

Oct. 20, 1925.

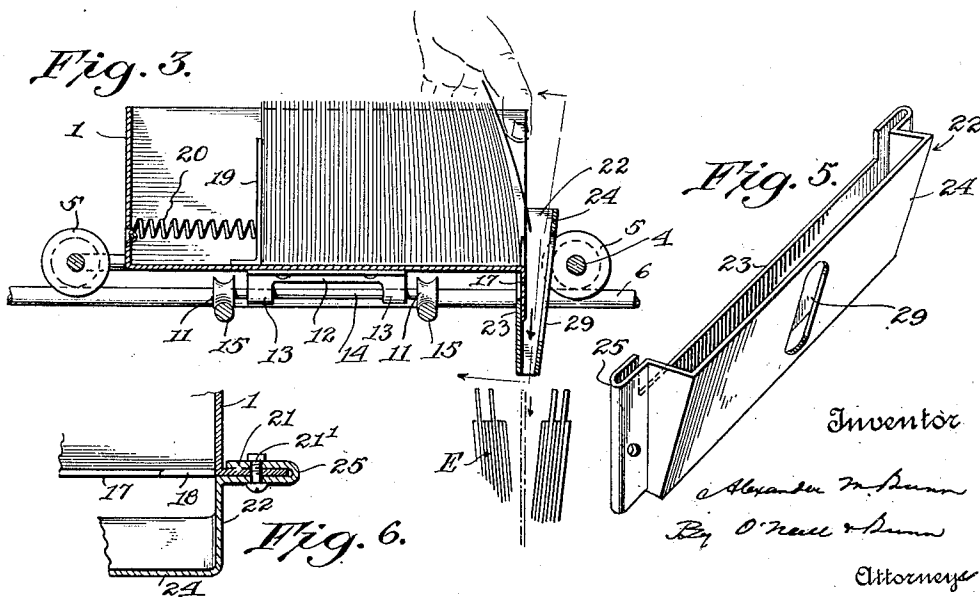
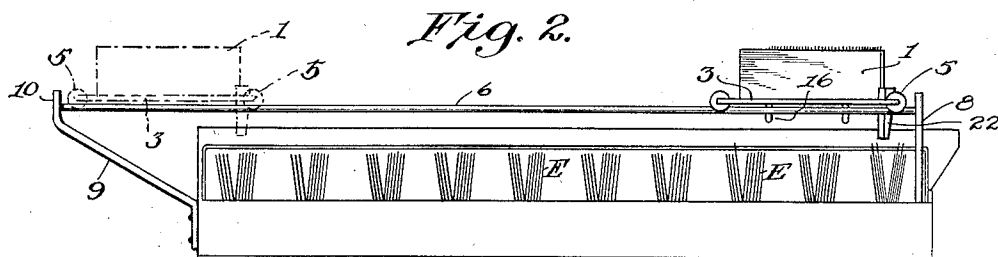
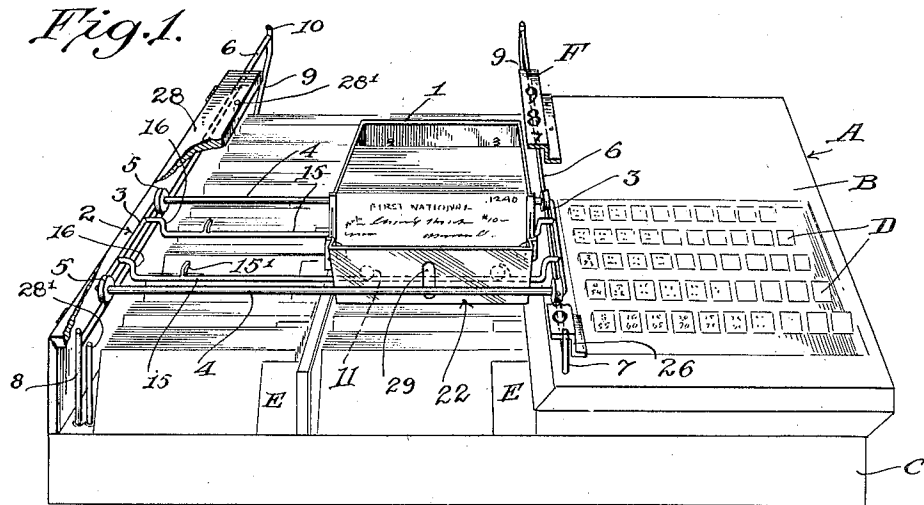
1,558,234

A. M. BUNN

FEEDING DEVICE FOR SORTING MACHINES

Filed Dec. 19, 1923

2 Sheets-Sheet 1



Oct. 20, 1925.

