

May 26, 1942.

I. MILLER

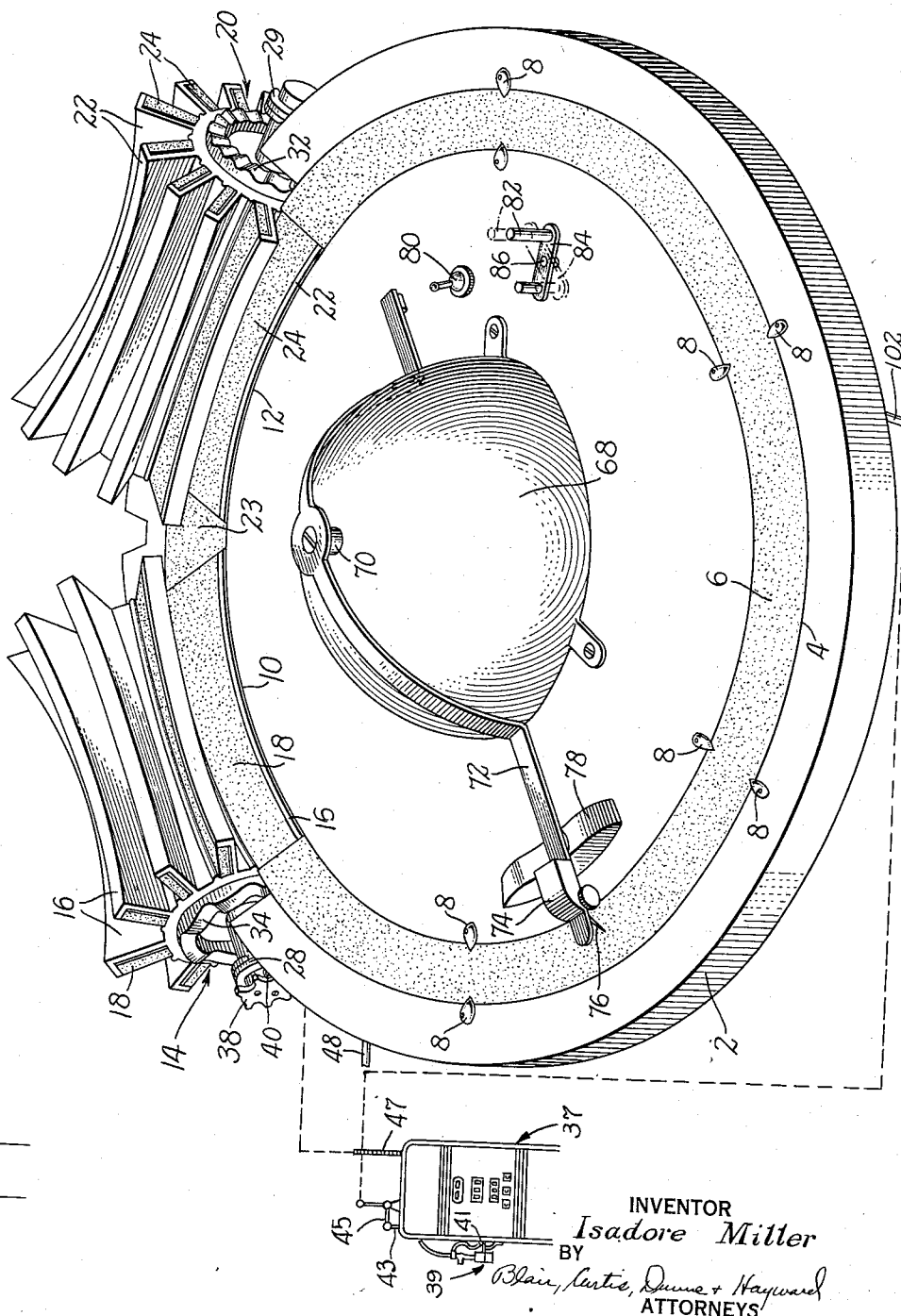
2,284,008

AUDIBLE METER

Filed Feb. 28, 1939

2 Sheets-Sheet 1

Fig. 1.



