

PATENTS EXAMINATION BOARD

PRACTICAL LEGAL PROBLEMS

Paper 1

EXAMINATION: JULY 2018

EXAMINERS: R BAGNALL

D DOHMEN

MODERATOR: C E PUCKRIN S.C.

DURATION: READING TIME: 1 HOUR

EXAMINATION TIME: 4 HOURS

TOTAL: 5 HOURS

NOTES TO CANDIDATES:

1. Attached to the paper are copies of the following documents:
 - (i) A copy of the Patents Act No. 57 of 1978;
 - (ii) A copy of the Patent Regulations 1978; and
 - (iii) A copy of the Uniform Rules of the High Court under the Superior Courts Act 10 of 2013 (Rules 6, 14, 17, 18, 19, 21, 22, 23, 24, 25, 30, 35, 36 and 37).
2. Each candidate is also allowed access to (1) one dictionary during the Exam.

3. This paper consists of 25 pages in total and includes the following documents:
 - (i) Questions 1 to 3 (100 marks) (Pages 3 to 4);
 - (ii) Combined Summons and Particulars of Claim (Pages 5 to 11);
 - (iii) Document A: Patent Specification ZA2012/04321 (Pages 12 to 18);
 - (iv) Document B: Sprinkl-Eeze Press Release (Pages 19 to 21);
 - (v) Document C: Excerpt from Big Bulbs (Pages 22); and
 - (vi) Document D: Patent specification ZA2011/00123 (Pages 23 to 25).
4. Prior to the hand out of the answer papers, candidates will have the opportunity to read the above documents and make notes for 60 minutes.
5. Where appropriate reference should be made to case law.
6. Please note that in the marking of answers:

30% of the marks will be allocated for advice on legal aspects;

60% for technical/practical advice; and

10% for form of the advice.

QUESTION 1

(30 Marks)

You receive the following letter from your client.

"Dear Patent Attorney

I refer to my earlier telephone call and attach hereto the summons and particulars of claim which were served yesterday on our receptionist by the Sheriff of the court.

As discussed, Douse All Systems is the dominant supplier of fire suppression systems for the South African buildings market. A fire suppression system has a series of sprinklers, which are usually mounted to the ceiling of a room and in the event of a fire the sprinklers automatically activate to cause water to be dispersed therefrom to douse the fire.

An important part of any sprinkler system is the glass bulb which is held in an industry standard frame. We were surprised to learn that Douse All has obtained a patent for their sprinkler (Document A) and are equally surprised by Douse All's claims of patent infringement against our Sprinkl-Eeze sprinklers.

We designed our two variations of the Sprinkl-Eeze sprinkler last year after evaluating a range of sprinklers which were available on the market. We started manufacturing the Sprinkl-Eeze sprinklers at our Kew facility in February 2018 and have recently released the Sprinkl-Eeze sprinklers for sale nationally.

The press release (Document B) which is attached to the summons was released by us and describes our two types of Sprinkl-Eeze sprinkler heads in complete detail.

The glass bulb for our Sprinkl-Eeze sprinklers are cheaper to manufacture than those of our competitors because they use water and a solid plastic plug. This allows us to slightly undercut our competitors while keeping a healthy profit margin.

Our Sprinkl-Eeze sprinklers have been well received in the market and we are generating nice profits from both products.

We sell more or less equal numbers of our Sprinkl-Eeze pro and Sprinkl-Eeze lite and would like to keep our market share for both these products.

During our development of the Sprinkl-Eeze sprinklers, we found the attached two documents (Document C and D) which in our view describes similar sprinklers to the one described in Douse All's patent.

As far as we could ascertain, the Standard Bulb: Mark 1 described in the Big Bulb's document (Document C) was launched on the South African market but The Bespoke Bulb was never released in the South African market.

I trust that you can assist us in this matter.

*Yours sincerely
Mr Pyro Technic
CEO
Firetech"*

Please provide your client with an opinion as to whether the activities of Firetech in respect of each of its products amount to an infringement of South African Patent No. ZA 2012/04321.

QUESTION 2

(45 marks)

Please provide your client with an opinion as to whether or not South African Patent No. 2012/04321 is valid and enforceable in South Africa in light of the prior art (**Documents C and D**) and provide your client with strategic advice as to how it should proceed in protecting its market share.

QUESTION 3

(25 marks)

Please draft a plea and counterclaim (if required in your opinion) to the summons and particulars of claim received from Douse All Systems (Pty) Ltd. The header and representative details of the pleading may be omitted.

