

Feb. 2, 1943.

M. COHEN

2,310,160

ARTICLE DISTRIBUTING SYSTEM

Filed Aug. 26, 1940

4 Sheets-Sheet 1

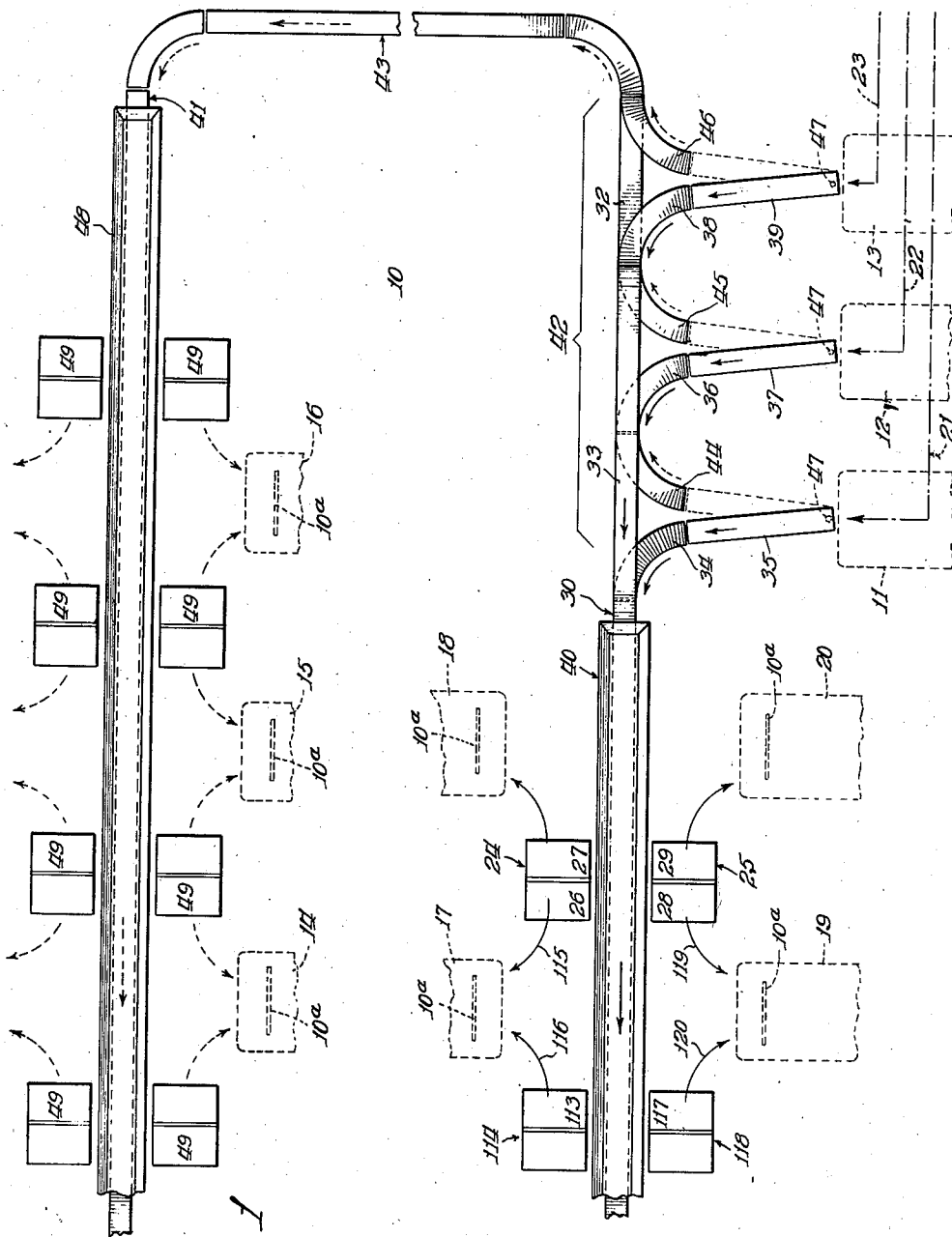


Fig. 1

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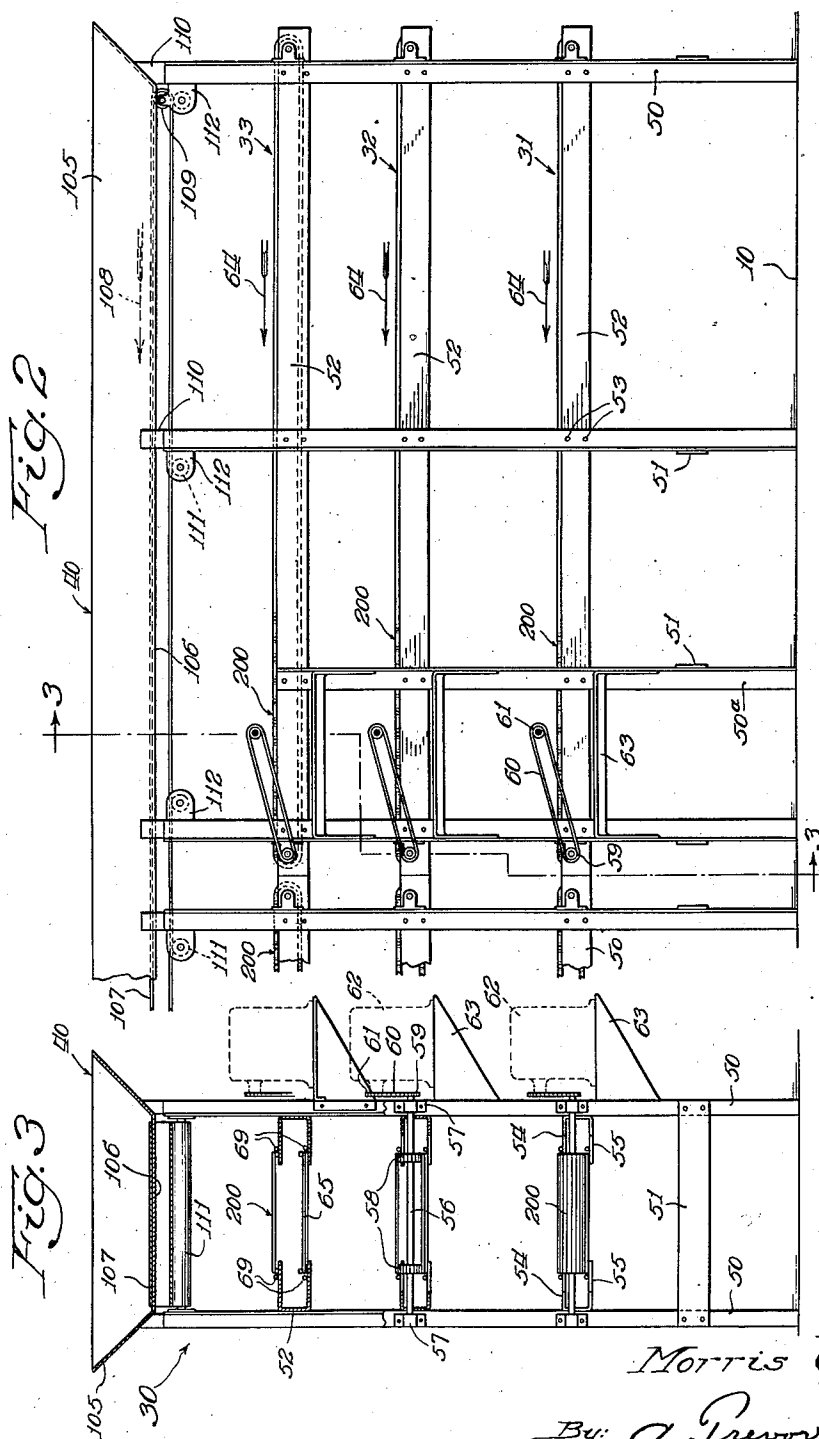
