April 16, 1940. F. C. A. OTT 2,197,156

DISTRIBUTING DEVICE

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Fig. 1

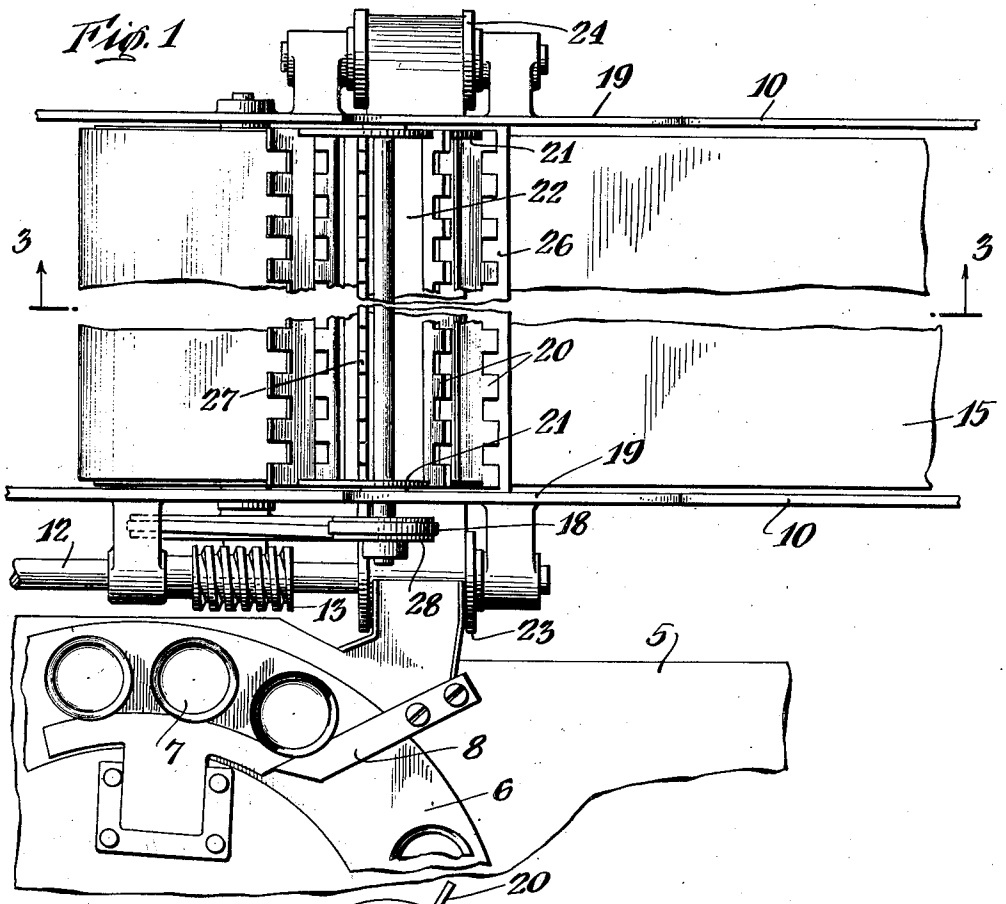
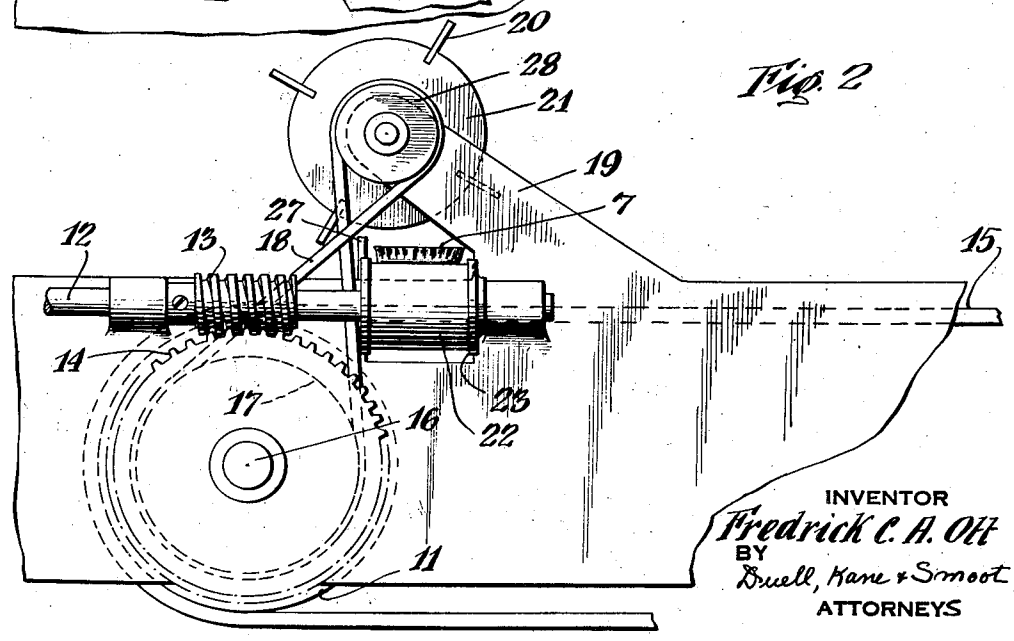


