Feb. 22, 1955 M. R. MIRICK ET AL 2,702,735

PRINTER FOR COMPUTER FOR GASOLINE PUMPS

Filed Oct. 14, 1952 2 Sheets-Sheet 1

Fig. 1

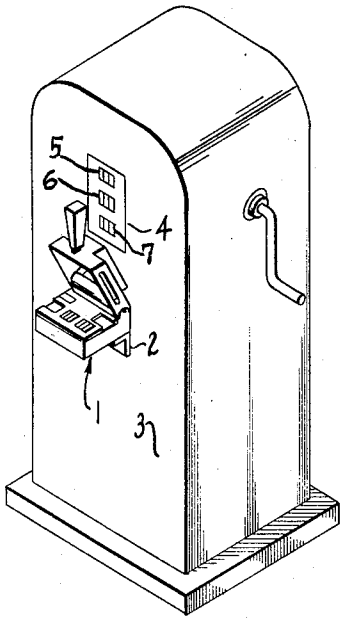


Fig. 2

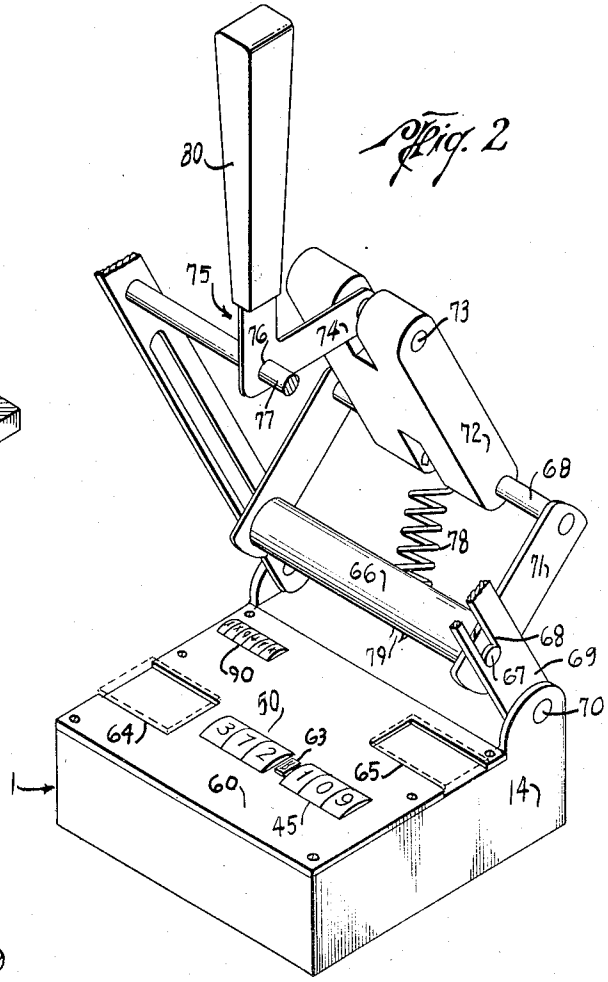
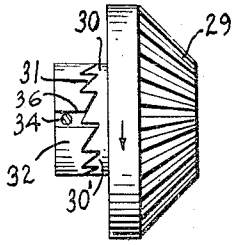