TOTAL: 100 marks

IN THE COURT OF THE COMMISSIONER OF PATENTS
FOR THE REPUBLIC OF SOUTH AFRICA

Patent/Case No. 2012/04321

In the matter between:

DOUSE ALL SYSTEMS (PTY) LTD

Plaintiff

and

FIRETECK (PTY) LTD

Defendant

In re: South African Patent No. 2012/04321 and infringement thereof.

COMBINED SUMMONS

To the Sheriff or his Deputy:

INFORM **FIRETECH (PTY) LTD**, a company duly incorporated in terms of the company laws of the Republic of South Africa with its principal place of business at **10 Victor Road, Kew, Johannesburg, Gauteng, South Africa** (hereinafter called "the defendant"); and

THAT **DOUSE ALL SYSTEMS (PTY) LTD**, a company duly incorporated in terms of the company laws of the Republic of South Africa with its principal place of business at **7 Steel Road, Pietermaritzburg, Kwazulu-Natal, South Africa**, (hereinafter called "the plaintiff");

hereby institutes action against the defendant in which action the plaintiff claims the relief on the grounds set out in the particulars of claim attached hereto.

INFORM the defendant further that if it disputes the claim and wishes to defend the action it shall:

- (i) within ten (10) days of the service of this summons file with the Registrar of this Court at the Patent Office, Block F – Entfufukweni, 77 Meintjies Street, Sunnyside, Pretoria, notice of its intention to defend and serve a copy thereof on the plaintiff's attorney, which notice shall give an address (not being a post office box or poste restante) referred to in Rule 19(3) for the service on the defendant of all notices and documents in this action,
- (ii) thereafter, and within twenty (20) days after filing and serving notice of intention to defend as aforesaid, file with the Registrar and serve upon the plaintiff a plea, exception or notice to strike out, with or without a claim in reconvention.

INFORM the defendant further, that if it fails to file and serve notice as aforesaid, judgment as claimed may be given against it without further notice to it, or if, having filed and served such notice, it fails to plead, except, make application to strike out or counterclaim, judgment may be given against it.

AND immediately thereafter serve on the defendant a copy of this summons and return the same to the registrar with whatsoever you have done thereupon.

SIGNED AT PRETORIA ON THIS THE 2nd DAY OF JUNE 2018.

D. H. Dohmen
ADAMS & ADAMS
Plaintiff's Patent Attorneys
Adams & Adams,
Lynnwood Bridge, 4 Daventry
Street, Lynnwood Manor,
0081, Pretoria
Ref: PL00001ZA00 DHD
Tel: +27 (0) 12 432 6000
Fax: +27 (0) 12 432 6599
Email: danie.dohmen@
adamsadams.com

TO: REGISTRAR OF THE COURT OF
THE COMMISSIONER OF PATENTS
DTI Campus
77 Meintjies Street
Block F – Entfufukweni
Sunnyside, PRETORIA
GAUTENG

AND TO: FIRETECK (PTY) LTD
10 Victor Road
Kew
Johannesburg
Gauteng
South Africa

PARTICULARS OF CLAIM

1.

The plaintiff is Douse All Systems (Pty) Ltd, a company duly incorporated in terms of the company laws of the Republic of South Africa with its principal place of business at 7 Steel Road, Pietermaritzburg, Kwazulu-Natal, South Africa.

2.

The defendant is Firetech (Pty) Ltd, a company duly incorporated in terms of the company laws of the Republic of South Africa with its principal place of business at 10 Victor Road, Kew, Johannesburg, Gauteng, South Africa.

3.

The plaintiff is, and has been, at all material times, the proprietor of Patent No. 2012/04321 entitled "Sprinklers" ("the patent in suit").

4.

A copy of the complete specification of the patent in suit is attached hereto as annexure "**Document A**".

5.

The patent in suit is, and has been, at all material times, valid and subsisting.

6.

6.1. From a date unknown to the plaintiff, the defendant has made and/or used and/or imported and/or offered to dispose of and/or disposed of and continues to make and/or use and/or import and/or offer to dispose of and/or dispose of, in South Africa, a sprinkler head entitled SPRINKL-EEZE.

6.2. In support of the allegation in paragraph 6.1, a press release dated July 2017 and issued by the defendant is attached hereto as "**Document B**".

7.

The defendant's sprinkler head falls within the scope of each of claims 1 to 6 of the patent in suit.

8.

In the premises the defendant has infringed, and is still infringing each of claims 1 to 6 of the patent in suit.

9.

The above conduct of the defendant is not authorised by the plaintiff.

10.

The plaintiff apprehends on reasonable grounds that the defendant will persist with the aforesaid infringement of the patent in suit unless the defendant is restrained by

a final interdict ordered by this Court.

