# PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

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# PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

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| Date of mailing *(day/month/year)* | 12 AUG 2020 |
| Applicant's or agent's file reference<br>78166.00116 | **FOR FURTHER ACTION**<br>See paragraph 2 below |

| International application No. | International filing date *(day/month/year)* | Priority date *(day/month/year)* |
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International Patent Classification (IPC) or both national classification and IPC

IPC - B01F 3/04; B05B 17/06; F21S 10/04 (2020.01)

CPC - B01F 3/04; B05B 17/06; F21S 10/04; B01F 3/0407; B05B 17/0684

Applicant ANGELOTTI, PHILIP

1. This opinion contains indications relating to the following items:

- [x] Box No. I Basis of the opinion
- [ ] Box No. II Priority
- [ ] Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- [ ] Box No. IV Lack of unity of invention
- [x] Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement
- [ ] Box No. VI Certain documents cited
- [ ] Box No. VII Certain defects in the international application
- [ ] Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

| Name and mailing address of the ISA/US | Date of completion of this opinion | Authorized officer |
|---|---|---|
| Mail Stop PCT, Attn: ISA/US<br>Commissioner for Patents<br>P.O. Box 1450, Alexandria, Virginia 22313-1450<br>Facsimile No. 571-273-8300 | 21 July 2020 | Lee Young<br>PCT Help Desk<br>Telephone No. 571-272-4300 |

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**Box No. I Basis of this opinion**

1. With regard to the **language**, this opinion has been established on the basis of:

   ☒ the international application in the language in which it was filed.

   ☐ a translation of the international application into _____ which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1(b)).

2. ☐ This opinion has been established taking into account the **rectification of an obvious mistake** authorized by or notified to this Authority under Rule 91 (Rule 43*bis*.1(b)).

3. ☐ With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, this opinion has been established on the basis of a sequence listing:

   a. ☐ forming part of the international application as filed:

      ☐ in the form of an Annex C/ST.25 text file.

      ☐ on paper or in the form of an image file.

   b. ☐ furnished together with the international application under PCT Rule 13*ter*.1(a) for the purposes of international search only in the form of an Annex C/ST.25 text file.

   c. ☐ furnished subsequent to the international filing date for the purposes of international search only:

      ☐ in the form of an Annex C/ST.25 text file (Rule 13*ter*.1(a)).

      ☐ on paper or in the form of an image file (Rule 13*ter*.1(b) and Administrative Instructions, Section 713).

4. ☐ In addition, in the case that more than one version or copy of a sequence listing has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that forming part of the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

5. Additional comments:

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**Box No. V** **Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step and industrial applicability; citations and explanations supporting such statement**

1. Statement

| | | | |
|---|---|---|---|
| Novelty (N) | Claims | 9, 16, 17, 24, 32, 33, 36 | YES |
| | Claims | 1-8, 10-15, 18-23, 25-31, 34, 35 | NO |
| Inventive step (IS) | Claims | NONE | YES |
| | Claims | 1-36 | NO |
| Industrial applicability (IA) | Claims | 1-36 | YES |
| | Claims | NONE | NO |

2. Citations and explanations:
Claims 1-8, 10-15, 18-23, 25-31, 34 and 35 lack Novelty under PCT Article 33(2) as being anticipated by US 2019/0003670 A1 (Angelotti).

Regarding claim 1, Angelotti discloses a device to produce an artificial flame (para [0002]- This disclosure is generally directed to the creation of an imitation flame), comprising: (i) a liquid (para [0004]- an apparatus having a transducer configured to transduce and modulate a liquid); (ii) a transducer in contact with the liquid (para [0006]- The liquid from a liquid reservoir within the housing may be in contact with the transducer); (iii) one or more mist outlets disposed above the liquid and configured to channel mist produced by the transducer (para [0036]- allow the aerosol 12 to rise through the transducer opening 32; para [0051]- The cover nozzle 14 may be of various shapes to channel and shape the vaporized mist generated from the resonator 106 as it exits the housing 202); and (iv) a light source disposed to light the mist as the mist exits the one or more mist outlets (para [0036]- At least one light source 34, which may produce a colored light or be a colored light source, is configured to illuminate the aerosol 12 to create the appearance of a flame. The light source 34 may be a light emitting diode (LED) source).

