Nov. 4, 1930. C. BRAHY 1,780,292

AUTOMATIC LIQUID FUEL DISPENSER

Filed Oct. 8, 1929 4 Sheets-Sheet 1

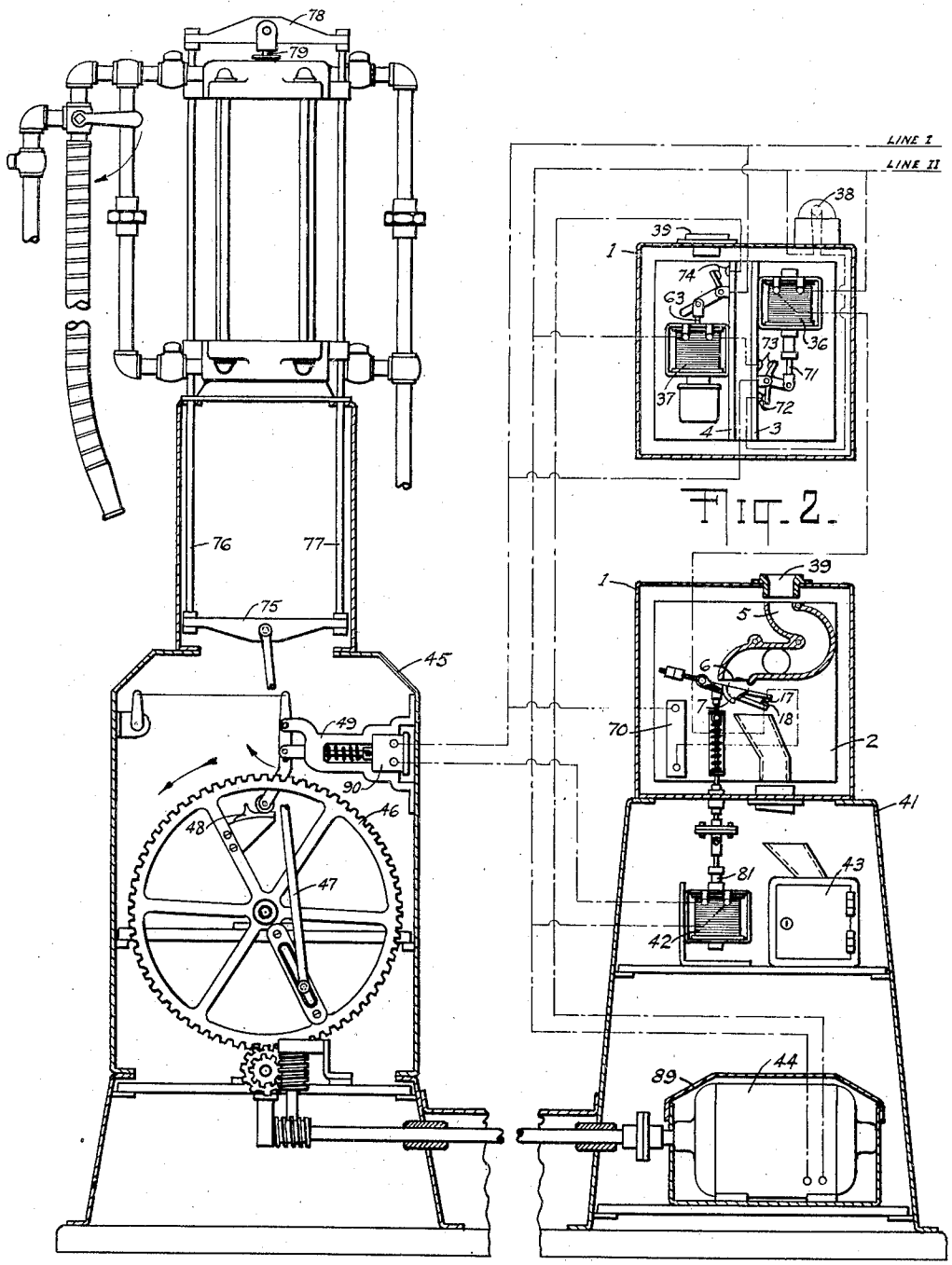


Fig. 2.

Fig. 1.

