

HUMBERTO RUBIO & CIA
ABOGADOS

Carrera 7 No. 74-64 Oficina 506
Teléfonos 313 24 08 - 313 24 10 - 313 24 23 - 313 17 59
Fax: (571) 313 16 - 47 - (571) 313 23 67
Email: rubiolaw@unete.com
Apartado Aéreo 21848
Santafé de Bogotá, D.C. - Colombia

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Señor

SUPERINTENDENTE DE INDUSTRIA Y C
DIVISIÓN DE NUEVAS CREACIONES

E. S. D.

SUPERINDUSTRIA Y COMERCIO
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Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

REF. Expediente: 00-039.418
Patente de Invención: CONTADOR
Titular: FUSION METERS LIMITED

DESTINO: 09

Humberto RUBIO CAMACHO, mayor de edad, vecino de Santafé de Bogotá, D.C., identificado con la cédula de ciudadanía numero 17'192.062 de Bogotá, abogado en ejercicio portador de la Tarjeta Profesional No. 50.007, expedida por el Consejo Superior de la Judicatura, en carácter de apoderado de la Sociedad FUSION METERS LIMITED; encontrándome dentro del termino legal establecido en el Artículo 4° del Convenio de París, me permito anexar los siguientes documentos:

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Atentamente,



HUMBERTO RUBIO CAMACHO
C.C. 17'192.062 de Bogotá
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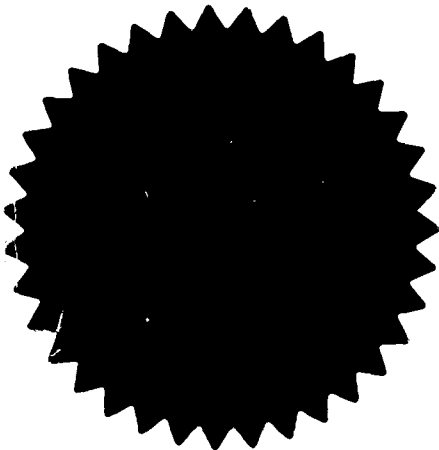
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Description	14
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Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

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(please specify)

11.

I/We request the grant of a patent on the basis of this application.

Signature

Date

28 May 1999

12. Name and daytime telephone number of person to contact in the United Kingdom

Mark C. Foster 0171 405 4916

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This invention relates to meters, and is more specifically, but not exclusively, concerned with modular utility meters, particularly water meters.

A wide variety of utility meters are known for measuring the supply of utilities, for example, gas, water and electricity. The measurement of utility supply allows each consumer to be charged according to the level of their use of the supply and discourages wasting of natural resources.

A utility meter comprising, in general, a transducer, processing electronics and a power supply will often have to be completely replaced should any of these parts fail. For example, the moving parts of a mechanical transducer may wear, or the battery power supply will run out.

A utility meter may include a visual display for displaying the current supply reading, and often also includes apparatus for facilitating remote reading, such as an external inductive pad or a radio frequency (RF) module. This apparatus allows the meter to be read without a person having to manually record the reading. Should the reading requirements for the meter change, for example if it becomes desirable to read the meter using RF methods rather than using an inductive pad, then the whole utility meter must necessarily be replaced.

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The first portion of the meter may conveniently include an amplifier and conditioning electronics. This allows some simple processing of the raw signal from the transducer before the signal is output to the second portion.

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A power supply may be provided in the second portion. The second portion may include a liquid crystal display.

10 The first portion may be made of plastics, specifically acetyl, and may conveniently include replaceable brass flanges for connection to the resource to be measured. The flanges may be lined or coated by any suitable material to prevent wetted contact between the brass and consumed water.

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According to a second aspect of the present invention, there is provided apparatus for use with a meter for transmitting data indicative of the meter reading by radio frequency (RF) transmission comprising a receiver and a
20 transmitter, wherein said receiver is activated periodically, and wherein said frequency of activation of said receiver periodically is increased when the apparatus receives RF transmission originating from compatible RF devices.

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The apparatus may preferably transmit the data after receiving RF transmission which includes a signal indicative of a request for the data.

30 The signal may be unique to the meter.

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The apparatus may be detachably connected to the meter.

The apparatus may alternatively be integrally formed within the meter.

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Specific embodiments will now be described, by way of example, with reference to the accompanying drawings, in which:

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Fig. 1 shows a perspective view of a water meter according to the invention;

Fig. 2 shows a perspective, exploded view of the meter base of the water meter of Fig. 1;

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Fig. 3 shows a perspective, exploded view of the meter head of the water meter of Fig. 1;

Fig. 4 shows a cross-sectional view of the transducer assembly of the water meter of Fig. 1;

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Fig. 5 shows a cross-sectional view of the meter head of the water meter of Fig. 1;

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Fig. 6 shows a perspective view of a flow chamber;

Fig. 7 shows the connections between the components of the water meter;

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Fig. 8 shows an example output signal from a flow transducer;

Fig. 9 is a graph showing the relationship between the
5 volume of fluid flow which causes a pulse to be generated
against pulse frequency; and

Fig. 10 shows a perspective, exploded view of an
alternative meter base for the water meter of Fig. 1.

10

Fig. 1 shows a perspective view of a water meter 1
comprising a meter base 2 and meter head 3 (known as a
totalizer).

15 Fig. 2 shows a perspective, exploded view of the meter
base 2 of the water meter 1 of Fig. 1. The meter base 2
comprises a transducer assembly 4, a brass body 5, a brass
base plate 6 and a locking ring 7. When the meter base is
assembled, the transducer assembly 4 is located within the
20 brass body 5, and the brass base plate 6 is fixed to the
brass body 5 using four screws 8. The locking ring 7 is
used to hold the meter base 2 and the meter head 3
together. The brass body 5 includes two brass flanges 14.
The flanges 14 may be lined or coated with any suitable
25 material to prevent wetted contact between the brass and
the consumed water.

Fig. 3 shows a perspective, exploded view of the meter
head 3 of the water meter of Fig. 1 The meter head
30 comprises an encoder 9 and a display assembly 10. The
encoder 9 has a communications port 11 for connection to

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apparatus (not shown) for facilitating meter reading, such as an inductive pad or RF module. The display assembly 10 has a liquid crystal display 12 for displaying the meter reading, and a hinged protective cover 13.

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Fig. 4 shows the transducer assembly 4 comprising a flow transducer 20 having a flow chamber 21 with two magnets (not shown). The flow chamber 21 is designed based upon the principles of fluidic oscillation, which is a well-
10 recognised flow sensing technique. The flow chamber is made of PPS (poly phenylene sulphide), a material approved for contact with fluids for human consumption, but could be made of any other suitable material. The transducer assembly 4 also comprises a first printed circuit board
15 (PCB) assembly 22 having an amplifier, conditioning electronics and an EEPROM. A 9-way connector 23 is provided from the PCB 22 to the exterior of the transducer assembly 4. When the water meter is assembled, the connector 23 provides electrical connection, including
20 power supply, to the meter base 2 from the meter head 3.

