ABSTRACT: A coin-operated system for dispensing gasoline which will receive and register a variety of coins or tokens, dispense the total amount purchased or portions thereof, and make refunds for remaining credits. A control system adapted for incorporation into conventional gasoline pumping units for coin-operated dispensing.
COIN-ACTUATED FLUID-DISPENSING SYSTEM

This invention relates to coin-operated fluid-dispensing systems and will be described herein as used in a gasoline pumping unit for an automobile service station. However, it will be readily recognized that the system of the invention can be utilized for dispensing other fluids in other environments.

Most of the companies which sell gasoline at retail desire to provide gasoline sales without requiring continuous attendance by an employee. Many motorists are capable of operating the hose nozzle and are willing to do this work in order to benefit by a lower selling price for the fuel. A wide variety of devices has been developed for dispensing gasoline but none has been particularly successful nor has received widespread acceptance in the industry. Accordingly, it is an object of the present invention to provide a new and improved coin-operated fluid-dispensing system which is simple and substantially foolproof in operation and which provides for the various operating functions which a customer encounters while making a purchase. A further object is to provide such a system which is reliable and inexpensive and which can utilize standard components and which is suitable for addition to a conventional pumping unit.

It is a particular object of the invention to provide a new and improved coin-operated fluid-dispensing system which will accept various coins or tokens representing a sales unit and multiples of sales units, with the system dispensing fluid in sales units. The particular apparatus described herein is designed to receive a 25-cent coin, a 50-cent coin and a $1-token, representing one, two and four sales units, respectively. Of course other monetary units may be utilized and other combinations of coins and tokens and sales units may be utilized. The work "coin" is used in the following specification and claims to indicate coins, tokens and other items of like nature.

It is an object of the invention to provide a coin-operated fluid-dispensing system which provides for dispensing the amount of fluid paid for and which provides for refunding coins if the amount paid for is not used. A further object is to provide such a system incorporating an instruction panel which is coordinated with the state of operation of the overall system. A specific object is to provide a new and improved control system and components thereof for use in a coin-operated dispensing system.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. The drawings merely show and the description merely describes a preferred embodiment of the present invention which is given by way of illustration or example.

In the drawings:

FIG. 1 is a side view of a gasoline pumping unit incorporating a preferred embodiment of the present invention, with some of the side panels of the housing removed;

FIG. 2 is a partial view of the unit of FIG. 1 from the opposite side;

FIG. 3 is an enlarged partial view of the unit of FIG. 1 illustrating the coin display section;

FIG. 4 is a partial sectional view taken along the line 4-4 of FIG. 1; and

FIGS. 5a and 5b comprise an electrical schematic of the unit of FIG. 1.

The structure of FIG. 1 includes a conventional gasoline delivery unit 10 with a number of modifications which will be described. The side panels have been removed from the housing 11 to show an inlet pipe 12, and air separator 13, a fluid flow meter 14 and a meter display unit 15. There is a pump 16 in the inlet pipe 12, which powers the pump usually being positioned remote from the delivery unit. An additional flow control is inserted in the gasoline flow line, typically between the flow meter 14 and the pipe 17 which in turn is connected to the hose 18 and outlet nozzle 19. In the embodiment illustrated, the additional flow control comprises two solenoid-operated off-on valves, indicated as No. 1 and No. 2, with the valves connected in parallel between the flow meter 14 and the pipe 17. All of the components in the gasoline flow path are conventional except for the two valves No. 1 and No. 1.

When both valves are open, the system operates at a full flow rate; when one valve is open, the system operates at a low flow rate; and when both valves are closed, there is no gasoline delivery. Other valving arrangements for achieving full flow, and low flow are readily apparent, such as a single valve having a fully open and a partly open position. In a simplified form of the system, a single valve providing only for full flow can be utilized.

The flow meter 14 is connected to the meter display unit 15 by a shaft 21, with the amount of gasoline dispensed being displayed in gallons and in dollars at windows 22. The meter display unit 15 is reset to the zero position by rotating a shaft 23.