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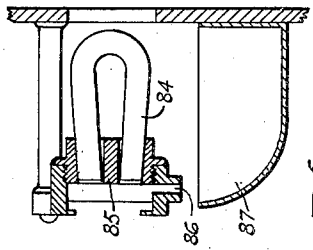


FIG. 6.

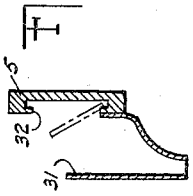


FIG. 5.

FIG. 3.

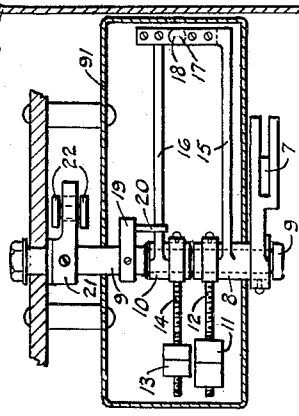


FIG. 4.

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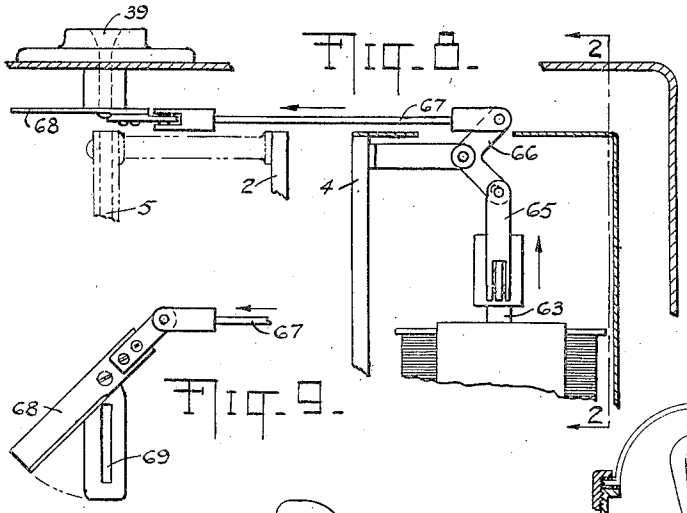


Fig. 8.

Fig. 9.

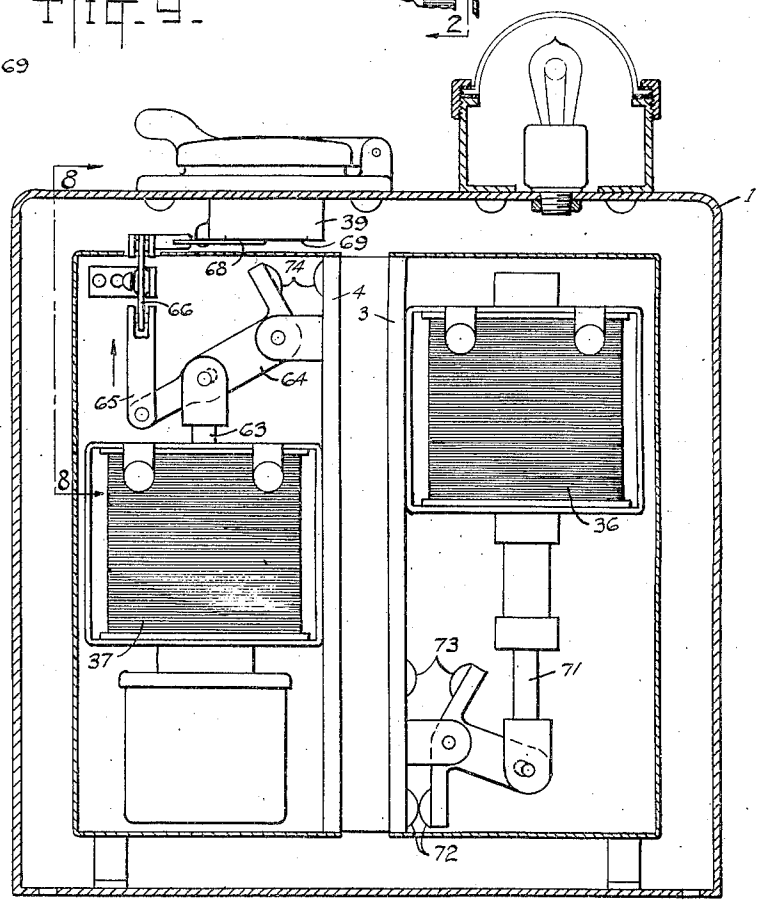


Fig. 7.

