

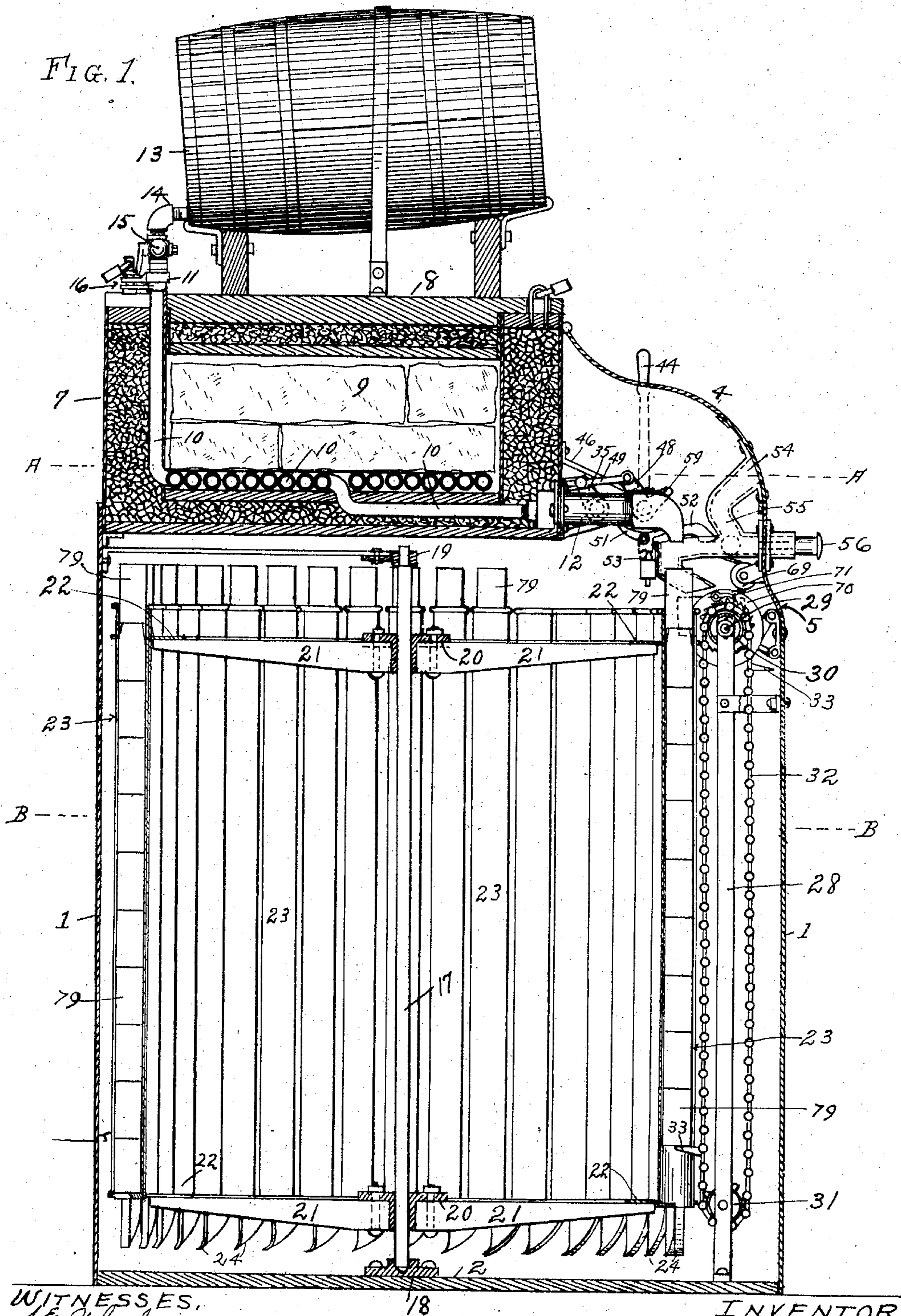
No. 780,560.

PATENTED JAN. 24, 1905.