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Filed Aug. 26, 1940

4 Sheets-Sheet 2



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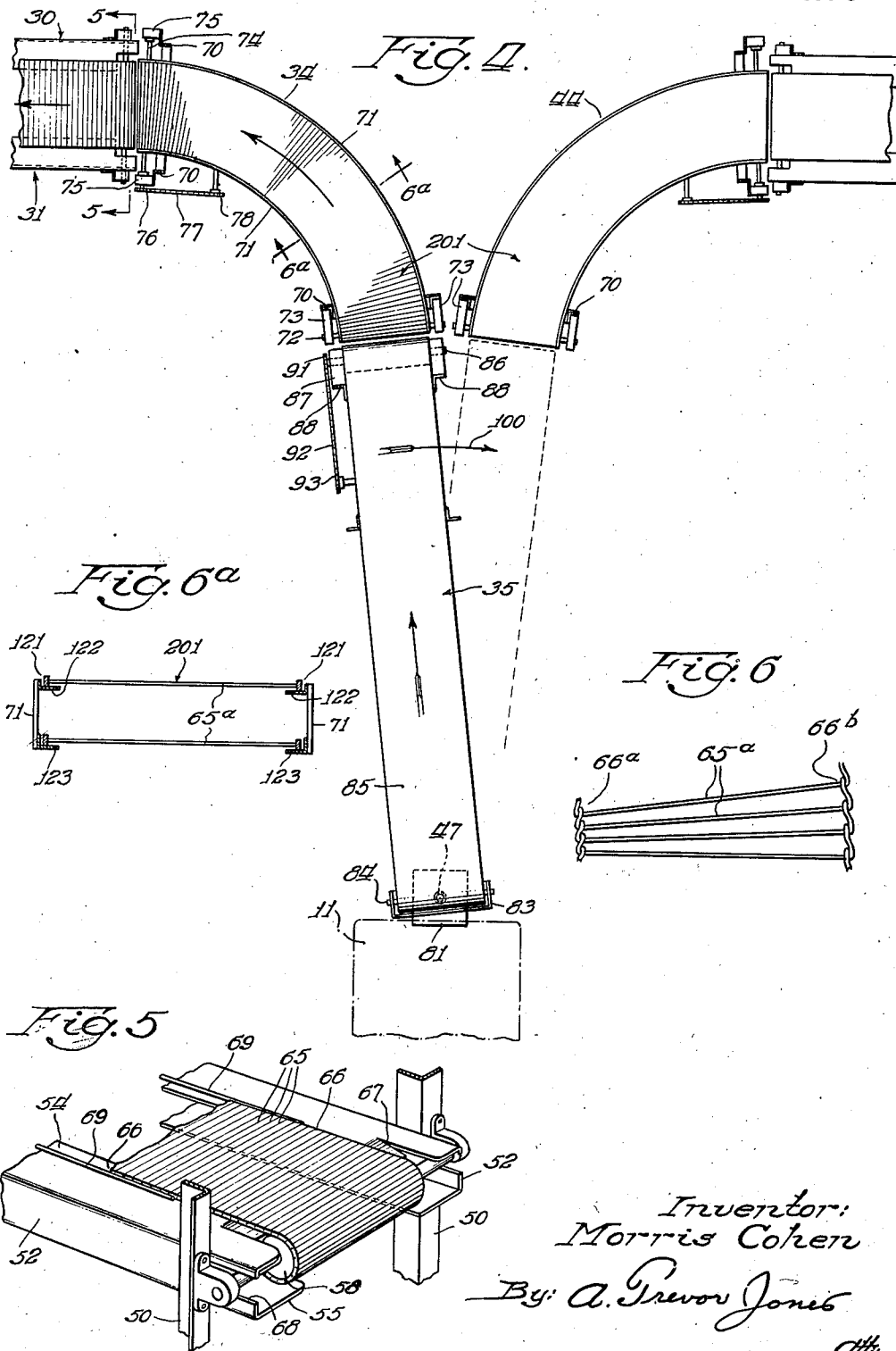
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4 Sheets-Sheet 3



