Oct. 27, 1936. H. E. GRAY 2,058,976

CAN CONVEYING AND FILLING DEVICE

Original Filed Aug. 25, 1931 3 Sheets-Sheet 1

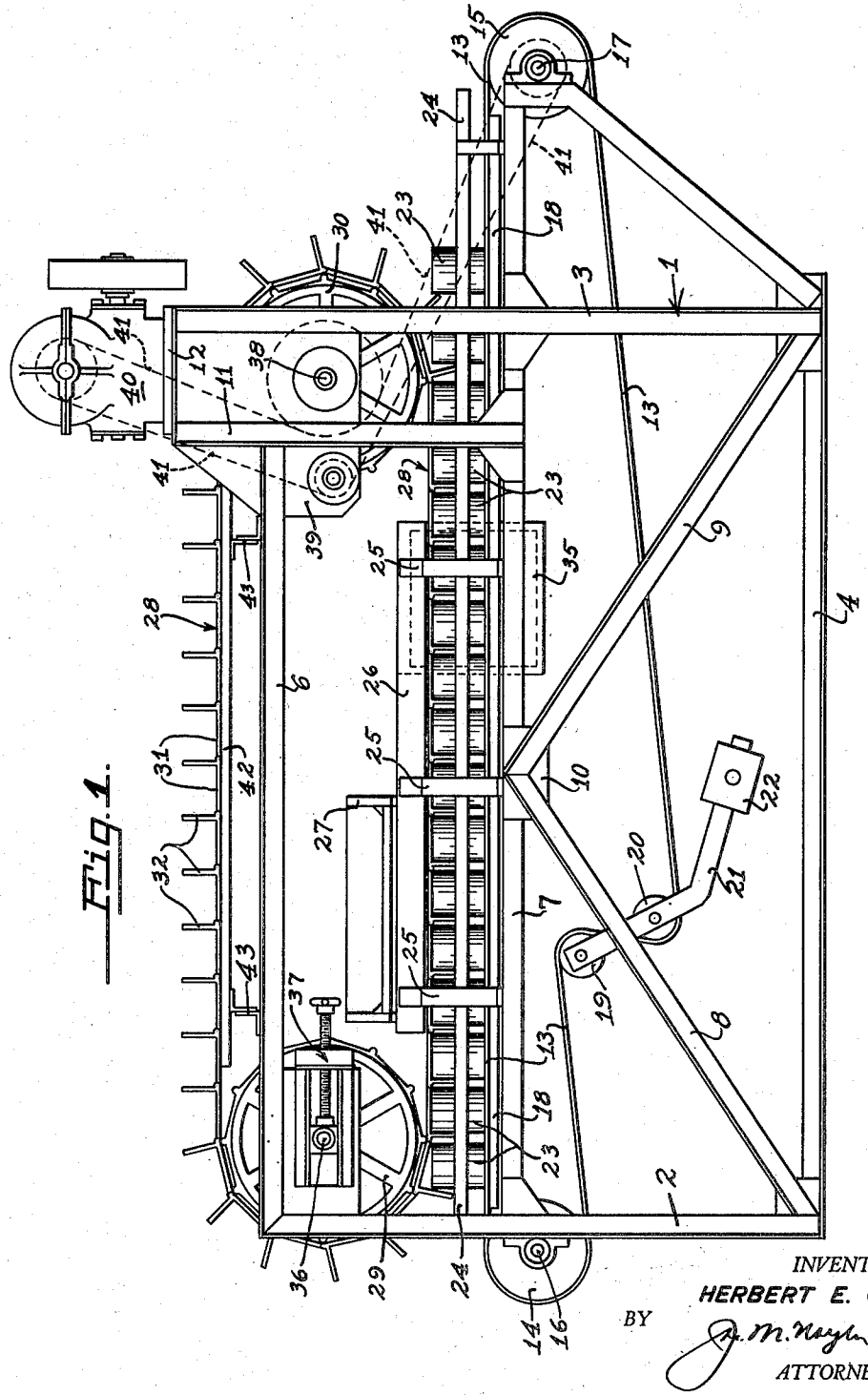


Fig. 1.

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Original Filed Aug. 25, 1931 3 Sheets-Sheet 2

Fig. 2.

