

W. A. CARRELL.  
STERILIZING CANNED ARTICLES.  
APPLICATION FILED FEB. 8, 1908.

999,007.

Patented July 25, 1911.

4 SHEETS—SHEET 1.

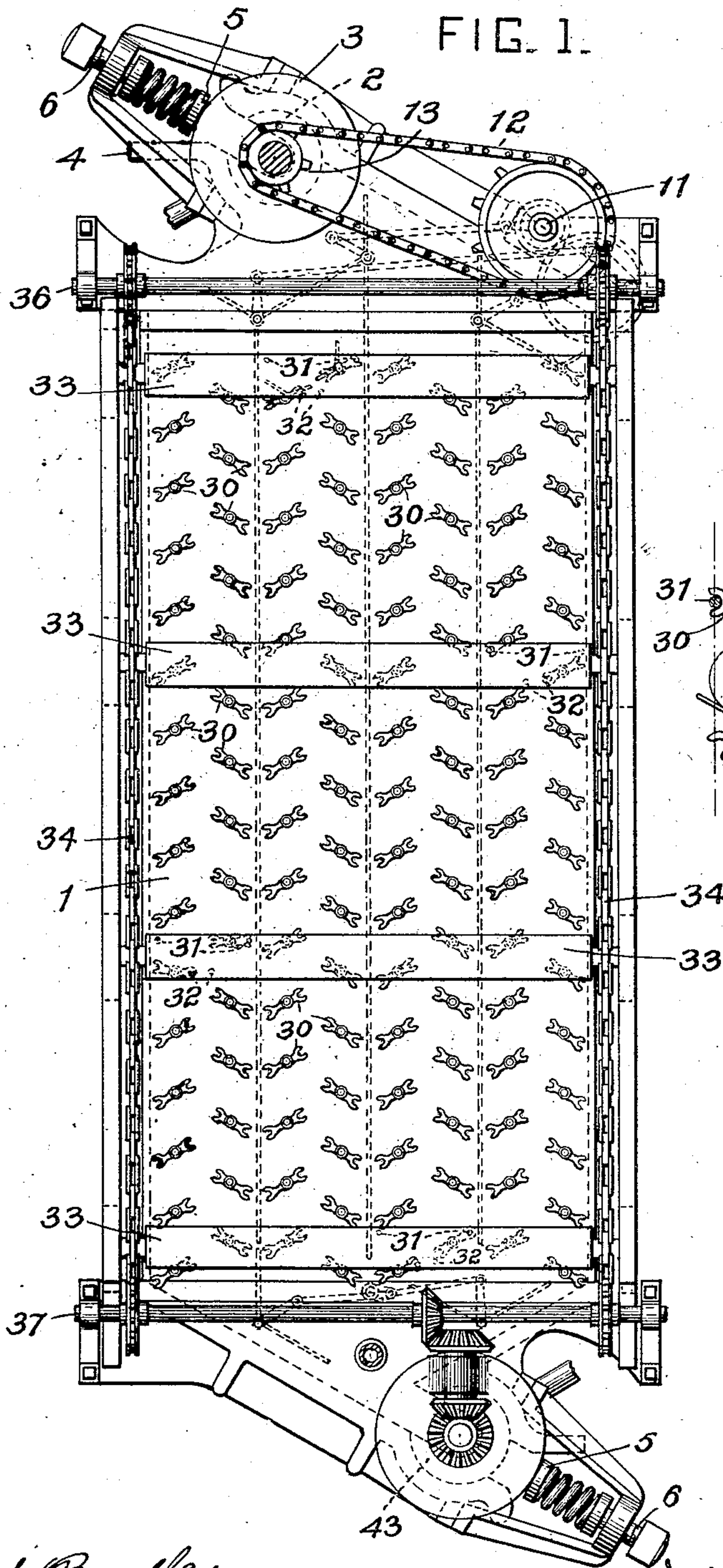
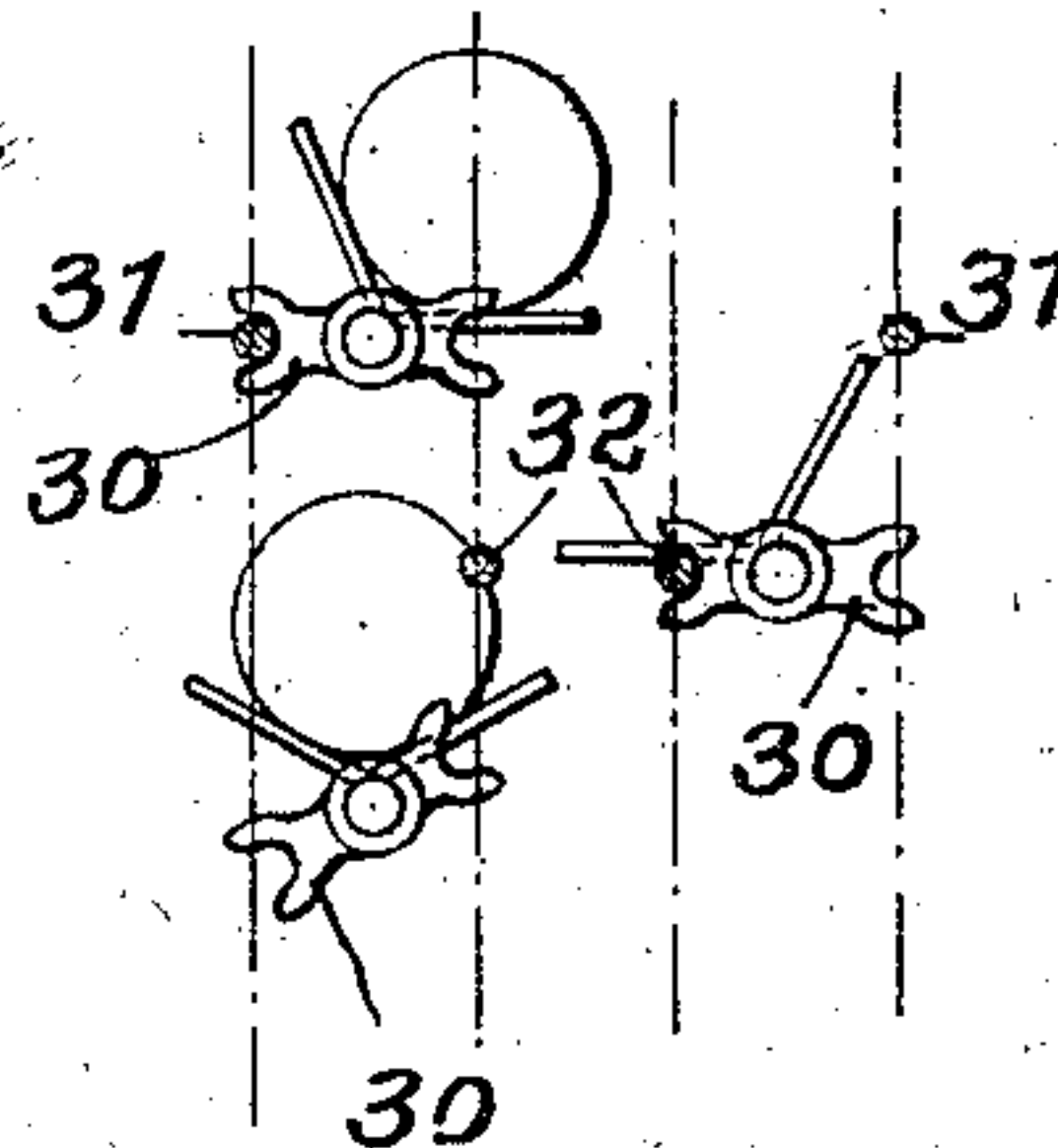


