June 20, 1950 G. DAWSON, JR 2,512,199

CAN AND DRUM FILLING MACHINE

Filed Jan. 25, 1947 6 Sheets-Sheet 1

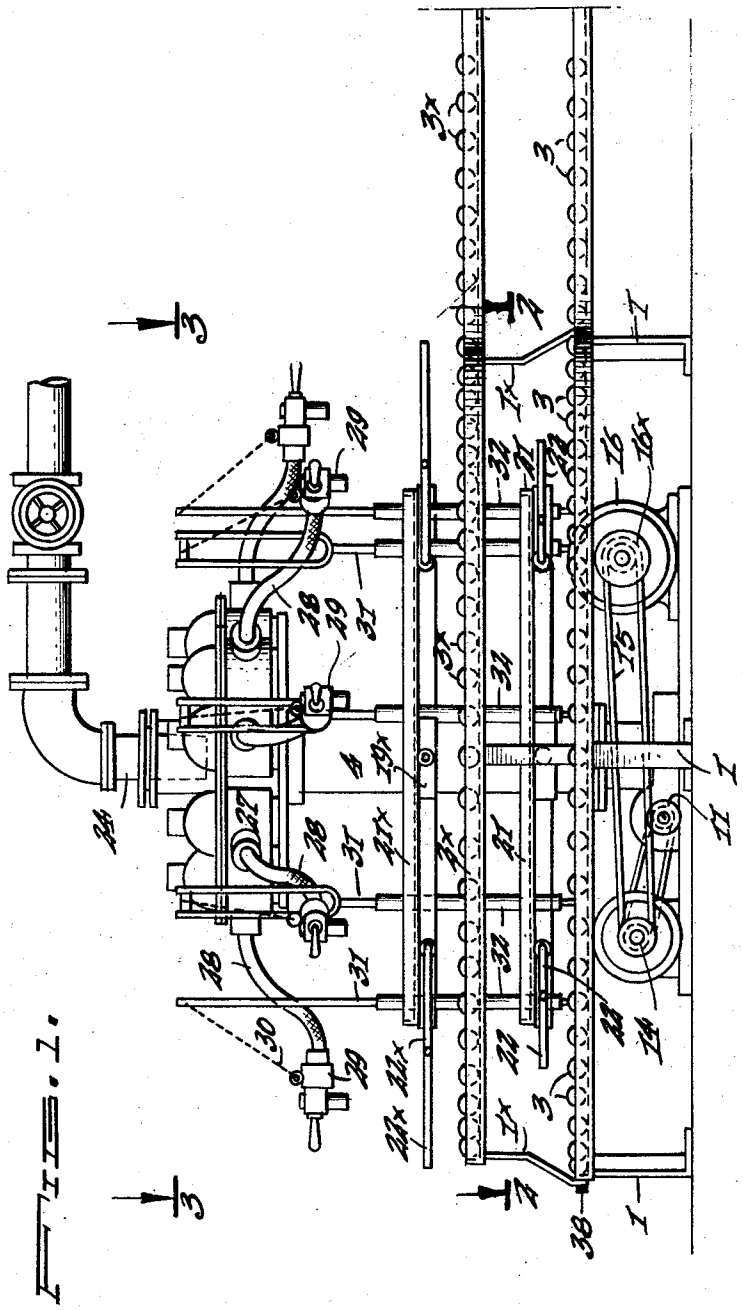


Fig. 1.

INVENTOR.
George Dawson, Jr.
BY W. Lee Helms
ATTORNEY.

