Feb. 3. 1925. 1,524,829

F. H. KOEHLER

MECHANISM FOR AUTOMATICALLY DELIVERING ARTICLES IN A DEFINITE ORDER

Filed July 21, 1920 3 Sheets-Sheet 1

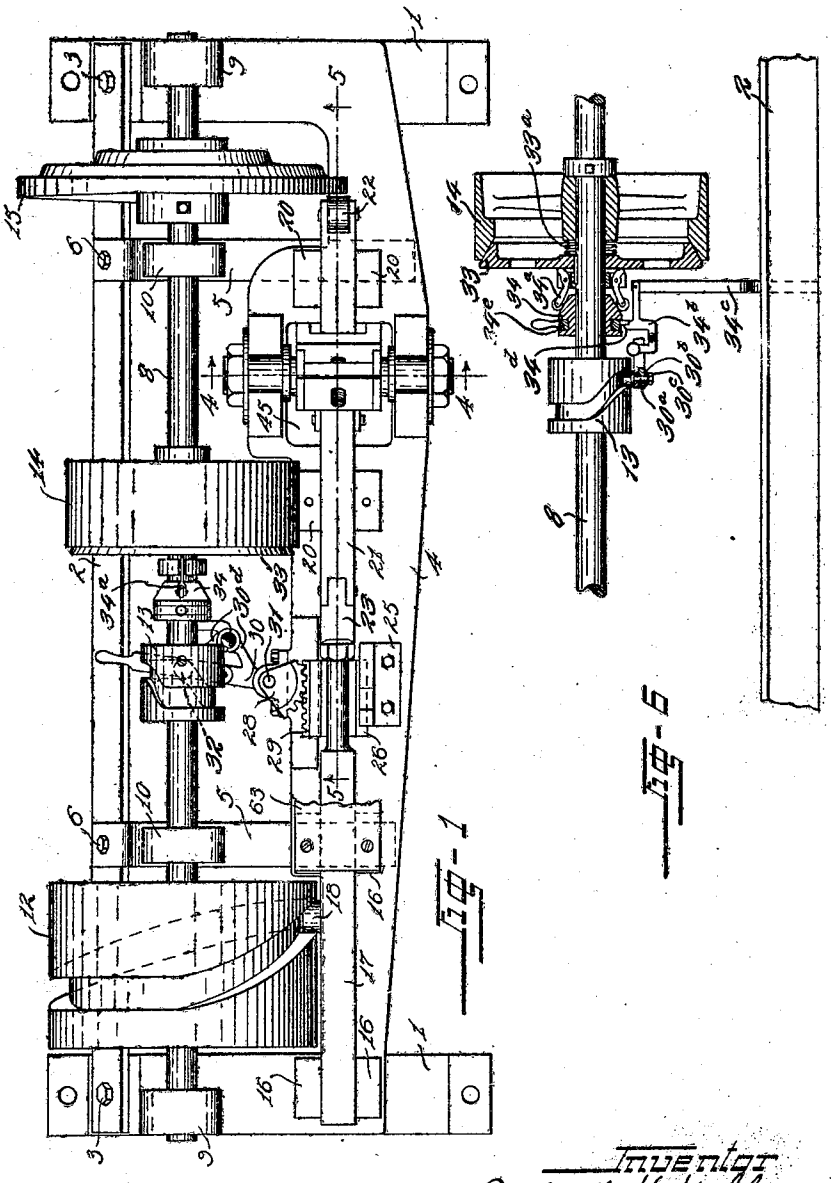


Fig. 1

Fig. 5

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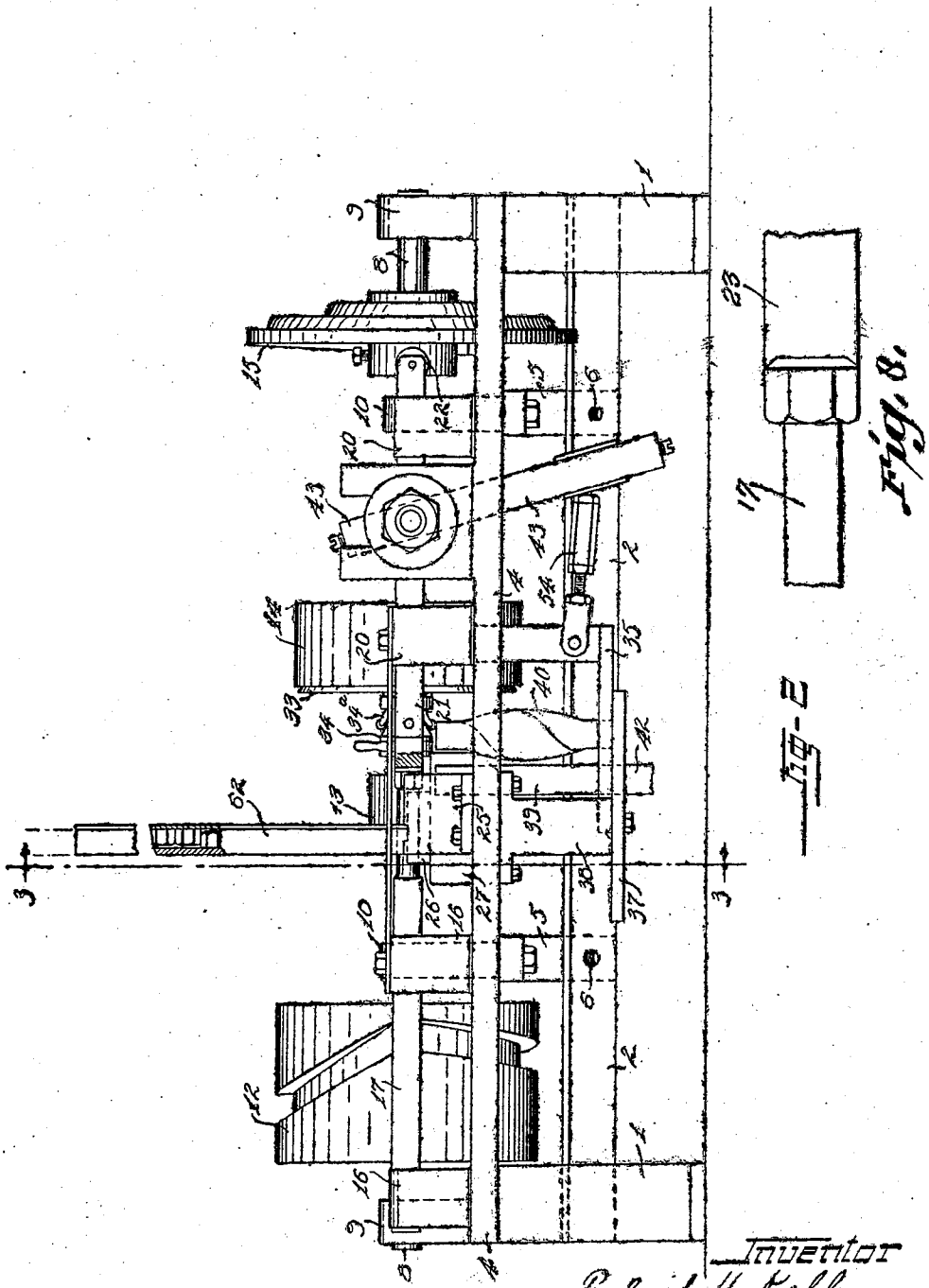


Fig. 8.

