

CAVELIER

ABOGADOS

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SUPERINDUSTRIA Y COMERCIO

Radicación : 04042453 00000002 Folios: 78

Fecha (ADM): 2004-05-04 16:39:48

Trámite : 002 PATENTES D 1 REGISTRO/ 444 RESPUESTA

Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

Señora Jefe de la
DIVISION DE NUEVAS CREACIONES
Superintendencia de Industria y Comercio
E. S. D.

Trámite :002
Evento :001
Actuación :444

Referencia : Expediente No. 04.042.453
Asunto : Solicitud de patente para
"ROCIADORES DE BOMBA ACCIONADOS POR
DISPARO EN LINEA DE BAJO COSTO"
Solicitante : SAINT-GOBAIN CALMAR INC.
Fecha de Solicitud : 07 de mayo de 2004

1. Yo, Emilio FERRERO, obrando como apoderado del solicitante en el asunto antes identificado, me refiero al oficio número 05375, notificado por fijación en lista el 03 de junio de 2004.

2. Atiendo al oficio número 05375 de la siguiente manera:

2.1. Documento de Cesión. Presento el documento de cesión otorgado por el inventor de la solicitud de patente en referencia, debidamente legalizado por Apostilla y junto con su correspondiente traducción oficial al español.

2.2. Documentos de Prioridad. Presento copias certificadas de las solicitudes de patente números 60/468,642 y 10/836,384 de Estados Unidos de América, sobre las

cuales se reivindica prioridad para el presente caso. Así mismo adjunto la traducción simple del capítulo reivindicatorio de cada una de estas solicitudes.

2.3. Dibujos Formales. Presento copia de los dibujos formales que complementan la presente solicitud de patente.

3. Puesto que se ha atendido a cabalidad la observación de carácter formal hecha por su Despacho sobre la presente solicitud de patente, atentamente solicito a ustedes que se continúe su tramitación.

Bogotá, - 4 AGO. 2004
Señora Jefe,



EMILIO FERRERO
T.P.A. No. 31.929

 COLO 13532 801 004 0
DLW/DLM/ID-000080/WPC13532

8A
2a

Apostille

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America

This public document

2. has been signed by JUDY C. DAVIS

3. acting in the capacity of NOTARY PUBLIC

4. bears the seal/stamp of JUDY C. DAVIS - NOTARY PUBLIC-STATE OF MISSOURI

Certified

5. at Jefferson City, Missouri

6. the 28TH day of JULY, 2004

7. by Matt Blunt, Secretary of State, State of Missouri

8. No. 112509

9. Seal/Stamp

10. Signature:

Matt Blunt

88
80

**CAVELIER
ABOGADOS
Edificio Siski
Carrera 4, No 72-35
Bogota 8, COLOMBIA**

66044/PN.CC 2089-5

ASSIGNMENT

I (we), the undersigned

Steve L. SWEETON

Of:

350 South Shore Drive, Lake Winnebago, MO 64034, USA

states under oath to be sole and true inventor(s) of the invention:

LOW-COST, IN-LINE TRIGGER OPERATED PUMP SPRAYER

State as well, that assign, without reservations or limitations in favour of

SAINT-GOBAIN CALMAR INC.

A corporation constituted and existing in conformity with the laws of the State of Delaware, UNITED STATES OF AMERICA

Domiciled in City of Industry, State of California, United States of America, all rights inherent to said invention and that the above mentioned company is hereby enabled to apply, on its behalf, for the corresponding patent in the Republic of Colombia.

Given and signed July 27, 2004 in Lee's Summit, MO, USA

Steve L. Sweeton

Steve L. SWEETON

On this 27th **day of** July **2004, signed before me, a Notary Public of the State of Missouri, County of** JACKSON **personally appeared Steve L. Sweeton to me known, and known to me to be the person(s) who executed that foregoing document, and who has(have) legal capacity to execute it.**

SEAL

**JUDY C. DAVIS
Notary Public-Notary Seal
State of Missouri
Commissioned in Jackson County
My Commission Expires: Aug. 10, 2004**

To be Notarized & Legalized through Apostille

Judy C. Davis
Notary Public

89
8
21

TRADUCCIÓN OFICIAL No. 13.07/04 preparada por María Elvira Martelo, traductora oficial aprobada por el Ministerio de Justicia mediante Resolución No. 2879 de 1995 y reconocida por el Ministerio de Relaciones Exteriores.

TRASPASO

Yo (nosotros), los suscritos

Steve L. SWEETON

De

350 South Shore Drive, Lake Winnebago, MO 64034, E.U.A.,

declaro bajo juramento ser el único y verdadero inventor de la invención:

ROCIADOR DE BOMBA ACCIONADO POR DISPARO EN LÍNEA DE BAJO COSTO

También declaro que cedo sin reservas ni limitaciones en favor de

SAINT-GOBAIN CALMAR INC.,

una sociedad constituida y existente de conformidad con las leyes del Estado de Delaware, ESTADOS UNIDOS DE AMÉRICA,

domiciliada en City of Industry, Estado de California, Estados Unidos de América, todos los derechos inherentes a dicha invención y que dicha sociedad queda por el presente autorizada para solicitar en su nombre, la patente correspondiente en la República de Colombia.

Dado y firmado el 27 de julio de 2004 en Lee's Summit, MO, E.U.A.

(Firma ilegible)

Steve L. SWEETON

Hoy 27 de julio de 2004 firmó ante mí, un Notario Público del Estado de Missouri, Condado de Jackson, personalmente Steve L. Sweeton, conocido por mí y me consta que es la persona que ejecutó el documento anterior y que tiene capacidad legal para ejecutarlo.

SELLO

JUDY C. DAVIS

Notario Público-Sello Notarial

Estado de Missouri

Comisionada en el Condado de Jackson

Mi comisión expira el 10 de agosto de 2004.

(Firmado) Judy C. Davis

Notario Público

APOSTILLA

(Convención de La Haya del 5 de octubre de 1961)

1. País: Estados Unidos de América

Este documento público

2. Ha sido firmado por JUDY C. DAVIS

3. Actuando en su capacidad de NOTARIO PÚBLICO

4. Lleva el sello/timbre de JUDY C. DAVIS-NOTARIO PÚBLICO-
ESTADO DE MISSOURI

Certificado

5. En Jefferson City, Missouri.

6. el 28 JULIO de 2004

7. Por Matt Blunt, Secretario de Estado, Estado de Missouri.

8. No. 112509 ✓

9. Sello: Sello del Secretario de Estado, Missouri.

10. Firma: (Firma) Matt Blunt

SELLO

JUDY C. DAVIS

Notario Público-Sello Notarial

Estado de Missouri

Comisionada en el Condado de Jackson

Mi comisión expira el 10 de agosto de 2004.

(Firmado) Judy C. Davis

Notario Público

Es traducción fiel y completa de la cual se deja copia en esta oficina para su confrontación.

COLO 13532-801-004-0

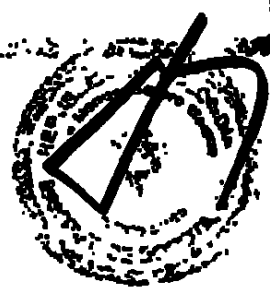
WPC 123532 - ID 57

AGO 02/04

Maria E. Martelo
TRADUCCION No. 130764
MARIA ELVIRA MARTELO
Traductora e interprete Oficial
Inglés - Español - Inglés
Res. No. 2879 Min. Justicia

6

COMO NOTARIO SEXTO DEL CIRCULO DE SANTAFE DE
BOGOTA, HAGO CONSTAR QUE LA(S) FIRMA(S) DE
Maria Elvira Martelo
CON LA FIRMA REGISTRADA POR
EN ESTA NOTARIA 2004
SANTAFE



NO SE ASUME
RESPONSABILIDAD DEL TEXTO

23 AGO - 3 P 12:11
Miguel
FE DE LEGALIZACIONES
BOGOTA D.C.

MINISTERIO DE
RELACIONES EXTERIORES

247487
Maria Elvira Martelo
CUIA P... APARECE EN EL
BOGOTA D.C. O DESEMPEÑA
LAS FUNCIONES INDICADAS



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

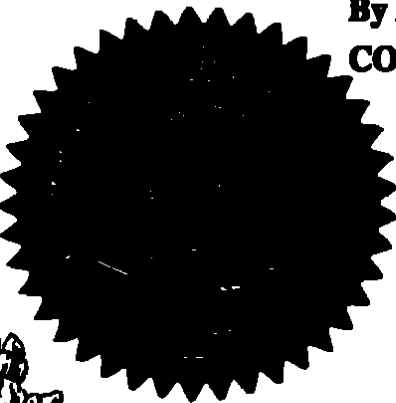
June 16, 2004

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: 60/468,642

FILING DATE: May 08, 2003

**By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS**




N. WOODSON
Certifying Officer

60468642 .050383

Please type a plus sign (+) inside this box ☐

Approved for use through 10/31/2002. OMB 0851-0032
U.S. Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PROVISIONAL APPLICATION FOR PATENT COVER SHEET This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c).

INVENTOR(S)					
Given Name (first and middle (if any))		Family Name or Surname		Residence (City and either State or Foreign Country)	
STEVE L.		SWEETON		LEE'S SUMMIT, MO	
☐ Additional inventors are being named on the _____ separately numbered sheets attached hereto					
TITLE OF THE INVENTION (250 characters max)					
LOW COST TRIGGER SPRAYER					
Direct all correspondence to:			CORRESPONDENCE ADDRESS		
☒ Customer Number 25268			Place Customer Number Bar Code Label here		
OR					
☐ Firm or Individual Name			Type Customer Number here		
Address			Address		
City			State	ZIP	
Country			Telephone	Fax	
ENCLOSED APPLICATION PARTS (check all that apply)					
☐ Specification Number of Pages		☐ CD(s), Number			
☒ Drawing(s) Number of Sheets 14		☒ Other (specify) CLAIMS			
☐ Application Data Sheet. See 37 CFR 1.78					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)					
☐ A check or money order is enclosed to cover the filing fees					FILING FEE AMOUNT (\$)
☒ The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number 04-2223					\$180.00
☐ Payment by credit card. Form PTO-2038 is attached.					
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
☒ No.					
☐ Yes, the name of the U.S. Government agency and the Government contract number are: _____					

Respectfully submitted,

SIGNATURE 
TYPED or PRINTED NAME LAWRENCE R. RADANOVIC
TELEPHONE 202 906 8624

Date 5/8/03

REGISTRATION NO. 23,077
(If appropriate)
Docket Number: 68044-1505-5

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting the complete provisional application to the PTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, D.C. 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Box Provisional Application, Assistant Commissioner for Patents, Washington, D.C.

P18LARGE0005

68044-1505-5

LOW COST TRIGGER SPRAYER

1. A trigger actuated pump sprayer, comprising a pump body including an integrally formed a pump cylinder and an integrally formed closure for mounting the sprayer on a container of liquid product to be sprayed, a hollow piston reciprocable within the cylinder to therewith define a variable volume pump chamber, the cylinder lying along an axis substantially perpendicular to a central axis of the closure, a piston return spring and an inlet valve lying along the cylinder axis, a trigger lever connected to said pump body in engagement with a stem of said piston, a spray nozzle mounted on said lever, means defining spin mechanics upstream of the nozzle, and a discharge valve upstream of the spin mechanics means.
2. The pump sprayer according to claim 1, wherein the trigger lever is integrally hinged to the pump body.
3. The pump sprayer according to claim 1, wherein the trigger lever is trunnion mounted to said pump body.
4. The pump sprayer according to claim 1, wherein a shroud cover is mounted on said pump body.
5. The pump sprayer according to claim 1, wherein a shroud cover is integrally formed with said pump body.
6. The pump sprayer according to claim 1, wherein the discharge valve and the spin mechanics are integrally formed.

7. A trigger actuated pump sprayer, comprising a pump including an integrally formed a pump cylinder and an integrally formed closure for mounting the sprayer on a container of liquid product to be sprayed, a hollow piston reciprocable within the cylinder to therewith define a variable volume pump chamber, the cylinder lying along an axis substantially perpendicular to a central axis of the closure, a single piece elastomeric element comprising a piston return spring, an inlet valve to said chamber and a discharge valve.

8. The pump sprayer according to claim 7, wherein the piston has a hollow plunger in engagement with a central portion of the elastomeric element.

9. The pump sprayer according to claim 8, wherein the discharge valve engages a distal end of the hollow plunger.

10. The pump sprayer according to claim 7, wherein said inlet valve comprises an annular chevron valve disposed with the pump chamber.

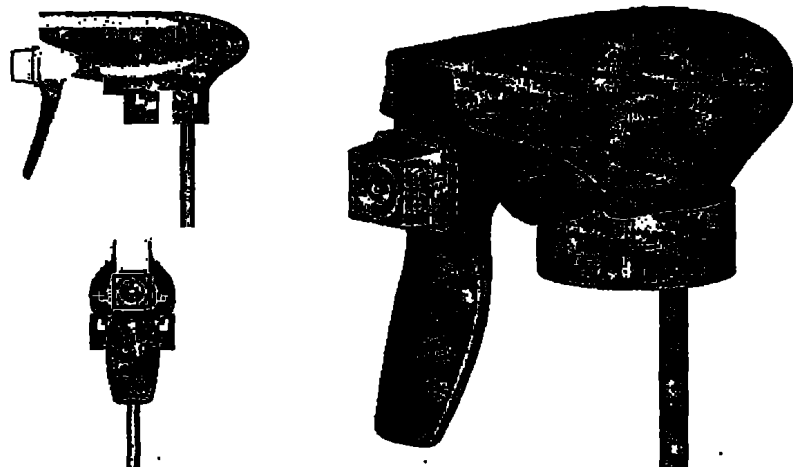


LOW-COST TRIGGER SPRAYER
SINGLE-AXIS ASSEMBLY CONCEPT

SHIM GEBIN
CALMAR

PROJECT 'ROAD-RUNNER' (DESIGN for HIGH SPEED ASSEMBLY)

TRADITIONAL PISTON & VALVING SYSTEM (8 COMPONENTS)



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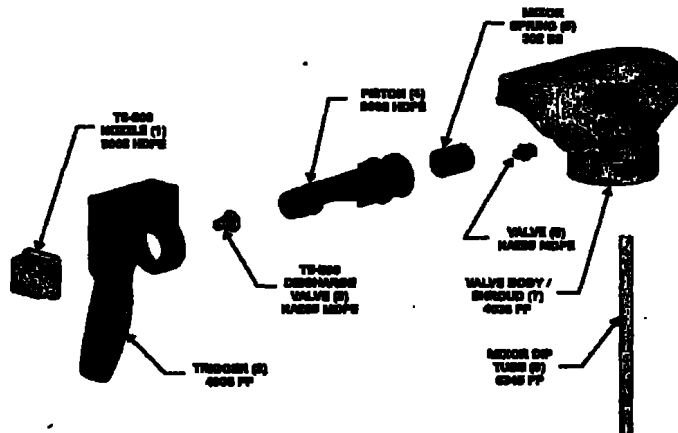
02-05