In conventional delivery units, a lever projects from the side of the housing for manual rotation of the shaft 23 to accomplish the resetting. In the embodiment illustrated, the shaft 23 is rotated by a meter reset solenoid MRS mounted in a box 24 carried on the side of the housing 11, with the shaft 23 projecting into the box 24. Referring to FIG. 4, energization of the solenoid MRS moves the armature 25 to the left and rotates the lever 26 counterclockwise, producing clockwise rotation of the shaft 23 by engagement of the lever 26 with lever 27 at the end of the shaft. A spring 28 returns the armature 25 to the position illustrated, when the solenoid is deenergized.

The pump 16 is energized in the conventional manner. After the nozzle 19 is removed from the cradle 30 on the side of the housing 11, lever 31 may be rotated manually from the vertical position illustrated to a horizontal position, if the meter display unit has been reset to the zero position. The lever 31 rotates a shaft 32 which engages the meter display unit 15 and operates a push rod 33 to open a valve in the flow meter 14. The conventional interlock mechanism within the display unit 15 prevents rotation of the shaft 32 unless the display unit is in zero position. Rotation of the shaft 31 to the horizontal position also closes two switches mounted in switch box 34, which switches are identified as PC Sw No. 1 and PC Sw No. 2. The electrical circuitry for these switches is shown in FIG. 5 and will be discussed in detail later. One of the switches actuated by the lever 31 acts to apply power to the motor for the pump 16.

A switch, referred to as the meter sensor switch 5 Sw, is mounted in a box 35 and is actuated by the meter display unit 15 to open the switch when the meter display unit is in a zero sales unit position. The meter display unit is driven by the meter display unit 15 to rotate one revolution per sales unit, i.e., for the embodiment disclosed, one revolution for each 25 cents worth of gasoline delivered. A pin 37 is carried on a wheel on the end of the shaft 36 and engages a lever 38 for closing the S switch as the meter passes the zero position, i.e., when the display unit is reset, when a 25-cent sale is indicated, when a 50-cent sale is indicated, when a 75-cent sale is indicated, etc. Typically, the shaft 36 may be the output shaft of a gear reduction unit added to the conventional display unit, with the input of the reduction unit driven by the display unit.

The box 24 also contains a conventional coin acceptance unit 40 and coin chute 41 leading from coin slots 42 positioned on both sides of the box 24. In the particular embodiment illustrated, the smaller coin slot receives 25-cent coins and 50-cent coins and the larger slot receives 1-tokens. The coin box 40 includes three switches, referred to as the 25¢ Sw, the 50¢ Sw and the $1.00 Sw. The coin-receiving mechanism functions in the conventional manner to close the 25¢ switch momentarily when a 25-cent coin is received, to close the 50¢ switch momentarily when a 50-cent coin is received, and to close the $1.00 switch momentarily when a 1-token is received.

A refund unit 43 actuated by a payout solenoid PAS is mounted in the box 24 adjacent a coin storage tube 44 and functions to dispense coins from the storage tube to an outlet receptacle 45, in a manner to be described.

A monetary display unit 46 is mounted on each side of the box 24 to provide a visual display of the amount of money or
equivalent received at the coin box. A typical monetary display unit comprises 12 panels with the symbols $1 through $8, $0.00, $0.25, $0.50, and $0.75 thereon, and a light bulb behind each panel to provide a visual indication in dollars and cents when particular lamps are energized. The appearance of the display unit with all lamps energized is shown in Fig. 3.

Another box 50 is mounted on top of the housing 11 and contains the remaining electrical circuitry. Display panels 51, 52 are mounted on opposing sides of the box 50. Each display panel is provided with five legends identified by the numerals 1 through 5, and with lamps for selectively illuminating the legends. The preferred language for each of the legends is set out in Table II. Legend 1 may be presented in a cutout having the form of an arrow pointing toward the coin slots 42. Legends 2 and 5 may be provided in a cutout having the form of an arrow pointing toward the nozzle 19 and lever 31, with the lever 31 being painted red. Legend 3 may be positioned in a cutout having the form of an arrow pointing toward pushbutton switches S5, which function as refund switches for initiating the refund operation.

The electrical circuitry for the delivery unit is illustrated in Figs. 5a and 5b, and the various components are identified in Table I.