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AUTOMATIC LIQUID FUEL DISPENSER

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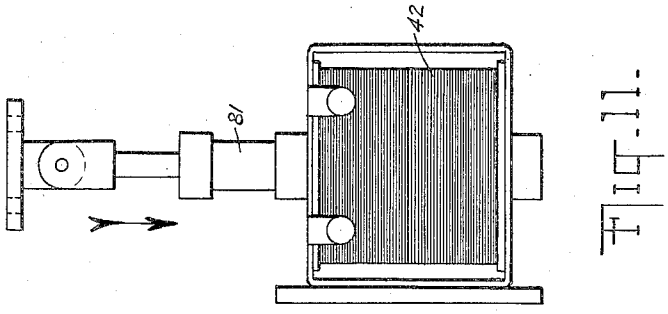


Fig. 11.

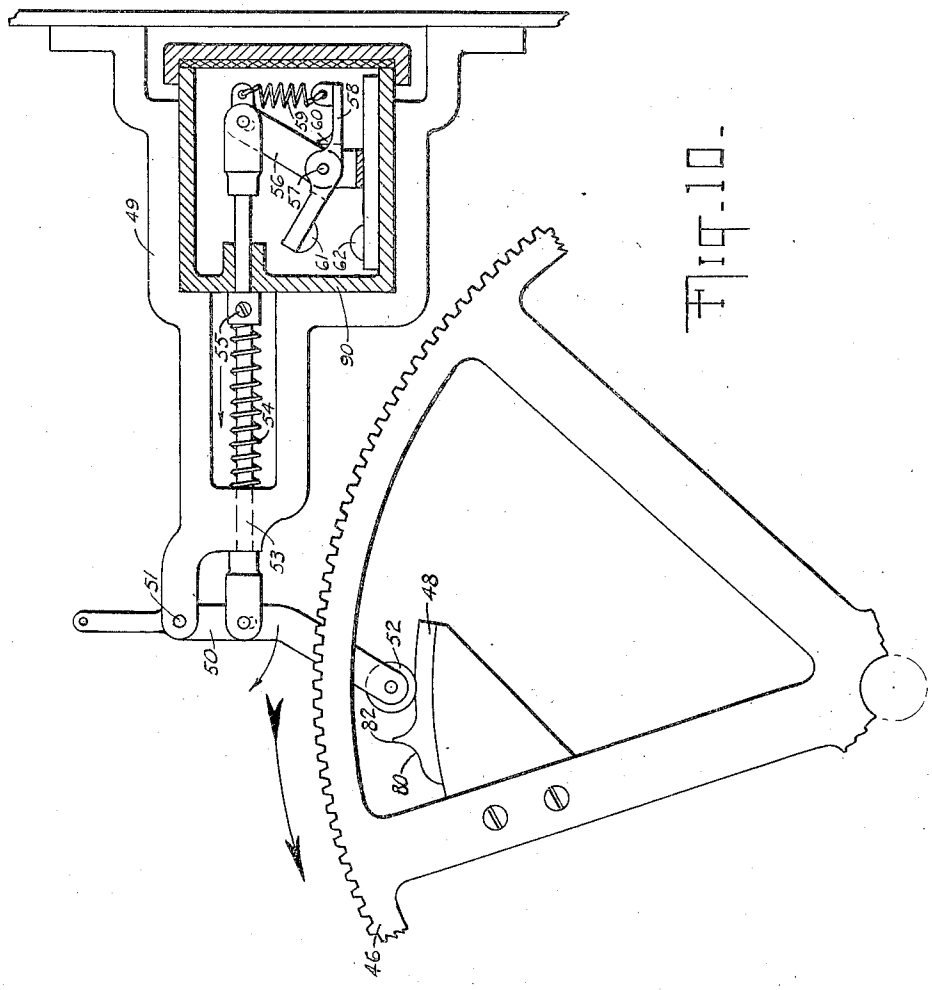


Fig. 10.

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UNITED STATES PATENT OFFICE

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AUTOMATIC LIQUID-FUEL DISPENSER

Application filed October 8, 1929. Serial No. 398,162.