11.

The conduct of the defendant has caused and is causing the plaintiff damages, which damages the plaintiff is at present unable to quantify.

WHEREFORE the plaintiff claims:

1. An interdict restraining the defendant from infringing each of claims 1 to 6 of SA patent no. 2012/04321 by making, using, importing, disposing of or offering to dispose of the defendant's sprinkler head, or any other article falling within the scope of the claims 1 to 6 of the patent, in the Republic;
2. An order for the delivery up for destruction of any article in the possession or under the control of the defendant which infringes any of claims 1 to 6 of SA patent no. 2012/04321;
3. An enquiry into damages suffered by the plaintiff as a consequence of the infringement of SA patent no. 2012/04321, and payment of the amount of damages found to have been so suffered; alternatively an enquiry into the extent of the infringement and the amount of a reasonable royalty to be paid in lieu of damages, and payment of the amount of royalties found to be so payable;

4. In the event of the enquiry in terms of prayer 4 above being ordered, and the parties being unable to reach agreement as to the future pleadings to be filed, discovery, inspection or other matters of procedure relating to the enquiry, an order authorising any of the parties to make application to the above Honourable Court for directions in regard thereto; and
5. An order directing that the defendant pays the plaintiff's costs including the costs of counsel and the qualifying fees of the plaintiff's expert witness(es).

SIGNED AT PRETORIA ON THIS THE 2nd DAY OF JUNE 2018.

D. H. Dohmen
ADAMS & ADAMS
Plaintiffs' Patent Attorneys
Adams & Adams, Lynnwood
Bridge, 4 Daventry Street,
Lynnwood Manor, 0081,
Pretoria
Ref: PL0001ZA00 DHD
Tel: +27 (0) 12 432 6000
Fax: +27 (0) 12 432 6599

South Africa Patent No 2012/04321

(Filed March 2012 (Priority Date), Granted September 2012)

Sprinklers

This invention relates to sprinklers, and specifically sprinklers comprising thermally responsive frangible bulbs.

5 Automatic fire sprinklers (nozzles) have a frame with an outlet at one end, an orifice which is usually just upstream of the outlet, and an inlet which is connectable to a source of fire retarding fluid under pressure. The outlet is secured in the normally closed or sealed position by a cap or valve; the cap or valve being held in place by a thermally responsive element which is releasable when its temperature is increased from a normal ambient condition to an operating temperature, by the heat from a fire. Upon
10 release of the thermally responsive element, a stream of fire retarding fluid rushes from the outlet towards a deflector, which is mounted on the frame at the opposite end from the outlet, and is distributed over the area to be protected by the sprinkler (nozzle) from fire.

The two primary types of thermally responsive elements used to automatically release fire sprinklers
15 are fusible solder links and frangible glass bulbs. Although satisfactory, fusible solder links have generally fallen out of favour and have been replaced by frangible, or breakable, glass bulbs.

Over time it has become possible to reduce the size of the frangible glass elements and the frames of automatic fire sprinklers. However, the principles concerning the method of operation of frangible glass
20 bulbs as well as the advantages of their use have remained essentially the same.

The successful use of frangible glass bulbs, as thermally responsive elements for automatic fire sprinklers, requires a bulb of a particular strength, which can withstand ambient environmental conditions but which can be easily and readily broken as it heats. Such bulbs typically contain a liquid,
25 and the thermophysical properties of the liquid used to fill the glass shell are key to the performance of the bulb.

Of course, it is desirable to have the glass bulb break as soon as a fire occurs so that the sprinkler system is activated as soon as possible. However, it is also desirable for the glass bulb to only break when it is
30 certain that a fire has occurred rather than there being a change in the environmental temperature.

It is an object of the invention to provide a sprinkler system having an improved thermally responsive frangible bulb and to an improved glass bulb.

A first aspect of the invention relates to a sprinkler system in accordance with Claim 1.

5

Advantageously, by using two different species within the bulb, the active range, sensitivity and responsiveness of the bulb can be increased and/or tuned to specific needs and requirements whilst showing the quick actuation times specified.

10 The actuation time is measured as the time taken for a thermally responsive member to break when exposed to a particular temperature, i.e. by suddenly exposing a thermally responsive member to an environment with a temperature of X °C, the actuation time is the time it takes for the thermally responsive member to break.

15 Preferably, the actuation time is less than 10 s at 75 °C and less than 5 s at 120 °C. For example, an actuation time of 9 s at 75 °C and an actuation time of 4 s at 120 °C.

The first species may be a fluid and the second species may be a liquid, preferably the first species and second species are immiscible liquids.

