

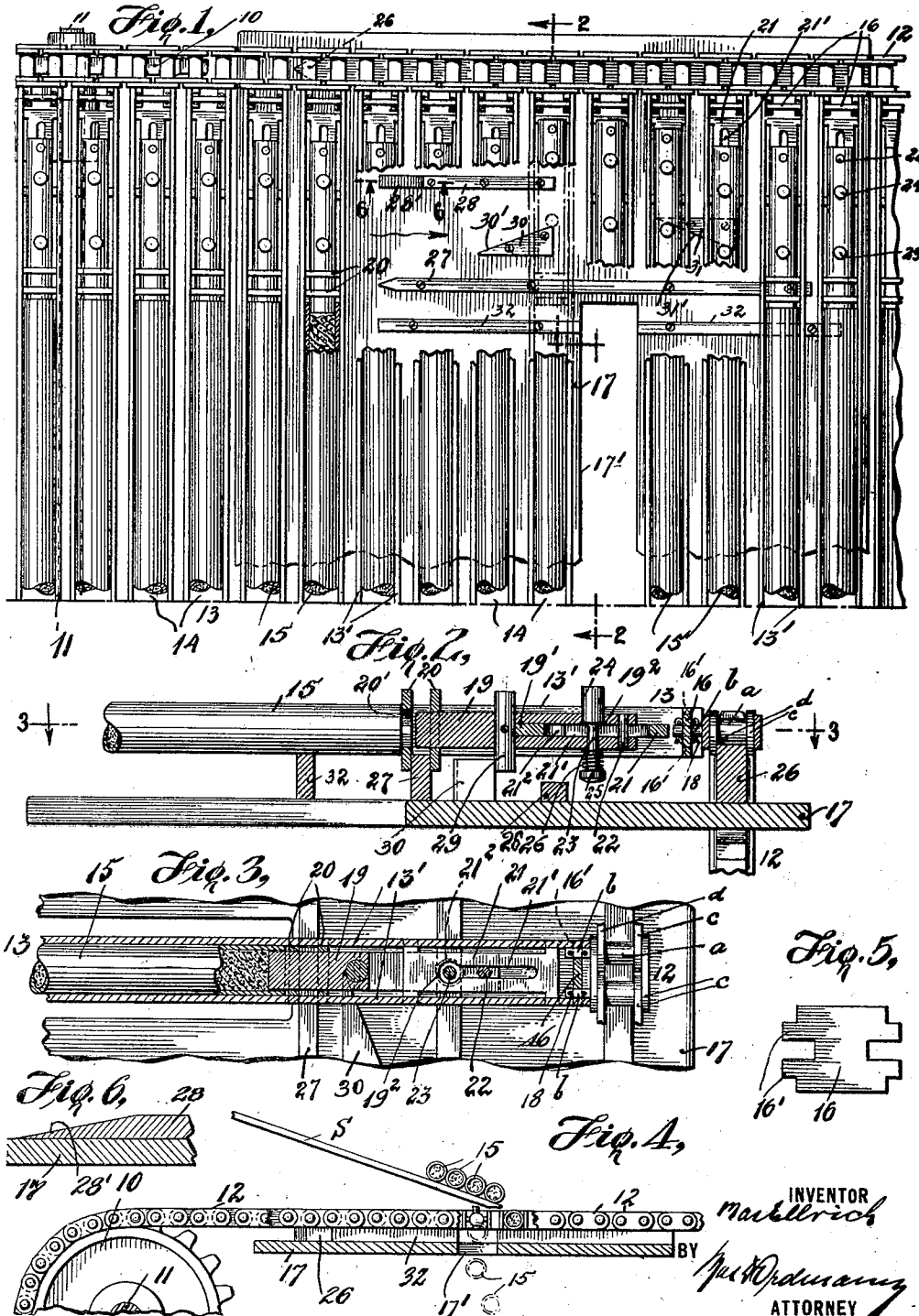
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CONVEYER

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UNITED STATES PATENT OFFICE.

MAX ELLRICH, OF JERSEY CITY, NEW JERSEY, ASSIGNOR, BY MESNE ASSIGNMENTS,
TO MARIE CHRISTENSEN, OF BROOKLYN, NEW YORK.

CONVEYER.

Application filed November 5, 1920. Serial No. 421,841.

To all whom it may concern:

Be it known that MAX ELLRICH, citizen of the German Republic, residing at 173 New York Avenue, Jersey City, in the county of Hudson and State of New Jersey, has invented certain new and useful Improvements in Conveyers, of which the following is a specification.

The present invention relates to conveyers for conveying tubular containers, particularly such which are used to convey tubes containing cork composition for treatment in an oven.

My invention has for its object to provide means which will automatically and securely grip or connect the tubes to the conveyer and automatically release the same after they pass out from the oven or apparatus in which they are treated.

