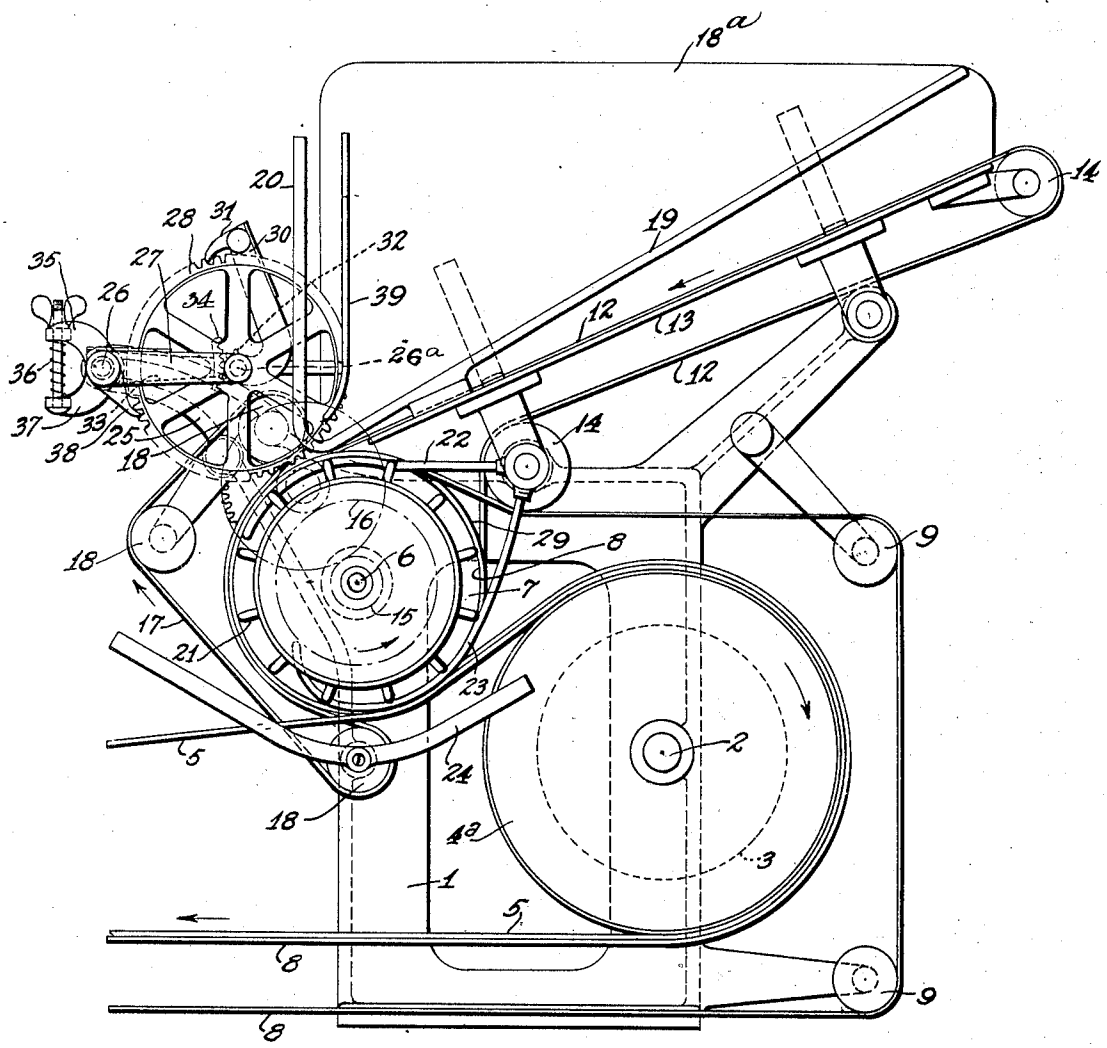
June 29, 1926. 1,590,213

W. B. STORY

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Filed July 29, 1922 3 Sheets-Sheet 1

Fig. 1



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INVENTOR.
ATTORNEYS.

