Jan. 4, 1927. 1,612,893

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SEGREGATING PACKAGED GOODS UNDERGOING TREATMENT

Filed Dec. 29, 1925 3 Sheets-Sheet 1

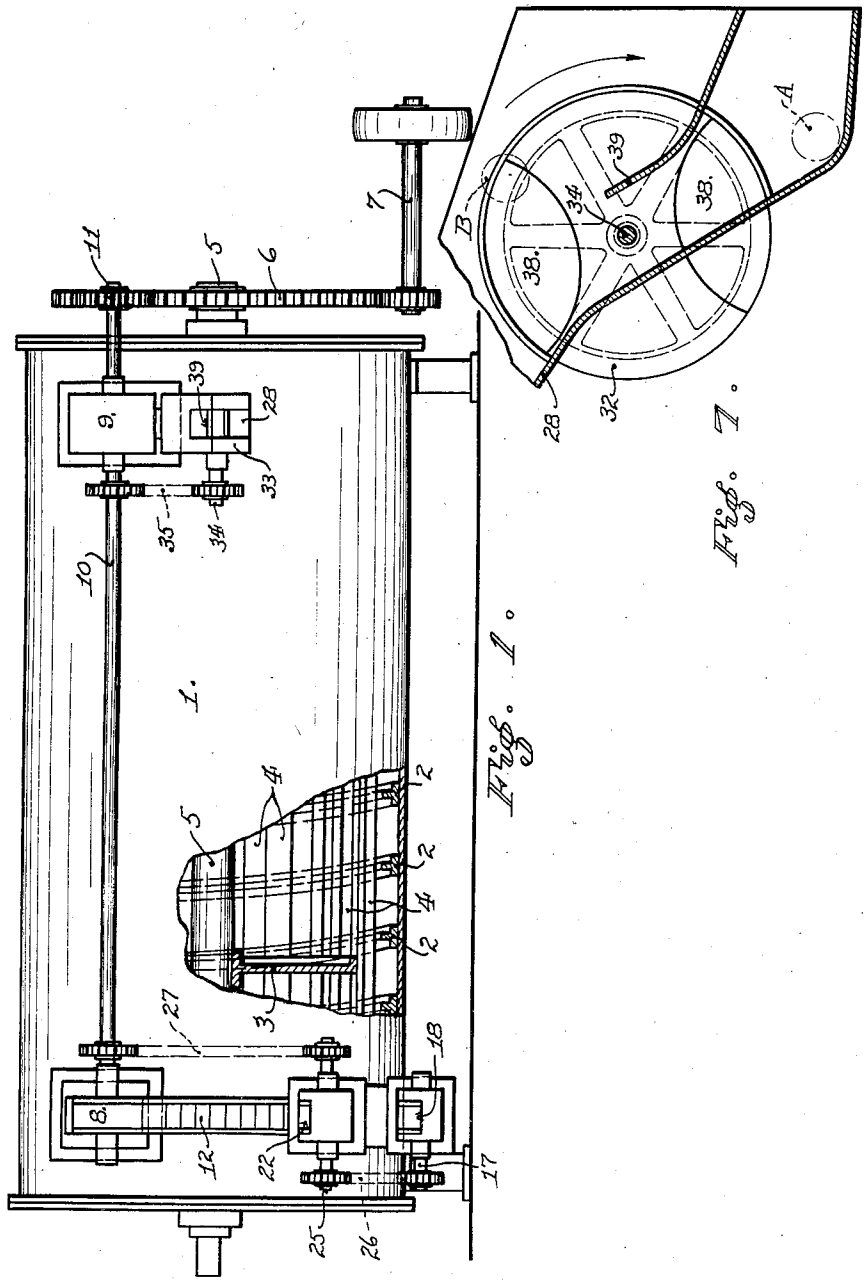


Fig. 1.

Fig. 7.

