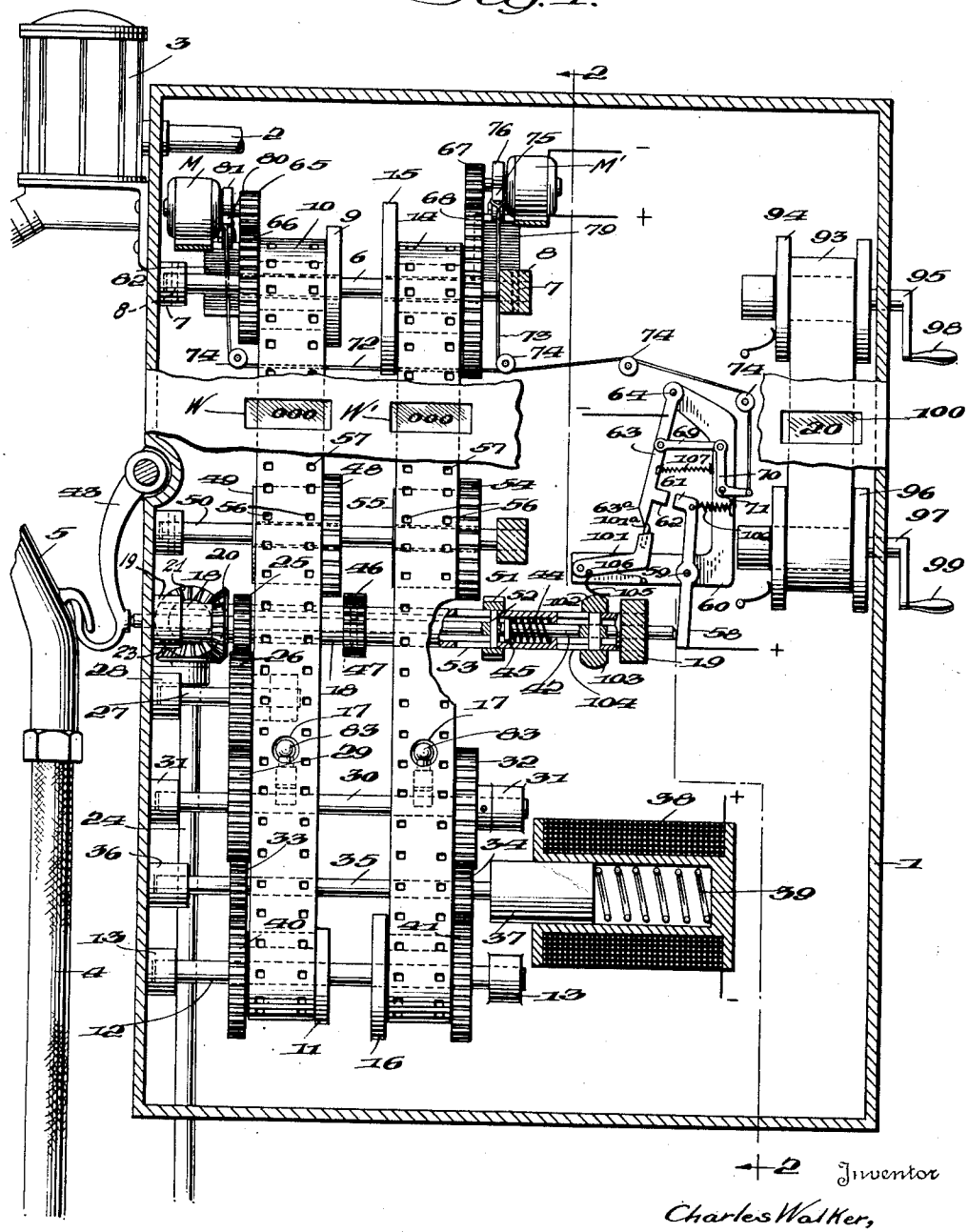
Oct. 17, 1939. C. WALKER 2,176,828

REGISTERING MECHANISM

Filed March 22, 1938 4 Sheets-Sheet 1

Fig. 1.



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Oct. 17, 1939. C. WALKER 2,176,828

REGISTERING MECHANISM

Filed March 22, 1938 4 Sheets-Sheet 2

Fig. 2.