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4 Sheets-Sheet 4

Fig. 7

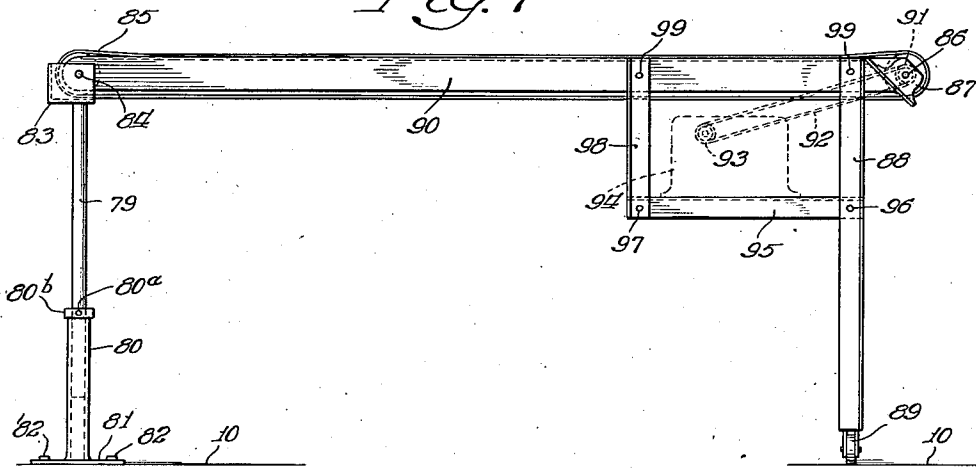


Fig. 8

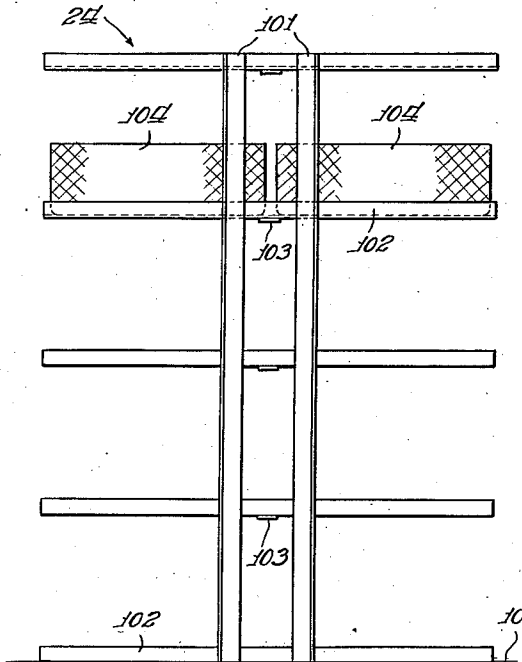
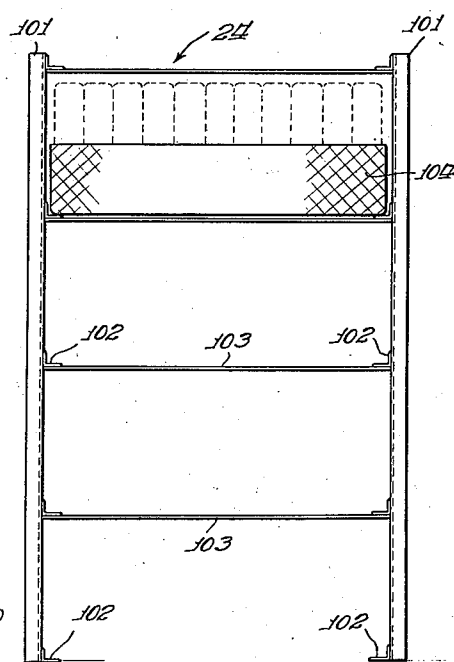