J. W. FORD.
BEVERAGE VENDING MACHINE.

APPLICATION FILED DEC. 18, 1901.

4 SHEETS—SHEET 1.



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4 SHEETS—SHEET 2.

FIG. 2.

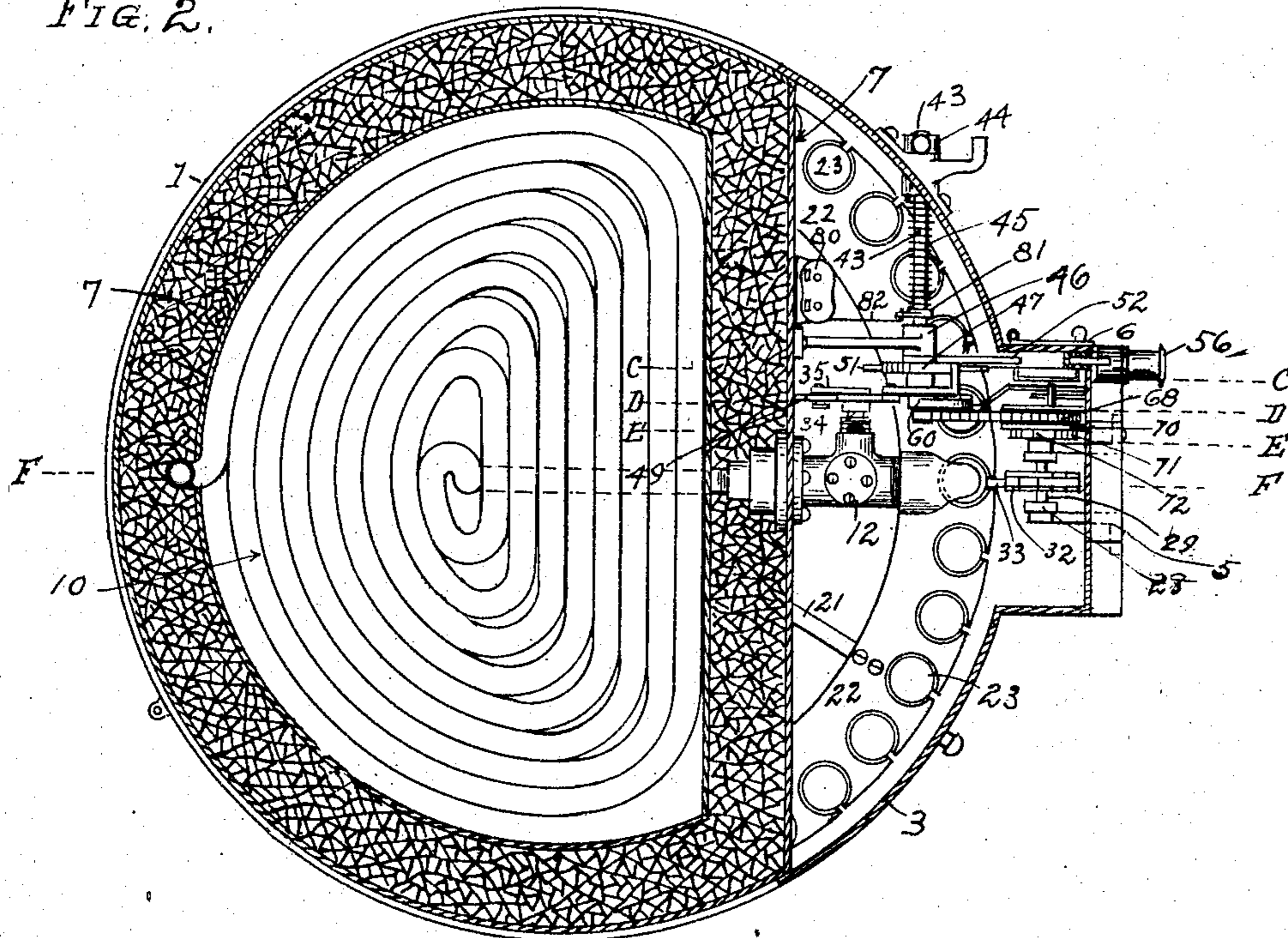
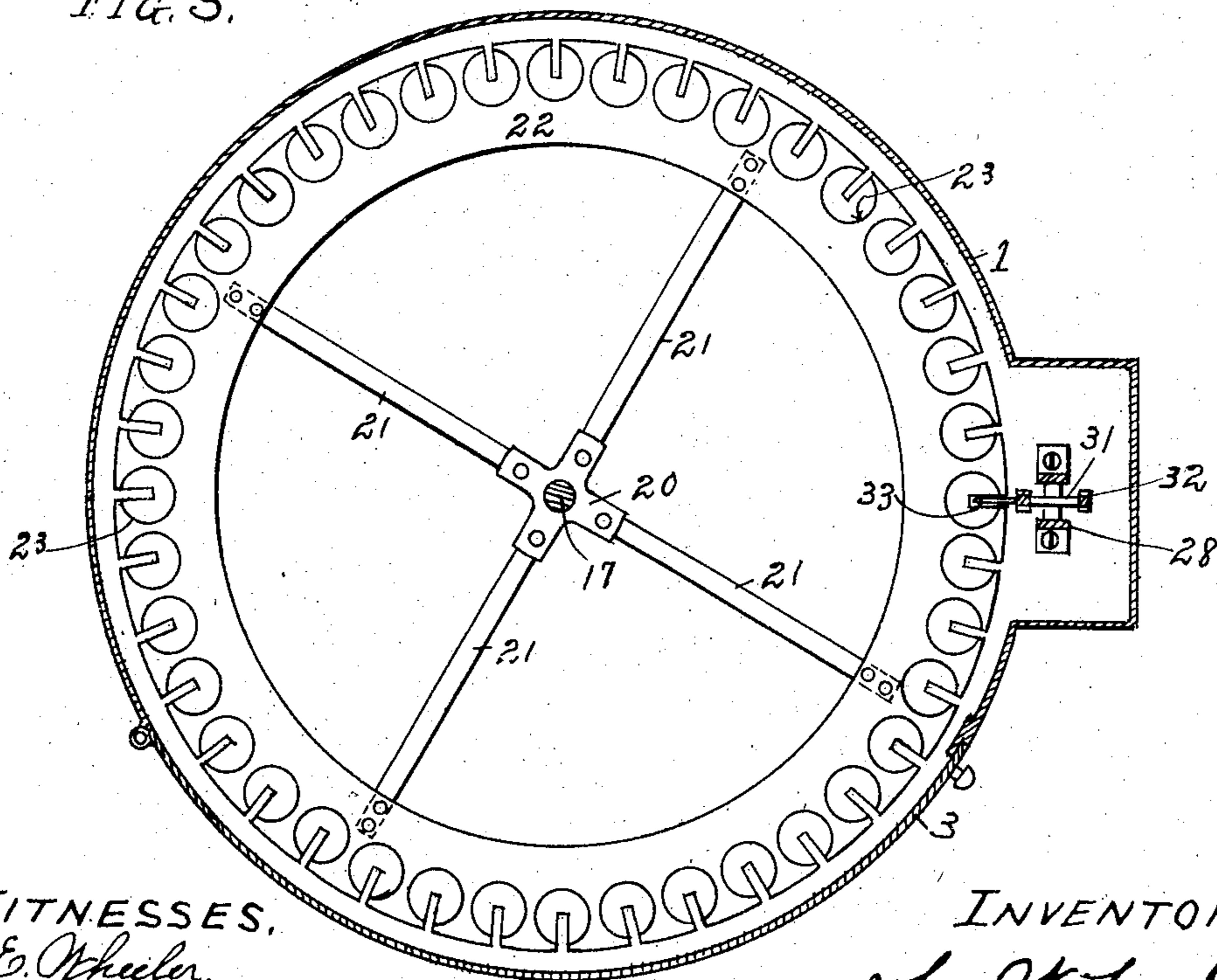


FIG. 3.