LOW COST TRIGGER SPRAYER SINGLE AXIS ASSEMBLY CONCEPT

TRADITIONAL PISTON & VALVING SYSTEM

8 COMPONENT SINGLE AXIS ASSEMBLY (OPTION: Dip tube installed at filling-line)

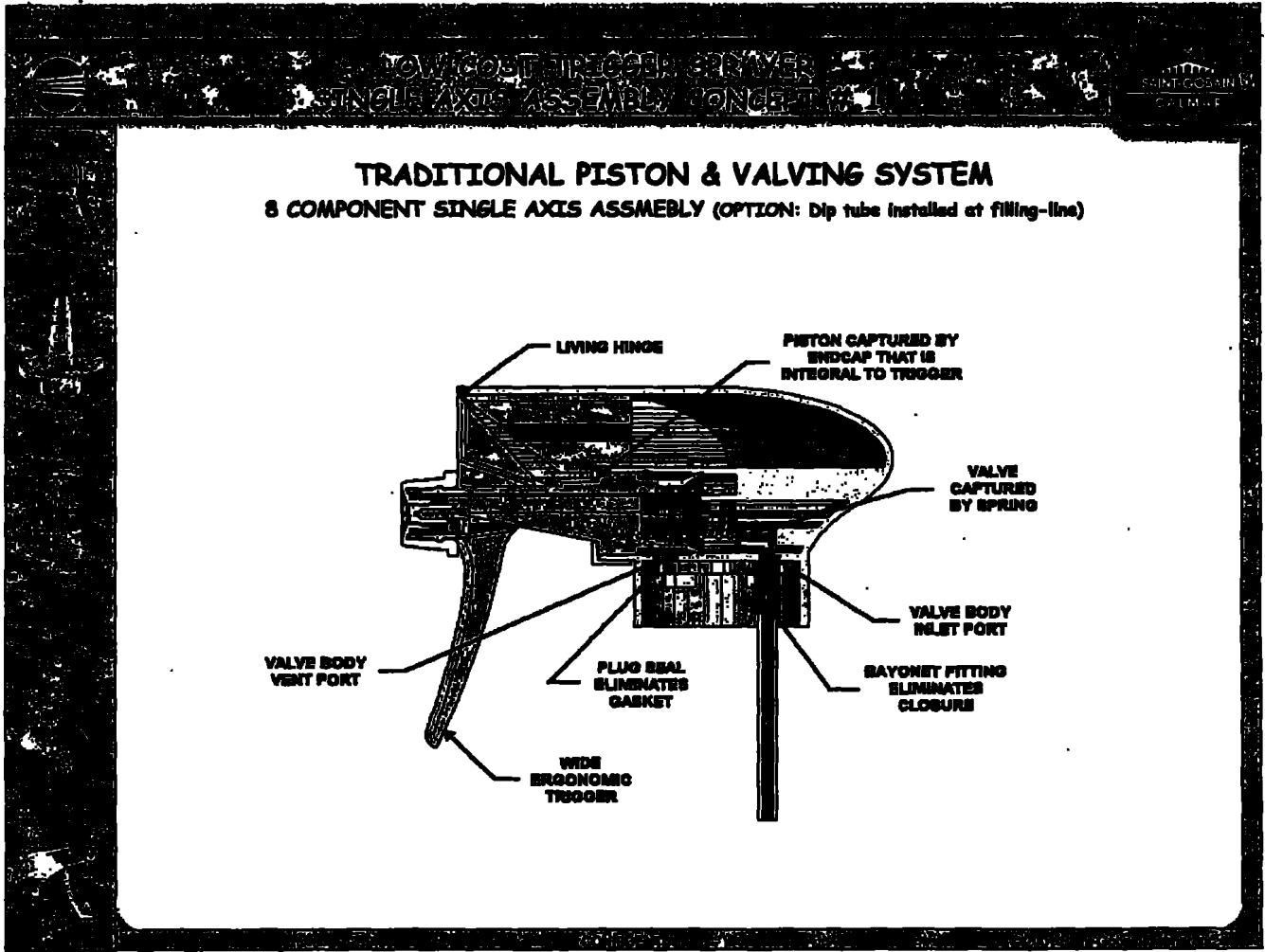
In this design the valving & spring were simplified. All components except for the dip-tube are assembled in a single axis. The dip-tube is to be assembled at the filling line. The filler must be a part of the solution! The bayonet-closure-plug seal is viewed as absolutely necessary for an optimal low-cost design. Again, the filler and the bottle manufacturing must be a part of the solution! The shroud molded to this already complex part is still viewed as unacceptable. The hinged trigger component has also been evaluated and deemed unacceptable for high speed molding and assembly.



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Copy provided by user to illustrate design concept only for reference



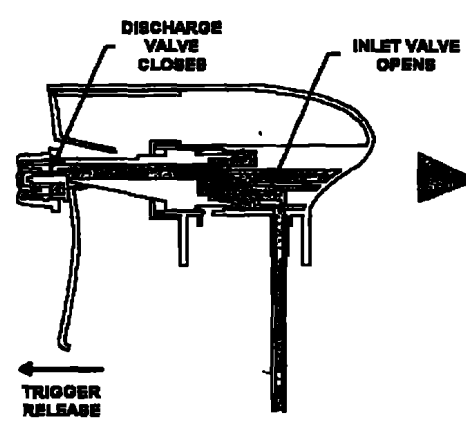


LOW COST TRIGGER SPRAYER SINGLE AXIS ASSEMBLY CONCEPT

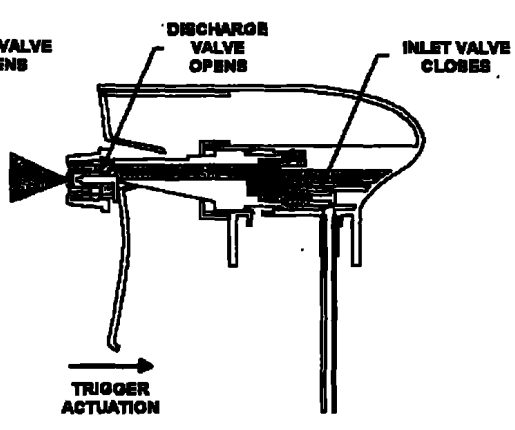
SAINT-GOBAIN
CALMAR

TRADITIONAL PISTON & VALVING SYSTEM 8 COMPONENT SINGLE AXIS ASSEMBLY (OPTION: Dip tube installed at filling-line)

PRIMING



DISCHARGE



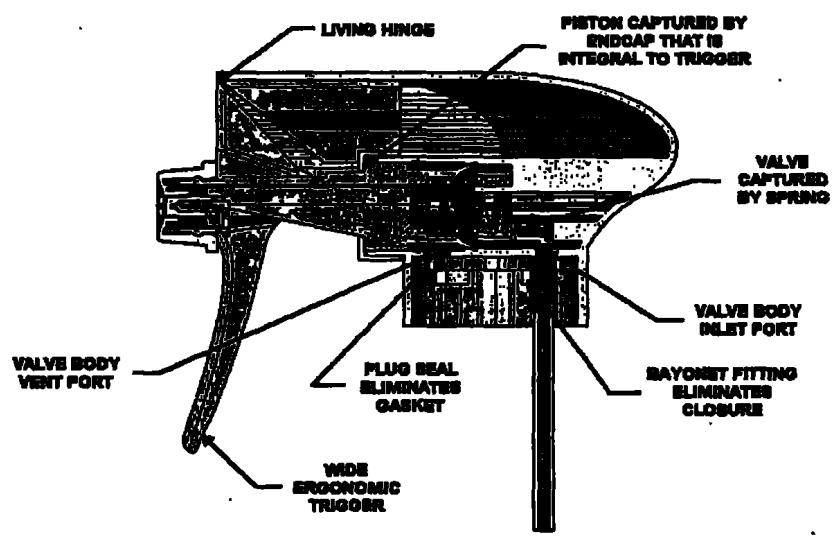
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LOW COST TRIGGER SPRAYER
SINGLE AXIS ASSEMBLY CONCEPT

UNITED STATES
PATENT & TRADEMARK
OFFICE

TRADITIONAL PISTON & VALVING SYSTEM
8 COMPONENT SINGLE AXIS ASSEMBLY (OPTION: Dip tube installed at filling-line)



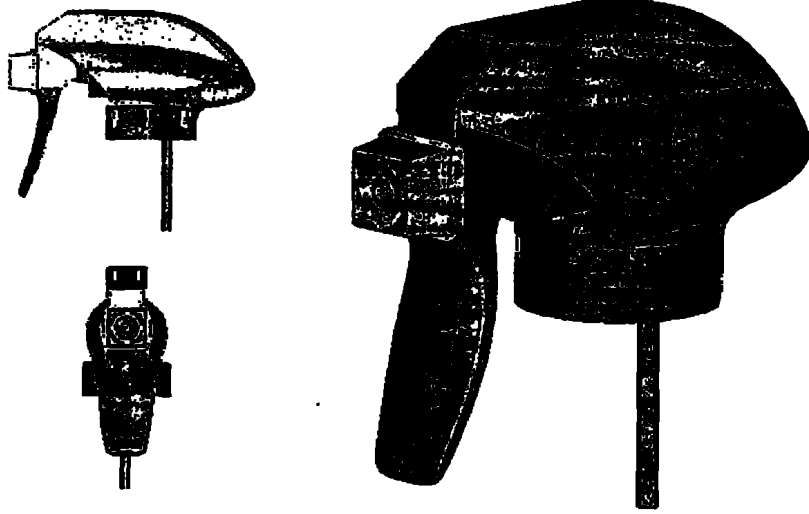
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LOW COST TRIGGER SPRAYER
SINGLE AXIS ASSEMBLY CONCEPT # 2

SAINT-GOBAIN
FRANCE

PROJECT 'ROAD-RUNNER'
(DESIGN for HIGH SPEED ASSEMBLY)

TRADITIONAL PISTON & VALVING SYSTEM
(9 components)



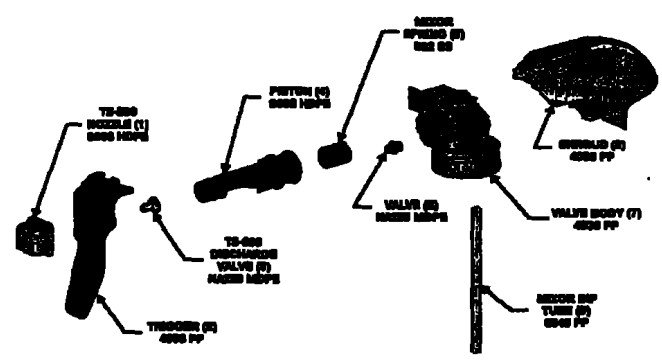
6046842.050803

LOW COST TRIGGER SPRAYER
SINGLE AXIS ASSEMBLY CONCEPT # 2

SAINT-GESAIN
CALMAR

TRADITIONAL PISTON & VALVING SYSTEM
9 COMPONENT SINGLE AXIS ASSEMBLY (OPTION: Dip tube installed at filling-line)

In this design the valving & spring were simplified. All components except for the dip-tube are assembled in a single axis. The dip-tube is to be assembled at the filling line. The filler must be a part of the solution! The bayonet-closure-plug seal is viewed as absolutely necessary for an optimal low-cost design. Again, the filler and the bottle manufacturing must be a part of the solution! The shroud has been broken-out as a separate component for efficient high cavitation molding. Removing the shroud complexity from the 'valvebody-closure-plug seal' component also makes it feasible for high cavitation molding. The hinged trigger component has been eliminated and replaced by a more traditional component that is much more conducive to high cavitation molding and high speed assembly.



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LOW COST TRIGGER SPRAYER SINGLE AXIS ASSEMBLY CONCEPT #2

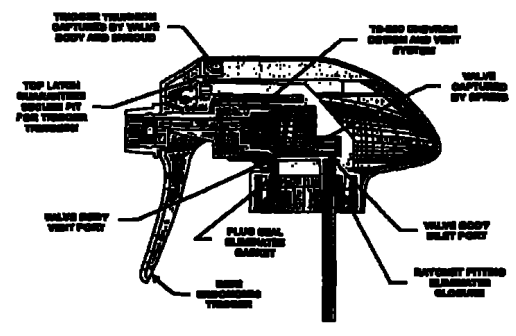


TRADITIONAL PISTON & VALVING SYSTEM 9 COMPONENT SINGLE AXIS ASSEMBLY (OPTION: Dip tube installed at filling-line)

- We believe that this is our/the best conceptual low cost design.
- It addresses all the basic design criteria for low-cost.
- The sprayer performance should be close to today's accepted standard with only a sacrifice to aesthetics.
- It does require the customer, filling-line & bottle, to be a part of the solution! We cannot bare the entire responsibility.

The remaining questions relate to the industries general state of business:

- 1.) Re-capitalizing existing capacities with an all new design?
- 2.) Investigate new manufacturing technologies that can be incorporated into our existing design.

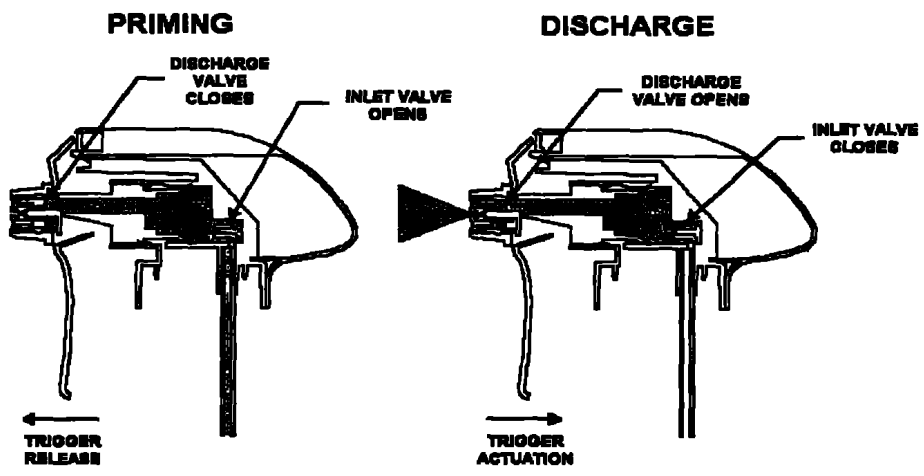


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LOW-COST TRIGGER SPRAY
SINGLE AXIS ASSEMBLY CONCEPT #2

SAINT JOHN
CANADA

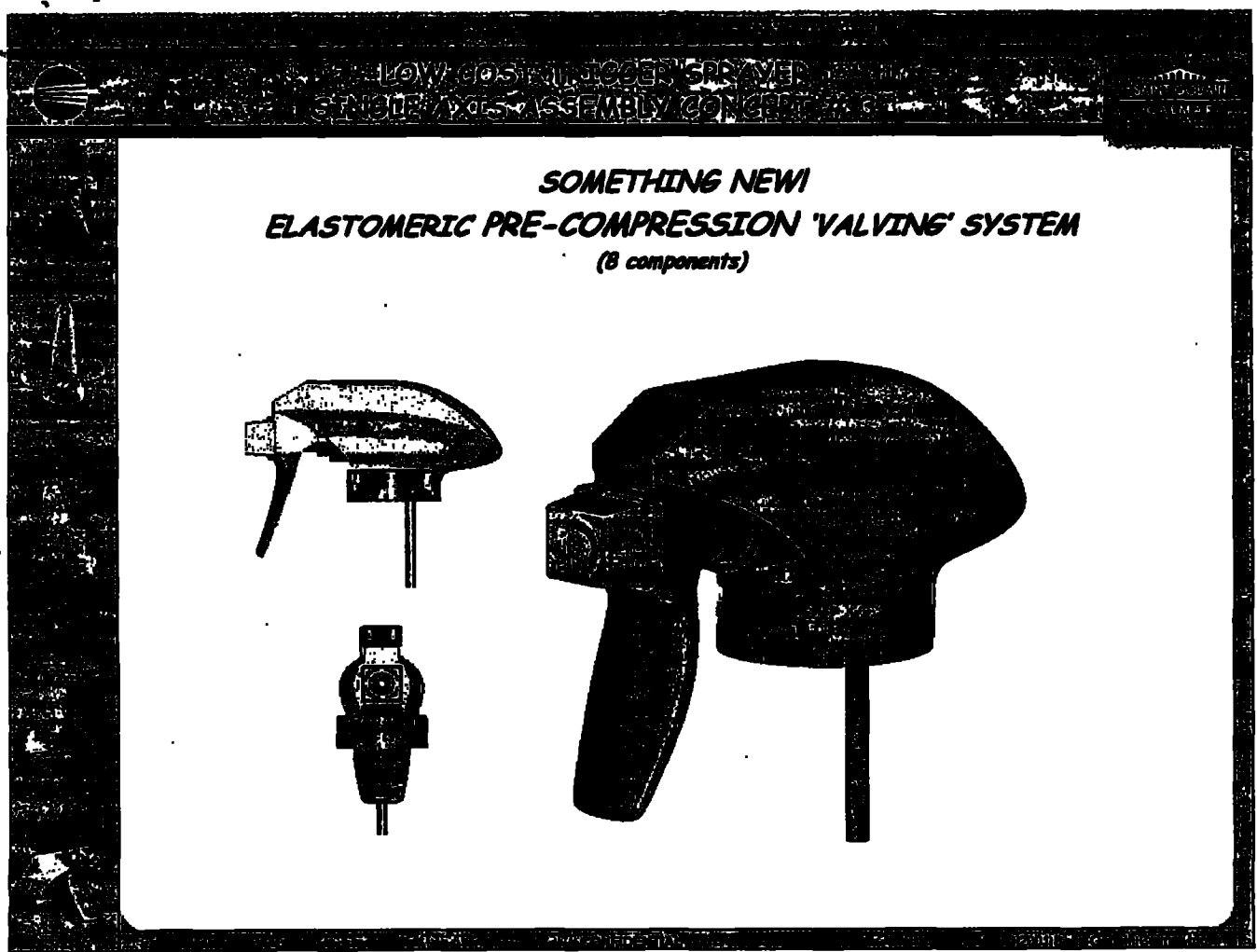
TRADITIONAL PISTON & VALVING SYSTEM
9 COMPONENT SINGLE AXIS ASSMBLY (OPTION: Dip tube installed at filling-line)



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Copy provided by user to illustrate product design. Not for reproduction.