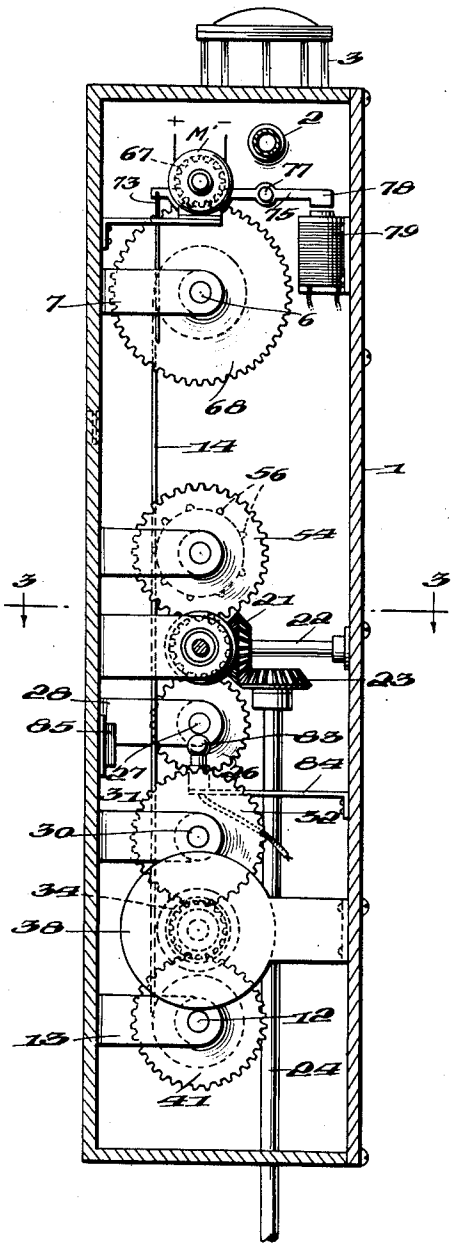
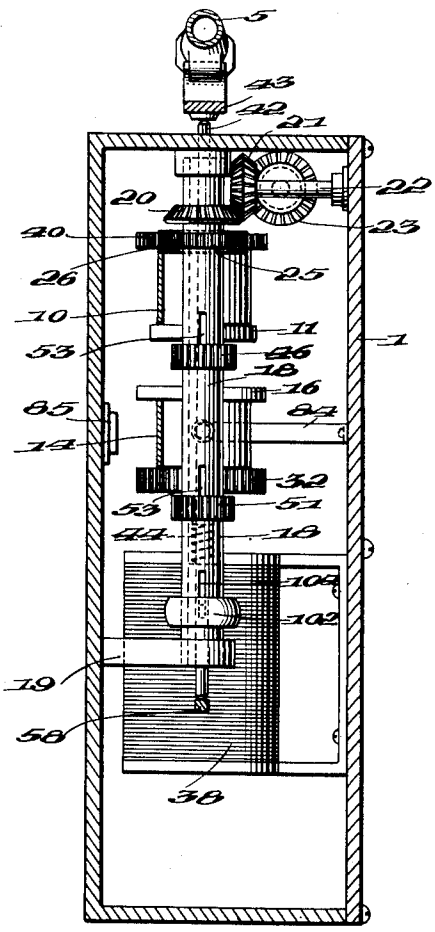


Fig. 3.



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Oct. 17, 1939. C. WALKER 2,176,828

REGISTERING MECHANISM

Filed March 22, 1938 4 Sheets-Sheet 3

Fig. 4.

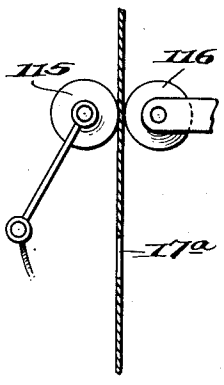


Fig. 5.

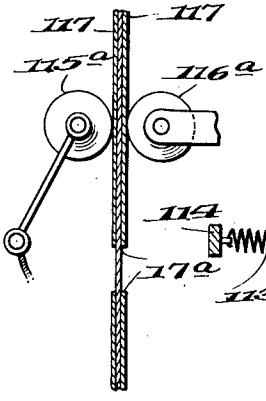
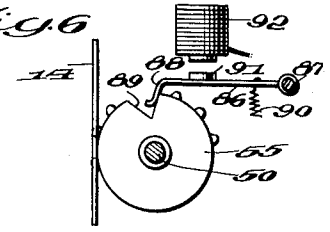


Fig. 6



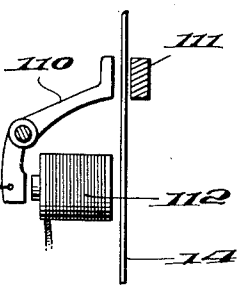
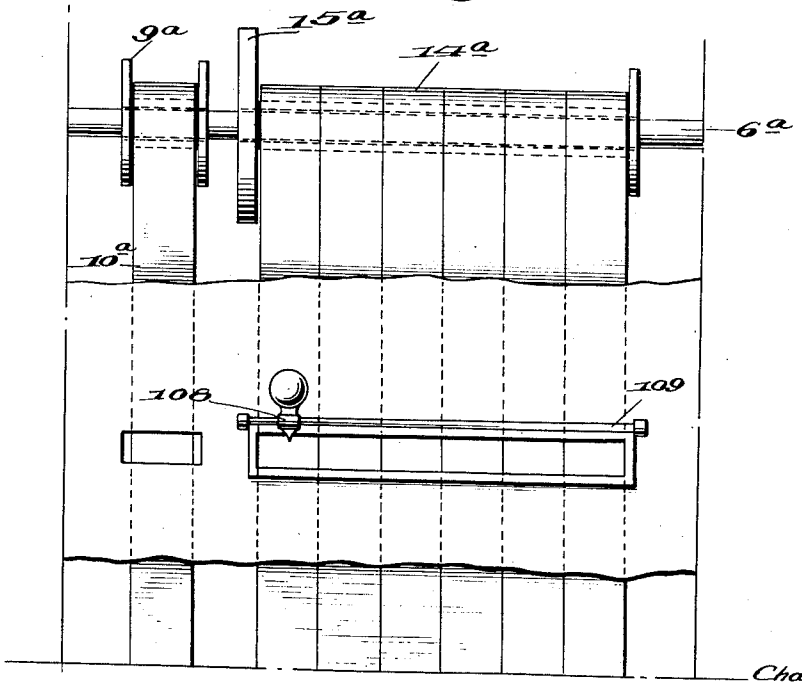


Fig. 7.