With the object in view my invention consists in the novel construction, arrangement, and combination of parts as will be hereinafter more fully described and defined in the appended claims.

In the accompanying drawings in which similar reference characters denote corresponding parts, Fig. 1 is a top plan view of one end and of one side of a tube conveyer; Fig. 2 is a vertical section on line 2—2 of Fig. 1; Fig. 3 is a section on line 3—3 of Fig. 2; Fig. 4 is a more or less diagrammatic view of one end of the conveyer; Fig. 5 is an elevation of a detail, and Fig. 6 is a section on line 6—6 of Fig. 1.

Referring specifically to the drawing 10 denotes one of the sprocket wheels arranged on shaft 11 and over which run two parallel endless chains 12, of which only one is shown in the drawing. These chains are adapted to be connected together by frames 13 for supporting the tubes 15 containing the material to be treated in an oven, while conveyed through the latter. Each chain consists of rollers *a*, mounted on pins *b* and connected by end links *c* and *d*. The frames 13 are each composed of a pair of parallel bars 13', 13' extending transversely and adapted to be fastened to the opposite inner links *d* of the two chains.

The two parallel bars 13', 13' are in height and spaced apart a distance substantially equal to the diameter of the tubes, and in length equal to the distance between the opposite links of the two chains. The attachment of said bars 13', 13' to the links

d, may be accomplished in various ways, but I prefer to use the following construction:

On the inner extensions of the pins *b* of the two adjoining rollers *a* are mounted vertically disposed recessed plates 16 which have lateral projections 16' adapted to be passed through holes made in the ends of the bars 13' and to be suitably fixed thereto in position. The plates 16 may be steadied in position on the pins *b* by cotter pins 18 or the like. Each pair of bars 13', 13' form between themselves a pocket 14 adapted to receive a tube 15. The tubes 15 are somewhat shorter than the pockets 14, so that when positioned therein there is a free space formed at each end for the accommodation of a gripping member. The two gripping members and their arrangement in each pocket are identical, and I shall, therefore, describe the construction of the conveyer in respect to one side, it being understood that its construction at the opposite side is the same.

Each gripping mechanism comprises a longitudinally movable bolt 19, arranged centrally and at the end of a pocket 14. The tubes are open at their ends and are packed with the material to be treated not quite to the ends, leaving free spaces sufficiently large to receive the extreme ends of the gripping bolts 19 which when moved into operative position will engage the tubes.

At points near the open ends of the tubes when properly positioned in the pockets 14, I provide guide members in form of a pair of parallel plates 20 arranged in vertical position and provided with central circular holes 20' in which the bolt 19 is movably supported. These guide members 20 are fixed in the bars 13', 13' similar to the plates 16. The outer end of this locking bolt 19 is centrally slotted in longitudinal direction as at 19' to movably engage a horizontally disposed bridge plate 21, which again is fixed to the bars 13', 13' in like manner as plates 16. This plate 21 is provided with a longitudinal central recess 21' having at its inner end an enlargement 21². The bolt 19 is rectilinearly guided on said plate 21 by a guide pin 22 which passes through the slot or recess 21'. Borne in the bolt 19 is a vertically movable lock pin 23 of which the upper part 24 is enlarged in diameter, and which extends through the slot 21'.

The enlarged portion 24 of said pin projects outwardly or upwardly through a correspondingly enlarged bore 19² of the bolt. The free end of the reduced portion of the pin 23 is formed with a head piece 25, and a spring 26 is mounted around said reduced part of the pin to rest with one end against said head piece 25 and with its opposite end against the outer face of the bolt 19, the same having the tendency to draw the lock pin 23 downwardly. When the bolt 19 is in inoperative position the enlarged end 24 of the lock pin will be displaced relative to the enlarged part 21² of the slot and the pin, therefore, held in unlocked position permitting the bolt to be moved. When the bolt 19 is moved inwardly or into locking position, the part 24 of the locking pin comes into the range of the opening 21² and snaps into it by force of its spring 26 and thereby locks the bolt in operative position.

Extending from the inner circumference of the sprocket wheels 10 in the direction of travel of the chains and below the latter is a stationary bed or base 17 on which certain guide pieces and cams are provided for guiding the chains and the tubes and for operating the gripping members 19 at predetermined periods of time. Above the chain conveyer a chute S is provided through which the tubes are fed by their own gravity into the pocket 14 of the conveyer.