June 20, 1950 G. DAWSON, JR 2,512,199

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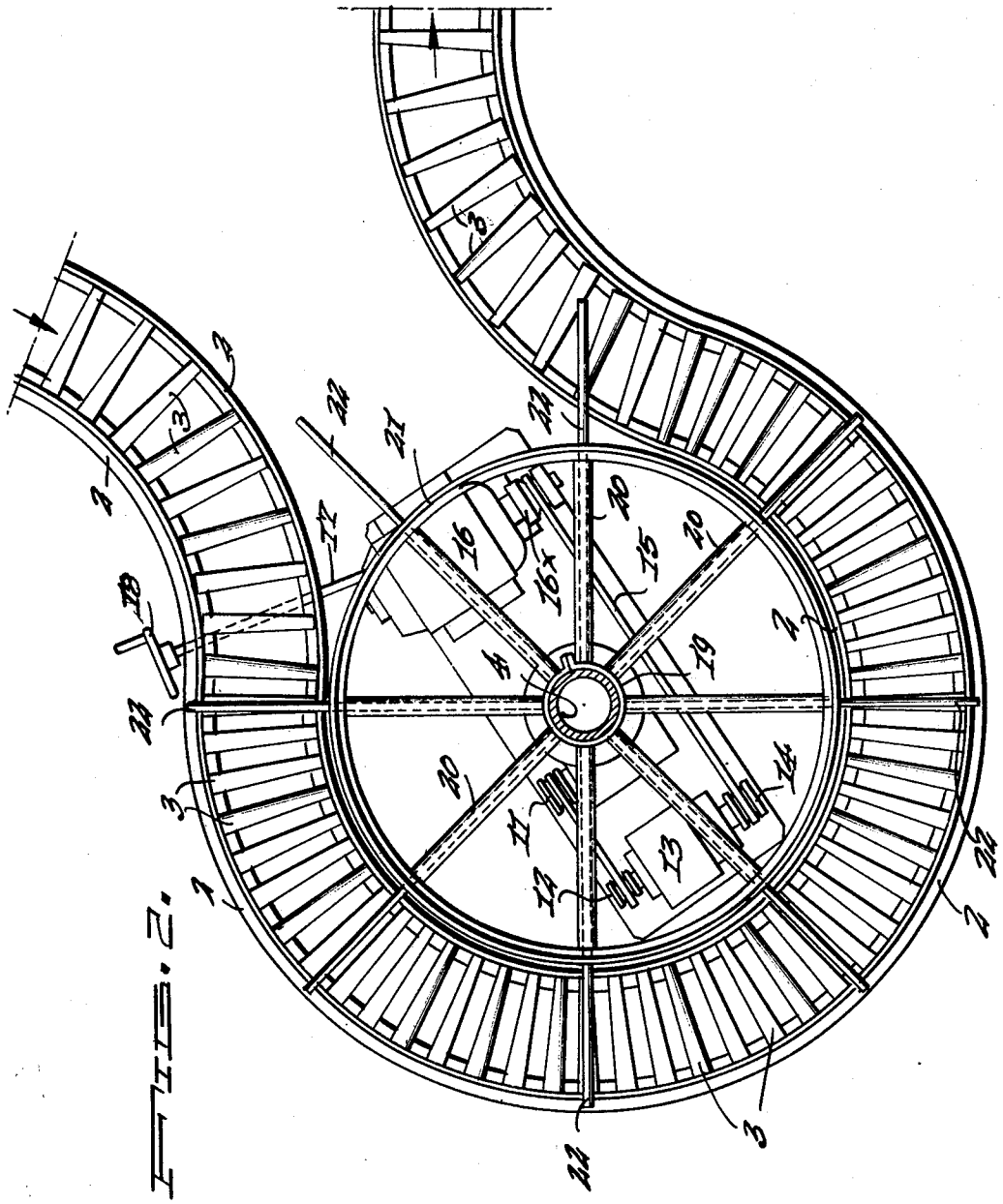


FIG. 2.

INVENTOR.
George Dawson, Jr.
BY W. Lee Helms
ATTORNEY.

