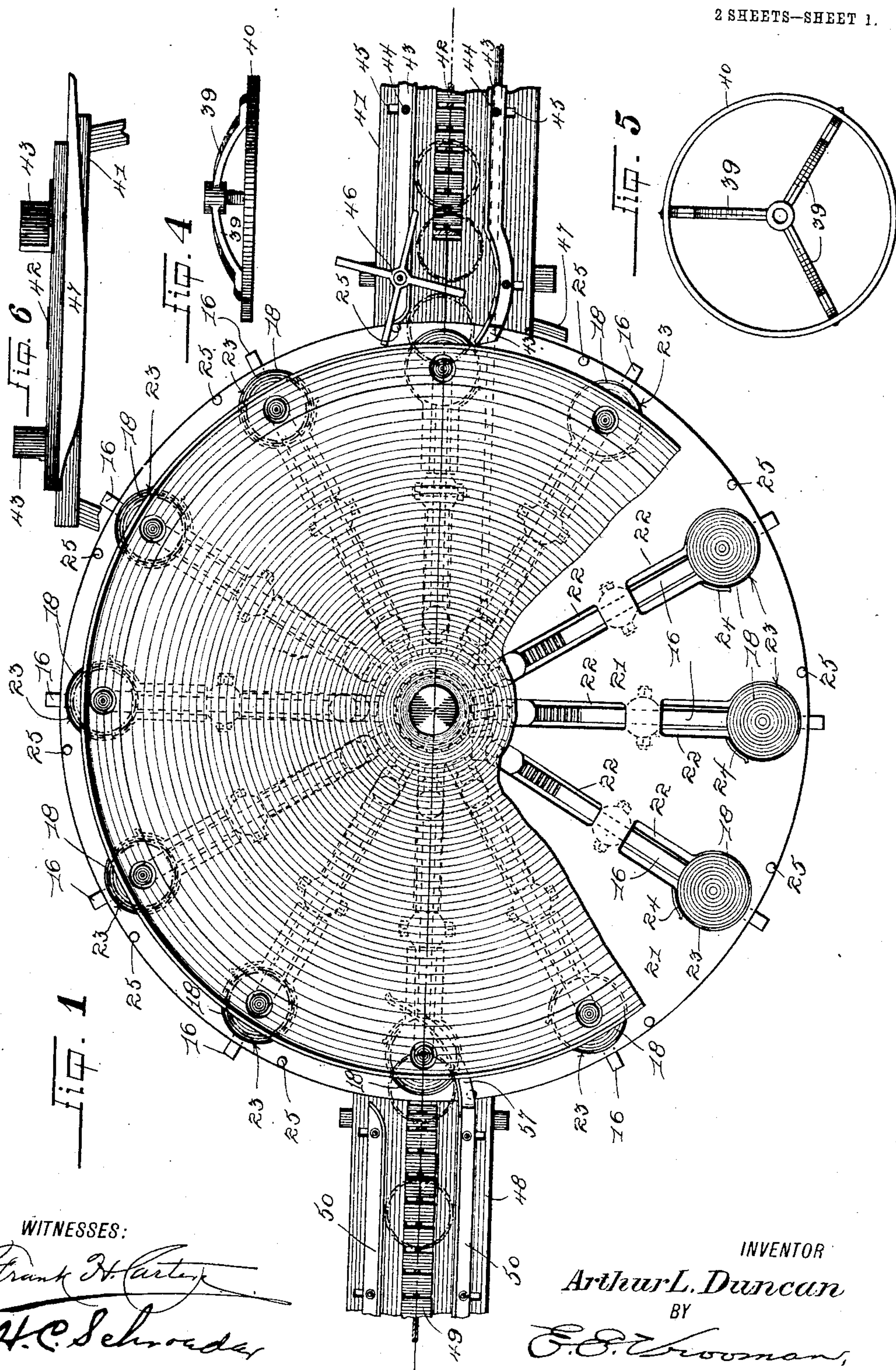


A. L. DUNCAN.
AUTOMATIC WEIGHING SCALE.
APPLICATION FILED SEPT. 16, 1909.

968,749.

Patented Aug. 30, 1910.

