

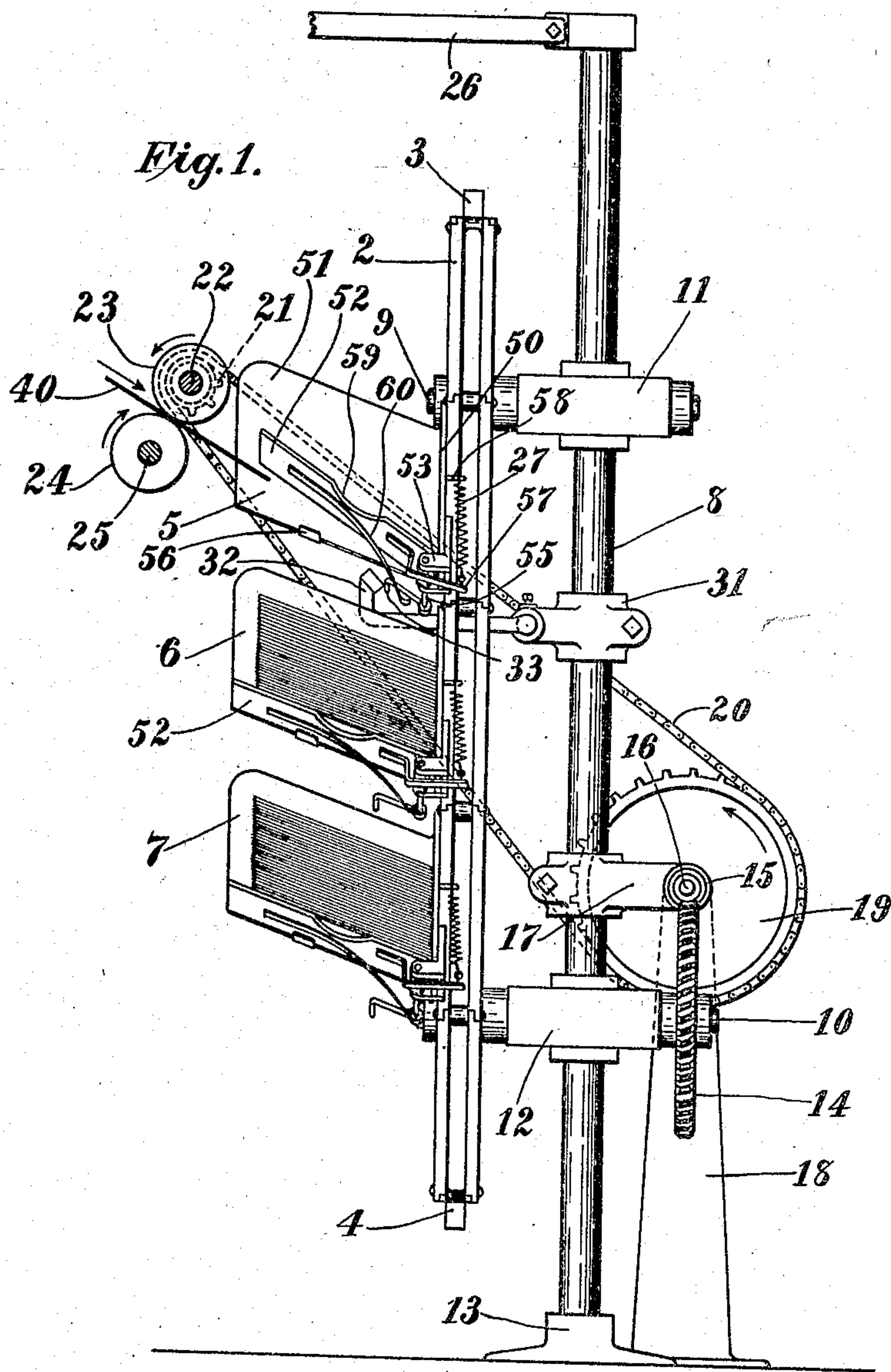
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F. E. STRASBURG.  
BUNCHING AND COUNTING MACHINE.  
APPLICATION FILED FEB. 7, 1908.