SOMETHING NEW!
ELASTOMERIC PRE-COMPRESSION 'VALVING' SYSTEM
(8 components)

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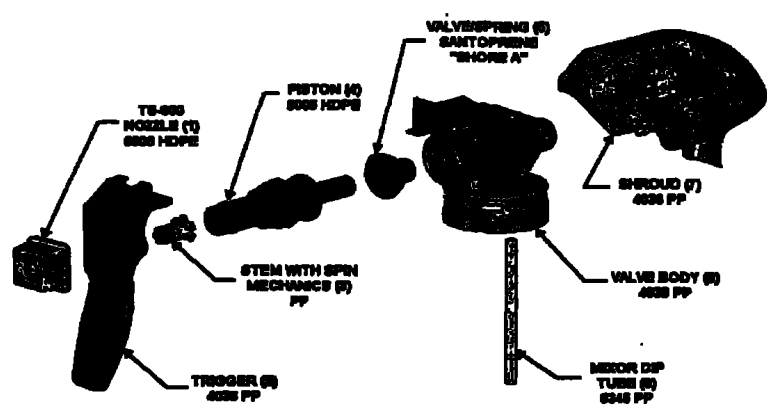
LOW COST TRIGGER SPRAYER SINGLE AXIS ASSEMBLY CONCEPT #3

SAINT-JOSEPH
CALIFORNIA

ELASTOMERIC PRE-COMPRESSION VALVING SYSTEM

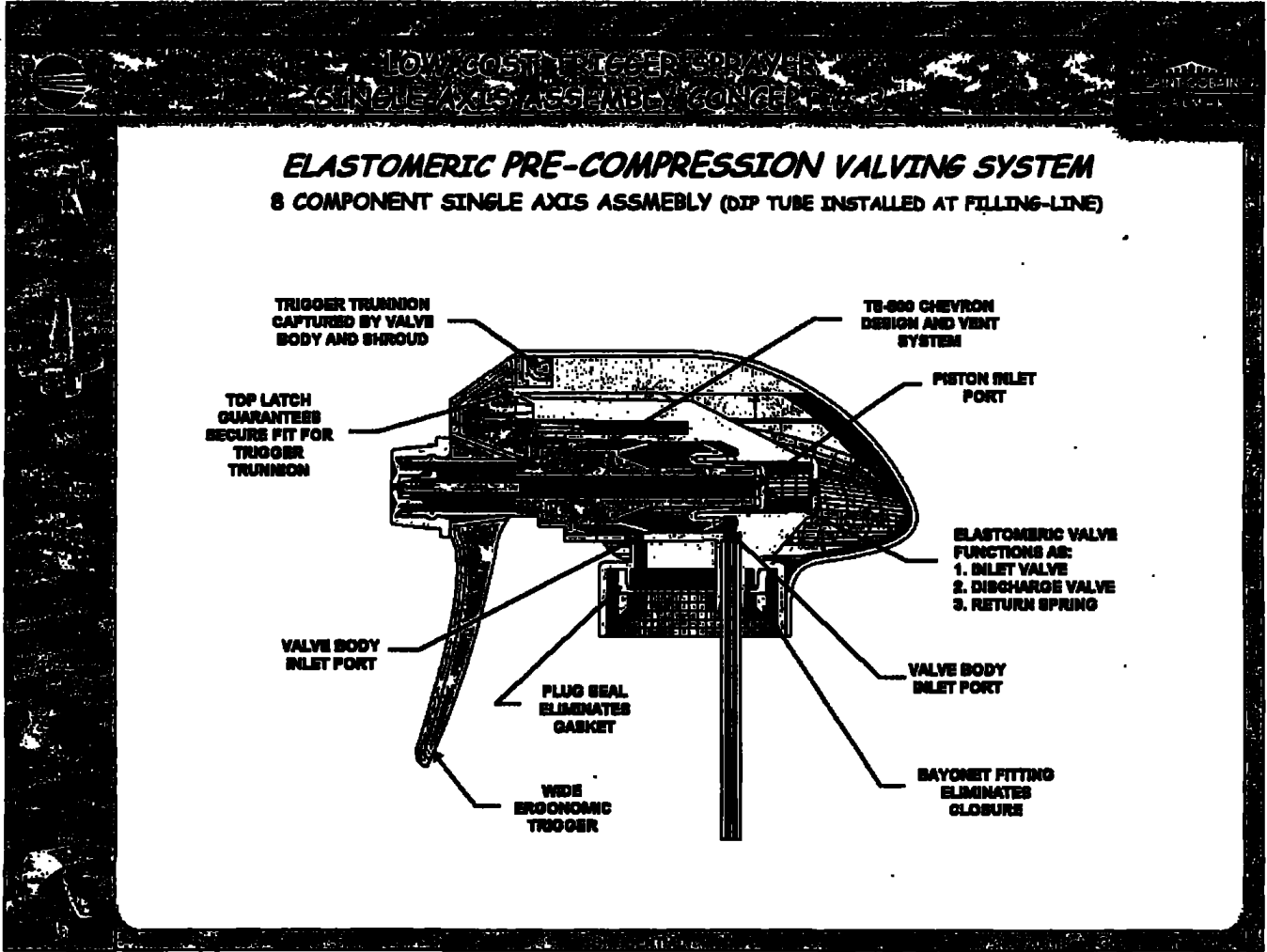
8 COMPONENT SINGLE AXIS ASSEMBLY (DIP TUBE INSTALLED AT FILLING-LINE)

ALL THE SAME BENEFITS AS CONCEPT #2 WITH THE ADDITION OF AN ELASTOMER COMPONENT THAT REPLACES THE INLET VALVE, DISCHARGE VALVE, AND THE SPRING. THE VALVING PORTION OF THIS COMPONENT IS DESIGNED AS A PRE-COMPRESSION TYPE VALVE. A VERY COMPLEX DESIGN THAT MAY REQUIRE BI-INJECTION TECHNOLOGY TO IMPART ACCEPTABLE PERFORMANCE. VERY RISKY!!!



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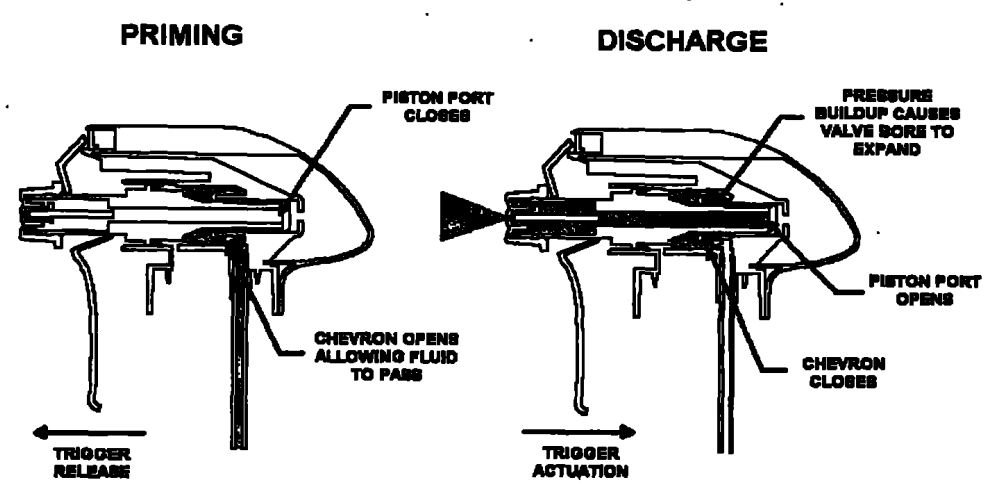
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186

LOW COST TRIGGER SPRAYER
SINGLE AXIS ASSEMBLY CONCEPT #3



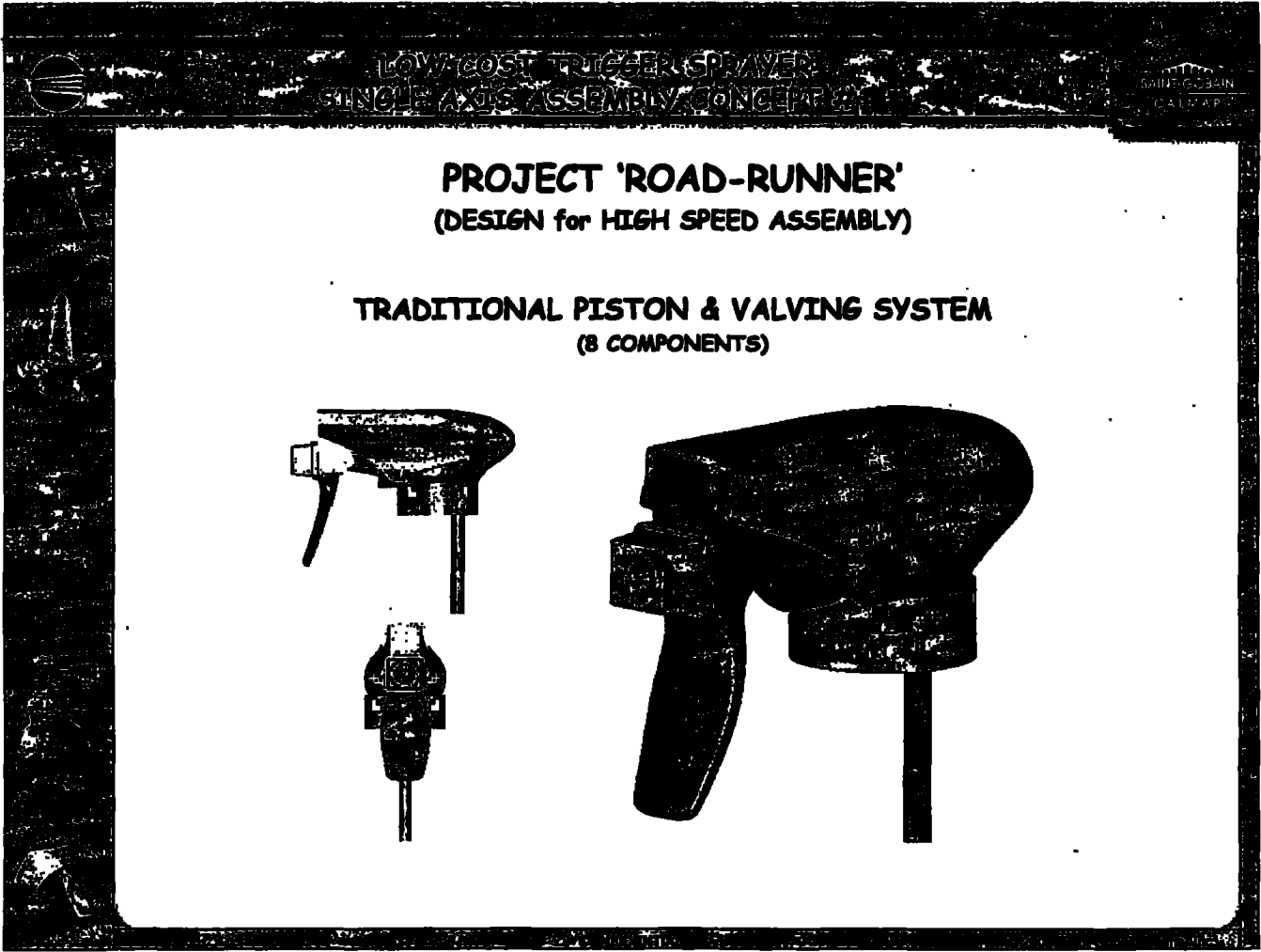
ELASTOMERIC PRE-COMPRESSION VALVING SYSTEM
8 COMPONENT SINGLE AXIS ASSEMBLY (DIP TUBE INSTALLED AT FILLING-LINE)



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Copy provided by user to illustrate the piston trigger mechanism on the trigger



LOWCOST TRIGGER SPRAYER
SINGLE AXIS ASSEMBLY CONCEPT

SAINT-GOBAIN
CALFAP

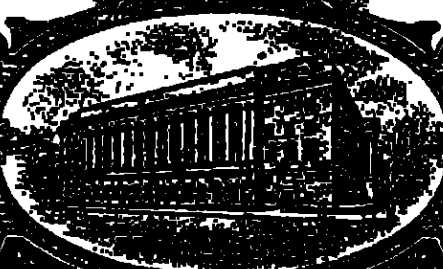
PROJECT 'ROAD-RUNNER'
(DESIGN for HIGH SPEED ASSEMBLY)

TRADITIONAL PISTON & VALVING SYSTEM
(8 COMPONENTS)

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LOS ESTADOS UNIDOS DE AMÉRICA

A TODO AQUEL A QUIEN CONCIERNA LO PRESENTE

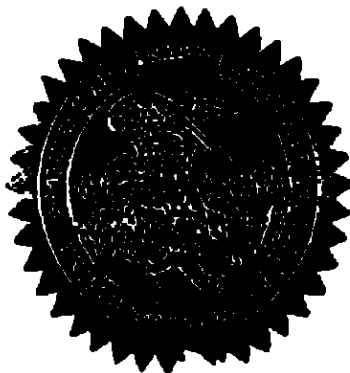
DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS

Oficina de Patentes y Marcas de los Estados Unidos

16 de junio 2004

LA PRESENTE ES PARA CERTIFICAR QUE ADJUNTA A LA MISMA HAY UNA COPIA FIEL DE LOS REGISTROS DE LA OFICINA DE PATENTES Y MARCAS DE LOS ESTADOS UNIDOS DE LOS DOCUMENTOS DE LA SOLICITUD DE PATENTE IDENTIFICADA EN LO QUE SIGUE, QUE CUMPLEN LOS REQUISITOS PARA OTORGARLE UNA FECHA DE PRESENTACIÓN BAJO 35 USC 111.

NÚMERO DE SOLICITUD: 60/468.642
FECHA DE PRESENTACIÓN: 8 de mayo de 2003



**Por la Autoridad del
COMISARIO DE PATENTES Y MARCAS**

N. WOODSON

Oficial certificador

**TRADUCCI N REIVINDICACI NES
SOLICITUD DE PATENTE U.S. 60/468,642**

"ROCIADOR CON DISPARADOR DE BAJO COSTO"

1. Un rociador accionado por un disparador, que comprende un cuerpo de bomba que incluye un cilindro de bomba formado integralmente y un cierre formado integralmente para montar el rociador sobre un contenedor de producto líquido para ser rociado, un pistón hueco reciproco dentro del cilindro para así definir una cámara de bomba de volumen variable, el cilindro recostado a lo largo de un eje sustancialmente perpendicular a un eje central del cierre, un resorte de retorno de pistón y una válvula de entrada recostado a lo largo del eje de cilindro, una palanca de disparo conectado a dicho cuerpo de bomba en acople con una caña de dicho pistón, una boquilla de rociado montada sobre dicha palanca, medios que definen medios de mecanismos de espín.

2. El rociador de bomba de acuerdo con la reivindicación 1, en donde la palanca de disparo esta engoznado integralmente al cuerpo de bomba.

3. El rociador de bomba de acuerdo con la reivindicación 1, en donde la palanca de disparo esta montada con muñón a dicho cuerpo de bomba.

4. El rociador de bomba de acuerdo con la reivindicación 1, en donde una cubierta de refuerzo esta montada sobre dicho cuerpo de bomba.

142
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5. El rociador de bomba de acuerdo con la reivindicación 1, en donde la cubierta de refuerzo esta formada integralmente con dicho cuerpo de bomba.

6. EL rociador de bomba de acuerdo con la reivindicación 1, en donde la válvula de descarga y los mecanismos de espín están formados integralmente.

7. Un rociador accionado por un disparador, que comprende una bomba que incluye un cilindro de bomba formado integralmente y un cierre formado integralmente para montar el rociador sobre un contenedor de producto líquido a ser rociado, un pistón hueco reciproco dentro del cilindro para así definir una cámara de bomba de volumen variable, el cilindro recostado a lo largo de un eje sustancialmente perpendicular a un eje central del cierre, un elemento elastomérico de una sola pieza que comprende un resorte de retorno del pistón, una válvula de entrada a dicha cámara y una válvula de descarga.

8. El rociador de bomba de acuerdo con la reivindicación 7, en donde el pistón tiene un émbolo hueco acoplado a una porción central del elemento elastomérico.