June 20, 1950 G. DAWSON, JR 2,512,199

CAN AND DRUM FILLING MACHINE

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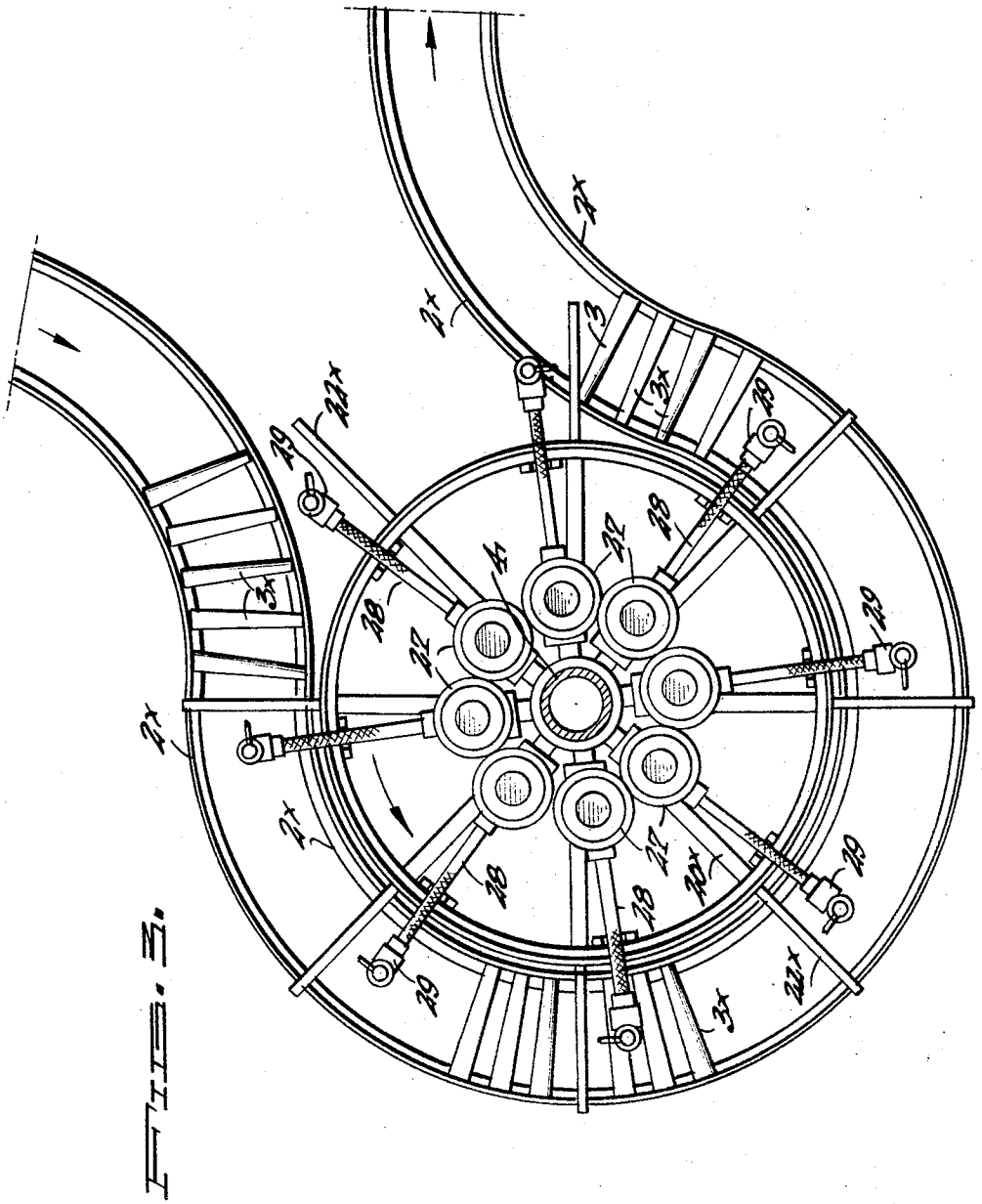


FIG. 3.

INVENTOR.
George Dawson, Jr.
BY W. Lee Helms
ATTORNEY.