Regarding claim 2, Angelotti discloses the device of claim I. Angelotti discloses, wherein the light source is a LED light source (para [0036] - At least one light source 34, which may produce a colored light or be a colored light source, is configured to illuminate the aerosol 12 to create the appearance of a flame. The light source 34 may be a light emitting diode (LED) source).

Regarding claim 3, Angelotti discloses the device of claim 2. Angelotti discloses, further comprising an artificial wick disposed within the one or more mist outlets that further comprises the LED light source (para [0036]- The candle artificial wick 11 may have different shapes i.e. helical, tiered, and include intertwined or braided fiber optic cables of varying colors that may travel along the cables, or LED lights/tubes).

Regarding claim 4, Angelotti discloses the device of claim I. Angelotti discloses, further comprising an artificial wick that comprises the light source, wherein the light source is a fiber optic light source (para [0036]- The candle artificial wick 11 may have different shapes i.e. helical, tiered, and include intertwined or braided fiber optic cables of varying colors that may travel along the cables, or LED lights/tubes).

Regarding claim 5, Angelotti discloses the device of claim I. Angelotti discloses, further comprising an artificial wick that comprises the light source, wherein the light source comprises a plurality of fiber optic light sources (para [0036]- The candle artificial wick 11 may have different shapes i.e. helical, tiered, and include intertwined or braided fiber optic cables of varying colors that may travel along the cables, or LED lights/tubes).

Regarding claim 6, Angelotti discloses the device of claim I. Angelotti discloses, further comprising an artificial wick that comprises the light source, wherein the light source is a light tube (para [0036]- The candle artificial wick 11 may have different shapes i.e. helical, tiered, and include intertwined or braided fiber optic cables of varying colors that may travel along the cables, or LED lights/tubes).

Regarding claim 7, Angelotti discloses the device of claim I. Angelotti discloses, wherein the light source comprises a plurality of light sources (para [0049]- FIGS. 15 and 16 show embodiments of helical and tiered artificial wicks, and include intertwined or braided light sources).

Regarding claim 8, Angelotti discloses the device of claim I. Angelotti discloses, further comprising an air moving mechanism within the device that shapes the mist (para [0051]- The cover nozzle 14 may be of various shapes to channel and shape the vaporized mist generated from the resonator 106 as it exits the housing 202).

Regarding claim 10, Angelotti discloses the device of claim I. Anglotti discloses, wherein the mist outlet comprises a shaping nozzle (para [0035]- The mist directing/shaping nozzle 14, shown as a cone, is configured to shape the aerosol vapor 12).

Regarding claim 11, Angelotti discloses the device of claim 10. Angelotti discloses, wherein the shaping nozzle is cone shaped (para [0035]- The mist directing/shaping nozzle 14, shown as a cone, is configured to shape the aerosol vapor 12).

Regarding claim 12, Angelotti discloses the device of claim I. Angelotti discloses, further comprising a standing wave tube comprising the one or more mist outlets (para [0055]- Mist 114 may enter an inlet 502 to enclosure 501 of the standing wave tube and a sound wave generator 506).