9. El rociador de bomba de acuerdo con la reivindicación 8, en donde la válvula de descarga acopla una terminación distal de un émbolo hueco.

10. El rociador de bomba de acuerdo con la reivindicación 7, en donde dicha válvula de entrada comprende una válvula de cheurón anular dispuesta con la cámara de bomba.



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

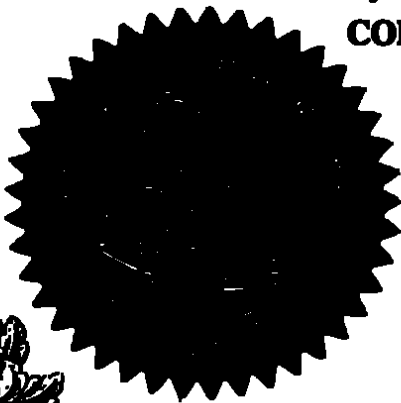
June 18, 2004

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

APPLICATION NUMBER: 10/836,384

FILING DATE: May 03, 2004

**By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS**



M. K. HAWKINS

Certifying Officer

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE
FEE RECORD SHEET

05/05/2004 BUSINESS 00000078 042222 10036384

01 FC:1001	770.00 DA
02 FC:1202	360.00 DA
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106' 112

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
66044-2077-5

Total Pages in this Submission

050304
17238
U.S. PTO**TO THE COMMISSIONER FOR PATENTS**Mail Stop Patent Application
P.O. Box 1450
Alexandria, VA 22313-1450

Transmitted herewith for filing under 35 U.S.C. 111(a) and 37 C.F.R. 1.53(b) is a new utility patent application for an invention entitled:

LOW-COST, IN-LINE TRIGGER OPERATED PUMP SPRAYER

and invented by:

SWEETON, Steve L.22141 U.S. PTO
10/896384

If a CONTINUATION APPLICATION, check appropriate box and supply the requisite information:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Which is a:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Which is a:

☐ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application No.: _____

Enclosed are:

Application Elements

1. ☒ Filing fee as calculated and transmitted as described below
2. ☒ Specification having 18 pages and including the following:
 - a. ☒ Descriptive Title of the Invention
 - b. ☐ Cross References to Related Applications (if applicable)
 - c. ☐ Statement Regarding Federally-sponsored Research/Development (if applicable)
 - d. ☐ Reference to Sequence Listing, a Table, or a Computer Program Listing Appendix
 - e. ☒ Background of the Invention
 - f. ☒ Brief Summary of the Invention
 - g. ☒ Brief Description of the Drawings (if filed)
 - h. ☒ Detailed Description
 - i. ☒ Claim(s) as Classified Below
 - j. ☒ Abstract of the Disclosure

10x 46

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
66044-2877-5

Total Pages in this Submission

Application Elements (Continued)

3. ☒ Drawing(s) (when necessary as prescribed by 35 USC 113)
- a. ☒ Formal Number of Sheets _____
- b. ☐ Informal Number of Sheets 4
4. ☒ Oath or Declaration
- a. ☒ Newly executed (original or copy) ☐ Unexecuted
- b. ☐ Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional application only)
- c. ☒ With Power of Attorney ☐ Without Power of Attorney
- d. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s) named in the prior application,
see 37 C.F.R. 1.63(d)(2) and 1.33(b).
5. ☐ Incorporation By Reference (usable if Box 4b is checked)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ☐ CD ROM or CD-R in duplicate, large table or Computer Program (Appendix)
7. ☒ Application Data Sheet (See 37 CFR 1.76)
8. ☐ Nucleotide and/or Amino Acid Sequence Submission (if applicable, all must be included)
- a. ☐ Computer Readable Form (CRF)
- b. ☐ Specification Sequence Listing on:
- I. ☐ CD-ROM or CD-R (2 copies); or
- II. ☐ Paper
- c. ☐ Statement(s) Verifying Identical Paper and Computer Readable Copy

Accompanying Application Parts

9. ☒ Assignment Papers (cover sheet & document(s))
10. ☐ 37 CFR 3.73(B) Statement (when there is an assignee)
11. ☐ English Translation Document (if applicable)
12. ☒ Information Disclosure Statement/PTO-1449 ☒ Copies of IDS Citations
13. ☐ Preliminary Amendment
14. ☒ Return Receipt Postcard (MPEP 503) (Should be specifically itemized)
15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)
16. ☐ Certificate of Mailing
- ☐ First Class ☐ Express Mail (Specify Label No.): _____

108 1/7

UTILITY PATENT APPLICATION TRANSMITTAL
(Large Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
66044-2077-5

Total Pages in this Submission

Accompanying Application Parts (Continued)

17. ☐ Additional Enclosures (please identify below):

Request That Application Not Be Published Pursuant To 35 U.S.C. 122(b)(2)

18. ☐ Pursuant to 35 U.S.C. 122(b)(2), Applicant hereby requests that this patent application not be published pursuant to 35 U.S.C. 122(b)(1). Applicant hereby certifies that the invention disclosed in this application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication of applications 18 months after filing of the application.

Warning

An applicant who makes a request not to publish, but who subsequently files in a foreign country or under a multilateral international agreement specified in 35 U.S.C. 122(b)(2)(B)(i), must notify the Director of such filing not later than 45 days after the date of the filing of such foreign or international application. A failure of the applicant to provide such notice within the prescribed period shall result in the application being regarded as abandoned, unless it is shown to the satisfaction of the Director that the delay in submitting the notice was unintentional.

UTILITY PATENT APPLICATION TRANSMITTAL
(Larg Entity)

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Docket No.
66844-2077-5

Total Pages in this Submission

Fee Calculation and Transmittal

CLAIMS AS FILED

For	#Filed	#Allowed	#Extra	Rate	Fee
Total Claims	40	- 20 =	20	x \$18.00	\$360.00
Indep. Claims	6	- 3 =	3	x \$88.00	\$258.00
Multiple Dependent Claims (check if applicable) ☐					\$0.00
BASIC FEE					\$770.00
OTHER FEE (specify purpose)					\$0.00
TOTAL FILING FEE					\$1,388.00

- ☐ A check in the amount of _____ to cover the filing fee is enclosed.
- ☒ The Director is hereby authorized to charge and credit Deposit Account No. 04-2223 as described below.
- ☒ Charge the amount of \$1,388.00 as filing fee.
- ☒ Credit any overpayment.
- ☐ Charge any additional filing fees required under 37 C.F.R. 1.16 and 1.17.
- ☐ Charge the issue fee set in 37 C.F.R. 1.18 at the mailing of the Notice of Allowance, pursuant to 37 C.F.R. 1.311(b).

Dated: 3 MAY 2004


Signature

LAWRENCE R. RADANOVIC, Reg. No. 23,077
CUSTOMER NO. 25269
202 906 8624

CC:

110 119

Applicant Data Sheet

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CORRESPONDENCE INFORMATION:

Correspondence Customer Number	25269
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REPRESENTATIVE INFORMATION

Registration Number	23,077
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APPLICATION INFORMATION:

Title - LOW-COST, IN-LINE TRIGGER OPERATED PUMP SPRAYER

Total Drawing Sheets	4
Formal Drawing	YES
Application Type	UTILITY
Application Data Sheet	Yes
Assignee	Saint-Gobain Calmar Inc.

This application is a:	Non-Prov. of Provisional
Application :	60/468,642
Filing Date:	May 8, 2003

Docket No.	66044-2077-5
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DC01V9388.1
IDLRR

111-120

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR UNITED STATES LETTERS PATENT

INVENTOR: Steve L. SWEETON

TITLE: LOW COST, IN-LINE TRIGGER OPERATED PUMP SPRAYER

DC01V9167.1
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BACKGROUND OF THE INVENTION

- [0001] This invention relates generally to trigger actuated pump sprayers, and more particularly to such sprayers having unique features which significantly reduce the cost of production and assembly given the fewer number of component parts and the efficiencies developed compared to known trigger actuated sprayers.
- [0002] The manually actuated pump sprayer to which the present invention is directed is trigger actuated for reciprocation of the piston within a pump cylinder and may be used for the dispensing of a wide variety of, for example, liquid household products. Low-cost trigger actuated sprayers are known which require a specially molded container to which the sprayer is attached or a specially molded pump housing which, in either case, result in higher, rather than lower, production and assembly costs. And, many of the known trigger actuated pump sprayers are of somewhat complex design of the sub-assembly components which only adds to the cost of molding.

SUMMARY OF THE INVENTION

- [0003] It is therefore an object of the present invention to provide a trigger actuated pump sprayer of reduced cost with fewer component parts yet highly reliable, versatile, easy to mold and assemble, and highly effective in operation.
- [0004] The trigger sprayer of the invention is of the in-line variety in which a hollow piston operates within a pump cylinder with the piston defining a discharge passage lying substantially perpendicular to the center line the container closure provided for mounting the pump sprayer to the neck of the container of liquid product to be sprayed. The sprayer has a pump body which includes the pump cylinder, and the container closure may be formed integrally with the pump body or may be formed separate therefrom. A seal ring acts between the pump body and the container neck, the ring being either a separate seal washer or

122
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being formed integrally with the pump body as a plug seal for plugging into the container neck on assembly. A shroud cover is provided which may be a separate element coupled to the pump body, or which may be formed integrally with the pump body. An inlet check valve is provided within the pump body for inletting the liquid product into the pump chamber, and a one-way discharge valve is provided for controlling the discharge of the liquid product from the pump chamber through the discharge orifice of a spray nozzle cap mounted on a forward end of hollow piston. A trigger lever is coupled to the pump body and engages the piston for reciprocation thereof upon trigger actuation. In one embodiment the trigger actuator has an end cap coupled to the pump body and has an upper section to which the lever is hinged via a living hinge. The upper section may be received within a front open end of the shroud cover. In accordance with other embodiments of the invention, the trigger lever is hingedly mounted to the pump body as by trunnions on the lever received within trunnion supports on the pump body, with the shroud cover overlying the hinged connection for retaining the hinged lever in place. The inlet check valve may be retained in place by bearing against a turn of a coil spring provided as a return spring for the piston, or may be snap-fitted within a groove formed within the pump body.

[0005] Otherwise, an elastic diaphragm may be provided which functions as a spring bias for the piston, and which includes an annular inlet check valve seated within a upstream end of the cylinder bore. The elastic diaphragm likewise functions as a discharge valve as a cylindrical side wall thereof cooperates with a hollow stem portion of the piston.

[0006] The hollow piston may have an integral nozzle adapter formed therewith, or may have a separate nozzle adapter which cooperates with the discharge valve having a spin mechanics feature. A rotatable spray nozzle cap overlies the discharge valve/spin mechanics element which may control the discharge between spray/off and stream/off.

123
114

And, the container may be of the internally threaded variety, or may be of the snap-fit or snap-fit/turn varieties.

[0007] Other objects, advantages and novel features of the invention will become more apparent from the following detailed description of the invention when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] Fig. 1 is an expanded perspective view of a low cost trigger actuated pump sprayer in accordance with one embodiment of the invention;

[0009] Fig. 2 is a vertical sectional view of the Fig. 1 pump sprayer as assembled together, at a slightly enlarged scale;

[0010] Fig. 3 is an expanded perspective view of another embodiment of the invention;

[0011] Fig. 4 is a vertical sectional view of the Fig. 3 sprayer as assembled together, at a slightly enlarged scale;

[0012] Fig. 5 is an expanded elevational view of yet another embodiment of the invention;

[0013] Fig. 6 is a sub-assembly vertical, part sectional view of several components of the sprayer of Fig. 5.

DETAILED DESCRIPTION OF THE INVENTION

[0014] Turning now to the drawings wherein like reference characters refer to like and corresponding parts throughout the several views, an embodiment of a low-cost trigger sprayer according to the invention is shown in expanded view in Fig. 1 and is generally designated 10, and is shown assembled in Fig. 2. It should be pointed out that the term "sprayer" is broadly used herein to include a manually actuated pump which discharges liquid product as either a spray or a stream.

124
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Likewise, the term "sprayed" or the like includes discharge as either a spray or a stream.

[0015] Sprayer 10 generally comprises a pump body 11 which includes a pump cylinder 12 for the reception of a hollow piston 13 having its piston seal 14 in engagement with the interior of the cylinder for reciprocation to therewith define a variable volume pump chamber 15. The piston has a hollow stem 15 defining a discharge passage 17. A coil spring 18 spring biases the piston out of its cylinder and extends between an inner end 19 of the pump cylinder and a shoulder 21 of the piston. The piston likewise has an outboard vent seal 22 in engagement with the wall of the cylinder outboard of chamber 15. The vent seal is provided for covering and uncovering a vent port 23 located in the cylinder wall, the port being in open communication with the interior of container C to which the pump is mounted. The vent seal is similar to that disclosed in Reissue patent 33235 and in U.S. patent 4,072,252 for opening and closing a vent port during piston reciprocation. In the Figs. 1, 2 embodiment, pump body 11 includes an integral container closure 24. The closure is configured for snap-fit engagement with neck N of container C for mounting pump sprayer 10 to the container of liquid product to be sprayed. And, formed integrally with the pump body is a plug seal 25 comprising an annular seal ring having an outwardly chamfered edge to facilitate plugging the seal into the interior of the container neck on assembly, thereby avoiding the need for a separate seal gasket.

[0016] Pump body 11, in the Figs. 1, 2 embodiment, likewise has an integral shroud cover 26 configured to have a rearward extension 27 adapted to rest on the hand of the operator for supporting a connected, liquid filled container, when operating the trigger sprayer. The shroud cover, as more clearly shown in Fig. 1, likewise has an open front area 28 of a predetermined cross-section which, as shown, may be substantially U-shaped forming a top wall 29 and opposing side walls 31, 32.

125
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- [0017] Pump sprayer 10 further includes a trigger lever assembly 33 of one-piece molded construction which includes a trigger lever 34 having an upper support section 35 and an end cap 36. The trigger lever has an opening 37 through which hollow piston 13 extends as shown in the Fig. 2 assembled position. Opening 37 is sized to snugly engage cylindrical portion 38 of the piston, and the edge of opening 37 bears against a shoulder 39 on the piston for translating reciprocation movement to the piston upon trigger actuation.
- [0018] Upper section 35 is of a complementary shape to that of open front area 28 of the shroud cover so as to snugly fit within the front area defined by walls 29, 31, 33. Opposing side walls 41, 42 of upper section 35 are parallel to walls 31, 32 of the shroud, and upper section 35 is integrally connected to trigger lever 34 via a living hinge 43. The trigger lever may be formed with opposing upper side walls 44, 45 for rigidity purposes, confronting edges of side walls 44, 42 and of side walls 45, 41 being sloped so as to form a predetermined angle 46 therebetween in the relaxed position of the trigger lever of Fig. 2 to thereby permit the trigger lever to pivot during pump actuation relative to upper section 35 without interference between these side walls which generally lie in the same plane.
- [0019] End cap 36 is sized to snugly surround and engage pump cylinder 12 for mounting assembly 33 to the pump body. The end cap may be further welded to the pump cylinder or snap-fitted thereto, as optional. And, the end cap has an annular flange 47 which defines an end stop for the pump piston as shoulder 48 thereon bears against flange 47 at the end of the piston suction stroke for limiting the extent of the piston stroke and for capturing the piston within its pump cylinder on assembly.
- [0020] Leading end 49 of the pump piston extends through opening 37 of the trigger sprayer, and a discharge valve/spin mechanics element 51 having a central depression is mounted on stem 52 extending in an

19/26
117

axial direction within the pump piston. Element 51 is provided with a discharge valve seal 53 which may extend radially or conically in a forward direction and which is seated against inner cylindrical wall 54 at leading end 49. Element 51 compares with plug element 16 of U.S. patent 4,706,888, the entire disclosure of which is incorporated specifically herein by reference. Thus, element 51 defines a spin chamber at its forward end, longitudinal grooves, and radial/tangential grooves for creating a spray of stream depending on the rotational position of a nozzle cap 54 mounted on leading end 49 with snap fit engagement, and having an inner cylindrical sleeve, as similarly shown in the 4,706,888 patent, with similar longitudinal grooves for the control of the discharge of product from discharge passage 17 through discharge orifices 55 in the nozzle cap.