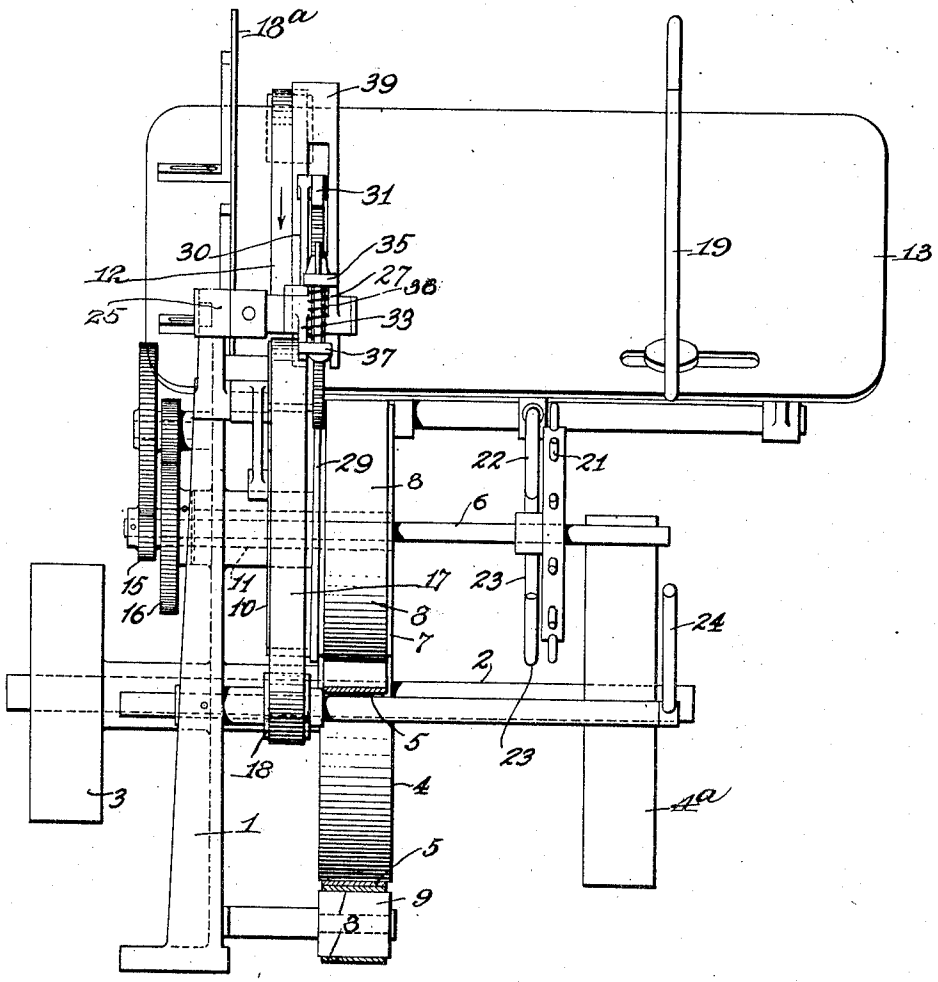
June 29, 1926. 1,590,213

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Fig. 2



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June 29, 1926.