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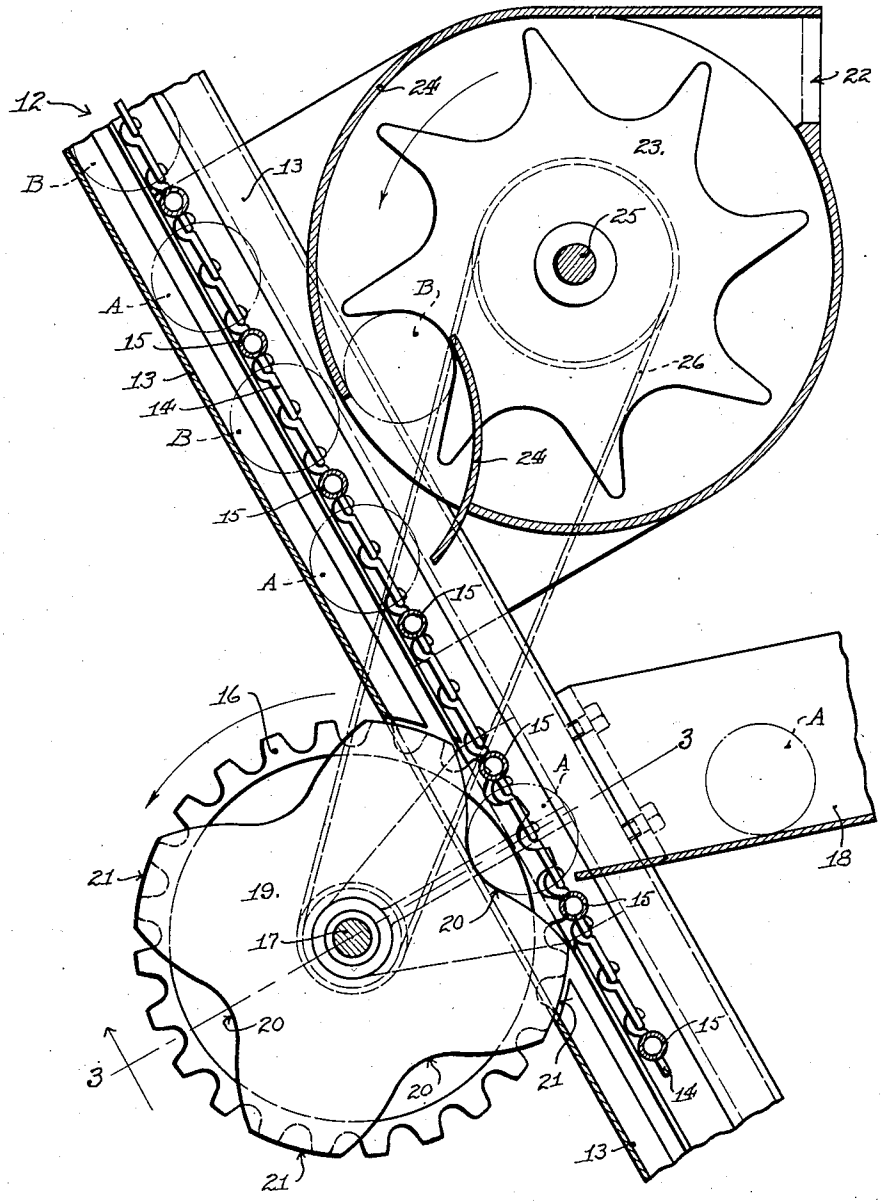


Fig. 2.