June 20, 1950 G. DAWSON, JR 2,512,199

CAN AND DRUM FILLING MACHINE

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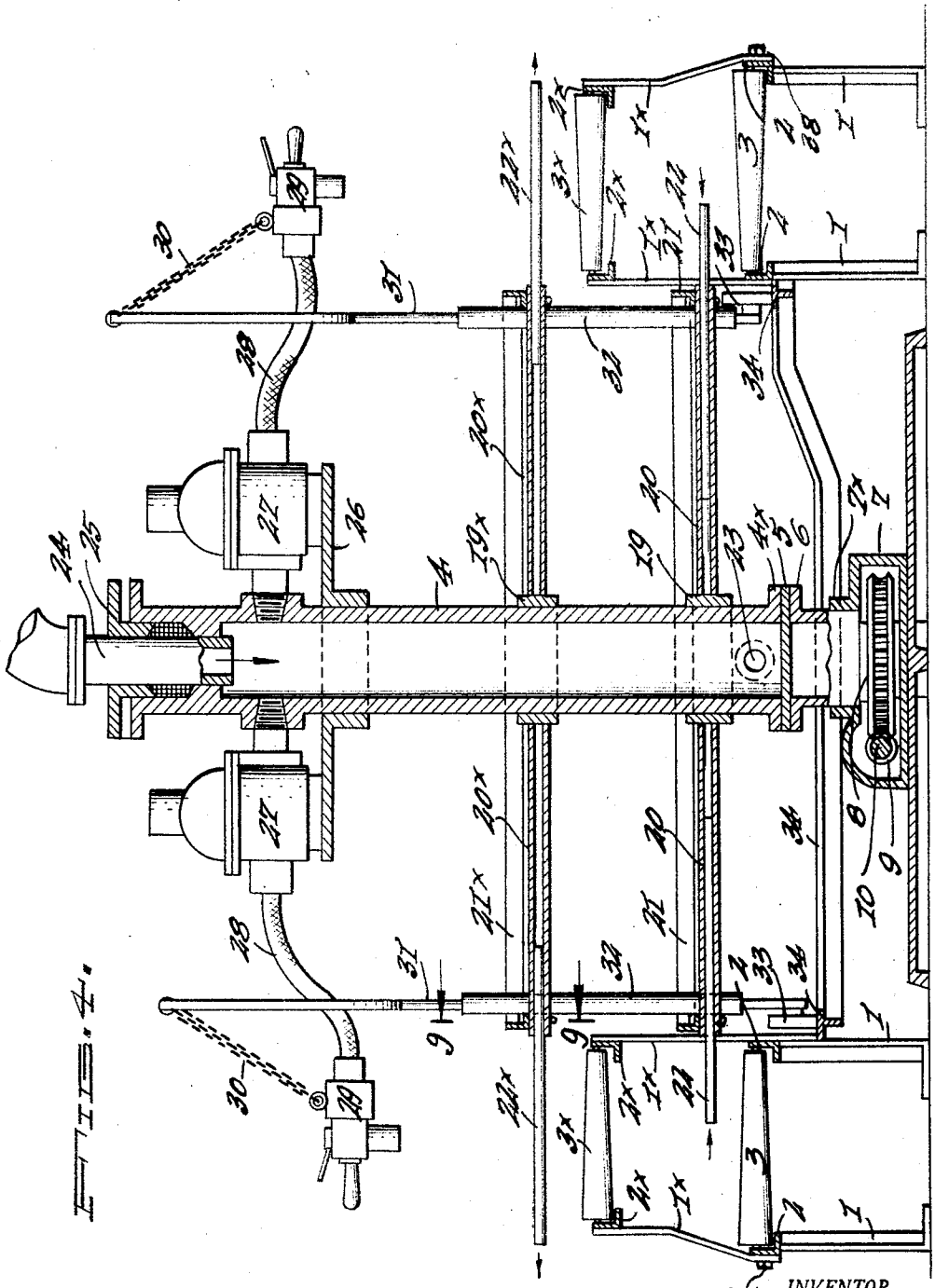


FIG. 4.

INVENTOR.

BY George Dawson, Jr.

H. Lee Helms

ATTORNEY.

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CAN AND DRUM FILLING MACHINE