FIG. 4.



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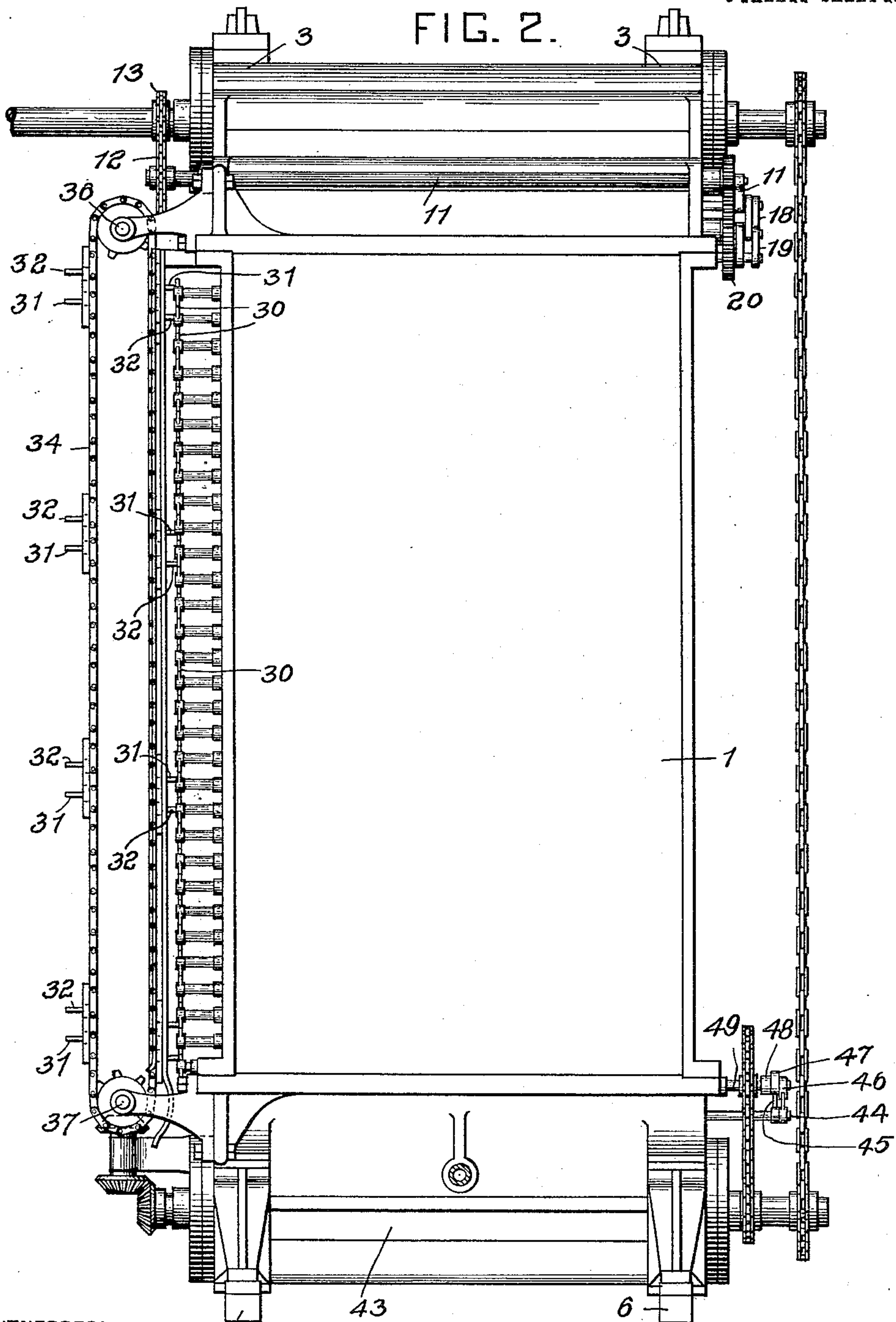
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4 SHEETS-SHEET 2.