<table>
<thead>
<tr>
<th>Legend</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Deposit Coins</td>
</tr>
<tr>
<td>2</td>
<td>Remove Nozzle and Turn Red Handle</td>
</tr>
<tr>
<td>3</td>
<td>Push For Refund</td>
</tr>
<tr>
<td>4</td>
<td>You Have More Gas Coming</td>
</tr>
<tr>
<td>5</td>
<td>Return Nozzle</td>
</tr>
</tbody>
</table>

Most of the components are switches, relay coils, relay contacts and solenoid coils and are conventional in construction and operation. By way of example, reference numeral 60 indicates a set of contacts of the 1.00 R relay and reference numeral 60 indicates a set of contacts of the 1.00 R relay. The moving arm of the contact set 60 engages the upper fixed contact when the coil is energized and engages the lower fixed contact when the coil is energized. The coil for the 1.00 R relay is energized when the $1.00 switch 1.00 Sw of the coin box is closed.

The system is powered from a 110 volt AC source connected at terminals 58, 59. A voltage stepdown transformer 63, a full wave rectifier 64 and a filter capacitor 65 provide a 24 volt DC power source for some of the components.

The system includes a counter, typically a stepping switch 68, referred to as a credit stepper CS. The credit stepper 68 includes a wheel 69 carrying a cam which opens a contact set, as illustrated in Fig. 5a. The credit stepper also includes two solenoids, the credit stepper add solenoid KB and the credit stepper subtract solenoid KBR. Each time the solenoid KB is energized, the wheel 69 is advanced one step or sales unit, and each time the solenoid KBR is energized, the wheel 69 is moved in the opposite direction one step or sales unit. At the reset or zero sales unit position, the CS switch is open. When the credit stepper is advanced to any position from the zero position, the CS switch is closed and the coil of the credit relay CR is energized. The credit stepper may be a conventional component.

The system includes another counter, typically a stepper switch for energizing the lamps of the monetary display units 46, referred to as the display stepper DS. The display stepper may be a conventional rotary stepping switch 71 with two banks of contacts connected to the lamps 74 of the display units 46, as indicated in Fig. 5b.

For purposes of clarity, all interconnections of the outer ring of contacts of DS are not shown. The 1st, 5th, 9th, 13th, 17th, 21st, 25th, 29th and 33rd contacts are interconnected as shown (progressing counterclockwise). The 2nd, 6th, 10th, etc. contacts are similarly interconnected, as are the 3rd, 7th, etc. and 4th, 8th, etc. Moving arms 72, 73 of the display stepper are advanced a step at the time as the display stepper advance solenoid KA is energized. The display stepper is reset to the zero position as indicated in Fig. 5b when the display stepper reset solenoid KAR is energized. One side of the DC source is connected to the moving arms 72, 73, which are advanced in synchronism by the advance solenoid KA. While individual lamps and display elements have been utilized in the display units 46, any of the various display devices available on the market can be utilized, two widely different examples being the Nixie tube and the rotating wheel. Other conventional counter units, such as relay or transistor types, may be used for either or both of CS and DS if desired.

The system includes a pulse generator PG which provides for actuating the credit stepper relay CSR and the payout relay PAY. The pulse generator includes a wheel 75 driven by the pulse generator motor M. The wheel 75 of the pulse generator includes two radially extending cams which engage the moving arms of contact sets 76 and 77, and a laterally projecting pin 78 which engages the moving arm of contact set 79. The functions of the remaining components of the system will readily be apparent from the description of operation which follows.

When the system is reset and ready to accept coins, the display stepper is at the zero position energizing the .00 lamp and legend lamp 1 is energized from the 110 volt AC line through closed contact RST. A customer approaches and drops a 25-cent coin into the coin slot. The 25c switch is closed and energizes the coin stepper relay CSR which in turn energizes KA and KB solenoids to advance the credit stepper and the display stepper one sales unit. Each additional 25-cent piece deposited will advance each stepper another sales unit. The customer may deposit a 50-cent piece which closes the 50c switch and energizes the 50c relay. This causes the pulse generator motor M to rotate the pulse generator wheel 75 one revolution providing two operations of CSR and advancing each of the steppers two sales units. CSR is energized from the DC line through a 50c R contact set, the pulse generator contact set 76 and a RFR contact set, with the refund relay
The operation described above covers the situation where a customer utilizes any combination of a plurality of coins, follows the instructions presented by the legends, and receives the full amount of fuel which he paid for, with the fuel being dispensed in multiples of sales units.