This application is a continuation in part of my application for automatic liquid fuel dispensers filed March 28th, 1928, Serial No. 265,257, and of the application filed August 28th, 1929, Serial No. 388,956, as well as of my application for automatic liquid fuel dispensers, filed concurrently herewith—the scope of this application covering improvements in the coin control features of my invention.

An object of this invention is to provide an automatic coin-actuated mechanism that will control the dispensing operation of a liquid fuel pump. Another object of my invention is to provide means to prevent the operation of the machine when a coin other than that of a predetermined denomination is deposited, so that overweight, and undersized coins, and iron and steel slugs will fail to cause the dispensing of fuel. A further object is to provide a vapor proof construction for such electrical parts as may be subject to sparking, so as to eliminate the danger of explosions due to the ignition of combustible vapors, such as generally abound in the vicinity of gasoline stations. A still further object of this invention is to provide means to prevent the insertion of a coin in the deposit slot during the fuel dispensing cycle of the pump. Other objects and features will appear from the drawings and description hereinafter given.

Referring to the drawings:

Fig. 1 is a front sectional elevation, showing the general arrangement and the wiring diagram of the apparatus constituting my invention.

Fig. 2 is a rear sectional elevation of the back portion of the casing 1, taken along line 2—2 of Fig. 8.

Fig. 3 is an enlarged front sectional elevation of the front portion of the coin deposit mechanism within the casing 1.

Fig. 4 is a fragmentary sectional plan along line 4—4 of Fig. 3.

Fig. 5 is a fragmentary side sectional elevation of Fig. 3 along line 5—5, showing a portion of the coin receiver for small coins.

Fig. 6 is a fragmentary side section of Fig. 3 along line 6—6, showing the arrangement of the magnet and slot for steel and iron slugs.

Fig. 7 is an enlarged rear sectional elevation of the back portion of casing 1, taken along line 2—2 of Fig. 8, showing the solenoids comprising the circuit controlling relay.

Fig. 8 is a fragmentary sectional side elevation of Fig. 7 along line 8—8, showing the coin slot shutter arrangement.

Fig. 9 is a partial bottom view of the coin shutter arrangement of Fig. 8.

Fig. 10 is a fragmentary and partial sectional elevation of the circuit breaking tripper switch and tripping mechanism.

Fig. 11 is an elevation of the tripper actuated circuit breaking solenoid.

In the drawings, the casing 1 contains the panels 2, 3 and 4. Attached to panel 2 is the coin chute 5, under the opening 6 of which is the temporary coin receptacle 7. This receptacle, as can best be seen from Fig. 4, is fixed to sleeve 8 which is loosely mounted on shaft 9, on which is similarly mounted the sleeve 10. The counterweight 11 is slidably secured to the bar 12, which is fixed to sleeve 8; and the counterweight 13 is slidably mounted on bar 14 which is fixed to sleeve 10. The stems 15 and 16 carry the contact points 17 and 18, respectively. Attached to the shaft 9 is the arm 19 carrying the pin 20 which is engageable with the stem 16. The arm 21 is in pivotal engagement with the forked ends 22 of the member 23, which is attached to the stem 24. The helical spring 25 is positioned over the stem 24 and fixed thereto at 26, the free end of the spring being in abutment with the wall 27. Mounted on the panel 2 and underneath the temporary coin receptacle 7 is the intermediate coin chute 28 which leads to the coin outlet 29, normally kept closed by the weighted door 30. The small coin receiver 31 is adjacent the slotted opening 32 in the wall of the coin chute 5 (Fig. 3 and Fig. 5), the said receiver 31 communicating with the chute 33, the return outlet 34 and the return receptacle 35.

Attached to panel 3 is the solenoid 36, and attached to panel 4 is the slow operating

solenoid 37. Mounted on the top of casing 1 is the lamp 38 and also the coin deposit slot 39, which is normally kept closed by the spring actuated cover 40.

The casing 41 contains the circuit breaking solenoid 42, the coin box and chute 43, and the enclosed motor 44. Within casing 45 is the gear wheel 46 to which is connected the pump connecting rod 47 and the tripping cam 48.