Fig. 9



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UNITED STATES PATENT OFFICE

2,310,160

ARTICLE DISTRIBUTING SYSTEM

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Application August 26, 1940, Serial No. 354,189

2 Claims. (Cl. 198—75)

This invention relates to an article distributing system, more particularly for bakery goods units such as wrapped loaves of bread which are to be allocated, in varying numbers of said units, to a plurality of delivery vehicles.

As will be understood, the material used in a bakery is the smaller element in the cost of the final product, the larger element being that of labor and distribution. In order to cut the cost of labor and distribution it is desirable to improve the efficiency and simplicity of these factors, so that the cost of a loaf of bread, for example, when it is finally on its way to the ultimate consumer, shall be kept down and if possible reduced so as to permit the consuming public to enjoy the benefits of more and better bread.

The present invention contemplates an improved and simplified system for this purpose, and among other objects, aims to provide such a system in which a plurality of series of units, each series having a common character differing from the character of another series, may be advanced simultaneously past a row of delivery vehicles, so that an operator, with a minimum of movement, may easily select sufficient units of each series, as they are moving past him, to supply a particular vehicle.

In one aspect, the invention contemplates that the operator may, practically simultaneously with the selection of the units, place them in repositories, one for each different series of units, which repositories may be located not only convenient to the operator as he removes the units from the conveyors but also convenient to the vehicle which is intended to be loaded with that particular selection of units, but which may at the time be out of the bakery.

In another aspect, the invention contemplates also that the vehicle driver may place his vehicle in a given position from which, with a minimum of movement, he may remove from the vehicle returned units (for example, sometimes referred to as "stale bread" returned by the dealer) and so that without changing the position of the vehicle it may be loaded with a fresh supply of units with the economy of time and energy already alluded to.

Furthermore, the invention makes possible, by easy adaptation, provision for more than one row of vehicles so positioned, all to be served by a single group of bread wrapping machines, one for each of the series of units, with the attendant advantages pointed out.

The invention is inclusive of both means and method, as will be understood from the follow-

ing description, taken together with the accompanying drawings from which other objects and advantages of the invention will be apparent and in which—

5 Figure 1 is a plan view, somewhat diagrammatic, of a system embodying my invention;

Figure 2 is a fragmentary enlarged side elevational view of a conveyor frame shown in Fig. 1;

10 Figure 3 is a section taken on the line 3—3 of Fig. 2 looking in the direction of the arrows;

Figure 4 is an enlarged view, somewhat more in detail, of one part of the expedients shown in Fig. 1;

15 Figure 5 is a fragmentary still further enlarged perspective view of parts shown in Fig. 4 and being an end view taken on the line 5—5 of Fig. 4;

Figure 6 is a fragmentary enlarged plan view of parts shown in Fig. 4;

20 Figure 6a is a section taken on the line 6a—6a of Fig. 4;

Figure 7 is an enlarged side elevational view of parts shown in Fig. 4;

25 Figure 8 is an enlarged view of other parts shown in Fig. 1; and

Figure 9 is an end view of parts shown in Fig. 8.

Referring in detail to the illustrations of the drawings, the numeral 10 indicates the ground floor of a bakery, for example, upon which may be located a number of article discharging devices such as the usual bread wrapping machines here diagrammatically suggested by the numerals 11, 12 and 13. Delivery vehicles such for example as the usual motor trucks indicated diagrammatically by the numerals 14, 15, 16, 17, 18, 19 and 20 are intended to be driven onto the floor 10 and to be loaded, to the extent required for their respective delivery routes, with loaves of bread wrapped for delivery by the wrapping machines 11, 12 and 13.

Customarily, of course, each truck will carry and deliver more than one style of bread, and the wrapping machine 11 may, during a given day or period of a day, handle, say, loaves of rye bread, the wrapping machine 12, say, loaves of white bread, and the wrapping machine 13, say, loaves of whole wheat bread. The rye bread may be passed to and through the wrapping machine 11 from an oven for this style of loaf by any suitable means well known to the art and as indicated diagrammatically by the broken line 21. Similarly the loaves of white bread for the wrapping machine 12 may be supplied as indicated by the broken line 22, and the whole wheat

bread for the wrapping machine 13 as indicated by the broken line 23.

In accordance with the present invention, a plurality of the delivery trucks such as the trucks 17, 18, 19 and 20 are arranged in a double row upon the floor 10, the trucks 17 and 18, in this instance, representing one row of the double row, and the trucks 19 and 20 the other row of this double row, the trucks 17 and 18 being abreast and the trucks 19 and 20 abreast, with the rear doors of the trucks 17 and 18 facing respectively the rear doors of the trucks 19 and 20, assuming that it is the intention, as in this case, to load the trucks from the rear.