When the operation of dispensing fuel delivery and refunding any over payment. The intervention may be produced by the customer who operates the manual valve in the nozzle, or by automatic operation of the manual valve when the tank is full.

Consider the situation where gasoline is being delivered at the full rate of 3,550,743 units per minute, interrupted either by the customer or by the full tank operation of the dispenser. The S switch is closed and remains closed, energizing NFS. After the predetermined period of time elapses without opening of the S switch, the NFS contacts are moved to the energized or down position. ZPR is energized and legend lamp 3 is energized. The customer then pushes the refund switch closing contact set RS energizing the refund relay RFR. The 501 relay is energized, the motor M for the pulse generator is energized to turn the wheel 75 and energize the payout relay PAY which in turn actuates the payout solenoid PAS and the credit stepper subtract solenoid KBR. Each actuation of PAY produces payout of a 25-cent coin and subtracts a sales unit from the credit stepper. The pulse generator continues to operate until the credit stepper arrives at the zero sales unit position. When the credit stepper arrives at the zero sales unit position, CR is deenergized, terminating the refunding operation. A KBR contact set may be connected in parallel with the credit stepper contact set CS to insure energization of CR during the payout operation, particularly for the last coin payout. Legend lamp 3 is deenergized and legend lamp 4 is energized, indicating that the customer has the remaining portion of a sales unit of gasoline available. The customer may open the valve at the nozzle and deliver the remaining quantity of fuel, with the system functioning to terminate delivery when the meter display unit 15 arrives at the zero position, as described previously.

The S switch is opened and NFS is deenergized, deenergizing legend lamp 4 and energizing legend lamp 5. The customer turns the lever 31 to the vertical position and returns the nozzle to the cradle and the system resets, ready for the next customer.

A capacitor 86 may be charged from the DC line when PAY is unenergized. When PAY is energized, the capacitor 86 is connected across the coil of PAY for the purpose of maintaining PAY energized for a longer period of time and improving operating stability. If the customer returns the nozzle to the cradle without pushing the refund switch RS, the system will automatically pay out any refund coming in multiples of sales units. When the lever 31 is turned to the vertical position, the system will automatically pay out any refund coming in multiples of sales units.

The operation proceeds as previously described.

The system of the invention provides for delivering the amount of fuel purchased by the customer and provides for delivery of less than this amount, with a manual and automatic refunding operation. The system utilizes a minimum of special components and provides for registering of purchased sales units and for payout with a single pulse generator. The system utilizes the conventional fuel delivery equipment with special instructions for the customer thereby requiring the minimum amount of customer education.

Although an exemplary embodiment of the invention has been disclosed and discussed, it will be understood that other applications of the invention are possible. It should be understood that the embodiment disclosed may be subjected to various changes, modifications and substitutions without necessarily departing from the spirit of the invention.

We claim:
1. In a coin operated fluid dispensing system including pump, flow meter and outlet nozzle, the combination of:
   register means for registering sales units;
means for receiving a plurality of coins of various values
denoting sales units and advancing said register means a
number of sales units corresponding to the coins
received;
8

valve means for controlling flow from the pump through the
meter to the outlet nozzle;
means for opening said valve means for dispensing fluid;
means for subtracting sales units from said register means
one at a time as fluid is dispensed by the system, with said
subtraction occurring at the start of dispensing of a sales
unit;
means for reducing the rate of flow through said valve
means when said register means registers zero sales units;
means for closing said valve means at the completion of
dispensing of a sales unit when said register means re-
gisters zero sales units;

a coin storage;
means for generating a refund signal; and
means for dispensing coins from said storage as a function
of registered sales units in response to a refund signal.

2. A system as defined in claim 1 including:
switch means driven by the flow meter to provide a signal at
the start and completion of dispensing of a sales unit; and
circuit means for coupling said signal in actuating relation
with said means for subtracting and means for closing.

3. A system as defined in claim 1 in which said means for
dispensing coins includes:
payout means for continuously paying out coins in sales
units one at a time;
refund means for actuating said payout means to initiate
coin payout;
means for coupling said payout means to said means for
subtracting sales units from said register means as a func-
tion of coin payout; and
means for blocking operation of said payout means when
said register means registers zero sales units.