Mounted on the casing 45 is bracket 49, which contains the tripper switch for setting into motion the circuit breaking mechanism. The lever 50, pivotally connected at 51, carries the roller 52 which is engageable with the surface of the tripper cam 48. Pivotally attached to lever 50 is rod 53, the helical spring 54 being mounted thereon and fixed thereto at 55. The rod 53 is pivotally attached to link 56 which is mounted on shaft 57. Connecting the ends of rod 53 and the contact lever 58 is the spring 59, the said contact lever having thereon the finger 60 adapted to engage the link 56, and the contact point 61 adapted to come into abutment with the contact 62.

In Figures 7, 8 and 9, the coin slot shutter mechanism is shown. The core 63 is pivotally attached to lever 64 which, through a system of linkage comprising the elements 65, 66, and 67 connects with the blade shutter 68 which is adapted to cover the underside 69 of the coin deposit slot 39.

When a coin of the proper size and weight is deposited into the coin deposit slot 39, it drops down through the coin chute 5 and into the temporary coin receptacle 7. The weight of the coin causes this receptacle to swing down against the action of the weight 11 bringing stem 15 down until contact 17 is brought into abutment with contact 18. This actuates the relay consisting of solenoids 36 and 37 and closes the circuit through the motor 44 and the main source of current supply comprising line I and line II. To be more specific, when contact is made between points 17 and 18, the circuit is closed through solenoid 36, the current passing through the resistance 70 which is in series with the contacts 17 and 18 and the said solenoid 36. The core 71 is drawn upward, separating the contacts 72, and thereby breaking the circuit through the lamp 38, which remains broken throughout the cycle of operation of the pump. At the same time the contacts 73 are brought into abutment, thereby closing the circuit through the slow operating solenoid 37, resulting in an upward movement of core 63 to bring the points 74 into contact. This closes the circuit through the motor 44.

This motor drives the gear wheel 46 through a system of shafting and gearing as shown, resulting in a reciprocating movement of the connecting rod 47 and a corresponding movement of the members 75, 76, 77 and 78 and of the pump piston 79, thereby operating the pump. This is more specifically described in another application concurrently filed herewith, and which is a continuation of the application filed on August 28th, 1929, Serial No. 388,956.

The gear wheel 46 is shown in its starting position. At the end of one complete revolution thereof when a fuel dispensing cycle has been completed, the surface 80 of the tripper cam 48 will strike the roller 52 and cause a clockwise movement of the lever 50 around its center 51, thereby producing a movement of the rod 53 in the direction of the arrow against the action of spring 54. This movement is transmitted through the spring 59 to the lever 58, resulting in the contact of points 61 and 62. (See Fig. 10.) This closes the circuit through the solenoid 42, as a result of which the core 81 is drawn down, carrying with it, against the action of spring 25, the stem 24 and member 23. The resulting downward movement of arm 21 is transmitted through shaft 9 to arm 19, so that the pin 20 engages the stem 16 and forces it to swing downward against the action of weight 13. As the stem 15 of the temporary coin receptacle 7 is supported by stem 16, the contacts 17 and 18 being in abutment, the downward movement of stem 16 releases the temporary coin receptacle 7 and permits it to swing down due to the weight of the coin therein, until the said coin drops into the intermediate coin chute 28, through the coin outlet 30 and into the coin box 43. The absence of the coin in receptacle 7 will permit the weight 11 to swing stem 15 back to its starting position as shown in Fig. 3, so that the contact between 17 and 18 is now broken.

Referring to Fig. 10 it will be seen that after the roller 52 passes over the apex 82, the lever 50 will move in a counter-clockwise direction and cause the rod 53 to move to the right, so that the link 56 will engage the finger 60 and cause a clockwise movement of lever 58, thereby separating the contacts 61 and 62. This breaks the circuit through solenoid 42, permitting the spring 25 to bring the stem 24 back to its starting position, as well as the arm 19 and the pin 20. The stem 16, acted upon by counterweight 13, swings back until it comes into abutment with the now stationary pin 20, which holds stem 16 in the starting position shown in Fig. 3.

The breaking of the contact points 17 and 18 breaks the circuit through solenoid 36, thereby causing a downward movement of core 71, a disengagement of contacts 73, and an engagement of contacts 72. The circuit through 37 is now broken, so that the core 63 will move downward and separate contacts 74, thereby breaking the circuit through the

motor, and thus putting a stop to the operation of the mechanism.