Fig. 2



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Fig. 3

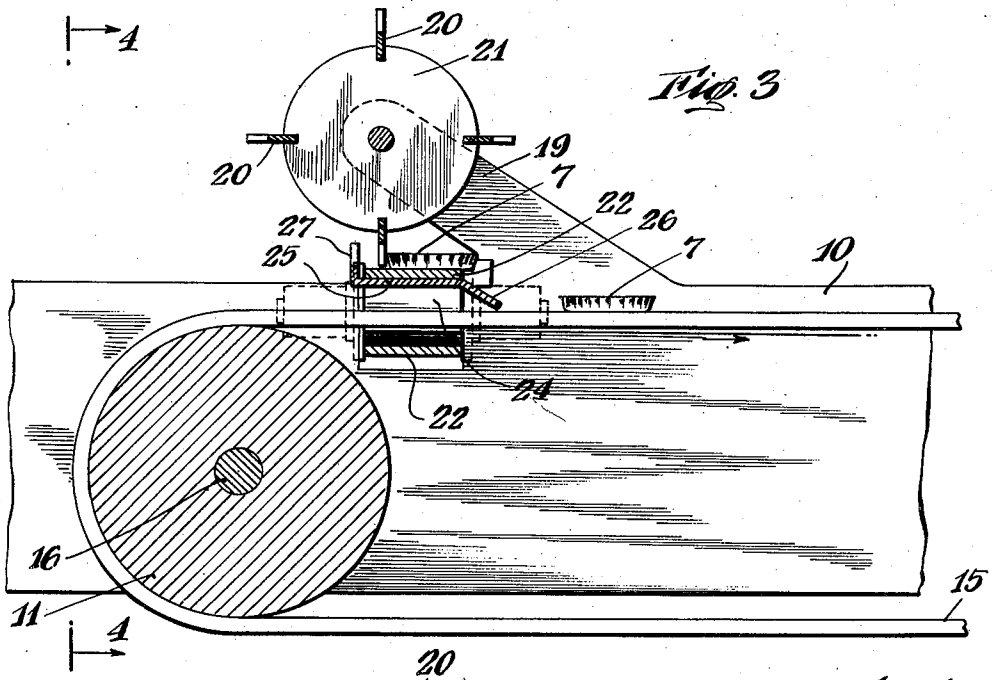
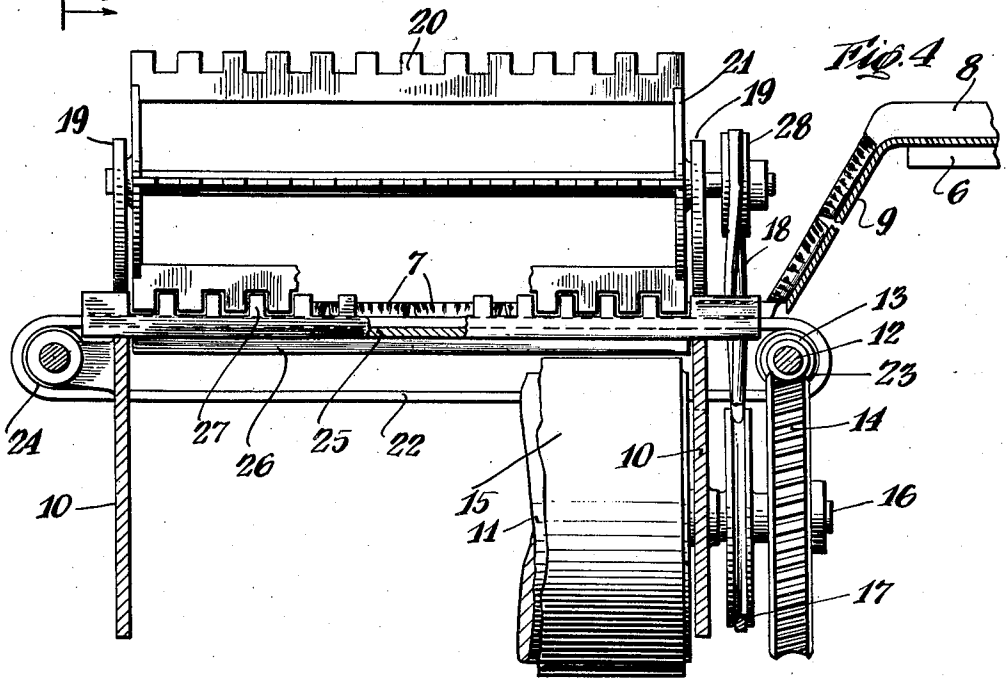