2 SHEETS—SHEET 1.



WITNESSES:

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Arthur L. Duncan

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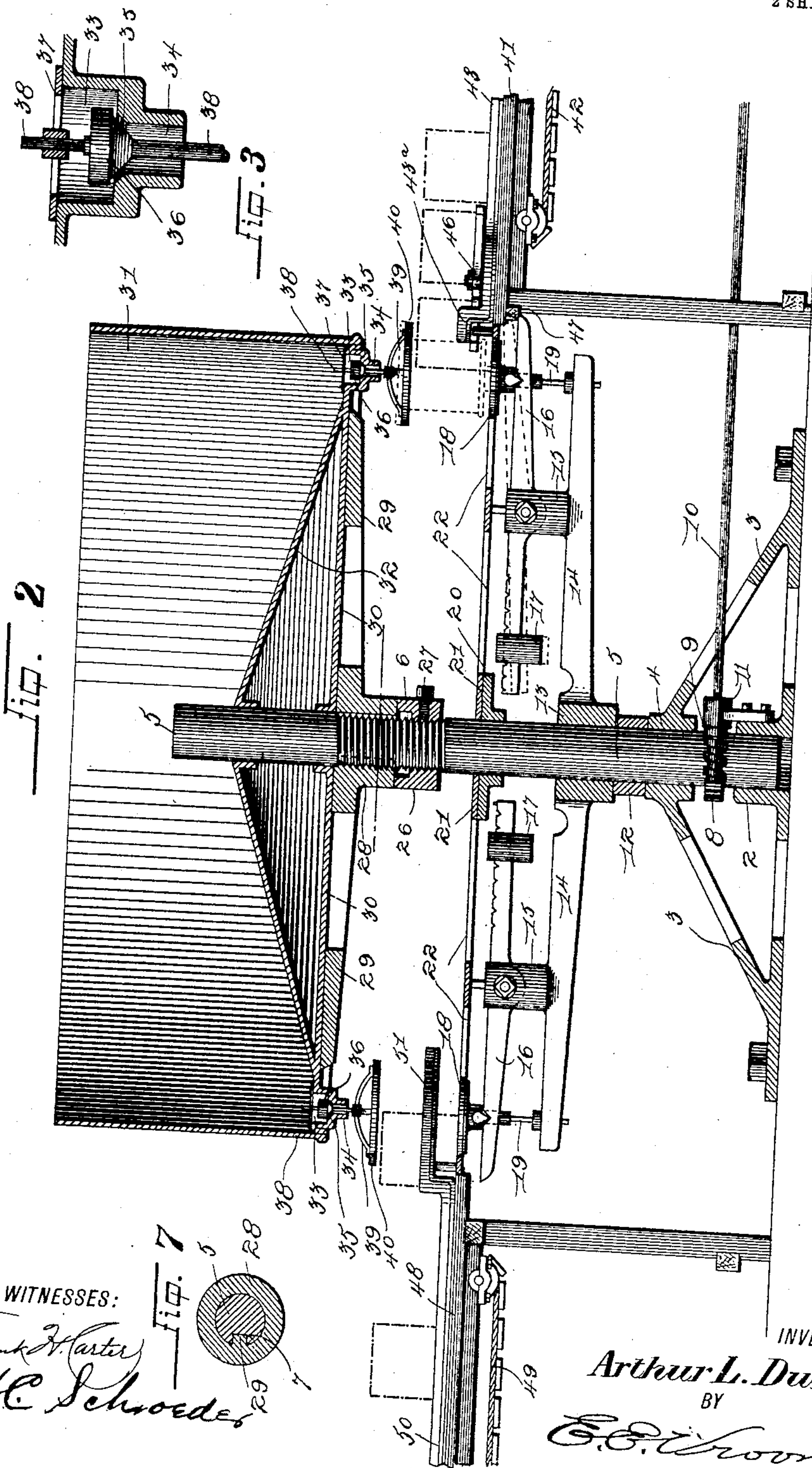


Fig. 2

Fig. 7

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ARTHUR L. DUNCAN, OF OAKLAND, CALIFORNIA.