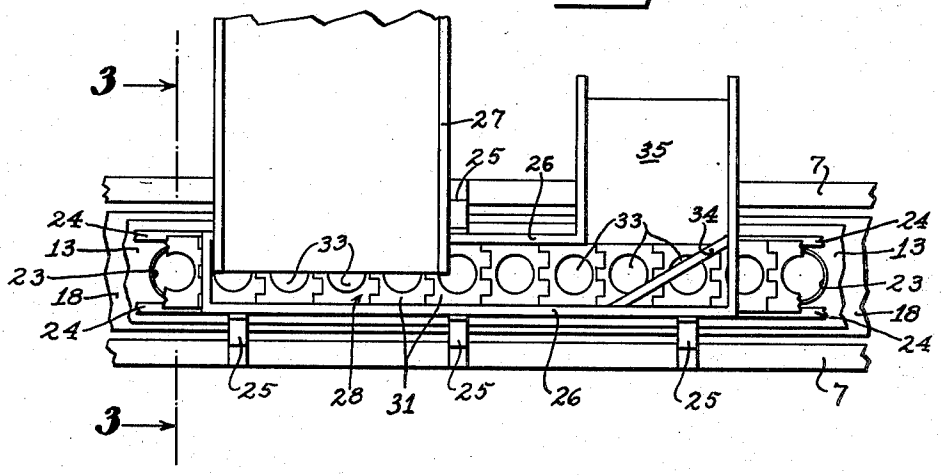


Fig. 3.

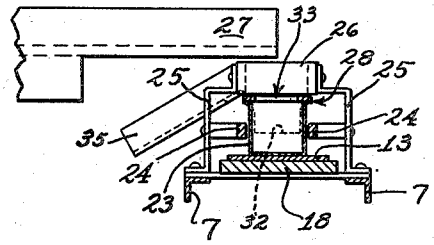
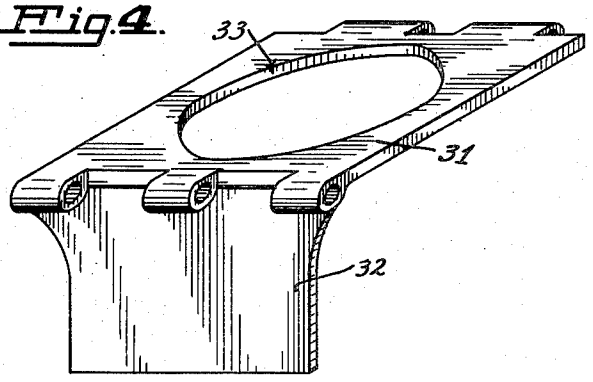


Fig. 4.



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Original Filed Aug. 25, 1931 3 Sheets-Sheet 3

Fig. 5.

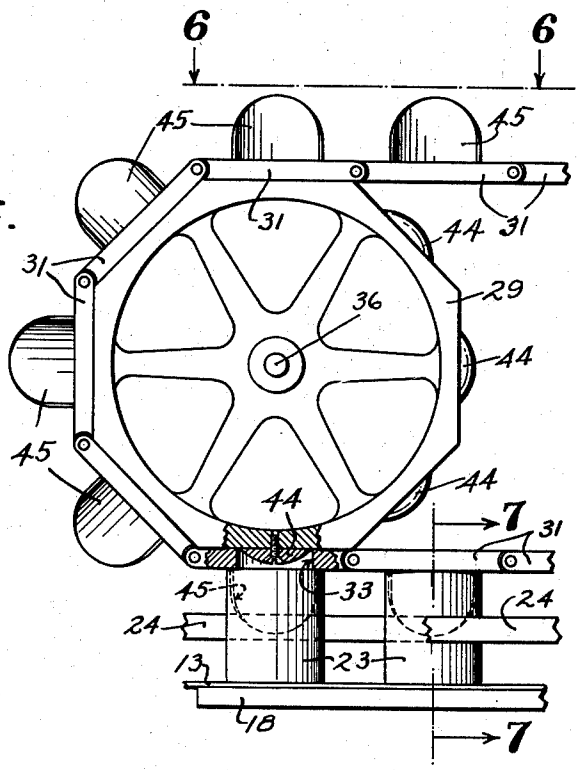


Fig. 6.

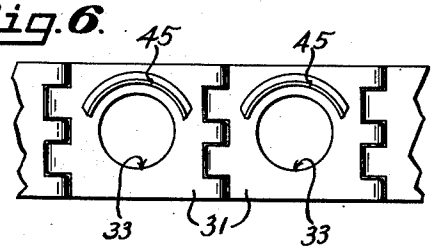
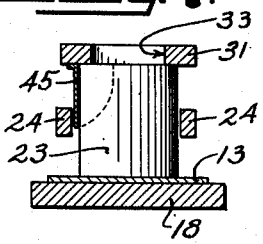


Fig. 7.