Fig. 4

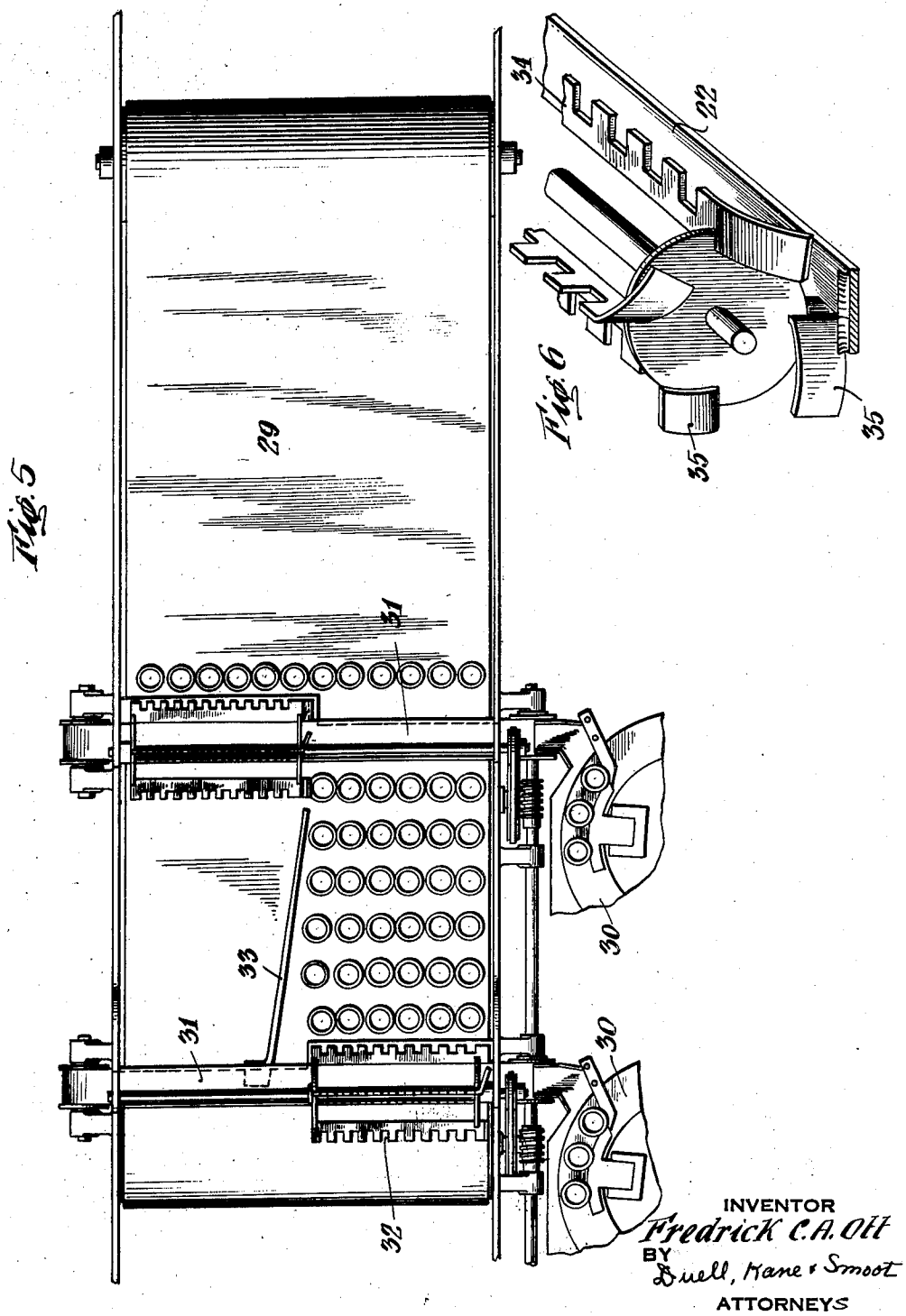


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UNITED STATES PATENT OFFICE

2,197,156

DISTRIBUTING DEVICE

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Application September 11, 1937, Serial No. 163,375

7 Claims. (Cl. 198—31)

This invention relates to a functionally and structurally improved distributing device or machine and, in its more specific aspects, aims to provide a mechanism of this character of particular value when employed in connection with tops of, for example, the "crown" type.

An apparatus embodying the teachings of the present invention is usually employed in conjunction with assemblying or top finishing machines and provides for an inspection of the tops before the latter are packaged or otherwise disposed of. It is obvious that in forming, assemblying and finishing tops and similar articles—and especially where automatic machines and methods are relied upon—that a certain number of these articles will not be perfect. Therefore, it is of primary importance that the tops be distributed so as to be susceptible to inspection by an operator.

Machines to achieve this result have heretofore been suggested. They have, however, offered disadvantages among which were; first, they have not operated with sufficient speed; second, certain of the tops—or equivalent articles—have fallen or been otherwise improperly distributed; third, relatively complicated mechanisms have been involved which have required frequent replacement and adjustment.

Thus, it is an object of the invention to furnish a mechanism which will operate at high speed and maximum efficiency, such mechanism almost invariably distributing the tops—or equivalent articles—in a proper and efficient manner.

A further object is that of providing a distributing device which will operate automatically and which will require but a minimum of adjustment or replacement, in that it will involve relatively few parts, each individually simple and rugged in construction; such parts operating over long periods of time with freedom from all difficulties.