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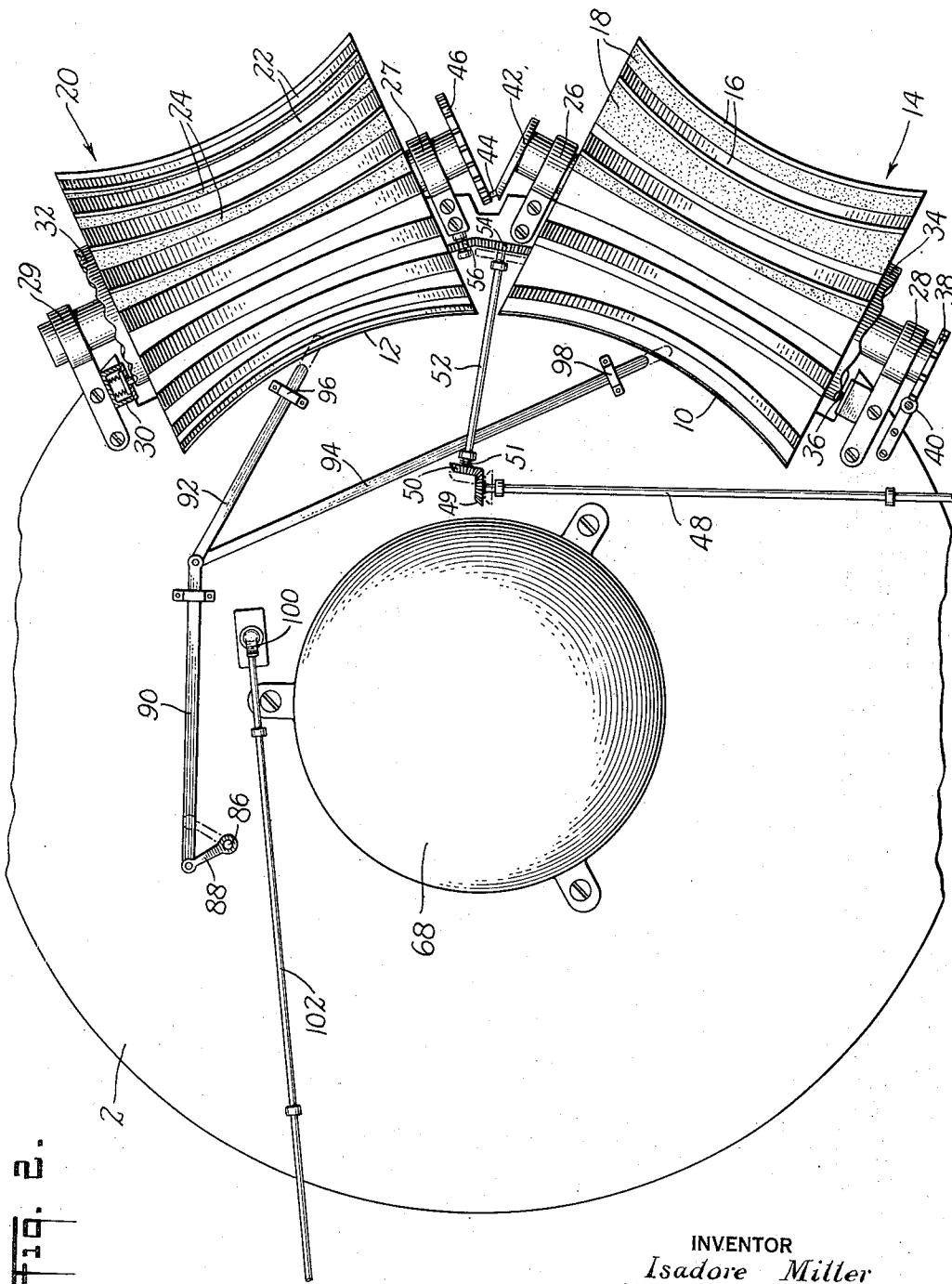
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2 Sheets-Sheet 2



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AUDIBLE METER

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9 Claims. (Cl. 73—198)

This invention relates to metering and automatic voice reproduction, and more in particular to a phonograph attachment to automatically announce at the end of a dispensing operation the quantity of liquid dispensed.

An object of this invention is to provide efficient and dependable means for automatically producing a sound upon the completion of an event, the nature of the sound depending upon the nature of the event which has been completed. A further object is to provide an apparatus of the above character for announcing to a customer the quantity of a product which he has received, and other facts which it is desirable for him to know. A further object is to provide mechanism of this character for automatically announcing the characteristics of a transaction at the end of the transaction. A further object is to provide apparatus of the above nature which is compact and sturdy in construction and dependable and efficient in operation. These and other objects will be in part obvious and in part pointed out below.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, and in the relation of each of the same to one or more of the others, all illustratively described herein, and the scope of the application of which will be indicated in the following claims.