Fig. 6



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Fig. 3

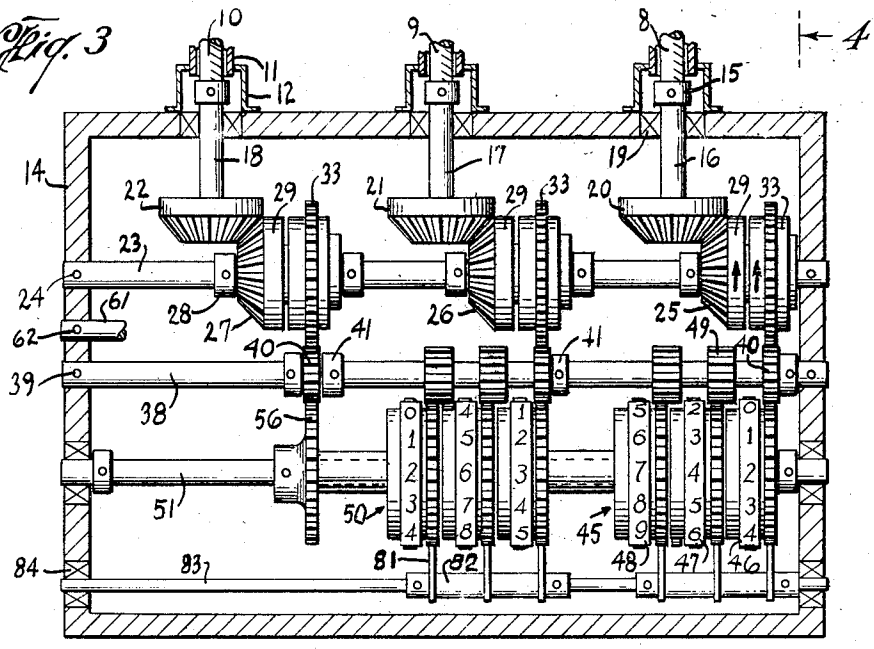


Fig. 4

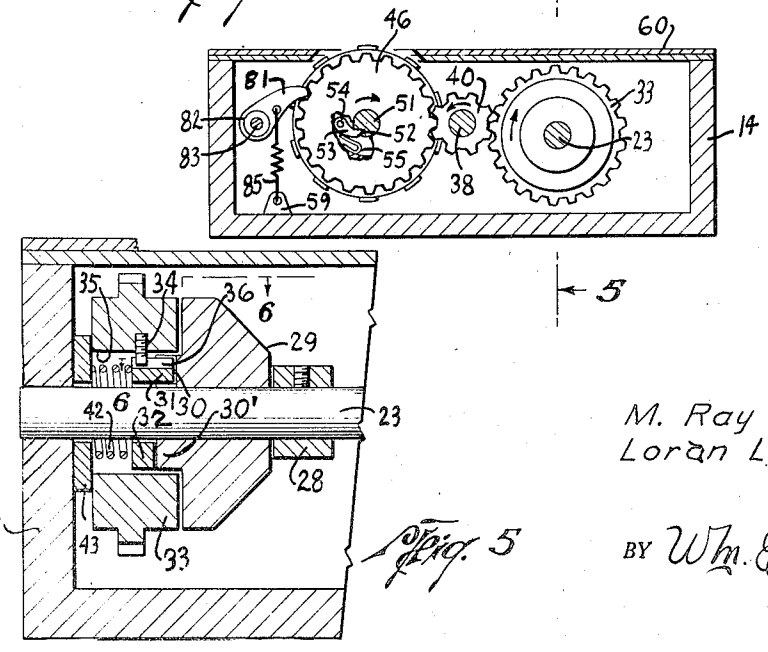


Fig. 5

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United States Patent Office 2,702,735
Patented Feb. 22, 1955

2,702,735

PRINTER FOR COMPUTER FOR GASOLINE PUMPS

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Application October 14, 1952, Serial No. 314,606

4 Claims. (Cl. 346—14)

This invention relates to a printer adapted for employment with a metering and calculating device, such as the machine provided with a gasoline pump, which records the number of gallons in a sale, and the price of such sale.

Such conventional pumps do not have installed therewith any means of printing such credit sales records, but rather it is necessary for a gasoline station attendant to go into the station and make a record ticket of such sale, then the attendant must obtain the signature of the customer, either at his automobile, or else the customer must walk into the station to sign the ticket. This procedure, repeated over and over again during the day, takes up much valuable time on the part of each customer and also occupies the attendants for some appreciable portion of the day, whereas otherwise, with a quicker ticket processing method the attendants could be free to attend to other duties around the station.