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Patented Oct. 27, 1936 2,058,976

UNITED STATES PATENT OFFICE

2,058,976

CAN CONVEYING AND FILLING DEVICE

Herbert E. Gray, San Jose, Calif., assignor to Barron-Gray Packing Company, San Jose, Calif., a corporation of California

Application August 25, 1931, Serial No. 559,170
Renewed June 5, 1935

6 Claims. (Cl. 226—95)

This invention relates to the art of canning fruits and vegetables and particularly to a can conveying and filling device.

In the past it has been the practice to either fill the cans by hand operated devices or to employ devices having a multiplicity of minor working parts frequently requiring replacement or repair and those which cause an undue waste of the material to be canned.

In general the object of this invention is the provision of a can conveying and filling device which is not subject to the objections heretofore mentioned, which will not require constant attention of an operator, may be easily maintained, and which reduces waste to a minimum.

More specifically the object of the invention is to provide an endless chain of substantially rectangular and flat link construction having filling openings therein, positioning cans directly beneath the said filling openings on an endless conveyor belt having the same directional relation and speed as the said chain, and passing the combination under a bottomless filling trough, so that fruit falling into the said trough passes through the filling openings in the said chain into the cans.

Another object of the invention is to provide means to insure that the cans move toward the filling device evenly and directly beneath the filling openings in the said endless chain.

Still another object of the invention is to provide means to prevent waste of the material to be canned.

The invention possesses other advantageous features, some of which with the foregoing, will be set forth at length in the following description where I shall outline in full that form of my invention which I have selected for illustration in the drawings accompanying and forming a part of the present application. In said drawings, I have shown one form of my invention, but it is to be understood that I do not limit myself to such form, since the invention as set forth in the claims, may be embodied in a plurality of forms.

Referring to the drawings:—

Fig. 1 is a side elevation of a can conveying and filling device embodying the objects of my invention.

Fig. 2 is a top plan view of the filling unit of the same.

Fig. 3 is a vertical section of the filling unit taken along the lines 3—3 of Figure 2, showing the relation of the can to the belt and chain, when directly beneath the filling trough.

Fig. 4 is a perspective view of a link of the chain showing the filling opening therein and the can spacing means.

Fig. 5 is a side elevation of a portion of my device, showing a variation in the construction of the driving sprocket and the can positioning member attached to the chain, a link of which is shown in Figure 4. A portion of this view is broken away to more clearly illustrate the construction of the periphery of the driving sprocket and the relation thereto of the chain links.

Fig. 6 is a plan view, taken along the lines 6—6 of Figure 5, showing the relation of the can positioning member to the filling openings in the chain, and

Fig. 7 is a vertical section of the filling unit taken along the line 7—7 of Figure 5, showing the relation of the can to the belt and chain, and the novel positioning member forming a part of the latter.

For purposes of illustration my invention has been shown embodied in a device having a frame supporting pulleys carrying a belt designed to convey the cans forwardly to the filling device. The latter consists of a trough, also supported on the frame. The said pulleys are mounted on shafts running in journals bolted to the frame, and a take-up of the roller and weight type is provided to keep the endless conveyor belt taut. A horizontal support is provided for the top run of the conveyor belt. An endless chain of substantially flat and rectangular link construction, provided with filling openings therein of less diameter than the mouth of the can to be filled, and having lugs or can positioning members extending at right angles to the normal plane of the chain and designed to position the can directly beneath the filling openings in said chain, is driven by sprockets mounted on shafts journaled at either end of the frame above the endless conveyor belt. A standard take-up is employed to keep said chain taut, and bolted to the top of the frame is a horizontal support for the chain to further prevent sagging thereof. Mounted at the top of the frame is a worm gear speed reducer, on the low speed shaft of which is mounted a sprocket carrying a chain driving both the lugged chain and the conveyor belt in the proper directional relation and at exactly the same speed.