20

Because the liquids are preferably immiscible (i.e. they do not mix) it is possible to accurately control the overall operating characteristics and to provide a broad range of operating criteria. This is because liquids are practically incompressible and so two immiscible liquids act as two separate systems within the closed environment provided by the bulb. We have surprisingly found that the use of immiscible
25 liquids leads to a better response time.

The first liquid may have a boiling point and/or density less than that of the second liquid. This means that one fluid will float on the other. In practice, this means that the heavier fluid (which may boil at a higher temperature) will probably be closer to the fire or heat source as the temperature rises.

30

Where the second species has a density greater than the first species (and has a higher boiling point), we prefer the second species to take up more volume than the first species within the thermally responsive element.

35 The thermally responsive member is preferably a glass bulb with an upper pointed end and a lower rounded end; the upper pointed end being for accommodating an air bubble. The pointed end is provided to give the bulb an installation direction (pointed end up) and accommodates the air bubble (which is

impossible in practice to avoid) so that the air bubble does not interfere with the fluids. In any case, the air bubble is small and so does not affect the response time of the sprinkler system.

5 The glass bulb preferably has a wall between the two ends, which wall is thinner than the lower rounded end. The wall should be sufficiently thick that it does not break in use but sufficiently thin to be able to break as the pressure rises. A thick bottom portion may be more effective at transferring heat to the fluids within the glass bulb.

10 Any fluids known from the prior art may be used within the sprinkler as will be appreciated by the addressee. Preferably, the fluids, in combination, will offer the combination of properties needed to achieve quick response operating characteristics in cost-effective frangible glass bulbs having a nominal operating temperature of at least up to 90 °C and, preferably at least up to 130 °C.

15 Although the technical choice of suitable liquids for fast response sprinkler bulbs should be based on consideration of thermophysical properties such as compressibility, thermal expansivity and thermal conductivity, the data available for candidate liquids is sparse, often dubious and rarely in the pressure/temperature regime of a sprinkler bulb at operation. It is not possible to accurately predict performance as a bulb filling liquid based on incomplete or contentious literature values. Practically no independent empirical measures exist of important liquid properties such as the dP/dT ratio, which
20 defines the relationship between bulb operating temperature and sensitivity. The choice of the most suitable liquid depends on an extensive empirical testing programme.

The preferred liquids contained in the glass bulbs (CH and DMF) are readily available and represent a reduced level of toxicity in comparison with previously used substances. More particularly, the cost of
25 relatively expensive species can be controlled by substituting for low cost co-liquids.

An embodiment of the invention will now be described, by way of example only, with reference to the accompanying drawings, in which:

30 FIG. 1 is a partial sectional view of an automatic fire sprinkler showing a preferred embodiment of the quick response, frangible glass bulb, thermally responsive element of this invention; and FIG. 2 is an enlarged, axial, cross-sectional view of the quick response, frangible glass bulb of this invention taken along the line A-A of FIG. 1.

35 With reference to FIG. 1, automatic fire sprinklers (nozzles) of this invention have a frame 1 with an outlet 2 at one end, an orifice 3 which is usually just upstream of the outlet 2, and an inlet 4 which is

connectable to a source of fire retarding fluid (also known as extinguishant) under pressure. The outlet 2 is secured in the normally closed or sealed position by a cap 5, the cap 5 being held in place by a thermally responsive element 6 which is secured in position by bulb assembly screw 7. Upon release of the thermally responsive element 6, a stream of fire retarding fluid (typically water) rushes from the outlet towards a deflector 8, which is connected to the frame 1 at the opposite end from the outlet 2, and is distributed over the area to be protected by the sprinkler (nozzle) from fire. Clearly, the frame 1 will usually be mounted to a ceiling (not shown) with the frame 1 depending below.

With reference to FIG. 2, the thermally responsive element 6 of this invention is comprised of a frangible glass bulb 6A being itself comprised of a shell 9 and a fluid 10 which nearly completely fills the interior space 11 of the shell 9, except for a relatively small glass pocket in which a gas bubble 12 resides. With further reference to FIG. 2, the shell 9 of the frangible glass bulb of this invention consists of a central region R1 which has a uniform outer diameter D1, a spherical end region R2, and a stem end region R3, the spherical end region having a seat of diameter D2 and the stem end region R3 having a seat of diameter D3, the distance between the spherical end seat and the stem end seat being length L. The gas bubble 12 resides in the spherical end region R2 as shown but when installed (stem end uppermost) will fill the stem end region R3. The gas bubble 12 represents a third fluid within the thermally responsive element 6. Whilst it would be advantageous to not have present the gas bubble 12, it is in practice very difficult, if not impossible, to avoid due to filling and sealing technologies used to prepare the thermally responsive element 6.