With these and other objects in mind, reference is had to the attached sheets of drawings illustrating practical embodiments of the invention, and in which:

Fig. 1 is a fragmentary, plan view of a distributing machine or device;

Fig. 2 is a fragmentary side elevation thereof;

Fig. 3 is a longitudinal, sectional view taken along the lines 3—3 and in the direction of the arrows as indicated in Fig. 1;

Fig. 4 is a transverse, sectional view taken along the lines 4—4 and in the direction of the arrows as indicated in Fig. 3;

Fig. 5 is a view similar to Fig. 1 but showing a multiplicity of machine units delivering to the distributing mechanism; and

Fig. 6 is a fragmentary perspective view of a slightly modified form of distributing structure.

In these views, the invention has been illustrated in its preferred association. As afore brought out, the device might readily be employed in other associations and its structure modified as desired. Thus the present drawings and specifications are to be regarded as illustrative rather than in a limiting sense, except where otherwise indicated in the claims.

With the foregoing in mind, the numeral 5 indicates the platform of an assembly or finishing machine, mounting a turn-table 6, or other mechanism, from which tops 7, or their equivalents, are delivered by means of a diverting member 8. Such delivery, according to the present invention, preferably occurs into a chute 9 through which the articles are in turn delivered to the distributing device.

The latter may include a frame 10 mounting a pair of rollers 11 (only one of which has been shown). One, or both of these rollers may be driven in any desired fashion, as for example by a power shaft 12 mounting a worm 13 which meshes with the teeth of a worm wheel 14. Passing around the rollers 11 is a conveyor 15 of any suitable type, and the shaft 16 which mounts one of these rollers, as well as the wheel 14, may also mount a pulley 17 within which a belt 18 rides.