Fig. 8.



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REGISTERING MECHANISM

Filed March 22, 1938 4 Sheets-Sheet 4

Fig. 9.

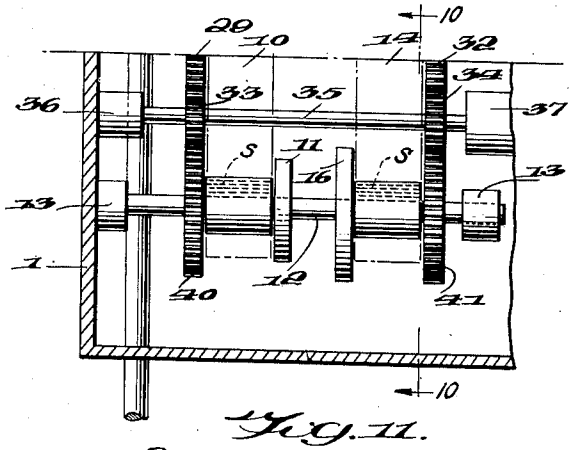


Fig. 10.

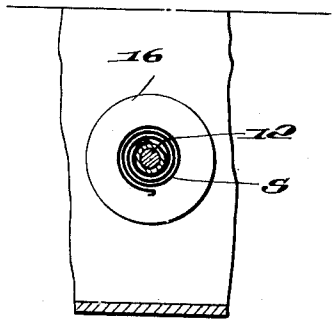


Fig. 11.

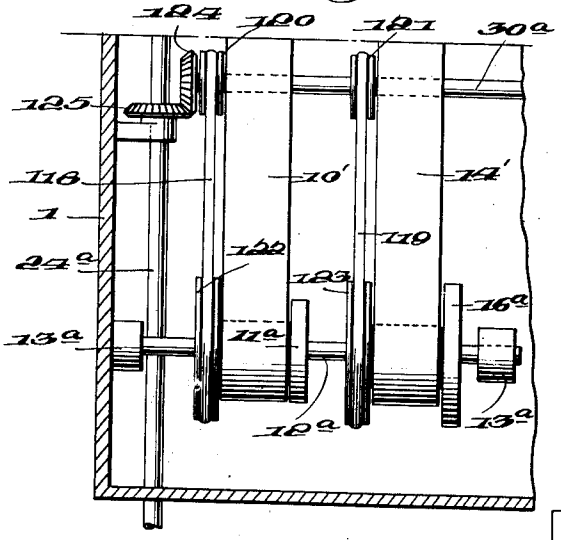
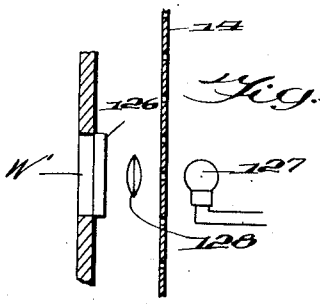


Fig. 12.



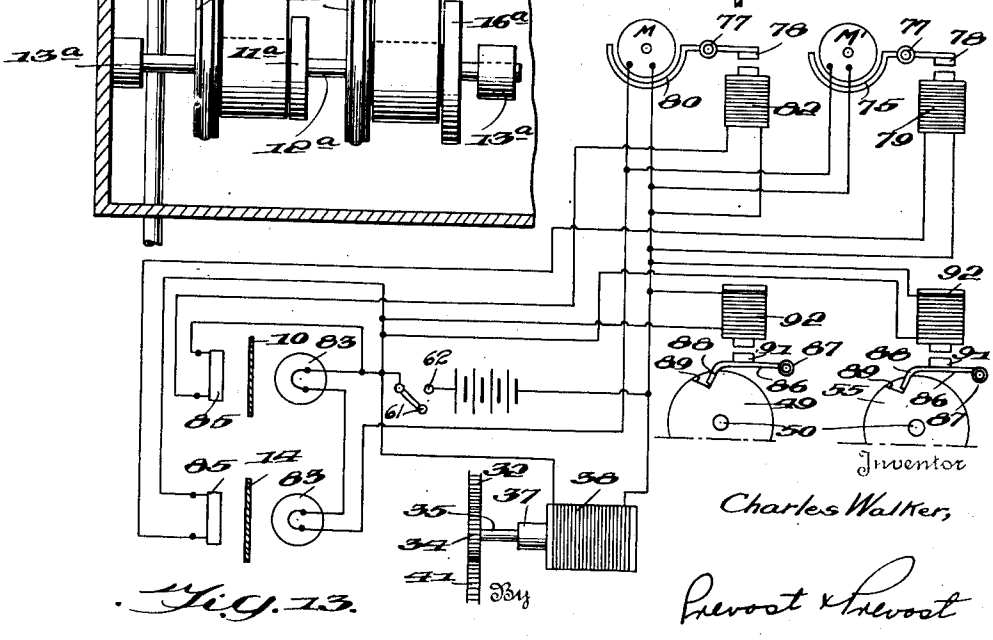


Fig. 13.

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Patented Oct. 17, 1939

2,176,828

UNITED STATES PATENT OFFICE

2,176,828

REGISTERING MECHANISM

Charles Walker, Knoxville, Tenn.