Fig. 2

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MECHANISM FOR AUTOMATICALLY DELIVERING ARTICLES IN A DEFINITE ORDER

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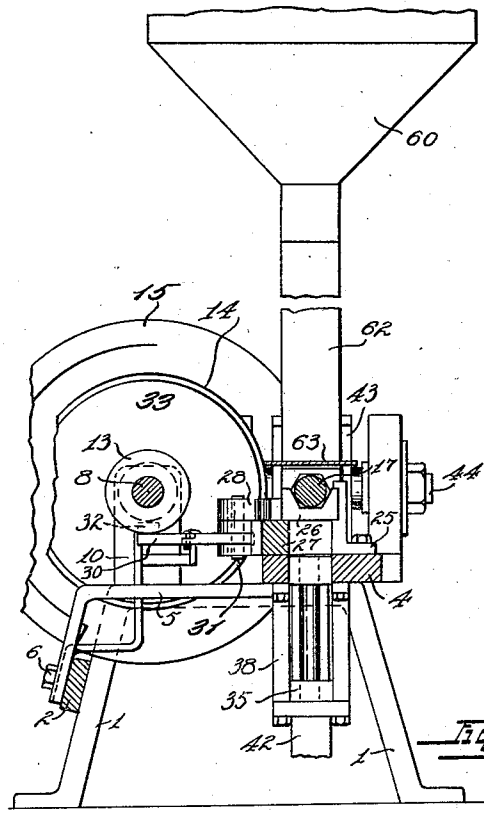


Fig. 3

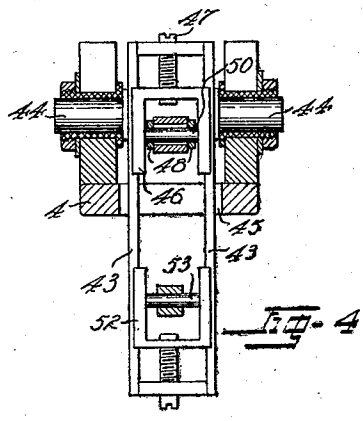
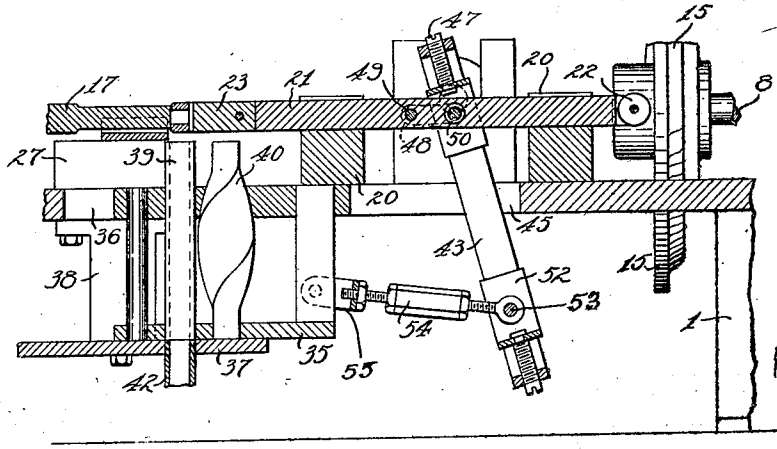


Fig. 4

Fig. 7



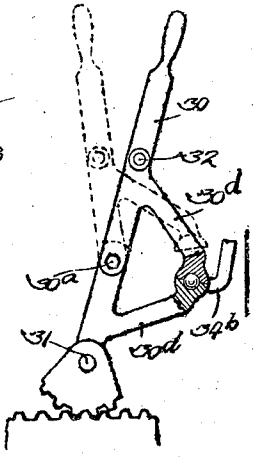


Fig. 5

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Patented Feb. 3, 1925. 1,524,829

UNITED STATES PATENT OFFICE.

FREDERICK H. KOEHLER, OF CLEVELAND, OHIO, ASSIGNOR OF THREE-SIXTEENTHS TO HENRY KREIKENBOHM, OF CLEVELAND, OHIO, AND THREE-SIXTEENTHS TO HELLMUTH C. HOHMANN, ADMINISTRATOR OF THE ESTATE OF ADOLPH HOHMANN, DECEASED, OF LAKEWOOD, OHIO.

