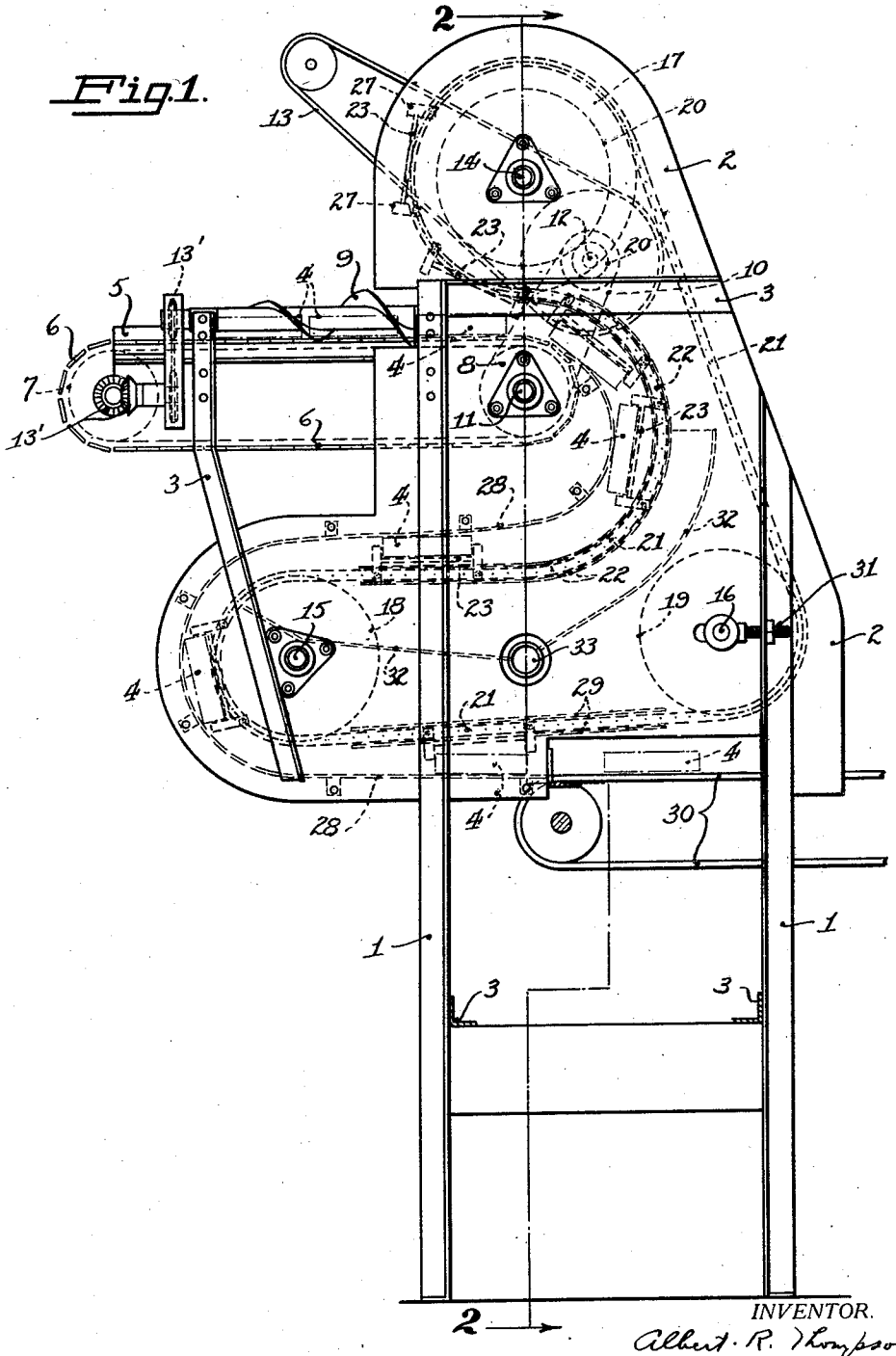
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CAN DRAINER

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Fig. 1.