A screening can 24 is positioned over the PCB assembly 22, and the PCB assembly 22 and screening can 24 are then encapsulated in polyurethane resin 25.

25

A suitable flow chamber 21 is illustrated in Fig. 6. Water enters the flow chamber 21 at an inlet orifice 30. The inlet orifice 30 narrows so as to accelerate water entering the flow chamber 21 into a jet. When the jet
30 enters the flow chamber 21, it is split by splitter post 32. Pressure areas are created on either side of the flow

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chamber 21 which have the effect of drawing the jet to one side or the other of the chamber 21. Most of the flow will exit the chamber at outlet 34 but a portion will enter one of the feedback loops 36. This flow passes around posts 38 and will return to the area just ahead of the inlet orifice 30, where it will impinge on the jet from the inlet orifice 30, forcing it to the opposite side of the chamber. This cycle is repeated endlessly while flow is present and will oscillate at a frequency proportional to the flow rate through the flow chamber 21. The oscillation is monitored by two pairs of electrodes (not shown) within a magnetic field generated by two magnets 39. The electrodes detect changes in the electromotive force of the jet, and this provides an indication of the flow rate through the meter. A transducer assembly for employing a flow chamber 21 of the type illustrated in Fig. 6 is advantageous because it has no moving parts, and therefore does not wear prematurely. A suitable flow chamber 21 is manufactured by the present applicant.

20

Fig. 5 shows a plan cut-away view of the meter head 3. The encoder 9 comprises a battery cell assembly 40, and processing electronics are provided on a second PCB assembly 41. The communications port 11 comprises a 3-pin connector 42. A cap 43 is formed over the battery cell assembly 40 and the PCB assembly 41, and polyurethane resin 44 surrounds these components. The battery cell assembly 40 is non-replaceable and is sealed in place during manufacture. This has the advantage that it prevents water leaking in during use, which is a possible drawback for replaceable batteries since in these cases

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there is necessarily an aperture provided to enable replacement of the battery.

Figure 7 is a schematic view showing the connections
5 between the components of the water meter 1. The signal 50
output from the flow transducer 20 is input to amplifying
and conditioning electronics section 22A of the PCB
assembly 22 of the transducer assembly 4.

10 An example of a signal output from the flow transducer 20
is shown in Fig. 8. Region A of Fig. 8 shows a pulsed
output indicative of a relatively slow rate of flow.
Region B of Fig. 8 shows a pulsed output indicative of a
relatively fast rate of flow. As the rate of flow
15 increases the frequency of the pulsed output increases.
However, the relationship between frequency and flow rate
is not entirely linear. Figure 9 shows a graph which
illustrates the relationship between the volume of fluid
flow which causes a pulse to be generated against pulse
20 frequency. Ideally, for a linear system, the volume flow
per pulse would be the same irrespective of the frequency,
as illustrated by the dashed line in the graph of Figure
9. However, real flow transducers produce a non-linear
output. The transducer employed in the present embodiment,
25 at low frequencies, produces a pulse in response to less
fluid flow than it does at high frequencies. EEPROM
section 22B of PCB assembly 22 contains calibration
information specific to the flow transducer in use. This
calibration information is derived from the graph in
30 Figure 9, and is conveniently stored, for example, in the
form of a look-up table in the EEPROM.

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In use, the raw signal from the flow transducer 20 is amplified and conditioned (for example, filtered) in section 22A of the PCB assembly 22 to produce a pulse output 52 for input to the encoder 9 of the meter head 3. Output 54 from the section 22B of the PCB assembly 21 is the look-up table, and this information is also input to the encoder 9. The processing electronics in the encoder 9 processes the pulse output 52 and look-up table output 54 in order to produce a running total output 56 of flow through the meter (the flow accumulation). The information from the EEPROM enables the encoder 9 to correctly interpret the pulsed output 52 so that the flow accumulation output 56 is always accurate, even at low frequencies where the flow transducer 20 does not produce a linear output.

The meter base 2 may be replaced by another meter base which contains a different type of transducer. Since the data stored on the EEPROM is specific to the transducer it accompanies, the processing electronics are able to correctly calculate the flow through the meter regardless of the type of transducer.

It may also be desirable to change the meter head which is used with a given meter base 2. For example, it may be desired to replace a meter head capable of driving an inductive pad with a meter head capable of driving an RF module.

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The meter head (totalizer) 3 has the capacity to record and report run-dry events, detect leaks, detect and report separation of the meter base and head, and allows for the provision of a user-programmable serial number.

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If a run-dry event is detected by the meter hardware, then the software will inhibit flow accumulation while the flow chamber is dry and for a number of seconds afterwards. A counter is incremented each time a run-dry event occurs,
10 and the contents of this counter are output when the meter is read.

A leak event is detected when a period of continuous flow through the meter exceeds a specified time. A counter
15 LEAK-TIME is regularly incremented when water flows through the meter. If flow stops (or a run-dry event is detected) LEAK-TIME will be cleared. Each time LEAK-TIME is incremented it is compared with a stored constant MAX-LEAK-TIME. If LEAK-TIME is greater than or equal to MAX-
20 LEAK-TIME then a leak is deemed to have occurred. A counter is incremented each time a leak event occurs, and the contents of this counter are output when the meter is read.

25 The software detects any separation of the meter head and the meter base by attempting to pass a signal from the meter head 3 to the meter base 2, and detecting whether the signal is received. When separation occurs the meter head 3 ceases normal flow recording. A counter will be
30 incremented each time separation is detected, and the contents of the counter will be output when the meter is

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read. When the software detects that the modules are
reconnected the meter will resume normal flow recording,
and the counter will be incremented again. Thus, when
reading the meter, an even count value indicates that the
5 modules are connected, and an odd number indicates that
the modules are separated.

A serial number is stored in the meter head 3 which may be
programmed through the communications port 11. The serial
10 number is output when the meter is read.

The meter head 3 may be replaced by another meter head
with different functionality such as, for example, one
which includes a wall mounted LCD, an internal RF module
15 or a data logger, etc. The modular design of the water
meter 1 allows any meter head to be combined with any
meter base. If a different meter head is required then
this may be replaced without incurring the additional
expense of simultaneously having to replace the meter
20 base.

A suitable RF module may be connected to the meter 1
through the communications port 11. The RF module will
enable the meter to be read remotely using meter reading
25 apparatus having a compatible RF module. A bi-directional
RF module for connection to the meter has the following
modes of operation. The first mode of operation comprises
one-to-one communication. In response to a special RF
signal transmitted from meter reading apparatus the RF
30 module will transmit data. For example, the data will only
be transmitted if the special signal contains the

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Identification Number for the meter 1. This mode of operation is required when the meter reading apparatus is interrogating a specific meter. The data transmitted, for this mode and for other modes of operation, may include
5 the meter reading, the meter Identification Number and other data indicative of the state of the meter or the utility usage.