Application March 22, 1938, Serial No. 197,450

14 Claims. (Cl. 242—55)

My invention consists in new and useful improvements in liquid dispensing apparatus and relates more particularly to filling station pumps, having for its object to provide registering mechanism for indicating the cost, volume and price, respectively, of the liquid dispensed.

It is another object of my invention to provide a registering mechanism in the form of tapes carrying suitable indicia thereon adapted to be progressively advanced past a suitable window opening in the casing of the apparatus.

A further object of my invention is to provide means for automatically returning the tapes to normal position after each operation of the pump.

Still another object resides in mechanism for preventing overrunning of the register tapes past their normal operating positions.

With the above and other objects in view, which will appear as the description proceeds, my invention resides in the novel features hereinafter set forth, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

Referring to the drawings, in which numerals of like character designate similar parts throughout the several views,

Figure 1 is a fragmentary front view partly in section of a filling station pump illustrating the registering mechanism which forms part of my invention.

Figure 2 is a sectional view taken on line 2—2 of Fig. 1.

Figure 3 is a sectional view taken on line 3—3 of Fig. 2.

Figure 4 is an enlarged detail showing a modification of the brake applying switch in the form of contact rollers.

Figure 5 is a similar view of a slightly modified form of switch.

Figure 6 is a detail view of the braking mechanism for the sprocket drums.

Figure 7 is a detail view of another form of braking mechanism cooperating with the tapes.

Figure 8 is an enlarged detail of a modified form of register tapes.

Figure 9 is a vertical sectional view through the lower portion of the casing illustrating the tension springs about the cores of the lower spools.

Figure 10 is a transverse section taken on line 10—10 of Fig. 9.

Figure 11 is a vertical section through the lower portion of the casing illustrating a modified form of winding mechanism for the lower spools.

Figure 12 is an enlarged sectional detail view of a modified form of my invention for magnifying the indicia on the tapes, and

Figure 13 is a diagrammatic view of the electrical hook-up.

In the drawings, 1 represents the casing of a filling station pump having the conventional gasoline discharge conduit 2 in the upper portion thereof leading from the pump (not shown) to the sight gauge 3 and the delivery hose 4, the latter terminating in a nozzle 5 provided with the conventional valve (not shown).

6 designates a horizontal shaft which extends transversely across a portion of the casing adjacent its upper end, said shaft being mounted in suitable supports 7 and keyed therein by suitable pins 8. A spool 9 is rotatably mounted on the shaft adjacent one end thereof and has wound thereon the upper end of a volume tape 10 provided with indicia or graduations for progressively indicating the volume of the gasoline dispensed. The other end of the tape extends downwardly from the spool 9 and is secured to a lower spool 11 rotatably carried on a shaft 12 transversely mounted in the casing in supports 13 at a suitable point below shaft 6. Another tape 14 provided with indicia for progressively indicating the total cost of the gasoline dispensed is wound at one end on a second spool 15 rotatably mounted on the upper shaft 6, its other end extending downwardly and being secured to a second spool 16 carried by the lower shaft 12. Each of the tapes 10 and 14 is provided with a stop opening 17 for the purpose hereinafter set forth.

18 represents a hollow shaft mounted transversely in the casing 1 in suitable bearings 19 intermediate the upper and lower spool shafts 6 and 12, respectively. This shaft is provided adjacent one end thereof with a bevel gear 20 keyed thereto and meshing with one face of a double bevel 21 mounted on a short shaft 22 which extends transversely to the hollow shaft 18. The other face of the double bevel meshes with a bevel gear 23 provided on the upper end of the operating shaft 24 for the pumping mechanism (not shown).

Adjacent the bevel gear 20 and along one edge of the volume tape 10, the hollow shaft carries a gear 25 meshing with a gear 26 mounted on a short transverse shaft 27 located immediately below shaft 18 and rotating in bearings 28. Gear 26 in turn meshes with another gear 29 keyed on a second transverse shaft 30 adjacent one end of the latter, which shaft extends across the back of the tapes 10 and 14 and is supported in suitable bearings 31 in the casing. The other end

of this shaft has keyed thereto a second gear 32 similar to gear 29. These two gears 29 and 32 are adapted to mesh with complementary pinions 33 and 34, respectively, carried by a transverse shaft 35 mounted at one end in a suitable bearing 36 on the side wall of the casing, its other end terminating in a plunger 37 adapted to reciprocate in a solenoid 38. A spring 39 normally forces the plunger and shaft outwardly toward the left, as shown in Fig. 1, thereby maintaining the pinions 33 and 34 in mesh with their respective gears 29 and 32. The pinions 33 and 34 are also adapted to mesh with gears 40 and 41, respectively, provided on the spools 11 and 16.

Thus, when the pump operating shaft 24 rotates, the lower spools 11 and 16 will simultaneously be rotated in a counter-clockwise direction (Fig. 2) through the medium of the above described train of gears to wind the tapes 10 and 14 on their respective lower spools.

A rod 42 extends into the hollow portion of shaft 18 and projects outwardly at one end through the side wall of the casing 1 in abutting engagement with a hook member 43 pivoted to the outside wall of the casing 1 for supporting the nozzle 5 of the delivery hose. This rod 42 is adapted to reciprocate in the hollow shaft and is normally forced outwardly by means of a spring 44 cooperating with a suitable stop pin 45 on the rod, adjacent its inner end.