The engagement of contacts 72 closes the circuit through the lamp 38 which acts as a signal that the machine is ready to begin a new fuel dispensing cycle.

At the beginning of the cycle of operation, after the deposit of the coin, the upward movement of the core 63 of solenoid 37 is transmitted to links 64, 65, 63 and 67 to the blade shutter 68 which moves counterclockwise to close the slot. (See Figures 8 and 9.) This prevents the deposit of a coin during the fuel dispensing operation. When at the end of the cycle, the circuit through solenoid 37 is broken, the lowering of the core 63 will cause a clockwise movement of blade 68, and in this way uncover the slot to permit the insertion of a coin for the next operation.

The coin deposit slot 39 is normally kept covered by the spring actuated cover 40, so as to keep out vapor, moisture and dust.

When a coin of greater than a predetermined weight is deposited, it will cause the temporary coin receptacle 7 and the stems 15 and 16 to swing down against the action of the counterweights 11 and 13 until the coin drops into chute 28, after which the said weights will bring the said parts 7, 11 and 13 back to their starting positions. The momentary contact between points 17 and 18 will not be of sufficient duration to cause the slow operating solenoid 37 to bring contacts 74 into abutment. The contacts 17 and 18 are thus separated before the motor is actuated, and hence the fuel operating cycle will not begin in case a coin of greater than the predetermined weight is deposited.

Should a coin of smaller than a predetermined diameter be deposited, it will drop out through the slotted opening 32 in the side of the coin slide 5, and into the small coin receiver 31, from which it will drop into the chute 33 and slide into the return outlet 34 through the door 83 and out into the return receptacle 35.

If a slug of iron or steel be deposited, it will be drawn by the magnet 84 against the surface 85 and drop through slot 86 into the receptacle 87. The said magnet is removed a sufficient distance from the level of surface 85 so that it will merely attract the slug and permit it to drop through slot 86, rather than hold it against surface 85.

One of the outstanding features of this invention is the vapor proof housing around such electrical parts as may be subject to sparking, so as to remove the danger of combustible gases such as gasoline vapor from the nearby pump, enveloping contact points, with consequent danger of explosions. Thus the casing 1 which contains the contacts 17, 18, 73 and 74, has no free and exposed openings. The outlet 29 is always kept closed by the weighted door 30 except for the fraction of a second it takes the coin to drop through this opening. The counterweight 92 is adjusted to permit the weight of the coin deposited to momentarily force door 30 open. The return outlet 34 is similarly kept closed by door 83; and the coin deposit slot 39 is sealed by cover 40. The stuffing box 88 seals the opening through which the stem 24 passes. The housing 89 encases the motor 44; and the casing 90, within the bracket 49, keeps the tripper switch containing contacts 61 and 62 protected against combustible vapors. Contacts 17 and 18 are enclosed within casing 91 as a double precaution against vapors.

The coin control mechanism contained within housing 41, and the motor 44 can be kept separate and at a distance from the pump mechanism contained within casing 45, thereby providing a flexible and safe apparatus.

This invention is not limited to the particular design disclosed herein, as within its scope may be embodied many other and different forms of construction.

What I claim is:

1. In an automatic liquid fuel dispenser, a coin actuated control mechanism comprising, in combination, a coin deposit slot communicating with a coin chute, a balanced temporary coin receptacle, a balanced releasable support for upholding said receptacle, and a pair of electric contact points, said receptacle carrying with it one of said points and being adapted to move downward under the weight of a coin deposited therein to bring said point into abutment with the other contact point carried by said support; means to release said support so as to permit said receptacle to continue on its downward course until the coin therein is caused to drop into a suitably positioned coin box; and balancing means to cause said receptacle and said support to return to their starting positions.

2. In an automatic liquid fuel dispenser, a coin actuated control mechanism containing, in combination, a pivotally mounted coin receptacle carrying with it an electric contact point and provided with balancing means to yieldably hold it against rotation; a pivotally mounted support for said receptacle, said support being provided with another electric contact point and with balancing means to yieldably hold said support against rotation; the said contact points being brought into abutment when the said receptacle is caused to move down under the weight of a coin and rest upon said support; means to release said support from its supporting position and to permit the said receptacle to continue on its downward swing until the coin therein is caused to drop into a suitably positioned coin box; the said balancing means being adapted, after the re-

lease of said coin, to bring said receptacle and said support back to a position where the two said contacts are in disengagement.

