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Stovetop fire suppression system and method

Abstract

A stovetop fire suppression system for selectively releasing a fire suppressant powder onto a stovetop first or second burner. The stovetop fire suppression system includes a base member and a chute member secured to the base member at opposed first and second ends of the base member. The chute member is movable between a storage position and a dispensing position. The suppression system further includes a first actuating member disposed at the base section first end and a second actuating member disposed at the base section second end. In response to actuation of the first actuating member, the chute member is movable the dispensing position to release the fire suppressant powder onto the first burner, and in response to actuation of the second actuating member, the chute member moves to the dispensing position to release the fire suppressant powder onto the second burner.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATIONS (1) This application claims the benefit of and priority to U.S. Prov. Pat. App. No. 62/992,716 filed on Mar. 20, 2020, and entitled “Stovetop Fire Suppression System and Method,” and U.S. Prov. Pat. App. No. 63/062,920 filed on Aug. 7, 2020, and entitled “Stovetop Fire Suppression System and Method,” the disclosures of which are hereby incorporated by reference in their entirety.

TECHNICAL FIELD

(1) The present disclosure relates to a system and method for suppressing and extinguishing fires,

and in particular, to an apparatus and method for mountable to a wall adjacent or near a stovetop cooking surface for suppressing and extinguishing kitchen stovetop fires.

BACKGROUND

(2) In a kitchen, dangers are posed by fires originating from overheating of grease or oils during cooking. For example, a pan of grease on a stove burner can become so hot that it ignites. Not only does it pose a risk to individuals working in the area around the stove, but oftentimes, if not extinguished quickly, damage to the stove and the surrounding building structure can occur. This is especially true during circumstances where the stove is unattended. In this situation, considerable damage and devastation can occur, including the surrounding building structure becoming engulfed in flames.

(3) In order to reduce the risk of household fires, fire suppression devices have been devised to automatically release a powder to suppress a stovetop fire, at least in part by smothering flames. Such a device is effective to put out a stovetop flame. Many designs have been proposed and used for extinguishing stovetop fires. However, such solutions are oftentimes difficult to install, are large, bulky, obstruct or otherwise block access to cooking surfaces, and are unable to store and/or precisely direct a sufficient amount of fire suppressant powder to extinguish a stovetop fire. It would be advantageous in the marketplace to address these and other deficiencies associated with current stovetop fire suppression devices

SUMMARY

(4) According to a first aspect, there is provided stovetop fire suppression system for selectively releasing a fire suppressant powder onto a stovetop first or second burner. The stovetop fire suppression system includes a base member and a chute member secured to the base member at opposed first and second ends of the base member. The chute member is movable between a storage position, whereby the chute member and the base member form a storage area for storing the fire suppressant powder therein, and a dispensing position, whereby the chute member is positioned to release the fire suppressant powder from the storage area. The system further includes a first actuation member disposed at the base section first end and a second actuation member disposed at the base section second end. In response to actuation of the first actuation member, the chute member is movable the dispensing position to release the fire suppressant powder onto the first burner, and in response to actuation of the second actuation member, the chute member is moveable to the dispensing position to release the fire suppressant powder onto the second burner.

(5) According to second aspect, there is provided a stovetop fire suppression system for selectively releasing a fire suppressant powder onto a stovetop first or second burner. The system includes base member having a top wall, a front wall, a rear wall, and a pair of sidewalls extending between the front and rear walls. The system also includes a chute member secured to the base member, the base member and the chute member forming a storage area for storing the fire suppressant powder. A first hinge is rotatably secured to the base member adjacent the base member front wall and a second hinge rotatably secured to the base member adjacent the base member rear wall. The chute member is secured to the first hinge and the second hinge at each respective end of the chute member; The system further includes a first actuation member disposed adjacent the base section front wall and a second actuation member disposed adjacent the base section rear wall such that in response to actuation of the first actuation member, the chute member moves to the dispensing position to release the fire suppressant powder onto the first burner, and in response to actuation of the second actuation member, the chute member moves to the dispensing position to release the fire suppressant powder onto the second burner.