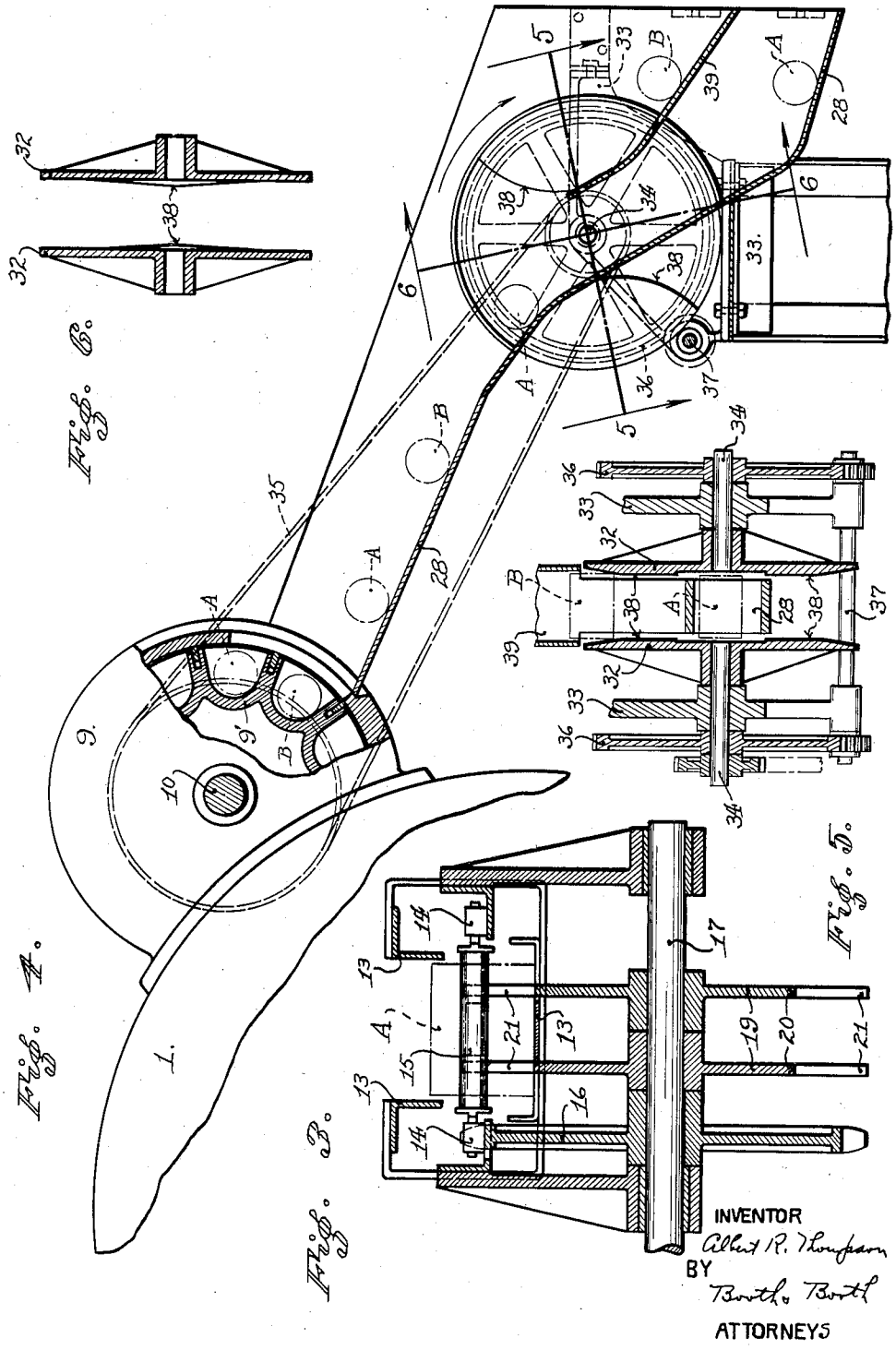
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UNITED STATES PATENT OFFICE.

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SEGREGATING PACKAGED GOODS UNDERGOING TREATMENT.

Application filed December 29, 1925. Serial No. 78,253.

My invention relates, in general, to the treatment of packaged goods, and, in particular, to an improvement in said treatment by which it is possible to run a continuous procession of packaged goods composed of different kinds, through a single treating effect in such relation that the different kinds may be readily segregated upon the completion of the treatment.

In further explanation, and as illustrative of my invention, I will refer to the canning art. It is customary in the canning of certain food products, for example peas, to initially divide the peas into a plurality of grades, each grade being preliminarily prepared, treated, placed in cans, and the cans sealed or closed, each grade being so treated, simultaneously and continuously, in its own line of apparatus. It is desirable, however, at this point in the process to combine the several grades for subsequent treatment, such for example as cooking, so that all may be cooked or otherwise treated in a single line of apparatus, the use of such single line of apparatus, of sufficient capacity to handle all grades simultaneously, being more economical than the continued separate treatment of the various grades in individual lines of apparatus of smaller capacity.