AUTOMATIC WEIGHING-SCALE.

968,749.

Specification of Letters Patent.

Patented Aug. 30, 1910.

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To all whom it may concern:

Be it known that I, ARTHUR L. DUNCAN, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Automatic Weighing-Scales, of which the following is a specification.

This invention relates to the subject of preserving fruits, etc., in cans, and the principal object of the same is to provide mechanism which receives the cans one at a time, automatically supplies the cans with the desired amount of syrup or preserving fluid and then delivers the cans singly to conveying mechanism which conveys the cans to a point where they are sealed.

In carrying out the object of the invention generally stated above, it is contemplated employing a rotatable platform which is provided with a plurality of weighing scales; a tank arranged above said platform and provided with a plurality of discharge outlets controlled by valves, said outlets corresponding in number to the scales; a conveyor for delivering cans containing fruits or vegetables one at a time to the scales so that the cans will automatically open the valves to permit syrup or preserving fluid to flow to the cans until the scales are overbalanced, whereupon the valves will automatically close; and a discharge conveyor for removing the cans from the scales and delivering the same to a point where they are sealed.

It will be understood, of course, that in the practical application of the invention, the essential features of the same are necessarily susceptible of changes in details and structural arrangements, one preferred and simple embodiment of which is shown in the accompanying drawings wherein—

Figure 1 is a top plan view of the improved filling and weighing machine. Fig. 2 is a central vertical sectional view taken on the line 2—2, Fig. 1. Fig. 3 is an enlarged detail sectional view of one of the valve-controlled discharge outlets of the liquid tank. Fig. 4 is a view in side elevation of a can-engaging ring carried by the discharge valves. Fig. 5 is a top plan view thereof.

Fig. 6 is a fragmentary end view of the conveyor platform from which the cans are delivered to the filling and weighing machine. Fig. 7 is a detail cross-sectional view taken on the line 7—7, Fig. 2.

Referring to said drawings by numerals, 1 designates a base which is provided with an upstanding central socket 2 and also with upwardly-projecting, inwardly-inclined, radiating arms 3 which support a guide collar 4 above and in alinement with said socket 2. A vertically arranged shaft 5 is mounted in said socket 2 and supported and guided by said collar 4. The shaft 5 is provided with a threaded intermediate portion 6. Said shaft is also provided with a longitudinal key slot 7 adjacent its upper portion. The lower end portion of said shaft carries a pinion 8 which is engaged by a worm 9 carried by a power shaft 10 preferably supported by a bearing 11 projecting from the socket 2, said shaft 10 being operated by a motor or other source of power not shown. A spacing collar 12 is mounted on the shaft 5 and rests on the guide collar 4 and supports a hub 13 on said shaft, which is provided with a plurality of radiating arms 14, each provided with a pivot ear 15 in which a scale beam 16 is mounted. The inner ends of said beams are provided with the usual notches and graduations indicating pounds and fractions thereof, and are each provided with the usual weight 17. The outer ends of the beams are provided with scale platforms 18, said platforms being flat and circular, and carry a pendent guide rod 19 which passes through the radiating arms 14.

A flanged collar 20 is mounted on the shaft 5 and retains a flat annular plate 21 above the scale beams, said plate being provided with radiating slots 22 arranged over the scale beams, the slots having their outer end provided with an enlarged opening 23 which is of sufficient diameter to permit the scale platform 18 to pass through them. Each opening 23 is provided with a guard flange 24 at one side. Lugs 25 project from the outer edge of the upper surface of the plate 23, one of said lugs being in advance of and adjacent to each opening 23.

An adjusting collar 26 is mounted on the

threaded portion 6 of the shaft 5 and may be held in the desired adjusted position by means of the set screw 27. A collar 28 has a key 29 slidably fitted in the keyway or slot 7 of the shaft 5, said collar being provided with radiating arms 29^a which are fastened to the bottom 30 of a supply tank 31, said bottom 30 having the shaft 5 passing through it and also carrying a cone-shaped false bottom 32 through which said shaft 5 also passes.