MECHANISM FOR AUTOMATICALLY DELIVERING ARTICLES IN A DEFINITE ORDER.

Application filed July 21, 1920. Serial No. 397,959.

To all whom it may concern:

Be it known that I, FREDERICK H. KOEHLER, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Mechanism for Automatically Delivering Articles in a Definite Order, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to mechanism for delivering articles in a definite position, and is peculiarly adapted for use with automatic nut cutting and semi-finishing machines or apparatus of similar character, and has for its general object to provide an automatic mechanism of this nature which shall be capable of delivering articles in a definite position irrespective of their relation when introduced into the machine.

Another object is to provide a mechanism of the aforesaid character which shall utilize the force of gravity for turning those nuts, whose position necessitates a reversal thereof to present them in a position similar to those which have passed therethrough.

Another object is to provide automatic means for stopping the machine in the event of a jam due to articles irregular in size or shape being fed therethrough. Further and more limited objects of the invention will appear hereinafter and will be realized in and through the combination of elements embodied in the claims hereof.

In the accompanying drawings where I have shown an illustrative embodiment of my invention but without intent to limit myself thereto, Fig. 1 is a top plan view of a machine constructed in accordance with my invention; Fig. 2 is a side elevation thereof; Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2; Figs. 4 and 5 are detail sectional views taken respectively on the lines 4—4 and 5—5 of Fig. 1; Fig. 6 is a detail sectional view of the clutch releasing mechanism; Fig. 7 is an enlarged detail plan view of a portion of the clutch releasing mechanism, and Fig. 8 is an enlarged plan view of a portion of the push rod and feeler head.

Describing the various parts by reference characters, 1 indicates a pair of transversely disposed supporting standards which are held in longitudinal spaced relation by a tie member 2 bolted to the rear sides thereof as indicated at 3 and also by an L-shaped bed member 4 fastened to the top sides of said standards. A pair of transverse bearing supports 5, 5 are each fastened at their forward ends, to the under side of the member 4 and at their rearward end said supports are deflected downwardly as shown in Figs. 1 and 3 to overlap the tie member 2, to which, they are fastened in any suitable manner as by the bolts indicated at 6. A drive shaft 8 is rotatably supported at each end by the bearing blocks 9, 9 positioned on the standards 1 and intermediate of the standards, the shaft 8 is rotatably supported by bearing blocks 10, 10 rising from the supports 5, 5. The drive shaft 8 has mounted thereon in turn a large cam drum 12, a smaller cam drum 13, a loosely mounted drive pulley 14 and a cam disk 15, the function of each of said elements being more fully set forth hereinafter.

Secured to the L-shaped member 4 adjacent one end thereof, are a pair of bearing blocks 16, 16 to slidably receive a non-rotatable push rod 17 which has a lug 18 projecting therefrom to engage the cam drum 12. Adjacent the other end of the member 4 is positioned a similar pair of bearing blocks 20, 20 to slidably receive a non-rotatable feeler rod 21 which mounts at one end thereof, a roller 22 adapted to engage the cam disk 15, and at the other end said rod is bifurcated to receive a feeler head 23 which is recessed at the free end to conform with the crown of the nuts to be positioned. It is obvious that different sized feeler heads may be inserted within the bifurcated end of rod 21 to conform with the size and shape of the nuts to be assorted. At a point substantially beneath the abutting ends of the push rod 17 and feeler rod 21, there is mounted a guide bracket 25 which is channeled to slidably support one side of a receiving block 26, said block being supported at its opposite side on a bearing block 27 fastened to the member 4. Reciprocation of the receiving block 26 is accomplished by means of a segmental pinion 28 meshing with a rack 29 which is fastened to a side of said block. The segmental pinion 28 is oscillated by the

small cam drum 13 through the medium of the semi-rigid lever 30 which is pivoted at one end about a pivot pin 31 which also forms the pivot point of the segmental pinion 28 and at the other end said lever is provided with a stud 32 which engages the underside of the cam drum 13. As shown in Fig. 3 the receiving block is formed with a depression to embrace three sides of the hexagonal nuts illustrated, although it will be understood that the shape of the depression may vary to conform with the shape and size of the nuts which are to be positioned.

