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SELECTIVE PRICE-INDICATING DEVICE

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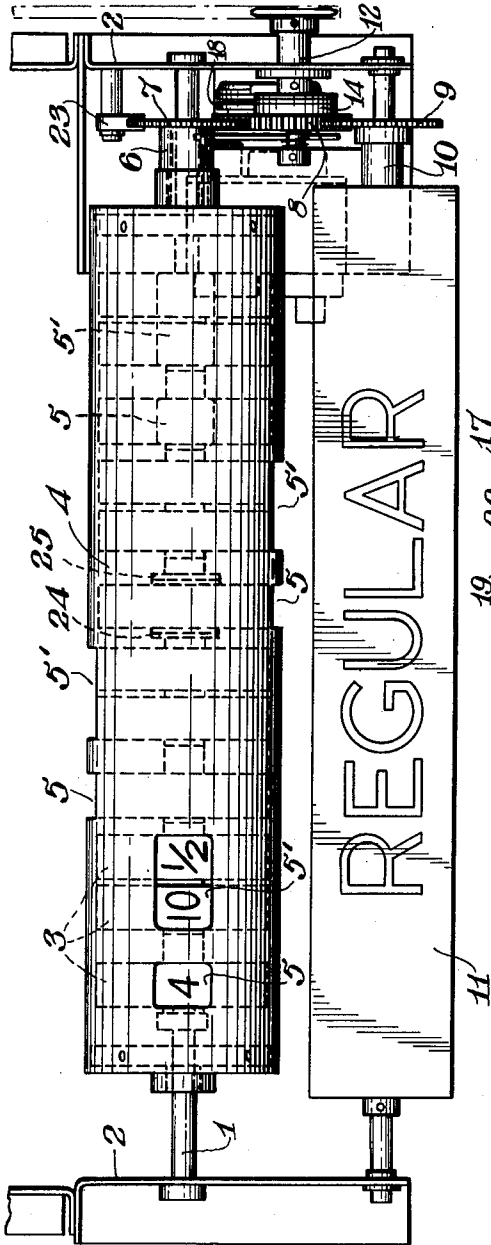


Fig. 1.

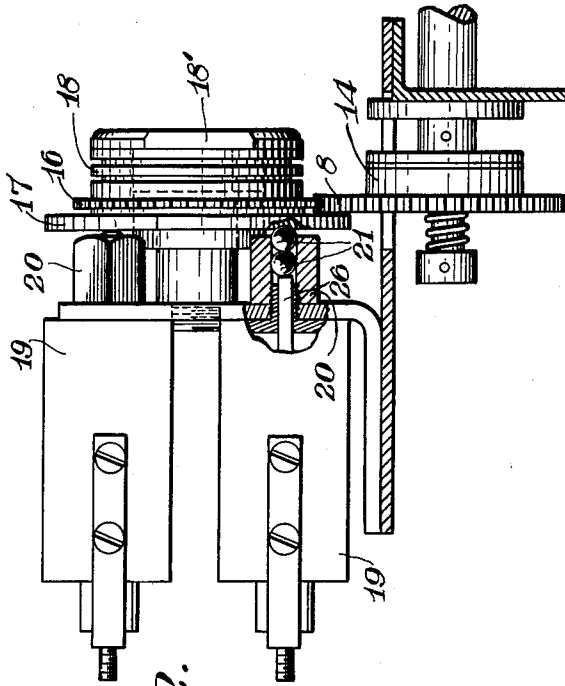


Fig. 2.

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SELECTIVE PRICE-INDICATING DEVICE

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This invention relates to an adjustable selective price-indicated device for use in conjunction with a dispensing apparatus, and it more particularly relates to such a device for use in conjunction with a multi-product gasoline dispensing apparatus.

Apparatus for selectively dispensing a number of different grades or types of gasoline are widely used in gasoline service stations. A number of such products may be obtained by selling two different grades which also may be mixed in varying proportions to provide a greater number of products. In such multi-product dispensers it is accordingly necessary to indicate the brand selected for dispensing and the price, and means must be provided for adjusting the price indications when costs vary.

An object of this invention is to provide a simple and economical device for selectively indicating the price of a product selected for dispensing from a multiple product dispenser.

Another object is to provide such a device which is particularly adaptable for use with multi-product gasoline dispenser.

In accordance with this invention a number of sets of price indicating drums are rotatably mounted along the length of a relatively stationary shaft with disengageable means maintaining them normally fixed relative to the shaft yet permitting their angular orientation upon it to be varied. An index tube encloses the shaft and the drums, and it includes a number of index frames longitudinally aligned with the sets of drums and angularly displaced about the periphery of the tube. An arresting means is operated to selectively stop the tube with one of the frames aligned at a frontal display position with one of the sets of drums for selecting the one of the sets corresponding to the price of the product to be dispensed for display.