With the object of thus saving time and also providing means for obtaining an accurately printed record of each sale, the following invention has been involved.

Conventional meter devices combined with calculators or computers are provided with conventional gasoline pumps to indicate the amount of a sale, the number of gallons in a sale, and the price per gallon of the gasoline.

Such combination metering and calculating or computing machines have shafts therein, not shown, which are rotatable responsive respectively to the means which indicates the volumes metered, to the means which indicates the price of the volumes metered and to the means which re-sets further indicating means to an initial indication as zero.

This invention considers connecting flexible shafts to each of the shafts hereinabove mentioned so that the rotation of such shafts may be imparted through such flexible shafts to the mechanism of the printer of this invention to be hereinbelow described.

However, since the re-setting mechanism of the machine provided for the pump operates positively to reset its own indicia, it is necessary to provide a means to prevent the resetting of the printer dials also to be transmitted therefrom back through the flexible shafts from the machine to either additively effect the re-setting of its indicia, or to cause interlockage in the transmission thereto.

Having set forth hereinabove the general application of this invention to a specific and practical structure, as a conventional gasoline pump, it is stated that this invention broadly relates to a printer actuated by a metering and calculating or computing device adapted to provide visual indicia, so that the visual indicia indicated on such combination machine may be readily printed on the printer of this invention when it is connected immediately adjacent thereto.

It is, therefore, an object of this invention to provide a printer adapted to print the indicia of each use of a combination metering and calculating device, as that provided with a conventional gasoline pump.

It is also an object of this invention to provide a printer of this class in which the volume and price printing dials are driven by the volume and price indicating transmissions of the pump.

It is a further object of this invention to provide a printer of this class in which the volume and price printing dials are reset to an initial reading, as zero, by actuation of a single re-setting means provided therewith.

It is another object of this invention to provide a printer of this class in which the actuation of its re-setting means is responsive to the actuation of the re-setting means of the pump.

Other and further objects will be apparent when the specification is considered in connection with the drawings in which:

Fig. 1 is a perspective view of a pump with printer installed thereon.

Fig. 2 is a perspective view of a printer with the cover thereof removed.

Fig. 3 is a plan view taken through the base or frame of the printer.

Fig. 4 is a sectional elevation taken along line 4—4 of Fig. 3.

Fig. 5 is a sectional elevation taken along line 5—5 of Fig. 4.

Fig. 6 is a sectional plan view taken along line 6—6 of Fig. 5.

As shown in Fig. 1, a printer **1** is supported by a bracket **2**, which is fixed to the side of a gasoline pump **3**, and preferably this printer is mounted adjacent a plaque **4** through which may be observed the indications of price per gallon **5**, the gallons metered out in a sale **6**, and the computer or calculated value or amount of the sale **7**.

Gasoline pumps of this type are well known in the art and also the combined metering and computing or calculating mechanisms which are supplied with such pumps are well known in the art as shown in Patent No. 2,159,625 to R. H. Arnold et al., and as shown in Patent No. 2,151,239 to E. A. Slye et al.

Three shafts, not shown, but provided in the pump **3**, operate respectively the indicia **7** showing the amount of a sale, the indicia **6** showing the metered volume, or gallons in the sale, and a re-set shaft, which is operable to turn back the indicia **6** and **7** to an initial starting point or zero after each sale. Corresponding shafts are shown in the prior art patents designated hereinabove.

This invention connects a shaft **8**, as a flexible shaft, to the shaft operating the amount indicia; also a shaft **9**, as a flexible shaft, is connected to the shaft which actuates the volume or gallons indicia; and also a shaft **10**, as a flexible shaft, is connected to the re-set shaft of the pump. The Bowden tubes **11** surrounding these shafts are connected by means of the adapter fittings **12** to the frame **14** of the printer. The shafts **8**, **9**, and **10**, by means of the connector fittings **15**, are connected respectively to the shafts **16**, **17**, and **18**, which are journalled in bearings **19** in the frame **14**, and which have the bevel gears **20**, **21** and **22**, respectively, incorporated therewith.