The clutch releasing mechanism for automatically stopping the machine in event of a jam, comprises a clutch member 33 which is normally held out of engagement with the drive pulley 14 by a spring 33^a interposed therebetween. Engagement of the clutch 33 is accomplished by a slidable cone 34 which serves to spread the pivoted clutch dogs 34^a, thereby to force said clutch member into engagement with the drive pulley in a manner well understood. The semi-rigid lever 30 is composed of two members pivotally fastened together by a bolt 30^a which has a spring washer 30^b interposed between one of said members and the nut 30^c. Each member is provided with a curved arm 30^d which abut when the lever 30 is straightened, to form a support for one end of the trip lever 34^b. At the other end said lever is pivoted to a vertical support 34^c rising from the tie member 2 and intermediate of the ends thereof, said lever is provided with a detent 34^d normally engaging a projection formed on a collar 34^e embracing the cone 34 thereby to hold said clutch into engagement.

The discharge mechanism for presenting the nuts with like faces in the same direction, comprises a reciprocable carriage 35 which is slidably mounted at the top thereof within an elongated slot 36 in the member 4 and at the bottom, said carriage is supported by a rail 37 fastened to the brackets 38, 38 which depend from the member 4. Mounted between the upper and lower members of the carriage 35 are a pair of vertical discharge tubes 39 and 40, tube 39 being shown as an ordinary discharge tube which permits the nut to fall by gravity in the same relative position as when clamped between the push rod and feeler rod, while tube 40 is twisted through 180° to turn the nut through a similar angle and hence reverse the relative position while passing therethrough. While I have specified that tube 39 is straight and tube 40 is twisted through 180° it will be understood that either or both of these tubes may be twisted to any desired angle to conform with the desired position of the assorted articles.

The mechanism for shifting the carriage to bring the proper tube into alignment with the stationary discharge tube 42, comprises a rectangular frame 43, (Fig. 4) which is provided with trunnions 44, 44 mounted one on each side of the enlarged opening 45 in the bed member 4. A yoke 46 is slidably and adjustably mounted within the upper end of frame 43 by means of an adjusting screw 47 threaded in the top of said frame and swiveled in the top of said yoke. A pair of links 48, 48 are pivotally connected at one end to a pin 49 disposed transversely of the feeler rod 21, and at the other end said links are pivotally connected to a cross pin 50 disposed transversely of yoke 46. At the lower end of the frame 43, the yoke 52 is slidably and adjustably mounted in a manner similar to that previously described in connection with yoke 46. A cross pin 53 disposed transversely of yoke 52 serves to pivotally connect one end of a turn-buckle 54 therewith and at the other end said turn-buckle is adjustably and pivotally connected to the carriage 35 by a yoke 55.

Any suitable means may be employed for feeding the nuts to the machine such as the hopper 60 which rotatably supports a suitable agitator (not shown) and at its lower end, said hopper is connected with a delivery chute 62 which is supported at its lower end by the guide bracket 25 and a plate 63 fastened to the top of bearing blocks 16, and 20.