1,558,234

A. M. BUNN

FEEDING DEVICE FOR SORTING MACHINES

Filed Dec. 19, 1923

2 Sheets-Sheet 2

Fig. 7.

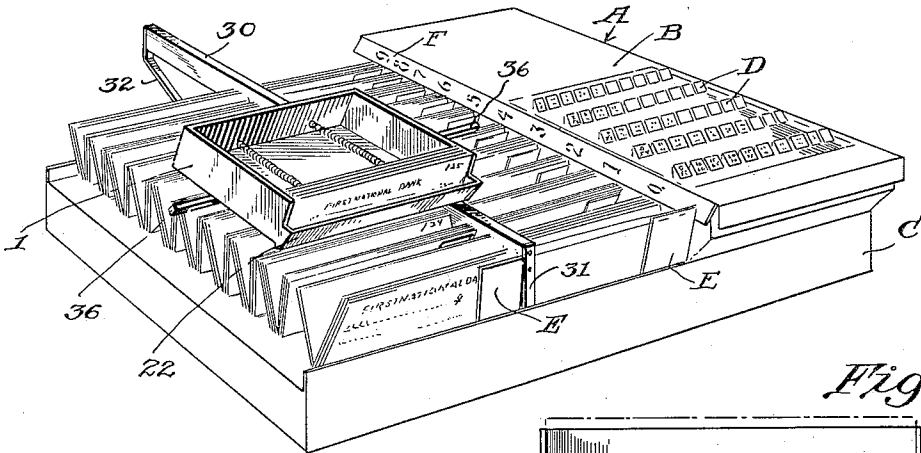


Fig. 8.

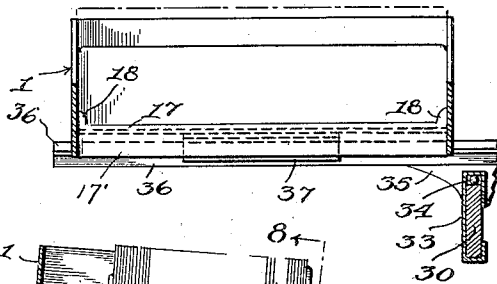


Fig. 10.

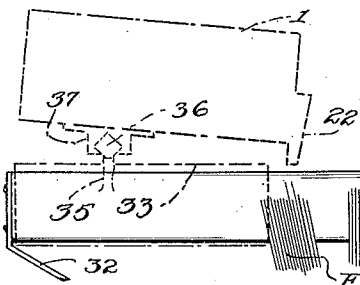
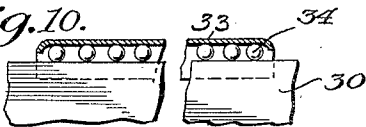


Fig. 9.