(6) According to third aspect, there is provided a method for suppressing a stovetop fire. The method includes providing a stovetop fire suppression system, the fire suppression system including a fire suppressant powder disposed within a storage area. The method further includes positioning the stovetop fire suppression system above a first burner and a second burner and securing stovetop fire suppression system to a support surface above the first burner and the second

burner. The stovetop fire suppression system includes a first actuation member on a first end of the storage area and a second actuation member on an opposed second end of the storage area, the fire suppression system selectively releases the fire suppressant powder onto the first burner or the second burner in response to actuation of the first actuation member or the second actuation member, respectively.

Description

DESCRIPTION OF THE FIGURES

- (1) The accompanying drawings facilitate an understanding of the various embodiments.
- (2) FIG. 1 is an illustration of a stovetop in which a stovetop fire suppression system is employed to advantage.
- (3) FIG. 2 is a front perspective view of the of stovetop fire suppression system FIG. 1 in a closed position.
- (4) FIG. 3 is a rear perspective view of the stovetop fire suppression system of FIGS. 1 and 2 in a dispensing position.
- (5) FIG. 4 is a front perspective view of the stovetop fire suppression system of FIGS. 1-3 in the dispensing position illustrating an extension member.
- (6) FIGS. 4a and 4b are illustrations of portion of the track and stop system for the extension member.
- (7) FIG. 5 is a rear perspective view of the stovetop fire suppression system of FIGS. 1-4 illustrating a fire suppression powder stored in a storage area.
- (8) FIG. 6 is a bottom interior view of a base member of the fire suppression system of FIGS. 1-5.
- (9) FIG. 7 is a section view of the fire suppression system taken along the line 7-7 of FIG. 5.
- (10) FIGS. 8-11 are illustrations of a section view of the fire suppression system of FIGS. 1-7 in the storage and dispensing positions.
- (11) FIGS. 12-14a are illustrations of the rotation stop and retaining system of the fire suppression system of FIGS. 1-11.
- (12) FIG. 15 is an illustration of the fire suppression system of FIGS. 1-14 having an end cover.
- (13) FIG. 16 is an illustration of another embodiment of a fire suppression system.
- (14) FIG. 17 illustrates a side view of the fire suppression system of FIG. 16.
- (15) FIG. 18 illustrates a fire suppression system secured to the underside of a microwave.
- (16) FIGS. 19 and 20 illustrate a fire suppression system secured to a wall via a wall support system.
- (17) FIG. 21 illustrates a bottom perspective view of the fire suppression system and the wall support system of FIGS. 19 and 20.
- (18) FIG. 22 illustrates top perspective view of the fire suppression system and the wall support system of FIGS. 19-21.
- (19) FIG. 23 illustrates an detailed exploded view of the fire suppression system and the wall support system of FIGS. 19-22.

DETAILED DESCRIPTION

- (20) FIG. 1 is an illustration of a stovetop 10 in which a pair of fire suppression devices 12 are secured to the bottom side of an overhead support structure 16, such as, for example, a microwave or vent hood. As discussed in greater detail below, each fire suppression device 12 incorporates and/or otherwise employs a dual pivot/hinge system to enable each of the devices 12 to selectively open toward a front burner 15 or a rear burner 17 on a stovetop cooking surface 18 in response to detecting a fire on the front burner 15 or the rear burner 17.
- (21) Referring specifically to FIGS. 2 and 3, an exemplary embodiment of the fire suppression device 12 is configured in a storage position (FIG. 2) and in a dispensing position (FIG. 3). In

FIGS. 2 and 3, the fire suppression device 12 includes a base member 20 and a chute member 22 rotatably secured to the base member 20 at first and second ends 24 and 26. In particular, the chute member 22 is rotatably secured to the base member 20 at the first end 24 so as to be movable between the storage position, whereby the fire suppressant powder 36 (FIG. 5) is stored within the suppression device 12, and the dispensing position, whereby the chute member 22 pivots downward toward the stovetop cooking surface 18 to dispense the fire suppression powder 36 onto the stovetop cooking surface 18.

(22) According to embodiments disclosed herein, the fire suppression device 12 is releasably mounted to the underside of the overhead support structure 16 in a position such that (i) as the chute member 22 pivots about first end 24, the chute member 22 is aligned to dispense the fire suppression powder 36 directly onto the rear burner 17 and (ii) as the chute member 22 pivots about the second end 26, the chute member 22 is aligned to dispense the fire suppression powder 36 onto the front burner 15.