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**Supplemental Box**

In case **the space in any of the preceding boxes is not sufficient.**
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Regarding claim 13, Angelotti discloses an artificial flame apparatus (para [0002]- This disclosure is generally directed to the creation of an imitation flame), comprising: (i) a housing (para [0005]- an exemplary embodiment, the mist exits a housing around an artificial wick); (ii) a liquid reservoir within the housing that contains a liquid (para [0006]- The liquid from a liquid reservoir within the housing may be in contact with the transducer surface directly); (iii) a transducer having a transducer surface within the housing (para [0006]- The liquid from a liquid reservoir within the housing may be in contact with the transducer surface directly); wherein said liquid from the liquid reservoir contacts the transducer surface to produce a mist (para [0006]- The mist of an exemplary artificial flame apparatus is produced by a transducer, such as an ultrasonic transducer having a transducer surface that produces vibrations... The liquid from a liquid reservoir within the housing may be in contact with the transducer surface directly); (iv) a controller comprising a drive signal in operable communication with the transducer (para [0008]- A controller may control and vary the functions of the artificial flame apparatus including the power, frequency, waveform and/or rate of mist exiting the housing through one or more housing openings, and may control the transducer, the rate of liquid delivery to the transducer, the color or intensity of the light, the oscillator and the like; para [0018]- FIG. 6 illustrates a representative waveform diagram(s) depicting a drive signal from the control circuit to modulate the resonator); (v) one or more mist outlets disposed above the liquid and configured to channel mist produced by the transducer (para [0036]- allow the aerosol 12 to rise through the transducer opening 32; para [0051]- The cover nozzle 14 may be of various shapes to channel and shape the vaporized mist generated from the resonator 106 as it exits the housing 202); and (vi) a light source to illuminate said mist as the mist exits the housing, wherein the illuminated mist appears as an artificial flame (para [0005]- The light emitted by the light source may be a colored light and may change color and/or intensity to produce a more realistic artificial flame).

Regarding claim 14, Angelotti discloses the artificial flame apparatus of claim 13. Angelotti discloses, wherein the light source is a LED light source (para [0036]- At least one light source 34, which may produce a colored light or be a colored light source, is configured to illuminate the aerosol 12 to create the appearance of a flame. The light source 34 may be a light emitting diode (LED) source).

Regarding claim 15, Angelotti discloses the artificial flame apparatus of claim 13. Angelotti discloses, wherein the housing comprises an air moving mechanism within the device that shapes the mist (para [0055]- An oscillator 384 may create sound waves, vibrations, or pressure gradients that force the mist 114 from the housing 202 at a variable rate).

Regarding claim 18, Angelotti discloses the artificial flame apparatus of claim 13. Angelotti discloses, further comprising a shaping nozzle (para [0035]- The mist directing/shaping nozzle 14, shown as a cone, is configured to shape the aerosol vapor 12), wherein the shaping nozzle comprises an opening, wherein the opening comprises one or more shaping apertures configured to shape the mist (Fig. 19, exit of element 512; para [0057]- A shaping nozzle 512 may be configured to shape the mist as it exits the housing to form a flame shaped vapor plume 218).

Regarding claim 19, Angelotti discloses the artificial flame apparatus of claim 13. Angelotti discloses, further comprising a standing wave tube comprising the one or more mist outlets in a fireplace configuration (para [0007]- A standing wave tube may be utilized in an artificial flame apparatus having a plurality of individual artificial wicks and flames, such as an artificial fire table or pit, log or fireplace configuration).

Regarding claim 20, Angelotti discloses a method of producing an artificial flame (para [0002]- This disclosure is generally directed to the creation of an imitation flame), comprising the steps of: (i) contacting a liquid with a transducer to produce a mist (para [0006]- The mist of an exemplary artificial flame apparatus is produced by a transducer, such as an ultrasonic transducer having a transducer surface that produces vibrations); (ii) passing the mist through a mist outlet (para [0036]- allow the aerosol 12 to rise through the transducer opening 32; para [0051]- The cover nozzle 14 may be of various shapes to channel and shape the vaporized mist generated from the resonator 106 as it exits the housing 202); and (iii) illuminating the mist with a LED light source (para [0036]- At least one light source 34, which may produce a colored light or be a colored light source, is configured to illuminate the aerosol 12 to create the appearance of a flame. The light source 34 may be a light emitting diode (LED) source).