- [0021] The pump body has an internal cylindrical section 56 for the reception of an inlet check valve 57 having an inlet valve seal 58 which may extend radially or conically in a forward direction and which is seated against the wall of cylindrical section 56 in the relaxed position of Fig. 2.
- [0022] Finally, the pump body has an inlet port 59 opening into cylindrical section 56, and a dip tube 61 extending from the inlet port into the liquid product within the container. And, it is to be noted that inlet valve 57 is retained within section 56 by the innermost turn of coil spring 18 which bears thereagainst, as shown in Fig. 2.
- [0023] It becomes evident from the foregoing that the various components making up the trigger sprayer 10 are essentially in line with one another for ease in assembly. Besides, there are a limited number of component parts which comprise the sprayer assembly itself. Thus, on assembly, inlet valve 57 is inserted, followed by the return spring, the pump piston, the trigger lever assembly and the nozzle cap which extends over element 51 mounted at the end of the pump piston. The trigger lever assembly may be frictionally fitted to the pump body and

127
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shroud cover, or may be welded thereto along confronting surfaces and edges or may be snap-fitted in place, if it becomes necessary. Otherwise, certainly, it can be glued in place as an option.

[0024]

In operation, with the dip tube mounted in place as shown in Fig. 2 and extending into the product located in the container to which the pump sprayer is mounted, and assuming the pump chamber primed with liquid to be sprayed, on each manual pull of the trigger the pump piston reciprocates within its cylinder against the bias of the return spring. During each pressure stroke of the piston, the one-way inlet check valve prevents the liquid from returning to the container through the inlet port, and product under pressure flows through the discharge passage as controlled by the discharge check valve for issuing through the discharge orifice as a spray or a stream, depending on the rotative position of the nozzle cap. Flange 57 of end cap 36 serves as a limit stop for the pump piston at the end of its suction stroke shown in Fig. 2 during which product is drawn into the pump chamber through the inlet port and an open inlet valve, as known in the art. The trigger lever at its opening 37 bears against shoulder 39 of the pump piston for reciprocating the piston as well as the spray nozzle as permitted by open angle 46 of the trigger lever assembly which avoids any interference when actuating the trigger lever.

[0025]

In accordance with another embodiment of the invention is a trigger actuated pump sprayer generally designated 62 shown in Figs. 3 and 4 which includes a pump body 63 having an integrally formed container closure 64, except that shroud 65 in this embodiment is separate from the pump body/container closure and is coupled thereto as in any normal manner. Thus, sprayer 10 of the first embodiment could likewise have a separate shroud coupled to the pump body in known manner, without departing from the invention. The pump body has a pump cylinder 12 with a vent port 23 and an inlet port 59 similar to that of Fig. 2, a hollow piston 66 being received within its pump cylinder for reciprocation. The piston has a piston seal 14 and a vent seal 22

128
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which operate the same as in Fig. 2, and the leading end of the piston extends through an opening 37 in trigger lever 67 and, as similarly in the first embodiment, the trigger lever at the edge of opening 37 engages a rib 68 on the piston to effect reciprocal movement thereof upon a pulling of the trigger, as will be described in more detail hereinafter.

[0026] Discharge valve/spin mechanics element 51 is mounted on stem 52, and nozzle cap 54 is mounted on the leading end of the piston, as in Fig. 2. Trigger lever 67 has a pair of lateral extending trunnions 69 for hingedly mounting the trigger to the pump body as the trunnions are received on a trunnion support 71 of the pump body. The shroud cover at its forward end overlies the trunnion when seated in place to retain it there. The pump piston may be identical to that of piston 13 of Fig. 2 spring biased by a coil spring such as 18 and having a separate inlet check valve 57, except that the cover shroud would be separate from the pump body, and the trigger lever would be trunnion mounted in place to the pump body, rather than mounted as described with reference to Fig. 2.

[0027] The embodiment of Figs. 3, 4 varies from the standard piston in that the piston is provided with an elongated stem 72, and a stretchable, elastomeric valve 73 is provided in this embodiment. The elastomeric valve has a central base section 74, a cylindrical side wall 75, and a forwardly sloping conical inlet valve seal 76. The valve seal is mounted on a cylindrical skirt 77 in the pump body, and the thickness of side wall 75 of the elastomeric valve is less than the space between stem 72 and skirt 77. Likewise, the free end of stem 72 is castellated so as to have a plurality of cutouts 78 as more clearly shown Fig. 3. The elastomeric valve functions as a combined inlet check valve, discharge check valve, and piston return spring. The component parts of the Figs. 3, 4 embodiment are likewise aligned similarly as in the first embodiment, and the aforescribed alternative embodiment with a separate shroud cover and trigger lever trunnion mounted in place.

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Thus, discharge passage 77 lies substantially perpendicular to the central axis of the container closure. Sprayer 62 with its few component parts is easily assembled in place as the elastomeric valve is mounted on skirt 77 with the piston inserted in its cylinder and the trigger lever trunnion mounted on the pump body followed by a snap fitting of the shroud cover in place to retain the trunnion in place, after which the nozzle cap may be snap fitted onto the leading end of the pump piston which extends through opening 37 in the trigger lever. The pump body, as in Fig. 2, has a plug seal 25, and container closure 64 may be of the type which snap fits into the container neck or which is of the bayonet type in which it is seated against retention lugs and then rotated slightly.

[0028] In operation, assuming that pump chamber 15 is primed with liquid product, a pull on the trigger lever by the operator pivots the trigger lever about its trunnion axis and reciprocates the pump piston together with the sprayer nozzle against the bias of the elastomeric element 73. The product within pump chamber 15 is discharged through an annular gap formed between side wall 75 of element 73 and stem 75, through notches 78 at the end of stem 75, along discharge passage 17 and out through discharge orifice 55 in the form of a spray or stream depending on the rotative position of the nozzle cap. As pull pressure against the trigger lever is relaxed, wall 75 of element 73 presses tightly against the confronting stem 75 to close the discharge. During each piston return stroke, inlet valve 76 which is seated against the confronting annular inner wall of the pump chamber, is moved away from that wall in response to a differential in pressure between the expanding pump chamber and the pressure acting on the upstream side of valve 76 to thereby suction product up through dip tube 61 and inlet port 59 and into the pump chamber. Therefore, element 73 functions as a piston return biasing means, an inlet check valve, and a discharge check valve, as a single unit.

130
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[0029] Pump sprayer generally designated 79 in Fig. 5 illustrates a still further embodiment according to the invention which combines features of the Figs. 2 and 4 embodiments, with several other refinements. Pump body 81 may have an integrally formed container closure 64 as in Fig. 4, or as shown in Fig. 5 may support a separate container closure 82 coupled thereto, which is shown as an internally threaded closure cap. Piston 83 is similar to piston 13 of Fig. 2 except that it has a nozzle adapter 84 which includes a stem 52 mounted at the forward end of the piston, rather than stem 52 being integrally formed with the piston as in Fig. 2. discharge valve/spin mechanics element 51 is the same as in Fig. 2 as is the nozzle cap 54, and trigger lever 67 is trunnion mounted to the pump body as in Fig. 4. The pump body likewise has a plug seal 25 extending into the interior of the container neck, and inlet check valve 85, unlike that of the inlet check valve of Fig. 2, is retained in place within a cylindrical section as the upstream end of pump cylinder 12 as an upstream end 87 of the inlet valve snaps within an annular groove 88. Assembly and operation of the embodiment according to Figs. 5, 6 are similar to that described hereinabove for the other embodiments.

[0030] A gasket seal 89 acting between the pump body and the top of the container neck may be provided in lieu of plug seal 25, and as mentioned above, the pump body may have an integrally formed closure such as 24 or 64 as in Figs. 2 and 4. Otherwise, the pump body, closure and shroud cover may be formed of a single molded integral part, similarly as in Fig. 2.

[0031] From the foregoing it can be seen that a low-cost trigger actuated pump sprayer having a minimum number of component parts acting essentially in-line has been devised a line for several alternate features as shown by the several embodiments in a manner which is highly economical, easy to mold and produce as to assemble, yet highly efficient in this operation and production. It is therefore to be

understood that within the scope of the appended claims the invention
may be practiced otherwise than as specifically described.

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What is claimed is:

1. A manually operated pump sprayer, comprising a pump body having an integrally formed pump cylinder and an integrally formed container closure for mounting the sprayer on a container of liquid to be sprayed, a hollow piston defining a discharge passage, the piston being reciprocable against the bias of piston biasing means upon actuation of a hinged trigger lever relative to the cylinder to therewith define a variable volume pump chamber, the piston and the cylinder lying along an axis substantially perpendicular to a central axis of the closure, an inlet check valve for inletting of liquid product into the pump chamber, a spray nozzle mounted at a forward end of said piston for reciprocable movement together therewith, and the trigger lever engaging the piston for reciprocation thereof upon trigger lever operation for spraying liquid through the nozzle.
2. The pump sprayer according to claim 1, wherein the trigger lever is mounted on the pump body piston and has an integral end cap engaging the pump body for mounting the trigger lever thereto.
3. The pump sprayer according to claim 1, further comprising a shroud cover mounted on the pump body.
4. The pump sprayer according to claim 1, wherein the trigger lever has a support member which includes the end cap coaxial with the piston.
5. The pump sprayer according to claim 3, wherein the shroud cover is integral with the pump body.
6. The pump sprayer according to claim 4, wherein the shroud cover is integral with the pump body.
7. The pump sprayer according to claim 4, wherein the trigger lever is connected to the support member by a living hinge.
8. The pump sprayer according to claim 1, wherein the inlet valve comprises a separate valve element having an annular valve flange seated against a tubular section of the valve body.

133
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9. The pump sprayer according to claim 8, wherein the piston biasing means comprises a coil spring, and wherein the valve element is arranged as to be retained within the tubular section by the piston return spring.
10. The pump sprayer according to claim 1, wherein the container closure has a container engaging skirt and an integral concentric annular seal arranged to plug into a neck of the container.
11. The pump sprayer according to claim 4, wherein the support member fits within a front end of the shroud cover.
12. The pump sprayer according to claim 1, wherein the trigger lever is hingedly mounted to the pump body.
13. The pump sprayer according to claim 1, wherein the trigger lever is mounted to the pump body on open hinge supports, the pump sprayer further comprising a shroud cover mounted on the pump body, the trigger lever being trunnion mounted on said hinge supports, and the shroud cover overlying the hinge supports for retaining the trunnions in place.
14. The pump sprayer according to claim 1, wherein the trigger lever is mounted to the pump body on open hinge supports and is retained hingedly mounted in place by the provision of a shroud cover mounted on the pump body.
15. The pump sprayer according to claim 1, wherein the piston biasing means comprises a coil spring.
16. The pump sprayer according to claim 1, wherein the piston biasing means comprises an elastic diaphragm with said inlet valve integrally formed therewith.
17. The pump sprayer according to claim 16, wherein said inlet valve comprises an annular valve flange normally seated against an inner wall of the pump cylinder.
18. The pump sprayer according to claim 16, wherein the elastic diaphragm valve has a side wall which cooperates with a stem portion of the hollow piston to therewith define a discharge valve.

13A
125

19. A manually operable pump sprayer adapted to be mounted on a container neck of a container of liquid to be sprayed, comprising, a pump body having a pump cylinder and an integrally formed container closure, a hollow piston reciprocable against the bias of a spring within the pump cylinder to therewith define a variable volume chamber, the piston defining a discharge passage having a spray nozzle at one end thereof, an actuation assembly mounted on the pump body, the assembly comprising a trigger lever having a end cap coaxial with said piston, the trigger lever being hinged connected to an upper wall section of the assembly and engaging the piston for reciprocation thereof, a spray nozzle mounted on a forward end of the piston at a location downstream of the trigger lever and an inlet check valve for inletting liquid product into the pump chamber.

20. The pump sprayer according to claim 19, further comprising a vent port in said pump body and in communication with the container interior at a location downstream of said pump chamber, and means on said piston for opening and closing the vent port respectively during pressure and suction strokes of the piston.

21. The pump sprayer according to claim 19, wherein the end cap defines a limit stop for the piston at the end of the suction stroke thereof.

22. The pump sprayer according to claim 19, further comprising a shroud cover integral with the pump body.

23. The pump sprayer according to claim 22, wherein the shroud cover overlies the upper wall section of the actuation assembly.

24. The pump sprayer according to claim 19, wherein the trigger lever is hinged to the upper wall section by an integral living hinge.

25. The pump sprayer according to claim 19, wherein the inlet check valve is retained in place by the spring.

26. A manually operable pump sprayer adapted to be mounted on a container neck of a container of liquid to be dispensed, comprising a pump body having a pump cylinder and an integrally formed container closure, a shroud cover coupled to the pump body, a hollow piston reciprocable against the bias of a spring within the

135
126

pump cylinder to therewith define a variable volume pump chamber, the piston and the cylinder lying perpendicular to a central axis of the closure, the piston defining a discharge passage having a spray nozzle at one end thereof, a trigger lever hingedly mounted on the pump body and engaging the piston for reciprocation thereof between pressure and suction strokes, the trigger lever having trunnions in hinged engagement with trunnion supports on the pump body, the shroud cover overlying the trunnion supports for retaining the trunnions in place, and the pump body having an inlet check valve for inletting liquid product into the pump chamber upon trigger lever actuation.

27. The pump sprayer according to claim 26, wherein the inlet check valve is retained in place by the spring.

28. The pump sprayer according to claim 26, wherein the closure has an integral plug seal for sealing engagement with the inside of the container neck.

29. The pump sprayer according to claim 26, wherein the pump cylinder has a vent portion communication with the interior of the container, the port being located downstream of the pump chamber, and means for opening and closing the port to atmosphere respectively during the pressure and suction strokes of the piston.

30. A manually operable pump sprayer adapted to be mounted on a container neck of a container of liquid product to be sprayed, comprising a pump body having a pump cylinder and an integrally formed container closure, a shroud cover coupled to the pump body, a hollow piston reciprocable within the pump cylinder to therewith define a variable volume pump chamber, the hollow piston defining a discharge passage lying perpendicular to a central axis of the closure, an elastic diaphragm supported within the pump body, the piston having an elongated hollow stem in engagement with a central portion of the diaphragm to thereby spring bias the piston during pressure and suction strokes thereof, the diaphragm comprising an inlet check valve for inletting liquid product into the pump chamber and comprising a discharge check valve for controlling discharge of liquid product from the pump chamber and into the discharge passage, a spray nozzle on an end of the piston, and a trigger lever having trunnions in hinged engagement with trunnion supports on

136
129

the pump body, the shroud cover overlying the trunnion supports for retaining the trunnion in place.

31. The pump sprayer according to claim 30, wherein said inlet check valve comprises an integral annular valve flange of said diaphragm seated against an inner wall of said cylinder.

32. The pump sprayer according to claim 30, wherein said discharge valve comprises a cylindrical portion of said diaphragm seated against said hollow stem.

33. A manually operable pump sprayer adapted to be mounted on a container of liquid product to be sprayed, comprising a pump body having a pump cylinder, a seal acting between the pump body and a neck of the container, a container closure coupled to the pump body, a hollow piston reciprocable against the bias of a return spring within the pump cylinder to therewith define a variable volume pump chamber, the piston defining a discharge passage having a spray nozzle assembly mounted at a forward end thereof, the discharge passage lying perpendicular to a central axis of the closure, a trigger lever actuator connected to said pump body by a hinged connection, said actuator being in engagement with the piston for reciprocation thereof, a shroud cover coupled to said pump body, an inlet valve supported within said pump body for the inletting of liquid product into said pump chamber, and said nozzle assembly including a discharge valve for controlling the discharge of the liquid product from said pump chamber.

34. The pump sprayer according to claim 33, wherein said nozzle assembly further comprises a nozzle adapter and a spin mechanics element.

35. The pump sprayer according to claim 34, wherein said discharge valve is integrally formed with said spin mechanics element.

36. The pump sprayer according to claim 33, wherein the seal comprises an annular plug seal integral with said pump body for plugging into the neck of the container.

37. A manually operated pump sprayer adapted to be mounted on a container neck of a container of liquid product to be sprayed, comprising, a pump body having

128
a pump cylinder, an integrally formed container closure and an integrally formed shroud cover, a hollow piston reciprocable against the bias of a spring within the pump cylinder to therewith define a variable volume pump chamber, the piston defining a discharge passage lying perpendicular to a central axis of the closure, a spray nozzle assembly on a forward end of the piston, a trigger lever hingedly connected to said pump body and engaging said piston for reciprocation thereof, a seal acting between the pump body and the container neck, an inlet check valve supported within said pump body for inletting of the liquid product into said pump chamber, and said spray nozzle assembly including a one-way discharge valve for controlling discharge of the liquid product from said pump chamber.

38. The pump sprayer according to claim 37, wherein said nozzle assembly includes a spray nozzle and a spin mechanics element formed integrally with said discharge valve.

39. The pump sprayer according to claim 38, wherein said nozzle assembly further includes a nozzle adapter supporting said spin mechanics element.