INVENTOR.

Albert R. Thompson

BY Booth & Booth

ATTORNEYS.

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CAN DRAINER

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Fig. 2.

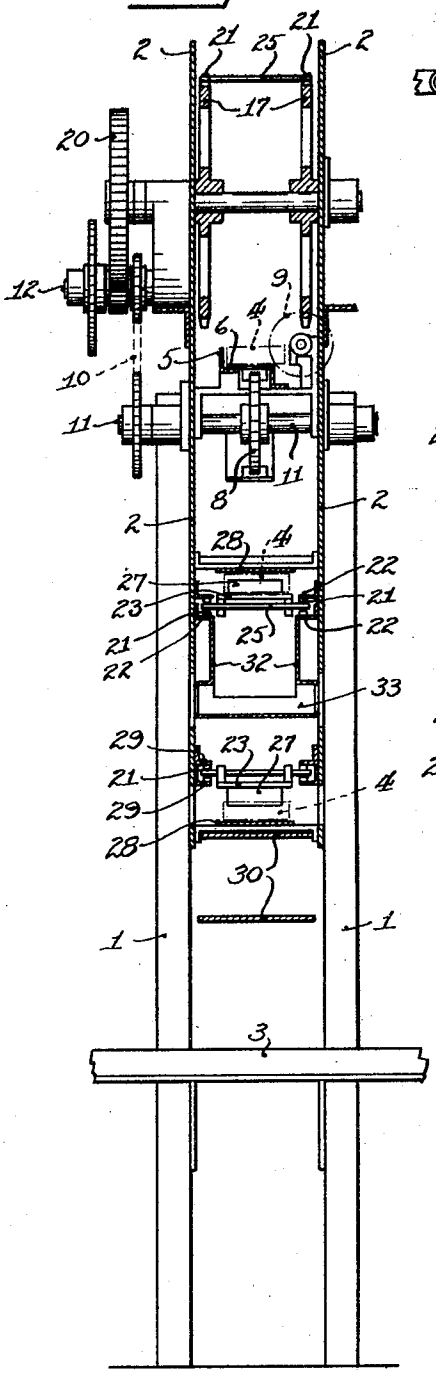


Fig. 3.

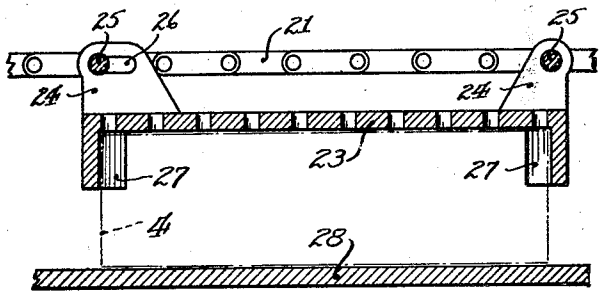
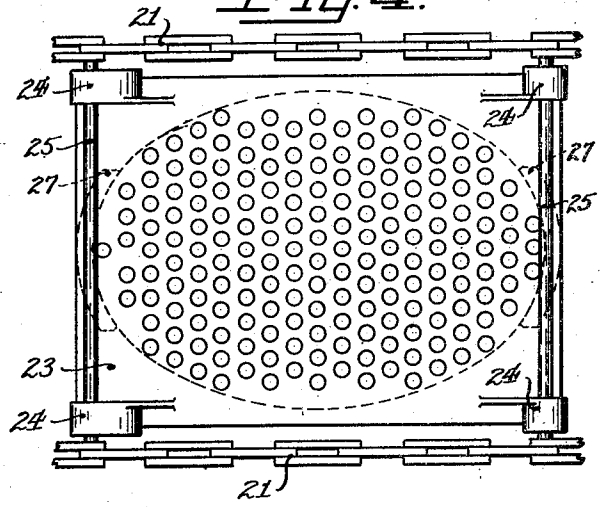


Fig. 4.