Arranged on said table 17 along the path of the rollers *a* of the chains on each side is a rail 26 and extending in the path of each pair of guide member 20 is a rail 27. These members 20 are somewhat extended vertically to engage the sides of said rail 27 when the conveyer passes over the table 17 so as to insure the proper positioning of the operative parts of the gripping member relative to the cams whereby the latter are adapted to be automatically operated. There is a cam 28 fixed on the table 17 to extend in the path of the lower end 25 of the locking pin for releasing said pin from its locking position. This cam 28 is in form of a bar extending longitudinally of the chains and has an incline 28'. Fixed in the bolt 19 is a vertical pin 29 which projects downwardly towards the table and serves to transmit movement to the bolt 19.

In the path of the pin 29 I provide two blocks 30, 31 having lateral cam surfaces 30', 31' so positioned that after the unlocking of the bolt 19 through the lifting of the locking pin 23 and the consequent release of the enlarged part 24 thereof from the opening 21² of the slot 21 this cam surface 30' will engage the pin 23 and, as the conveyer proceeds in its travel, cause the bolt 19 to move outwardly withdrawing its end from the tube 15, while the other cam surface 30' subsequently again engages the pin

29 and moves the bolt positively back into gripping position. There are also bars 32 fixed on the bed 17 adapted to extend longitudinally thereof below the tubes 15 to support the same while the conveyer passes over the bed. The latter at a place below the discharge end of the chutes is recessed as at 17' to permit the tubes 15 after their unlocking to fall into a receptacle (not shown) below the bed.

The mode of operation is as follows:

As the conveyer is delivered from the sprocket onto the bed 17 the tubes 15 pass onto the supports 32, the rollers *a* of the chains, onto the rails 26 and the guide bar 27 engages the guide member 20. At the same time the locking pins 23 at both sides are engaged by the inclined 28' of the bars 28 and are lifted releasing the upper ends 24 of the latter from the openings 21² of the bridge plates 21. As the conveyer continues to travel over the bed with the pins 23 unlocked, the pins 29 encounter the blocks 30 and by the cam surfaces of the latter are caused to move the bolts 19 laterally releasing them from the tubes 15, which thus become unlocked one by one and fall through the recess 17' of the bed.

The emptied pockets 14, as the conveyer proceeds are being filled by fresh tubes 15 fed from the chute S and these tubes on entering the pockets are gripped by the bolts 19 automatically through the operation of the blocks 31, whose cam surface 31' now engage the pins 29 and positively move the bolts 19 into operative position.

It is obvious that the device may be variously modified without departing from the principle of my invention, and I, therefore, do not wish to restrict myself to the details shown and described.

What I claim is:—

1. In a conveyer of the character described, the combination with tubular containers open at their ends, of laterally movable members adapted to enter the open ends of said containers to retain them in position.

2. In a conveyer of the character described, the combination with tubular containers, of laterally movable members adapted to enter said containers and means for locking said members in operative position.

3. In a conveyer of the character described, the combination with tubular containers, of positively actuated gripping members to enter said containers and means for locking said gripping members in operative position.

4. In a conveyer of the character described, the combination with tubular containers, of laterally movable gripping members adapted to enter and grip said containers, means for locking said members in operative position, and means for positively actuating said members.

5 In a conveyer of the character described, the combination with tubular containers, of laterally movable gripping members adapted to enter and grip said contain-
5 5 ers, means for automatically and positively moving said gripping members into operative position means for automatically and positively releasing said members from operative position and means for locking said
10 gripping members in operative position.

6. In a conveyer of the character described, the combination with tubular containers, of laterally movable gripping members adapted to enter and grip said containers, locking means for locking said members in operative position, a bed below said conveyer, and means on said bed to automatically actuate said members and locking means.

20 7. A conveyer for tubular containers comprising parallel chains, frames extending between and fixed to said chains, said frames forming pockets to receive said containers, gripping members at the ends of each pocket
25 to enter and grip said containers, locking means for locking said members in operative position, a loading bed, and means thereon for automatically and positively actuating said gripping members and locking means
30 when the conveyer passes over said bed.

8. A conveyer for tubular containers, comprising parallel chains, frames extending be-

tween and fixed to said chains, said frames forming pockets to receive said tubular containers longitudinally movable gripping
35 members at the ends of each pocket adapted to enter and grip said container, locking means for locking said gripping members in operative position, a loading bed, means thereon for automatically actuating said
40 members and locking means and means for automatically feeding the tubular containers into said pockets.

9. A conveyer for tubular containers having open ends, comprising parallel chains,
45 frames extending between and fixed to said chains, said frames forming pockets to receive said containers, longitudinally movable gripping members in each pocket to partly enter the open ends of the container
50 therein and retain the latter in position, a spring actuated locking pin for each gripping member to lock the same in operative position, and stationary means in the path
55 of travel of said conveyer to positively actuate said gripping members and said locking means so as to automatically grip and release said containers.

In testimony whereof I affix my signature in presence of two witnesses.

MAX ELLRICH.

Witnesses:

JOSEPH T. McMAHON,
S. W. CHRISTENSEN.