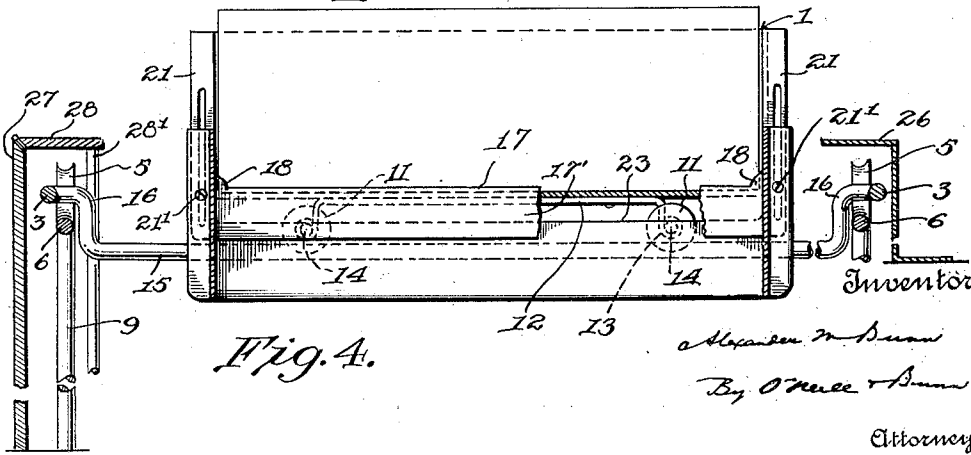
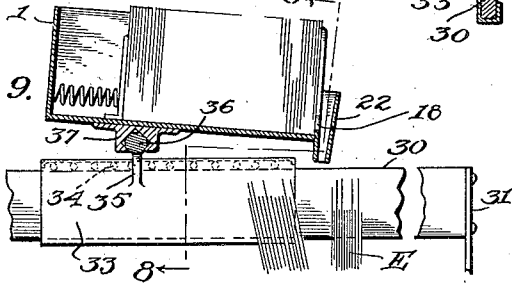


Fig. 4.

Alexander M. Bunn
By O. M. Bunn

Attorneys

UNITED STATES PATENT OFFICE

ALEXANDER M. BUNN, OF WASHINGTON, DISTRICT OF COLUMBIA, ASSIGNOR TO NATIONAL ASSORTING COMPANY, OF WASHINGTON, DISTRICT OF COLUMBIA, A CORPORATION OF DELAWARE.

FEEDING DEVICE FOR SORTING MACHINES.

Application filed December 19, 1923. Serial No. 681,646.

To all whom it may concern:

Be it known that I, ALEXANDER M. BUNN, a citizen of the United States, and resident of the city of Washington, District of Columbia, have invented certain new and useful Improvements in Feeding Devices for Sorting Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to feeding devices for sorting machines, and more particularly to machines of that character where manipulation of an actuating bar is effective to simultaneously provide a plurality of spaces, each of which is classified in accordance with certain designations carried by the article being sorted. Such a machine is disclosed in the application of George W. Cox, Jr., filed May 6, 1922, Serial No. 559,020.

In the aforesaid application a plurality of actuators are so positioned with respect to a multiplicity of pivotally mounted spacer elements arranged in groups that a reciprocation of any actuator will simultaneously move correspondingly positioned leaves in each group, each actuator bearing indicia classifying it with certain designations carried by the article being sorted. Additional indicia may be carried by the machine to classify each group, in accordance with additional designations carried by the article being sorted, and, by means of this machine, after the final sort, each article is in its proper position between the spacer elements.

In the utilization of the aforesaid machine for sorting papers, such as bank checks, either alphabetically or numerically, it has been customary for the operator to pick up the check with one hand, look at the name of the maker of the check, during the alphabetical sort, or at the number of the check, in the numerical sort, and to then use the other hand to cause a reciprocation of that actuator which is classified in accordance with the name of the maker of the check, or with a portion of the numerals included in the check number. This operation causes a space to be provided in each of the groups of spacer elements which

project outwardly from the machine, and the operator then places the check in that group which, because of indicia carried by the machine, or which, merely by the position of the group, in a row of groups, is classified in accordance with additional designations carried by said check, whether alphabetical or numerical.

The operation of sorting checks may be carried out much more quickly by the provision of an article carrier which is adapted for movement over all the groups of spacer elements, hereinafter called leaves, and which may be brought directly over any space which may be provided in any group thereof.

It is therefore the object of the invention to provide, for a machine of this character, an article-feeding device which comprises a receptacle or carrier, adapted to retain a plurality of the articles being sorted, and which is so anti-frictionally mounted as to be easily moved over all of the groups of leaves, and directly over any space which may be formed between any two leaves of any group.

Another object of the invention is the provision of means whereby the indicating designation of the article being sorted is always directly in front of the operator.

A further object of the invention is the provision of means whereby, after the carrier has been brought into position over the space provided in that group appropriate to the designation of the article, which is in front in the carrier, the article may be readily separated from the other articles in the carrier and allowed to gravitate into said space.