40. The pump sprayer according to claim 38, wherein the seal comprises an annular plug seal integral with said pump body for plugging into the neck of the container.

128
129

ABSTRACT OF THE DISCLOSURE

A low-cost, in-line trigger actuated pump sprayer has a pump body which may have an integral container closure and/or integral shroud cover with a trigger lever trunnion mounted to the pump body or with a trigger lever assembly mounted to the pump body as including a living hinge. A hollow pump piston defines a discharge passage lying perpendicular to the central axis of the closure, and an elastomeric element may be provided with functions as a piston return spring, inlet check valve and discharge check valve.

COMBINED DECLARATION AND POWER OF ATTORNEY
FOR UTILITY PATENT APPLICATION (Includes PCT)

Attorney Docket No.
66044-2077-5

As a below named inventor, I hereby declare that:
My residence, post office address and citizenship are as stated below next to my name; that

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural inventors are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

LOW-COST, IN-LINE TRIGGER OPERATED PUMP SPRAYER

the specification of which (check one): ☒ is attached hereto.

☐ was filed on _____ as Application Serial No. _____ and was amended on _____.

☐ was filed as PCT International application no. _____ and was amended under PCT Article 19 on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I do not know and do not believe the claimed invention was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application.

I hereby claim foreign priority benefits under Title 35, United States Code §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application(s) on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

_____ (Number)	_____ (Country)	_____ Day/Month/Year Filed	☐ Yes	☐ No
_____ (Number)	_____ (Country)	_____ Day/Month/Year Filed	☐ Yes	☐ No
_____ (Number)	_____ (Country)	_____ Day/Month/Year Filed	☐ Yes	☐ No

I hereby claim the benefit under Title 35, United States Code, §119 (e) of any United States provisional application(s) listed below:

60/468,642 Application No.	8 / May / 2003 Day/Month/Year Filed	_____ Application No.	_____ Day/Month/Year Filed
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I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) or PCT International application(s) designating the United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior application(s) in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT International filing date of this application:

140
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Application Serial No.	Filing Date	Status (patented, pending, abandoned)

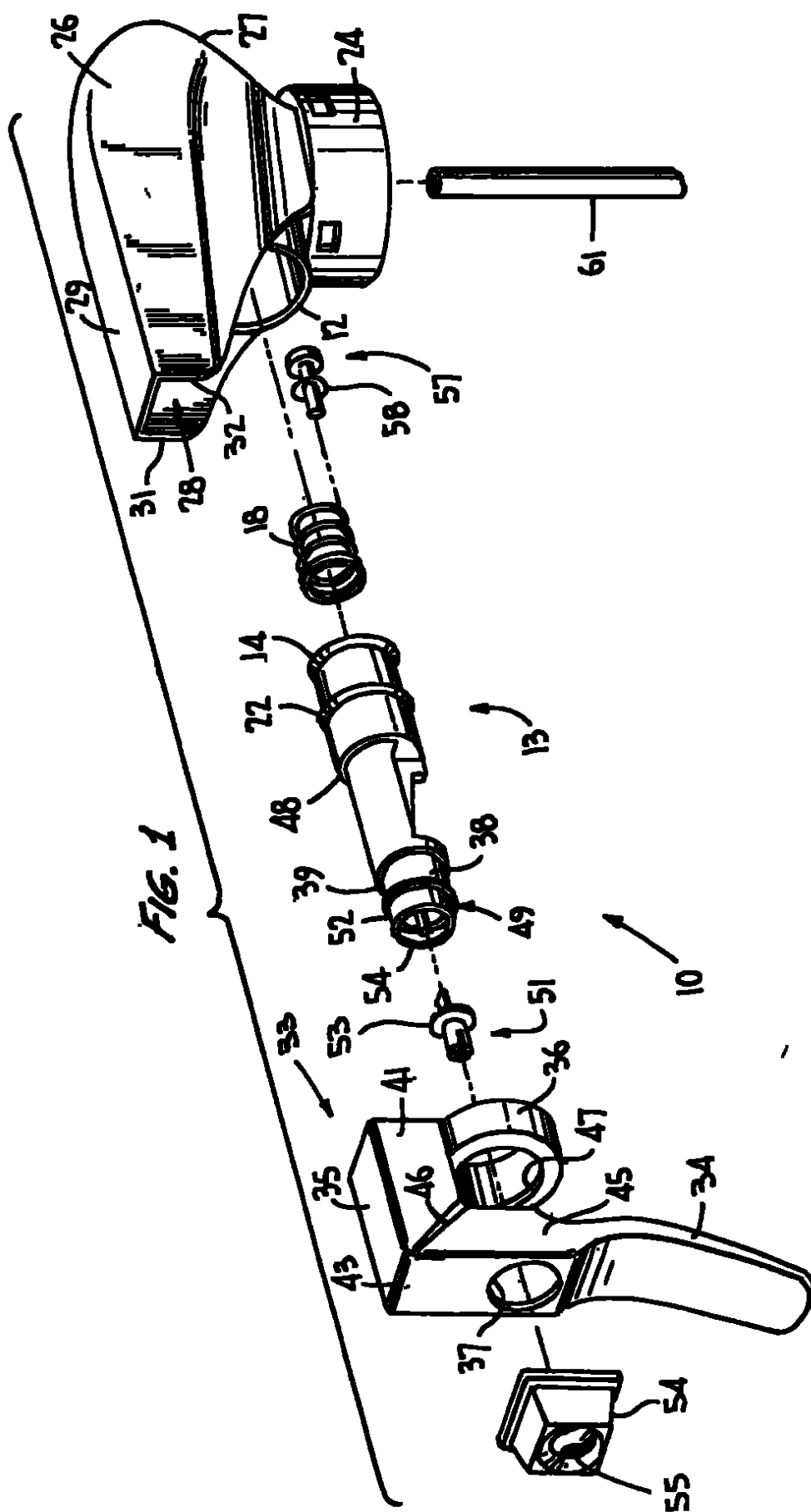
I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith: Lawrence R. Radanovic, Reg. No. 23,077; Richard H. Tushin, Reg. No. 27,297; Donald N. Huff, Reg. No. 27,581; John P. DeLuca, Reg. No. 25,505; Adesh Bhargava, Reg. No. 48,553; Charles Rutherford, Reg. No. 18,933; Robert L. Kelly, Reg. No. 31,843; Kevin M. Hirunan, Reg. No. 35,193; Ernest E. Helms, Reg. No. 29,721; William F. Kolakowski, Reg. No. 41,908; and John F. Buckert, Reg. No. 44,572, all of Dykema Gossett, PLLC. Direct all telephone calls to telephone No. (202) 906-8800 and faxes to (202) 906-8889.

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Residence:		Citizenship
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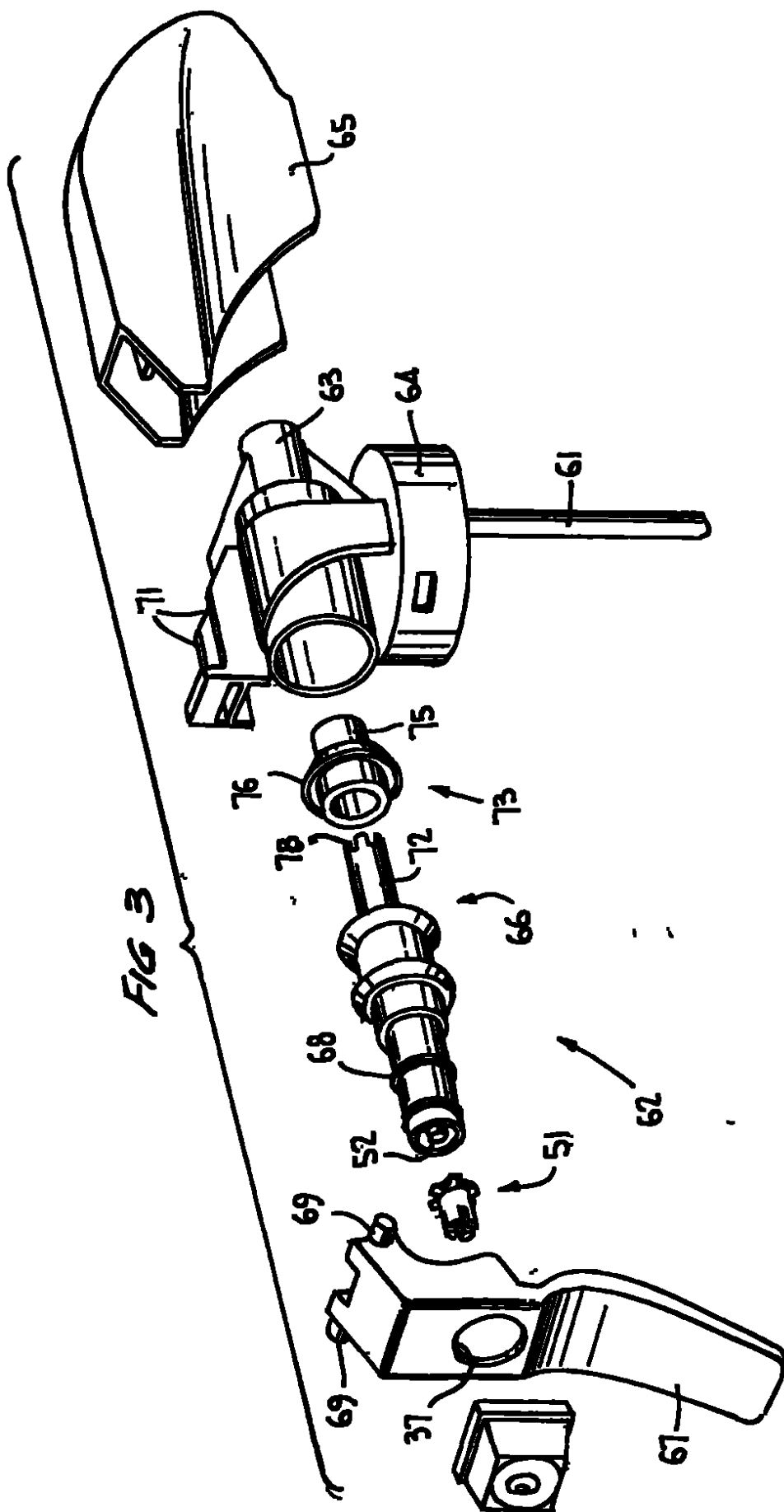


FIG. 5

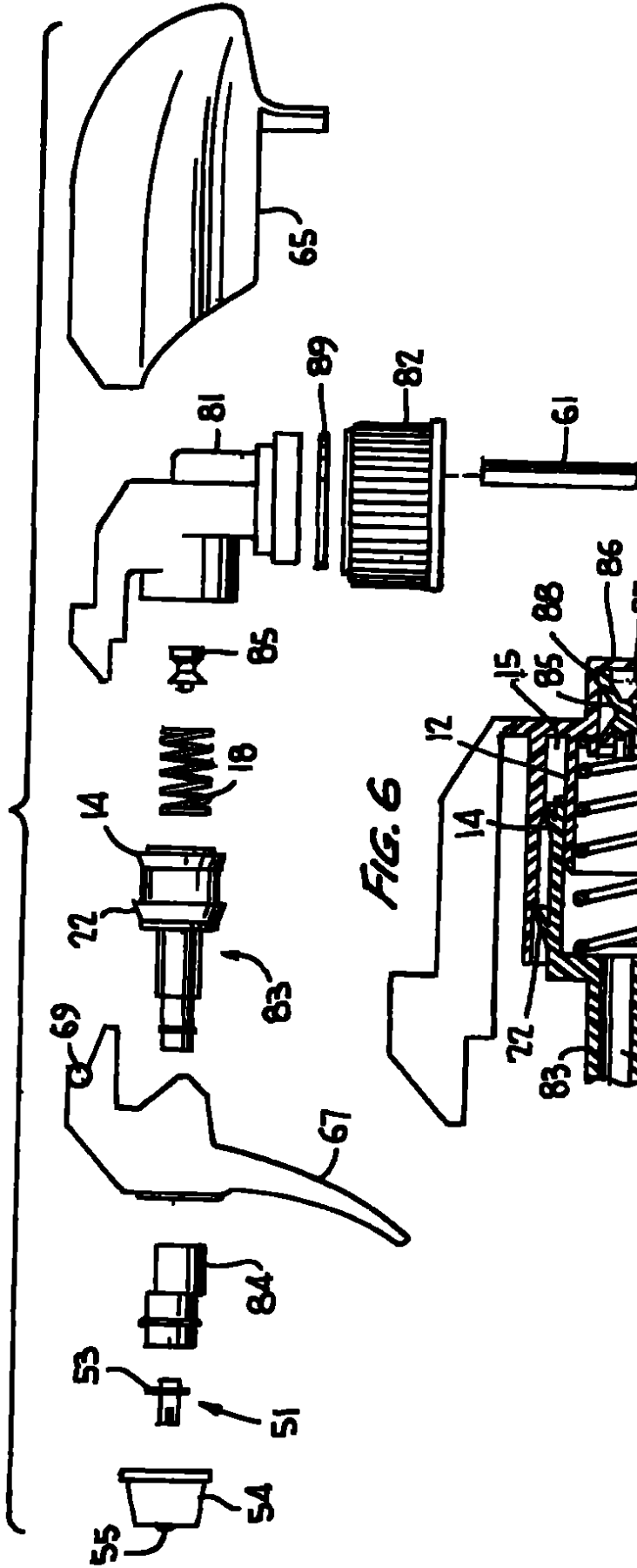
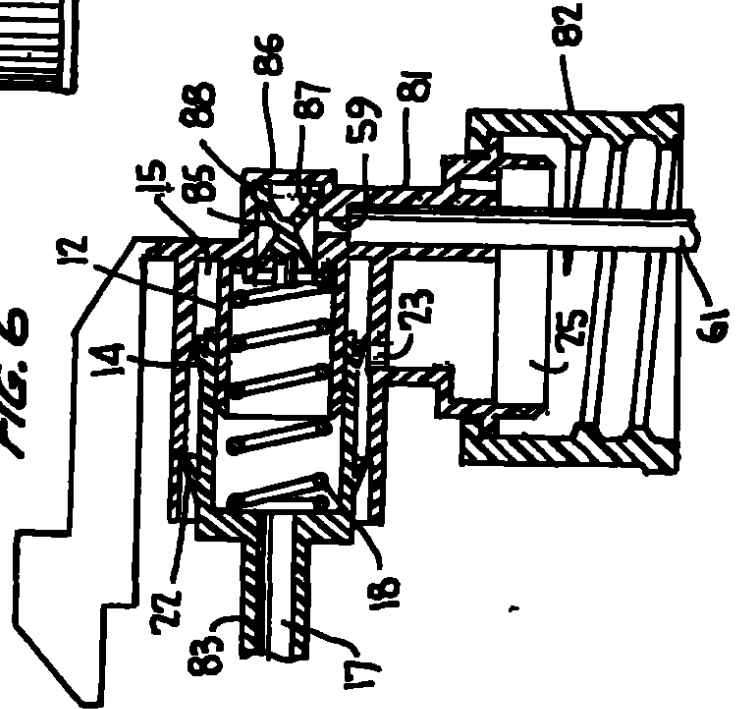


FIG. 6



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LOS ESTADOS UNIDOS DE AMÉRICA

A TODO AQUEL A QUIEN CONCIERNA LO PRESENTE

DEPARTAMENTO DE COMERCIO DE LOS ESTADOS UNIDOS

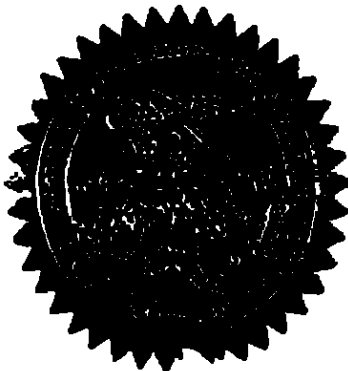
Oficina de Patentes y Marcas de los Estados Unidos

18 de junio 2004

LA PRESENTE ES PARA CERTIFICAR QUE ADJUNTA A LA MISMA HAY UNA COPIA FIEL DE LOS REGISTROS DE LA OFICINA DE PATENTES Y MARCAS DE LOS ESTADOS UNIDOS DE LOS DOCUMENTOS DE LA SOLICITUD DE PATENTE IDENTIFICADA EN LO QUE SIGUE, QUE CUMPLEN LOS REQUISITOS PARA OTORGARLE UNA FECHA DE PRESENTACIÓN BAJO 35 USC 111.