4. In a fluid dispensing system including pump, flow meter
and outlet nozzle, the combination of:
coin means for receiving a plurality of coins of various
values denoting sales units and producing coin signals
corresponding to the particular coins received;
a first counter including means for advancing and backing
up the counter by sales units and having a switch provid-
ing a signal when the counter is advanced from the zero
position;
a second counter including means for advancing the
counter by sales units and means for resetting the counter
to the zero position;
display means having display elements corresponding to a
sales unit and multiples of sales units;
first circuit means connecting said second counter to said
display means for actuating a display element corre-
sponding to the count position of said second counter;
and
counter advance means for generating advance signals for
each of said counters for advancing the counters a sales
unit at a time, and including a pulse generator for
generating pluralities of advance signals corresponding to
the pluralities of sales units denoted by the coin signals.

5. A system as defined in claim 4 in which said pulse genera-
tor comprises a motor driven cam, cam switches actuated by
said cam, and means for selectively energizing said cam
switches as a function of the coin signals, with actuation of an
energized cam switch producing an advance signal, and means
for energizing the cam motor as a function of the coin signals.

6. A system as defined in claim 4 including:
valve means for controlling flow from the pump through the
meter to the outlet nozzle;
second circuit condition, with said means having said first counter signal as an
input for opening said valve means for dispensing fluid
when said first counter is advanced from the zero posi-
tion;
manually operable switch means having OFF and ON posi-
tions, with said manual switch means in the OFF position
7

7 blocking opening of said valve means, whereby fluid may
be dispensed by the system when said manual switch
means is turned to the ON position; and
meter means for generating backup signals for backing up
said first counter a sales unit at a time, and including a
meter switch providing a backup signal each time the
meter measures a sales unit.

8. A system as defined in claim 6 in which:
said valve means includes a full flow rate condition and an
intermediate flow rate condition, with said valve means
being in said full flow rate condition when opened by said
second circuit means when said first counter is advanced
from the zero position; and
including third circuit means for opening said valve means
to said intermediate flow rate condition when said first
counter is at the zero position and said meter means is in
the process of measuring a sales unit.

9. In a coin-operated fluid-dispensing system including:
pump, flow meter and outlet nozzle, the combination of:
register means for registering sales units;
means for receiving a plurality of coins of various values
denoting sales units and advancing said register means a
number of sales units corresponding to the coins
received;
valve means for controlling flow from the pump through the
meter to the outlet nozzle;
means for opening said valve means for dispensing fluid;
means for subtracting sales units from said register means
one at a time as fluid is dispensed by the system, with said
subtraction occurring at the start of dispensing of a sales
unit;
means for reducing the rate of flow through said valve
means when said register means registers zero sales units;
means for closing said valve means at the completion of
dispensing of a sales unit when said register means reg-
gisters zero sales units;

a coin storage;
means for generating a refund signal; and
means for dispensing coins from said storage as a function
of registered sales units in response to a refund signal
including payout means for paying out coins in sales
units one at a time;
refund means for actuating said payout means to initiate
coin payout;
means for coupling said payout means to said means for
subtracting sales units from said register means as a func-
tion of coin payout; and
means for blocking operation of said payout means when
said register means registers zero sales units;

10. In a fluid dispensing system including pump, flow meter
and outlet nozzle, the combination of:
coin means for receiving a plurality of coins of various
values denoting sales units and producing coin signals
corresponding to the particular coins received;
a first counter including means for advancing and backing
up the counter by sales units and having a switch provid-
ing a signal when the counter is advanced from the zero
position;
a second counter including means for advancing the
counter by sales units and means for resetting the counter
to the zero position;
display means having display elements corresponding to a
sales unit and multiples of sales units;
first circuit means connecting said second counter to said
display means for actuating a display element corre-
sponding to the count position of said second counter;
and
counter advance means for generating advance signals for
each of said counters for advancing the counters a sales
unit at a time, and including a pulse generator for
generating pluralities of advance signals corresponding to
the pluralities of sales units denoted by the coin signals.
counter advance means for generating advance signals for each of said counters for advancing the counters a sales unit at a time, and including a pulse generator for generating pluralities of advance signals corresponding to the pluralities of sales units denoted by the coin signals; valve means for controlling flow from the pump through the meter to the outlet nozzle; second circuit means having said first counter signal as an input for opening said valve means for dispensing fluid when said first counter is advanced from the zero position; said valve means including a full flow rate condition and an intermediate flow rate condition, with said valve means being in said full flow rate condition when opened by said second circuit means when said first counter is advanced from the zero position; manually operable switch means having OFF and ON positions, with said manual switch means in the OFF position blocking opening of said valve means, whereby fluid may be dispensed by the system when said manual switch means is turned to the ON position; meter means for generating backup signals for backing up said first counter a sales unit at a time, and including a meter switch providing a backup signal each time the meter measures a sales unit; third circuit means for opening said valve means to said intermediate flow rate condition when said first counter is at the zero position and said meter means is in the process of measuring a sales unit; and fourth circuit means coupled to said manual switch means for actuating said means for resetting said second counter a predetermined time after said manual switch means is turned to the OFF position.