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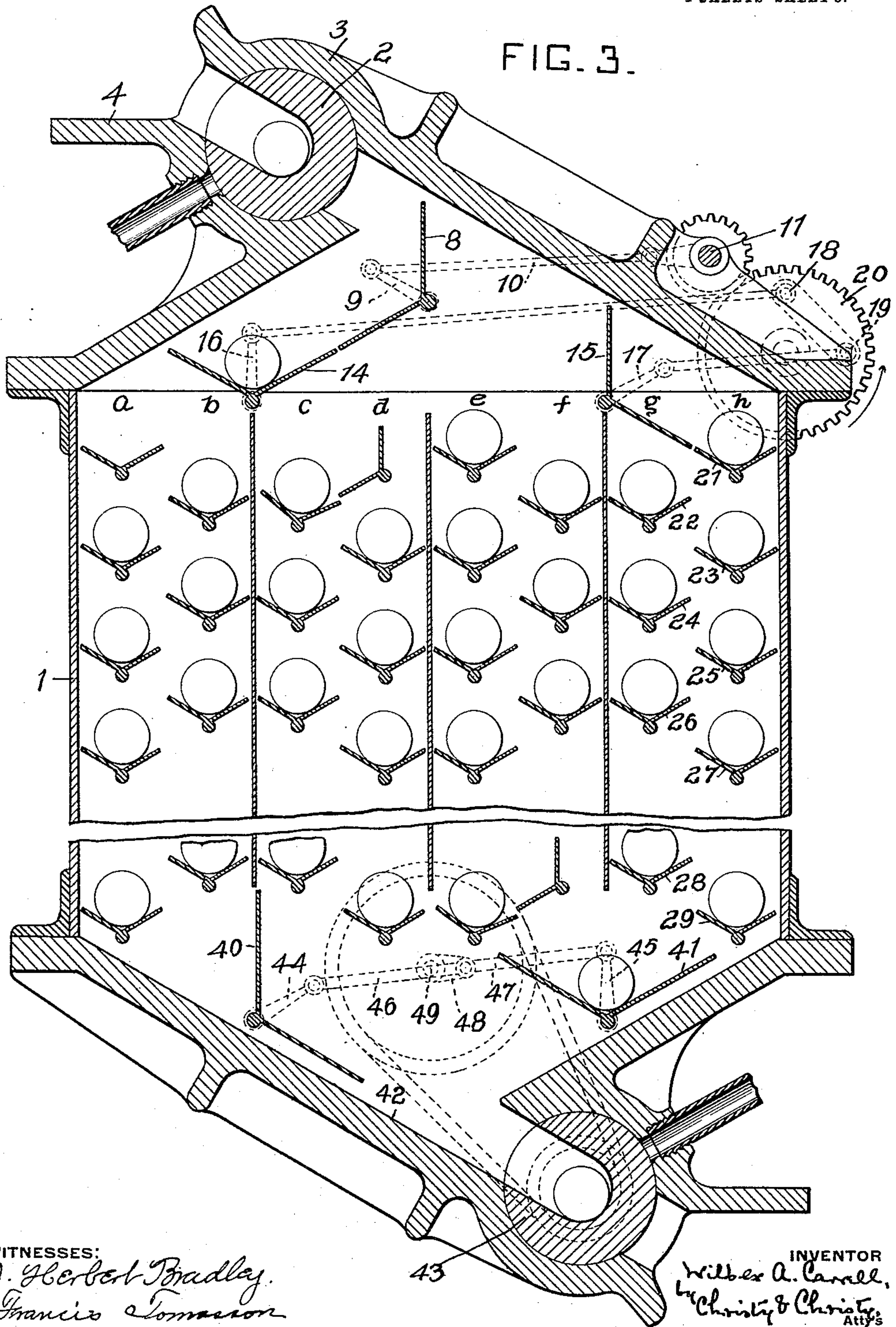


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4 SHEETS—SHEET 3.

FIG. 3.



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FIG. 5.