A still further object of the invention is the provision of means adapted to limit the lateral movement of the carrier to a position directly over the group of leaves into which it will be dropped, whereby the articles, such as checks, will always be in alignment with and immediately above the space which it is to enter.

The above and other objects of the invention will be made clear in the following specification, when read in connection with the drawings forming a part thereof.

In said drawings:

Fig. 1 is a perspective view, partially broken away, showing a sorting machine of the class described equipped with my invention;

Fig. 2 is a side elevation of the machine;

Fig. 3 is a vertical section taken longitudinally through the article carrier;

Fig. 4 is a transverse section taken through the carriage of the feeding device;

Fig. 5 is a perspective view of the feed chute for the carrier;

Fig. 6 is a detail sectional view showing the method of adjustably connecting the feed chute to the carrier;

Fig. 7 is a perspective view showing a modified form of carrier and carriage therefor;

Fig. 8 is a section on line 8—8, Fig. 9;

Fig. 9 is a fragmentary view showing the carriage, and the carrier in section; and

Fig. 10 is a detail, partly in section, and showing the anti-friction rollers for the carriage which supports the carrier.

Now referring specifically to the drawings, A represents generally a sorting machine of the general class hereafter referred to. Such a machine comprises a housing B mounted upon a support C. The machine is provided with a plurality of actuators each of which carries a projecting finger piece, which pieces are diagrammatically indicated at D, and each actuator carries depending lugs adapted for contact with one of the leaves in each of the groups of leaves E which project, as shown in Figs. 1 and 2, laterally of the machine. By means of indicia carried on the finger pieces D, which are classified in accordance with designations on the articles being sorted, the operator causes a reciprocation of that actuator which is classified in accordance with certain designations carried by the article being sorted, and the movement of the actuator simultaneously separates a leaf in each group from the leaf adjacent thereto, it being noted that each actuator contacts only similarly positioned leaves in each group. Briefly, then, when any one actuator is reciprocated, it simultaneously opens similarly positioned spaces in each group, and each of these spaces is classified to accord with a certain designation carried by the article which is to be placed in one of the spaces.

The group to which the article belongs is determined by other designations carried by the latter, and the groups are arranged in rows, the position of the group determining its classification. For assisting the operator to quickly determine the classification of any particular group of leaves, the machine is here shown as equipped with a strip F, mounted upon the housing B, and extending above and transversely of the groups of leaves, the strip bearing numerals 0 to 9,

one numeral being exactly opposite each group.

The machine is here shown as provided with two parallel rows of groups of pivotally-mounted leaf-portions E, each row containing 10 groups, the bodies of the leaves extending under the machine and each being adapted for contact by its associated actuator, under reciprocation of the latter. Each leaf body E extends laterally of the machine, and is provided with two upwardly extending leaf portions or projections, which are preferably integral with the body of the leaf, and these projections form the groups heretofore referred to.

In the operation of the machine heretofore, in the sorting of a plurality of checks bearing numbers, it has been necessary for the operator to pick up a check with one hand, and, after noting the number thereof, reciprocate the actuator which is classified in accordance with a portion of the number of said check. Such reciprocation opens up a plurality of spaces, one in each group, each space being classified in accordance with every other space. The operator then carries the check to a point above that group, the position of which indicates its classification in accordance with another portion of the number carried by the check, and the check is then placed in the open space in that group.

This invention contemplates the utilization of a movable carrier which is adapted to receive and hold a plurality of checks in such stacked relation that the checks are always projected towards the delivery end of the carrier, with the number of the check and the name of the maker approximately in front of the operator at all times.