At a suitable point adjacent the volume tape 10, I provide a gear 46 freely mounted on the hollow shaft 18 and adapted to slide longitudinally with the rod 42 by means of a pin 47 extending transversely from the rod through longitudinal slots in the hollow shaft 18. This gear 46 is adapted to engage and disengage complementary gear 48 of a sprocket drum 49 mounted on a transverse shaft 50 immediately above the shaft 18. Another gear 51 is similarly mounted on the hollow shaft and adapted to slide longitudinally with the inner rod 42 by means of the transverse pin 52 operating in longitudinal slots 53 in the hollow shaft 18. This second gear is adapted to mesh with another gear 54 of a second sprocket drum 55 mounted on the shaft 50 immediately back of the cost tape 14. It will thus be seen that when the nozzle of the hose is on the hook, rod 42 will be moved inwardly to disengage gears 46 and 51 from the sprocket gears 48 and 54, respectively, but that upon removal of the nozzle from the hook 43, the spring 44 will force the rod outwardly to permit engagement of the gears 46 and 51 with their respective sprocket gears.

The periphery of each of the sprocket drums 49 and 55 is provided with two rows of teeth 56 (Fig. 2) adapted to cooperate with complementary spaced rows of openings 57 along the vertical edges of the tapes. With the nozzle off the hook and the gears 46 and 51 in mesh with the sprocket gears 48 and 54, respectively, rotation of the shaft 18 by the pump operating shaft 24 will rotate the sprocket drums 49 and 55 and feed the tapes 10 and 14, respectively, downwardly, at the same time rotating the lower take-up spools 11 and 16 through the medium of the train of gears heretofore described. Windows W and W' are provided in the front wall of the casing adjacent the tapes for rendering visible the indicia on said tapes as they are fed past the same.

The inner end of the rod 42 projects inwardly through the bearing 19 of the shaft 18 and is adapted to cooperate with the lower end of a switch lever 58 fulcrumed at 59 to a suitable bracket 60 in the casing. The upper end of the lever terminates in a contact member 61 cooperating with a complementary electrode 62 provided on the lower end of a lever 63 pivoted to the bracket 60 as at 64 to close a circuit (Fig. 13) to a pair of electric motors M and M'. The shaft of motor M carries a gear 65 adapted to mesh with a complementary gear 66 provided on the spool 9, while shaft of motor M' carries a similar gear 67 adapted to mesh with a complementary gear 68 on the spool 15 to rewind the tapes 10 and 14 upon their respective spools after each operation of the pump when the nozzle is placed upon its hook.

The solenoid 38 is also energized by the switch mechanism 61, 62 to retract the plunger 37 into the cylinder of the solenoid thereby sliding the gears 33 and 34 carried by shaft 35 to the right of Fig. 1 to disengage said gears from their complementary gears 29 and 32, respectively, thus permitting the motors M and M' to rewind the tapes onto their upper spools while allowing the lower spools to rotate freely.

A link member 69 secured to the lever 63 at a point intermediate the ends thereof is connected to the upper arm of a bell-crank 70 pivoted to the bracket 60 at 71. The end of the lower arm of bell-crank 70 has attached thereto the lower ends of a pair of cords or cables 72 and 73 running over pulleys 74. The upper end of the cord 73 is connected to the end of a brake lever 75 (Fig. 2), which cooperates with a brake drum 76 on the shaft of motor M'. This brake lever is suitably pivoted at 77 and terminates at its other end in a contact member 78 which cooperates with an electro-magnet 79. The upper end of cord 72 is connected to a brake lever 80 cooperating with a brake drum 81 on the shaft of motor M and as in the case of brake lever 75, this brake lever 80 is also similarly pivoted and terminates in a contact member cooperating with an electro-magnet 82, as will hereinafter more fully appear.

83 represents a pair of light bulbs suitably mounted on a bracket 84 in the casing 1 immediately in back of the tapes 10 and 14, preferably at a point below the hollow shaft 18. These light bulbs cooperate with selenium cells or photo-electric cells 85 on the front wall of the casing 1 in front of the aforementioned tapes (Fig. 2) and in line with said bulbs so as to be energized by the light rays thereof when the stop opening 17 in each of the tapes 10 and 14 comes adjacent said bulbs. The selenium cell in front of tape 14 is in circuit with the electro-magnet 79, and selenium cell in front of tape 10 is in circuit with electro-magnet 82. Thus when said openings 17 in the tapes come adjacent the respective lights, said cells will be energized to rock the brakes 80 and 75 upon their fulcrums and stop the motors M and M'. This movement of the brakes will pull the cords 72 and 73 upwardly, and through the medium of the bell-crank 70 and link 69, will break the contacts 61 and 62 to the motors and light bulbs and deenergize the solenoid 38.