1,590,213

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Fig. 3

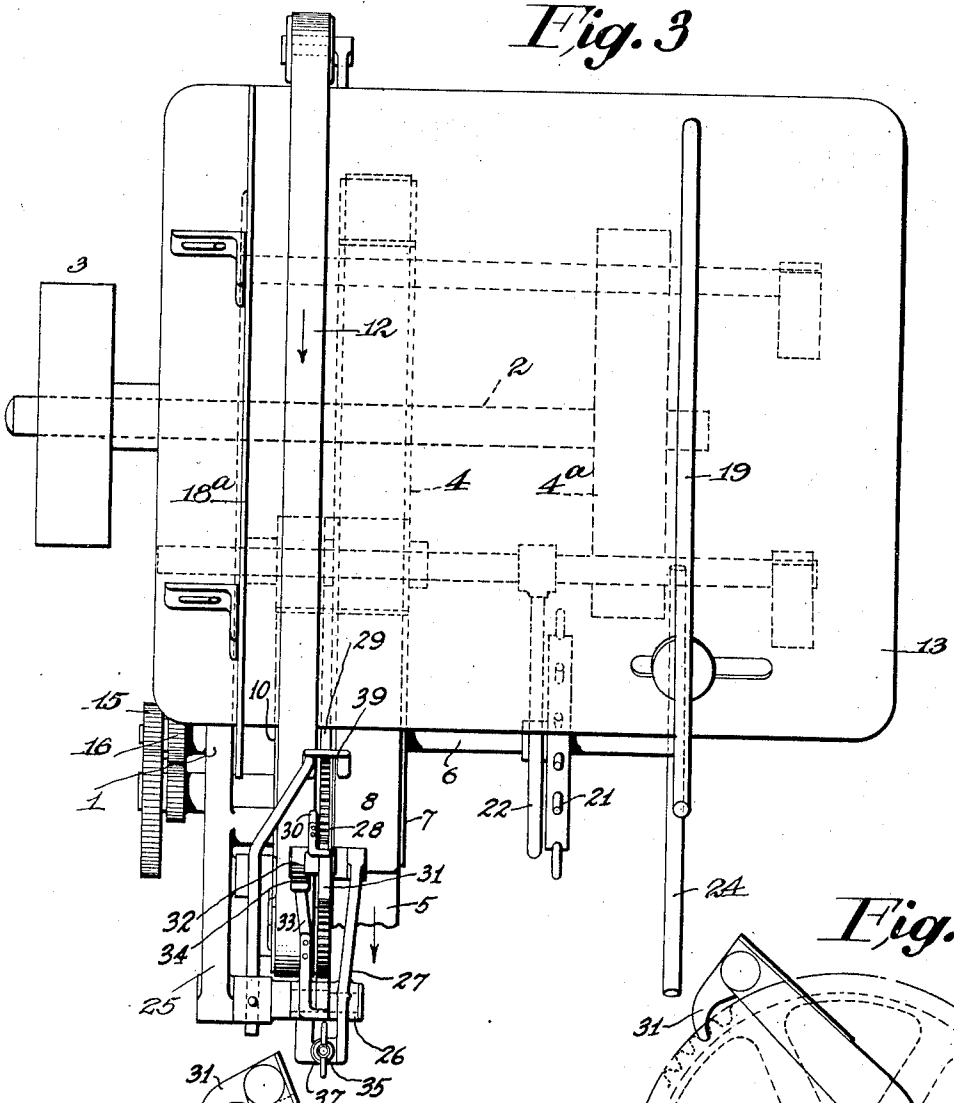
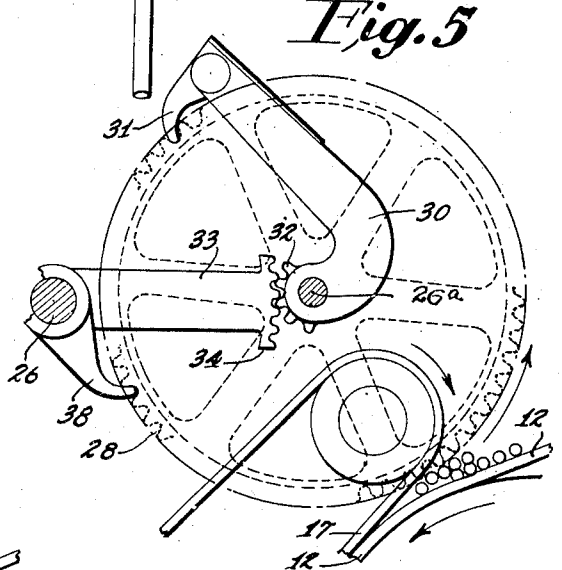


Fig. 5



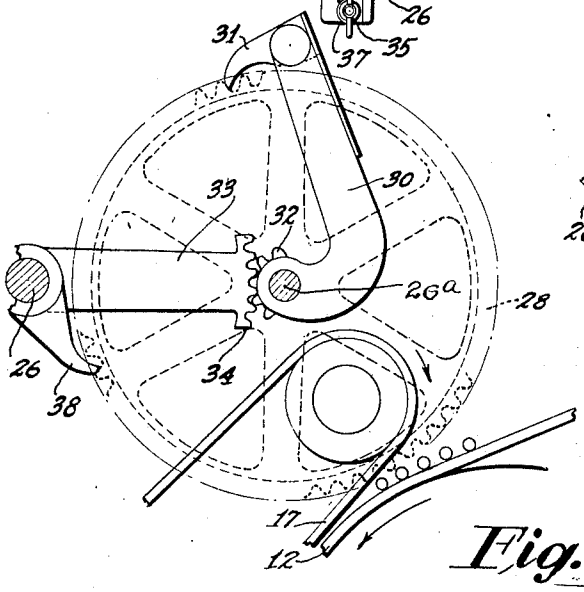


Fig. 4

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Patented June 29, 1926. 1,590,213

UNITED STATES PATENT OFFICE.