900,611.

Patented Oct. 6, 1908.

2 SHEETS—SHEET 1.



Witnesses:

Chas. W. La Rue

Dwight V. Riggs

Inventor:

Frederick E. Strasburg

by Wilbur M. Stone

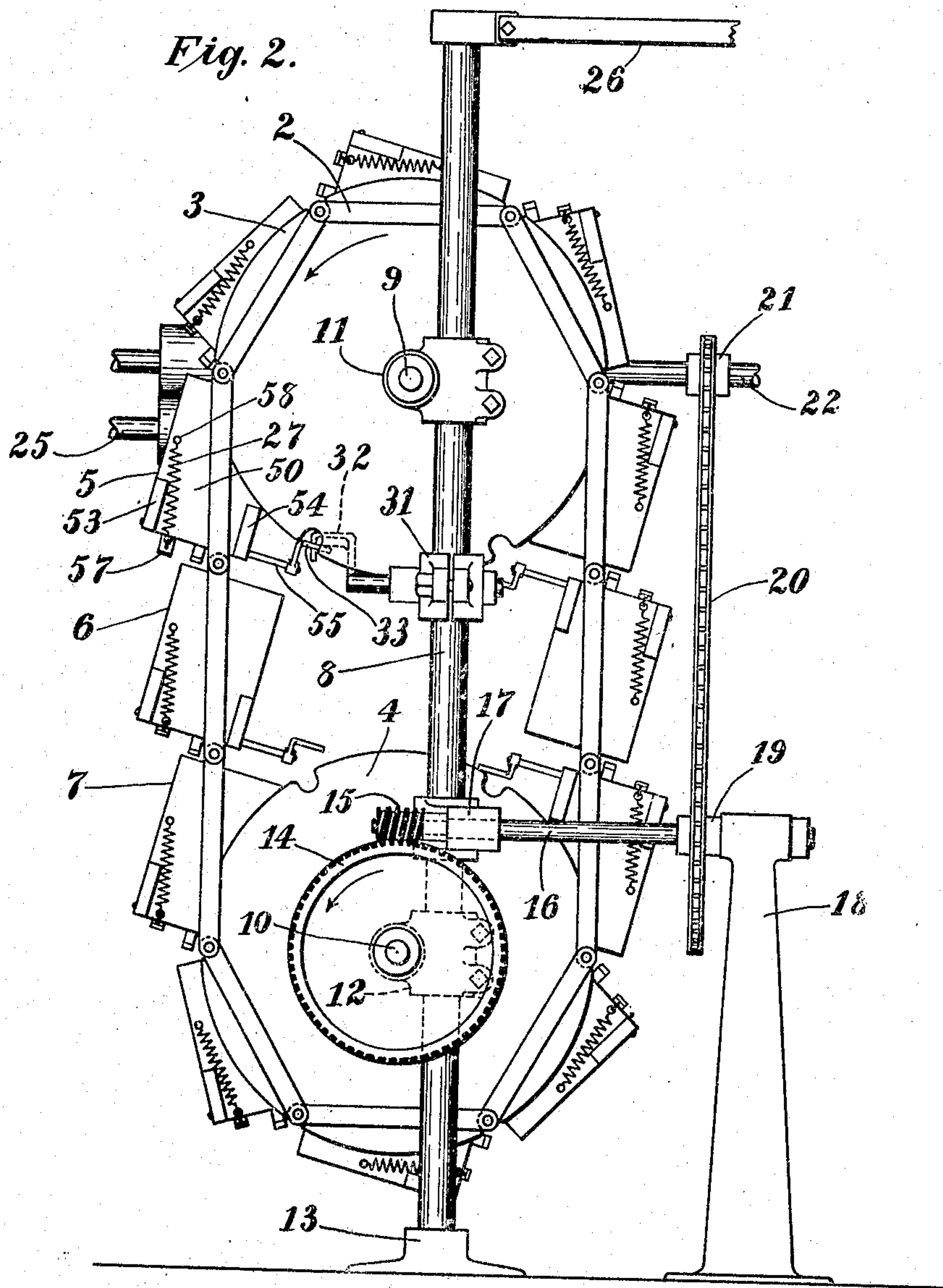
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*Chas. W. La Rue*  
*Daisy V. Riggs*

*Inventor:*  
*Frederick E. Strasburg*  
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*Attorney*



# UNITED STATES PATENT OFFICE.

FREDERICK E. STRASBURG, OF RUMFORD FALLS, MAINE, ASSIGNOR TO CONTINENTAL PAPER BAG COMPANY, A CORPORATION OF MAINE.