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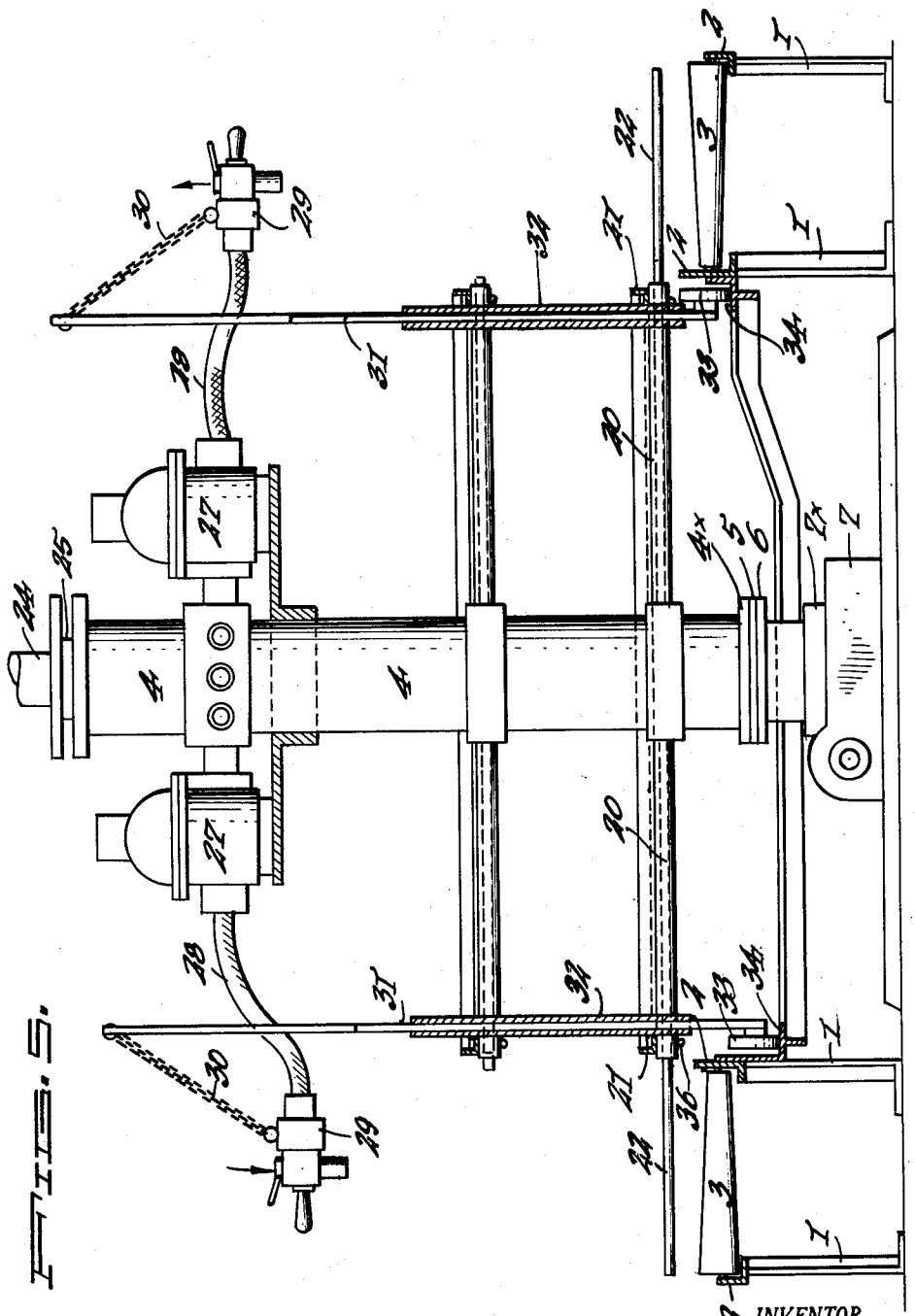


FIG. 5.

INVENTOR.
George Dawson, Jr.
BY H. Lee Helms
ATTORNEY.

June 20, 1950 G. DAWSON, JR 2,512,199

CAN AND DRUM FILLING MACHINE

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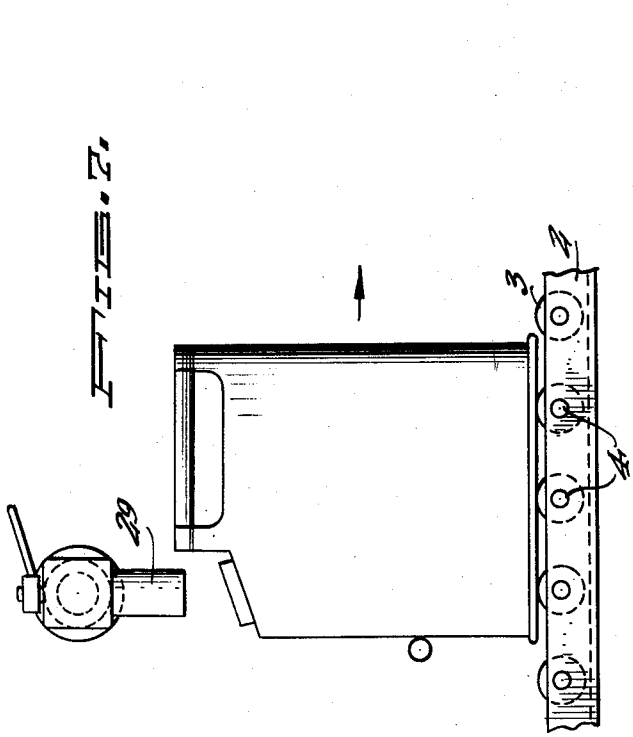


FIG. 2.