In Fig. 6 I have shown a stop mechanism for use on the sprocket drum 55 to arrest the upward travel of the tape 14 simultaneously with the application of the brake to the motor M'. This mechanism comprises a lever 86 pivoted at one end as at 87 and terminating at its other end in a bent portion 88 adapted to enter into a deep notch 89 on the periphery of the drum 55 along one edge thereof. Spring 90 on the underside of the lever 86 normally forces the latter downwardly in engagement with the notch 89. The

upper face of the lever intermediate its ends is provided with a contact member 91 cooperating with an electro-magnet 92 also energized by the switch mechanism 61, 62 so that when the motor M' starts to rewind the tape 14, the bent portion of the sprocket braking lever 88 will be lifted out of the notch 89 to permit the drum to rotate freely in clockwise direction by virtue of the engagement between the sprocket teeth 56 and openings 57 in the tape. However, when the circuit to the motor M' is broken by the switch mechanism heretofore described, the circuit to the electro-magnet 92 will also be broken to allow the lever 88 to be pulled downwardly by its spring into engagement with notch 89.

While I have shown and described the stop mechanism as applied to the sprocket drum 55, it will be understood that a similar mechanism is provided on the sprocket drum 49 for arresting the volume tape 10 and operates in a similar manner.

93 represents a price tape wound at its upper end on a spool 94 mounted on a short transverse shaft 95 in the side of the casing, the other end of the tape extending downwardly and being wound on a lower spool 96 mounted on another short shaft 97 at a suitable point below the shaft 95. The outer ends of these shafts project through the side wall of the casing and terminate in crank portions forming handles 98 and 99, respectively. Tape 93 is adjustable vertically between the spools and is provided with suitable indicia to indicate through a window opening 100 the current price of gasoline.

Having described the construction of the preferred form of my invention, its operation is as follows:

Assuming that the price of the gasoline is twenty cents per gallon as shown through the window 100 and that the parts are in the position shown in Fig. 1, with the cost tape 14 carrying indicia based on the twenty cent computation. The nozzle 5 is removed from the hook 43 permitting inner spring 44 to force the rod 42 outwardly, thereby sliding the gears 46 and 51 in mesh with their respective sprocket gears 48 and 54. The pump is then started, and through the medium of its operating shaft 24 and the bevel gear arrangement, rotates the hollow shaft 18 and the sprocket drums 49 and 55 to feed the tapes 10 and 14 downwardly on to the lower spools 11 and 16, respectively.

As the tapes are wound on the lower spools 11 and 16 at a uniform rate by the train of gears 25, 26, 29, 33 and 40, the diameters of the spools will progressively increase, resulting in an increasing take-up on the tapes, and unless provision is made to counteract this increasing take-up and consequent longitudinal strain on the tapes, said tapes will break. In Figs. 9 and 10, I have shown for this purpose coil springs S on the spools 11 and 16; these springs are secured at one end to the cores of the respective spools and their free ends are secured to the lower ends of the tapes 10 and 14. Thus, with continued windings of the lower spools, the increasing take-up on the tapes will be compensated for by the compression of the springs S about the cores of the spools.

When the desired volume of gasoline has been delivered, as shown in the window W, the pumping mechanism is stopped and the nozzle is replaced on its hook 43, thereby forcing the rod 42 inwardly to disengage the gears 46 and 51 from gears 48 and 54, respectively. The inner end of the rod will rock the switch lever 58 against the complementary contact member 62 to close the circuit to the motors M and M' and will energize the solenoid 38 to retract the plunger 37 therein, thereby disengaging gears 33 and 34 from gears 24 and 32, respectively. The electro-magnet 92 will simultaneously be energized to lift the bent portion 88 on the levers 86 out of the notch 89 on the drums 49 and 55 to allow the tapes 10 and 14 to be rewound upon their upper spools by the motors until the openings 17 come adjacent the light bulbs for energizing the selenium cells. As heretofore explained, this automatically closes the circuit to the electro-magnets 82 and 79 for applying the brakes 80 and 75, respectively, of the motors M and M'.

Application of the brakes simultaneously rocks bell-crank 70 upwardly by means of the cables 72 and 73 to move contact member 62 on switch lever 63 away from member 61. During this movement of the switch lever, its lower beveled end 63a will ride over the complementary beveled end of a spring latch 101a provided on the upper end of a lever 101 pivoted on the bracket 60 and will be latched in this position. The unlatching of the switch lever 63 is controlled by a collar 102 slidably mounted on the hollow shaft 18 adjacent its inner end and adapted to slide longitudinally with the inner rod 42 by means of a transverse pin 103 which extends from the rod through longitudinal slots 104 in shaft 18. When the rod 42 is in its innermost position, the collar 102 engages under a leaf spring 105 on the underside of the latch lever 101 to raise the latter into latching position. However, when the rod is moved outwardly toward the left, as hereinbefore described, the collar 102 will slide out of engagement with the spring 105 and permit latch lever 101 to drop downwardly onto its stop lug 106 on the bracket 60. Spring 107 will then return the switch lever 63 to its normal position with its contact member 62 ready to be actuated by the complementary contact 61 when the nozzle is replaced on the hook 43.

From the foregoing it will be observed that I have provided a registering mechanism which is entirely automatic in its operation and wherein such mechanism is accurate in its performance.

In order to adapt my invention to varying prices at which the gasoline may be sold, I provide a relatively wide cost tape 14a as shown in Fig. 8. This tape is wound at its upper end on an upper spool 15a mounted on shaft 6a and is divided into a transverse series of computing zones based on different computations. In this form of my invention, the window opening extends entirely across the width of tape 14a, and adjacent thereto, I provide a suitable indicator 108 mounted on a guide 109 and adapted to be slidable thereon to any of the computing zones on the tape 14a. The volume tape 10a wound on the upper spool 9a in this form of my invention is the same as that shown in Fig. 1 with the window W for bringing the indicia into view.