Fig. 1 shows a carrier 1, of the class referred to, mounted upon the housing B of the sorting machine. The carrier 1 is mounted upon a carriage 2, which is here shown as of rectangular formation and composed of metal rods 3, 3, and 4, 4, forming a frame work, and flanged wheels 5 are anti-frictionally mounted at each point of juncture of the rods 3 and 4, as indicated. The wheels 5, 5 are adapted for travel over the rails 6, 6, the front end of one of said rails 6 being here shown as mounted on a post 7, carried by the housing B and the other being similarly mounted on a post 8, carried by the support C. The rear ends of the rails 6, 6 are supported by brackets 9, 9, which are secured to the rear of the housing C, and are outwardly and upwardly inclined therefrom, the upper ends 10 of the brackets extending above the rails, which ends 10, and the upper ends of the posts 7 and 8, limit the longitudinal movement of the carriage 2, the rearwardly extending brackets 9, 9 permitting movement of the carriage to its rearmost position in order

that it may be positioned over the last group of leaves in the row of groups. From the foregoing it will be obvious that the carriage is adapted for movement to a position directly over any group of the row of groups of leaves which extend longitudinally of the machine A.

The carrier 1 comprises a receptacle or box-like structure of any length desired, and of a width not less than the length of the bank check of average size. It is provided on its bottom with at least four wheels, 11, 11, in the preferred embodiment of the invention, which wheels may be secured by a retaining bar 12, secured adjacent each end to the bottom of the carrier, and provided with a loop 13 at each end, adapted to anti-frictionally engage the axle 14, of the wheels 11, 11. The wheels 11 ride upon a track consisting of two metallic rods, 15, 15, secured at each end to the side rods 3, 3, of the carriage 2, said rods 15 also serving to brace carriage 2, and each being offset at 16, below the plane of rotation of the wheels 5, 5, so as to allow the carrier to hang, as nearly as possible, directly above the upper edges of the leaves E.

Mounted upon each of the rods 15, 15, are two inwardly facing curved detents 15', 15', constituting abutments for the wheels 11, 11, and limiting movement of the carrier 1 longitudinally of the leaves E, said detents being so positioned on the rods 15 that the carrier, when stopped by one or the other of the detents, is centrally positioned directly over the group into which a check is to be delivered.

The carrier 1 is closed at its sides and rear end, and the front end is open, except for the provision of a narrow strip 17 which extends across the lower edge of the front of the carrier, and terminates at each end in upwardly extending projections 18, secured to the sides of the latter. As shown in Fig. 3, a large number of checks may be arranged in the carrier 1, the numbers and names of the makers thereof being towards the front. A follower 19, actuated forwardly by a spring 20, constantly presses the checks towards the front of the carrier, the strip 17 and projections 18 preventing the undesired egress from the latter.

The front edges of the sides of the carrier are shown, Figs. 4 and 6, as provided with laterally extending flanges 21, which may be integral therewith or attached thereto, or the flange 21 may be carried by the bottom of the carrier. A feed-chute 22 is mounted in front of the strip 17, and is here shown as provided with a vertically extending inner wall 23, and an inclined outer wall 24, the outer wall 24 rising above the top of the strip 17 and projections 18, for a purpose to be later described. The wall 24 is in-

clined inwardly and downwardly, and forms, with the wall 23, a chute which is wider at its top than at its bottom, as clearly shown in Fig. 3. The walls 23 and 24 are here shown as connected by extensions 25 adapted to fit over the flanges 21, and to be adjustably secured by set screws 21', extending through registering apertures in the extensions 25 and elongated slots in the flanges 21, as shown in Figs. 4 and 6. A downward extension 17', of the strip 17, fits against the inner surface of the wall 23, to provide a more rigid and efficient structure. This construction is advantageous in permitting adjustments of the vertical position of the chute 22.

Mounted upon the housing B is a double-angled strip or Z-bar F, adapted to cover the right-hand wheels 5 and track 6 of the carriage 2, and a combined arm support and housing 27 is provided to cover the wheels 5 and track 6 at the left of the machine. The strip F and the housing 27 may both be provided with a row of designations, one over each group of the leaves E, adapted to indicate the classification of the groups. The housing 27 carries a hinged top 28 for a purpose later explained, said top being supported in its horizontal closed position by two posts 28', 28'.