In operation, the unassorted nuts are placed in the hopper 60 and are fed by a suitable agitator (not shown) down the delivery chute 62 in a single vertical column to the receiving block 26. The shaft 8 is rotated by any suitable source of power connected to the driving pulley 14, which rotation, causes the cam drum 12 to slide the push rod 17 and the nut and the receiving block forwardly to engage with the feeler head 23. Assuming that the nut is so positioned that the flat side thereof faces the feeler head as shown in Figs. 5 and 8, the operation will be as follows: The small cam drum 13 will operate the segmental pinion 28 to slide the receiving block forward with the push rod and nut. The flat side of the nut will abut the outer edges of the recessed portion of the feeler head and force the feeler rod 21 rearwardly until the roller 22 is in the proximity of the cam disk 15. The rearward movement of rod 21 will rock the lower end of the frame 43 forwardly by means of the link connections 48, 48 which are pivotally connected to the frame at a point below the pivotal axis thereof. The rearward movement of the frame serves to draw the carriage rearwardly until the discharge tube 39 is in alignment with the nut and the stationary tube 42. Meanwhile the cam drum 13 has rotated a distance sufficient to withdraw the receiving block rearwardly and permit

the nut to drop by gravity through tubes 39 and 42 to the machine to which they are to be delivered. Further rotation of shaft 8 and the parts mounted thereon serves to return the machine to its original position.

Assuming that the next nut is delivered on the receiving block with the crown thereof facing the recessed portion of the feeler head the operation will be as follows: The cam drum will feed the push rod 17 and nut forwardly causing the crown of the nut to enter the recess in the feeder head 23. The receiving block will also move forward as previously described and support the nut. It is obvious that the feeler rod will not be moved forwardly as great a distance as in the previous instance since a part of the push rod stroke is absorbed by the crown of the nut entering the recessed head 23. Hence the shortened stroke of the feeler rod will only rock the frame 43 rearwardly a distance sufficient to position the discharge tube 40 in alignment with the nut and stationary tube 42. The receiving block is now withdrawn rearwardly as previously described and the nut falls through the twisted tube by gravity and is rotated 180° to a position similar to the preceding nut.

Should the nuts become jammed between the feeler head and receiving block because of irregularities in shape or size, the semi-rigid lever 30 will bend at the pivoted joint 30^a and open the curved arms 30^d and thus drop the free end of the trip lever 34^b which disengages the detent 34^a and allows the spring 33^a to disengage the clutch and stop the machine. After the jam has been cleared the trip lever may be reset and operation of the machine continued.

It is obvious that the tubes 39 and 40 may be reversed when it is desired to reverse the delivery of the discharged nuts and that the machine is adjustable for various sized and shaped nuts.

Having thus described my invention, what I claim is:

1. In mechanism for delivering articles in a predetermined position, the combination with a delivery chute through which the articles pass irrespective of any predetermined position, of a discharge guide so formed as to change the position of the articles passing therethrough, a second guide so formed as to discharge the articles in a different position from those entering said first mentioned guide and means interposed betwen said chute and said guides for delivering the articles to the proper discharge guide.

2. In mechanism for delivering articles in a predetermined position, the combination with a delivery chute through which the articles pass irrespective of any predetermined position, of a discharge guide so formed as to reverse the position of the articles passing therethrough, a second guide so formed as to discharge the articles in the same relative position as received therein, and means interposed between said chute and said guides for delivering the articles to the proper discharge guide.

3. In mechanism for delivering articles in a predetermined position, the combination with a delivery chute through which the articles pass irrespective of any predetermined position, of a discharge guide so formed as to change the position of the articles passing therethrough, a second guide so formed as to discharge the articles in the same relative position as received therein, and means for shifting said guides whereby the proper guide will be positioned in operative relation to said articles.

4. In mechanism for delivering articles in a predetermined position, the combination with means for delivering the articles irrespective of any predetermined position, of a discharge guide so formed as to change the position of the articles passing therethrough, a second guide so formed as to discharge the articles in the same relative position as received therein, mechanism slidably interposed between said delivery means and said guides for receiving the articles, means dependent upon the movement of said receiving mechanism for shifting said guides to position each of said articles in operative relation to the proper guide.