This belt extends to a point adjacent the delivery end of chute 9 and brackets 19 may form a part of frame 10 and also extend adjacent this station. These brackets mount a series of (preferably four) distributing blades 20 which may form a part of a roller 21, having bearings in the brackets.

Also extending adjacent the delivery end of chute 9 is a conveyor 22 which passes around a roller 23 affixed to shaft 12, and a complementary roller 24 disposed adjacent the opposite edge of conveyor 15. Thus, conveyor 22 underlies the path of travel of blades 20 and is preferably relatively narrow.

Its upper course may be supported by a strip 25, the effective width of which is substantially equal to that of conveyor 22. The forward edge of this strip, at points beyond conveyor 22, may be inclined downwardly as indicated at 26 to provide a delivery apron. The rear edge of the same, as indicated at 27, may be extended upwardly beyond the corresponding edge of conveyor 22 and serve as a guard to prevent the accidental pas-

sage of an element over this edge of the conveyor and onto conveyor 15, or otherwise.

Now, with a view to allowing blades 20 to deliver the elements 7 from conveyor 22 to conveyor 15, it will be observed that each of the blades, as well as the upwardly extending flange 27, are serrated or notched to provide, in effect, comb structures. Moreover, the teeth of the blades are disposed with reference to flange 27 so that they may pass between each other. Consequently, the strips or blades may revolve without contacting flange 27, but at the same time stripping element 7 from conveyor 22 over apron 26 and onto conveyor 15.

In operation it will be understood that with the turn-table 6, or its equivalent, functioning to deliver articles, such as seals 7, into chute 9, shaft 12 will be rotated to operate conveyors 15 and 22 as well as blades 20. The speed of conveyor 22 will be relatively high as compared with that of conveyor 15. Accordingly, the element 7 will be delivered through chute 9 and, in the form of a row, onto conveyor 22, whereupon this entire row (numbering, for example, seven elements) will be swept by one of the blades 20 onto conveyor 15. On this conveyor they may be inspected by an operator and will be emptied, for example, into a bin or other suitable receptacle. The operator will, of course, remove from conveyor 15 any articles which do not pass inspection, it being observed that these articles will always be delivered upon this conveyor in such a manner that inspection is practicable.

Any articles which tend to be delivered by chute 9 onto conveyor 22 while one of the blades 20 is obstructing such conveyor, will either remain immovable—while conveyor 22 continues to slide below the same—or will accumulate in chute 9 until the blade has cleared conveyor 22. At that time, and before the next succeeding blade sweeps over the conveyor, an entire row of articles will be distributed upon such conveyor so that the complete row may be in turn distributed onto conveyor 15.

It is apparent that with this mechanism no intermittent or other relatively complicated units are presented, there being involved merely the drive shaft 12 and drive mechanisms 13, 14, 17, 18 and the pulley 28, associated with the blade mounting shaft.

The same advantages are apparent in the structure shown in Fig. 5 in which a single conveyor 29, corresponding to conveyor 15, is employed to receive the discharge or delivery from a plurality of assembly or finishing machines 30. In this form of construction, it will be seen that conveyors 31, corresponding to the conveyor 22, may in each instance extend across the full width of conveyor 29 and receive from mechanisms 30 a greater or lesser number of articles to be distributed. However, in the example under consideration, the distributing blade units 32, corresponding to the blades 20, extend merely across a portion of the conveyor 29.

It accordingly follows that units delivered from one machine will, for example, be distributed throughout one half the width of conveyor 29, while the remaining half of this conveyor will receive units distributed by the second machine. A tangentially extending baffle 33 may, of course, be furnished to preclude the likelihood of interference between any isolated element which is improperly distributed upon the face of conveyor 29.

Finally, in Fig. 6 the serrated blades 34, corresponding to blades 20, may have those ends of their bodies which are adjacent the delivery chute, bent to extend rearwardly as indicated at 35. In this manner a cam structure is furnished such that if elements continue to be delivered through the chutes toward conveyor 22 and if the latter is obstructed by a blade end, such elements will be cammed to prevent any possibility of their accidental displacement.