In the sorting of papers on machines of the class described the machine is usually equipped with means adapted to sort papers such as checks, numbered from 1 to 999, inclusive, and there are usually 10 groups of leaves arranged in one row only, each group being made up of 50 leaves, adapted to receive two checks between every two adjacent leaves. Other machines are constructed in accordance with the views shown in Figs. 1, 2 and 7, in which there are 50 leaves in each of the 10 groups of two parallel rows, and one check is to be deposited between each of the two adjacent leaves in every group in each row. Obviously, a machine may be provided with 20 groups of 50 leaves each, making provision for the reception of one check between all of the adjacent leaves.

In the operation of my device with the type of machine shown in Fig. 1, the operator will rest his left arm upon the top 28 of the housing 27, the hand resting upon the carrier 1, and the thumb of the left hand pressing backwardly upon the front face of the first or front check, as shown in Fig. 3. Having already noted the number of the front check, which is, say, 762, the operator pulls forward the finger piece D bearing the number 62, which operation simultaneously opens, in each group of the leaves E, a space which is proper for all checks having 62 as the last two digits. The carrier is then moved longitudinally of the housing B to a position immediately above the group below the numeral 7 on the plate 26, which is the

eighth group from the front, since the first group bears the "0" designation, and the check is dropped into the open 62 space in said group.

- 5 It is to be understood that, in machines of the class shown herein, provided with two rows of groups, each finger piece D bears two sets of numbers, such as

10
$$\begin{array}{ccc} 1 & 12 & 30 \\ 51 & 62 & 80 \end{array}$$

- etc., the bottom number on each finger piece being 50 higher than the top number. The left-hand row of groups is intended to receive all checks bearing such a number that the two terminal digits aggregate 50 or less, and the right-hand row of groups to receive all checks in which the two terminal digits aggregate 51 or more. Therefore, when the spaces 62 were opened in the row of groups on the right-hand side, the spaces in the row of groups on the left, while similarly positioned, were proper for the reception of all checks the numbers of which ended in 12, and, if the check referred to had been No. 712, the carrier would have been brought up to the group opposite the numeral 7 and pulled over to the left, and the check deposited in the open space in the left-hand group opposite the numeral 7.

- When the chute 22 is stopped by one of the detents 15' and is opposite its proper numeral on the plate 26, as indicated by the number on the front check, the operator pulls up the front check slightly until its bottom edge is disengaged from behind the strip 17 and the projections 18. This releases the check except from the pressure of the finger of the operator and, from the position shown in Fig. 3, it will tend to flip outwardly at the bottom and assume a straight line. Such action will cause its lower edge to project over the inner wall of the chute, and the operator then releases the check and it passes downwardly through the chute and into its proper space and group.

- The device is adapted to deliver to the machine, not only bank checks, but other papers and of any size. Many of these papers have been previously folded, and certain of them may, after being released by the operator, spring into a distorted condition which would prevent ready gravitation down a chute defined by parallel walls. In order to obviate such difficulty, the mouth of the herein-described chute is much wider than the exit, so that papers which are not approximately straight will nevertheless readily enter the chute. Moreover, I provide in the outer wall 24 of the chute, a vertically extending slot 29, whereby the operator's finger may reach and push downwardly any paper which lodges in the chute. Normally, however, the pressure of the

spring 20 will be sufficient to flatten out all of the papers held in the carrier 1, and they will readily descend the chute 22.

Figs. 7 to 10 show a modification, wherein a bar 30, is suspended by brackets 31, 32, between two rows of groups of the leaves E. A slide 33, here shown as composed of a strip of sheet metal, is provided with top and bottom flanges adapted to extend around the top and bottom surfaces of the slide 33, and over a portion of the opposite face thereof. Between the top of the slide 33, and the top of the bar 30, are interposed a plurality of anti-friction devices 34, here shown as bearing balls, the ends of the top flanges of the slide 33 being downwardly upset to retain the balls 34 in position. If desired, the anti-friction devices may also be applied between the bottom of the bar 30 and the slide.

The slide 33 carries, near its top, an upwardly projecting bracket 35, upon which is mounted a chamfered rod 36, which extends transversely of the bar 30, and longitudinally of and over the leaves in the two rows of groups, in the machine herein shown. Attached to the bottom of the carrier 1 is an elongated member 37, provided with a longitudinally-extending groove adapted to receive the rod 36, and having an open lower face. The sides of the groove are squared to fit the chamfer on the rod 36, as shown in Fig. 9, and the member 37 and the rod 36 are so designed that, when the rod 36 is in the groove of the member 37, the carrier 1 is tilted downwardly at its front end, so that the lower end of the chute 22 will barely clear the bar 30, as it passes thereover.