An idler shaft or stud **23** is fixed, as by the pins **24**, to the frame **14**, and the transmission means or assemblies **25**, **26**, and **27**, are mounted to rotate upon this fixed shaft or stud **23**, and are positioned, by means of the fixed collars **28**, to hold the transmission assemblies **25**, **26**, and **27** in mesh, respectively, with the bevel gears **20**, **21** and **22**.

Each transmission means, as shown in Fig. 5, may comprise a bevel gear **29** which includes the ratchet hub **30'** having the ratchet teeth **30** therein. As shown most clearly in Fig. 6, these teeth **30** mesh with the teeth **31** of the ratchet **32**, which is rotatable on the stud **23**, as is the bevel gear **29**. A drive gear **33** surrounds the ratchet **32** and the ratchet hub **30'** of the gear **29**, and such gear **33** has the projection **34** in the bore **35** thereof to extend into the slot **36** of the ratchet **32**, so that when the bevel gear **29** is driven by the bevel gear in mesh therewith, its ratchet **32**, in turn drives the drive gear **33** when the bevel gear **29** and the drive gear **33** rotate in the direction of the arrows shown thereon in Fig. 3. Such direction of rotation is also indicated by the arrow shown on the bevel gear **29** in Fig. 6.

The idler shaft or stud **38** is fixed to the frame by the pins **39**, and the idlers **40** are rotatably positioned thereon by the collars **41** to mesh with the gears **33**. When an idler **40** turns in a direction to rotate the gear **33** in the direction indicated by the arrow shown thereon in Fig. 3, the gear **33** drives the ratchet **32**, by virtue of the engagement of the projection **34** in the slot **35**, but the ratchet teeth **31** slip upon the ratchet teeth **30** of the bevel gear

29, and do not impart rotation thereto, since the whole ratchet 32 slides away from the ratchet hub 30' and against the compression of the spring 42, which is confined within the bore 35 by the disc 43 which spaces the gear 33 from the frame 14. Then, when the ratchet 32 has moved the length of one tooth with relation to the ratchet hub 30', the spring 42 forces the teeth 30 and 31 back into the engagement shown in Fig. 6, and then slippage begins again as rotation of the ratchet 32 continues.

The printing wheels 45 and 50 are conventional and each comprises the digit indicating wheel 46, the tens indicating wheel 47, and the hundreds indicating wheel 48. A lug on the digit indicating wheel, not shown, engages the idler gear 49 on each revolution, and the engagement of this gear with the tens indicating wheel rotates such wheel through an arc equal to one tenth of its circumference to change its indication to the next number. The same arrangement rotates the hundreds indicating wheel one tenth of its circumference for every revolution of the tens indicating wheel.

The shaft 51 on which the amount printing wheel 45 and the gallons printing wheel 50 are rotatably mounted, has the slot 52 therein and each of the wheels 46, 47, and 48 has the dog 53 pivoted on a pin 54 mounted in the body of the wheel, and a spring 55 is fixed at one end to the body of the wheel and bears at its other end against the dog 53. Normally the printing wheels rotate in the direction shown by the arrow in Fig. 4, and the dog 53 does not affect its operation. However, when the shaft 51 is driven by the engagement of the idler 40 with the gear 56, which is pinned to the shaft 51, the shaft is rotated in the direction of the arrow shown on the printing wheel 46 so that the dog 53 is engaged by the shaft 51, and locks in the slot 52, after which the printing wheel rotates with the shaft.

As the position of the dog 53 of each wheel bears the same predetermined radial relation to the same digit on each of the wheels, as the zero digit, it can be seen that regardless of what digit may be uppermost in any wheel when the drive through the re-set transmission is put into effect to re-set the wheels, the same digits, as the zero digits, can be brought into alignment when the re-setting takes effect to position the zeros on each wheel uppermost.

