June 18, 1946. J. S. BAKER 2,402,144

AUTOMATIC CAN FEEDING MEANS

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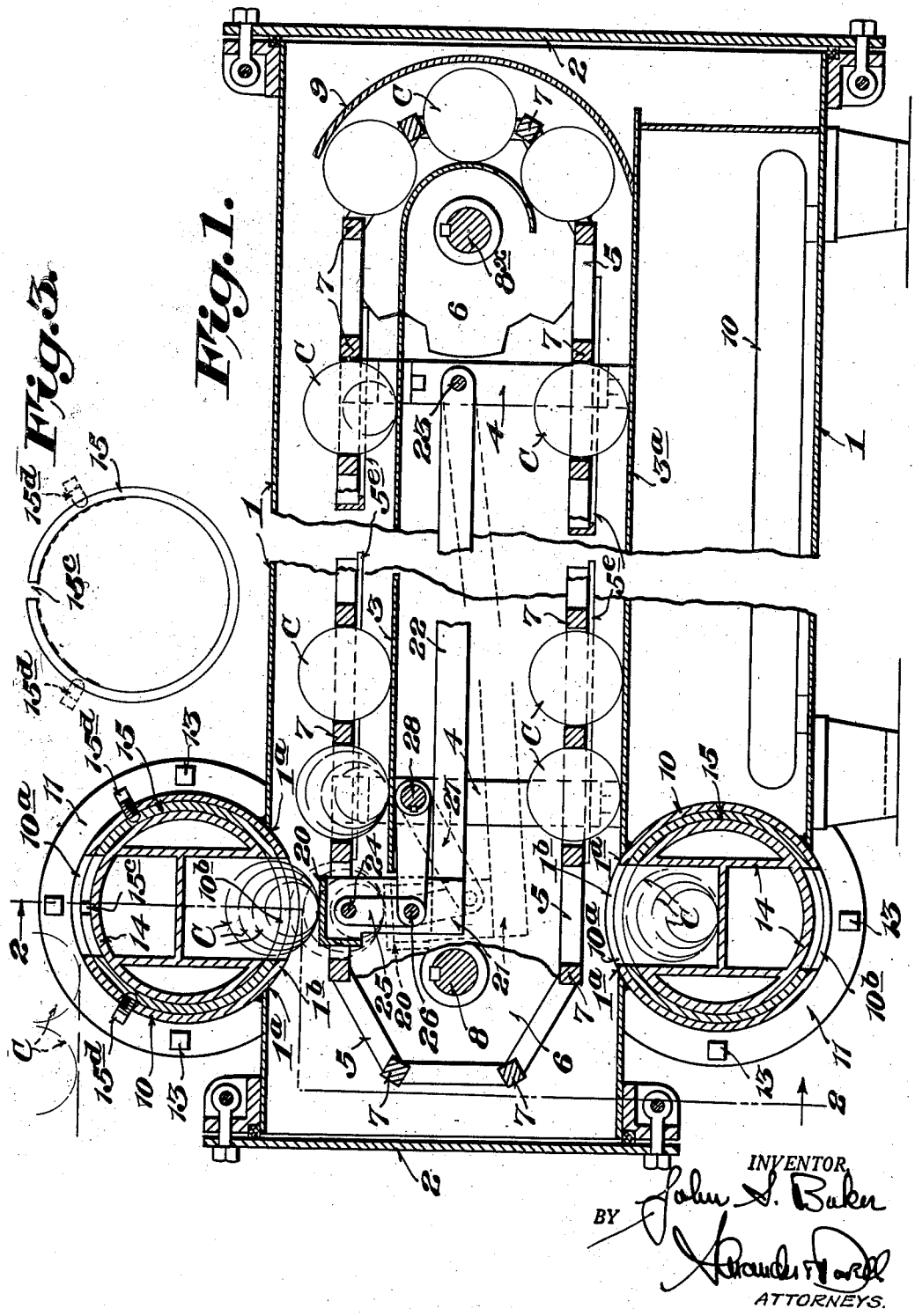


Fig. 1.