(23) In the embodiment illustrated in FIGS. 1-4, the fire suppression device 12 is removably attached to the overhead support structure 16 via a plurality of magnets 32. The fire suppression device 12 includes a plurality of rotatable arms 34, each arm supporting at least one magnet 32 to facilitate attachment to the overhead support structure 16. Referring specifically to FIG. 2-4, the rotatable arms 34 are secured to the base member 20 via screws 37, which allows the rotational movement of the arm 34 in order to appropriately position the magnets 32 for attachment to the underside of the overhead support structure 16. The rotational movement provides flexibility to avoid non-metallic obstructions, such as, for example, lights and filters, that are often found on the underside of microwave ovens and vent hoods. It should be understood that other methods of attachment may be used, such as, for example, clips, in order to rotationally or non-rotationally secure the arms 34 to the base 20. The magnets 32 are strong enough to securely attach the fire suppression device 12 to the overhead support structure 16 without the need for additional or complicated mounting arrangements.

(24) According to some embodiments, the clips can be integrally molded or otherwise a single unitary piece with the base member 20 so as to enable a secure connection between the rotatable arms 34 and the base member 20. According to some embodiments, the clips 37 comprise a plurality of spaced apart tabs that are sized to frictionally engage an inner wall of a corresponding opening 33 on the arm member 34. It should be understood, however, that any other type of method of securing the rotatable arms 34 to the base member 20 or any other portion of the fire suppression device 12 is permissible. Furthermore, while four rotatable arms 34 are illustrated, it should be understood that a greater or fewer number of rotatable arms 34 may be utilized and a greater number of magnets 32 may be secured to each rotatable arm 34. According to other embodiments, in addition to or in lieu of having rotatable arms 34, the arms can be designed with a slot to permit sliding movement of the arm 34 relative to the base member 20. Thus, for example, the arm 34 may have a slot sized to receive a corresponding pin extending from the base member 20, the pin engaging the slot to permit sliding movement of the arm 34 relative to the base member 20. Additionally, the arms 34, in addition to or in lieu of being rotatable, may be configured as adjustable in length to accommodate the obstructions commonly occurring on the underside of microwaves and vent hoods and other overhead support structures 16.

(25) Referring specifically to FIGS. 3 and 4, the chute member 22 is formed having a bottom wall 50, a pair of sidewalls 50a and 50b and a metering bar 51 extending between the sidewalls 50a and 50b. According to some embodiments, the chute member 22 further includes an extension member 23 extendable from the chute member 22 such that an end 23a of the extension member 23 is positioned to direct fire suppression powder 36 onto the front burner 15. In the embodiment illustrated in FIGS. 3 and 4, the extension member 23 telescopically extends from the chute member 22. Similar to the chute member 22, the extension member 23 is formed having a bottom wall 90 and a pair of sidewalls 90a and 90b forming an extended ramp or pathway from the chute

member **22** to the end **23a** of the extension member **23**. According to some embodiments, the extension member **23** includes a cross support member **90c** extending between the sidewalls **90a** and **90b**. Cross support member **90c** provides additional rigidity to the extension member **23**.

(26) In operation, as the chute member **22** transitions from the stored position downward toward the stovetop cooking surface **18** to the dispensing position, the extension member **23** telescopingly extends to an extended position, as seen for example, in FIG. **4**. Referring to FIGS. **3** and **4**, the extension member **23** moves relative to the chute member **22** along tracks **80**. Each track **80** is formed having a tongue **82** slideably disposed inside a groove **84**. In the embodiment illustrated in FIG. **4**, a tongue **82** extends outward from the sidewall **50a** and **50b**. The extension member **23** includes the groove **84** disposed along the sidewalls **90a** and **90b** sized to receive the respective tongue **82** therein. As seen specifically in FIGS. **4a** and **4b**, the groove **84** of the chute member **22** includes a stop system **99** formed as tab member **100** disposed at the first end **24**, the tab member **100** configured to contact and otherwise engage a corresponding end wall **85** of the groove **84** on the extension member **23** so as to prevent overextension of the extension member **23** in the direction of arrow **106**. In the embodiment illustrated in FIGS. **4a** and **4b**, the chute member **22** includes a tab member **100** on each tongue **82** extending from sidewalls **50a** and **50b**; however, it should be understood that only a single tab member **100** on either sidewall **50a** or **50b** may be utilized. Furthermore, it should be understood the stop system **99** may consist of any other configuration designed or otherwise utilized to resist the unwanted movement of the extension member **23** when the fire suppression device **12** actuates to extinguish a fire on a rear burner **17**.