The disengageable mounting of the drums upon the shaft is conveniently accomplished by frictional engagement, and the index frames are conveniently provided by apertures in an opaque tube. The sets of price drums include for example three drums corresponding to shillings, pence and half pence in British currency or dollars, tens of cents and cents in U.S. currency. These drums are conveniently manipulated through the windows when each are aligned with the frontal display position for varying the price that they display.

A selection-indicating drum may also be combined with the price-indicating device, and it includes indicia spaced about its periphery corresponding to the number of index frames in the tube. These indicia may be provided upon separate flat sides of the selection-indicating drum, and the names of the products whose prices are displayed in the windows may be prominently inscribed upon these sides.

A slip clutch may be interposed in the drive to the indicating drums to permit them to be stopped in selected angular positions by an arresting device such as a multiple solenoid-operated detent, which may be connected to the control circuit by the dispenser.

Novel features and advantages of the present invention

will become apparent to one skilled in the art from a reading of the following description in conjunction with the accompanying drawings wherein similar reference characters refer to similar parts and in which:

FIG. 1 is a front view in elevation of one embodiment of this invention; and

FIG. 2 is an enlarged view in elevation of a portion of the embodiment shown in FIG. 1.

In FIG. 1 is shown a selective price indicating device for use in conjunction with a multi-product gasoline dispenser such as the type described in copending U.S. patent application (W-137-139), S.N. 171,501, filed February 6, 1962. However, the device described in this application can display the prices of four different products, whereas the dispensing apparatus in the aforementioned patent application only dispenses two products. This present invention may be driven by the same sort of drive described in the aforementioned copending application and it has the advantage of facilitating the changing of the indicated prices. In that copending application a continuously driven motor is utilized in the drive to the indicator, which can also be used in the presently described device in conjunction with a slip clutch and selective detent. However, it is apparent that very many of the types of drive and controls can be utilized in conjunction with this invention.

As shown in FIG. 1, a relatively stationary shaft 1 is mounted between side frame plates 2. A number of sets of price drums 3 are rotatably mounted along the length of shaft 1. For example, four sets consisting of three drums each are arranged to display the price in British currency including shillings, pence and halfpence. However, a continuous range of price numerals can also be inscribed about these drums for displaying dollars, tens of cents and cents. Disengageable means are provided for maintaining drums 3 normally fixed relative to shaft 1 with sufficient tightness to prevent them from being accidentally displaced by vibration. This disengageable means is, for example, provided by frictionable engagement of the drums with the shafts at a force slightly enough to permit the drums to be manually turned for changing the prices indicated at the frontal display station thereby facilitating price changes.

Each drum is for example made in the form of a disc having a cylindrical flange about whose surface a continuous range of price numerals are inscribed. Each disc is held between a pair of friction discs 24 which are clamped against the drums by collars 25 secured to shaft 1 at suitable intervals.

An index tube 4 is rotatably mounted upon shaft 1 about drums 3, and it includes index frames or windows 5, which are for example arranged in pairs 5 and 5', to provide index frames which are longitudinally aligned with the sets of drums and angularly displaced relative to each other to permit only one set of drums 3 to be made visible at the frontal display position at any given time. This permits one of the four sets of prices available from this device to be selected for display. Where prices are displayed in a currency other than British, such as U.S. dollars, it is more convenient for the index frames 5 to be formed as single windows instead of the pairs 5 and 5'.

A hollow drive shaft 6 is connected to the end of index tube 4, and a spur gear 7 is secured to shaft 6 for rotating tube 4 to selected angular positions. Gear 7 is meshed with input spur gear 8 which is engaged with selection indicating drive gear 9. Gear 9 is secured to shaft 10 which is rotatably mounted in bearings in side frame plates

2. A selection-indicating drum 11, which for example includes a number of flat sides corresponding to the number of index frames 5 in index tube 4, is also mounted upon shaft 10. Names of products selected for dispensing, whose prices are displayed by index tube 4, are inscribed upon the sides of drum 11, such as gasoline brand names including "Regular" "Premium" and intermediate brand names. Drum 11 is rotated in synchronism with tube 4 to display the appropriate name of the brand whose price is displayed in the window 5 aligned at the frontal display position.

Index tube 4 and drum 11 are hollow to minimize their inertia and the torque required to rotate them. This driving torque is provided through shaft 12 which is maintained rotating at the beginning of each dispensing operation as described in copending application (W-137-139) S.N. 171,501, filed February 6, 1962, and its rotation stops only at the end of each dispensing operation. Shaft 12 drives gear 8 through slip clutch 14.