This combining of several grades of product in one apparatus necessarily involves the proper segregation of said grades at the end of the process, and it is to this end that my present invention is directed. For purposes of illustration, I shall confine myself to a description of the combining and segregation of two grades only, but it will be obvious that the principles involved can be extended to a greater number of grades if desired; and for the same reason I shall describe the combining and segregating processes as applied to a cooking effect, as used in the canning of good products, but it will be apparent that the said processes may be applied with equal facility to other effects. It is also to be understood that the principles of my invention are not limited to the treatment of canned or packaged goods, but may be employed in the segregation of other classes of objects which are continuously advanced in a single line or procession of individuals of different kinds.

It has been suggested, that where identical cans containing two different grades of product are simultaneously fed into and passed through a single cooker, the proper segregation of such cans, at the discharge of the cooker, can be accomplished by the expedient of preliminarily marking the cans of one grade before or while feeding them to the cooker, but this, even if it were practicable in the rapid movement of the procession, involves manual attention both in the marking and in the separation subsequently, such acts being wasteful of time, uneconomical, and not very accurate or satisfactory in results.

I have, however, found that it is possible to feed the two grade lines continuously to the single path of the cooker effect in such manner that the individuals of each line may be automatically and with accuracy separated upon the completion of the cook, and each delivered to its own destination, the operation requiring no manual attention.

My improvement consists essentially in so feeding the two grades to the line or path of the cooker effect that the individual cans of each grade occupy predetermined relative positions in said line and continue in such relative positions through the entire path of said cooker; and at the end of the cook diverting said individuals to different destinations in the same relative order in which they were initially placed in the line.

The apparatus by which my improvement is carried out, comprises separate means for receiving the respective grade lines, a single elevator with pockets adapted to supply the cans individually to the cooker; a transfer member for each receiving means, so timed with relation to the pockets of the elevator as to deposit the cans of the two lines in predetermined respective pockets; a cooker member having a definite can path through it, to which path the elevator delivers the cans in continuous procession with the cans of the two grades still occupying their predetermined relative positions and in and through which path such predetermined relation is preserved; and a means associated with the discharge of the cooker member timed correspondingly to the initial relative positioning of the cans in the line to switch said cans to separate destinations.

For the sake of illustration, I have herein shown and described an apparatus adapted to place the individual cans of two different grades in successively alternating sequence or order in the procession leading into and through the cooker, and an apparatus asso-

ciated with the discharge of said cooker for alternately directing the individual cans of said procession into two separate lines. It must be understood, however, that my invention is not limited to such individually alternating sequence in the cooker line, but may include, by a proper and obvious arrangement of the combining and segregating apparatus, the positioning of the individuals of the two grades in any predetermined order or relative position in the cooker line, and the subsequent segregation of said individuals from the line according to the same predetermined order. Thus for example the cooker line may be composed of alternating groups of cans, the cans of one group being fed from one grade line, and those of the next group from the other, and so on, instead of the individually alternating arrangement hereinafter described by way of illustration. Obviously the segregating apparatus must be so timed as to segregate the cans, whether by groups or individually, in the same predetermined order as they are fed into the cooker line.

A preferred form of apparatus embodying my invention will now be fully described with reference to the accompanying drawings, wherein—

Fig. 1 is a partly broken side elevation of a single line cooker of well known type having associated therewith apparatus for introducing cans from two sources and for segregating them at the discharge.

Fig. 2 is a vertical section, enlarged, of the combining and feeding mechanism.

Fig. 3 is a section taken in the direction of the arrow on the line 3—3 of Fig. 2.

Fig. 4 is a vertical section, enlarged, of the cooker discharge and can segregating mechanism.

Fig. 5 is a transverse section, taken on the line 5—5 of Fig. 4, of the segregating disks, and their associated mechanism.

Fig. 6 is a transverse section, taken on the line 6—6 of Fig. 4, of the segregating disks, the associated mechanism being omitted for the sake of clearness.

Fig. 7 is a sectional detail of the mechanism shown in the lower portion of Fig. 4, the segregating disks being advanced through approximately ninety degrees.