In the drawings:

Figure 1 is a perspective view partially schematic of the upper portion of a phonograph attachment; and

Figure 2 is a bottom plan view of the apparatus of Figure 1.

In some types of business, it is important that the customer be informed of the exact quantity of material or service which he has received. The present invention contemplates an apparatus for informing the customer of the vital facts of a transaction by means of an automatically operating sound producing mechanism. Thus the customer is assured of receiving the materials which he desires and mistakes are avoided.

The illustrative embodiment of the invention comprises a phonograph attachment incorporated in a gasoline dispensing pump and so constructed that, at the end of the pumping and dispensing operation, it announces the exact quantity of gasoline dispensed. Illustratively, the announcement states the number of gallons up to twenty, exact to one-tenth of a gallon. In one form of the apparatus, the sound track carries numerals corresponding to the value of the gasoline dis-

pensed and thus states the price rather than the quantity of gasoline dispensed.

Referring particularly to Figure 1 of the drawings, a circular stationary base 2 is provided near its outer edge with a groove 4 into which is fitted an arcuate sound track 6 which extends substantially 270°. Sound track 6 is removably held in position by a plurality of rotatable latch buttons 8 which may be turned to the position shown to extend over the edge of the sound track but which may be turned to be clear of the edge of groove 4. Base 2 and sound track 6 are cut away (see also the right-hand side of Figure 2) to provide two arcuately extending notches 10 and 12.

Mounted adjacent notches 10 and 12 are two reels generally indicated at 14 and 20, with one side of reel 14 extending into notch 10 and one side of reel 20 extending into notch 12. Each of these reels carries a plurality of arcuate shelves, there being illustratively ten shelves 16 on reel 14 and twenty shelves 22 on reel 20. Reels 14 and 20 move individually with the various shelves successively positioned in alignment with base 2. Shelves 16 and 22 carry sound track segments 18 and 24, respectively, each of which is in alignment with sound track 6 when the shelf carrying it is in alignment with base 2.

Reels 14 and 20 are rotated step-by-step and at the end of movement of the reels, one of the shelves 16 and one of the shelves 22 is positioned in alignment with base 2. Mounted in base 2 and extending between the adjacent ends of sound track segments 18 and 24 is a sound track segment 23. Thus when the reels are stationary, a complete circular sound track is formed by sound track 6, one of each of sound track segments 18 and 24, and sound track segment 23.

As best shown in Figure 2, reels 14 and 20 are rotatably carried at their adjacent ends by suitable brackets 26 and 27, respectively, extending from the under side of base 2. The opposite ends of reels 14 and 20 are carried by similar brackets 28 and 29, respectively.

As indicated above, reels 14 and 20 are moved step-by-step so that one shelf on each reel is in alignment except when the actual movement of the reels is taking place. Thus reel 20 is provided adjacent bracket 29 with a spring-pressed plunger 30 which rides against a cam ring 32 upon the end of the reel. Cam ring 32 is provided with twenty low points or recesses which are so positioned that when spring-pressed plunger 30 is in the bottom of a recess, a shelf of the reel is in proper alignment. In a like manner,

reel 14 is provided adjacent bracket 28 with a similar cam ring 34 and a spring-pressed plunger 36. Cam ring 34 is provided with ten recesses into which plunger 36 may ride to properly position the various shelves.

In this embodiment when one-tenth of a gallon of gasoline is dispensed, reel 14 is moved one-tenth of a revolution. Accordingly, adjacent bracket 28 reel 14 is mechanically connected to a dispensing mechanism shown schematically in Figure 1 and generally indicated at 37. This dispensing mechanism is a known type of filling station pump with a hose 39 which has a nozzle which is rested in a hook 41. Hook 41 has attached to it a rod 43 which is connected through a pivoted double-arm 45 to an operating arm 102 which is operated to start the operation of the phonograph attachment at the end of each dispensing operation in a manner to be more fully pointed out below. The mechanical connection between reel 14 and the dispensing mechanism 37 is by means of a shaft 47 which extends upwardly from the top of the dispensing mechanism. Shaft 47 carries at its end a worm 40 (see also Figure 2) which engages with a worm wheel 38 upon the end of the shaft carrying reel 14. At the end of each revolution of worm 40, a tooth on worm wheel 38 is engaged by the worm and reel 14 is turned one-tenth of a revolution.