The tank 31 is provided with a plurality of discharge outlets which are arranged at the outer edge of the bottom of the tank and correspond in number with and are directly above the scale platforms 18. Said outlets are preferably in the form of pendent tubes, the upper portion of which is enlarged, as indicated at 33, and the lower portion 34 relatively contracted, to provide a beveled edge annular flange 35 forming a seat for the valve 36. A slotted plate 37 is fitted over each discharge outlet, each plate being provided with a central guide collar for the upper end of the valve stems 38. Said stems project through the pendent tubes and carry radiating arms 39, the outer end of which are fastened to a holding ring 40. Preferably said arms are beveled on their upper surface.

A platform 41 is provided with a centrally located endless conveyer 42, preferably of rope and transverse slats for delivering the cans to the scale platforms, said conveyer platform being provided with guard flanges 43 for holding cans on the conveyer, the outer end of one of said flanges being raised and curved, as indicated at 43^a, to facilitate the delivery of cans. Preferably said flanges are held in adjustable relation on said platforms by means of the fastening bolts 44 and the slots 45 of the platform, so that said flanges may be relatively adjusted to accommodate cans of various sizes. A discharge wheel 46 is rotatably mounted to one side of the discharge end of said platform 41, the radiating arms of said wheel being spaced sufficiently to accommodate a can between any two of them, as is indicated in Fig. 1, one of said arms at all times projecting across the outer edge of the top surface of the plate 21 and in the path of movement of the lugs 25 so that said wheel will be rotated step-by-step by contact of said lugs with said arms. A cam strip 47 extends transversely across the under surface of the outer end of the platform 41 and is in the path of movement of the outer ends of the scale beams 16 so that contact of said ends with said strip 47 will depress the scale beams 16 to bring their platforms 18 on a level with the upper surface of the conveyer platform 41.

A second conveyer platform 48 is arranged

on the side of the machine opposite the conveyer platform 41, said conveyer platform 48 being provided with a rope and slat endless conveyer 49 and also with relatively adjustable guard flanges 50, one of which has its outer end raised to clear the lugs 25 of the plate 21 and is curved to form a hook 51 which projects across the upper surface of said plate to remove cans therefrom, as indicated in Figs. 1 and 2.

The operation of the machine is as follows:—The scales are set for the desired weight, after which the machine is rotated by means of the gear connection between shafts 5 and 10. The cans which are to receive the syrup or preserving liquid from the tank 30 are brought to the star wheel 46 one at a time by the conveyer 42, and are removed from said conveyer by the rotation of said star wheel and delivered onto the scale platforms 18. The cans having only been partly filled with vegetables or fruits will not overbalance the weight 17 of the scales, hence, the cans will contact with the holding ring 40 of the valve stem 38 and raise the valve 36 from its seat, thereby permitting the liquid to flow through the discharge outlets until sufficient liquid has been discharged into the cans to overbalance the said weights of the scales, whereupon the platforms 18 will be depressed so that the cans will not be in contact with the holding rings 40, and thereby permit the valve 36 to gravitate to its seat. As the filled cans reach the opposite side of the machine, the hook-shaped end 51 of the guard flange 50 pulls the same from the platforms and guides them to the conveyer 49 which delivers the cans at the place where they are to be sealed.

It will be seen from the foregoing that the operation of the machine is entirely automatic in its feeding to the machine, the filling of the cans, and the weighing of the same, and also in its discharge of the filled cans.

What I claim as my invention is:—

1. A machine of the character described comprising a shaft, a plurality of supporting arms radiating therefrom, a scale beam mounted on each support and provided with a platform on its outer end, a supply tank carried by said shaft and provided with a plurality of discharge outlets one of which is arranged directly over each beam platform, means for feeding cans to said platforms, a valve for each outlet and adapted to be opened by contact of an unfilled can therewith and to automatically close when said cans are filled, and means for removing said cans from said platforms.

2. In a machine of the character described, the combination with a plurality of rotatable weighing scales, a supply tank rotatable therewith, means for supplying cans one at

a time to said scales, valves carried by said tank for automatically delivering liquid to said cans, said valves being automatically closed when the cans are filled, and a conveyer platform provided with a hook-shaped projection adapted to remove cans from said scales.