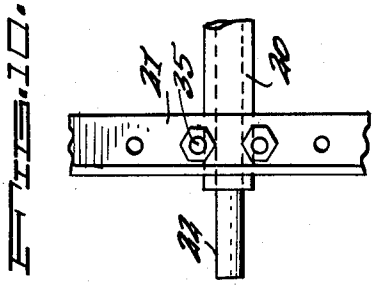


FIG. 10.

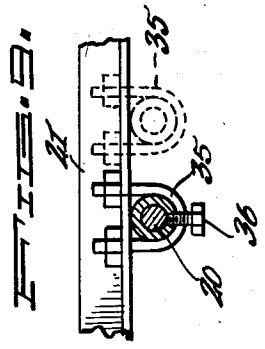


FIG. 9.

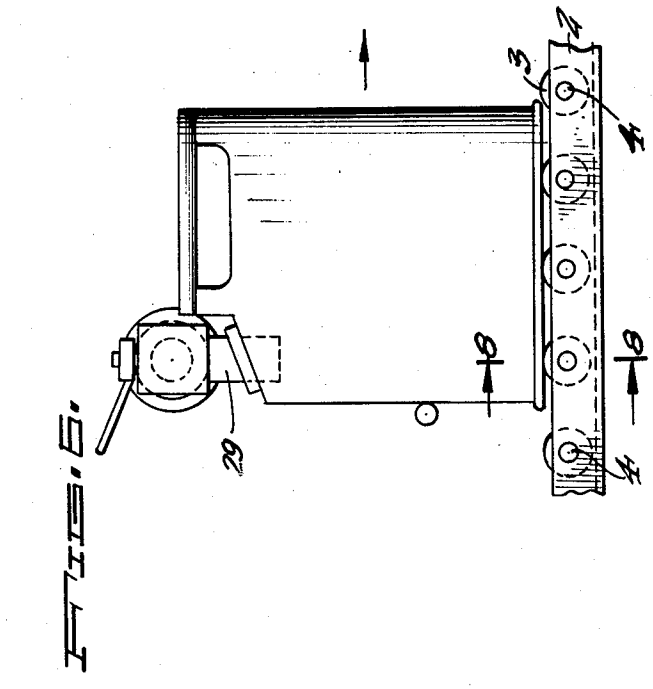


FIG. 8.

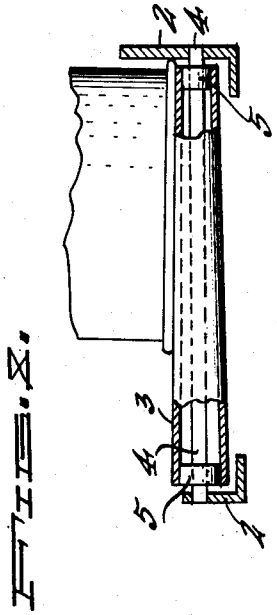


FIG. 11.

INVENTOR.
George Dawson, Jr.
BY
H. Lee Helms
ATTORNEY.

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UNITED STATES PATENT OFFICE

2,512,199

CAN AND DRUM FILLING MACHINE

George Dawson, Jr., Malvern, N. Y., assignor to Paragon Oil Company, Inc., Brooklyn, N. Y., a corporation of New York