Reels 14 and 20 are mechanically interconnected at their adjacent ends by means of a disk 42 upon the end of reel 14 carrying a pin 44 which engages the teeth of a wheel 46 on the end of reel 20. Wheel 46 is provided with twenty teeth, one corresponding to each of the shelves 22. At the end of each complete rotation of reel 14, pin 44 engages one tooth of wheel 46 and moves reel 20 an amount corresponding to the distance between one shelf and the next.

In this manner, as gasoline is dispensed, reel 14 is rotated to bring its ten shelves successively into alignment; nine of the ten shelves, starting with the second shelf, carry thereon the respective sound track segments with the notations "one-tenth," "two-tenths," etc., to "nine-tenths." The first shelf, which corresponds to the zero setting and the full gallon setting, carries a sound track segment with no recorded message thereon. During the time that the first gallon is being dispensed, the first sound track segment 24 carried by a shelf of reel 20 carries no recorded message, but when one gallon of gasoline has been dispensed and reel 14 has thus turned one complete revolution, pin 44 engages a tooth of wheel 46 and reel 20 is rotated one-twentieth of a revolution with the second shelf 22 in alignment. The sound track segment on the second shelf 22 carries the notation "one"; this shelf is in alignment during the dispensing of the second gallon. During the dispensing of each of the second, third, etc., gallons, the shelves of reel 14 are again successively moved into alignment and at the end of dispensing of each gallon, reel 20 is turned so that the shelves carrying the notations "two," "three," "four," etc., are successively presented. At any time that the dispensing operation ceases, a shelf of reel 20 corresponding to the number of whole gallons dispensed is in proper position and a shelf of reel 14 corresponding to the tenths of a gallon dispensed in addition to the number of whole gallons is in proper position.

Referring again to Figure 2, a resetting mechanism is provided to move the two reels back to the zero position before the dispensing operation starts. This resetting mechanism includes a

shaft 48 connected through a pair of bevel gears 49 and 50 to a shaft 52. Shaft 52 carries at its right end a cog wheel 54 which operates with a similar smaller wheel 56. Wheel 54 engages a tooth wheel (not shown) on the end of reel 14, and in a like manner wheel 56 engages a similar tooth wheel (not shown) on the end of reel 20. Each of the tooth wheels is blank at the point which is opposite its cooperating gear when the reel is set at zero. Thus, when shaft 48 is rotated, the two reels rotate until the blank places in their respective tooth segment wheels are opposite the gears 54 and 56. At this point the reels remain stationary irrespective of further rotation of shaft 48.

Shafts 48 and 52 are mounted to slide longitudinally in their supporting brackets, and the gears 54 and 50 thus may move from the full line position shown to the broken line position. A coil spring 51 is mounted around the end of shaft 52 adjacent gear 50 and normally holds the gears in the broken line position. In this broken line position, gear 54 is out of engagement with gear 56 and with the tooth segment wheel on reel 14. Thus the reels normally move independently and there is no interference by gears 54 and 56. When it is desirable to reset the reels before a dispensing operation, shaft 48 is pushed inwardly (toward the top of Figure 2) and bevel gear 49 moves into engagement with bevel gear 50. Due to the cam action between the beveled surfaces of the gears, bevel gear 50 and shaft 52 and gear 54 move to the full line position. Thus the gears are meshed and rotation of shaft 48 is transmitted to the reels in the manner outlined above.

As shown in Figure 1, mounted at the center of base 2 is a shell 68 which encloses an electric motor and speed reducing mechanism. Extending from the top of shell 68 is a shaft 70 which is driven by this motor through the speed reducing mechanism and which carries an arm 72. The left-hand end of arm 72 carries a pick-up head 74 with a needle 76 and when arm 72 is in the position shown, it rests upon the notched top of a cam-shaped support 78. When the motor within shell 68 is energized, arm 72 is rotated so that the arm moves off of support 78 and needle 76 is rested on sound track 6. As the arm slides off support 78, the motor is assisted in the acceleration of the arm by the cam action of the arm sliding from the support. As the arm continues to move, it picks up a message from the sound track 6 and then moves onto segment 24 to pick up the message corresponding to the number of gallons dispensed and over onto segment 18 where it picks up the message corresponding to the tenths of gallons dispensed. It then continues on its way to pick up any further message on the remaining portion of sound track 6. As the end of arm 72 carrying the head 74 approaches support 78, the opposite end of arm 72 engages and operates a switch 80 which turns off the motor within shell 68. The momentum of the mechanism carries the arm to the position shown.