In the preferred embodiment of this invention, the frangible glass bulb 6A is of the quick response type with a diameter D1 of from about 2 mm to about 3 mm, a diameter D2 of up to about 2.5 mm, a diameter D3 of up to about 2.2 mm, and a length L of from about 12 mm to about 24 mm, the diameters D2 and D3 being in proportion to diameter D1. The shell 9 of the frangible glass bulb 6A is almost completely filled by an activating fluid 10.

The activating fluid 10 comprises a first liquid 10A and a second liquid 10B. The liquids 10A, 10B are immiscible and there is a clear boundary 10C between them.

The first liquid 10A has a lower density than the second liquid 10B and so lies above it, with the frangible glass bulb 6A oriented vertically and in its correct position within the sprinkler. The air bubble 12 is above the first liquid 10A and will be accommodated in the stem end region R3.

In a preferred embodiment, the first liquid 10A is cyclohexane (CH) and the second liquid 10B is dimethylformamide (DMF). A table of properties is provided below:

Liquid	Boiling Point (°C)	Density (g/cm)	Heat Capacity (J/K/cm ³)	Thermal Expansion (cm/K)	dP/dT (Bar/K)
CH	81	0.779	1.4	0.0018	9.17
DMF	153	0.944	1.9	0.00104	13.82

Of these characteristics, the key ones are the boiling point, thermal expansion (i.e. the amount the species increases in size as it heats up) and the rate of change of pressure with temperature (dP/dT).

We have surprisingly found that by providing two separate liquids 10A, 10B we can tune the operating temperature and actuation time of the frangible glass bulb 6A so that it can activate quickly in the event of a fire.

As heat is transferred to the liquids 10A, 10B via the walls of the frangible glass bulb 6A the fluids start to heat and expand, thereby increasing the internal pressure within the frangible glass bulb. If the fluid is too expansive and with too low a boiling point it can cause premature breakage, which means that fire extinguishing fluid may be expelled before it was desired. In some systems this can lead to a reduction in the pressure of the water or other extinguishant, which can deleterious. By using two liquids the overall expansivity (and actuation temperature) can be controlled and the frangible glass bulb 6A is more resilient to temporary thermal shocks, which should not activate the sprinkler system.

Because the liquids are immiscible, each acts as a separate system and each may be capable of quickly activating the bulb 6A. In the present case, a smouldering (relatively low temperature) fire or heat source can heat the first liquid 10A sufficiently to cause the frangible glass bulb 6A to break. Alternatively, a flash (relatively hot) fire or heat source can cause the second liquid 10B to heat quickly and ensure that the frangible glass bulb 6A breaks. In the above example we have an actuation time of 9 s at 75 °C and an actuation time of 4 s at 120 °C.

A further advantage is that the filling cost of the frangible glass bulb 6A may be reduced. For example, DMF is less expensive than CH and so the overall cost is reduced as compared to a bulb filled entirely with CH. We have also surprisingly found that having a greater amount of DMF than CH improves both the low-temperature and high-temperature performance.

The frangible glass bulb 6A described above has been found to have suitable operating parameters and very fast actuation times.

As well as the liquids mentioned above, other liquids from the prior art can be used.

Claims

1. A sprinkler for automatically expelling a fire extinguishing fluid, the sprinkler comprising a frame and a thermally responsive member, the frame having an opening which is connectable
5 to a source of fire extinguishing fluid and a valve closing the opening, the thermally responsive member being held by the frame to bear against the valve and containing a first and a second fluid that when exposed to heat, at least one of the species will expand to break the thermally responsive member to actuate the valve and allow fire extinguishing fluid to flow, the actuation time being less than 12 s at 75 °C and less than 7 s at 120 °C.
10
2. A sprinkler according to Claim 1, wherein the first species is a fluid and the second species is a liquid.
3. A sprinkler according to Claim 2, wherein the first species and third species are immiscible
15 liquids.
4. A sprinkler according to Claim 3, wherein the first liquid has a boiling point and density less than the second liquid.
- 20 5. A sprinkler according to Claim 1, wherein the thermally responsive member is a glass bulb with an upper pointed end and a lower rounded end, the upper pointed end being for accommodating an air bubble.
- 25 6. A sprinkler according to Claim 5, wherein the glass bulb has a wall between the two ends, which wall is thinner than the lower rounded end.