It is obvious that, by the construction just described, the carrier may be anti-frictionally moved backwardly or forwardly, as desired, over the bar 30, or laterally over the rod 36, and that the carrier therefore may be positioned over any space in any group in either row of leaves E. Stop members similar in function to the members 15', may be provided on the rod 36, whereby to longitudinally center the carrier over each group.

After the machine A is filled with checks, the top 28, of the housing 27, is swung backwardly, the carriage pushed to the extreme rear and the checks removed in the order of the groups.

Various modifications of the herein-described structure may be suggested to those skilled in the art, but my invention covers all embodiments falling fairly within the scope of the appended claims.

I claim:

1. The combination, with a sorting apparatus equipped with means for simultaneously providing a plurality of spaces classified for the reception of articles carrying a designation in consonance with the classifi-

cation of certain of the spaces, of an article carrier mounted for travel into juxtaposition to any selected space, and means facilitating the delivery of a separate article into said space.

2. The combination, with an apparatus for sorting a multiplicity of promiscuously arranged articles each bearing classifying designations, and equipped with means for simultaneously providing a plurality of spaces classified in consonance with said designations, of an article carrier mounted for anti-frictional travel into a position adjacent any selected space and provided with means facilitating the delivery of a separate article into said space.

3. The combination, with a sorting apparatus provided with a plurality of separator elements arranged in parallelism and with means for separating any element from the element adjacent thereto, of means adapted to receive a multiplicity of the articles to be sorted, and mounted for anti-frictional travel over all said elements, substantially as described.

4. The combination, with a sorting apparatus provided with a plurality of separator elements arranged in parallelism and with means for separating any element from the element adjacent thereto, of means adapted to receive a multiplicity of the articles to be sorted, and mounted for anti-frictional travel over all said elements, and means facilitating the delivery of a separate article into the space provided between any two elements, substantially as described.

5. The combination, with a sorting apparatus provided with a plurality of separator elements arranged in parallelism, and with means for separating any element from the adjacent element, of a carrier adapted to contain a multiplicity of the articles to be sorted, said carrier being mounted for anti-frictional movement into proximity to any of the elements, and means on the carrier facilitating the delivery of an article into any selected space between the elements.

6. The combination, with a sorting apparatus provided with a plurality of separator elements arranged in parallelism, and with means for separating any element from the adjacent element, of a carrier adapted to contain a multiplicity of the articles to be sorted, said carrier being mounted for anti-frictional movement longitudinally and laterally in proximity to said elements, and equipped with means facilitating the delivery of an article into any space provided between said elements.

7. The combination, with a sorting apparatus provided with a plurality of separator elements arranged in parallelism, and with means for separating any element from the adjacent element, of a carrier adapted to contain a multiplicity of the articles to be

sorted, said carrier being mounted for anti-frictional movement over and into proximity to any of the elements, and means on the carrier facilitating the delivery of an article into any selected space between the elements.

8. A feeding device for sorting machines provided with a plurality of separator elements arranged in parallelism, and with means for moving each element to provide a space, comprising a carrier adapted to receive a multiplicity of the articles to be sorted, said carrier being mounted for anti-frictional travel over any space which may be provided by the machine, and equipped with means facilitating the delivery of an article into any selected space.

9. A feeding device for sorting machines provided with a plurality of separator elements arranged in parallelism, and with means for moving each element to provide a space, comprising a carrier adapted to receive a multiplicity of the articles to be sorted, said carrier being mounted for anti-frictional travel over any space which may be provided by the machine, and a feed chute depending from an end of said carrier and having its exit end in proximity to the top of said elements, substantially as described.

10. A feeding device for sorting machines provided with a plurality of separator elements arranged in parallelism, and with means for moving each element to provide a space, comprising a carrier adapted to receive a multiplicity of the articles to be sorted, said carrier being mounted for anti-frictional travel over any space which may be provided by the machine, and a vertically adjustable feed chute depending from an end of said carrier and having its exit end in proximity to the top of said elements, substantially as described.