The truck 17 is spaced from the truck 18 a suitable distance to have conveniently located therebetween but slightly forward of the common rear line of these trucks, the bread repository 24, and similarly the bread repository 25 is located for the trucks 19 and 20. One half 26 of the repository 24 may be for the truck 17 and the other half 27 of the repository 24 may be for the truck 18. Similarly, one half 28 of the repository 25 may be for the truck 19 and the other half 29 of the repository 25 may be for the truck 20.

Arranged somewhat snugly between the repositories 24 and 25 linearly along the bakery floor 10 is the conveyor frame 30 of my invention. I have found that an advantageous distance for the back of each truck from the straight line or linearly arranged conveyor frame 30 is about six feet, and in order to assure this substantially uniform distance, I desirably provide a block or bumper indicated by the line 10a, substantially permanently fixed on the floor 10 for each truck. A bumper 10a indicates the location for each truck and the driver may back up his truck until the truck wheels contact the bumper to assure the correct position of the truck. The conveyor frame 30, as best shown in Figs. 2 and 3, is of relatively narrow tiered construction and having the tiers 31, 32 and 33 in direct vertical relation one to the other.

The lower tier 31 is in this instance arranged to receive wrapped loaves of rye bread from the wrapping machine 11, as by a curved conveyor 34 which leads the bread from the wrapping machine 11 to the tier 31, a separable tangentially located conveyor 35 connecting the wrapping machine discharge with the proximate end of the curved conveyor 34. The intermediate tier 32 is arranged to receive wrapped loaves of white bread from the wrapping machine 12 as by a curved conveyor 36 which leads the bread from the wrapping machine 12 to the tier 32, a separable tangentially located conveyor 37 connecting the wrapping machine discharge with the proximate end of the curved conveyor 36. Similarly, the upper tier 33 is arranged to receive wrapped loaves of whole wheat bread from the wrapping machine 13 as by a curved conveyor 38 which leads the bread from the wrapping machine 13 to the tier 33, a separable tangentially located conveyor 39 connecting the wrapping machine discharge with the proximate end of the curved 38. It will be understood that at other times say, one or more of the wrapping machines may serve other types of units such as a special loaf or bakery sweet goods, or the units served by one wrapping machine may be diverted to another.

Since the trucks such as the trucks 17, 18, 19 and 20 which are aligned along the conveyor frame 30 will ordinarily have when returning to

the bakery each a quantity of returned or so-called "stale" goods, I provide, in accordance with my invention, also carried by the conveyor frame 30 and running along the top thereof, a stale goods conveyor 40 into which, as soon as the truck is located in position as shown, the driver may, after they have been checked and he has received credit for them, dump his stale goods, and these may be conveyed to a stale goods disposal bin or the like (not shown).

Since the floor space 10 is generally rectangular and not pronouncedly elongated, my system desirably contemplates another conveyor frame 41, say, parallel with the conveyor frame 30 and otherwise similar thereto and for a similar purpose as already described. In order that the conveyor frame 41 may be served by the same wrapping machines which serve the conveyor frame 30, I show the frames 30 and 41 overlapping and merging into each other as at 42 by a loop extension 43 of the frame 41. Thus where the curved conveyor 34 of the lower tier 31 of the conveyor frame 30 approaches the wrapping machine 11, I locate, adjacent thereto and in the same horizontal plane, another curved conveyor 44 for a similar tier 31 of the conveyor frame 41. Again, where the curved conveyor 36 for the intermediate tier 32 of the conveyor frame 30 approaches the wrapping machine 12, I locate, adjacent thereto and in the plane thereof, another curved conveyor 45 for a tier 32 of the conveyor frame 41. Again, similarly, where the curved conveyor 38 for the upper tier 33 of the conveyor frame 30 approaches the wrapping machine 13, I provide another curved conveyor 46 adjacent thereto and in the plane thereof, for a tier 33 of the conveyor frame 41.

As clearly shown in the drawings, the separable tangentially located conveyors 35, 37 and 39 are pivoted as at 47 to swing, as in the case of the conveyor 35, to connect the discharge of the wrapping machine 11 either with the curved conveyor 34 for the conveyor frame 30 or with the curved conveyor 44 for the conveyor frame 41. Similarly, the conveyor 37 may swing to connect the discharge of the wrapping machine 12 either with the curved conveyor 36 for the conveyor frame 30 or with the curved conveyor 45 for the conveyor frame 41. Again, similarly, the conveyor 39 is adapted to swing to connect the discharge of the wrapping machine 13 either with the curved conveyor 38 for the conveyor frame 30 or with the curved conveyor 46 for the conveyor frame 41.

In this instance, the trucks 14, 15 and 16 are served by the conveyor frame 41, the latter also having a stale goods conveyor 48 for these trucks and the fresh bread repositories 49 for the trucks 14, 15 and 16 as well as for other similarly positioned trucks, not here shown.