WARD B. STORY, OF BROOKLYN, NEW YORK.

FEEDER.

Application filed July 29, 1922. Serial No. 578,305.

The invention relates to apparatus for feeding articles in bulk, such for example tobacco leaves to a stemming machine, wherein the leaves are more or less straightened out, and in which the leaves will be fed to the stemmer in more or less regularly spaced relation.

The objects of the invention are to produce an apparatus in which the articles being fed will be prevented from clogging, in which the articles will be spread in a single layer, in which the articles will be spaced apart, and in which the speed of travel of the articles will be varied.

These and further objects will more fully appear in the following specification and accompanying drawings considered together or separately.

One embodiment of the invention is illustrated in the accompanying drawings, in which like parts in all of the several figures are designated by similar characters of reference, and in which—

Fig. 1 is a side elevation of the apparatus.

Fig. 2 is a rear elevation of the same.

Fig. 3 is a top plan view of the same.

Fig. 4 is a detail side elevation illustrating the combing apparatus in one position, and

Fig. 5 is a similar view showing the parts in another position.

In the drawings 1 designates a frame member which may be supported in any desired manner and in proximity to any device to which the articles acted upon are to be fed. Supported in suitable bearings in the frame is a main shaft 2 carrying a pulley 3, by means of which the apparatus may be driven from a source of power, and secured to the shaft 2 is a belt pulley 4 over which runs a delivery belt 5.

A countershaft 6 is mounted in bearings in the frame 1 above and to the rear of the shaft 2, and fast to countershaft is a pulley 7. A belt 8 engages with one of its sides the belt 5 where the latter laps the pulley 4, passes around the pulley 7 driving the countershaft 6, passes around guide pulleys 9, 9 and runs parallel to the belt 5 to the delivery end (not shown). The belts 5 and 8 are in engagement from the bottom of the pulley 4 to the delivery end, and also between the top of the pulley 4 and the bottom of the pulley 7 on the countershaft 6 for a purpose to be hereinafter described. The shaft 2 also carries a pulley 4^a which is spaced a considerable distance from, and is of the same diameter as, the pulley 4.

Loosely mounted on the countershaft 6 is a pulley 10 having the same diameter as, but less face than, the pulley 7. The pulley 10 is carried by a sleeve 11 which is journalled in the frame and forms the bearing for the countershaft 6, the said pulleys 7 and 10 being in axial alinement and spaced apart as shown. A belt 12 passes around the pulley 10, upward at an angle over and in contact with an inclined feed table 13, supported on extensions of the frame 1, and around guide pulleys 14, 14.

Fast to one end of the countershaft 6 is a pinion 15 forming one of a reducing gear train the last gear 16 of which is fast to the sleeve 11 whereby the pulley 10 is driven at a slower speed than the pulley 7.

A jockey belt 17 carried by loose pulleys 18, 18 engages the belt 12 for a portion of the periphery of the pulley 10 and is driven by such engagement.

An adjustable butter board 18^a is mounted on the table 13 adjacent one edge of the belt 12. At the side of the table opposite the butter board is positioned a guide rail 19 for supporting the extremities of the leaves. The rail 19 is raised above the inclined surface of the table and is at an angle thereto, and the lower end of the rail is provided with a vertical extension 20.

Carried on the countershaft 6 is a disc provided with radially extending spurs 21, and between the disc and the pulley 7 are arranged two guide fingers 22 and 23. The finger 22 is above the countershaft and its extremity is curved to the arc described by the outer ends of the spurs 21. The finger 23 is below the countershaft, a portion thereof is curved to the arc described by the spurs and its extremity is bent inward toward the shaft 6 to an extent such as will bring the end thereof nearer the shaft than is the periphery of the disc. Carried on the stud extending from the frame 1, and which carries the lowermost guide pulley 18, is a curved member 24.

Extending from the rear of the frame 1 and on a plane above that of the countershaft 6 is a bracket arm 25 in the end of which is secured a stud shaft 26 to which is pivoted an arm 27 which carries at its free end a stud shaft 26^a which in turn acts as

the journal for a toothed wheel 28. The arm 27 and wheel 28 are normally so positioned that the periphery of the wheel will be slightly above the horizontal planes of the upper surfaces of the belts 8 and 12 where they pass over the pulleys 7 and 10 respectively, the wheel 28 being located above the space between said pulleys whereby a leaf stem supported on the belts may be carried beneath the wheel without being engaged by the teeth thereof.