In the drawings, and referring for the moment to Fig. 1 thereof, the reference numeral 1 designates a cooker through which the cans are passed in a continuous single line procession. For purposes of illustration, I have shown this cooker as of a well known type having a helical rail 2 extending around its inner periphery and forming a continuous helical can path along which the cans (not shown) are propelled by a reel 3 provided with spaced longitudinal bars 4, said reel being mounted upon and rotated by a central shaft 5. At one end, said shaft carries a gear 6, with which is associated a drive shaft 7. Suitable means, not shown, are provided for maintaining the desired temperature in the interior of the cooker.

The continuous can path through the cooker extends from a can inlet valve indicated at 8 to a can discharge valve indicated at 9, so that the cans pass into, through, and out of the cooker in a continuous procession. The valves may be of any suitable and well known form, and are driven by any suitable means, as for example a shaft 10 provided with a pinion 11 meshing with the main gear 6.

The cans are fed, in continuous procession, to the inlet valve 8 by an elevator indicated at 12, and shown in detail in Figs. 2 and 3. This elevator comprises a trough 13, in which operate a pair of side chains 14 connected by suitably spaced transverse flights 15 which propel the cans up said trough, the chains 14 and the flights 15 forming in effect a single elevator chain. The elevator is operated by a sprocket 16 engaging one of the chains 14, said sprocket being mounted upon a shaft 17 which is driven in the proper timed relation to the cooker valve 8.

The process embodying my invention begins with the feeding of the cans to the elevator 12 and their positioning thereupon in a definite predetermined relation. As a suitable and convenient means for carrying out this step of the invention, I have provided the mechanism shown in Figs. 2 and 3. The cans of one grade, indicated in broken lines and designated by the letter A, are fed to the elevator 12 by a gravity chute 18, Fig. 2, and one such can A is deposited in each alternate pocket or space between flights of the elevator chain. In order to prevent the cans A from entering the intervening chain pockets, I provide a pair of turrets 19, Figs. 2 and 3, secured upon the sprocket shaft 17, and formed with pockets 20 corresponding with each alternate pocket or space of the chain, and with intervening teeth 21 adapted to enter the intervening pockets or spaces of said chain to exclude the cans therefrom. Thus the cans A can only enter the alternate chain spaces corresponding to the turret pockets 20, as shown in Fig. 2.

The cans of the other grade, indicated in broken lines by the letter B, are fed, in any suitable manner not shown, through an aperture 22, Fig. 2, to a pocketed turrent 23, which is timed to deposit them in the elevator pockets or spaces intervening between those occupied by the cans A. Suitably formed guides 24 cooperate with said turret 23 in thus feeding the cans B to the elevator. The turret 23 is mounted upon a shaft 25, which is connected with the shaft 17 by a chain indicated at 26, and said shaft 25 is driven, by a chain indicated at 27, in Fig. 1, from the cooker valve shaft 10. Thus the

elevator and its feed mechanism are driven in the proper timed relation to the cooker valves.

The sources from which the cans A and B, entering respectively at 18 and 22, are brought, is immaterial. The essential point is that said cans are automatically placed upon the elevator in a definite pre-determined relation, which in this case is one of individual alternation, the procession of cans in said elevator consisting of the two grades, A and B, in alternating sequence. This relation or sequence is preserved throughout the passage of the cans through the cooker, and at the completion of the cook, and after the passage of said cans through the discharge valve 9, they are automatically segregated as to grade by suitable mechanism which is capable of diverting alternate cans from the procession to one discharging means, and allowing the intervening cans to proceed to a separate discharging means.

A convenient form of such segregating mechanism is illustrated in Figs. 4 to 7. Referring for the moment to Fig. 4, the movable member of the discharge valve 9 is shown as a well known form of pocketed rotary turret 9^1, which is understood to receive the cans successively from the cooker in the usual manner, and which deposits them, in a procession and still in their initial sequence, upon a chute 28, down which they roll by gravity.

The chute 28 extends downwardly, and passes between two continuously revolving disks 32, suitably mounted in a frame 33. These disks are axially aligned, and are secured upon shaft portions 34, one of which is connected by a chain 35 with the cooker valve shaft 10. The relation of said disks and their shaft portions is shown in Fig. 5. Each shaft portion 34 carries a gear 36, which are interconnected by a pinion shaft 37. Thus both disks revolve together, although the space between them is clear for the passage of the cans upon the chute 28.