In order to insure the proper positioning of the shelves of the two reels 20 and 14, as the end of arm 72 carrying head 74 approaches the sound track segment 24, it contacts a pin 82 carried by lever 84 and swings the lever to the broken line position. The swinging of the lever turns a shaft 86 which extends through base 2 (see Figure 2) and carries an arm 88. Arm 88 is connected by a link 90 to cam links 92 and 94 which are provided with guides 96 and 98,

respectively. Cam links 92 and 94 are mounted flush with the bottom of base 2 and each of the cam links is provided with a cam toe portion. The toe portion of cam link 92 is provided with a cam-like forward end which is adapted to move beyond the edge of notch 12 and engage the bottom of the adjacent shelf 22. If this shelf 22 is out of alignment, the toe portion will move the shelf to the proper position so that its sound track segment will be in proper alignment.

In a like manner cam link 94 moves to properly position a shelf 16. Thus, when arm 72 (Figure 1) moves lever 84 to the broken line position, arm 88 (Figure 2) moves to its broken line position and the two cam links 92 and 94 are moved to the latching position. At a short time prior to the engagement of switch 80 (Figure 1) by the end of arm 72, this end of the arm engages lever 84 and slides the levers and cam links 92 and 94 to the full line position and thus withdraws the forward ends of the two cam links from engagement with their respective shelves.

With the elements in the position shown, the motor which moves arm 72 (Figure 1) remains stationary. However, when the next dispensing operation is completed and the gasoline dispensing nozzle is rested on its hook, switch 80 is operated to start the motor again. This operation of switch 80 is performed from below base 2 (Figure 2) through a linkage, formed by double-arm 45 (see Figure 1) and rod 43, connected to the left-hand end of an operating lever 100 which connects with an operating arm 102. Thus, at the end of the pumping operation the reels have positioned to correspond with the amount of gasoline dispensed, and the sound-reproducing mechanism is automatically operated without any action by the attendant.

Under some conditions of usage it is desirable to announce the exact price of the material or service being sold, and under these circumstances each of the sound track segments 18 carries a message corresponding to cents such as "one," "two," "three," etc., beginning with the second segment, the first segment carrying no message for the zero setting, and sound track segments 24 carrying notations corresponding to the dimes and dollars.

As many possible embodiments may be made of the mechanical features of the above invention and as the art herein described might be varied in various parts, all without departing from the scope of the invention, it is to be understood that all matter hereinabove set forth, or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

I claim:

1. In apparatus of the character described, a circular base portion, an arm rotatably mounted at the center of said base portion, a sound pick-up unit carried by said arm, an arcuately extending sound track mounted near the edge of said base portion but extending less than the total distance around said base portion to thereby provide a cut-out portion at one position along the edge of said base portion, a plurality of sound track segments each of which is of proper size to be inserted in said cut-out portion and to be positioned in alignment with said arcuately extending sound track, means rotatably mounting said sound track segments so that they may be successively moved into said

cut-out portion, and means to rotate said arm and move said sound pick-up device along said arcuately extending sound track and the particular sound track segment which is in alignment therewith.

2. In apparatus of the character described, a circular base portion, an arm rotatably mounted at the center of said base portion, a sound pick-up unit carried by said arm, an arcuately extending sound track mounted near the edge of said base portion but extending less than the total distance around said base portion to thereby provide a cut-out portion at one position along the edge of said base portion, a plurality of sound track segments each of which is of proper size to be inserted in said cut-out portion and to be positioned in alignment with said arcuately extending sound track, a reel means rotatably mounted at the edge of said base portion and carrying said sound track segments upon axially extending shelves so that said reel means may be rotated and said sound track segments may be successively moved into said cut-out portion, and means to rotate said arm and move said sound pick-up device along said arcuately extending sound track and the particular sound track segment which is in alignment therewith.

3. In apparatus of the character described, a circular base portion, an arm rotatably mounted at the center of said base portion, a sound pick-up unit carried by said arm, an arcuately extending sound track mounted near the edge of said base portion but extending less than the total distance around said base portion to thereby provide a cut-out portion at one position along the edge of said base portion, a plurality of sound track segments each of which is of proper size to be inserted in said cut-out portion and to be positioned in alignment with said arcuately extending sound track, means rotatably mounting said sound track segments so that they may be successively moved into said cut-out portion, means to rotate said arm and move said sound pick-up device along said arcuately extending sound track and the particular sound track segment which is in alignment therewith, and a switch positioned to be actuated by the movement of said arm.