## BUNCHING AND COUNTING MACHINE.

No. 900,611.

Specification of Letters Patent.

Patented Oct. 6, 1908.

Application filed February 7, 1908. Serial No. 414,682.

*To all whom it may concern:*

Be it known that I, FREDERICK E. STRASBURG, a citizen of the United States, residing at Rumford Falls, in the county of Oxford and State of Maine, have invented certain new and useful Improvements in Bunching and Counting Machines, of which the following is a specification.

This invention relates to bunching and counting machines and has for its object to provide means for gathering into bunches, each containing a predetermined number, sheets of paper, metal or other material, cards, envelops, paper bags or other articles.

The product of many modern automatic machines is delivered therefrom at high speed and at a uniform rate and means for gathering said product into bunches, each containing a predetermined quantity, is a highly desirable adjunct to such machines.

The present invention has for its object to provide means which, while receiving the articles from such automatic machines at high speed, will with great accuracy gather and arrange them into bunches each containing a predetermined number.

To that end my improved machine comprises parts and mechanisms as illustrated, in its preferred embodiment, in the accompanying drawings, wherein

Figure 1 is a side elevation thereof and Fig. 2 a rear end elevation.

My improved machine comprises primarily a conveyer illustrated herein as an endless chain 2, traveling over and carried by suitable sprocket wheels 3, 4. Said chain is provided with gathering boxes as 5, 6, 7 of peculiar construction which will be described more in detail later herein. For convenience and simplicity I have illustrated sprocket wheels 3, 4 fixed to shafts 9, 10 turning in boxes 11, 12 all respectively. Said boxes are adjustably supported on vertical post 8 arising from floor plate 13. Said post may be steadied at its upper end, from any convenient wall or pillar, by means of tie bars 26, 26.

Power may be communicated to one of said sprocket shafts as 10 from worm 15 through worm gear 14 fixed on said shaft 10. Said worm gear is fixed on one end of shaft 16 supported adjacent thereto in bearing 17 on post 8 and at the other end by floor stand 18. On said shaft 16 near floor stand 18 may be fixed sprocket wheel 19 to which power is communicated by chain 20 from sprocket 21

on feed-roll shaft 22. On said shaft 22 is fixed feed-roll 23 for engagement with feed-roll 24 on shaft 25. Said feed-rolls may be caused to rotate at the same surface speed in the direction of their respective arrows, by means of the usual gearing not shown, and shafts 22, 25 may be supported from the framework of my machine by suitable means not shown.

Power is communicated to shaft 22 from any suitable source of power.

If desired rolls 23, 24 and their shafts may form a part of the machine from which it is desired to deliver the articles to be bunched and counted by my improved machine. In any case it is necessary to properly time said rolls with the machine to be served or, in the absence of such primary machine, to supply the articles to be bunched and counted at a uniform and predetermined rate to said rolls.

In the drawings I have shown sprocket chain 2 as having twelve links each carrying a gathering box as 5. This choice of number of links and boxes is arbitrary and there can with equal efficiency be more or less. Also a plurality of said boxes may be mounted on one link or said boxes may be mounted on alternate links or otherwise spaced relative to said links, so long as said boxes be spaced uniformly and in such relative contiguity as to provide a continuity of receiving means for the articles.