The inner faces of the disks 32 are formed with segmental raised portions 38 at two diametrically opposite points. As shown in Fig. 5, said raised portions do not extend to the centers of the disks, and taper off toward their peripheries. The sides of said raised portions also taper off, as shown in Fig. 6, and their maximum area is bounded by the curved lines seen in Figs. 4 and 7. The raised portions of the two disks are opposite each other, as shown in Figs. 5 and 6.

The normal, or flat portions of the surfaces of the disks 32 are so spaced as to permit the passage of a can between them, as indicated at A in Fig. 5. Thus when said disks are in the rotative position shown in Fig. 4, the can A can roll down the chute 28, passing freely between them, and continuing on out to any suitable place not shown. But when said disks are rotated so that their raised portions 38 come into line with the can path, the can then approaching along the chute 28 is caught by said raised portions, as indicated at B in Figs. 5 and 7, and is carried up with said disks and deposited upon a chute 39, Figs. 4 and 7, spaced above the lower portion of the chute 28, and leading to a separate place of deposit, not shown.

The disks 32 are so timed with relation to the discharge valve 9 of the cooker that they make a quarter revolution for each can discharged by said valve, so that alternate cans are allowed to pass along the chute 28, and the intervening cans are diverted to the chute 39; and they are so timed with relation to the feed turrets 19, and to the length of the can path between said turret and said disks, that as each can of grade A approaches said disks, it passes freely between them along the chute 28, and as each can of grade B approaches, it is lifted out of the procession and deposited upon the chute 39. Thus the two grades, which are initially combined in a definite pre-determined order or sequence in a single procession, are subsequently segregated, automatically, according to the same order.

It is to be noted that any failure to supply either or both grades of cans to the combining feed mechanism will have no effect upon the segregating mechanism, for, in the event of such failure of supply, the pockets or spaces of the feed elevator 12 into which the absent cans would have been fed will remain empty, and as such pockets communicate with corresponding pockets in the cooker path formed by the reel rails 4 and the helical guide rails 2, the positions of the absent cans will be held vacant througout the entire can path. That is to say, there is no opportunity for a can to get out of its predetermined position in the procession, even though the adjacent positions be vacant, and therefore each can will be directed by the segregating disks to its proper destination irrespective of its neighbors in the procession.

I claim:—

1. The method of segregating, according to kind, differing goods being treated in identical packages, which comprises positioning the packages of the different kinds of goods in a single-file procession in a definite pre-determined sequence; advancing said procession without change in the relative sequence of its packages; and automatically directing said packages to separate destinations in a sequence corresponding to that in which they were initially positioned in the procession.

2. The method of treating goods of differing kinds in identical packages, which comprises separately receiving the packages containing the different kinds; combining said packages in a single-file procession, the dif-

ferent kinds occupying predetermined positions therein; passing said procession through a treating zone without change in the relative positions of the packages; and automatically directing said packages to separate destinations according to their relative positions in the procession.

3. The method of treating goods of two different kinds in identical packages, which comprises arranging the packages containing one kind in a single-file procession; introducing the packages containing the other kind into the single file of said procession in predetermined positions with relation to the packages of the first kind; passing said procession through a treating zone without change in the relative positions of the packages; automatically diverting the packages of one kind from the procession according to their relative positons therein; and allowing the packages of the other kind to continue to a destination separate from that of the diverted packages.

4. The method of treating goods of differing kinds in identical packages which comprises separately and simultaneously receiving the packages containing the different kinds; combining said packages continuously into a single line procession; passing said procession through a treating zone; automatically segregating the packages of the advancing procession according to the kind of goods within them; and directing the segregated packages to respective separate destinations.

5. The method of segregating, according to kind, differing goods being treated in identical packages which comprises continuously and simultaneously receiving a separate line of each kind of packaged goods; joining said lines into a single line composed of alternating packages of the confluent lines; passing said blended line unaltered through a treating zone to a discharge; and diverting said discharging packages alternately to separate destinations.

6. An apparatus for segregating, according to kind, differing goods being treated in identical packages comprising means for continuously and simultaneously receiving a plurality of separate lines of packaged goods; means for joining said lines into a single line composed of alternating packages from the confluent lines; a treating effect; means for supplying said blended line of packaged goods unaltered to said treating effect; means for passing said blended line unaltered through and from said treating effect; and means for diverting the discharging packages alternately to separate destinations.