That edge of the pulley 10 nearest the pulley 4 is provided with a peripheral flange 29 the diameter of which is equal to that of the pulley plus the thickness of the belt 12. That portion of the leaf stem which extends across the gap between the pulleys 7 and 10 is, therefore, supported on the flange 29 as well as on the belts 8 and 12, and the wheel 31 is positioned over and in proximity to the flange.

Loosely pivoted on the stud 26[a] carried at the free extremity of the arm 27 is an arm 30 carrying at its free end a spring pressed pawl 31 adapted to engage the teeth of the wheel 28. The pivoted end of the arm 30 carries an arc-shaped toothed segment 32.

Rigidly secured to the stud 26 is an arm 33 carrying at its free end a toothed segment 34 in mesh with the segment 32. The arm 27 is provided with a crutch member 35 and a spring 36 is disposed between said member and a similar member 37 carried by the rack arm 33 whereby said members are held apart and the segment 34 will maintain the pawl arm 30 in such position that the pawl 31 when moved forward will move the wheel 28 in the counter clockwise direction. A spring pressed pawl 38 carried by the stud 26 acts to prevent rotation of the wheel 28 in the clockwise direction.

A shield 39 straddles the wheel 28 and prevents articles which may engage between the teeth of the wheel from being carried upward away from the pulleys 7 and 10.

The operation is as follows:

Power is applied to the shaft 2 and the pulleys 3, 4 and 4[a] are rotated in the clockwise direction. The gear train 15—16 will drive the pulley 10 in the same direction, but at a slower speed than the pulley 7, the upper side of the belt 12, which forms the moving portion of the table 13, will travel toward the pulley 10, and the engagement of the jockey belt 17 with the belt 12 will drive the jockey belt.

The leaves are spread, more or less, on the table 13 by the operator with the butts of the stems against the butter board 18[a] and with the stems resting on the slow moving belt 12. The bodies of the leaves will extend across the table and the outer ends or tips will be supported on the rail 19. Resting the bodies of the leaves on the rail and the inclination of the rail and table will reduce the friction between the leaves and table, and the leaves will be more readily drawn along by the belt 12.

When a stem enters the throat between the belts 12 and 17 it is nipped between said belts and carried around with the pulley 10. The body of the stem will be supported on the curved portion of the finger 22 and, as the travel continues the tip of the leaf will be drawn from the guide rail 19—20. When the body of the leaf passes from the support of the finger 22, it will engage between two of the spurs 21 of the disc rotating at the speed of the countershaft 6.

When the stem, clamped between the belts 12 and 17, reaches the under side of the pulley 10, it will be released from the influence of said belts 12 and 17 by reason of the change in direction of travel of the belts, and will be clamped between the fast moving belts 5 and 8. The guard finger 23 will strip the leaf from the surface of the spurred disc should there be a tendency for the leaf to adhere thereto. The leaf will now travel under the influence of the belts 5 and 8 to the point of delivery. The guide 24 will prevent undue sagging of the tip of the leaf.

The transition from the low speed of the pulley 10 to the relatively high speed of the pulleys 7 and 4 will space the leaves apart whereby they may be delivered to the stemming machine in proper relation to the instrumentalities of that apparatus.

It will be seen that, when the leaves are carried by the delivery belts 5 and 8, the butt ends of the stems will project some distance beyond the edges of the belts, whereby when the stems are delivered to the stemming machine the projecting butts will be properly presented to the stem grasping mechanism of the machine.

The ideal method of operating the device is for the operator to spread the leaves on the table and belt 12 in a single layer, in which event the device will operate as above described. This ideal method is practically unattainable, as owing to the condition of the leaves, the manner in which they are placed on the table, the inexpertness of the operator, and for other reasons, the stems occasionally will reach the nipping point between the belts 12 and 17 in more or less bunched condition.