NÚMERO DE SOLICITUD: 10/836.384

FECHA DE PRESENTACIÓN: 3 de mayo de 2004



**Por la Autoridad del
COMISARIO DE PATENTES Y MARCAS**

M.K. HAWKINS

Oficial certificador

147
132

REIVINDICACIONES

1. Un rociador de bomba operado manualmente, que comprende un cuerpo de bomba que tiene un cilindro de bomba formado integralmente y un cierre de contenedor formado integralmente para montar el rociador sobre un contenedor de líquido para ser rociado, un pistón hueco que define un pasaje de descarga, el pistón es alternante contra el empuje de los medios de empuje de pistón luego de la actuación de una palanca de disparo abisagrada con relación al cilindro para definir allí una cámara de bomba de volumen variable, el pistón y el cilindro descansan a lo largo de un eje sustancialmente perpendicular a un eje central del cierre, una válvula cheque de entrada para dejar entrar el producto líquido dentro de la cámara de la bomba, una boquilla de rociado montada en un extremo delantero de dicho pistón para tener un movimiento alternante junto con él, y la palanca de disparo engancha el pistón para alternar allí también luego de que la operación de la palanca de disparo para rociar el líquido por la boquilla.

148
138

2. El rociador de bomba de acuerdo con la reivindicación 1, en donde la palanca de disparo está montada sobre el pistón del cuerpo de bomba y tiene una tapa de extremo integral que engancha con el cuerpo de la bomba para montar la palanca de disparo en ella.

3. El rociador de bomba de acuerdo con la reivindicación 1, que comprende adicionalmente una cubierta de recubrimiento montada sobre el cuerpo de la bomba.

4. El rociador de bomba de acuerdo con la reivindicación 1, en donde la palanca de disparo tiene un miembro de soporte que incluye la tapa de extremo coaxial con el pistón.

5. El rociador de bomba de acuerdo con la reivindicación 3, en donde la cubierta de recubrimiento es integral con el cuerpo de la bomba.

6. El rociador de bomba de acuerdo con la reivindicación 4, en donde la cubierta de recubrimiento es integral con el cuerpo de la bomba.

149
139

7. El rociador de bomba de acuerdo con la reivindicación 4, en donde la palanca de disparo está conectada al miembro de soporte por una bisagra viviente.

8. El rociador de bomba de acuerdo con la reivindicación 1, en donde la válvula de entrada comprende un elemento de válvula separado que tiene un reborde de válvula anular asentado contra una sección tubular del cuerpo de la válvula.

9. El rociador de bomba de acuerdo con la reivindicación 8, en donde los medios de empuje del pistón comprenden un resorte helicoidal, y en donde el elemento de válvula está dispuesto de modo que sea retenido dentro de la sección tubular por el resorte de retorno de pistón.

10. El rociador de bomba de acuerdo con la reivindicación 1, en donde el cierre de contenedor tiene una falda de enganche de contenedor y un sello anular concéntrico integral dispuesto para taponar un cuello del contenedor.

150
140

11. El rociador de bomba de acuerdo con la reivindicación 4, en donde el miembro de soporte se ajusta dentro de un extremo delantero de la cubierta de recubrimiento.

12. El rociador de bomba de acuerdo con la reivindicación 1, en donde la palanca de disparo está montada de manera abisagrada al cuerpo de la bomba.

13. El rociador de bomba de acuerdo con la reivindicación 1, en donde la palanca de disparo está montada al cuerpo de la bomba sobre soportes de bisagra abiertos, el rociador de bomba comprende adicionalmente una cubierta de recubrimiento montada sobre el cuerpo de la bomba, la palanca de disparo está montada con un muñón sobre dichos soportes de bisagra, y la cubierta de recubrimiento está sobrepuesta a los soportes de bisagra para retener los muñones en su lugar.

14. El rociador de bomba de acuerdo con la reivindicación 1, en donde la palanca de disparo está montada al cuerpo de la bomba sobre soportes abiertos de bisagra y es retenido y montado de manear abisagrada en

15/c
14

su lugar por la provisión de una cubierta de recubrimiento montada sobre el cuerpo de la bomba.

15. El rociador de bomba de acuerdo con la reivindicación 1, en donde los medios de empuje del pistón comprenden un resorte helicoidal.

16. El rociador de bomba de acuerdo con la reivindicación 1, en donde los medios de empuje del pistón comprenden un diafragma elástico con dicha válvula de entrada integralmente formada allí.

17. El rociador de bomba de acuerdo con la reivindicación 16, en donde dicha válvula de entrada comprende un reborde de válvula anular normalmente asentado contra una pared interior del cilindro de la bomba.

18. El rociador de bomba de acuerdo con la reivindicación 16, en donde la válvula de diafragma elástico tiene una pared lateral que coopera con una porción de vástago del pistón hueco para definir allí una válvula de descarga.

199
142

19. Un rociador de bomba operable manualmente adaptado para ser montado sobre un cuello de un contenedor de líquido para ser rociado comprende, un cuerpo de bomba que tiene un cilindro de bomba y un cierre de contenedor formado integralmente, un pistón hueco alternativo contra el empuje de un resorte dentro del cilindro de bomba para así definir una cámara de volumen variable, el pistón define un pasaje de descarga que tiene una boquilla de rociado en un extremo del mismo, un conjunto de actuación montado sobre el cuerpo de la bomba, el conjunto comprende una palanca de disparo que tiene una tapa de extremo coaxial con dicho pistón, la palanca de disparo está conectada de manera abisagrada a una sección de pared superior en el conjunto y engancha el pistón para alternar con él, una boquilla de rociado montada sobre un extremo delantero del pistón en una localización aguas debajo de la palanca de disparo y una válvula cheque de entrada para dejar entrar el producto líquido dentro de la cámara de la bomba.

20. El rociador de bomba de acuerdo con la reivindicación 19, que comprende adicionalmente una puerta de ventilación en dicho cuerpo de bomba y en comunicación con el interior del contenedor en una

168
143

localización aguas debajo de dicha cámara de la bomba, y medios sobre dicho pistón para abrir y cerrar la puerta de ventilación respectivamente durante las carreras de presión y succión del pistón.

21. El rociador de bomba de acuerdo con la reivindicación 19, en donde la tapa de extremo define un retén límite para el pistón en el extremo de la carrera de succión del mismo.

22. El rociador de bomba de acuerdo con la reivindicación 19, que comprende adicionalmente una cubierta de recubrimiento integral con el cuerpo de la bomba.

23. El rociador de bomba de acuerdo con la reivindicación 22, en donde la cubierta de recubrimiento se sobrepone a la sección de pared superior del conjunto de actuación.

24. El rociador de bomba de acuerdo con la reivindicación 19, en donde la palanca de disparo está abisagrada a la sección de pared superior por una bisagra viviente integral.

154
144

25. El rociador de bomba de acuerdo con la reivindicación 19, en donde la válvula cheque de entrada está retenida en su lugar por el resorte.

26. Un rociador de bomba operable manualmente a adaptado para ser montado sobre un cuello de un contenedor de líquido que va a ser dispensado, comprende un cuerpo de bomba que tiene un cilindro de bomba y un cierre de contenedlo formado integralmente, una cubierta de recubrimiento acoplada al cuerpo de la bomba, un pistón hueco que alterna contra el empuje de un resorte dentro del cilindro de la bomba para definir así una cámara de bomba de volumen variable, el pistón y el cilindro descansan perpendicularmente sobre un eje central de cierre, el pistón define un pasaje de descarga que tiene una boquilla de rociado en un extremo del mismo, una palanca de disparo está montada de manera abisagrada sobre el cuerpo de la bomba y engancha al pistón para alternar con él entre las carreras de presión y succión, la palanca de disparo tiene muñones en enganche abisagrado con soportes de muñón sobre el cuerpo de la bomba, la cubierta de recubrimiento descansa sobre los soportes de muñón para retener los muñones en su

198
145

lugar, y el cuerpo de la bomba tiene una válvula de cheque de entrada para dejar entrar el producto líquido dentro de la cámara de la bomba luego de la actuación de la palanca de disparo.

27. El rociador de bomba de acuerdo con la reivindicación 26, en donde la válvula cheque de entrada es retenida en su lugar por el resorte.

28. El rociador de válvula de acuerdo con la reivindicación 26, en donde el cierre tiene un sello de tapón integral para un enganche de sello con el interior del cuello del recipiente.

29. El rociador de bomba de acuerdo con la reivindicación 26, en donde el cilindro de bomba tiene una porción de ventilación en comunicación con el interior del contenedor, la puerta ha sido localizada aguas abajo de la cámara de la bomba, y medios para abrir y cerrar la puerta para hacia la atmósfera respectivamente durante las carreras de presión y succión del pistón.

156
146

30. Un rociador de bomba operable manualmente para ser montado sobre un cuello de contenedor de un recipiente de producto líquido que va a ser rociado, comprende un cuerpo de bomba que tiene un cilindro de bomba y un cierre de contenedor formado integralmente, una cubierta de recubrimiento acoplada al cuerpo de la bomba, un pistón hueco alternante dentro del cilindro de bomba para definir así una cámara de bomba de volumen variable, el pistón, hueco define un pasaje de descarga que descansa perpendicular a un eje central del cierre, un diafragma elástico soportado dentro del cuerpo de la bomba, el pistón que tiene un vástago hueco alargado en enganche con una porción central del diafragma para así empujar por resorte el pistón durante las carreras de presión y succión del mismo, el diafragma comprende una válvula cheque de entrada para dejar entrar el producto líquido dentro de la cámara de la bomba y comprende una válvula cheque de descarga para controlar la descarga de producto líquido desde la cámara de la bomba y hacia el pasaje de descarga, una boquilla de rociado en un extremo del pistón, y una palanca de disparo que tiene muñones en enganche abisagrado con los soportes de muñón sobre el cuerpo de la bomba, la cubierta de recubrimiento descansa

157
142

sobre los soportes de muñón para retener los muñones en su lugar.

31. El rociador de bomba de acuerdo con la reivindicación 30, en donde dicha válvula cheque de entrada comprende un reborde de válvula anular integral de dicho diafragma asentado contra la pared interior de dicho cilindro.

32. El rociador de bomba de acuerdo con la reivindicación 30, en donde dicha válvula de descarga comprende una porción cilíndrica de dicho diafragma asentada contra el vástago hueco.

33. Un rociador de bomba operable manualmente adaptado para ser montado sobre un recipiente de producto líquido que va a ser rociado, comprende un cuerpo de bomba que tiene un cilindro de bomba, un sello que actúa entre el cuerpo de la bomba y un cuello del recipiente, un cierre de recipiente acoplado al cuerpo de la bomba, un pistón hueco alternante contra el empuje de un resorte de retorno dentro del cilindro de la bomba para así definir una cámara de bomba de volumen variable, el pistón define un pasaje de descarga que tiene un conjunto

158
148

de boquilla de rociado montado sobre un extremo delantero del mismo, el pasaje de descarga descansa perpendicular a un eje central del cierre, un actuador de la palanca de disparo conectado a dicho cuerpo de bomba por una conexión abisagrada, dicho actuador está en enganche con el pistón para alternar con él, una cubierta de recubrimiento acoplada a dicho cuerpo de bomba, una válvula de entrada soportada dentro de dicho cuerpo de bomba para dejar entrar el producto líquido dentro de la cámara de dicha bomba, y dicho conjunto de boquilla incluye una válvula de descarga para controlar la descarga del producto líquido desde dicha cámara de bomba.

34. El rociador de bomba de acuerdo con la reivindicación 33, en donde dicho conjunto de boquilla comprende adicionalmente un adaptador de boquilla y un elemento mecánico de spin.

35. El rociador de bomba de acuerdo con la reivindicación 34, en donde dicha válvula de descarga está formada integralmente con dicho elemento mecánico de spin.

158
149

36. El rociador de bomba de acuerdo con la reivindicación 33, en donde dicho sello comprende un sello de tapón anular integral con dicho cuerpo de bomba para taponar dentro del cuello del recipiente.

37. Un rociador de bomba operado manualmente adaptado para ser montado sobre un cuello de recipiente de un recipiente de producto líquido que va a ser rociado, comprende, un cuerpo de bomba que tiene un cilindro de bomba, un cierre de contendor formado integralmente y una cubierta de recubrimiento formada integralmente, un pistón hueco alternante contra el empuje de un resorte dentro del cilindro de bomba para así definir una cámara de bomba de volumen variable, el pistón define un pasaje de descarga que descansa perpendicular a un eje central del cierre, un conjunto de boquilla de rociado sobre un extremo delantero del pistón, una palanca de disparo conectada de manera abisagrada a dicho cuerpo de bomba y que engancha dicho pistón para alternar con él, un sello que actúa entre el cuerpo de bomba y el cuello del recipiente, una válvula cheque de entrada soportada dentro de dicho cuerpo de bomba para dejar entrar el producto líquido dentro de dicha cámara de bomba, y dicho conjunto de boquilla de

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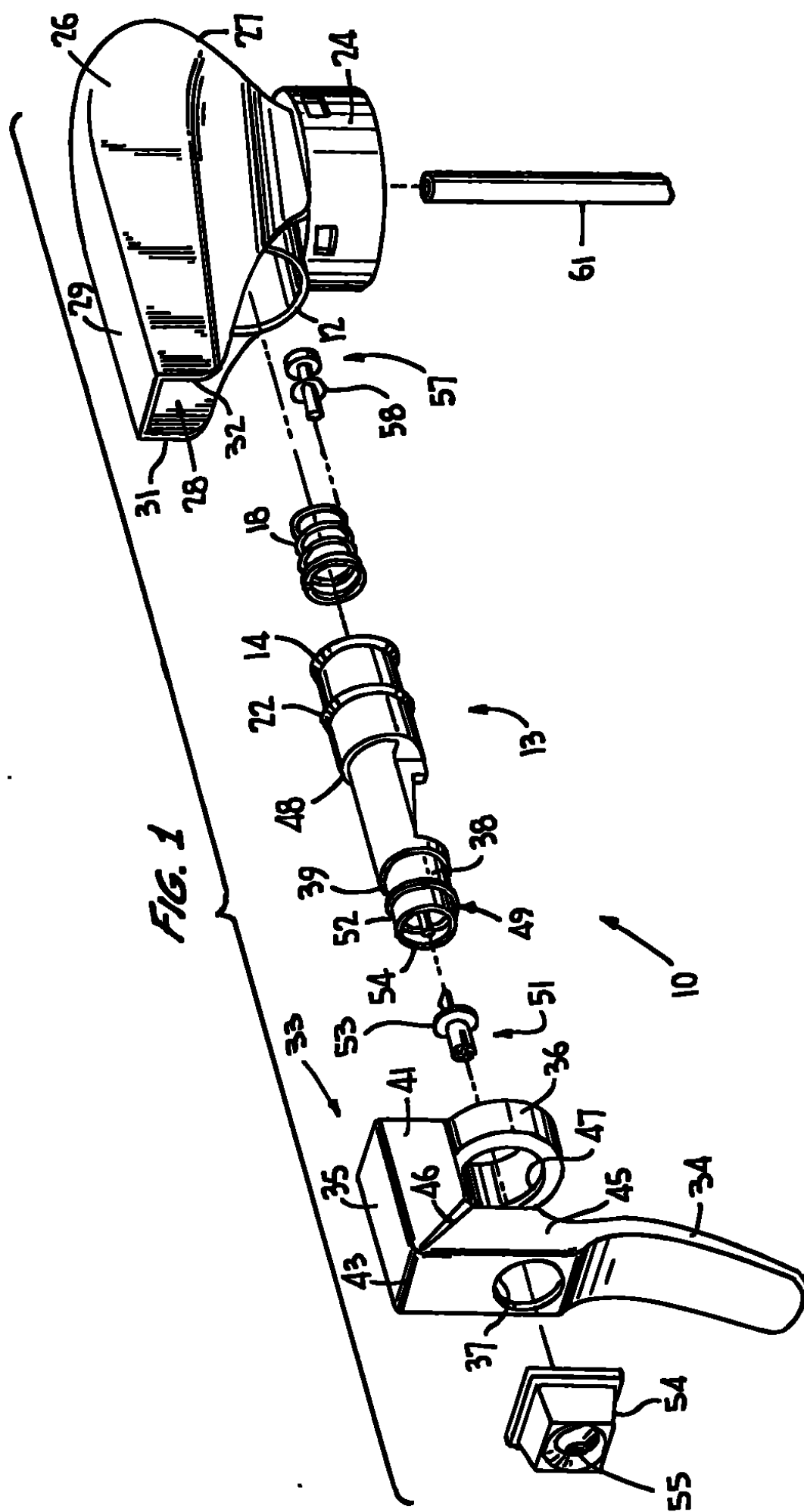
rociado incluye una válvula de descarga de una vía para controlar la descarga del producto líquido desde dicha cámara de bomba.