Suitable guide bars are mounted on the frame to keep the cans in line on the endless conveyor belt and directly beneath the filling openings in the lugged chain. The filling trough, the bottom of which is supplied by the lugged chain while riding in a horizontal plane on the tops of the

cans, is supported by angle irons bolted to the main frame. The said filling trough is substantially oblong in shape, and extends in a horizontal plane above the lugged chain. A supply chute is positioned directly above the end of the filling trough nearest the feed end of the device. A section of the wall of the filling trough nearest the discharge end of the device is cut away to accommodate an inclined overflow chute, into which the fruit not falling into the cans through the filling openings in the lugged chain is swept by means of a bar disposed at an angle across the surface of the chain.

Referring to the drawings I have shown a frame generally designated as 1 and comprising uprights 2 and 3, the latter being slightly longer than the former, secured at their feet to the angle iron 4. The frame 1 is further provided with upper and lower longitudinal angle irons 6 and 7, respectively, secured to the uprights 2 and 3, and the lower portion of the structure is further supported by the angle irons 8 and 9, forming a triangle, secured at their upper ends to the lower longitudinal angle iron 7 by means of a plate 10 and with their lower ends secured to the lower ends of the uprights 2 and 3. At one end of the frame thus formed, there is provided an auxiliary frame supporting a speed reducer and a chain driving sprocket, comprising an upright 11, secured to the upper longitudinal angle iron 6 and the lower longitudinal angle iron 7, and extending above the former to a height equal to that of the upright 3. A horizontal angle iron 12 is secured to the upper ends of the uprights 3 and 11.

An endless conveyor belt 13 is carried by the pulleys 14 and 15, mounted on shafts journaled at either end of the main frame, as at 16 and 17, respectively. The belt 13, while conveying cans under the filling unit, moves over the surface of the horizontal support 18, secured to the horizontal angle iron 7. The belt 13 is kept taut by means of a take-up of known construction, consisting of the rollers 19 and 20 mounted on the angled end of the rod 21 which carries the weight 22.

23 indicates cans carried along the surface of the belt 13, between the guide bars 24, secured to the uprights 25. The uprights 25 are angled at their upper ends to support the walls of the filling trough 26, and are secured at their lower ends to the longitudinal angle iron 7 of the main frame. A supply chute 27 is positioned directly over the filling trough 26.

The chain generally designated by the numeral 28, carried by the sprockets 29 and 30, is formed of flat apertured links 31 which are substantially square in shape, and the lugs or can positioning members 32 extend outwardly at right angles from the said links. The lugs 32, while shown as being an integral part of the links 31, may, of course, consist of separate pieces detachably connected to the same. The links 31 are slightly longer and wider than the diameter of the cans 23, and the circular filling openings 33 therein are of slightly smaller diameter than the mouths of the cans 23. The chain 28 while travelling on its lower horizontal plane, or in the direction of the filling unit, rests upon the tops of the cans 23 and supplies an endless moving bottom for the filling trough 26.

The solid portion of the surface of the chain 28 carries that part of the fruit not passing through the filling openings 33 into the cans, to the sweep-off bar 34 disposed within the filling trough 26 at an angle to the line of movement of the cans. The bar 34 sweeps the surplus fruit into the inclined chute 35.

The sprocket 29 is mounted on a shaft 36 journaled in the standard take-up 37, which is rigidly secured to the uprights 2 and the upper angle iron 6 of the main frame 1. The sprocket 30 is mounted on the shaft 38 journaled in the plate 39 rigidly secured to the main frame members 3, 11 and 6. A speed reducer 40 mounted on the auxiliary frame above the sprocket 30, drives both the sprocket 30 and the pulley 15 by means of a chain 41, maintaining a proper directional relation and identity of speed between the chain 28 and the conveyor belt 13.

While the take-up 37 serves to keep the chain 28 taut in its upper horizontal plane, it is further prevented from sagging by the support 42 bracketed to the frame member 6 by means of the angle irons 43.

In Figure 5 I show a modification of the construction of the driving sprocket 29 and the chain 28. Instead of relying upon teeth disposed upon the periphery of the sprocket to engage the links of the chain 28 by entering the apertures 33 therein and drive the latter forwardly, I have provided an octagonally shaped sprocket with dome-shaped members 44 secured to the flat surfaces thereof and adapted to engage the chain 28 by fitting into the filling openings 33 in the links 31. I find that the efficiency of the device is increased by the use of this modification, due to the fact that the links 31 of the chain 28 fit more snugly onto the sprocket 29 and the dome-shaped members 44 by entering the filling openings 33 in the links 31 insure to a greater degree the maintenance of a proper timing of the speed of the chain 28 and the conveyor belt 13.