Thus, among others, the several objects of this invention as specifically afore noted are achieved. Obviously, numerous changes in construction and rearrangements of the parts might be resorted to without departing from the spirit of the invention as defined by the claims.

Having described my invention what I claim as new and desire to secure by Letters Patent is:

1. A distributing device including a pair of conveyor belts, rollers movably mounting said conveyor belts to lie one above the other and shift in directions substantially transverse with respect to each other, a worm wheel secured to one of said rollers, a pulley secured to said worm wheel, a drive shaft, a worm secured to said drive shaft and engaging said wheel, the roller of the upper most conveyor belt being secured to said drive shaft, a series of blades movable over the upper face of the upper most conveyor belt, a pulley for moving said blades, and a belt connecting said pulley with said first named pulley.

2. A distributing device including a pair of conveyor belts, rollers movably mounting said convyor belts to lie one above the other and shift in directions substantially transverse with respect to each other, a worm wheel secured to one of said rollers, a pulley secured to said worm wheel, a drive shaft, a worm secured to said drive shaft and engaging said wheel, the roller of the upper most conveyor belt being secured to said drive shaft, a series of blades movable over the upper face of the upper most conveyor belt, a pulley for moving said blades, a belt connecting said pulley with said first named pulley, and a serrated guide disposed adjacent the rear edge of said upper most conveyor, said blades being similarly serrated and disposed to have the projecting portions thereof move through the spaces presented between the projecting portions of said guide.

3. A distributing mechanism including in combination, a conveyor to receive articles, a guide disposed adjacent one edge of said conveyor and having its upper edge serrated, an annular series of blades each having their outer edges also serrated, means for moving said blades over said conveyor with the projecting portions of said blades moving through the notches presented in the upper edge of said guide, and said blades being bent to extend angularly and rearwardly of their path of movement and adjacent the end of the conveyor which receives articles to be distributed.

4. A distributing device including in combination a conveyor to receive articles, means for supporting and driving said conveyor, a pair of conveyors to conduct articles to said first named conveyor, said latter conveyors being axially disposed and substantially transverse with respect to said first named conveyor and with their upper courses overlying the upper course of said first named conveyor and at points longitudinally spaced along the latter, transfer means overlying said latter conveyors and cooperating with the same throughout only a limited zone of their upper courses, and means for driving said latter

conveyors and transfer devices whereby to cause a distribution of articles from said latter conveyors to said first named conveyor and in predetermined zones of the latter.

5. A distributing device including in combination a conveyor to receive articles, means for supporting and driving said conveyor, a pair of conveyors to conduct articles to said first named conveyor, said latter conveyors being axially disposed and substantially transverse with respect to said first named conveyor and with their upper courses overlying the upper course of said first named conveyor and at points longitudinally spaced along the latter, transfer means overlying said latter conveyors and cooperating with the same throughout only a limited zone of their upper courses, means for driving said latter conveyors and transfer devices whereby to cause a distribution of articles from said latter conveyors to said first named conveyor and in predetermined zones of the latter, and means extending longitudinally of said first named conveyor and between said last named conveyors to re-arrange upon said first named conveyor any articles distributed by the first of said latter conveyors and which articles tend to occupy positions beyond a predetermined area of said first named conveyor.

6. A distributing device including in combination a conveyor, means for mounting and driving said conveyor, a second conveyor extending angularly above said first named conveyor, means for driving said latter conveyor, a distributing device overlying said latter conveyor to transfer articles from said last named to said first named conveyor, said distributing device including a rotatable body, blades extending from said body and to sweep over said latter conveyor, and blade end portions extending beyond one end of said body and furnishing a cam mechanism to shift articles upon said last named conveyor and as said body is rotated.

7. A distributing device including in combination a conveyor, means for mounting and driving said conveyor, a second conveyor extending angularly above said first named conveyor, means for driving said latter conveyor, a distributing device overlying said latter conveyor to transfer articles from said last named to said first named conveyor, said distributing device including a rotatable body, blades extending from said body and to sweep over said latter conveyor, and cam portions forming a part of said blades and projecting beyond said blades and one end of said body to cooperate with and shift articles from said last named conveyor and at points beyond said body as the latter is rotated.

FREDERICK C. A. OTT.