3. A machine of the character described comprising a vertically arranged shaft, a plurality of radiating arms carried thereby, a scale beam mounted on each arm, a platform carried by the outer end of each beam, a plate carried by said shaft and provided with openings through which said platforms are removable, a supply tank mounted on said shaft and having a discharge outlet arranged above each platform, means for delivering cans to said platforms, valves controlling said discharge outlets, and adapted to be actuated by unfilled cans to deliver liquid to said cans, and means for removing cans from said platforms.

4. A machine of the character described comprising a shaft, weighing scales radiating therefrom, a plate arranged above said scales provided with spaced apart lugs, a supply tank for delivering material to cans on said scales, a conveyer platform, a discharge wheel carried thereby and actuated by said lugs to deliver cans one at a time to said scales, and means for removing cans from said scales.

5. A machine of the character described comprising a shaft, supporting arms radiating therefrom, a scale beam mounted on each arm and carrying a platform at its outer end, a plate carried by said shaft above said scales and provided with openings through which said platforms are movable, lugs carried by said plate and arranged in advance of each opening, a conveyer platform, a star wheel thereon actuated by said lugs for delivering a can to said platforms, a tank for supplying liquid to said cans, and means for removing cans from said platforms.

6. A machine of the character described comprising a rotatable shaft, a plurality of radiating supports projecting therefrom, a scale beam carried by each support, a platform carried by each beam, a plate carried by said shaft and provided with openings through which said platforms normally project, a conveyer platform provided with a cam strip for depressing said scale beams, means on said conveyer platform for delivering cans to said beam platforms, a supply tank carried by said shaft for automatically delivering a predetermined amount of material to said cans, and means for removing the cans from said platforms after receiving the material from said tank.

7. A machine of the character described comprising a shaft, a plurality of supports carried thereby, a weighing scale on each

support, means for delivering cans to said scales, a supply tank provided with valve controlled discharge outlets for automatically delivering a predetermined amount of material to said cans, a conveyer platform, and a hook-shaped extension carried by said platform for removing cans from said scales.

8. A machine of the character described comprising a shaft, a plurality of supporting arms radiating therefrom, a scale beam pivotally mounted on each arm, a platform carried by each beam, a plate on said shaft above said beams, and provided with openings through which said platforms normally project, a conveyer platform for delivering cans to said beam platforms, means carried by said conveyer platform for depressing the scale beams while their platforms are receiving a can, a supply tank carried by said shaft and provided with discharge outlets, a gravity valve for each outlet adapted to be opened by the cans received on said beam platforms and to automatically close when the predetermined amount has been delivered to said cans, and means for automatically removing the cans from said beam platforms.

9. A machine of the character described comprising a main shaft, means for rotating the same, a supply tank carried by said shaft and provided with discharge outlets a plurality of can receiving scale beams corresponding in number and arranged beneath said outlets, said beams supported by and rotating with said shaft, means for delivering cans one at a time to said beams, a valve for each discharge outlet adapted to be actuated by an unfilled can to open said outlet and to automatically close when said outlet is filled, and means for removing the cans one at a time from said beams.

10. A machine of the character described comprising a plurality of rotating scales, means for delivering cans thereto, a supply tank for filling the cans of said scales, and a conveyer platform having a hooked-shaped extension that projects into the path of movement of said cans to remove the same from said scales and deliver them to said platform.

11. A machine of the character described comprising a rotatable shaft, a plurality of weighing scales carried thereby, a delivering platform, a discharge wheel carried thereby, means carried by said scales for rotating said wheel to remove a can from said platform and deliver the same to said scales, a supply tank for automatically filling the cans on said scales, and means for removing filled cans from said scales.

12. A machine of the character described, comprising a rotatable shaft, scales radiating therefrom, means for delivering cans to said scales, a supply tank provided with de-

pendent discharge outlets corresponding in number with and arranged above said scales, a valve for each outlet provided with a pendent stem, a ring carried by each stem
5 with which cans on the scales contact to raise said valves from their seat in the outlets, and means for removing the cans from said scales.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR L. DUNCAN.

Witnesses:

H. C. SCHROEDER,
F. P. SCHROEDER.