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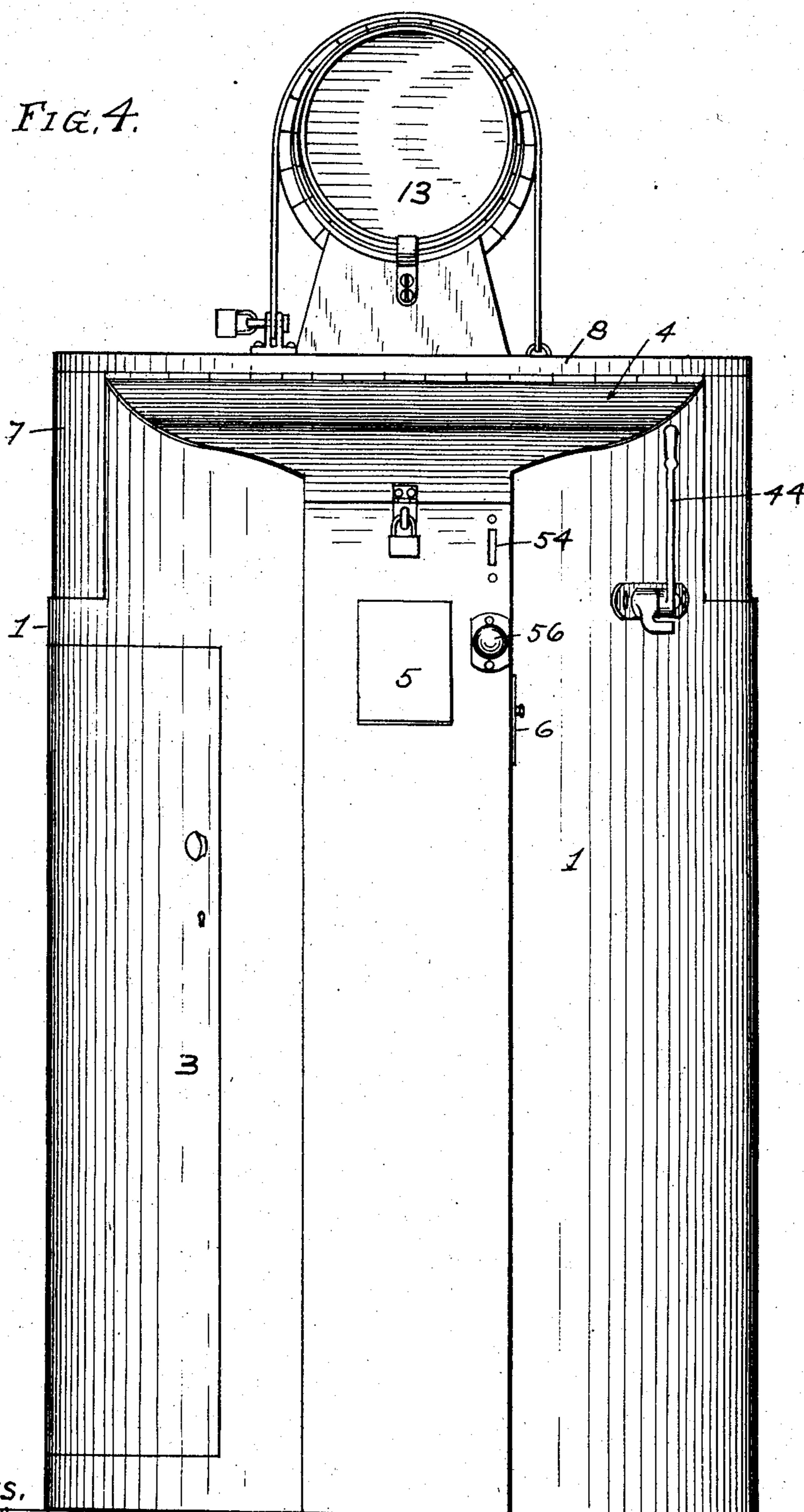
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UNITED STATES PATENT OFFICE.

