in that the front leg 23 of auxiliary arm 27 abuts against the bottommost or topmost package pigeonholed in the respective compartment 40. For continuing and limiting the said motion, however, a double wedge 63 is used, which is vertically guided by means of a rod 66 which traverses two bearings 67 secured to the respective longitudinal wall 13 of box 13, 14. The wedge 65 co-operates with pins 68 secured in line to the carriages 48 and performs the functions which in the previous example are carried out by the arms 55 and 57, as shown in Fig. 8. As required for the said ratching movements, the wedge 65 is vertically reciprocated by means of a cam 69 fixed to control shaft 12, which cam through a roller 70 co-acts with a top extension 71 provided on the guide rod 66. A cross-member connecting the extension 71 and the rod 66, traverses a slit provided in the respective longitudinal wall 13 of box 13, 14. A spring 72 engaging the extension 71, tends to hold the wedge 65 in operative position between two adjacent pins 68. The cam 69 operates to continuously reciprocate the wedge 65 vertically, and the carriage 48 is not moved through a step as long as the indexing or ratching movement is not initiated by the auxiliary arms 27 and the wedge 65 is moved upwardly by a pin 68 to the rear of which it then drops again in order to become operative. The wedge 65 which acts in co-operation with the row of pins 68 as indexing and ratching member, normally rests on one of pins 68.

An eccentric disc 73 fixed to control shaft 12 co-acts with the roller 20 of one arm of the bell crank 21, 22 of chute 25 in order to periodically rock the latter, as described in connection with the first example.

In a manner analogous to packages supplied from winding machines, cops produced on a spinning machine, and similar tubes and packages can be properly pigeonholed in a magazine by means of our present invention.

What I claim as new and desire to secure by Letters Patent, is:

1. Apparatus, for depositing wound bobbins, discharging from a row of bobbin winders, in a parallel-walled four-sided open-top receptacle with the bobbins positioned horizontally and stacked therein in parallel adjacent columns, comprising an insert for said receptacle

vertically removable through the open top thereof, which insert comprises means operatively forming relatively thin separators subdividing the interior of said receptacle into parallel vertical stack spaces for the bobbins open at their tops and removably closed at their bottoms by the bottom of the receptacle; a carriage for removably supporting the receptacle for movement in the direction of the extent of the several successive stack spaces; delivery means for entering successive bobbins into the open tops of said stack spaces for filling such spaces with the columns of bobbins; conveyor means for receiving the wound bobbins as they are discharged from the bobbin winders and delivering them one by one to said delivery means; said delivery means comprising a swingably mounted part; means for periodically swinging said part; said part comprising a downwardly inclined bobbin guide for receiving at an upper portion thereof the bobbins delivered one by one to said delivery means by said conveyor means, and comprising a normally stationary abutment associated with the lower end portion of said bobbin guide at the upper side thereof for forming a stop for the bobbin when it moves down said guide to its lower end portion and said guide is in its lower position of swinging, said abutment and the lower end of said guide being so disposed as to form between them a space through which the bobbin may fall when said guide moves toward its upper position of swinging; an apron for receiving the bobbins that so fall; the swinging part also comprising means for engaging bobbins on said apron, as said part swings toward its lower position, and pushing them therefrom for falling into said stack space of said receptacle; and means for indexing the carriage step by step for placing successive stack spaces of said receptacle into cooperation with said delivery means comprising a portion of said swinging part adapted to engage the topmost bobbins of the stacks of bobbins for moving the carriage when the topmost bobbin of a stack is placed in that stack and said swinging part swings toward its lower position.

2. Apparatus, for depositing wound bobbins, discharging from a row of bobbin winders, in a parallel-walled four-sided open-top receptacle with the bobbins positioned horizontally and stacked therein in parallel adjacent columns, comprising an insert for said receptacle vertically removable through the open top thereof, which insert comprises means operatively forming relatively thin separators subdividing the interior of said receptacle into parallel vertical stack spaces for the bobbins open at their tops and removably closed at their bottoms by the bottom of the receptacle; a carriage for removably supporting the receptacle for movement in the direction of the extent of the several successive stack spaces; delivery means for entering successive bobbins into the open tops of said stack spaces for filling such spaces with the columns of bobbins; conveyor means for receiving the wound bobbins as they are discharged from the bobbin winders and delivering them one by one to said delivery means; said delivery means comprising a swing-

ably mounted part; means for periodically swinging said part; said part comprising a downwardly inclined bobbin guide for receiving at an upper portion thereof the bobbins delivered one by one to said delivery means by said conveyor means, and comprising a normally stationary abutment associated with the lower end portion of said bobbin guide at the upper side thereof for forming a stop for the bobbin when it moves down said guide to its lower end portion and said guide is in its lower position of swinging, said abutment and the lower end of said guide being so disposed as to form between them a space through which the bobbin may fall when said guide moves toward its upper position of swinging; an apron for receiving the bobbins that so fall; the swinging part also comprising means for engaging bobbins on said apron, as said part swings toward its lower position, and pushing them therefrom for falling into said stack space of said receptacle; the means forming the separators of the receptacle presenting openings extending downward from their upper edges and the swinging part having a portion adapted when said part swings to and fro to enter through said openings the upper portion of the stack space being filled with bobbins for catching the bobbin falling from said apron and then to be withdrawn from such stack space for releasing such bobbin to permit it to fall farther down said stack space; and means for indexing the carriage step by step for placing successive stack spaces of said receptacle into cooperation with said delivery means comprising that portion of said swinging part which is adapted to enter the upper portion of the stack space being filled with bobbins, which portion is adapted to engage the topmost bobbins of the stacks of bobbins for moving the carriage when the topmost bobbin of a stack is placed in that stack to build up the stack to the path of swinging of said portion.

3. Apparatus according to claim 1 in which the means for periodically swinging the swingably mounted part moves it positively from its lower to its upper position of swinging and releases it in its said upper position to cause it to swing to its lower position by gravity.

4. Apparatus according to claim 2 in which the means for periodically swinging the swingably mounted part moves it positively from its lower to its upper position of swinging and releases it in its said upper position to cause it to swing to its lower position by gravity.

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