11. A feeding device for sorting machines provided with a plurality of separator elements arranged in parallelism and with means for moving each element to provide a space, comprising a carrier adapted to receive a multiplicity of the articles to be sorted, said carrier being mounted for anti-frictional travel over any space which may be provided by the machine, and a downwardly tapering feed chute depending from an end of said carrier and having its exit end in proximity to the top of said elements substantially as described.

12. A feeding device for sorting machines provided with a plurality of separator elements arranged in parallelism, and with means for moving each element to provide a space, comprising a carrier adapted to receive a multiplicity of the articles to be sorted, said carrier being mounted for anti-frictional travel over any space which may be provided by the machine, and a vertically adjustable, downwardly-tapering feed chute depending from an end of said carrier, and

having its exit end in proximity to the top of said elements, substantially as described.

13. A feeding device for sorting machines, provided with a plurality of separator elements arranged in parallelism, and with means for moving each element to provide a space, comprising a carrier having an open end and adapted to contain a multiplicity of articles, means constantly pressing said articles towards said open end, and a feed chute depending from the open end of the carrier and terminating in proximity to the top of said elements.

14. A carrier for paper-feeding devices, comprising a receptacle adapted to contain a plurality of papers in stacked relation, said receptacle being provided with an open delivery end, and a paper-retaining strip, carrying vertically extending projections on each side, positioned across the bottom portion of said open end, substantially as described.

15. A carrier for paper-feeding devices, comprising a receptacle adapted to contain a plurality of papers in stacked relation, said receptacle being provided with an open delivery end, and a paper-retaining strip positioned across the bottom portion of said open end, and a feed chute depending below said strip, substantially as described.

16. A carrier for paper-feeding devices, comprising a receptacle adapted to contain a plurality of papers in stacked relation, said receptacle being provided with an open delivery end, and a paper-retaining strip positioned across the bottom portion of said open end, and a feed chute depending below said strip, the front wall of said chute rising above said strip, substantially as described.

17. A carrier for paper-feeding devices, comprising a receptacle adapted to contain a plurality of papers in stacked relation, said receptacle being provided with an open delivery end, and a paper-retaining strip positioned across the bottom portion of said open end, and means constantly forcing said papers toward said strip, substantially as described.

18. Feed mechanism for sorting machines provided with a plurality of groups of separator elements arranged in parallel rows of groups, and with means for moving selected leaves in all the groups, comprising a car-

rier adapted to contain a multiplicity of the articles to be sorted, and mounted for travel longitudinally and laterally over each group, and means mounted in the path of travel of the carrier and adapted to stop the latter in centered position over each group.

19. Feed mechanism for sorting machines provided with a row of separator elements, and with means for moving each element to provide a space for an article, comprising a carriage adapted to be anti-frictionally moved over all of said elements, and a carrier adapted to contain a plurality of the articles being sorted, said carrier being mounted on said carriage and being equipped with means facilitating the delivery of a single article to any space provided between said elements.

20. Feed mechanism for sorting machines provided with a plurality of rows of separator elements, and with means for moving the elements to provide spaces therebetween for the articles being sorted, comprising a carriage mounted for antifrictional movement longitudinally over each row of elements, and a carrier adapted to contain a multiplicity of the articles being sorted, said carrier being mounted on said carriage and being adapted for movement laterally thereof, and equipped with means facilitating the delivery of a single article to any space provided between said elements.

21. Feed mechanism for sorting machines provided with a plurality of rows of separator elements, and with means for moving the elements to provide spaces therebetween for the articles being sorted, comprising a carriage mounted for antifrictional movement longitudinally over each row of elements, and a carrier adapted to contain a multiplicity of the articles being sorted, said carrier being mounted on said carriage and being adapted for movement laterally thereof, and equipped with means facilitating the delivery of a single article to any space provided between said elements, and means on said carriage mounted in the path of movement of said carriage and adapted to stop said carrier over the longitudinal center of said space.

In testimony whereof I affix my signature.

ALEXANDER M. BUNN.