As best shown in Figs. 2 and 3, the conveyor frames 30 and 41 may include vertical parallel standards 50, conveniently in the form of angle irons which rest on the bakery floor 10, cross struts 51 spacing them a suitable distance apart transversely and which I have found is desirably approximately eighteen inches between their inner faces. Secured to the standards 50 to be supported and also forming with the standards a unitary frame are the vertically spaced apart longitudinal channel members 52 providing tracks for the tiers 31, 32 and 33. Each track, as best shown in Figs. 3 and 5, comprises a pair of the channel members 52 with their channels horizontally aligned and facing each other, what

might otherwise be termed the bottom wall of the channel being turned on its side and secured as by rivets or bolts 53 to the vertical standards 50. Thus, each pair of the horizontally aligned pairs of channel members 52 furnishes not only a track for the conveyor belt 200, but in fact a pair of tracks for opposite runs of the conveyor, the upper walls 54 providing the run upon which the bakery goods are carried and the lower walls 55 providing the return run.

As clearly shown in the drawings, the conveyor frame 30, for example, is advantageously formed in longitudinally aligned sections, and at each end of each section, which may be say approximately twenty feet along, is a shaft 56 journaled as in bearings 57 for each of the tiers 31, 32 and 33, the shafts 56 having laterally spaced apart sprocket wheels 58 fixed thereon about which the endless conveyor belt 200 is entrained for driving the latter. The shafts 56 at one end of the conveyor frame section may extend laterally beyond the frame parts and thereat have fixed thereon a pinion 59 which, by means of a chain 60, is in driven relation to a driving pinion 61 on the drive shaft of a motor reducer 62. The motor reducers 62 are aligned in vertical relation on the frame 30 as by being each supported on a laterally extending bracket 63 carried by the frame adjacent each of the tiers 31, 32 and 33 respectively. The brackets 63 may be reinforced by an additional vertical standard 50a, which may terminate at its upper end short of the main standards 50. When the conveyor frame sections are aligned end to end, as shown, the bread will ride readily over the relatively small breaks between the sections, and passing from one of the endless belts of its tier to the next belt of the same tier, being thus progressively conveyed along the frame 30. Desirably, the motor reducers 62 are at the forward end of each conveyor frame section, looking in the direction of the arrow 64 indicating the direction of the upper or unit bearing run of the conveyor belt.

As best shown in Fig. 5, the conveyor belt 200 desirably comprises parallel wire rods 65, the ends of each rod as at 66 being turned to extend in the direction of the conveyor run and to loop loosely about the adjacent rod, whereby the rods engage between teeth of the sprockets 58 for driving the belt. At the ends of the channel members 52, the inner margins of the top walls 54 are preferably struck downwardly as at 67 to facilitate the belt riding from the track formed by the upper wall 54 onto the sprockets 58 or vice versa as the case may be. At their ends also, as best shown in Fig. 5, the attaching sides of the channels 52 may be notched as at 68 to receive the shafts 56 therein. Along the upper track formed by the wall 54 are a pair of bead-like guides 69 between which the upper run of the conveyor belt moves and which inhibit undesirable lateral movement of the belt.

Many loaves of bread are approximately sixteen inches long and five inches high by five inches wide. In order that an operator who stands adjacent the conveyor frame 30 or 41, as the case may be, may be able to pick up the bread therefrom and may be able to reach the lower tier 33 without excessive stooping and the upper tier 31 without excessive stretching, I have found it desirable to locate the lower tier 31 approximately twenty-four inches above the floor, the second tier 32 approximately fifteen and one-quarter inches above the lower tier, and the upper tier 33 approximately eleven and one-half inches

above the intermediate tier 32, making a total of slightly over four feet for the height of the upper tier, while allowing say another foot or so for the height of the stale goods conveyor 40 or 43, as the case may be, at the top of the conveyor frame 30 or 41, which still permits a practicable height for the latter. Thus adequate head-room is provided on each tier for a loaf five inches in height so that the loaf can be removed from the conveyor belt without danger of scraping on the tier above it. Also, since the conveyor frame as a whole is less than two feet across, the operator has no difficulty in reaching across any belt while standing at one side thereof.

On the curved conveyors 34, 44, 36, 45, 38 and 46, as best shown in Fig. 4, the wire belt 201 is carried on an arcuate frame which comprises the upright standards 70 arranged in parallel at each end and arcuate side frame guide members 71. A shaft 72 at the proximate end of each curved conveyor carries the usual sprockets for engaging the wire conveyor belt 201 and each shaft is suitably mounted as by brackets 73 on the curved conveyor frame. Similarly, at the distal end of the curved conveyor the shaft 74 is similarly mounted on brackets 75 on the frame and this shaft 74 is extended at one end laterally of the frame to terminate in a pinion 76 which through a chain 77 is driven by the pinion 78 of a motor reducer carried by the frame. The conveyor belt 201 is similar to the conveyor belt 200 except that the wire rods 65a (Fig. 6) of the curved conveyor are looped more closely together at one side as at 66a than they are at the other side at 66b, thus providing for a smaller radius of the belt 201 at the side of the curved conveyor having the shorter arc.