JOHN W. FORD, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO H. D. HODGES, OF ALTON, AND P. P. COOPER, OF EAST ALTON, ILLINOIS.

BEVERAGE-VENDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 780,560, dated January 24, 1905.

Application filed December 18, 1901. Serial No. 86,367.

To all whom it may concern:

Be it known that I, JOHN W. FORD, a citizen of the United States, residing in the city of St. Louis and State of Missouri, have invented new and useful Improvements in Beverage-Vending Machines, of which the following is a specification, reference being had to the accompanying drawings, and figures of reference marked thereon, which form a part of this specification.

My invention relates to machines designed and equipped for dispensing cold water and other cold drinks; and it consists of an inclosing case, a holder therein adapted to hold a plurality of cups suitable for serving drinks therein, of a refrigerator whereby the water or other drink is cooled, of a detachable receptacle for holding in store the water or other drink to be dispensed, of a measuring-valve adapted to be actuated to supply the cups with the water or other drink, and of a lever-actuated mechanism, whereby the cups are brought into position to be filled, the valve operated to fill the cups with the liquid, and a door opened whereby the cups may be taken by their purchaser, which mechanism is normally retained locked against actuation, but adapted to be unlocked, so as to be operated by dropping a coin into a slot in the machine-case and by actuating a push-slide, thus causing the coin to operate a device whereby said mechanism is unlocked; and the objects of my improvements are to provide a device whereby pure cool drinks may be procured for a nominal price in localities where it is not easily obtained free, to provide in the service of the device a clean fresh cup for each individual patron, and to make it possible to dispense such drinks in such manner without the service of an immediate attendant.

Referring to said drawings, Figure 1 is a sectional elevation of the machine, taken on line F F of Fig. 2; Fig. 2, a cross-sectional view on line A A of Fig. 1 looking down; Fig. 3, a similar view on line B B of said Fig. 1, also looking down; Fig. 4, a front exterior elevation of the machine; Fig. 5, a detailed side and partial sectional view of the locking and slot mechanism on line C C of Fig. 2 look-

ing toward the top of the sheet; Fig. 6, a similar view of the mechanism for actuating the cup lifting and adjusting device and for opening the dispensing-door, taken on the line D D for the upper portion of said view and on line E E for the lower portion of the view; Fig. 7, a partial interior view of said dispensing-door and the spring-hinge thereof; Fig. 8, a sectional view of the measuring-valve of the machine; Fig. 9, a detailed front view of two of the cup-holding tubes of the machine, with portions broken away to show construction and also to condense the length of the view; Fig. 10, a top plan of one of said tubes; Fig. 11, a bottom plan of two of said tubes; and Fig. 12 a perspective view of one of the drinking-cups, such as are adapted for use in the machine.

In said drawings, 1 represents the side walls of the case of the machine, having a floor 2, a main side door 3, a top door 4, a dispensing-door 5, and a coin-collecting door 6.

Placed to cover, and thus inclose, the top of case 1 in rear of door 4 is a refrigerator 7, comprising an inner and outer box arranged to form a chamber between their bottoms and side walls, which is packed with charcoal or other suitable material, as represented in Figs. 1 and 2, and is further provided with an inserted lid 8, having its inserted portion likewise packed. The interior of said inner box forms a chamber 9, wherein ice is placed, as represented in Fig. 1. In the bottom of said chamber 9 is placed a coil-pipe 10, having its supply branch arranged through an opening in the side of said inner box and extending up through the wall-packing and from said refrigerator, where it terminates with a union-coupler 11, while the opposite pipe branch is arranged passing down between the bottoms of said two boxes, thence along to the front side of said refrigerator, where it terminates in the measuring-valve 12, which is fixed to the refrigerator and extends forward therefrom, with its discharge-spout in suitable position to supply the cups brought thereunder.