INVENTOR.
Albert R. Thompson
BY Booth & Booth
ATTORNEYS.

Patented Feb. 9, 1932 1,843,995

UNITED STATES PATENT OFFICE

ALBERT R. THOMPSON, OF SAN JOSE, CALIFORNIA, ASSIGNOR TO ANDERSON-BARN-GROVER MFG. CO., OF SAN JOSE, CALIFORNIA, A CORPORATION OF CALIFORNIA

CAN DRAINER

Application filed November 14, 1928. Serial No. 319,283.

My invention relates to machines used in the canning art for draining the fluidic portions of the contents from cans preparatory to sealing.

The general object of my invention is to provide a simple machine, capable of continuous and rapid accurate operation, for successively inverting and restoring to original position an advancing procession of cans. In modern practice in which a can procession speedily passes through a line of machines, all possible interruptions must be guarded against. Not the least of these is the danger in transfers. The best solution is to insure accurate timing by avoiding transfers in the travel of the cans within the drainer and also where transfers in feeding and discharging are necessary, preserving the direction of travel at such points, thereby avoiding jamming which may follow an abrupt change. This solution is herein attained both by the single continuous non-transfer course through the machine and also as the can procession enters the machine and as it leaves it. Thus greater speed with less chance of damage to the cans is possible, and an essential of the general object of my invention is herein attained. This object is further insured by the provision of a machine which receives the cans at a relatively high level and discharges them at a lower level, thus rendering it suitable for close association with the discharge of the exhaust box for which I have filed an application for United States Letters Patent under date of May 7th, 1927, Serial No. 189,722, and in which the cans are discharged at the top. By providing a drainer to receive the cans directly from such an exhaust box, or from any other apparatus having its discharge at a high level, and to invert temporarily said cans during their descent to a lower level, I am able not only to effect a valuable saving in floor space, but also to discharge the cans from the drainer at the level of the standard types of apparatus, such as syrupers or sealers, which are used to perform subsequent operations, thus simplifying the apparatus necessary to convey or transfer the cans from one machine which is of columnar nature and to another.

It will be apparent that machines embodying my present invention may be used in connection with can handling apparatus other than the exhaust box mentioned above, and also that, although the machine herein illustrated and described is constructed to operate upon flat cans of the type commonly used for packing fish, it can easily be adapted, merely by changing certain of its dimensions and proportions, to handle other forms of cans and containers. It should also be understood that the construction, form, and arrangement of the several parts hereinafter described may be varied within the limits of the claims hereto appended, without departing from the spirit of the invention as set forth in said claims.

A preferred embodiment of my invention will now be described fully with reference to the accompanying drawings, wherein:—

Fig. 1 is a side elevation of the complete machine.

Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1.

Fig. 3 is a longitudinal section, enlarged, of one of the can holding and propelling cover members.

Fig. 4 is a plan view of the same.

The supporting frame of the machine consists of legs 1 and spaced side plates 2, with sundry braces and brackets 3. The cans, indicated by the broken lines 4, are fed into the machine, near its top, by a suitable conveyer comprising a horizontal track 5 and a propelling chain 6, the latter being carried upon sprockets 7 and 8. A worm 9 is provided adjacent the track 5 to time the cans so that they will be engaged properly by the draining cover members to be described later. The feed chain 6 is driven continuously by a chain 10 connecting the shaft 11 of the sprocket 8 with a jack shaft 12, which in turn is driven from some suitable source of power by a belt or chain indicated at 13. The timing worm 9 is driven from the shaft of the forward sprocket 7 by gearing indicated at 13′ in Fig. 1.