In the event of such a condition, the stems will be crowded into the space between the upper surface of the flange 29 of the pulley 10, and the teeth of the wheel 28. The wheel will be raised from the position shown in Fig. 4, where one stem at a time is permitted to pass beneath the wheel, to the position shown in Fig. 5, the wheel being permitted to rise because of the pivotal connection of its supporting arm 27 with the stud 26. As

the wheel rises the engagement of the teeth 32 with the stationary rack 34 will swing the arm 30 on its pivot (the journal or stud shaft 26ª of the wheel 28), and the pawl 31 will rotate the wheel in the counter clockwise direction. The rotation of the wheel will comb, as it were the surplus stems backward away from the gap between the belts 12 and 17, and as they are removed the wheel will drop to its normal position to permit a single layer of stems to pass.

The rise of the wheel is very much exaggerated in Fig. 5 for the purpose of showing the movement. In actual work the combing operation will take place if a double layer only of stems is between the wheel 28 and flange 29.

In accordance with the provisions of the patent statutes the principle of the invention has been described, together with the apparatus which is now considered to represent the best embodiment thereof, but it is desired to have it understood that the apparatus shown is merely illustrative, and that the invention may be carried out in other ways.

The invention having been described, what is claimed and desired to be secured by Letters Patent of the United States is:

1. Apparatus of the character described, comprising means for supporting articles to be fed, continuously operating means for transporting the articles from the support, delivery means, and means for gripping the articles to the transporting means and transferring the same from the transporting to the delivery means.

2. Apparatus of the character described, comprising means for supporting articles to be fed, continuously operating means for transporting the articles from the support, delivery means, and continuously moving means between which and the transporting means the articles are gripped and transferred from the transporting to the delivery means, without interrupting the travel of the articles.

3. Apparatus of the character described, comprising means for supporting articles to be fed, continuously operating means for transporting the articles from the support, delivery means, and means traveling at the same speed as that of the transporting means for gripping the articles to the transporting means and transferring the same to the delivery means, without interrupting the travel of the articles or the transporting or delivery means.

4. Apparatus of the character described, comprising a continuously moving belt for supporting and transporting articles to be fed, a jockey belt for engaging the articles with transporting belt, a pair of continuously moving delivery belts adapted to grasp the articles between them, and means whereby the articles may be transferred from the control of the transporting and jockey belts to that of the delivery belts.

5. Apparatus of the character described, comprising a continuously moving belt for supporting and transporting articles to be fed, a jockey belt for engaging the articles with transporting belt, a pair of continuously moving delivery belts adapted to grasp the articles between them, means whereby the articles may be transferred from the control of the transporting and jockey belts to that of the delivery belts, the speed of said delivery belts being greater than than that of the supporting and jockey belts, and means other than the belts for supporting the articles at the time the same are being transferred.

6. Apparatus of the character described, comprising a constantly moving belt for transporting articles to be fed, said belt engaging one end only of the article, a jockey belt for clamping the end of the article to the transporting belt, whereby movement is transmitted there to the jockey belt, means for changing the direction of movement of the jockey belt, whereby the same will diverge from the transporting belt, a pair of superposed constantly moving delivery belts arranged in a different vertical plane from the transporting and jockey belts, one of said delivery belts diverging from the path of travel of the other in proximity to the point of divergence of the transporting and jockey belts whereby the articles may be transferred from the control of the transport-jockey belts to the control of the delivery belts.

7. Apparatus of the character described, comprising a constantly moving belt for transporting articles to be fed, said belt engaging one end only of the article, a jockey belt for clamping said end of the article to the transporting belt whereby movement is transmitted to the jockey belt, means for changing the direction of movement of the jockey belt whereby the same will diverge from the transporting belt, a pair of superposed constantly moving delivery belts arranged in a different vertical plane from the transporting and jockey belts, one of said delivery belts diverging from the path of travel of the other in proximity to the point of divergence of the transporting and jockey belts whereby the articles may be transferred from the control of the transport-jockey belts to the control of the delivery belts, the delivery belts traveling at a higher rate of speed than the transporting and jockey belts, and means for supporting the other end of the article at the time of transfer.

8. Apparatus of the character described, comprising continuously moving means for transporting articles to be fed, and gauging

means for limiting the articles on the transporting means to a single layer.

9. Apparatus of the character described, comprising continuously moving means for transporting articles to be fed, and gauging means adapted to move relatively to the transporting means for limiting the articles on the transporting means to a single layer.

10. Apparatus of the character described, comprising a continuously moving element adapted to support and transport articles to be fed, and a normally stationary gauge for limiting the articles to a single layer on the element.