5. In mechanism for delivering articles in a predetermined position, the combination with a delivery chute through which the articles pass irrespective of any predetermined position, of a discharge guide so formed as to reverse the position of the articles passing therethrough, a second guide so formed as to discharge the articles in the same relative position as received therein, said guides being so positioned as to utilize the force of gravity for conveying the articles therethrough and means for delivering each of said articles to its proper guide.

6. In mechanism for delivering articles in a predetermined position, the combination with means for delivering articles irrespective of any predetermined position, of mechanism for receiving said articles, and means dependent upon the gravity of the articles for discharging said articles with predetermined faces in the same relative position.

7. In mechanism for delivering articles in a predetermined position, the combination with a delivery chute through which the articles pass irrespective of any predetermined position, of a discharge guide so formed as to reverse the position of the articles passing therethrough, a second guide so formed as to discharge the articles in the same relative position as received therein, mechanism interposed be-

tween said chute and said guides for receiving said articles and means for shifting said receiving mechanism and said guides toward and from each other to divert said articles through the proper guide.

8. In mechanism for delivering articles in a predetermined position, the combination with a delivery chute through which the articles pass irrespective of any predetermined position, of a supporting member for receiving the articles, means for sliding said articles along said supporting member, a discharge guide so formed as to reverse the position of the articles passing therethrough, a second guide so formed as to discharge the articles in the same relative position as received therein, and means for moving said sliding means and said guides to divert said articles through the proper guides.

9. In mechanism for delivering articles in a predetermined position, the combination with a delivery chute through which the articles pass irrespective of any predetermined position, of a supporting member for receiving the articles, means for sliding said articles along said supporting member, a discharge guide so formed as to reverse the position of the articles passing therethrough, a second guide so formed as to discharge the articles in the same relative position as received therein, means for moving said sliding means, and connections between said sliding means and said guides whereby the movement of the latter will be dependent upon the former to divert said articles through the proper guides.

10. In mechanism for delivering articles in a predetermined position, the combination with a delivery chute through which the articles pass irrespective of any predetermined position, of means for receiving the articles from said chute, a push rod for moving said articles along said receiving means, a feeler head disposed in longitudinal alignment with said push rod and against which the articles are adapted to contact, means for accurately positioning said articles against said feeler head, and means for receiving the articles from said feeler head and arranging them with predetermined faces in the same relative position.

11. In mechanism for delivering articles in a predetermined position, the combination with a delivery chute through which the articles pass irrespective of any predetermined position, of a supporting member slidably mounted beneath said chute and adapted to receive each of the articles from said chute, a push rod for moving said articles along said supporting member, a feeler head against which the articles are adapted to contact, and means dependent upon the movement of said feeler head for receiving the articles and arranging them with predetermined faces in the same relative position.

12. In mechanism for delivering articles in a predetermined position, the combination with a delivery chute through which the articles pass irrespective of any predetermined position, of a discharge guide so formed as to change the position of the articles passing therethrough, a second guide so formed as to discharge the articles in a different position from those entering said first mentioned guide, means for shifting said guides whereby the proper guide will be positioned in operative relation to said articles, and means for automatically stopping said mechanism dependent upon the presentation of other than uniform articles thereto.

13. In mechanism for delivering articles in a predetermined position, the combination with means for delivering articles irrespective of any predetermined position, of mechanism for receiving said articles, means for discharging said articles with predetermined faces in the same relative position, and means for automatically stopping the machine dependent upon the presentation of other than uniform articles thereto.

14. In mechanism for delivering articles in a predetermined position, the combination with means for delivering articles irrespective of any predetermined position, of mechanism for receiving each of said articles separately, means dependent upon the gravity of the articles for discharging said articles with predetermined faces in the same relative position, and clutch releasing means dependent upon the operation of said receiving mechanism whereby the machine is rendered inoperative upon the presentation of other than uniform articles to said receiving mechanism.

In testimony whereof, I hereunto affix my signature.

FREDERICK H. KOEHLER.