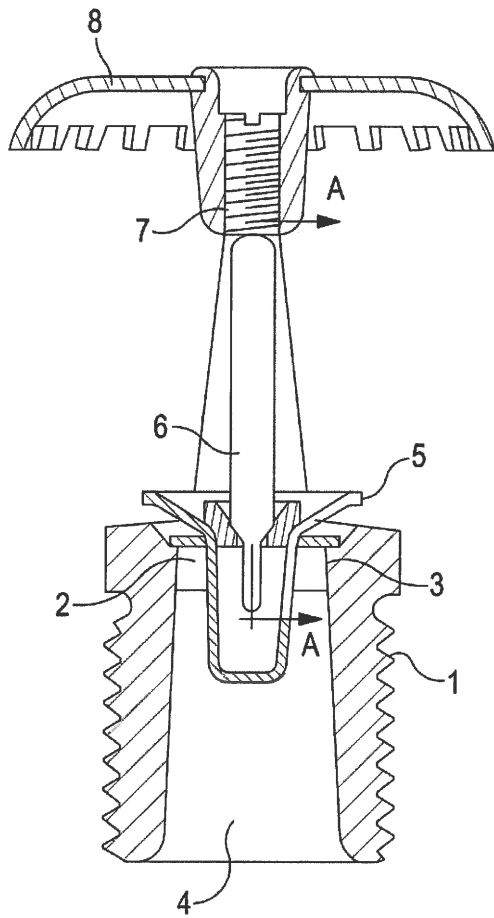


FIG. 1

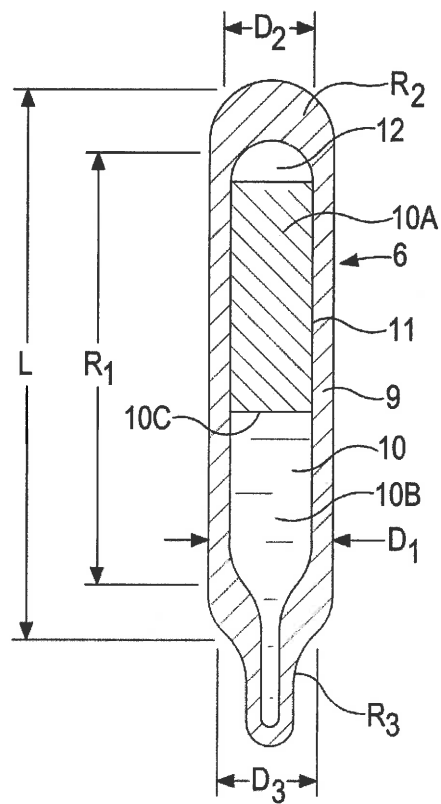


FIG. 2

PRESS RELEASE – For Immediate Circulation

Sandton, SA – April 2018

Firetech, the new innovative fire suppression company is pleased to announce the launch of its new range of sprinkler heads, the SPRINKL-EEZE®.

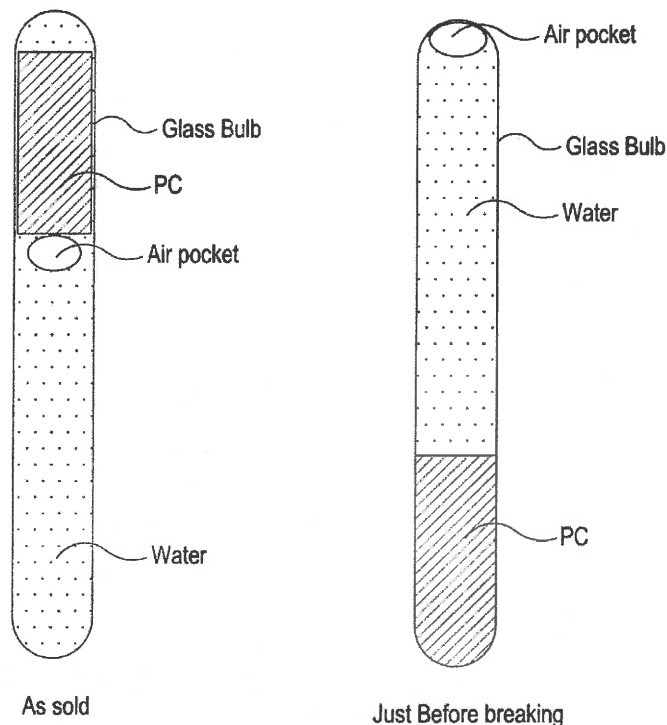
5 One of the problems of many current sprinkler systems is the speed with which they activate, whilst ensuring that the activation does not occur until the system is sure that there is a fire to be extinguished. This is particularly important in industrial or commercial settings, which are susceptible to large variations of ambient temperatures, but is also important in the domestic setting, where sprinkler systems (particularly in renovated office blocks now used for housing) are becoming more commonplace.