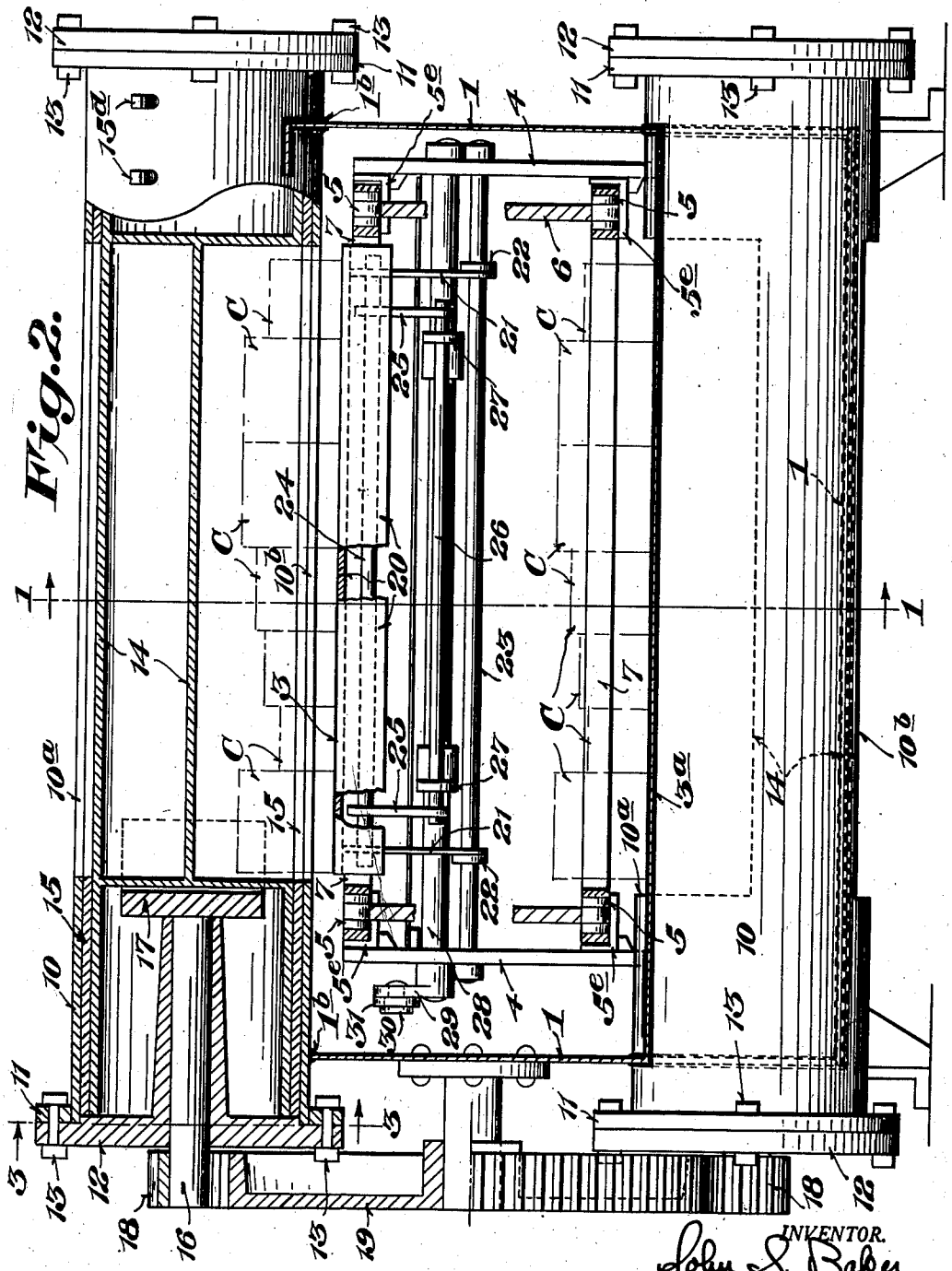
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Fig. 2.



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AUTOMATIC CAN FEEDING MEANS

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4 Claims. (Cl. 198—103)

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This invention relates to automatic can feeding and discharging means for cooking or cooling machinery for processing foods in containers such as used in the food canning industry, the present invention being an improvement on the machine shown in my copending application Serial No. 343,030, filed June 28, 1940, which discloses a cooker in which cans are fed into and discharged from the processing chamber in rows, the rows being rolled through the chamber in pockets formed between cross-bars extending between parallel endless chains which are actuated in a step-by-step movement from the drive shaft.

In machines of this type the canway within the chamber must be of sufficient height to permit passage therethrough of the largest cans; therefore, the distance from the discharge outlet of the feeding means to the bottom of the canway in cookers heretofore constructed is necessarily so great that if small cans are being processed along with large cans, when the feeding means releases a row of cans the small cans will drop out of the outlet of the feeding means, as same opens, into the bottom of the canway before the large cans can pass therethrough, and the abutting large cans in the row will thereafter drop on top of the small cans, instead of between same, thus causing jamming of the cans at the feeding means. Moreover, if glass or frangible containers are being processed, such drop may cause breakage thereof.