Suitably stationed but removably retained upon refrigerator 7 is a barrel or other suit-

able receptacle 13, wherein the water or other liquid to be dispensed is placed, which is provided with a pipe 14 and cut-off valve 15, which are through the agency of union 11 5 coupled with pipe 10 when in service, two parts of said union having side extending perforated ears, (represented at 16,) and valve 15 has its lever shaped to coincide with said ears and likewise perforated, and a pin is 10 placed through said ears and lever jointly and there secured, by means of a lock, as represented, to prevent the removal of said receptacle 13 by persons not in charge thereof. Placed in the case 1 below said refriger- 15 erator is an upright rotatable cup-holder comprising an upright shaft 17, stepped in box 18 on floor 2 and held at its top in a box 19, having arms extending and fixed to the wall of case 1. Spiders 20 20, fixed on said shaft, as shown, respectively bearing radially-extending arms 21 21, which have fixed to their end portions flat annular plates 22 22, one directly above the other, which plates are made with a plurality of holes open at their outer side, 25 wherein are fixed a plurality of tubes 23, correspondingly open along their outer side, as represented. Said holder thus constructed is so arranged as to be rotated and bring each of said tubes 23 directly under the spout of valve 30 12. Also attached to the bottom of the lower plate 22 is a plurality of cams 24, which are for the purpose of being engaged by an up-traveling finger to cause an intermittent rotating movement of said cup-holder. Said 35 cams are attached, respectively, at points between adjacent tubes 23 and reach under each adjacent tube and are shaped with their depending portion curved to underreach the vertical line of the face or side, opening in one 40 adjacent tube and beveled up to register in line with the opposite adjacent tube side opening. (See Fig. 9.) Said tubes may have removable bottoms 25, (shown in Fig. 9, also Fig. 3,) or said bottoms may be omitted and 45 said cams serve as bottom-supports, as represented in Fig. 11. In the attaching of said cams screws 26 (see Figs. 11 and 9) are placed, through holes in plate 22, down into them, which swivels them so they may be turned, 50 as represented by dotted lines in Fig. 11, so as to clear the lower end of said tubes when it becomes necessary to charge them with cups, and as a means of holding said cams in proper operative position dowel-pins 27 (see 55 Fig. 11) are placed, through holes of plate 22, down into them.

Case 1 is made with a portion at its front extending beyond the annular line of its remaining portion, as represented in Figs. 2, 60 3, and 4, wherein an upright frame 28 is placed, which bears at its upper portion a horizontal shaft 29, having fixed thereon a sprocket-wheel 30, and at its lower portion an idler sprocket-wheel 31, and placed on said 65 wheels is a sprocket-chain 32, having two

equidistant fingers 33, which when the chain is actuated come about under wheel 31, first engage against a cam 24, and as they move up cause the engaged cam to be forced side- 70 wise from the path of the engaging finger, which action rotates said cup-holder one tube section. Continued up movement of said finger brings it into the side opening of the adjacent tube 23, and hence against the bottom of the lower cup placed in said tube. While one said 75 finger 33 is in such service the opposite one is free and descending, to be brought into position for like service when its fellow has lifted the last cup from its tube and passed over and out of service. The movement im- 80 parted to said chain 32 is intermittent, or only when the machine is operated to dispense a drink.