11. Apparatus of the character described, comprising a continuously moving element adapted to support and transport articles to be fed, a normally stationary gauge for limiting the articles to a single layer on the element, and a pawl for moving the gauge relatively to the element.

12. Apparatus of the character described, comprising a continuously moving element adapted to support and transport articles to be fed, a normally stationary gauge for limiting the articles to a single layer on the element, and means for rotating the gauge relatively to the element.

13. Apparatus of the character described, comprising a continuously moving element adapted to transport articles to be fed, a normally stationary gauge on a plane above that of the element whereby the passage of the articles on the element will be limited to a single layer, the accumulation of articles between the element and the gauge causing the gauge to move relatively to the element whereby the accumulated articles will be dispersed.

14. Apparatus of the character described, comprising a continuously moving element adapted to transport articles to be fed, a normally stationary gauge on a plane above that of the element whereby the passage of the articles on the element will be limited to a single layer, the accumulation of articles between the element and the gauge causing the gauge to be rotated in the direction opposite to the direction of movement of the element whereby the accumulated articles will be dispersed.

15. Apparatus of the character described, comprising a continuously moving element adapted to transport articles to be fed, a normally stationary gauge on a plane above that of the element whereby the passage of the articles on the element will be limited to a single layer, the accumulation of articles between the element and the gauge causing the gauge to be moved away from the element and to be rotated in the direction opposite to the direction of travel of the element whereby the accumulated articles will be dispersed.

16. Apparatus of the character described, comprising a pulley, a shaft, gearing between the shaft and pulley whereby the latter will be rotated in the same direction as but at a different speed from the shaft, a second pulley secured to the shaft, in axial alinement with the first pulley, a transporting belt on the first pulley, a jockey belt engaging the transporting belt for a portion of the periphery of its pulley, a delivery belt engaging the second pulley and driving the latter, a second delivery belt engaging the first delivery belt for a portion of the circumference of the second pulley, the points of divergence of the jockey belt from the transporting belt and the second from the first delivery belt being in proximity whereby articles transported by engagement between the transporting and jockey belts will be transferred at said point to engagement between the first and second delivery belts.

17. Apparatus of the character described, comprising a pulley, a shaft, gearing between the shaft and pulley whereby the latter will be rotated in the same direction as but at a different speed from the shaft, a second pulley secured to the shaft in axial alinement with the first pulley, a transporting belt on the first pulley, a jockey belt engaging the transporting belt for a portion of the periphery of its pulley, a delivery belt engaging the second pulley and driving the latter, a second delivery belt engaging the first delivery belt for a portion of the circumference of the second pulley, the points of divergence of the jockey belt from the transporting belt and the second from the first delivery belt being in proximity whereby articles transported by engagement between the transporting and jockey belts will be transfered at said point to engagement between the first and second delivery belts, and movable means for automatically preventing the accumulation of articles on the transporting belt.

18. Apparatus of the character described, comprising means for continuously feeding separate articles, a toothed member mounted above the feeding means and adapted to be rotated relatively thereto whereby articles carried by the feeding means will be moved relatively to said means.

19. Apparatus of the character described, comprising means for continuously feeding separate articles, a toothed member mounted above the feeding means and adapted to be rotated relatively thereto whereby the engagement of the member by articles carried by the feeding means will cause the member to be rotated whereby said articles will be moved relatively to said means.

20. Apparatus of the character described, comprising means for continuously feeding separate articles, a toothed member pivoted relatively to the feeding means and adapted

to be rotated independently of its pivotal movement, a stationary rack, a rack rotatably mounted on the axis of the member, said latter rack engaging the stationary rack, a pawl carried by the rotary rack and engaging the teeth of the member, the periphery of the member being normally positioned relatively to the surface of the feeding means as to prevent the passage between them of more than one article at a time..

21. Apparatus of the character described, comprising means for continuously feeding separate articles, a toothed member pivoted relatively to the feeding means and adapted to be rotated independently of its pivotal movement, a stationary rack, a rack rotatably mounted on the axis of the member, said latter rack engaging the stationary rack, a pawl carried by the rotary rack and engaging the teeth of the member, the periphery of the member being normally positioned relatively to the surface of the feeding means as to prevent the passage between them of more than one article at a time, and means for preventing the articles from adhering to the member.

This specification signed July 21, 1922.

WARD B. STORY.