Therefore, one object of my invention is to provide an aligning means within the processing chamber, intermediate the outlet of the feeding means and the bottom of the canway, whereby when a row of cans of different sizes is released from the feeding means same will of necessity align themselves on said aligning means before being lowered or dropped onto the bottom of the canway, thus eliminating the aforesaid jamming.

Other minor objects of the invention will be hereinafter set forth.

I will explain the invention with reference to the accompanying drawings, which illustrate one practical embodiment thereof, to enable others familiar with the art to adopt and use the same, and will summarize in the claims, the novel features of construction, and novel combinations of parts, for which protection is desired.

In said drawings—

Fig. 1 is a vertical longitudinal section through the machine on line 1—1, Fig. 2.

Fig. 2 is a transverse section through the machine on the line 2—2, Fig. 1, with the adjacent end of the conveyor chain and sprocket wheels removed to better show the can aligning means.

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Fig. 3 is an end view of the split bushing in which the feed valve rotates, and showing the adjusting screws which cooperate therewith.

As shown, the cooker comprises a horizontally disposed chamber 1, with doors 2, at each end. A flat canway 3—3a on which the cans C are rolled is supported therein by side legs 4. Endless chains 5 are disposed at each side of canway 3—3a, said chains running on tracks 5e and over sprockets 6, can pusher cross-bars 7 extending between the chains 5 across the canway 3—3a with their ends attached to chains 5. The above construction forms a can conveyor with longitudinal can pockets formed between the cross-bars 7, each pocket being adapted to take a row of cans C from the feeding means and to move said row along canway 3—3a, to the discharging means. Sprockets 6 are keyed on shafts 8 and 8x, shaft 8x being the drive shaft. A can guide 9 is provided at the transfer end of the upper canway 3 to hold the cans C in the conveyor can pockets during transfer onto the lower canway 3a. Steam pipes 10 serve to boil the water in the bottom of the chamber to generate steam in the chamber for cooking the canned foods.

The feed and discharge valves and tubes and the entire valve construction are identical, and therefore explanation of one will also explain the other. Ordinary light weight inexpensive stock tubing or piping 10 of required diameter is used, the tubes 10 being cut to required length. Flanges 11 are welded to each end of tube 10 so that heads 12 may be removably secured thereto, such as by bolts 13. Longitudinal can ports 10a and 10b, long enough to admit and discharge a row of cans therethrough are provided in the top and bottom of each tube 10 respectively. The tubes 10 are then bodily welded into slots in the chamber 1 as hereinafter described.

In the top of chamber 1 is a transverse rectangular opening 1a of less width than the diameter of the tube 10, and each side wall of the chamber is recessed as at 1b to receive and conform with the curvature of tube 10 and thereby align the tube and its related valve with the canway 3—3a and conveyor 5, 7 on the chamber 1. The tube 10 is bodily welded onto the chamber around the openings and recesses 1a—1b of said chamber as shown, thus making the tube 10 and chamber 1 practically unitary with a permanent steam-tight joint therebetween, the connection requiring practically no machine work. Tube 10 extends beyond each side of chamber 1 to give access to the bolts 13 so that the heads 12 may be removed when necessary to pull out the valve 14 or its bushing

15. Bushing 15 (Fig. 3) is fitted within tube 10 between the heads 12 (Fig. 2) and longitudinal can ports corresponding in size and shape to ports 10a and 10b are also cut in the bushing 15 and aligned with the said ports in tube 10, in order that a row of cans C may pass through the bushing 15 in the feed tube. Bushing 15 is split longitudinally at its top as at 15c (Figs. 1 and 3) and set screws 15d tapped through tube 10 at opposite sides of said split 15c for closing the bushing (as shown in dotted lines Fig. 3) around the feed valve 14 to compensate for wear on the valve 14 due to rotation. This bushing 15 may be split and sprung as shown in Fig. 3, or may be made or formed in halves or the like. The lower or discharge valve 14 requires no adjustment, and hence its bushing 15 need not be split or compressible.

The lower or discharge valve tube 10 is welded in the end of the water compartment in the bottom of chamber 1, Fig. 1, the tube serving as the end of this part of the chamber, and narrowing the extending front end of the chamber and the related door 2, thus reducing the size of said door 2 and the steam pressure on the door joint, also reducing the weight and cost of said door 2. Since the lower tube 10 serves as an end for the water compartment, the cost of a separate end plate is also eliminated.