As best shown in Figs. 4 and 7, each of the separable tangentially located conveyors 35, 37 and 39 comprises a three-point mounting frame having a single standard 79 at its pivot point 47 which standard may be in the form of a cylindrical rotatable post received in a cylindrical socket 80 projecting from the floor 10 and secured as by a base 81 and bolts 82 to the floor immediately in front of and on the center line of the discharge of the wrapping machine 11, 12 or 13, as the case may be. The post 79 at its upper end is fixed centrally of a bracket 83 which carries the shaft 84 having the usual means for engaging an endless conveyor belt 85, which, at its forward end, is trained about similar belt engaging means on the shaft 86 carried by bracket 87 mounted transversely at the upper end of the parallel standards 88, side frame members 90 connecting the ends of the brackets 83 and 87 to complete the frame. In this case, the standards 88 at their lower ends are equipped with rollers 89 so that the separable conveyor is mobilized at its forward or distal end to swivel or swing on the pivot 47 by the expedients described. In this case these separable conveyors may carry a conveyor belt 85 which may be of canvas or the like. To drive this conveyor belt, the forward shaft 86 may be extended laterally of the frame at one side to terminate in a pinion 91 which through a chain 92 is driven by the pinion 93 of a motor reducer 94 supported on a shelf 95 secured as at one end 96 to the forward standards 88 and its rear end 97 to truss members 98 secured as at 99 to the side frames 90 and depending therefrom below the frame parts 90. Thus, one of these separable conveyors may swing from its full line position as shown in Fig. 4 to its dotted line position in the direction of the arrow 100 or vice

versa as described, from one to the other of its adjacent curved conveyors, to direct its load to either the conveyor frame 30 or the conveyor frame 41, the units to be delivered riding readily over the conveyor belt 85 to the closely abutting conveyor belt 201 in either case. To suit the height of the wrapping machine discharge, the standard 79 may be vertically adjustable in the socket 80 as by a set-screw 80a threadedly interacting with a collar 80b at the top of the socket piece 80 and engageable with the standard 79.

As best shown in Figs. 8 and 9, the repositories 24, 25 and 49 may comprise the usual framework having each a double pair of standards 101 arranged centrally thereof connected as by struts 102 and other cross strips 103 to form a rectangular central support for the repositories. As here shown, the struts 102 are in the form of angle irons and are extended on each side of the central standards 101 in cantilever fashion to support removable baskets or other containers 104 into which units such as wrapped loaves of bread may be deposited, there being at least one of the baskets 104 for each of the tiers 31, 32 and 33 for each delivery truck, and the repositories are advantageously similarly arranged in tiers as shown.

The stale goods conveyors 40 and 48 may, as best shown in Figs. 2 and 3, comprise a trough 105 of substantially the width of the conveyor frame 30 or 41, as the case may be, at its bottom and flaring outwardly toward its top as shown, so as to project laterally above the conveyor frame and make a convenient dumping receptacle for the returned or stale goods which the driver removes from his truck in the usual basket or other carrier. As the driver dumps the stale goods into the trough 105, the goods fall upon a belt such as the endless canvas belt 107 which rides over the bottom 106 of the trough 105, as indicated by the arrow 108. The return run of the belt 107 may pass under the trough bottom 106 after being entrained about the rollers 109 at the ends of the conveyor. The shafts for the rollers 109 may be supported by brackets 112 and the trough 105 itself by extensions 110 of the conveyor frame standards 50. Also, some of these brackets 112 may carry idler rollers 111 to support the return run of the belt 107.

From the foregoing, it will be understood that one of the advantages of my system is that the units may be selected and located immediately adjacent the position which a truck will occupy to receive that particular selection, and that this may be done during the day, say, when the truck is still out on its route. It is customary in bakeries for the trucks to leave with their loads early in the morning and to return in the afternoon, anywhere from, say, two to six o'clock. During the day the operator may make a selection of units for each truck from the conveyor and may place the various selections in the repositories for the various trucks.

As shown in the drawings, in this instance, the trucks may be located between the repositories so that a truck 17, for example, may receive the baskets 104 which are upon the side 26 of the repository 24 next adjacent the truck 17 and may also receive similar baskets from the adjacent side 113 of another repository 114, as indicated by the arrows 115 and 116 respectively. Similarly, the truck 19 may receive the baskets 104 from one side 28 of the repository 25 which is next adjacent the truck 19 and also from one side 117 of the repository 118 which is

next adjacent the truck 19, as indicated by the arrows 119 and 120 respectively. These baskets can be placed in the trucks at any time after the truck has returned in the afternoon and before it leaves again in the morning, and the baskets so disposed for each truck may contain the proper number of loaves of rye bread, for example, the proper number of loaves of white bread, and the proper number of loaves of whole wheat bread, as selected by the operator from the conveyor for that particular truck, and as indicated to the operator by any suitable means such as a bulletin board (not shown) hung on the conveyor in the vicinity of the truck location specifying the number of units of each character of goods which the driver wishes to deliver to his customers the following day.

In making these various selections for the various trucks, the operators have, as described, a plurality of each of a series of units passing before them on the conveyors readily at their hands, and it is desirable that the conveyor be arranged to move at a speed as slow as possible and still handle the units from the wrapping machine at the rate at which they are discharged. A wrapping machine normally wraps at the rate of about forty loaves per minute, and since a loaf of bread is normally about five inches wide, I prefer that the speed of the belts 200, as determined by the motor reducers 62, shall be approximately two hundred inches a minute, or forty times five inches. Thus, when the operator picks up five loaves, for example, of a total of ten loaves of the same series which he requires for the truck which he is serving, the next five loaves of that series still on the conveyor are not too far away for his easy reach.