10

The SPRINKL-EEZE system comes in two variants, 'SPRINKL-EEZE pro' and 'SPRINKL-EEZE lite', for commercial and domestic use respectively.

15 Both variants use our patent-pending technology relating to our fast-acting glass bulb which activates at elevated temperatures to release water, or other fluids, from the sprinkler head; the details are shown below.

SPRINKL-EEZE pro



The bulb used in the SPRINKL-EEZE pro system comprises a glass vial which contains water and a solid plastic plug made from a low melting point plastic (we use a plastic material called polycaprolactone or PC for short). PC melts at about 60 °C, which makes it ideal for our purposes.

- 5 As the temperature in a room rises, the heat from the fire source is transmitted to the glass bulb and to the PC plug. As the temperature rises, the PC material starts to melt and slumps towards the bottom of the glass bulb; as the PC melts, the air pocket rises, which causes mixing within the PC material and spreads out the heat.
- 10 With the PC material at the bottom of the vial it is closest to the metal frame of the sprinkler head and then heats by conduction and convection until it expands sufficiently to break the bulb and thereby cause fire extinguishing fluid to be released by the sprinkler system. The water within the bulb also expands to help break the bulb.
- 15 We have found that the SPRINKL-EEZE pro system has a reaction time of 1 s once the ambient temperature reaches 91 °C, which is industry leading. Indeed the system has a very flat reaction time from 80 to 100°C.

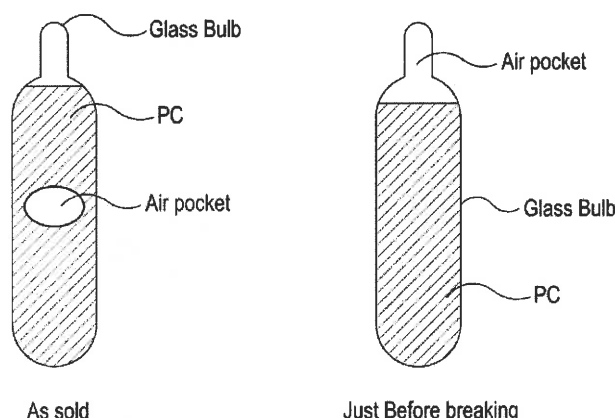
Advantageously, the air pocket provides a quick and easy indicator of activation of the bulb and an easy guide to installation direction within the sprinkler head when replacing bulbs after activation.

The use of water within the bulb is, as far as we know, revolutionary and completely removes the need for expensive, dangerous and environmentally unfriendly chemicals.

25

SPRINKL-EEZE lite

The bulb in our house or domestic fire suppression system uses similar technology to that in our commercial system and is shown below:



- 30 The principal difference between the 'pro' and 'lite' versions is that the lite is smaller and absent water. This means that the 'lite' version is more appropriate for domestic systems – it activates at a lower temperature but has a longer actuation time (according to our tests, it takes 12 s to actuate at about 70 °C and less than 7 s to activate at 80 °C).

We shall be demonstrating both versions at our stand at the leading fire suppression exhibition, FIRE-EX, in Sandton in May 2018.

5 In each case we supply a sprinkler which has a fitting for attachment to a surface (either a wall or a ceiling) and to a supply of fire extinguishant (typically water or an aqueous foam). The fitting usually contains a valve movable from closed position to an open position. The fire extinguishant urges the valve member towards the open position and, in normal use, the glass bulb retains the valve member in the closed position. When the glass bulb breaks, the valve is caused to move to the open position, under the influence of the fire extinguishant, which thus flows out to quell the fire.

10 Our glass bulbs come with the Firetech guarantee against accidental breakage. Because of the use of solid PC within the bulb we can make the entire glass bulbs out of a single thickness of thin wall glass which makes the bulbs more responsive.