Regarding claim 21, Angelotti discloses the method of producing an artificial flame of claim 20. Angelotti further discloses, further comprising passing the mist through a shaping nozzle, wherein the mist is shaped as it passes through the shaping nozzle (para [0035]- The mist directing/shaping nozzle 14, shown as a cone, is configured to shape the aerosol vapor 12).

Regarding claim 22, Angelotti discloses the method of producing an artificial flame of claim 21. Angelotti discloses, wherein the mist is shaped as it passes through the shaping nozzle (para [0035]- The mist directing/shaping nozzle 14, shown as a cone, is configured to shape the aerosol vapor 12) through modulating the air pressure in the shaping nozzle (para [0007]- An exemplary oscillator device is a sonic device that produces sound waves and associated sound or acoustic pressure that pushes the mist from the housing).

Regarding claim 23, Angelotti discloses the method of producing an artificial flame of claim 21. Angelotti discloses, wherein the mist is shaped as it passes through the shaping nozzle through modulating the speed of the mist as it passes through the shaping nozzle (para [0007]- An oscillator device may be utilized to change the rate of flow of the mist from the housing. An exemplary oscillator comprises an air-moving device, such as a fan, that forces the mist from the housing or mist reservoir; para [0057]- A shaping nozzle 512 may be configured to shape the mist as it exits the housing to form a flame shaped vapor plume 218).

Regarding 25, Angelotti discloses the method of producing an artificial flame of claim 21. Angelotti discloses, wherein the shaping nozzle is cone shaped (para [0038]- A cone shaped nozzle may be preferred as it may shape the exiting mist to resemble a flame), wherein shaping the mist comprises passing the mist through the cone shaped shaping nozzle (para [0038]- Referring to FIG. 5, the nozzle 14, or manifold, may have other shapes/sizes, such as shorter cone nozzle 50, or taller cone nozzle 52, or be configured as a spiral nozzle 54. The various nozzles 14 help shape the aerosol, and also control the height and variations in the height of the aerosol 12).

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**Supplemental Box**

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Regarding claim 26, Angelotti discloses the method of producing an artificial flame of claim 21. Angelotti discloses, wherein the shaping nozzle comprises one or more apertures (see Fig. 19, top portion of element 512), wherein shaping the mist comprises passing the mist through the one or more apertures (para [0057]- A shaping nozzle 512 may be configured to shape the mist as it exits the housing to form a flame shaped vapor plume 218).

Regarding claim 27, Angelotti discloses the method of producing an artificial flame of claim 21. Angelotti discloses, wherein an air moving device produces a flow of air that passes the mist through the shaping nozzle (para [0052]- An air-moving device 388, such as a fan, may produce a flow of air, as indicated by the bold arrows that forces the mist 114 from the housing... A shaping nozzle 512 may be configured to shape the mist as it exits the housing to form a flame shaped vapor plume 218).

Regarding claim 28, Angelotti discloses the method of producing an artificial flame of claim 21. Angelotti discloses, wherein the shaping nozzle has variable diameters throughout its length, wherein the mist is shaped by passing through a portion of the shaping nozzle in which its diameter is the smaller relative to other portions of the shaping nozzle (see Fig. 18, top and bottom portion of element 14 diameters; para [0052]- A shaping nozzle 512..to shape the mist as it exits the housing to form a flame shaped vapor plume 218).