Application January 25, 1947, Serial No. 724,281

4 Claims. (Cl. 226—96)

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The object of the present invention is to provide a machine which will receive either cans or drums, which will feed said containers continuously in a circular path with each container brought into registration with one of a plurality of filling nozzles, the latter communicating with metering devices of a known type for filling the containers with a measured quantity of fluid. As each container is brought to the beginning of the circular path an appropriate filling nozzle automatically descends into the container, this being done with respect to each of a succession of containers, so that a plurality undergo filling until they reach the end of the circular path. At this point the nozzles are retracted from the containers, in succession, and the containers move away for packing or direct shipment. A characteristic of the invention is that the spacing and registration of the containers in the circular path is effected by the means which moves them, such means being pusher arms. There are two sets of pusher arms, each arm of a set being telescopic, one set being for drums or other large containers and a second and uppermost set being for cans or other relatively small containers. Each set of arms lies above its own support for the containers. The supports are trackways in the form of elongated rollers, inwardly tapered, the entire upper trackway being removable in order that the lower trackway alone may function with respect to drums or large containers.

The invention will be described with reference to the accompanying drawings, in which:

Fig. 1 is a side elevation showing an embodiment of the machine;

Fig. 2 is a horizontal section on the line 2—2, Fig. 1;

Fig. 3 is a horizontal section on the line 3—3, Fig. 1;

Fig. 4 is a vertical section through the machine taken transversely of its position shown in Fig. 1;

Fig. 5 is a view similar to Fig. 4 showing the upper trackway removed and the pusher arms therefor retracted; and

Fig. 6 is a fragmentary schematic view showing the position of a can on the trackway, the end of a pusher arm in engagement with the can, and a nozzle in filling position;

Fig. 7 is a view similar to Fig. 6 with the nozzle retracted;

Fig. 8 is a view partly in section, on the line 8—8, Fig. 6, with the can partly broken away;

Fig. 9 is a detailed fragmentary view partly in section showing the strap mounting for the pusher arms; and

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Fig. 10 is a plan view of the structure shown in Fig. 9.

Referring to the drawings, I have shown at 1 a plurality of vertical standards which support angle irons 2 which pivotally carry between them a plurality of tapered rollers 3. As shown in Fig. 8 these rollers are preferably formed of tubing and an axle 4 projects at each end thereof after passing through disks 5. The angle irons 2 are bent to form a circular path partly around a rotary tubular axial member 4. At one end the assembly of two angle irons 2 forms an entrance length and the opposite end forms an exit length, as shown more particularly in Figs. 2 and 3.

The tubular standard 4 is, as shown in Fig. 4, provided with a flanged base at 4x closed by a diaphragm 5 and thence mounted upon the flanged upper end of a tubular depending extension 6 which enters the bearing boss 7x of a gear box 7. The reduced lower end of member 6 of the tubular standard 4 carries a worm wheel 8 engaged by a worm 9 (Fig. 4). This worm is on a shaft 10 which projects from one end of the gear box, and the exposed end thereof carries a pulley 11 (Fig. 2) leading to a pulley 12 carried by a shaft driven by suitable reduction gearing (not shown) in a gear box 13, the reduction gearing being driven through a pulley 14 rotated by a belt 15 leading to the pulley 15x of the motor 16. This motor may be a standard variable speed motor, and for convenience in controlling the speeds I have provided a speed reducing shaft 17 operated by a hand wheel 18 from a point exterior the trackway.

For moving drums or other relatively large containers on the rollers 3 of the lower trackway, there is mounted on the tubular standard 4 a sleeve 19 from which projects a plurality of tubular carriers 20 connected at their ends by a ring 21. Within each carrier 20 is a pusher rod 22, the rod and tubular carrier in each case providing a telescopic container-feeding arrangement.

Above the diaphragm 5 tubular standard 4 is provided with a drain plug 23, and at its top it receives a filler pipe 24 in a packing gland generally indicated at 25, Fig. 4.

Supported by a table 26 on tubular standard 4 are a plurality of metering valves 27 which may be of a standard type well known as operative to be set for the flow of a predetermined volume of fluid in a pre-set time and then shut off. The construction of such a valve forms no part of the present invention, and hence it is not specifically illustrated.