It will be understood that only substantially enough loaves of bread of a particular character are put through a wrapping machine to supply the total delivery requirements for the next day, and that these quantities are known beforehand. Consequently, when sufficient loaves of each character have been delivered by the wrapping machines to the conveyor frame 30, for example, and have been removed by the operators for the various trucks, as already described, the conveyors 35, 37 and 39 may then be swung over so that the remaining units of bread from the same wrapping machine are delivered to the conveyor frame 41 to be similarly located for the trucks associated with the latter conveyor frame, as referred to.

The preferred form of conveyor belt 200 which is shown is of the end-looped wire rod type and may suitably be only twelve inches wide, since by the arrangement which I have shown this width of belt will accommodate a loaf of bread anywhere from, say, a few inches to as long as, say, sixteen inches, the ends of a sixteen inch loaf, for example, overhanging the conveyor belt two inches at each side with no disadvantage, since the channels 52 provide with the belt itself a track of actually eighteen inches in width between frame standards 50, the low bead-like guides 69 for the belt on the upper surface of the channels 52 not interfering with the overhang of the loaf in this way. As best shown in Fig. 3, I desirably make the guides 69 so as not to project above the belt 200 and so as thus to offer no impediment to the progress of the loaf on the belt even though the loaf may overhang the belt, while at the same time the beads function as guides for the belt, as already pointed

out. The smooth uninterrupted surfaces of the channels 52 also contribute to this result.

Similarly, in the curved conveyors 34, 44 and 36, 45 and 38, 46 I desirably make the upper edges of the side frames 71 terminate below the upper surface of the belt 201 for a similar purpose, as best shown at 121 (Fig. 6a), the side frames 71 comprising angle members 122 having horizontal flanges which provide a track for the upper or unit carrying run of the conveyor 201 and other angles 123 having horizontal flanges which provide a track for the return run of this belt.

Since several trucks may be unloading their stale bread onto the stale bread conveyor 40 or 48, as the case may be, at the same time, and in order to keep the width of this conveyor not excessively greater than the width of the conveyor frames 30 and 41, I desirably run the stale goods conveyor belt 107 at an enhanced speed (by any suitable means not here shown) greater than that of the belts 200.

Manifestly, the invention is not limited to details of construction shown for purposes of exemplification. Furthermore, it is not essential that all features of the invention be used conjointly, as various combinations and sub-combinations may be advantageously employed.

Having described my invention, I claim:

1. In an article distributing system embodying a plurality of article discharging devices, a plurality of article repository stations to be supplied with articles from said devices, conveyors for transporting the articles from the devices to the stations, and means for driving the conveyors, that improvement therein which comprises a pair of unitary conveyor frames each arranged adjacent a plurality of said stations, a plurality of conveyor tiers each comprising conveyors carried by each frame, tiers of the frames of a pair being arranged in pairs, each pair of tiers having a common level spaced vertically from the levels of the other pairs of tiers but vertically aligned therewith in said frames, tiers of the frames overlapping in the vicinity of said devices, a curved conveyor extending from each tier of each frame, said curved conveyors being arranged in pairs for the common levels respectively and each pair of curved conveyors for the respective frames being spaced longitudinally from another

pair of said curved conveyors and directed toward one of said devices, and intermediate supplying means adjacent each said device and adapted to selectively convey articles from an adjacent discharging device to one or the other curved conveyor of a pair whereby the devices may serve both conveyor frames selectively and articles may move on the tiers of one or the other of the frames from the devices toward said stations, and adjacent each station served by a conveyor frame there may be moving simultaneously on each of said tiers of said frame articles discharged by said devices.

2. In an article distributing system embodying a plurality of article discharging devices, a plurality of article repository stations to be supplied with articles from said devices, and endless belt conveyors for transporting the articles from the devices to the stations and power means for driving the belts, that improvement therein which comprises a pair of unitary conveyor frames each arranged adjacent a plurality of said stations, a plurality of conveyor tiers each comprising endless belts carried by each frame, tiers of the frames of the pair being arranged in pairs, each pair of tiers having a common level spaced vertically from the levels of the other pairs of tiers but vertically aligned therewith in said frames, tiers of the frames overlapping in the vicinity of said devices, a curved conveyor extending from each tier of each frame, said curved conveyors being arranged in pairs for the common levels respectively and each pair of curved conveyors for the respective frames being directed toward one of said devices, a separable tangentially located conveyor adjacent each said device and adapted to be swung from one to the other curved conveyor of a pair whereby the device may serve both conveyor frames selectively and articles may move on the tiers of one or the other of the frames from the devices toward said stations and adjacent each station served by a conveyor frame there may be moving simultaneously articles on each of said tiers of said frame, and an additional conveyor tier carried by each frame above said first mentioned tiers, said additional conveyor tier being for returned goods and leading away from said devices.

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