7. An apparatus for segregating, according to kind, differing goods being treated in identical packages, comprising means for simultaneously and separately receiving the packages containing the different kinds of goods; means for combining said packages into a single-file procession, the different kinds occupying pre-determined positions therein; a treating effect through which said procession is passed without change in the relative positions of its packages; and means for automatically directing said packages to separate destinations according to their relative positions in the procession.

8. An apparatus for treating goods of differing kinds in identical packages comprising a conveying system having a series of traveling package-receiving pockets arranged in a procession; means for separately receiving the packages containing the different kinds of goods and for positioning them in pre-determined pockets of said conveying system; means for automatically segregating the packages according to the pockets of said conveyer system from which they are discharged; and means for directing the segregated packages to separate destinations.

9. An apparatus for treating goods of differing kinds in identical packages comprising a conveying system adapted to advance the packages in a single-file procession; means for separately receiving the packages containing the different kinds of goods and for feeding them to said conveying system in a pre-determined sequence; and means for segregating the packages discharged from said conveying system in the same sequence.

10. An apparatus for treating goods of differing kinds in identical packages comprising a treating effect; a conveyer for supplying the packages in a procession thereto; means for placing the packages containing the different kinds of goods in pre-determined relative positions upon said conveyer; means within said treating effect for advancing the procession of packages therethrough without change in their relative positions; and means associated with the discharge of said treating effect for segregating the packages according to their relative positions in the procession.

11. An apparatus for treating goods of differing kinds in identical packages comprising a treating effect; a pocketed conveyer adapted to supply the packages in a procession thereto; means for feeding the packages containing one kind of goods to said conveyer; means for excluding said packages from pre-determined pockets of said conveyer; means for placing packages containing another kind of goods in said pre-determined pockets; means within said treating effect for advancing the procession of packages therethrough without change in their relative positions; and means associated with the discharge of said treating effect for segregating the packages accord-

ing to their relative positions in the procession.

12. An apparatus for treating goods of differing kinds in identical packages comprising a treating effect; a pocketed conveyer adapted to supply the packages in a procession thereto; means for feeding the packages containing one kind of goods to said conveyer; a moving member cooperating with said conveyer and having spaced teeth positioned to extend into pre-determined pockets thereof to exclude said packages therefrom; means for placing packages containing another kind of goods in said predetermined pockets; means within said treating effect for advancing the procession of packages therethrough without change in their relative positions; and means associated with the discharge of said treating effect for segregating the packages according to their relative positions in the procession.

13. An apparatus for treating goods of differing kinds in identical packages comprising a treating effect; means for positioning the packages in a procession in pre-determined sequence according to the kind of goods in them; means for advancing said procession of packages through and from said treating effect without change in their sequence; a chute along which the procession of packages advances from said treating effect; and means operating in timed relation to said feeding means for diverting from said chute the packages containing one kind of goods.

14. An apparatus for treating goods of differing kinds in identical packages comprising a treating effect; means for alternately positioning the packages containing different kinds of goods in a procession; means for passing said procession through said treating effect without change in the alternating sequence of the packages; and means for alternately directing the packages to separate destinations upon their discharge from the treating effect.

15. In an apparatus for the described purpose, a chute along which a procession of identical packages advances; a pair of movable members, positioned one on each side of said chute; and means carried by said members for removing from the chute certain packages, according to their relative positions in the procession, by engagement with their opposite ends.

16. In an apparatus for the described purpose, a chute along which a procession of identical packages advances; and a pair of spaced rotating members, positioned one on each side of said chute, and provided with oppositely disposed raised portions upon their adjacent faces adapted to engage and remove from the chute certain packages according to their relative positions in the procession.

17. In an apparatus for the described purpose, a chute along which a procession of identical packages advances; and a pair of spaced rotating members, positioned one on each side of said chute, and provided upon their adjacent faces with alternating raised and depressed portions adapted respectively to remove the packages from said chute and to permit them to pass along it.

In testimony whereof I have signed my name to this specification.

ALBERT R. THOMPSON.