38. El rociador de bomba de acuerdo con la reivindicación 37, en donde dicho conjunto de boquilla incluye una boquilla de rociado y un elemento mecánico de spin formado integralmente con dicha válvula de descarga.

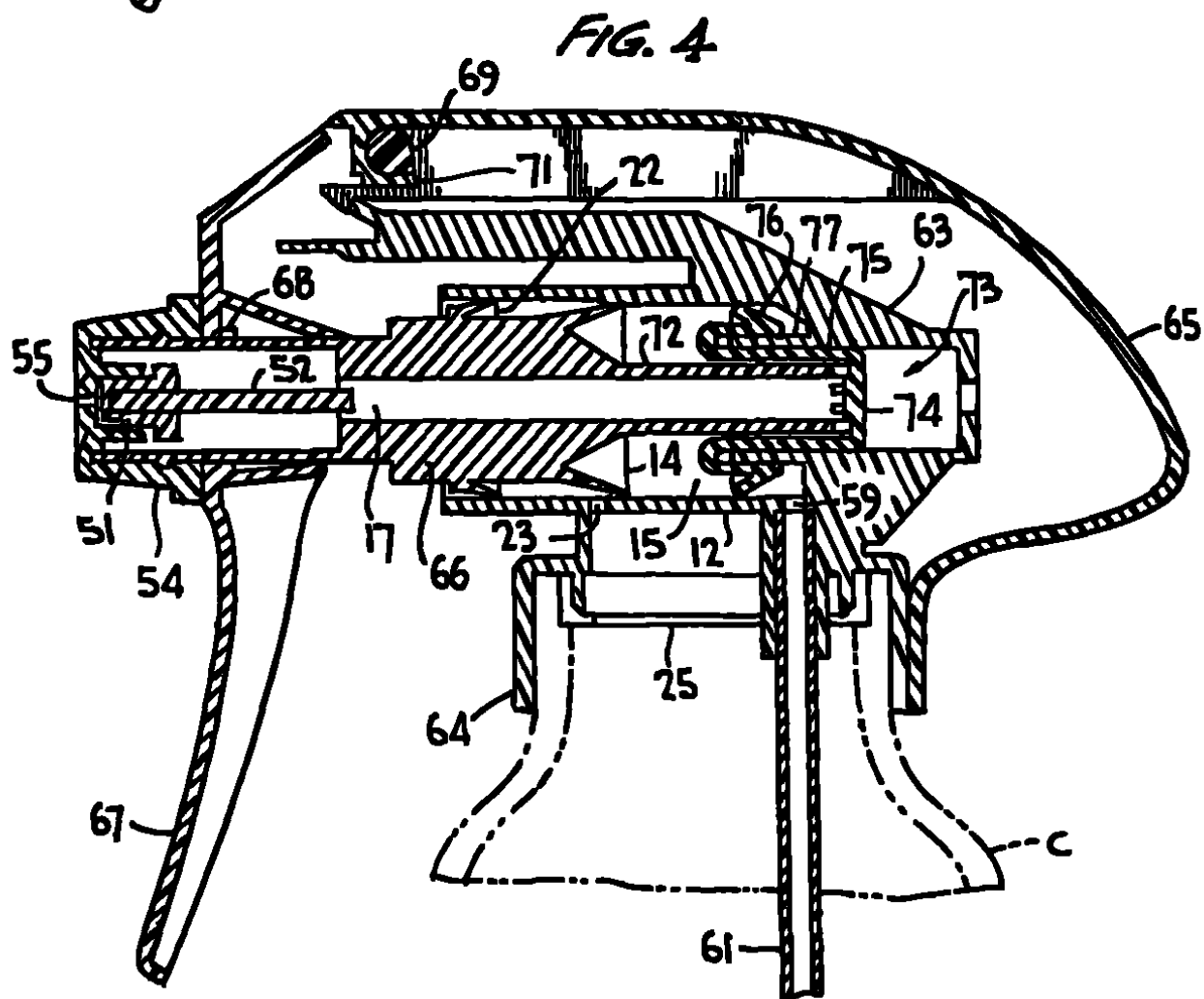
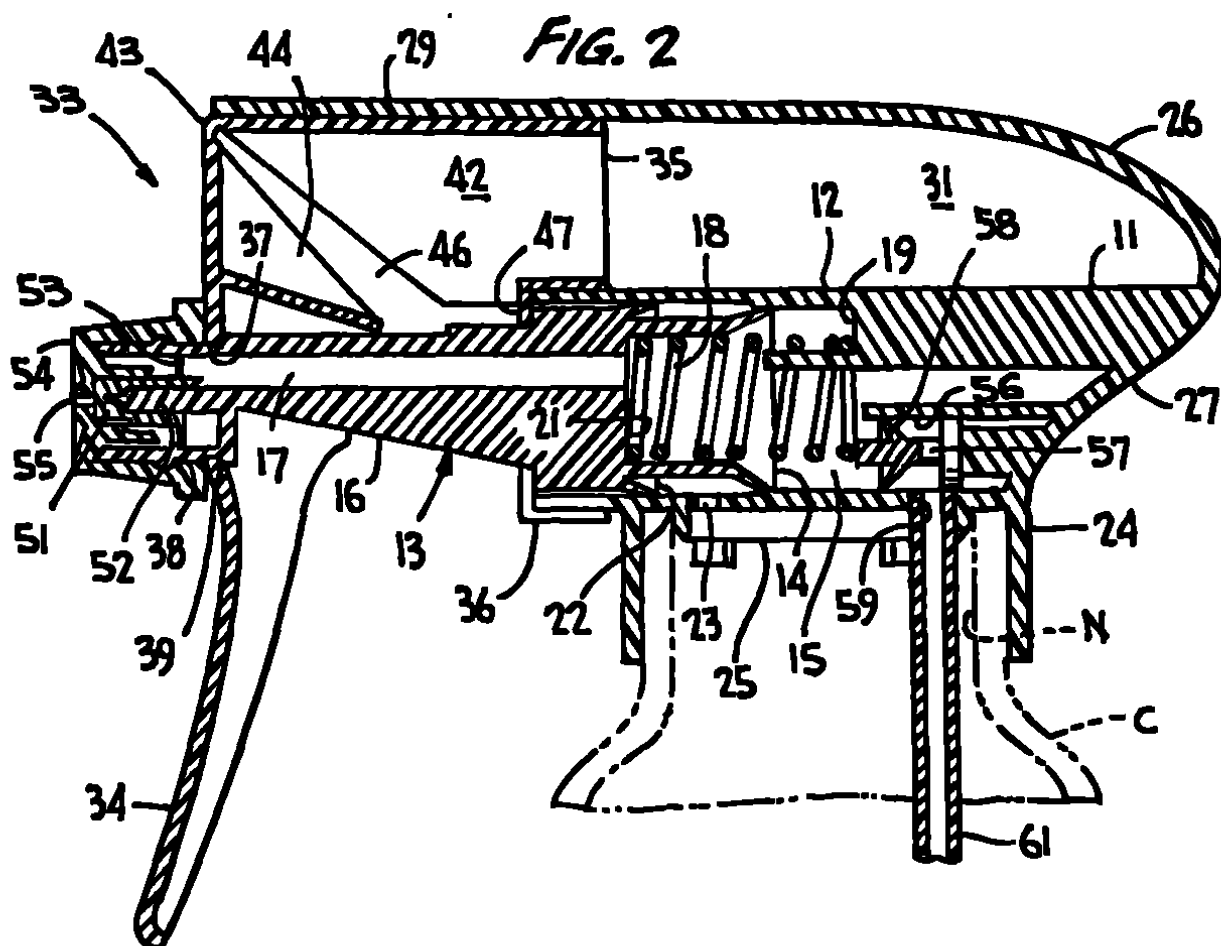
39. El rociador de bomba de acuerdo con la reivindicación 38, en donde dicho conjunto de boquilla incluye adicionalmente un adaptador de boquilla que soporta dicho elemento mecánico de spin.

40. El rociador de bomba de acuerdo con la reivindicación 38, en donde el sello comprende un sello de tapón anular integral con dicho cuerpo de bomba para taponar el cuello del recipiente.

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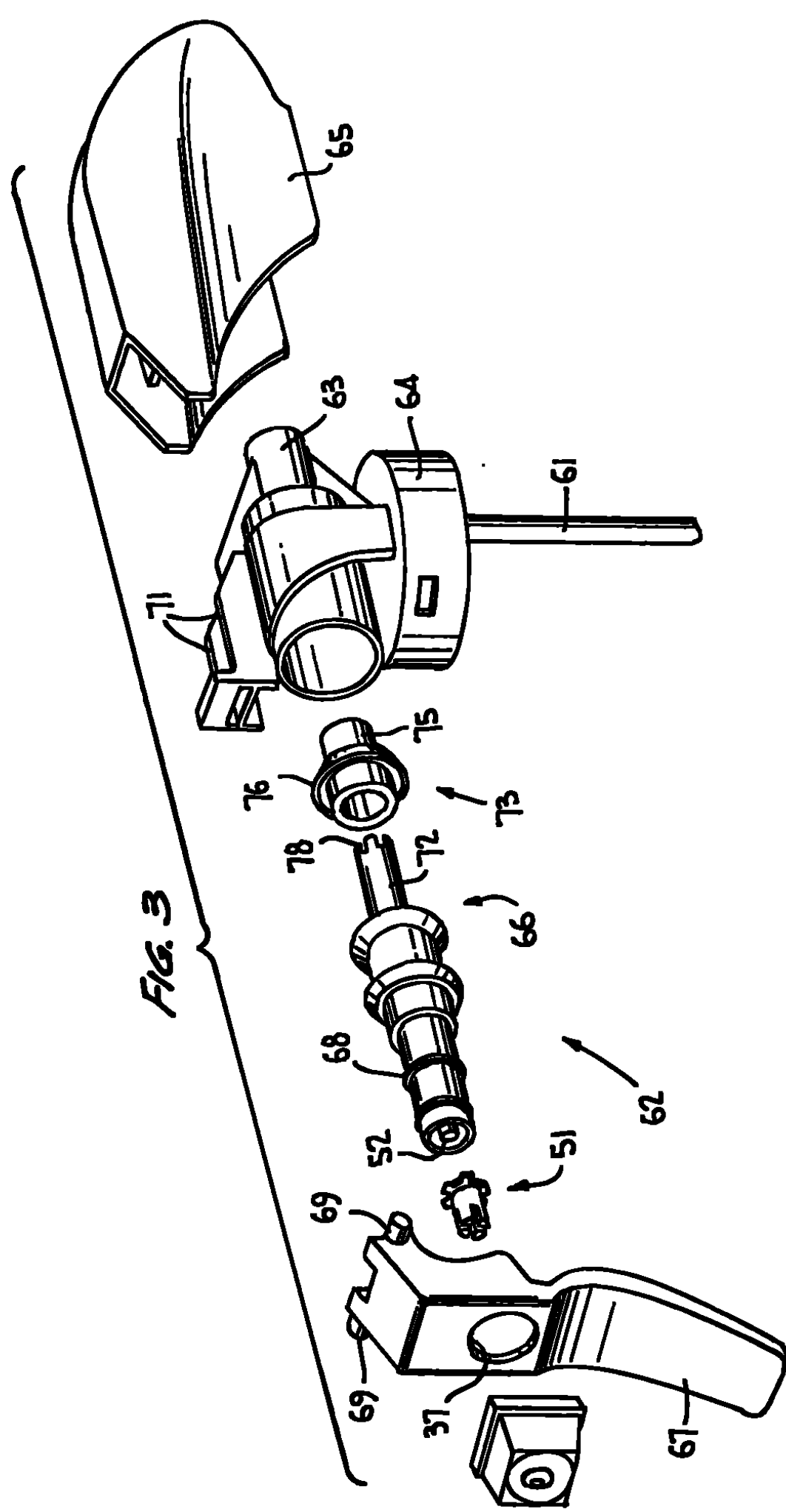


FIG. 5

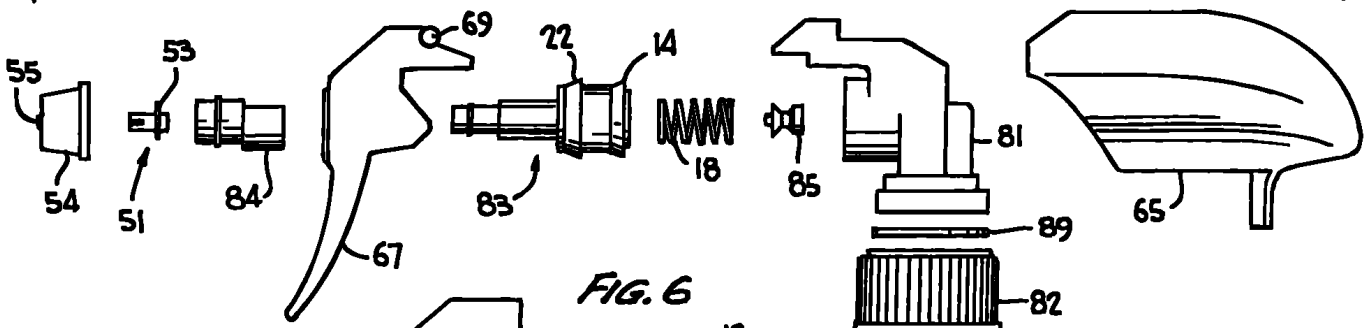
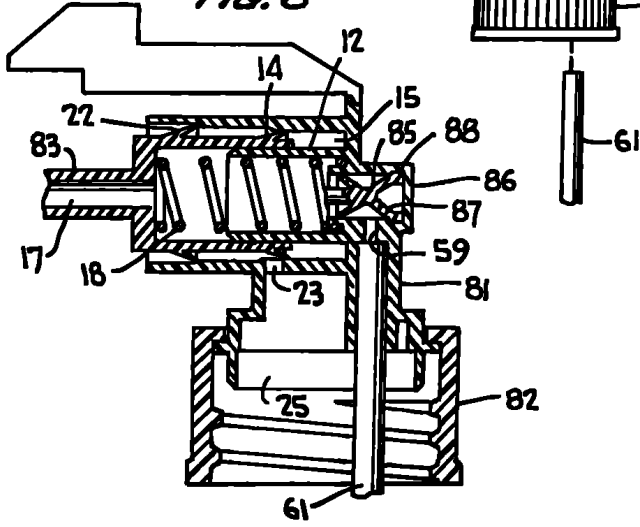


FIG. 6



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Radicación No 04-42453

Concepto No. 812

Clasificación Internacional de Patentes B 05 B 1/00

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:

REVISION TECNICA

- 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 APLICA ☐ Contiene los dibujos necesarios para comprender la invención (Art.26-d)
- SI ☒ NO ☐ Contiene una o más reivindicaciones. (Art.26-c).
- SI ☐ NO ☐ NO APLICA ☒ 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 APLICA ☒ 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-l).
- SI ☐ NO ☐ La invención se refiere a un producto relativo a un material biológico. (Art.26-J).
- SI ☒ NO ☐ NO APLICA ☐ La prioridad coincide con la materia reivindicada.
- SI ☒ NO ☐ **CUMPLE LOS REQUISITOS TÉCNICOS**

REVISION JURIDICA

- SI ☒ NO ☐ NO APLICA ☐ Presentó el documento en que consta la cesión del derecho a la patente otorgado por el inventor al solicitante o a su causante (art. 26-k, Dec 486/2000).
- SI ☒ NO ☐ NO APLICA ☐ Presentó el poder otorgado al abogado, con el lleno de los requisitos jurídicos exigidos.
- SI ☒ NO ☐ NO APLICA ☐ Acredita la existencia y representación de la sociedad solicitante.
- SI ☒ NO ☐ NO APLICA ☐ Presento la copia certificada de la prioridad invocada en los términos establecidos en los artículos 10 y 11, Dec. 486.
- SI ☒ NO ☐ **CUMPLE LOS REQUISITOS JURÍDICOS**

[] OBSERVACIONES Y OTROS:

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REFERENCIA:	Radicación No.	04-42453
	Trámite	002
	Evento	001
	Actuación	416
	Oficio No.	1641
	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.

De acuerdo con lo previsto por el artículo 40 de la Decisión 486/00, la publicación en este caso se hará a partir del día 07 de noviembre de 2005.

Cúmplase

Dado en Bogotá DC, a los

29 OCT. 2004


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

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