In the modification illustrated in Fig. 11, I have eliminated the use of the train of gears and solenoid actuated clutch for the lower spools and have substituted therefor a pair of endless belts 118 and 119 running over pulleys 120 and 121, respectively, keyed to shaft 30a adjacent the tapes 10' and 14'. These belts extend downwardly onto pulleys 122 and 123 provided on shaft 12a adjacent the spools 11a and 16a, respectively. In this form of my invention, shaft 30a is operatively connected to the vertical pump operating

shaft 24a by means of a bevel gear 124 meshing with a complementary bevel gear 125 on shaft 24a, so that both shafts will rotate in unison to take up the lower ends of the tapes 10a and 14a by the belt and pulley arrangement above described. With continued windings of the tapes on to their lower spools, the diameters of said spools will progressively increase as explained in connection with Figs. 9 and 10. However, the strain on the tapes occasioned by such increasing diameters will be relieved by reason of the slippage of the belts over their respective pulleys, and on the return movement of the tapes onto their upper spools hereinbefore described in connection with Fig. 1, the belts 118 and 119 will also slip over their pulleys, inasmuch as during this movement of the tapes, the shafts 24a and 30a are stationary.

In Fig. 7 I have illustrated a modified form of braking mechanism for the tape in place of that shown on the sprocket drum in Fig. 6. This braking mechanism comprises a pivoted brake lever 110 immediately in front of the tape 14 and adapted to cooperate with a block 111 immediately in back of said tape. The other end of the brake lever is adapted to cooperate with an electro-magnet 112 so that when the magnet is energized, the brake lever will be rocked out of engagement with the tape to permit the motors M and M' to wind the tape on the upper spools. When the magnet is deenergized, a spring 113 interposed between a suitable bracket 114 and the lever 110 rocks the latter into frictional engagement with the tape.

In the form of my invention shown in Fig. 1, I preferably employ metallic tapes so that when the mechanism is in operation to feed the tapes downwardly on to the lower spools 11 and 16, the light rays from the bulbs 17 for actuating the selenium cells will be intercepted. However, the tapes may be composed of any suitable resilient material which will similarly intercept the ray of light.

I may, if desired, use tapes of any non-conducting material such as shown in Fig. 4, and instead of the selenium cell arrangement I employ oppositely disposed contact rollers 115 and 116 on the front and back of the tapes, respectively, normally urged toward each other by any suitable spring means. During the rewinding operation of the tapes onto their upper spools, when the openings 17a come adjacent the rolls, said rolls will complete the circuit to the brake applying mechanism as heretofore described, in connection with the selenium cell arrangement.

In Fig. 5 I have shown a similar embodiment of contact rollers 115a and 116a but wherein the tapes are metallic and coated with any suitable insulating material 117. The insulating material is removed at a point corresponding to the opening 17a to permit contact of the rolls with the metallic tape for completing the circuit to the brakes.

The indicia on the tapes 10 and 14 may be applied in any suitable manner such as by perforations or printing the same thereon. However, in order to minimize the lengths of the tapes, such indicia may be greatly reduced in size and in Fig. 12 I have shown suitable mechanism applied to tape 14, for example, for magnifying such indicia and projecting the same onto screens 126 located immediately in back of the windows W and W' and in front of the respective tapes. A pair of electric lights 127 immediately in back of the tapes cooperate with magnifying lenses 128 interposed between the tapes and screens. Thus, as the tapes are fed past the lights, the indicia will be magnified and projected onto the screens.

From the foregoing, it is believed that the construction and advantages of my invention may be readily understood by those skilled in the art without further description, it being borne in mind that numerous changes may be made in the details disclosed without departing from the spirit of my invention as set out in the following claims:

What I claim and desire to secure by Letters Patent is:

1. Registering mechanism including supply and take-up spool members, register tape means wound on said supply spool and secured at its opposite end to said take-up spool, sprocket mechanism for paying out said tape from said supply spool onto said take-up spool, a prime mover for operating said sprocket mechanism, a clutch for connecting and disconnecting said sprocket and said prime mover, an electric motor for returning said tape to normal position, a switch mechanism controlled by said clutch for actuating said motor, whereby upon the release of said clutch, said tape will be rewound upon its supply spool, braking mechanism for said motor, means for actuating said brake mechanism, whereby when said tape has returned to a predetermined position by said motor, said braking mechanism will stop the latter, and means for positively preventing overrunning of the tape beyond its predetermined position.

2. Mechanism as claimed in claim 1 wherein said last named means comprises a brake mechanism on said sprocket.

3. Mechanism as claimed in claim 1, wherein said last named means comprises a friction brake cooperating with said tape.

4. Registering mechanism including register tape means, supply spool means on one end of said register tape, take-up spool means on the other end of said tape, a sprocket drum for paying out said tape from said supply spool, a prime mover for winding said tape onto said take-up spool, a clutch for connecting and disconnecting said sprocket drum and said prime mover, a second clutch for connecting and disconnecting said prime mover and said take-up spool, an electric motor for returning said tape to normal position, and a switch mechanism controlled by said first-named clutch for actuating said motor and for releasing said second named clutch, whereby upon closing of said switch, said tape will be rewound upon its supply spool.