The case of measuring-valve 12 is made with a covered hand-hole, as shown, to ren- 85 der it possible to place therein its necessary parts, and the side thereof is made with a suitable stuffing-box, wherein a shaft 34 is placed, and arranged extending horizontally (see Fig. 2) on the extending end of said 90 shaft is fixed an arm 35, and on its end within valve-case 12 is fixed a cam 36, which operates against stems 37 and 38 (see Fig. 8) to alternately open valves 39 and 40, respectively, of said stems. Springs 41 42, placed 95 about and impinging cross-pins of said stems, respectively close valves 39 40 when cam 36 so permits. Valve 39 is normally held open and arm 35 thrown back, thus permitting the case or shell 12 to fill from pipe 10. At any 100 time the machine is operated shaft 34 and cam 36 is actuated to permit valve 39 to close and to open valve 40 and permit the contents of case 12 to flow out through the case-spout and into a cup supported in a tube 23. For- 105 ward from and parallel with shaft 34 is a shaft 43, arranged with one end passing out of case 1 through a suitable bearing, and thereat bears the actuating-lever 44, normally held, by means of a coil-spring 45 on said 110 shaft, in an upright position. Said shaft 43 is suitably supported at its inner portion in a bracket-bearing 46 and has fixed thereon adjacent said bearing a ratchet-wheel 47 and arm 48, (see Fig. 5,) which arm connects arm 115 35 by means of a link 49, which is slotted over a wrist-pin of said arm 35, so that a partial movement of arm 48 may be had before arm 35 is actuated thereby. Bearing 46 is made with a depending portion 50, to which 120 is pivoted a locking-dog 51 and a trip-lever 52, and in the terminal portion of said part 50 is a barrel, into which is placed a spring-plunger 53, which is made V-shaped at its upper end and arranged engaging yieldingly in a small V- 125 notch in the depending portion of dog 51, and thus holds said dog thrown so either one or the other of its opposite branches may be held to engage wheel 47, slipping plunger 53 from one V-notch of the dog to another fellow notch 130

whenever said dog is thrown. In the normal position of the machine parts the inner branch of dog 51 is held engaging a tooth of wheel 47, as shown in Fig. 5, which locks lever 44 against being pulled over forward, and thus operated. When it is desired to operate the machine, a coin is dropped into slot 54, and by means of the flat tube 55 it falls and comes to rest in rear of a spring push-slide 56. This slide is then pushed in, which pushes the coin along under and past lever 52, where it is permitted to then fall farther down said tube and enter a deposit-receptacle 57, fixed to the inner side of the collecting-door 6. As said coin is thus pushed in it lifts the end of lever 52, causing a side extending pin thereof to engage dog 51 and throw it to disengage its rear branch from wheel 47 and bring its front branch to engage said wheel, and the form of teeth at that side of wheel 47 prevents the return of lever 44 after it has been brought over forward in process of operation until it has made its full movement forward and a branch 59 of arm 48, which has a side extending portion, has engaged the forward branch of said dog and forced it down, thus throwing said dog and again bringing its rear branch to engage wheel 47, and thereby again lock lever 44 in its normal position. Also fixed on shaft 43 adjacent arm 48 is an arm 60, (see Fig. 6,) and sleeved on shaft 43 adjacent said arm 60 is an arm 61. Pivoted to arm 60 is a latch-arm 62, having a notch which is engaged by a lug 63 of arm 61. Pivoted to arm 62 is a box 64, through which a rod 65 is placed, which rod extends downward and forward and pivotally connects with an arm 66 of the dispensing-door hinge-shaft 67 and is at its upper end slightly longer than the point of box 64, which permits arm 60 to move a fraction of its distance before box 64 engages the stop of said rod end.

Fixed to the end of arm 61 is a chain 68, which passes forward about a pulley 69, thence rearward, and its opposite end is fixed to the periphery of a sheave 70, which is sleeved on shaft 29 adjacent a ratchet-wheel 71, which is fixed on said shaft, and a pawl 72, pivoted to the side of sheave 70, is arranged to engage the teeth of said wheel 71.

In line with one side of sheave 70 and pivotally attached to case 1 is a latch-bar 73, which has one notch wherein the lower end of arm 66 engages, (see Fig. 6,) which locks door 5 closed. A coil-spring 74 holds said latch in action. A pin 75, set in the side of sheave 70, immediately above latch 73, wipes down when said sheave is turned, and thus unlocks said door 5 by pressing said latch down. The spring 74 also serves the purpose of returning sheave 70 to its normal position after each actuation. Hinge-shaft 67 of door 5 has thereon a coil-spring 76, which automatically closes said door at the conclusion of each actuation of the machine.