In order to avoid the spinning of the printing wheels, which would otherwise occur by virtue of their being rotatable on the shaft 51 and engageable with the idlers on the idler shaft or stud 38, the dogs 81 are provided and are fixed to the sleeves 82 which are pinned to the shaft 83 which in turn is journalled in the bearings 84 in the frame 14. The springs 85 are connected at their upper ends to the dogs 81 and at their lower ends to the brackets 59 on the frame 14, and thus the dogs 81 bear downwardly on the printing wheels to urge them in a direction opposite to their direction of rotation and to thereby maintain a positive drive between the gears 33 and the printing wheels 46.

As shown in Fig. 4, the digits of the printing wheels 45 and 50 are positioned, by virtue of the location of the shaft in the frame 14, to extend just above the plate 60 when such plate is connected to the body or frame of the printer 1. Also, a date indicia 90, as shown in Fig. 2, and as indicated in Fig. 3 by the stud 61 which is shown fixed to the frame 14 by the pin 62, may be provided, and re-set manually each day by the operator. Such indicia, of conventional design, can be constructed similarly to the printer wheels 45 and 50, with one wheel having twelve graduations for the months of the year, one wheel having thirty one graduations for the days of the month, and one wheel having ten graduations to indicate the years.

The plate 60 may have a raised letter thereon, as the letter "R" shown at 63, to indicate the type of the gasoline dispensed by the pump 3. "R" designating the "regular" gasoline, and an "E" on a plate designating the "ethyl" gasoline.

Also, the plate has the slots 64 and 65 therein, the slot 64 receiving a card therein having letters embossed thereon to identify the station selling the gasoline, and the slot 65 receiving the credit card of the individual customer. Such customer credit cards correspond in detail to the credit cards furnished customers by department stores, and have embossed letters thereon to identify the individual customer.

Thus when the plate 60 is installed, raised thereabove are characters to print the amount of a sale, the type of gasoline, the gallons sold, the identity of the station, the date of the sale, and when the individual customer's card is in place, the identity of the customer.

The printing device comprises the printing roller 66 having its shaft 67 slidable in the slot 68 in the lid 69 which is pivoted at 70 to the frame 14. The arms 71 extend from the shaft 67 to support the rod 68' which has pivotally mounted thereon the linkage 72. This linkage 72 supports the pin 73 on which is pivoted the arm 74 of the bell crank lever 75, such lever being pivoted at 76 to the rod 77 which is supported by the lid 69. The spring 78 is connected at its lower end to the lug 79 on the frame 14 and at its upper end to the rod 68'. Thus, when the handle 80 of the lever 75 is forced downwardly the roller 66 moves outwardly and over a sheet to be printed, when such sheet is in place over the plate 60 and the raised characters thereabove. In this manner a complete printed record is obtained of all factors to be considered in recording a credit sale.

Thus, a device is provided, operable upon the operation of the metering transmission and calculating or computing transmission of an apparatus, as a gasoline pump, which can reproduce the indicia of price and volume shown on such pump, and which will return the printing or reproducing means to a pre-determined initial position, as zero, without in turn affecting the metering or the calculating or computing mechanism of the pump.

When this invention is installed for operation with apparatus, as gasoline pumps, having inherent in their operation the feature whereby in re-setting the wheels in 6 and 7, shown in Fig. 1, are over-driven past the initial or zero position, and then returned to such initial position or zero setting, it is necessary to install a transmission unit 27 on the stud 23, as shown in Fig. 3, corresponding in structure to the transmission unit 26, and to the transmission unit 25, shown in Figs. 3 and 5. With such transmission unit, it is possible to so arrange the gear ratio 33, 40, 56 so that at the end of over-drive in re-setting, the printing wheels 45, 50 return to their initial setting. Thus when the re-setting mechanism of the pump back-lashes from over-drive to return the over-driven indicia 6, 7, to their initial setting, the rotation imparted to the bevel gear 29 of the transmission unit 27, is not imparted further to drive through 33, 40, 56 to turn the re-set printing wheels 45, 50 off of their initial setting to which they have been returned during over-drive.