The second mode of operation for the RF module comprises
10 mass transmission mode. In response to a generally recognised RF signal transmitted from the meter reading apparatus, the RF module will transmit data. In this mode, all RF modules within range may respond to the mass transmission signal. This allows a "mass transmission
15 speed-read" to be carried out in an area where a large number of meters are located, and is generally useful for vehicle based reading. The responding transmissions from the RF modules may be staggered using time division multiplexing in order to prevent overloading the
20 capability of the meter reading apparatus to receive incoming data.

A third mode of operation for the RF module involves activity sensing. In general, the RF module comprises a
25 receiver that is activated intermittently, for example every 5 seconds, to attempt to receive transmissions from a meter reader. The receivers are only activated intermittently in order to reduce power consumption, and thereby prolong battery life (powering up the receiver is
30 the most energy intensive function of the RF module). In activity sensing mode, the frequency of receiver

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- activation is increased, for example to every 0.5 seconds, if meter reading activity is sensed in the local area. The RF module effectively responds to the activity of compatible devices operating in the area, increasing the frequency of receiver activation if the RF transmissions it receives contain a recognised pattern. Thus the RF module is able to respond to an interrogation signal from the meter reading apparatus much faster.
- 10 The meter head 3 may be redesigned to include such an RF module, instead of this being provided by an external plug-in RF module via connection through the communications port 11.
- 15 An example of an alternative meter base 60 which may be used with the meter head 3 is illustrated in Fig. 10. The meter base comprises a transducer assembly 4, a plastics body 61 made of acetyl, a brass base plate 62, a brass top plate 63, a locking ring 7, two brass flanges 64 and two flange locking rings 65. Acetyl is used in this embodiment because it is generally durable, and is flexible so that it resists cracking when dropped or otherwise abused. However, any other suitable plastics material may be used. The transducer assembly 4 and the locking ring 7 are identical to those provided for the first meter base 2. When the meter base 60 is assembled, the transducer assembly 4 is located within the plastics body 61, the brass base plate 62 is fixed to the plastic body 61 using six screws 8. The brass flanges 64 protrude from the ends of the plastics body 61 and each is held in place using a flange locking ring 65 which has an internal screw thread

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which co-operates with an external screw thread formed on the plastics body 61. The brass base plate 62 provides rigidity support for the body of the meter base 60. The locking ring 7 is used to hold the meter base 60 and the
5 meter head 3 together.

The formation of the body 61 of plastics (rather than brass) reduces contact between consumed water and brass, and consequently reduces the risk of contaminating the
10 water with lead.

The flanges 64 are made of brass rather than plastics because brass provides a more rigid connector for the water pipes which will be less easily damaged during
15 fitting than plastics. If, nevertheless, the flanges 44 are damaged, they can be removed and replaced. The flanges 64 may be lined or coated with any suitable material to prevent wetted contact between the brass and the consumed water. The small size and simple shape of the flanges 44
20 allows the coating process to be used. It is not easy to coat larger, more complex structures such as an entire water meter body.

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CLAIMS

1. A meter comprising first and second detachably
5 connected portions, the first portion comprising a flow
measuring transducer and storage means containing data
specific to the transducer, and the second portion
comprising processing means for processing a flow
measurement signal from the transducer and the transducer
10 specific data to produce an output signal representative
of flow but independent of transducer characteristics
represented in the transducer specific data.
2. A meter according to claim 1, wherein the transducer
15 specific data represents the relationship between the flow
measurement signal generated by the transducer and the
flow rate measured by the transducer.
3. A meter according to claim 1 or 2, wherein the meter
20 comprises a water meter.
4. A meter according to claim 3, wherein the transducer
comprises a fluidic oscillator.
- 25 5. A meter according to any one of the preceding claims,
wherein the first portion of the meter includes an
amplifier and filter for amplifying and filtering the flow
measurement signal from the transducer.

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6. A meter according to any one of the preceding claims, wherein the second portion of the meter includes a power supply for the first and second portions of the meter.
- 5 7. A meter according to any one of the preceding claims, wherein the second portion of the meter includes a display for displaying the meter reading.
8. A water meter including a plastics body which
10 contains flow measuring apparatus, and a metal connector extending from the body which allows connection of the body to a water supply.
9. A water meter according to claim 8, wherein the body
15 is formed of acetyl.
10. A water meter according to claim 8 or 9, wherein the metal connector is formed of brass.
- 20 11. A water meter according to claim 8, 9 or 10, wherein the metal connector is lined or coated with non-metal.
12. A water meter according to any one of claims 8 to 11, wherein the flow measuring apparatus comprises a fluid
25 oscillator.
13. Apparatus for use with a meter for transmitting data indicative of the meter reading by radio frequency (RF) transmission comprising a receiver and a transmitter,
30 wherein said receiver is activated periodically, and wherein said frequency of activation of said receiver

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periodically is increased when the apparatus receives RF transmission originating from compatible RF devices.

14. Apparatus according to claim 13, wherein the
5 apparatus transmits the data after receiving RF transmission which includes a signal indicative of a request for the data.

15. Apparatus according to claim 14, wherein said signal
10 is unique to the meter.

16. Apparatus according to any of claims 13 to 15, said apparatus suitable for detachable connection to the meter.

15 17. Apparatus according to any of claims 13 to 15, said apparatus being provided within the meter.

18. A meter substantially as hereinbefore described with reference to and/or substantially as illustrated in any
20 one of or in any combination of the accompanying drawings.

19. Apparatus for use with a meter for transmitting data indicative of the meter reading substantially as hereinbefore described with reference to and/or
25 substantially as illustrated in any one of or in any combination of the accompanying drawings.

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ABSTRACTA UTILITY METER

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A modular utility meter 1, for example, a water meter, is provided which comprises a meter base 2 and a meter head 3. The output signal from a transducer in the meter base 2 is processed in the meter head 3 to calculate the utility
10 supply. The processing includes linearization of the signal using calibration data stored in the meter base 2. Therefore, any meter head may be combined with a meter base containing any different type of transducer.

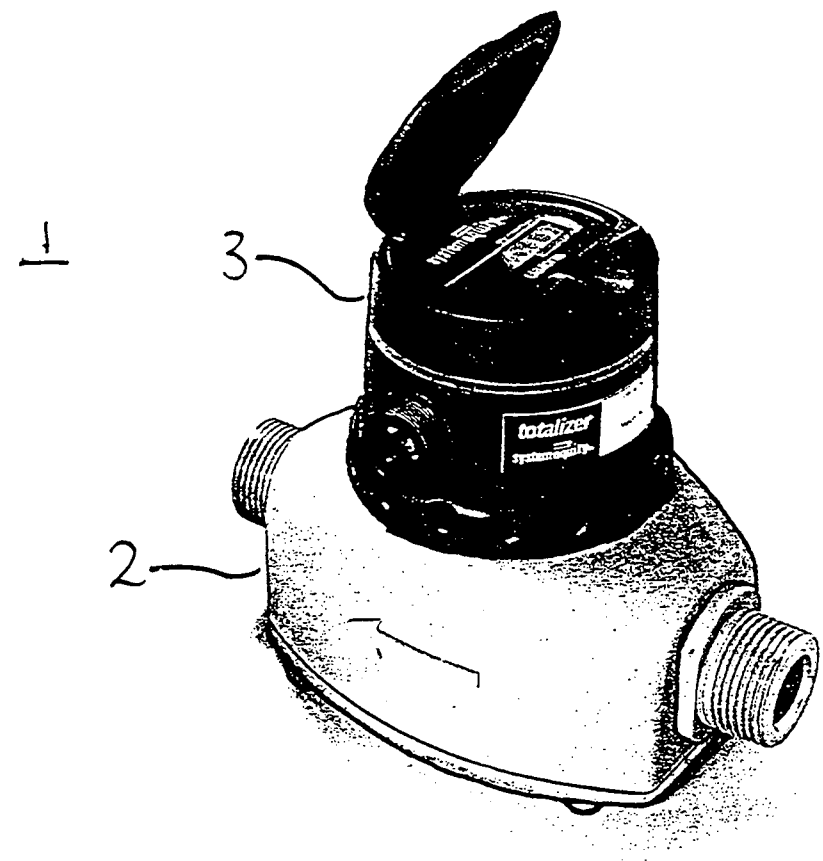
15 [Fig. 1]