The side plates 2 support three horizontal shafts 14, 15, and 16, each of which carries a pair of spaced sprockets, designated 17, 18,

and 19 respectively. The shaft 14, at the top of the machine, is driven by gears 20 from the jack shaft 12. A pair of endless chains 21 constituting a single continuous conveyer pass over the three pairs of sprockets 17, 18, and 19. Between the sprockets 17 and 18 these chains are guided in a curved path by fixed guide channels 22 secured to the side plates 2, said channels being best formed by pairs of spaced angle irons, as shown in Fig. 2. The chains 21 carry a series of regularly spaced can propelling draining cover members 23, shown in detail in Figs. 3 and 4. Each cover member comprises a perforated plate having ears 24 through which pass transverse rods 25 extending to and connected with the chains 21. The ears at one end of the plate are slotted, as shown at 26, to allow the chains to travel in curved paths. The plate has downwardly extending lugs 27 at its ends, positioned to fit over the ends of the can 4, said lugs holding and propelling the can when the plate is seated upon it, as shown in Figs. 1 and 3.

When the cans leave the feed conveyer tracks 5, they pass on to a vertically sinuous plate or track 28, Fig. 1, which is supported between the side plate 2 substantially parallel with the path of the chains 21 and spaced a few inches therefrom. As each can passes from the feed conveyer to the track 28, timed properly by the worm 9, it is covered and engaged by one of the cover plates 23, which is brought down upon said can by the converging approach of the chains 21, as shown in the upper portion of Fig. 1. Thereafter the can is held in engagement with said cover plate by the track 28, and is propelled along said track by the engagement with its ends of the lugs 27.

The path of the chains 21 and the track 28, which is roughly S-shaped or vertically sinuous, as shown in Fig. 1, is such as to cause the cans to be inverted while said chains are passing through the guides 22, so that said cans rest upside down upon the cover plates 23, and their liquid contents drain out through the perforations in said plates. Thereafter the cans are restored to their original positions, while the chains 21 are passing over the sprockets 18, so that they again rest, right side up, upon the track 28.

Between the sprockets 18 and 19, the chains 21 pass through guides 29, which are given a slight upward inclination divergence, so that the cover plates 23 are lifted from the cans, and said cans are freed by the lugs 27 just as they are moved on to a suitable discharge conveyer 30, which removes them from the machine. This discharge conveyer may be of any suitable type and arranged in any suitable manner. It is herein shown, for purposes of illustration, as a moving belt carrying the cans out of the machine in line with their path over the final portion of the track 28. The shaft 16 is provided with bearings which are adjustable in the side plates 2, as shown at 31, so that the chains 21 may be kept under proper tension.

A drip pan 32, having side outlets 33, is mounted beneath that portion of the can path upon which the cans are inverted, so that the drained liquid is caught and may be removed to any suitable receptacle.

It will be seen that the machine is capable of continuous and rapid operation. There are no reciprocating or intermittently moving parts, and the forward motion of the cans is continuous from the time they enter the feed track 5 until they are removed by the discharge conveyer 30. It will also be seen that the cans are fed in at a relatively high level, i. e. that of the feed track 5, and are taken out at the considerably lower level of the discharge conveyer 30, and that said cans are at all times under positive control, so that they are delivered to said discharge conveyer in orderly sequence and at regular intervals. It will also be seen that the cans are carried through the machine in a path that lies in one vertical plane, and that their movement is free from any abrupt change in direction. I regard this last mentioned feature as one of considerable importance, because it enables the machine to operate at high speed without the danger of damage to the cans which is present in drainers of the usual type, in which the cans are inverted in a circular path lying at right angles to the direction of their feeding and discharge movement, requiring abrupt changes in their direction when they are removed from and restored to the feed and discharge conveyer.

It is to be understood that the cans need not be completely inverted as shown in the drawings. The can path may be so formed as to cause a partial inversion of the cans, such for example as would amount to tilting them on to their ends, and which, obviously, would result in more or less complete draining. The word "inverted", therefore, as used throughout this application, is to be construed as including partial, as well as complete inversion.