At the beginning of each dispensing operation, tube 4 and drum 11 are rotated until their motion is stopped by an arresting means. This arresting means is described in FIG. 2, and it includes a freely rotatable gear 16 secured to a detent plate 17 which is rotatably mounted against a thrust bearing race 18 and a housing 18'. Detent plate 17 is mounted adjacent plungers 26 of four solenoids 19 mounted at regularly spaced angular intervals about the axis of rotation of gear 16. Plungers 26 of solenoids 19 move through guides 20 into contact with pairs of detent balls 21. When each solenoid 19 is energized, its plunger 26 contacts associated balls 21 to maintain the outer ball 21 forcibly engaged with the single recess 22 in detent plate 17. Recess 22 is radially aligned with plungers 26 and associated balls 21. Selective actuation of one of solenoids 19 accordingly stops detent plate in alignment with it when the associated outer ball 21 is engaged within recess 22. This also arrests the entire gear train including gears 7, 8 and 9 to selectively arrest tube 4 and drum 11 for displaying one of the prices and its name. In FIG. 1 the price of the regular brand is displayed as 4 shillings and 10½ pence in British currency.

Solenoids 19 are connected in the control circuit of the dispensing means described in the aforementioned copending application which causes shaft 12 to start to turn when the dispenser motor is started to dispense a selected brand of gasoline such as a "Regular" grade. The appropriate solenoid 19 is also energized by the control circuit to stop the gear train at a point in which the correct side of drum 11 and index window 5 are aligned with the frontal display position for respectively indicating the name of the brand and its price which have been selected for dispensing.

A ratchet 23 shown in FIG. 1 is engaged with gear 7 to prevent any accidental backward movement of tube 4 and drum 11 when the control circuit is deenergized together with the arresting solenoids. This prevents any kickback or backlash from accidentally rotating tube 4 and drum 11 out of position at that time.

This invention accordingly provides a selective price device for a multi-product dispenser whose price indicia can easily be adjusted when prices of the particular brands must be changed by convenient manipulation through index windows 5.

What is claimed is:

1. A selective price indicating device for a multi-product dispenser comprising a relatively stationary shaft, a number of sets of price indicating drums rotatably mounted along the length of said stationary shaft, a frontal display position arranged at one angular orientation about the axis of said shaft, said price indicating drums having a full range of price indicating numbers about their peripheries, disengageable means maintaining said drums normally fixed relative to said shaft and permitting their angular orientation to be varied relative to it whereby the prices that they display at said frontal display station may be varied, an index tube rotatably mounted about said shaft and said drums, a number of index frames on said tube respectively longitudinally aligned with said sets of drums and angularly displaced from each other about the periphery of said tube, and controllable drive means connected to said tube for rotating it and selectively stopping it with a selected one of said index frames angularly aligned at said frontal display station with one of said sets of drums for displaying the price upon it.

2. A device as set forth in claim 1 wherein said tube is opaque, and said index frames comprise windows in said tube.

3. A device as set forth in claim 1 in combination with a selection-indicating drum, said selection-indicating drum being rotatably mounted adjacent said tube, said selection-indicating drum including separate selection-indicating indicia angularly spaced about its periphery corresponding in number to the number of sets of drums and index frames, and said drive means for said tube also being connected to drive said selection-indicating drum in synchronism with said tube for displaying the name of the product associated with the price displayed in the selected index frame which is stopped at said frontal displaying station.

4. A device as set forth in claim 3 wherein said selection-indicating drum is substantially flat-sided having a number of sides equal to the number of index frames upon said tube.

5. A device as set forth in claim 1 wherein a slip clutch is interposed between said tube and said drive means and an arresting means being operatively connected with said tube for permitting said drive to continue operating while said arresting means stops the rotation of said tube.

6. A device as set forth in claim 5 wherein said arresting means comprises a solenoid-operated detent means.

7. A device as set forth in claim 6 wherein said solenoid-operated detent means includes a detent disc with a single recess and solenoids corresponding in number to the number of index frames upon said tube.

8. A device as set forth in claim 1 wherein said disengageable means comprise frictional engaging means.

9. A device as set forth in claim 8 wherein said frictional engaging means comprise friction discs which are engaged with said drums by collars secured to said shaft.

References Cited in the file of this patent

UNITED STATES PATENTS

2,743,843	Bliss	May 1, 1956
3,075,310	Culver	Jan. 29, 1963
3,100,062	Spalding	Aug. 6, 1963