However, it is obvious that with an apparatus, as a gasoline pump, which does not have this inherent feature of over-driving the indicia wheels past the initial point or zero in re-setting, and then returning such indicia wheels to such initial point, as by a back-lashing action, it will not be necessary to have a transmission unit 27, as shown in Fig. 3, but rather an integrated bevel gear 29 and drive gear 33 may be provided to rotate upon the stud 23. This is obvious since, without back-lash, the re-set drives its indicia wheels 6, 7 to their initial point or zero, and stops at such point. Thus, under such conditions, the bevel gear and drive gear may be formed integrally, and the ratchet 32 and its associated parts may be omitted from this modification.

Broadly this invention relates to a printer which is adapted to position characters reproducing the indicia of a combination metering and calculating or computing device in a position to be printed, and to such a printer which is adapted to be re-set at an initial position without affecting the operation of the machine whose indicia it reproduces.

What is claimed is:

1. For use with a recording machine having recorder drive mechanism and recorder reset mechanism, a printer including a mounting member, a pair of parallel shafts carried thereby, one being rotatable and the other being fixed, a first gear rotatably mounted on the fixed shaft with a hub projected axially from one side face thereof, a second gear rotatably mounted on said hub, a spring pressed sleeve surrounding the fixed shaft internally of the second gear and slidably keyed thereto with ratchet tooth engagement with said hub, a drive connection for joining said first gear with the recorder drive mechanism, a type wheel geared to said second gear and rotatably mounted on said rotatable shaft, a one way drive connection between the type wheel and the rotatable shaft and a drive connection for joining said rotatable shaft with the recorder reset mechanism.

2. For use with dispensing apparatus having volume

and value recorders and resetting mechanism common to both recorders, a receipt printer including a rotary shaft arranged for drive connection with the resetting mechanism, two sets of printing wheels rotatably supported by said rotary shaft, a pawl and groove one way drive connection releasably latching said rotary shaft with both sets of printing wheels for rotating both in one direction with rotation of their support shaft, a fixed support shaft in spaced parallelism with said rotary shaft, two sets of two rotary drive gear elements rotatably supported by the fixed shaft and arranged for drive connection of one element of one set with the volume recorder, of the other element of the set with one of the sets of printing wheels, of one element of the other gear element set with the value recorder and of the other element with the other of the sets of printing wheels, the elements of each set being side by side and one having a projecting hub on which the other element is journalled and a spring pressed sleeve slidably keyed to the last mentioned element and having a one way ratchet drive engagement with said hub for transmitting printing wheel drive in the other direction only.

3. For use with a recording machine having a recorder and a recorder reset mechanism, a printer including movable type and drive transmitting connections for joining said movable type with the recorder and with the reset mechanism respectively for type movement in one direction in response to operation of the recorder and in the other direction in response to operation of the reset mechanism, each connection embodying a pair of side by side drive train elements, one having a hub extension on which the other is journalled, and a spring pressed member having one way ratchet tooth drive engagement with one of said elements and axially slidable keyed connection with the other element for rotation therewith.

4. A transmission unit comprising a fixed supporting stud, a first gear rotatable thereon and having a ratchet toothed hub projecting axially thereof, a second gear having a bore therethrough to receive said hub, a ratchet in said bore and rotatable on said stud and having ratchet teeth to mesh with said hub teeth, a drive key connecting said ratchet with said second gear for rotation therewith while permitting said ratchet to slide axially with relation to said second gear whereby rotation of said second gear in over-running relation to the first gear will cause said ratchet teeth to slide upon said hub teeth as said ratchet moves axially and resilient means to urge said ratchet teeth back into full meshed engagement with said hub teeth.

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