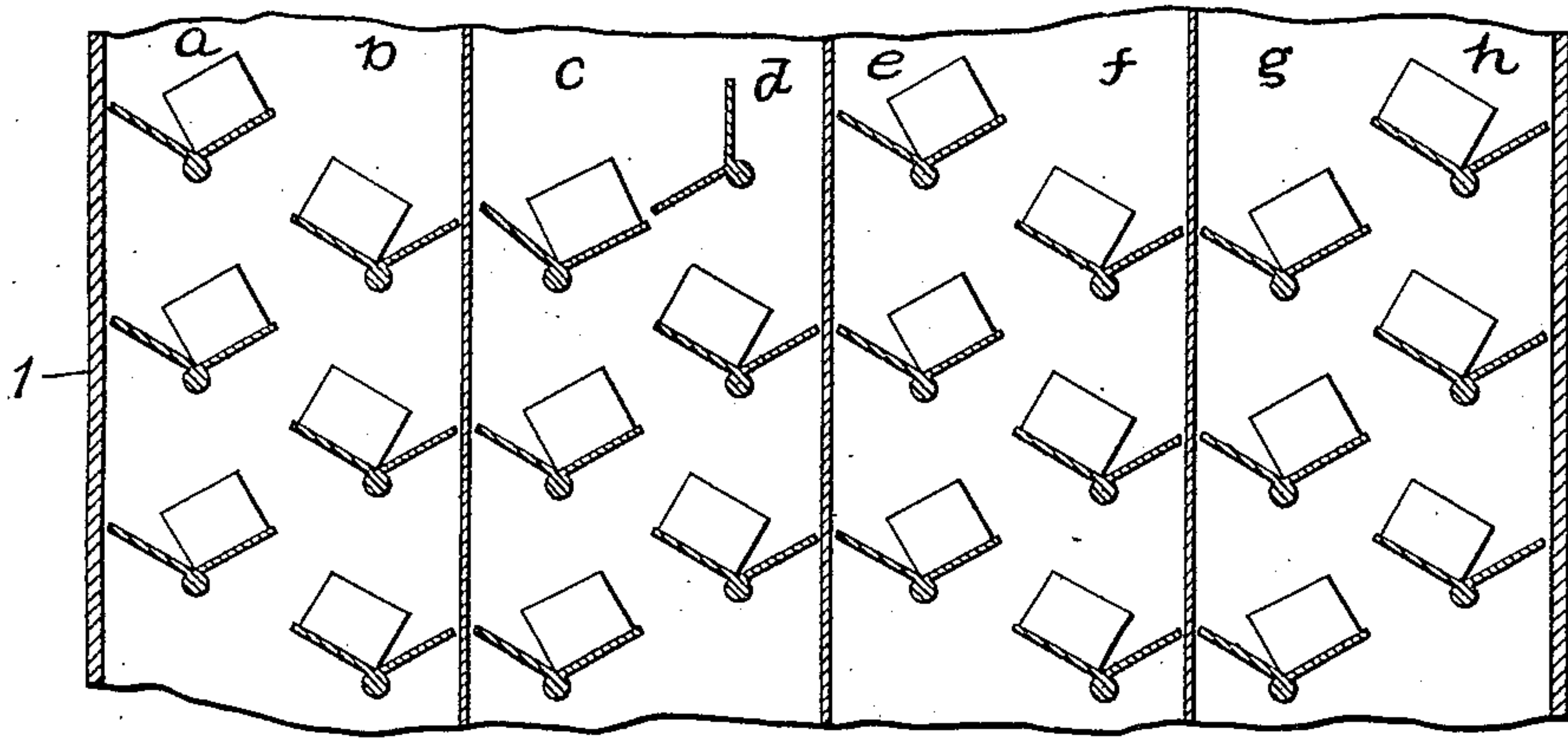
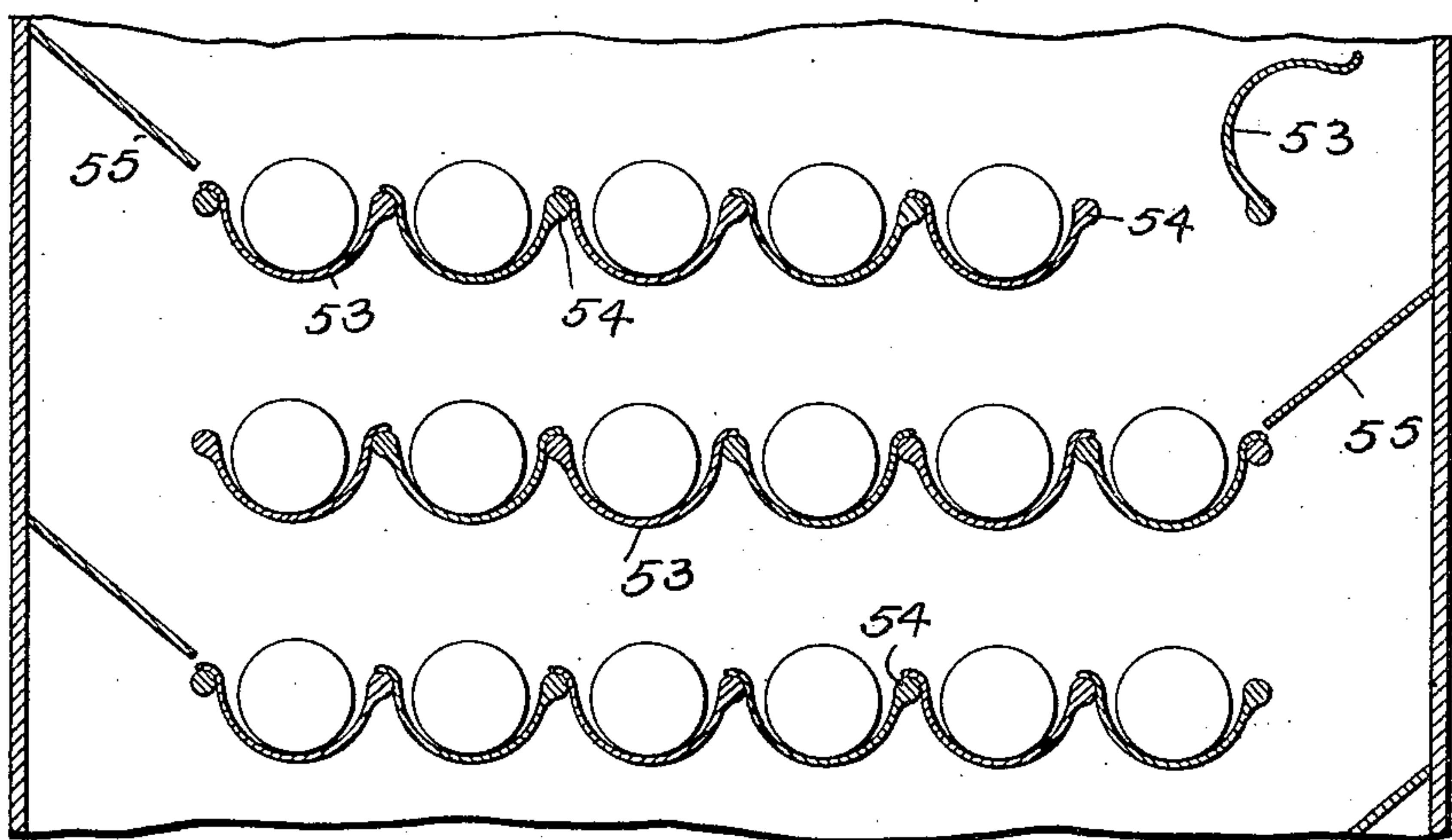