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FIG. 1



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62 60

FIG. 3

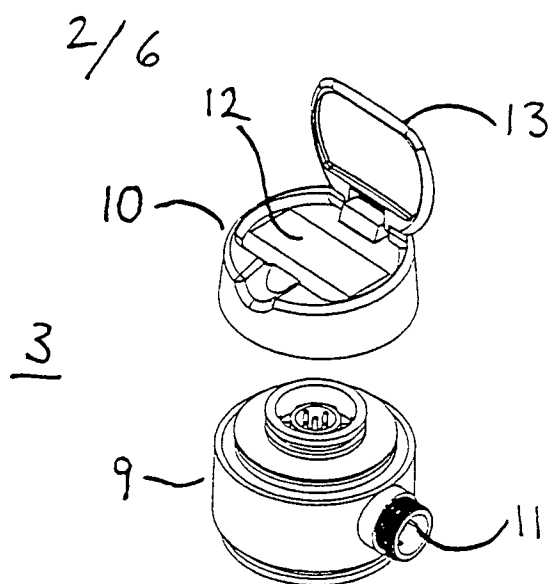
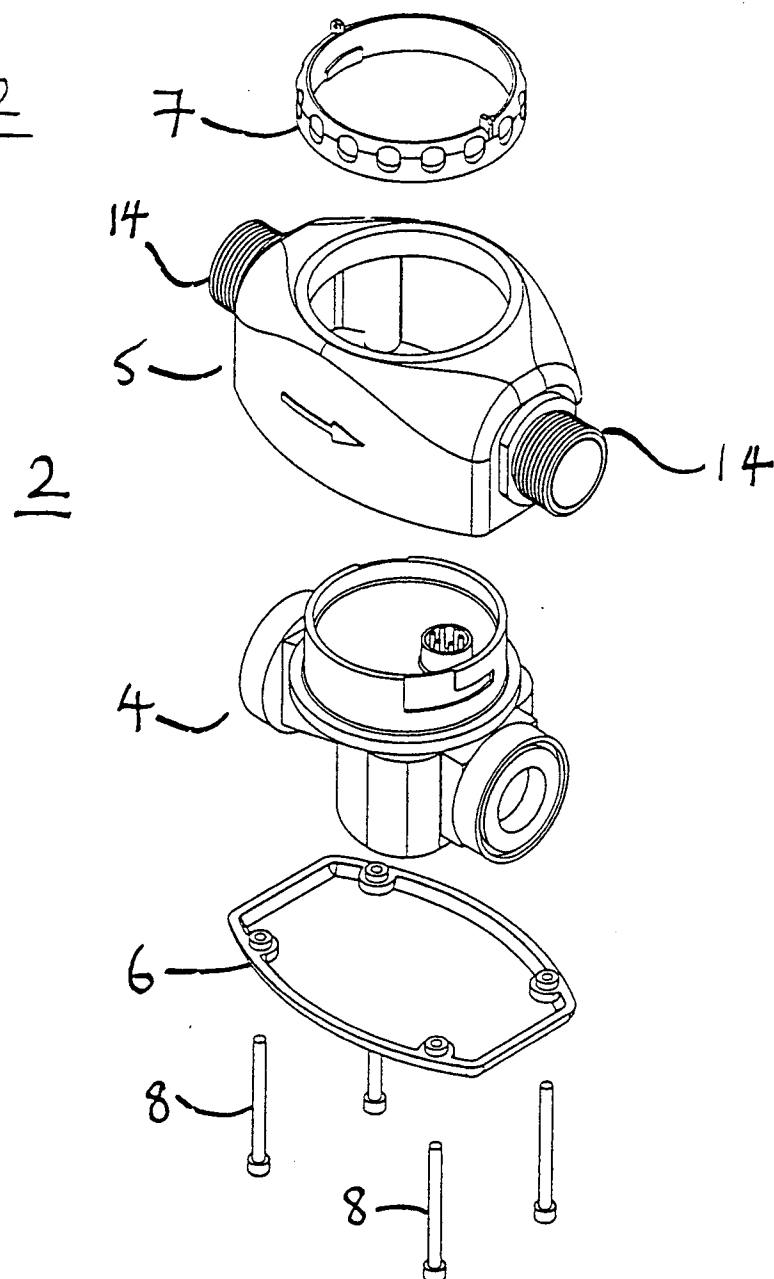