It must be noted that this relatively attenuated, vertically sinuous, substantially S-shaped can path facilitates draining exceptional products, such as fish, especially sardines, for example, for the reason that the section of the path in which the cans are maintained in vertical position may be made, as herein shown, of greater length than the section in which they are fully inverted. As affecting such products, the oil and water will drain from the interstices, while the cans are partially or wholly up ended, that is, in turning both to and from complete inversion, more readily than when in the latter position.

I claim:—

1. A can drainer comprising a continuous vertically sinuous substantially S-shaped can track extending uninterruptedly throughout the machine; a traveling drainer cover following the sinuosity of said track throughout the length thereof; and means for effecting the covering, holding, propelling and releasing association of said drainer cover with a can throughout the length of said track.

2. A can drainer conprising a continuous vertically sinuous substantially S-shaped can track extending uninterruptedly throughout the machine; a single traveling conveyer following the sinuosity of said track throughout the length thereof; and a drainer member carried by said conveyer, adapted to cover, hold, propel and release a can while upon said track; can-supplying means aligned with one end of the track; and can-discharging means aligned with the other end thereof.

3. A can drainer comprising a continuous vertically sinuous substantially S-shaped track extending uninterruptedly throughout the machine; can-feeding means aligned with the upper end of said track; can-discharging means aligned with the lower end of said track; a single traveling conveyor following the sinuosity of said track throughout the length thereof and spaced therefrom; draining covers carried by said conveyor; means for effecting a converging overlying approach of said conveyer toward the upper end of the track, to cause its draining covers to descend upon the cans to inclose them and hold them to and propel them along the track throughout the sinuous course thereof; and means for effecting the divergence of said conveyer from the track upon its approach to the can-discharging means, to remove said covers from and release the cans.

4. A can drainer comprising a continuous vertically sinuous substantially S-shaped track extending uninterruptedly throughout the machine; can-feeding means aligned with the upper end of said track; can-timing means associated with said can-feeding means for controlling the passage of the cans to said track; can-discharging means aligned with the lower end of said track; a single traveling conveyer following the sinuosity of said track throughout the length thereof; draining covers carried by said conveyer and timed for association with the infeeding cans; means for effecting a converging overlying approach of said conveyer toward the upper end of the track; to cause its draining covers to descend upon the cans to inclose them and hold them to and propel them along the track throughout the sinuous course thereof; and means for effecting the divergence of said conveyer from the track upon its approach to the can-discharging means, to remove said covers from and release the cans.

5. A can drainer comprising a continuous vertically sinuous substantially S shaped can track, extending uninterruptedly throughout the machine; and a single, traveling conveyer following the sinuosity of said track, and adapted to engage a can upon said track and propel it therealong.

6. A can drainer comprising a continuous vertically sinuous substantially S shaped can track extending uninterruptedly throughout the machine; a single traveling conveyer following the sinuosity of said track and adapted to engage a can upon said track and propel it therealong; can feeding means aligned with one end of said track; and can discharge means aligned with the other end of said track.

7. A can drainer comprising a continuous vertically sinuous substantially S shaped track extending uninterruptedly throughout the machine; a single traveling conveyer following the sinuosity of said track throughout the length thereof and spaced therefrom; means for effecting a converging overlying approach of said conveyer toward the upper end of the track to cause it to descend upon cans resting upon said track and to propel them therealong throughout the sinuous course thereof; and means for effecting the divergence of said conveyer from the track upon its approach to the lower end thereof, to disengage it from and release the cans.

8. A can drainer comprising a continuous vertically sinuous substantially S shaped track extending uninterruptedly through the machine; can feeding means aligned with the upper end of said track; can discharging means aligned with the lower end of said track; a single traveling conveyer following the sinuosity of said track throughout the length thereof and spaced therefrom; means for effecting a converging overlying approach of said conveyer toward the upper end of the track to cause it to descend upon cans resting upon said track and to propel them therealong throughout the sinuous course thereof; and means for effecting the divergence of said conveyer from the track upon its approach to the can discharging means, to disengage it from and release the cans.

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

ALBERT R. THOMPSON.