FIG. 6.



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# UNITED STATES PATENT OFFICE.

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## STERILIZING CANNED ARTICLES.

999,007.

Specification of Letters Patent.

Patented July 25, 1911.

Application filed February 8, 1908. Serial No. 414,941.

*To all whom it may concern:*

Be it known that I, WILBER A. CARRELL, residing at Bellevue, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Sterilizing Canned Articles, of which improvements the following is a specification.

The invention described herein relates to certain improvements in sterilizing canned goods, etc.

In the sterilization of canned goods it is necessary that the cans and contents be subjected to a comparatively high temperature for a considerable time, and it is also equally necessary that the entire contents should reach this high temperature. Where the cans are stationary while being subjected to treatment the permeation of the heat to the center of the contents is slow, uncertain and irregular. It has been attempted to overcome these difficulties by rotating the can and contents while subjected to the heat, but in this method as practiced the rotation of the cans is slow and continuous and in the same direction, consequently there will be comparatively small movement between the particles of the can contents, so that this method only partially overcomes the difficulties above stated.

In the practice of my invention provision is made for the rotation of the cans first in one direction and then in the other, the change in direction being made quick, and also by preference, for imparting a sudden shock or jar at intervals to the can. In this way a constant agitation and stirring up of the contents is effected and the distribution of the heat throughout the entire contents will be rapid and uniform.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification Figure 1 is a front elevation of a form of sterilizing apparatus adapted to the practice of my invention. Fig. 2 is a side elevation of the same; Fig. 3 is a sectional elevation on an enlarged scale of the apparatus showing the construction of the can-shifting parts and the movement of the cans through the sterilizer; Fig. 4 is a detail view of two troughs in delivering and receiving positions; Fig. 5 shows

the operation of the construction in Figs. 1, 2 and 3 on rectangular cans, and Fig. 6 is a sectional view illustrating a further modification of my improvement.

In the practice of my invention I employ a shell or casing 1 having suitable steam inlet and outlet pipes, through which the cans are passed, being subjected during their passage to rotary movements and also to shocks or jars. To feed the cans into the apparatus I employ a valve or gate of any suitable construction capable of containing a number of cans arranged end to end. In the construction shown this gate consists of a cylinder block 2 provided with a longitudinal groove extending a portion of the length of the block and having a diameter sufficient to receive the largest cans to be treated. This block is mounted in suitable seats 3 formed in the hopper 4. This hopper is so constructed that when the block is in one position *i. e.* receiving position, a number of cans can be readily placed in the groove of the block and when the latter is turned the cans will be discharged through the hopper into the shell or case. This block forms a tight joint with the seats in the hopper and is held in position by means of blocks 5 pressed against the ends of the block by screws 6. In this construction little or no steam can escape except what is carried around by the groove in the block when rotated from discharging to receiving position. This block is rotated in any suitable manner at certain predetermined intervals, dependent upon the desired speed of movement of the cans through the shell. The hopper is so constructed that when the block is turned to discharge position the cans contained in the block, will roll down into a trough 8 which is pivotally mounted, its journals projecting through suitable stuffing boxes in the sides of the shell. One of the journals of the trough is provided with an arm 9 connected by a link 10 to a crank on a shaft 11, which is driven through a sprocket chain 12 by a toothed wheel 13 on one of the journals of the feed block 2. The sprocket wheels on the block 2 and the shaft 11 are so proportioned that the shaft 11 will rotate once for every two rotations of the feed block 2. In a complete rotation of the shaft 11 the trough 8 will be rocked from receiving position once to the right and



once to the left and back to receiving position. When rocked to the right cans contained therein will be discharged into a trough 14 and when rocked to the left cans will be discharged into a trough 15. These troughs have their journals extending through the sides of the casing and on one of the journals of each trough are secured crank arms 16 and 17 respectively which are connected to crank pins 18 and 19 operated by the gear wheel 20 intermeshing with a gear wheel on the shaft 11. These interposed gear wheels are so proportioned that the gear wheel 20 will make one revolution for every two revolutions of the shaft 11.