FIG. 2



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63 61

FIG. 4

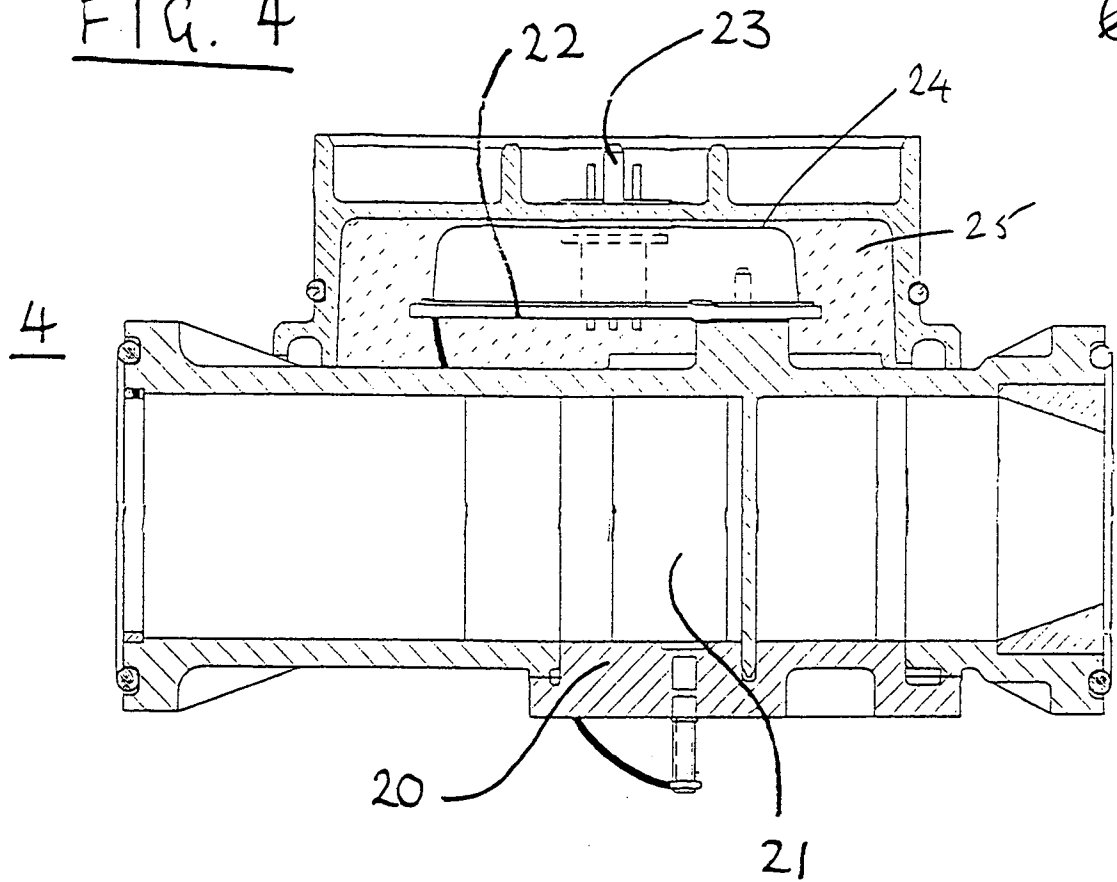
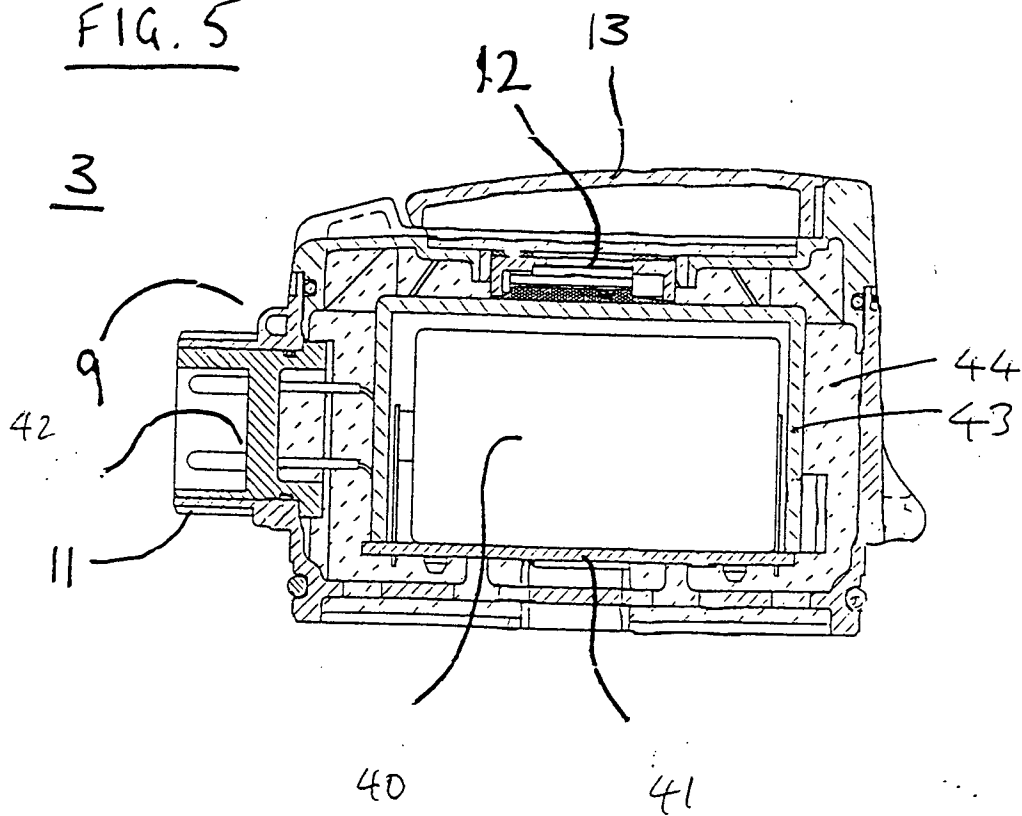