As a modification of the can positioning member 32, shown in Figure 4, I have provided the lug 45, shown in Figures 5, 6 and 7. This member 45 is a semi-cylindrical piece corresponding in shape to the wall of the can and designed to fit partly around the can to further insure the maintenance of the positioning of the can mouth directly beneath the filling opening 33 in the link 31 of the chain 28. As the cans are fed onto the conveyor belt 13 the lug 45 drops downwardly from the sprocket 29, fits the wall of the can moving it into position beneath the said filling opening 33 and forwardly with the same directional speed as the conveyor belt 13.

The operation of the device above described is as follows:

The cans 23 are fed onto the conveyor belt 13, moving in the direction of the filling trough 26, and maintained in upright position and in proper relation to the filling openings 33 of the chain 28, by means of the lugs 32 of the said chain. These lugs drop behind the can as it progresses under the sprocket 29, and the links 31 rest upon the top of the can. The filling trough 26 is thus bottomed by the moving chain 28 and the cans so positioned with respect to the openings therein as to catch the fruit falling from the supply chute 27. The chute 27 may be connected with appropriate shaker mechanism to cause the fruit to pass along it in an even feed or may be inclined so that the fruit falls from its discharge end by force of gravity into the filling trough 26. The discharge end of the chute 27 is centered over the filling openings 33 in the chain 28, and thus the fruit falls directly therethrough into the cans.

The surplus fruit or that portion of the discharge from the chute 27 which falls and rests upon the solid surfaces of the chain 28, is carried along in the trough toward the sweep-off bar 34 and the overflow chute 35. It will be noted that the sweep-off bar 34 will have a tendency to further insure the filling of the cans as it sweeps the surplus fruit across the surface of the chain 28 and particularly the filling openings 33 therein. The fruit swept into the overflow chute 35 passes on to a suitable launder (not shown) from which it may be taken for future use.

The filled cans progress on the conveyor belt 13, past the sprocket 30 lifting the chain 28, to other mechanism and devices for the addition of syrups and/or lidding of the cans, as the case may be.

I claim:

1. A can conveying and filling device of the character described, comprising a filling trough in communication with a suitable supply chute, an endless travelling bottom for said filling trough having filling openings therein and means integral therewith for positioning cans with respect to said filling openings, a can conveyor belt having a directional relation and identity of speed with said endless travelling bottom for said filling trough, said filling trough being in communication with an overflow chute, and means integral with said trough and said chute to cause fruit not falling through said filling openings in said endless travelling bottom for said filling trough to fall into said overflow chute.

2. A can conveying and filling device of the character described, comprising a filling trough, an endless travelling bottom for said filling trough having filling openings therein and means integral therewith for positioning cans with respect to said filling openings, a can conveyor belt having directional relation and identity of speed with said endless travelling bottom for said filling trough, supporting means for said can conveyer belt while conveying cans under said filling trough, said filling trough being in communication with an overflow chute, and means integral with said trough and said chute whereby fruit not falling through said filling openings in said endless travelling bottom for said filling trough will be caused to fall into said overflow chute.

3. A can conveying and filling device of the character described, comprising a filling trough, an endless travelling bottom for said filling trough having filling openings therein, means for maintaining communication of said filling openings with the mouths of cans, a can conveyer belt having directional relation and identity of speed with said endless travelling bottom for said filling trough, said filling trough being provided with an overflow chute and means for causing the fruit not passing through said filling openings into the cans to fall into said overflow chute.

4. A can conveying and filling device of the character described, comprising a filling trough, an endless travelling bottom therefor said bottom having filling openings therein designed to correspond substantially to the shape of the mouth of a can, a can conveyer belt having directional relation and identity of speed with said travelling bottom for said filling trough, guide bars to keep said cans in line on said conveyer belt, and lugs dependent from said bottom for spacing said cans with respect to the filling openings in said travelling bottom for said filling trough and maintaining complete registry of said filling openings with the mouths of said cans.

5. In a can filling device, a trough for a supply of material to be canned, an endless chain comprising flat links forming a movable bottom for said trough, each of said links having an opening formed therein, means for maintaining cans to be filled in registry with said openings, and means for leveling the material in the filled cans and removing the excess material from the trough.

6. A can feeding device comprising a material trough, an apertured movable bottom for said trough, means for maintaining cans to be filled in alignment with the apertures of the bottom, means for feeding material to the trough at one end, and a diagonally disposed sweeper bar at the opposite end of the trough to effect removal of surplus material from the trough.

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