The feed block and the troughs 8, 14 and 15 are so operated that for every revolution of the feed trough, the trough 8 will receive a series of cans and will deliver the received cans alternately into the troughs 14 and 15. The troughs 14 and 15 in turn will feed cans to four series of troughs, the trough 15 feeding first to the series of troughs *a*, and next to the series of troughs *d*. The trough 15 will feed to a series of troughs *e* and then to series *h*. The troughs of the several series are arranged in line with each other vertically, the troughs of one series as *a* being arranged to deliver into the troughs of series *b*, and these in turn back again to *a*, so that the cans are given a zig-zag motion down through the case or shell. It will be observed by reference to Fig. 3 that two series form what might be termed pairs of series, and are separated from the next pair of series by partitions extending part way through the case or shell. The troughs 21, 22, etc., of these pairs of series have their journals projecting through the side of the case or shell and on one of the journals of each of the troughs is secured an arm 30 adapted to be shifted and thereby shift the troughs from receiving to discharge position and back to receiving position by means of pins 31 and 32 on bars 33 which have their ends connected to sprocket chains 34 passing around wheels on the shafts 36 and 37, one of said shafts being driven by suitable gearing from the feed block 2.

At the lower end of the case or shell are mounted troughs 40 and 41 constructed to receive cans from series *a*, *d*, *e* and *h* of troughs in due sequence. After each delivery into them of cans from one series of troughs *a*, *d*, etc., the troughs 40, 41 are tipped so as to discharge the received cans upon an inclined surface 42, down which they will roll into a feed block 43 similar in construction and arrangement to the block 2 and preferably driven therefrom in proper sequence, *i. e.* to receive cans from the inclined surface 42 at the time cans are being charged into the block 2, and to be turned to discharge the cans from the casing at the same time that the block 2 is turned to feed

cans into the trough 8. The troughs 40, 41 have their journals projecting through suitable stuffing boxes in the side of the casing and are provided with cranks 44 and 45 connected by a pitman 46 and 47 to a crank 48 on the shaft 49 which is driven through suitable means as by a sprocket chain from the journal of the block 43.

It will be observed that as cans are discharged from one trough to another they are rotated and on the next movement imparted to the cans the troughs containing them are so tipped that the direction of rotation of the cans will be reversed. In other words as cans move from one trough to the next, they are rotated in one direction and when moved from this second trough to the third, they are rotated in the opposite direction. As will be readily understood cans will commence to roll as soon as the side of the trough passes below a horizontal plane. At this time the trough, which is to receive the cans is being restored to receiving position, but has not attained such position so that cans in passing from one trough to the next will drop through a short distance and thereby be given a shock or jar.

It is characteristic of my improved construction that only one trough will be vacant or unoccupied by a can in each pair of series of troughs at a time. In other words in the construction shown, where there are four pairs of series only four troughs will be unoccupied so that the sterilizing apparatus will be working at a maximum capacity.

As shown in Fig. 5, cans rectangular in cross section can be passed through the machine and also circular cans can be caused to turn end over end in passing from one trough to another.

In Fig. 6 is shown a construction in which the cans are moved horizontally from one trough to another, adjacent troughs being arranged in such relation to each other that when one trough is tipped the can is caused to turn and drop into the next trough. A desirable construction consists in securing one edge of each trough 53 to a shaft 54, projecting through stuffing boxes on the sides of the case or shell similar to the journals of the troughs shown in Figs. 1, 2 and 3. Arms similar to the arms 30 are secured on the shafts 54 and the troughs are tipped by means of pins on movable bars as shown in Fig. 1 or in any other suitable manner. It is preferred that the free edge of each trough should be supported by the shaft 54 of the preceding trough in such manner as not to interfere with the turning of the latter. It will be understood that a horizontal line of troughs might be arranged in a long case or shell in which case the cans would always turn in the same direction while being treated. It is preferred however to ar-



range the troughs in a plurality of horizontal rows in different horizontal planes, and to provide for the delivery of the cans from one row into the next row below. To this  
 5 end an inclined plate 55 is arranged to receive the cans from the last trough of one row and direct them into the first trough of the next row. As this second row is arranged  
 10 below the first row, the cans when moving down the plate and along the second row, will turn in the opposite direction from that imparted to them in the first row. It is also preferred that the inclined plates should  
 15 have such positions relative to the last troughs of each row that the cans will drop onto the plates with sufficient force to jar and agitate the contents.