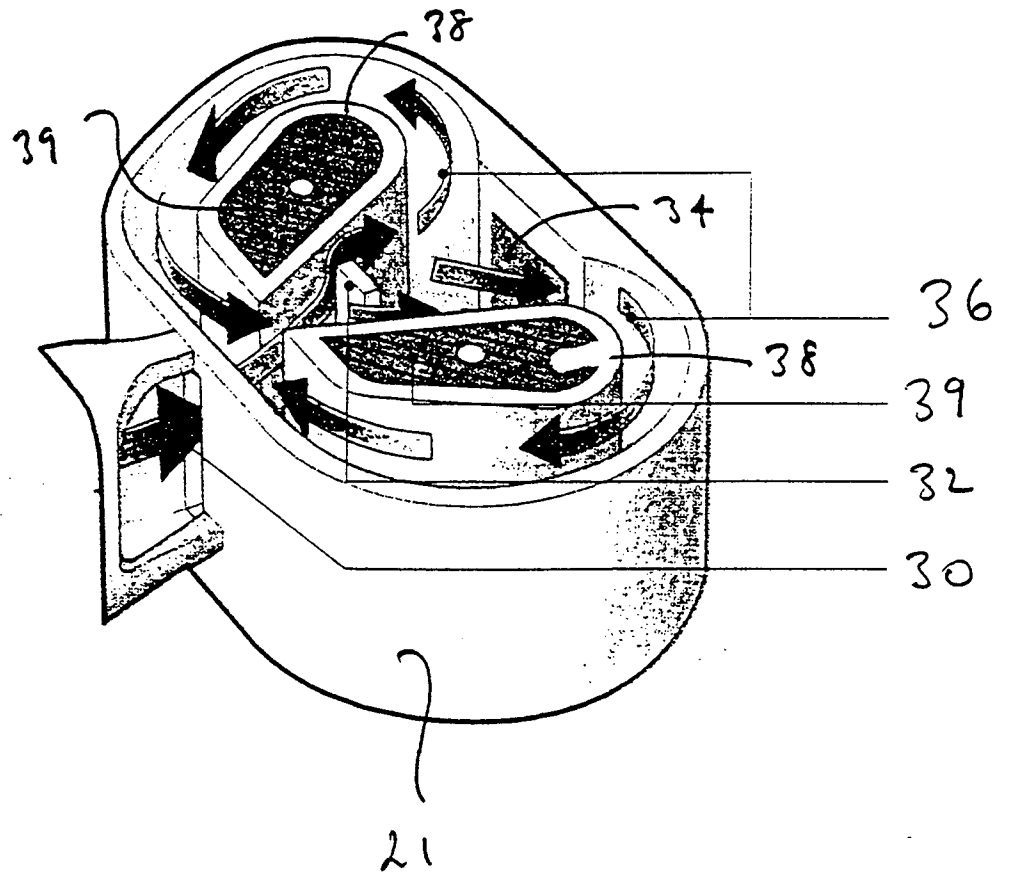
FIG. 5



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FIG. 6



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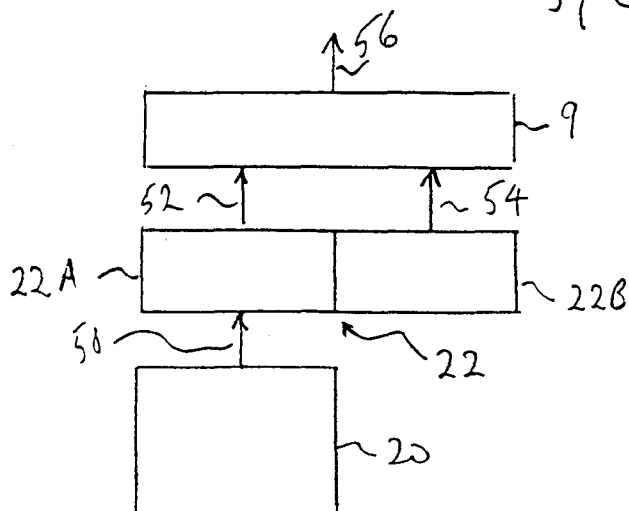


FIG. 7 ²⁶ 6563

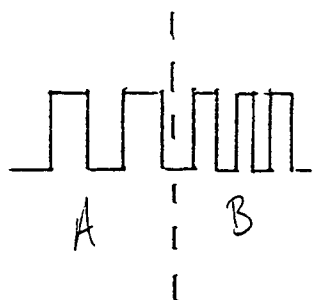


FIG. 8

VOLUME
FLOW PER PULSE

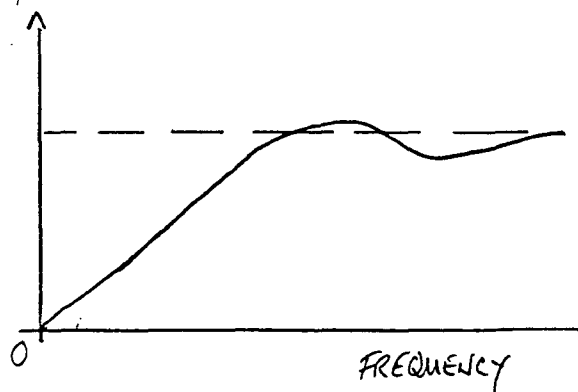


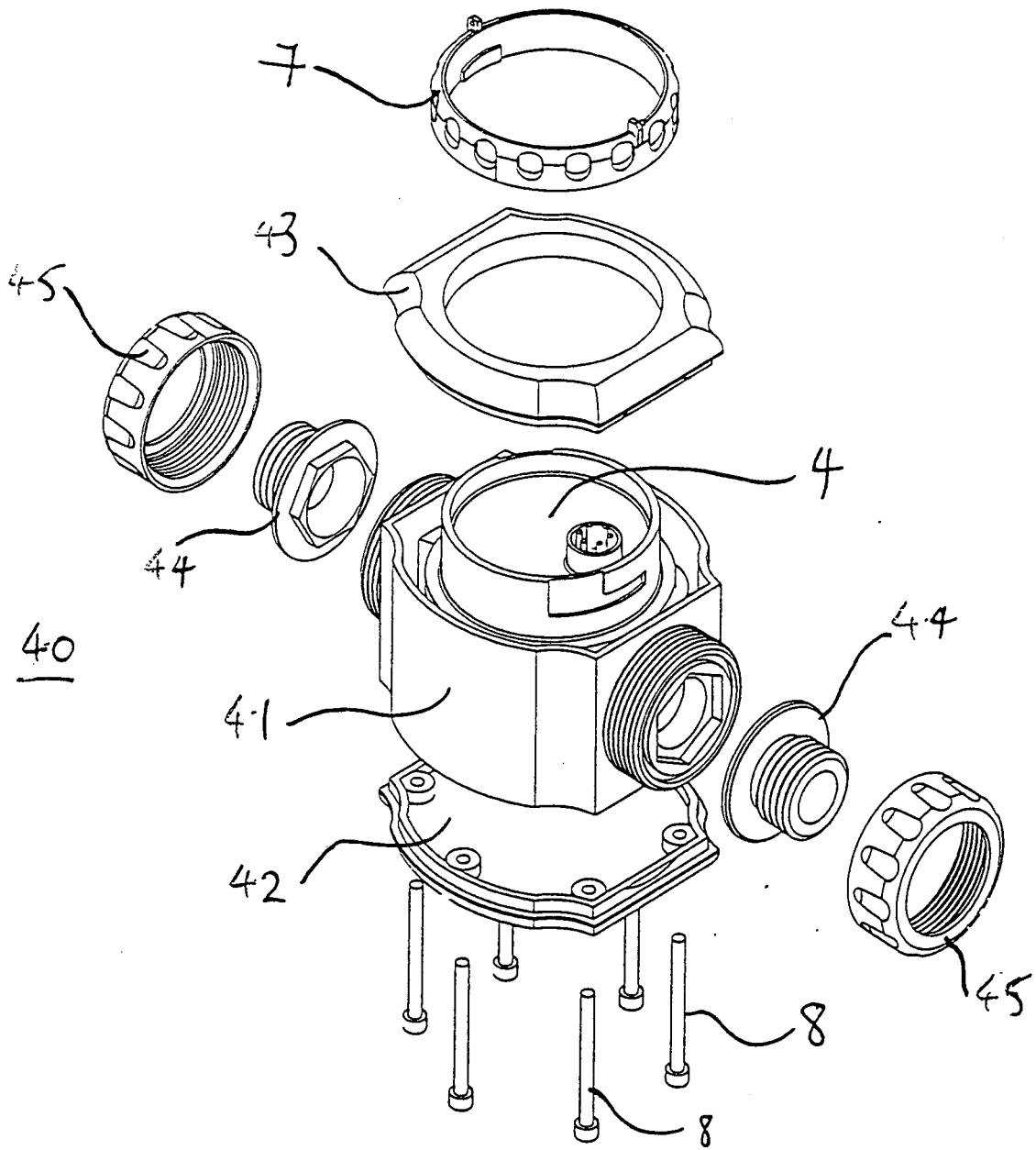
FIG. 9

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FIG. 10



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Gwent NP9 1RH

28 Mayo 1999

1. Su referencia

P14911

2. Solicitud de patente número

9912561.9

3. Nombre completo dirección y Apartado
De o de cada solicitante

**FUSION METERS LIMITED
2308 COVENTRY ROAD
BIRMINGHAM B26 3JZ**

Número ADP de patente

5861240002

Si la solicitud es un cuerpo corporativo, indique
El país/ estado de su incorporación

REINO UNIDO

4. Título de la invención

CONTADOR

5. Nombre del Agente

**Edward Evans & Co.,
Chancery House
Chancery Lane
Londres WC2A 1SD
661001**

Número de Patentes ADP

31

7068

6. Si esta declarando prioridad de una o mas solicitudes de patentes prioritarias, provea el país y fecha de presentación de cada una de estas solicitudes prioritarias y el número de cada una de las solicitudes.