5. Registering mechanism including register tape means, supply spool means on one end of said register tape, take-up spool means on the other end of said tape, a sprocket drum for paying out said tape from said supply spool, a prime mover for winding said tape onto said take-up spool, a clutch for connecting and disconnecting said sprocket drum and said prime mover, a second clutch for connecting and disconnecting said prime mover and said take-up spool, an electric motor for returning said tape to normal position, a switch mechanism controlled by said first-named clutch for actuating said motor and for releasing said second named clutch, whereby upon closing of said switch, said tape will be rewound upon its supply spool, braking mechanism for said motor, means for actuating said brake mechanism, means for positively prevent-

ing overrunning of the tape beyond a predetermined position, and means actuated by said motor brake mechanism for opening said switch.

6. Registering mechanism including register tape means, supply spool means on one end of said register tape, take-up spool means on the other end of said tape, a sprocket drum for paying out said tape from said supply spool, a prime mover for winding said tape onto said take-up spool, a clutch for connecting and disconnecting said sprocket drum and said prime mover, a second clutch for connecting and disconnecting said prime mover and said take-up spool, an electric motor for returning said tape to normal position, a switch mechanism controlled by said first-named clutch for actuating said motor and for releasing said second named clutch, whereby upon closing of said switch, said tape will be rewound upon its supply spool, braking mechanism for said motor, a light ray actuated switch controlled by said tape for actuating said brake, means for positively preventing overrunning of the tape beyond a predetermined position, and means actuated by said motor brake for opening said switch.

7. Registering mechanism as claimed in claim 6 including a light bulb and an opening in said tape, whereby when said opening comes adjacent said light bulb, said light actuated switch will be energized.

8. Registering mechanism including a register tape, a spool on one end of said tape, take-up supply spool on the other end of said tape, a sprocket drum for paying out said tape from said supply spool, a prime mover for winding said tape onto said take-up spool, a clutch for connecting and disconnecting said sprocket drum and said prime mover, a second clutch for connecting and disconnecting said prime mover and said take-up spool, an electric motor for returning said tape to normal position on said supply spool, means for engaging and disengaging said first-named clutch, a switch mechanism actuated upon the release of said first-named clutch for actuating said motor, a solenoid actuated by said switch mechanism for releasing said second named clutch, braking mechanism for said motor, a selenium cell controlled by said tape for actuating said braking mechanism, brake mechanism on said sprocket drum for positively preventing overrunning of the tape beyond a predetermined position, means actuated by said motor brake for opening said switch, and means controlled by said first-named clutch mechanism for locking said switch in open position.

9. Registering mechanism as claimed in claim 8, wherein said tape comprises a series of transversely spaced registering zones based on different computations, a light bulb, and an opening in said tape so located relative to said predetermined position of said tape that when said opening comes adjacent said light bulb, said selenium cell will be energized.

10. Mechanism as claimed in claim 8 including means for releasing said switch lock upon the engagement of said first-named clutch with said sprocket drum.

11. Registering mechanism including an insulated register tape, a supply spool on one end of said tape, a take-up spool on the other end of said tape, a sprocket drum for paying out said tape from said supply spool, a prime mover for winding said tape onto said take-up spool, a clutch on said prime mover for connecting and disconnecting said sprocket drum and said prime mover, means for shifting said clutch into and out of engagement with said sprocket drum, a second clutch for connecting and disconnecting said prime mover and said take-up spool, an electric motor for returning said tape to normal position on said supply spool, a switch mechanism effective upon the release of said first-named clutch for actuating said motor, a solenoid actuated by said switch mechanism for releasing said second named clutch, braking mechanism for said motor, a second switch controlled by said tape for actuating said braking mechanism, braking mechanism on said sprocket drum for preventing overrunning of the tape beyond a predetermined position, means actuated by said motor brake for opening said first-named switch, means for latching said switch in open position, and means on said prime mover effective upon the engagement of said first-named clutch for unlatching said switch.

12. Registering mechanism as claimed in claim 11 wherein said second named switch comprises a pair of oppositely disposed contact members, and an opening in said tape for permitting engagement of said members to close the circuit to said motor braking mechanism for energizing the latter.

13. A registering mechanism including supply and take-up spool members, tape means wound on said supply spool and secured at its opposite end to said take-up spool, means for paying out said tape from said supply spool onto said take-up spool, a prime mover for operating said paying-out means, means for compensating for the increasing diameter of the windings on said take-up spool, a clutch for connecting and disconnecting said paying-out means and said prime mover, a second clutch for connecting and disconnecting said prime mover and said take-up spool, means for returning said tape to normal position, and means actuated by said first-named clutch for controlling said return means and for releasing said second-named clutch.

14. A registering mechanism including supply and take-up spool members, tape means wound on said supply spool and secured at its opposite end to said take-up spool, means for paying out said tape from said supply spool onto said take-up spool, a prime mover for operating said paying-out means, a clutch for connecting and disconnecting said paying-out means and said prime mover, a second clutch for connecting and disconnecting said prime mover and said take-up spool, means for returning said tape to normal position, means actuated by said first-named clutch for controlling said return means and for releasing said second-named clutch, and mechanism for arresting the return movement of said tape beyond a predetermined point.

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