Passing now to a more detailed description of the receiving boxes it will be observed that said boxes are all of one pattern and a description of one will therefore suffice for all. For convenience of illustration, in Fig. 1 I have shown only three gathering boxes but it will be understood that in practice boxes will be arranged about the whole length of carrying chain 2 as shown in Fig. 2. Therefore referring particularly to box 5, said box comprises three sides, viz: a rectangular end by which said box is attached to conveyer chain 2; a rhomboidal back 51 attached by one edge thereof to the rear edge of end 50 and extending upwardly and away from end 50 toward the receiving end of the box. The third side of said box is bottom 52 hinged at one of its ends to the lower edge of end 50. For the purpose of said hinging, bearing ears 53, 54 affixed to end 50 support shaft 55 fixed to said bottom 52. An inreaching ear 56 is provided on the lower edge of back 51 to support bottom 52 in its lower position as shown



in box 6. Bottom 52 when in its lower or receiving position thus lies substantially parallel with the bottom edge of back 51 and inclines upwardly toward its receiving end.

5 Outreaching arm 57 fixed to the lower side of bottom 52 has one end of spring 27 attached to its outer end for urging said bottom to its lower position and for retaining it in that position. The other end of said spring is attached to post 58 in end 50. Bottom 52 may have its side notched as at 59 to facilitate the removal of the bunch of articles after being gathered and counted. A spring deflector 60, attached to bottom 52, is provided to assist in guiding the articles into the box immediately below it. Box 5 is mounted on chain 2 obliquely whereby said box is canted relative to the perpendicular and bottom 52 thereof has its front edge higher than its back edge and back 51 has its top edge rearward of its bottom edge as seen in Fig. 1. If said box was shifted so that its back 51 was parallel with the run of chain 2 and the run of said chain was modified to lie in approximately the present angle of back 51 relative to the vertical the same object would be accomplished.

By means of the aforescribed upward inclination of bottom 52 towards its receiving end, the reception of articles delivered to the box is facilitated. The canting of said box relative to the vertical serves several purposes; first it compensates for the well known back and forth movement of the boxes with chain 2 caused by the passage of the relatively long links of said chain over the relatively small sprockets 3, 4. Second, said canting facilitates the delivery of the articles against back 51 of the box whereby said articles are arranged in a regular pile in said box; and third, said canting of the boxes facilitates the retention of the articles in the boxes after delivery.

Under some conditions if desired the boxes of my improved mechanism may be provided with front walls respectively. In this case said boxes may have their ends as 50 arranged vertically (when in operative position) that is parallel to the chain links to which they are attached respectively. This arrangement, however, does not provide any compensation for the right and left movement (Fig. 2) of the boxes caused by the passage of the chain over the sprockets, and it is necessary to make said boxes enough wider to allow of proper delivery thereinto at all stages of their right and left movement.

If bottom 52 was fixed in its lower position (as shown in box 6) it would be practically impossible to change from delivery into one box to delivery into the next succeeding box with precision at high speed even though said boxes were moved intermittently or at a variable speed. To obviate this difficulty and afford freedom and precision of delivery

I have provided the movable bottom 52 already described. To accomplish the movement of said bottom I have provided the following means. On bracket 31 adjustably fixed on post 8 is cam arm 32 inreaching for engagement with trip lever 33 fixed to the inboard end of pivotal shaft 55 of bottom 52. Trip lever 33 extends from its shaft 55 rearwardly toward the receiving end of box 5. Said cam arm 32 is so positioned vertically relative to the travel of box 5 that as said box is carried downwardly by chain 2 toward the position shown in Fig. 1, trip lever 33 engages with said cam arm 32 and causes bottom 52 to swing upwardly on its pivotal shaft 55 out of the path of the incoming articles as 40. Said bottom 52 is retained thus out of position until the last article required to make up the predetermined number has been delivered into box 6 when trip lever 33 passes out of engagement with cam arm 32 and bottom 52 urged by spring 27 moves promptly across the path of delivery of the articles into its lower position ready to receive the first article of its particular load. In Fig. 1 article 40, in the act of being delivered, is the last article of the complement of box 6 and bottom 52 of box 5 is on the verge of moving to its lower position. The gathered bunches are supposed to be removed from the boxes before said boxes have passed materially beyond the position of box 7. The boxes then pass idly around sprocket 4 and then upwardly and over sprocket 3 into operative position as described.