Regarding claim 29, Angelotti discloses an artificial flame apparatus (para [0002]- This disclosure is generally directed to the creation of an imitation flame), comprising: (i) a housing (para [0006]- The liquid from a liquid reservoir within the housing may be in contact with the transducer); (ii) a liquid reservoir within the housing that contains a liquid (para [0006]- The liquid from a liquid reservoir within the housing may be in contact with the transducer); (iii) aromatic oils within the liquid (para [0009]- Liquid within the liquid reservoir may comprise water and other agents such as aromatic agents to produce a mist having a scent); (iii) a transducer disposed within the liquid (para [0053]- A second representative transducer 106 is located within the liquid reservoir 20); (iv) a controller comprising a drive signal in operable communication with the transducer (para [0008]- A controller may control and vary the functions of the artificial flame apparatus including the power, frequency, waveform and/or rate of mist exiting the housing through one or more housing openings, and may control the transducer, the rate of liquid delivery to the transducer, the color or intensity of the light, the oscillator and the like; para [0018]- FIG. 6 illustrates a representative waveform diagram(s) depicting a drive signal from the control circuit to modulate the resonator); (v) one or more mist outlets disposed above the liquid and configured to channel mist produced by the transducer (para [0036]- allow the aerosol 12 to rise through the transducer opening 32; para [0051]- The cover nozzle 14 may be of various shapes to channel and shape the vaporized mist generated from the resonator 106 as it exits the housing 202); and (vi) a light source to illuminate said mist as the mist exits the housing (para [0036]- At least one light source 34, which may produce a colored light or be a colored light source, is configured to illuminate the aerosol 12 to create the appearance of a flame. The light source 34 may be a light emitting diode (LED) source), wherein the illuminated mist appears as an artificial flame (para [0036]- light source 34...is configured to illuminate the aerosol 12 to create the appearance of a flame. The light source 34 may be a light emitting diode (LED) source).

Regarding claim 30, Angelotti discloses the artificial flame apparatus of claim 29. Angelotti discloses, further comprising an air moving mechanism (para [0055]- An oscillator 384 may create sound waves, vibrations, or pressure gradients that force the mist 114 from the housing 202 at a variable rate).

Regarding claim 31, Angelotti discloses the artificial flame apparatus of claim 30. Angelotti discloses, wherein the air moving mechanism is within the housing (see location Fig. 18, element 384; para [0055]- An oscillator 384 may create sound waves, vibrations, or pressure gradients that force the mist 114 from the housing 202 at a variable rate).

Regarding claim 34, Angelotti discloses a device to produce an artificial flame (para [0002]- This disclosure is generally directed to the creation of an imitation flame), comprising: (i) a liquid (para [0006]- The liquid from a liquid reservoir within the housing may be in contact with the transducer); (ii) a transducer in contact with a liquid (para [0006]- The liquid from a liquid reservoir within the housing may be in contact with the transducer); (iii) one or more mist outlets disposed above the liquid and configured to channel mist produced by the transducer (para [0036]- allow the aerosol 12 to rise through the transducer opening 32; para [0051]- The cover nozzle 14 may be of various shapes to channel and shape the vaporized mist generated from the resonator 106 as it exits the housing 202); (iv) a light source disposed to light the mist as the mist exits the device (para [0036]- At least one light source 34, which may produce a colored light or be a colored light source, is configured to illuminate the aerosol 12 to create the appearance of a flame. The light source 34 may be a light emitting diode (LED) source); and (v) an air moving mechanism that shapes the mist (para [0051]- The cover nozzle 14 may be of various shapes to channel and shape the vaporized mist generated from the resonator 106 as it exits the housing 202).

Regarding claim 35, Angelotti discloses the device of claim 34. Angelotti discloses, wherein the air moving mechanism is within the device (see location Fig. 18, element 384; para [0055]- An oscillator 384 may create sound waves, vibrations, or pressure gradients that force the mist 114 from the housing 202 at a variable rate).

Claims 9, 16, 17, 24, 32, 33, and 36 lack an inventive step under PCT Article 33(3) as being obvious over Angelotti in view of US 2019/0128490 A1 to Sterno Home Inc. (hereinafter Sterno).