The can feed and discharge valves 14 are both full floating, or have their bearings entirely in their related bushings 15; therefore the entire length of each valve 14 and its related bushing 15 is subject to valve operation wear. Valves 14 are oscillated by stub shafts 16 (Fig. 2) carrying yokes 17 on their inner ends which fit over the can pockets of valves 14 as shown in Fig. 2. Pinions 18 are keyed on the other ends of shafts 16 and mesh with a master spur gear 19 driven in any desired manner from the main drive-shaft of the cooker (not shown).

A can rest 20 is provided upon which a row of cans C are aligned after dropping a short distance out of the outlet of feed valve 14 (Fig. 1), can rest 20 remaining momentarily in its upper position shown in Fig. 1 until feed valve 14 has completely opened and the entire row of cans C discharged therefrom are resting on can rest 20 which aligns the rows. Can rest 20 is then lowered to the bottom of the upper canway 3, as shown in dotted lines in Fig. 1. At each end of can rest 20 are side support plates 21 (Figs. 1 and 2) fixedly secured as by welding on swingable bars 22 having one end pivoted on a shaft 23 having end bearings in one of the pairs of legs 4. Can rest 20 may thus swing up and down between the can pusher bars 7, and side chains 5, same pivoting on shaft 23; and can-rest 20 prevents the smaller cans C in a row dropping to the bottom of the canway 3 ahead of the larger cans as the feed valve 14 is opening slowly to release a row of cans. Other means however may be substituted for dropping the row of cans C out of the valve pocket 14 to the bottom of the canway 3, after being aligned.

A rod 24 (Figs. 1 and 2) extends through side plates 21, and a link 25 is provided adjacent each end of rod 24. Each link 25 is freely connected at its other end to a parallel rod 26 so as to be

freely swingable on both rods 24 and 26. Rod 26 is carried by the outer ends of arms 27 keyed on rocker shaft 28 which is journaled in bearings in a pair of parallel legs 4. On one end of shaft 28 beyond the leg 4, is keyed an arm 29 (Fig. 2) with a wrist pin 30 in the outer end, and a link 31 connects pin 30 to the pawl arm of the main conveyor ratchet drive (not shown) of shaft 8x, said ratchet drive being preferably but not necessarily similar to that disclosed in my copending application Serial No. 343,240, filed June 28, 1940, aforementioned, same driving the conveyor chains 5 with a step-by-step movement. As the pawl arm oscillates it simultaneously rocks shaft 28 and swings the can rest 20 up and down through links 25. However, shaft 28 may be rocked by any other desired means.

I do not limit my invention to the exact form shown in the drawings, for obviously changes may be made therein within the scope of the claims.

I claim:

1. In a machine of the character specified; a chamber, a canway therein; automatic can feeding means for feeding a row of cans into the canway; a conveyor having longitudinal can pockets extending across said canway adapted to receive a row of cans from the feeding means and move them therealong; aligning means adapted to be normally raised within said conveyor can pockets intermediate said feeding means and bottom of said canway for aligning a row of cans therein released from said feeding means; means for actuating said aligning means to lower a row of aligned cans thereon into position within said conveyor can pocket aligned with the canway; and means for actuating said feeding means and conveyor.

2. In a machine as set forth in claim 1, said aligning means including a longitudinal rest on which a row of cans is aligned; bars extending from said rest, said bars being pivoted at one end; means for swinging said bars up and down on said pivots to position a row of cans in said canway pocket; and means for actuating said means.

3. In a machine of the character specified; a chamber, a canway therein; automatic can feeding means for feeding a row of cans into the canway; conveyor means having longitudinal can pockets extending across said canway adapted to receive a row of cans from the feeding means and move them therealong; aligning means normally elevated within said conveyor can pockets while the conveyor means is stationary and disposed intermediate said feeding means and bottom of said canway for receiving and aligning a row of cans released from said feeding means; means for actuating said aligning means to lower said row of aligned cans into position in said conveyor can pocket aligned with the canway; and means for actuating said feeding means and conveyor.

4. In a machine as set forth in claim 3, said aligning means including a longitudinal rest on which a row of cans is aligned; bars extending from said rest and pivoted at one end for swinging said rest up and down on said pivots to position a row of cans in said canway pocket; and means for actuating said rest.

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