Continuous uniform movement of boxes 5, 6, and so forth, past the point of delivery of the articles is not a requisite to the successful operation of my improved machine; a continuous rythmical movement or a regular intermittent movement are equally efficient and may be used if more convenient. The movement must, however, be regular whatever its detail characteristics.

Various changes of arrangement to accommodate the invention to particular environments will be obvious to those skilled in the art, all within the scope of my invention.

I claim:

1. The combination of a conveyer, means for moving said conveyer vertically downward in regular movement, a series of boxes carried by said conveyer and canted relative to the perpendicular, means for delivering articles into the path of travel of said boxes, a movable bottom in each box, means for holding said bottom out of the path of delivery of said articles and means for moving said bottom across the path of delivery of said articles.

2. The combination of a series of boxes, uniformly spaced and canted relative to their direction of travel, means to move said boxes in regular movement in a rectilinear path of travel, means for delivering articles



at a uniform rate and in a constant direction into the path of travel of said boxes, a movable member in each box, means for maintaining said movable member out of the path of delivery of said articles and means for moving at a predetermined time, the movable member across said path of delivery of the articles.

3. The combination of a conveyer chain, a series of boxes uniformly spaced thereon, means to move the conveyer chain in regular rectilinear movement, means for delivering articles at a uniform rate and in a constant direction into the path of travel of said boxes, a bottom pivotally mounted in each box and inclined to its direction of travel and means for intermittently swinging said bottom across the path of delivery of said articles.

4. The combination of an endless chain, means for moving said chain in regular movement, a series of boxes uniformly spaced on said chain, means for delivering articles at a uniform rate and in a constant direction into the path of travel of said boxes, a bottom pivotally mounted in each box and means for intermittently swinging the entrance end of said bottom across the path of delivery of said articles and means carried by said bottom for deflecting the articles into the box next adjacent to said bottom.

5. The combination of a conveyer, means for moving said conveyer in regular movement, a series of boxes uniformly spaced on said conveyer, means for delivering articles at a uniform rate and in a constant direction into the path of travel of said boxes, a bottom pivotally mounted in each box, means for swinging said bottom across the path of delivery of said articles and yieldable means for deflecting said articles into the box next adjacent to said bottom.

6. The combination of a conveyer, means for moving said conveyer in regular movement, a series of boxes uniformly spaced on said conveyer, means for delivering articles at a uniform rate and in a constant direction into the path of travel of said boxes, a movable bottom in each box, means for intermittently moving said bottom across the path of delivery of said articles and means carried by said bottom for deflecting the articles into the box next adjacent to said bottom.

7. The combination of a series of boxes uniformly spaced, means for moving said boxes in regular movement, means for delivering articles into the path of travel of the boxes, a movable bottom in each box, means carried by said bottom for deflecting said articles into the box next adjacent to said bottom, means for temporarily withholding said bottom from its receiving position and means for returning it at a predetermined time to its receiving position.

8. The combination of a conveyer, means for moving said conveyer in regular movement, a series of boxes uniformly spaced on said conveyer, and canted relative to the perpendicular, a bottom pivotally mounted in each box, means for delivering articles into the path of travel of said boxes, means for intermittently swinging said bottom across the path of travel of said articles.

9. The combination of a conveyer, means for moving said conveyer in regular movement, a series of boxes carried by said conveyer and canted relative to the perpendicular, a bottom pivotally mounted in each box, said bottom being inclined upwardly toward its receiving end when in its receiving position, means for temporarily withholding it from its receiving position and means for returning it at a predetermined time to its receiving position.

10. The combination of a conveyer, gathering boxes mounted thereon, each box being provided with a movable member, means for delivering articles at a uniform rate into the path of travel of said boxes, means to maintain said movable member out of the path of delivery of the articles and means for moving at a predetermined time the movable member across the path of travel of the articles, yieldable means mounted on the movable member for deflecting said articles into the box next adjacent to said movable member, and means for moving the conveyer.

Signed this fourth day of February, 1908 at Rumford Falls, Maine, in the presence of two subscribing witnesses.

FREDERICK E. STRASBURG.

Witnesses:

HAROLD SMITHWICK,  
C. NORTON MIXER.