When lever 44 is operated, arm 60, with arms 61 and 62 latched therewith, will be likewise operated, causing arm 61 to draw on chain 68, and thus partially turn sheave 70, when the pawl 72 thereof engaging wheel 71 will turn said wheel correspondingly, and thus actuate shaft 29, together with sprocket-wheel 30 and sprocket-chain 32, causing a finger 33 to move up the length of one cup in a tube 23, thus bringing the top cup in the tube into position for service and to a position so as to come to rest upon opposite spring-keepers 77. During the first stage of such movement rod 65 does not operate; but when box 64 reaches its stop then said rod is pulled and opens door 5, as stated. Also but a partial movement of arm 60 is required to impart motion to wheel or sheave 70 to properly actuate sprocket-chain 32, and in order to prevent too great movement to said chain arm 62 is made so its extending end wipes against the hub of arm 35, so as to move it from engagement with lug 63, thus releasing arm 61, and thereby preventing further movement to sheave 70, but permitting arms 60 to 62 to continue the full movement, so door 5 will be pulled wide open. As sheave is returned to its normal position pawl 72 runs the teeth of wheel 71 and drops in ready for another like operation. Also chain 68 is paid back so the coil-spring 78 of arms 61 62 can return arm 61 to again latch with arm 62 to be in readiness for a succeeding actuation.

In service each tube 23 is filled with cups 79, such as is shown in Fig. 12, preferably made of paper coated on the interior with paraffin, and in each said tube one cup will project from the tube ready for service, so as to compensate for the movement of chain 32 when the said cup-holder is partially rotated, as before stated.

In operation a person drops a coin in slot 54, then pushes in slide 56, which unlocks lever 44. He then grasps said lever 44 and pulls it forward and down. The first portion of such lever movement actuates chain 32 and brings a cup into position, as stated, and the last portion of such continued movement actuates the measuring-valve, fills the cup, and pulls open the door 5, so the person may then reach in and take the cup and contents thereof, and as he releases lever 44 spring 45 will at once return it and spring 76 will at once close and cause the door 5 to lock closed.

It is intended that the doors of the machine, and especially door 5, shall be fitted to close very close, so as to exclude all dust from the interior of the machine.

In instances where cold water may be had from other sources the receptacle 13 and refrigerator 7 may be omitted and pipe 10 connected direct with such source.

In Fig. 2 I have represented a register at 80 adapted to be actuated by a crank-arm 81, fixed on shaft 43 through the agency of a rod 130

82, which register may be of any ordinary type for the purpose of recording the number of actuations of the machine.

Having thus described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is as follows:

1. In the herein-described machine the holding device comprising a plurality of vertical tubes fixed to a rotatable frame and slotted their entire length in such manner as to admit an arm or finger to enter therein and lift cups placed therein from their lower to their upper portion; the endless-chain mechanism provided with the fingers whereby cups placed in said tubes may be lifted; the dispensing-door arranged in the case inclosing said holder; and the lever mechanism and intermediate connections whereby said chain-fingers are actuated to consecutively bring cups into serviceable position, and whereby said dispensing-door is unlocked and opened so said cups may be taken by patrons, substantially as and for the purpose specified.

2. In the herein-described machine, the cup-holding device comprising the plurality of vertically and concentrically arranged slotted tubes wherein the cups are placed; the endless-chain mechanism provided with the fingers arranged to operate in said tubes through the

slots of the tubes; the cams fixed to said holding device in such manner as to be engaged by said chain-fingers and thereby, at each such engagement, rotate said holding device the distance of one tube-section; and the lever and intermediate connecting mechanism whereby said chain is actuated, substantially as and for the purpose specified.

3. In the herein-described machine, in combination with the cup-holding device, and the endless-chain mechanism provided with the fingers whereby cups are lifted in the tubes of said holding device; the liquid-supply tank, or storage; a liquid-measuring valve arranged connecting said tank, or storage; and the lever and intermediate connecting mechanism, whereby said cup-lifting mechanism is actuated to bring a cup into serviceable position, and said valve is simultaneously actuated to discharge liquid therefrom and thus supply the service-cup with said liquid, substantially as and for the purpose specified.

Signed at the city of St. Louis, in the State of Missouri, this 14th day of December, 1901.

JOHN W. FORD.

In presence of—

J. E. WHEELER,
WM. J. HUTCHINS.