4. In apparatus of the character described, a circular base portion, an arm rotatably mounted at the center of said base portion, a sound pick-up unit carried by said arm, an arcuately extending sound track mounted near the edge of said base portion but extending less than the total distance around said base portion to thereby provide a cut-out portion at one position along the edge of said base portion, a plurality of sound track segments each of which is of proper size to be inserted in said cut-out portion and to be positioned in alignment with said arcuately extending sound track, means rotatably mounting said sound track segments so that they may be successively moved into said cut-out portion, means to rotate said arm and move said sound pick-up device along said arcuately extending sound track and the particular sound track segment which is in alignment therewith, and lever mechanism adapted to be actuated by the movement of said arm to assist in the proper alignment of one of said sound track segments.

5. In apparatus of the character described, a circular base portion, an arm rotatably mounted at the center of said base portion, a sound pick-up unit carried by said arm, an arcuately extending sound track mounted near the edge of

said base portion but extending less than the total distance around said base portion to thereby provide a cut-out portion at one position along the edge of said base portion, a plurality of sound track segments each of which is of proper size to be inserted in said cut-out portion and to be positioned in alignment with said arcuately extending sound track, a reel means rotatably mounted at the edge of said base portion and carrying said sound track segments upon axially extending shelves so that said reel means may be rotated and said sound track segments may be successively moved into said cut-out portion, means to rotate said arm and move said sound pick-up device along said arcuately extending sound track and the particular sound track segment which is in alignment therewith, and a spring biased means tending to cause said reel means to move in step-by-step manner whereby one of said sound track segments tends to move into proper position at all times.

6. In apparatus of the character described, a circular base portion, an arm rotatably mounted at the center of said base portion, a sound pick-up unit carried by said arm, an arcuately extending sound track mounted near the edge of said base portion but extending less than the total distance around said base portion to thereby provide a cut-out portion at one position along the edge of said base portion, two sets of sound track segments adapted to be inserted in said cut-out portion and to be positioned in alignment with said arcuately extending sound track, two reel means rotatably mounted at the edge of said base portion, each of said reel means carrying one set of said sound track segments upon axially extending shelves so that the sound track segments of each set may be successively moved into said cut-out portion by rotating the reel means, and means to rotate said arm and move said sound pick-up device along said arcuately extending sound track and the particular sound track segments which are in alignment therewith.

7. In apparatus of the character described, a circular base portion, an arm rotatably mounted at the center of said base portion, a sound pick-up unit carried by said arm, an arcuately extending sound track mounted near the edge of said base portion but extending less than the total distance around said base portion to thereby provide a cut-out portion at one position along the edge of said base portion, two sets of sound

track segments adapted to be inserted in said cut-out portion and to be positioned in alignment with said arcuately extending sound track, two reel means rotatably mounted at the edge of said base portion, each of said reel means carrying one set of said sound track segments upon axially extending shelves so that the sound track segments of each set may be successively moved into said cut-out portion by rotating the reel means, and means to rotate said arm and move said sound pick-up device along said arcuately extending sound track and the particular sound track segments which are in alignment therewith, the set of sound track segments carried by one of said reel means carrying messages designating the fractions of a unit being measured and the set of sound track segments carried by the other of said reel means carrying messages designating whole units.

8. In liquid-dispensing apparatus, the combination of: means to dispense liquids; metering means to measure the quantity of liquid dispensed during each dispensing operation; sound-producing means capable of producing sounds designating various quantities of the liquid; means operative in response to the operation of said metering means to set said sound-producing means to correspond with the quantity of liquid dispensed during each dispensing operation; and means operable upon the cessation of each dispensing operation to operate said sound-producing means whereby it produces a sound designating the quantity of liquid dispensed during that particular dispensing operation.

9. In apparatus of the class described wherein a register is provided which is automatically set to correspond to the number of units or parts of units of a particular quantity of material, the combination with said register of sound-producing means to produce selectively one of a plurality of sounds corresponding to the exact amount of a particular quantity of material, means operated by the operation of said register to give said sound-producing means a setting corresponding to the amount of the material in that particular quantity, and means responsive to the cessation of each complete operation of said register to operate said sound-producing means and produce the sound corresponding to the number of units or parts of units of that particular quantity of material.

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