Pais	Solicitud de Prioridad No. (si lo conoce)	Fecha de presentación (dia/mes/año)
------	--	--

7. Si esta solicitud es dividida o en otro caso derivada de una solicitud de UK anterior, provea el número y fecha de presentación anterior.

número de la primera solicitud	fecha de presentación (dia/mes/año)
--------------------------------	--

8. Se requiere una declaración de inventor y derecho de concesión de una patente requerido para apoyar esta solicitud.(responda "si", si:

si

- a) algun solicitante nombrado tercera (3) parte no es un inventor, o
 - b) existe un inventor quien no es nombrado como solicitante, o
 - c) algún solicitante nombrado es un cuerpo corporativo
- vea nota (d)

9. Entre el número de hojas cualquiera de los ítems siguientes que usted esta presentando con este formato. No cuente copias del mismo documento.

Continuación de este formato

Descripción	14
Reivindicaciones	3
Extracto	1
Dibujos	6

10. Si usted esta presentando cualquiera, declare cuales contra cada ítem

Documentos de prioridad
Traducciones de Documentos de prioridad
Declaración de inventor y derechos de
concesión de una patente (Forma de Patentes 7/77)

32
71 69

**Solicitud de axaminación preliminar y
búsqueda** *(Forma de Patentes 9/77)*

Solicitud de examinación substantiva
(Forma de Patentes 10/77)

Cualquier otro documento
(por favor especifique)

11. Yo/ el que requiere la concesión de esta patente bajo las bases de esta solicitud.

Firma (ilegible)

Fecha 28 de Mayo de 1999

12. Nombre y teléfono diurno de la persona a contactar en el Reino Unido.
Mark C. Foster 0171 405 4916

Advertencia

Una vez una solicitud de una patente ha sido presentada, El Interventor de la Oficina de Patente se considera la publicación o comunicación de la invención debe ser prohibida o restringida bajo la Sección 22 del Acto de Patente 1977. Usted esta informado si es necesario de prohibir o restringir su invención en esta forma. Adicionalmente, si Usted vive en el Reino Unido, Sección 23 del Acto de Patentes 1977 lo detiene a Usted de presentar una solicitud en el exterior sin que primero obtenga permiso por escrito de la Oficina de Patentes a menos que una solicitud haya sido presentada por lo menos 6 semanas de antemano en el Reino Unido para la patente para la misma invención y publicaciones prohibidas hayan sido direccionadas o comunicación haya sido entregada, o cualquier dirección haya sido revocada.

Notas

- a) Si usted necesita ayuda para completar este formato o usted tiene alguna pregunta, por favor contacte la Oficina de Patentes en 0645 500505.
- b) Escriba sus respuestas en letra capital usando tinta negra o Usted puede escribir a maquina.
- c) Si no hay suficiente espacio para todos los detalles relevantes en alguna parte de este formato, por favor continúe en una página aparte y escriba " ve hoja de continuación"
- d) Si Usted ha respondido "si" el Formato 7/77 deberá ser completado.
- e) Una vez Usted ha completado el formato Usted debe recordar firmar y colocar fecha.
- f) Para detalles de gastos y formas de pago por favor contacte la Oficina de Patentes.

Forma de Patentes 1/77

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REIVINDICACIONES

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1. Un contador que comprende una primera y una segunda parte conectadas y susceptibles de desconectar; la primera parte comprende un transductor de medición de flujo y medios de almacenamiento que contienen datos específicos para el transductor y la segunda parte comprende un medio de procesamiento para procesar una señal de medición de flujo del transductor y los datos específicos del transductor para producir una señal de salida que corresponde al flujo pero independiente de las características del transductor que corresponden a los datos específicos de éste.
- 10 2. Un contador de acuerdo a la reivindicación 1, en donde los datos específicos del transductor representan la relación entre la señal de medición de flujo generada por el transductor y la velocidad de flujo medida por el transductor.
- 15 3. Un contador de acuerdo a la reivindicación 1 ó 2, en donde el contador comprende un contador de agua.
- 20 4. Un contador de acuerdo a la reivindicación 3, en donde el transductor comprende un oscilador fluídico.
5. Un contador de acuerdo a cualquiera de las reivindicaciones anteriores, en donde la primera parte del contador incluye un amplificador y un filtro para amplificar y filtrar la señal de medición del flujo del transductor.
- 25 6. Un contador de acuerdo a cualquiera de las reivindicaciones anteriores en donde la segunda parte de éste incluye un suministro de energía para la primera y segunda parte que lo comprenden.
7. Un contador de acuerdo con cualquiera de las reivindicaciones anteriores en donde la segunda parte del contador incluye una pantalla para visualizar la lectura de éste.
- 30 8. Un cuerpo de plástico que contiene un aparato de medida de flujo y un conector de metal que se extiende desde el cuerpo y que permite la conexión de éste a un suministro de agua.
- 35 9. Un contador de agua de acuerdo a la reivindicación 8, en donde el cuerpo está hecho en PPS (sulfuro de poli-fenilina).

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10. Un contador de agua de acuerdo a las reivindicaciones 8 o 9, en donde el conector de metal está hecho en bronce.
 11. Un contador de agua de acuerdo a la reivindicación 8, 9 o 10, en donde el conector de metal está forrado o recubierto con material no metálico.
 - 5 12. Un contador de agua, de acuerdo a cualquiera de las reivindicaciones 8 a 11 en donde el aparato de medición de flujo comprende un oscilador de fluido.
 13. Aparato para ser usado con un contador, para transmitir los datos indicativos de la lectura del contador mediante transmisión por frecuencia de radio, que comprende un receptor y un transmisor, en donde dicho receptor se activa periódicamente y en donde la frecuencia de activación de dicho receptor se incrementa periódicamente cuando el aparato recibe transmisión de frecuencia de radio originada en dispositivos compatibles con frecuencia de radio.
 - 10 14. Aparato de acuerdo con la reivindicación 13, en donde el aparato transmite los datos después de recibir la transmisión por radio frecuencia que corresponde a una señal indicativa de una solicitud de datos.
 - 15 15. Aparato de acuerdo con la reivindicación 14, en donde dicha señal es única para el contador.
 - 20 16. Aparato de acuerdo con cualquiera de las reivindicaciones 13 a 15, susceptible ser conectado y desconectado al contador.
 17. Aparato de acuerdo con cualquiera de las reivindicaciones 13 a 15, que se proporciona con el contador.
 18. Aparato para ser usado con un contador, para transmitir datos indicativos de la lectura del contador, que comprende un transmisor de datos solicitados por un receptor remoto, en donde se tiene el medio para transmitir los datos en un tiempo particular: el tiempo de transmisión que identifica el contador en el receptor.
 - 25 19. Aparato de acuerdo con la reivindicación 18, en donde se determina el tiempo de transmisión de acuerdo con por lo menos un número de identificación del contador o un número generado por un generador de números aleatorios.
 - 30 20. Un contador que comprende un transductor de flujo y medios para aplicar una señal a través del trayecto normal del fluido y detectar dicha señal de manera que se proporciona una indicación de presencia del fluido en dicho trayecto de fluido.
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21. Un contador como se describió de manera sustancial anteriormente y como se ilustró sustancialmente en los dibujos acompañantes, o en cualquier combinación de éstos.
22. Aparato para ser usado con un contador para transmisión de datos indicativos de la lectura del contador, como se describió anteriormente de manera sustancial en los dibujos acompañantes, o en cualquier combinación de éstos.