11. A system as defined in claim 10 in which said flow meter includes an indicator unit which advances from a zero position as the meter measures fluid flow, said system including a meter reset mechanism for resetting said indicator to the zero position, with said fourth circuit means also actuating said meter reset mechanism.

12. In a fluid dispensing system including pump, flow meter and outlet nozzle, the combination of: coin means for receiving a plurality of coins of various values denoting sales units and producing coin signals corresponding to the particular coins received; a first counter including means for advancing and backing up the counter by sales units and having a switch providing a signal when the counter is advanced from the zero position; a second counter including means for advancing the counter by sales units and means for resetting the counter to the zero position; display means having display elements corresponding to a sales unit and multiples of sales units; first circuit means connecting said second counter to said display means for actuating a display element corresponding to the count position of said second counter; counter advance means for generating advance signals for each of said counters for advancing the counters a sales unit at a time, and including a pulse generator for generating pluralities of advance signals corresponding to the pluralities of sales units denoted by the coin signals; valve means for controlling flow from the pump through the meter to the outlet nozzle; second circuit means having said first counter signal as an input for opening said valve means for dispensing fluid when said first counter is advanced from the zero position; manually operable switch means having OFF and ON position, with said manual switch means in the OFF position blocking opening of said valve means, whereby fluid may be dispensed by the system when said manual switch means is turned to the ON position; meter means for generating backup signals for backing up said first counter a sales unit at a time, and including a meter switch providing a backup signal each time the meter measures a sales unit; payout means for paying out coins in sales units and generating backup signals for said first counter; refund means for actuating said payout means; means for blocking operation of said payout and refund means when said first counter is at the zero position; and flow means for sensing when there is fluid flow through the system and including means for blocking operation of said payout and refund means during fluid flow.

13. A system as defined in claim 12 in which said refund means includes a pulse generator for generating refund signals, with each refund signal coupled to said payout means providing a sales unit payout and a backup signal, and a manually operated refund switch initiating operation of said pulse generator.

14. A system as defined in claim 13 in which said counter advance means and said refund means incorporate the same pulse generator.

15. A system as defined in claim 13 in which said pulse generator comprises a motor driven cam, at least one cam switch actuated by said cam, and means for energizing said cam switch when said manually operated switch is actuated to initiate operation of the pulse generator, with actuation of an energized cam switch producing a refund signal, and means for energizing the cam motor while said first counter is advanced from the zero position.
UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION


Inventor(s) Harry R. ROTHSCHILD and Robert B. YOUNG

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1: Line 33, "work" should read --word--;
Line 66, "and" should read --an--.

Column 2: Line 2, "No. 1" (second occurrence) should read --No. 2--.

Column 3: Line 75, "60 indicates a set of contacts" should read --61 indicates the coil--.

Column 5: Line 5, "taken" should read --token--.

Column 6: Line 26, "arrives at" should read --is backed up to

Claim 2: Line 1, the colon after "including" should be deleted.
Line 4, the semicolon after "unit" should be a comm.

Claim 12: Lines 17 and 18, "position" should read --positions

Signed and sealed this 20th day of April 1971.

(SEAL)
Attest:

EDWARD M. FLETCHER, JR. WILLIAM E. SCHUYLER, JR.
Attesting Officer Commissioner of Patents