Leading from each metering valve 27 is a flex-

ible conduit 28 at the end of which is a nozzle 29, each nozzle being supported by a chain or other flexible holder 30, leading downward from an endwise movable rod 31 mounted in a bracket sleeve 32. Carried by the lower end of each rod 31, is a roller 33 which rides upon a cam-track 34 supported by standard 1. At both the entrance and exit portions of the cam-track it has a high section. That is to say, when the containers reach such position that they are initially and successively engaged by the pusher arms, the respective engaging pusher arms will lie immediately over the high point of the cam-track and immediately adjacent a nozzle which will be held above the can or other container. However, as the container is moved further the roller of the appropriate rod 31 moves to the lower area of the cam-track and the nozzle is dropped from the position of Fig. 6 to the position of Fig. 7 and hence into the filling opening of the container. The appropriate metering valve will be set to institute the flow of oil or other fluid at this point.

As shown in Figs. 9 and 10 the attachment of the tubular members 20 of the pusher arms to the ring 21 may be by means of straps 35, and adjacent the straps, each tubular member 20 may be provided with a set screw 36 for holding the appropriate rod 22 in either projected or retracted position. Also, it will be noted from Fig. 1 that the nozzle holding rods 21 are preferably formed with yoke ends so as to embrace and provide guiding surfaces for the flexible conduits 28. When small cans or other containers are to be filled a detachable trackway consisting of angle irons 2x, rollers 3x and supporting arms 1x is employed. The lower ends of the supporting arms 1x may be forked to receive the bolts 38 by which the upper trackway may be detachably held upon the angle irons 2 of the lower trackway, although the inner supporting arms 1x may, as shown in Fig. 4, rest directly upon the cam-track 34.

For cooperation with the upper trackway there is provided an upper pusher assembly consisting of the hollow tubular members 20x carried at their inner ends by a sleeve or collar 19x on standard 4 and carried at their outer ends by a ring 21x. In the embodiment shown the ring 21x is but a spacer member for the pusher arms, but it may be arranged to afford a positive support therefor. Each hollow member 20x telescopically receives a pusher arm 20x.

In the operation of the machine with respect to large containers such as oil drums, the drums are successively moved forward on the rollers 3, Fig. 2, at the entrance end of the trackway as shown by the arrow on the upper portion of Fig. 2. Each container will be met by one of the pusher arms 22 which, as shown in Fig. 3, lies adjacent one of the nozzles 29. In the filling of the large containers the upper trackway with its rollers 3x will have been removed and the pusher arms 22x will have been retracted. The said large containers will be received within the circular path of the trackway while the appropriate nozzles are held by the high point of the cam-track. In a short, continued, movement of each container a nozzle will be dropped into the filler opening so that the pre-set metering valves may begin the filling operation. The filling proceeds in the slow movement of the appropriate containers until they reach the exit end of the trackway whereupon the high point of the cam-track is utilized to raise the nozzles in succession and the containers are discharged.

It will be understood that various modifications may be made in the form and arrangement of the elements constituting the embodiment illustrated in the drawings without departing from the spirit of the invention.

Having described my invenion, what I claim and desire to secure by Letters Patent is as follows:

1. A can and drum-filling machine, consisting of a tubular standard and means for rotating the same, a platform embracing and moving with the standard, a plurality of metering valves carried by the platform, a manifold provided by the standard and communicating with the metering valves, said manifold being adapted for communication with a fluid supply, a flexible conduit leading from each metering valve, each conduit having a discharge end, means applied to each conduit and comprising a push rod for raising and lowering the conduit, vertical sleeve members connected to the tubular standard and rotating therewith, the sleeve members receiving said push rods, propelling rods extending laterally from the tubular standard and rotating therewith, a trackway for cans and drums, said trackway at least partially surrounding the tubular standard and below said propelling rods, and a second trackway having elevated and relatively depressed sections with which the push rods successively engage.

2. A can and drum-filling machine constructed in accordance with claim 1 in which the tubular standard is closed at its base section and is formed with upper lateral feed ducts leading to the metering valves, the interior of the standard having the function of a reservoir and, with said ducts, acting as a manifold.

3. A can and drum-filling machine constructed in accordance with claim 1, in combination with a plurality of axially directed sleeves projected from the standard and receiving said propelling rods.

4. A can and drum-filling machine constructed in accordance with claim 1, in combination with a trackway supporting frame, upper and lower sets of axially directed sleeves projecting from the standard, such sleeve receiving one of said propelling rods, and means on said trackway supporting frame for mounting a second trackway intermediate the two sets of said sleeves.

GEORGE DAWSON, JR.

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