Regarding claim 9, Angelotti discloses the device of claim 1. Angelotti fails to disclose, further comprising an air moving mechanism external to the device that shapes the mist. Sterno, drawn to flame effect mist devices, discloses, further comprising an air moving mechanism external to the device that shapes the mist (see Fig. 7B, element 108; para [0039]- A fluid-flow adjustment portion may be associated with or included in the first fluid-transferring portion 108. This fluid-flow adjustment portion may adjust a flow of mist-infused fluid through the first fluid-transferring portion 108 (for example, adjust a flow into the inlet of the first fluid-transferring portion 108)). It would have been obvious to one having ordinary skill in the art to combine the external mechanism of Sterno with the device of Angelotti to improve the simulation effect (see Sterno, para [0057]- By having a second flow, for example an outer flow circumscribing the mist-infused fluid flow, it may be possible to reduce the speed at which the mist-infused fluid flow travels, thereby allowing the height of the mist-infused fluid in the exterior region to promote an effective illusion of a flame). --see next page

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Regarding claim 16, Angelotti discloses the artificial flame apparatus of claim 13. Angelotti fails to disclose, further comprising an air moving mechanism external to the device that shapes the mist. Sterno, drawn to flame effect mist devices, discloses, further comprising an air moving mechanism external to the device that shapes the mist (see Fig. 7B, element 108; para [0039]- A fluid-flow adjustment portion may be associated with or included in the first fluid-transferring portion 108. This fluid-flow adjustment portion may adjust a flow of mist-infused fluid through the first fluid-transferring portion 108 (for example, adjust a flow into the inlet of the first fluid-transferring portion 108)). It would have been obvious to one having ordinary skill in the art to combine the external mechanism of Sterno with the apparatus of Angelotti to improve the simulation effect (see Sterno, para [0057]- By having a second flow, for example an outer flow circumscribing the mist-infused fluid flow, it may be possible to reduce the speed at which the mist-infused fluid flow travels, thereby allowing the height of the mist-infused fluid in the exterior region to promote an effective illusion of a flame).

Regarding claim 17, Angelotti discloses the artificial flame apparatus of claim 13. Angelotti fails to disclose, further comprising air channels configured to shape the mist into a plume as it exits the one or more mist outlets. Sterno, drawn to flame effect mist devices, discloses, further comprising air channels configured to shape the mist into a plume as it exits the one or more mist outlets (see shape of flame in Fig. 7B; para [0038]- The first chamber 114 may direct or channel the mist-infused fluid to the first fluid-transferring portion 108 (for example, a nozzle); para [0055]- FIG. 7B illustrates a mist-infused fluid flow enveloped by another fluid flow being emitted from flameless candle 100, according to certain inventive techniques; para [0057]- it may be possible to reduce the speed at which the mist-infused fluid flow travels, thereby allowing the height of the mist-infused fluid in the exterior region to promote an effective illusion of a flame. For example, without the second flow, the mist-infused fluid flow may need to be relatively fast, thereby leading to a misted region that is too high (e.g., higher than a typical candle flame)). It would have been obvious to one having ordinary skill in the art to combine the channels of Sterno with the apparatus of Angelotti to improve the simulation effect (see Sterno, para [0057]- By having a second flow, for example an outer flow circumscribing the mist-infused fluid flow, it may be possible to reduce the speed at which the mist-infused fluid flow travels, thereby allowing the height of the mist-infused fluid in the exterior region to promote an effective illusion of a flame).

Regarding claim 24, Angelotti discloses the method of producing an artificial flame of claim 21. Angelotti fails to disclose, wherein shaping the mist comprises using directed airflow after the mist passes through the mist outlet. Sterno, drawn to flame effect mist devices, discloses, wherein shaping the mist comprises using directed airflow (para [0038]- The first chamber 114 may direct or channel the mist-infused fluid to the first fluid-transferring portion 108 (for example, a nozzle)) after the mist passes through the mist outlet (para [0046]- one or more vortex-shaping portions that may influence a flow pattern of the fluid emitted at the outlet of the second fluid-transferring portion 110. The vortex-shaping portions may impart a vortex motion to the fluid such that a vortex is shaped when the fluid is emitted into the exterior region). It would have been obvious to one having ordinary skill in the art to combine the directed airflow of Sterno with the method of Angelotti to improve the simulation effect (see Sterno, para [0057]- By having a second flow, for example an outer flow circumscribing the mist-infused fluid flow, it may be possible to reduce the speed at which the mist-infused fluid flow travels, thereby allowing the height of the mist-infused fluid in the exterior region to promote an effective illusion of a flame).