15

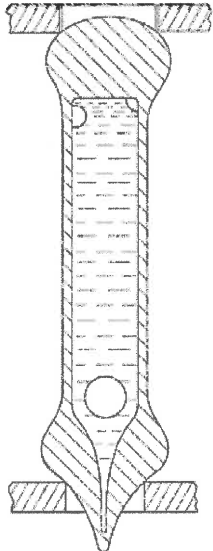
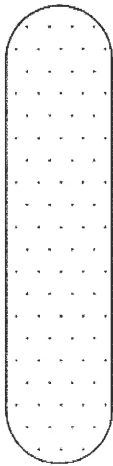
About Firetech (Pty) Ltd:

20 *Firetech is one the most dynamic suppliers of fire suppression systems operating in SA. From a standing start just over a year ago we have developed a 20% market share and continue to grow, based on our innovations and deep industry insight.*

Excerpt from BIG BULBS

The Universal Fire-Suppression System catalogue (Summer 2011–Spring 2012)

Page 671

	<p>Standard Bulb: Mark I</p> <p>This glass bulb is perfect for standard installations in typical factory and office environments.</p> <p>95% filled with cyclohexane (CH). Guaranteed to activate in under 15 seconds at temperatures around 77 °C.</p> <p>OR</p> <p>95% filled with dimethylformamide (DMF). Guaranteed to activate in under 10 seconds at temperatures around 120 °C.</p> <p>Usable with all standard sprinkler heads.</p>
	<p style="text-align: center;">COMING SOON</p> <p>New for Autumn 2012</p> <p>The Bespoke Bulb.</p> <p>This glass bulb is for the more challenging environment and discerning customer. Homogenous blends of standard liquids can be provided to enable a bespoke activation profile (time, temperature) to customer's specification.</p> <p>The bulb will be 100% filled with the liquids using our new filling technology.</p> <p>We can work with you to design the bulb to your needs and requirements.</p>

(Publication Date: 30 June 2011)

South Africa Patent No 2011/00123

(Filed January 2011 (Priority Date), Published July 2012)

Release Member

This invention relates to a release member for a sprinkler for a fixed fire extinguisher installation.

5 A known release member, which consists of a small glass vessel filled with a liquid, which holds a valve plate or disc of the sprinkler in a closed position. The valve is held in a frame with the release member held vertically, the frame having an opening closed by the valve.

10 Such sprinklers have been known for many decades.

In the event of fire, the glass wall of the vessel is heated by the fire, which wall in its turn heats the liquid. Because of the absorption of heat, the liquid expands and thereby exerts from inside an exploding or bursting
15 pressure on the glass vessel.

The glass vessel has to have a certain wall thickness, in order thereby to withstand the mechanical pressure which is normally necessary for sealing the sprinkler. The thicker the glass wall of the release member, then
20 increasingly longer is the time period which is necessary for heating the liquid therein to the explosive pressure temperature. In order to shorten this time, the wall thickness of the glass vessel has generally been made increasingly thinner but it is not possible for the glass wall to be made
25 too thin, for strength reasons.

According to the present invention, there is provided a release member for a sprinkler for a fixed fire extinguisher installation, the release member consisting of a glass vessel filled with a liquid for bursting the vessel upon heating thereof, the release member being intended normally to close
30 the sprinkler, wherein a liquid displacement member is arranged inside the glass vessel in the liquid, which displacement member consists of a material with a heat-absorption capacity which is smaller than the heat-absorption capacity of the liquid.

35 For a better understanding of the invention and to show how the same may be carried into effect, reference will now be made, by way of example, to the

accompanying drawing, in which the single Figure is a diagrammatic sectional side view of a release member for a sprinkler of the type discussed above for a fixed fire extinguisher installation.

5 The drawing shows a release or sprinkler initiating member 1 which consists of a small closed glass vessel 2 having a certain wall thickness 3. A liquid displacement member 6 is arranged within the glass vessel 2, which member 6 consists of a material having a heat-absorption capacity which is smaller than the heat-absorption capacity of a liquid 5 also in the vessel
10 2. The displacement member 6 can, for example, consist of a synthetic plastics material such as polytetrafluoroethylene (sold as Teflon(RTM)). The displacement member 6 floats freely inside the vessel 2 in the liquid 5. After introducing the liquid 5 and fitting the displacement member 6, an end 4 of the vessel 2 is sealed, thereby trapping the usual air bubble
15 indicated at 7.

The ratio between the volume of the liquid 5 and the volume of the liquid displacement member 6 can be 1:1 to 1:5 and is preferably 1:3 whereas (although not shown) the air bubble 7 occupies the same volume as the
20 liquid 5.

With this construction, the volume of the liquid 5 is substantially reduced as compared with the prior art, with unchanged mechanical strength of the small glass vessel 2. The smaller quantity of liquid is therefore more
25 quickly able to assume the temperature which is necessary for the bursting of the glass vessel 2. Consequently, in the event of a fire, a sprinkler incorporating a release or initiating member 1 constructed according to the invention is opened more quickly than the known sprinklers without displacement members, as quick as 10 seconds at 70 °C.

30 The glass vessels 2 will be used with sprinkler head systems as disclosed above.

[CLAIMS OMITTED]