103 25
104

Señor

SUPERINTENDENTE DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES

E. _____ S. _____ D. _____

RECEIVED
REGISTRO DE PATENTES
Fecha: 2000-08-14 15:18:51
Trámite: 002 PATENTES D. I. REGISTRO DE D. COMPLETADO
Dependencia: 2000 DIVISIÓN DE NUEVAS CREACIONES

REF. Expediente: 00-039.418
Patente de Invención: CONTADOR
Titular: FUSION METERS LIMITED

DESTINO: 09

Humberto RUBIO CAMACHO, mayor de edad, vecino de Santafé de Bogotá, D.C., identificado con la cédula de ciudadanía numero 17'192.062 de Bogotá, abogado en ejercicio portador de la Tarjeta Profesional No. 50.007, expedida por el Consejo Superior de la Judicatura, en carácter de apoderado de la Sociedad **FUSION METERS LIMITED**; encontrándome dentro del termino legal establecido en el Artículo 4° del Convenio de París, me permito anexar los siguientes documentos:

- 1.- Copia certificada de la Solicitud No. 9912561.9 de 28 de mayo de 1.999, expedida por la Autoridad Competente, junto con su respectiva traducción al Castellano; base de la prioridad reivindicada en la solicitud de registro de la Patente de Invención citada en la referencia; todo de conformidad con el Artículo 4° del Convenio de la Unión de París y el Concepto 5 de enero de 1.999 de la SIC.

Atentamente,

Original Firmado
Por Humberto Rubio

HUMBERTO RUBIO CAMACHO

C.C. 17'192.062 de Bogotá

T.P. 50.007 Consejo Superior
de la Judicatura

COD 4134

00/1089-01/PI

2do. EXAMEN DE FORMA PATENTE DE INVENCION

Folio

106

104
2003-02-14
372

Radicación no 00-39418

Concepto Técnico no . 399

Clasificación Internacional de Patentes : 6 G01 4/08 //G01F1/66

Practicado el examen de acuerdo a lo establecido en el Art. 38 de la Decisión 486 se determinó que esta solicitud de **Patente de Invención**:

- | | |
|---|---|
| SI [☒] NO [] | Contiene un resumen de la invención (Art.26-e). |
| SI [☒] NO [] | Contiene el título o nombre de la invención (Art.27-d). |
| SI [☒] NO [] | Contiene la descripción de la invención (Art.26-b). |
| SI [☒] NO [] | NO ES APLICABLE [] Contiene los dibujos necesarios para comprender la invención (Art.26-d) |
| SI [☒] NO [] | Contiene una o más reivindicaciones. (Art.26-c). |
| SI [] NO [] | NO ES APLICABLE [☒] Han sido desarrollados los productos y/o procedimientos a partir de recursos genéticos o de sus productos derivados de los que cualquiera de los Países Miembros es país de origen. (Art. 26- h). |
| SI [] NO [] | NO ES APLICABLE [☒] Los productos y/o procedimientos han sido obtenidos o desarrollados a partir de los conocimientos tradicionales de las comunidades indígenas, afroamericanas, o locales de los países miembros, de acuerdo a lo establecido en la Decisión 391 y sus modificaciones y reglamentaciones vigentes.(Art.26-i). |
| SI [] NO [☒] | La invención se refiere a un producto relativo a un material biológico. (Art.26-J). |
| SI [☒] NO [] | La prioridad coincide con la materia reivindicada. |
| SI [☒] NO [] | CUMPLE LOS REQUISITOS TÉCNICOS |

OBSERVACIONES Y OTROS: SI [☒] NO [] ver hoja(s) anexa(s)

EXAMINADOR TÉCNICO
202044

Bogotá D. C. Febrero 14 de 2003.

105

Folio ~~107~~

Concepto técnico no. 399

OBSERVACIONES

- Envía el documento mediante el cual reivindica la prioridad. Folios 41-66.
- Anexa la traducción del documento de prioridad. Folios 67-74.
- Anexa el extracto de publicación. Folio 105.
- Anexa el poder junto con el documento que indica la persona jurídica del solicitante. Folios 100-103
- Anexa dibujos alucivos a la invención. Folios 94 -98.
- Anexa un nuevo capítulo descriptivo. Folios 77-90
- Anexa nuevas reivindicaciones. Folios 91-92
- Anexa artes finales . Folio 99.

EXAMINADOR TECNICO

202044

Bogotá, Febrero 14 de 2003.

2020
Bogotá DC

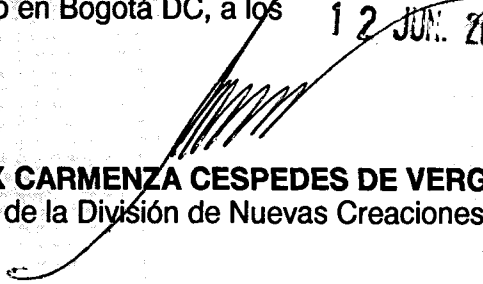
Doctor(a)
HUMBERTO RUBIO CAMACHO
Apoderado(a)

REFERENCIA:	Radicación No.	00-39418
	Trámite	002
	Evento	001
	Actuación	416
	Oficio No.	820
	Folios	001

Teniendo en cuenta que la solicitud de privilegio de patente que se tramita bajo el expediente indicado en la referencia, reúne los requisitos de forma establecidos en los artículos 26 y 27 de la Decisión 486 de la Comisión de la Comunidad Andina, y en las demás disposiciones vigentes sobre la materia, se envía el extracto de la solicitud a la Oficina de Comunicaciones para efecto de su publicación en la Gaceta de Propiedad Industrial, conforme lo establece el artículo 40 de la misma Decisión.

Cúmplase

Dado en Bogotá DC, a los 12 JUN. 2003


ALIX CARMENZA CESPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones

202044

DIVISION DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No 00-39418

EL EXTRACTO DE LA PRESENTE SOLICITUD DE **PATENTE DE INVENCION** FUE
PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No 531, DE FECHA **29 TDE**
AGOSTO DE 2003, EL TERMINO HABIL SEÑALADO POR LA LEY EXPIRA EL **26 DE**
NOVIEMBRE DE 2003.

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud caiga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____

NO X _____