3. In an automatic liquid fuel dispenser, a coin actuated control mechanism containing two adjacent contact points normally disengaged; a collar, a stem fixed to said collar and carrying one of said points, a temporary coin receptacle, and an adjustable counterweight secured to said collar; a second collar, a supporting stem fixed to said latter collar and carrying the other of said points, and a second adjustable counterweight secured to said latter collar; a shaft over which both of said collars are loosely mounted; said first mentioned counterweight being adjustable to permit said receptacle to swing downwardly under the weight of a coin deposited therein until contact is made between said contact points; and means to separate said contact points.

4. In an automatic liquid fuel dispenser, a coin actuated control mechanism containing a shaft, two collars loosely mounted on said shaft, one of said collars having fixed thereon a temporary coin receptacle, an adjustable counterweight, and a stem containing a contact point, the other of said collars having fixed thereon another adjustable counterweight and a supporting stem containing a second contact point; said first mentioned counterweight being adjustable to permit said receptacle to swing downwardly under the weight of a coin deposited therein until contact is made between said contact points; said shaft carrying a pin engageable with said supporting stem; tripping means operable upon said shaft to cause it to rotate and thereby cause said pin to actuate said supporting stem in a downward direction, thereby permitting the coin weighted receptacle to continue on its downward course until relieved of the coin, the said counterweights being adjustable to permit the return of said contact points to their starting and disengaged positions.

5. In an automatic liquid fuel dispenser, a coin actuated control mechanism containing a pivotally mounted temporary coin receptacle, independently and pivotally mounted supporting means provided with means adapted to hold said receptacle against rotation and a shaft on which said receptacle and said supporting means are both mounted; two contact points, one carried by said receptacle and the other by said supporting means; means to bring said points into abutment; balancing means to yieldably hold said receptacle and said supporting means against rotation; said balancing means being adjustable to cause said supporting means to yield when the coin deposited within said receptacle is of greater than a predetermined weight, thereby causing said points to separate and permitting said receptacle to continue on its downward course due to the weight of the coin therein, until said coin is caused to drop into a suitably positioned coin box.

6. In an automatic liquid fuel dispenser, a coin actuated control mechanism containing an adjacent pair of contact points, a relay of solenoids, a balanced coin receptacle adapted to bring said points into contact and close the circuit through said solenoids, the first solenoid in said relay being operable upon a pair of adjacent contacts to close the circuit through the last solenoid in said relay which is provided with slow-operating means to gradually bring into abutment the motor actuating contacts; and means to cause said balanced receptacle, when the coin deposited therein is of greater than a predetermined weight to break the circuit through the first of said solenoids before said slow-operating means bring the said motor-actuating contacts into abutment.

7. In an automatic liquid fuel dispenser, a coin actuated control mechanism containing a coin deposit slot, a shutter for covering said slot a motor actuating circuit, a pair of contact points in series with said circuit, electro-mechanical means operable upon said points, a temporary coin receptacle adapted to control the circuit through said electro-mechanical means, and a lever said electro-mechanical means being provided with a movable element adjustably connected to a lever one end of which carries one of said contact points in cooperable relation with the other of said points, the other end of said lever being connected with a series of links attached to said shutter, the said element being operable upon said lever so as to simultaneously cause the contacting of said points and the movement of said shutter over said slot.

8. In an automatic liquid fuel dispenser, a sealed and enclosed vapor-proof coin control box containing a coin deposit slot normally kept closed by a spring actuated cover, a plurality of coin outlets provided with doors normally held closed by yieldable means; said box containing an enclosed casing having therein a pair of relay-actuating contacts, said box also containing means to actuate said contacts, a relay consisting of a plurality of solenoids provided with pairs of contacts adapted to control the motor-actuating circuit, and tripping means adapted to disengage said relay-actuating contacts, said tripping means extending through a stuffing box mounted on said control box; a pair of contacts to actuate said tripping means, said contacts being enclosed in a casing mounted on the pump housing; and a motor enclosed in a housing outside of said pump housing.

In testimony whereof, I affix my signature.

CHARLES BRAHY.