I claim herein as my invention:

1. In an apparatus for sterilizing canned  
 20 goods the combination of two or more parallel series of can supports, the supports of each series being arranged in or approximately in line vertically and the supports of one series alternating vertically with those  
 25 of the other series and arranged in such relation as to receive cans from the other series and means for moving the cans from the supports.

2. In an apparatus for sterilizing canned  
 30 goods the combination of two or more series of pivotally mounted troughs or can supports, the troughs or supports of each series being arranged in or approximately in line vertically and the troughs of one series alternating vertically with those of adjacent  
 35 series and means for tipping the troughs or supports of one series toward those of the adjacent series.

3. In an apparatus for sterilizing canned  
 40 goods the combination of two or more series of pivotally mounted troughs or can supports, the troughs or supports of each series being arranged to enter approximately in line vertically and the troughs or  
 45 supports of one series alternating with those of the adjacent series, means for tipping the trough or support of one series and then the next lower trough of the adjacent series.

4. In an apparatus for sterilizing canned  
 50 goods the combination of a distributing trough or can support, means for tipping such support alternately in opposite directions to discharge positions, two pairs of rows of troughs or can supports, the can supports  
 55 of one row alternating with those of the other row of each pair and arranged to receive cans from an upper trough, the upper trough of each pair being arranged to receive cans from the distributing trough and  
 60 means for tipping the troughs of each row toward those of the other row of the pair.

5. In an apparatus for sterilizing canned goods, the combination of a plurality of  
 65 troughs arranged in such relation to one another that each receives cans discharged

from the preceding trough and means for tipping said troughs successively.

6. In an apparatus for sterilizing canned goods the combination of a sterilizing chamber through which the canned goods are  
 70 moved by gravity and a pair of opposed groups of pivotally supported devices forming between them a passageway for the cans, the devices of each group arranged approximately in line vertically and the devices of  
 75 one group alternating vertically with those of the other group whereby the cans are moved alternately from the devices of one group to those of the other group, said devices operating to rotate said cans upon  
 80 their axes, to subject them to a series of shocks and to arrest their motion at intervals during their passage through said chamber.

7. In an apparatus for sterilizing canned  
 85 goods the combination of a sterilizing chamber through which the canned goods are moved by gravity, a series of pairs of opposed groups of pivotally supported devices the groups of each pair forming between  
 90 them a passageway for the cans, and the devices of each group arranged approximately in line vertically and those of one group alternating vertically with those of the other group, whereby the cans are moved alter-  
 95 nately from the devices of one group to those of the other group of each pair, said devices operating to rotate said cans upon their axes, to subject them to a series of shocks and to arrest their motion at inter-  
 100 vals during their passage through said chamber and means for distributing the cans to the several pairs of groups.

8. In an apparatus for sterilizing canned  
 105 goods the combination of a sterilizing chamber through which the canned goods are moved by gravity, a plurality of pivotally supported devices arranged in such relation to one another that each receives cans dis-  
 110 charged from the preceding device and means for tipping said devices successively.

9. In a processing machine, in combination, a retort through which packages may move in a plurality of paths; means for ad-  
 115 mitting packages to said retort; and means within the retort for distributing the entering packages to various paths of movement.

10. In a processing machine, in combination, a retort through which packages may move in a plurality of paths; means within  
 120 the retort for forming a plurality of paths for the packages; a rotary inlet valve for admitting packages to said retort; a receptacle arranged to receive packages from said valve; and means for reciprocating said re-  
 125 ceptacle and emptying the contents thereof into said path-forming means.

11. In a processing machine, in combination, a retort; means in said retort for caus-  
 130 ing packages to travel in a plurality of



paths; package-admitting means; a device  
having a package-receiving compartment  
therein; and means for reciprocating said  
device into and out of receiving position  
5 with relation to said package-admitting  
means and into and out of discharging po-  
sition with relation to said paths.

In testimony whereof, I have hereunto set  
my hand.

WILBER A. CARRELL.

Witnesses:

F. J. TOMASSON,  
CHARLES BARNETT.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,  
Washington, D. C."

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