Regarding claim 32, Angelotti discloses the artificial flame apparatus of claim 30. Angelotti fails to disclose, wherein the air moving mechanism is external to the housing. Sterno, drawn to flame effect mist devices, discloses, wherein the air moving mechanism is external to the housing (see Fig. 4A and 7B, element 108; para [0039]- A fluid-flow adjustment portion may be associated with or included in the first fluid-transferring portion 108. This fluid-flow adjustment portion may adjust a flow of mist-infused fluid through the first fluid-transferring portion 108 (for example, adjust a flow into the inlet of the first fluid-transferring portion 108)). It would have been obvious to one having ordinary skill in the art to combine the external mechanism of Sterno with the apparatus of Angelotti to improve the simulation effect (see Sterno, para [0057]- By having a second flow, for example an outer flow circumscribing the mist-infused fluid flow, it may be possible to reduce the speed at which the mist-infused fluid flow travels, thereby allowing the height of the mist-infused fluid in the exterior region to promote an effective illusion of a flame).

Regarding claim 33, Angelotti discloses the artificial flame apparatus of claim 29. Angelotti fails to disclose, further comprising air channels configured to shape the mist into a plume as it exits the one or more mist outlets. Sterno, drawn to flame effect mist devices, discloses, further comprising air channels (para [0038]- The first chamber 114 may direct or channel the mist-infused fluid to the first fluid-transferring portion 108 (for example, a nozzle)) configured to shape the mist into a plume as it exits the one or more mist outlets (see shape of flame in Fig. 7B; para [0055]- FIG. 7B illustrates a mist-infused fluid flow enveloped by another fluid flow being emitted from flameless candle 100, according to certain inventive techniques; para [0057]- it may be possible to reduce the speed at which the mist-infused fluid flow travels, thereby allowing the height of the mist-infused fluid in the exterior region to promote an effective illusion of a flame. For example, without the second flow, the mist-infused fluid flow may need to be relatively fast, thereby leading to a misted region that is too high (e.g., higher than a typical candle flame)). It would have been obvious to one having ordinary skill in the art to combine the channels of Sterno with the apparatus of Angelotti to improve the simulation effect (see Sterno, para [0057]- By having a second flow, for example an outer flow circumscribing the mist-infused fluid flow, it may be possible to reduce the speed at which the mist-infused fluid flow travels, thereby allowing the height of the mist-infused fluid in the exterior region to promote an effective illusion of a flame).

Regarding claim 36, Angelotti discloses the device of claim 34. Angelotti fails to disclose, wherein the air moving mechanism is external to the device. Sterno, drawn to flame effect mist devices, discloses, wherein the air moving mechanism is external to the device (see Fig. 7B, element 108; para [0039]- A fluid-flow adjustment portion may be associated with or included in the first fluid-transferring portion 108. This fluid-flow adjustment portion may adjust a flow of mist-infused fluid through the first fluid-transferring portion 108 (for example, adjust a flow into the inlet of the first fluid-transferring portion 108)). It would have been obvious to one having ordinary skill in the art to combine the external mechanism of Sterno with the device of Angelotti to improve the simulation effect (see Sterno, para [0057]- By having a second flow, for example an outer flow circumscribing the mist-infused fluid flow, it may be possible to reduce the speed at which the mist-infused fluid flow travels, thereby allowing the height of the mist-infused fluid in the exterior region to promote an effective illusion of a flame).

Claims 1-20 have industrial applicability as defined by PCT Article 33(4) because the subject matter can be made or used by industry.