(27) It should be understood that other methods of extension may be used. For example, the extension member **23** may be pivotably attached to the chute member **22**.

(28) Referring to FIGS. **3**, **5** and **6**, the fire suppression powder **36** is illustrated stored within a storage area **28** that is sized to store a sufficient volume of fire suppression powder **36** to suppress at least one stovetop fire. As illustrated, the base member **20** and the chute member **22**, when the fire suppression device is in the closed position, form the storage area **28** for holding the fire suppression powder **36** therein. In particular, the base member **20** includes a top wall **40** (removed from FIG. **5**, but illustrated in FIGS. **2-4**), a pair of sidewalls **42** and **44**, a front wall **46** and a rear wall **48** extending from the top wall **40** so as to contact and otherwise engage the bottom wall **50** (best illustrated in FIG. **3**) of the chute member **22**. With particular reference to FIG. **3**, the chute bottom wall **50** includes a channel **52** to receive a seal **54** (see FIG. **8**). The channel **52**, and thus the seal **54**, correspond to the shape of the walls **42**, **44**, **46** and **48** of the base member **20** such that when the fire suppression device **12** is in the closed position, the walls **42**, **44**, **46** and **48** sealingly engage the seal **54** in order to contain the fire suppression powder **36** inside the storage area **28**.

(29) Referring now to FIGS. **5-7**, a pair of hinges **60** and **62** are disposed at respective first and second ends **24** and **26** to not only enable movement of the chute member **22** between the stored and discharge positions, but also, as explained in greater detail below, to facilitate the direction of discharge. In FIG. **6**, hinges **60** and **62** extend between sidewalls **42** and **44** of the base member **20**. In some embodiments, each end of the hinge **60** and **62** includes a boss **110** supported within an opening **112** on each sidewall **42** and **44** to enable the rotational movement of the chute member **22**. For example, hinges **60** and **62** are positioned at respective first and second ends **24** and **26** such that in response to an actuation device **120a** detecting a fire on the front burner **15**, the chute rotates about hinge **62** to direct fire suppression powder **36** on the front burner **15**. Likewise, in response an actuation device **120b** detecting a fire on the rear burner **17**, the chute rotates about hinge **60** to direct fire suppression powder **36** onto the rear burner **17**.

(30) Referring now to FIGS. **5-8**, the hinges **60** and **62** support respective actuation devices **120a** and **120b**. Each hinge **60** and **62** retains and otherwise supports the actuation device **120a** and **120b**, which secures the chute member **22** to the base member **20** in the closed position. In operation, actuation devices **120a** and **120b** are used to not only detect a fire condition, but when such condition is detected, the actuation devices **120a** and **120b** position the fire suppression device

12 from the closed position to the discharge position by causing the separation of, as explained in greater detail below, the chute member **22** from the base member **20**.

(31) In the embodiment illustrated in FIGS. **5-8**, each actuation device **120a** and **120b** is formed having a charge cup **122** secured to each hinge **60** and **62** within an actuator support opening **124** (best illustrated in FIG. **6**) and a corresponding charge cap **126** is attached to the each end of the chute member **22** on the bottom wall **50**. The charge cap **126** is designed to be releasably secured to the charge cup **122** to facilitate separation therebetween. According to embodiments disclosed herein, the charge cap **126** threadingly engages the charge cup **122** in order to secure the chute member **22** to the base member **20**. It should be understood, however, that other means of securing the charge cap **126** to the charge cup **122** can be used. For example, the charge cap **126** can be frictionally secured to the charge cup **122**, an adhesive can be used to secure the charge cap **126** to the charge cup **122**, any other method that allows releasable attachment between the parts.

(32) As illustrated in FIGS. **7** and **8**, the charge cap **126** and the charge cup **122** form an interior cavity **128** for storing gun powder therein (not illustrated). A fuse **130** extends from the interior cavity **128** outside to the surrounding area such that when the fire suppression device **12** is disposed over the stovetop cooking surface **18**. If a fire were to occur, the fuse **130** would burn, ultimately igniting the gun powder in the interior cavity **128**, causing the chute member **22** to separate from the base member **20**.

(33) Referring now to FIGS. **8** and **9**, when a fire occurs on the rear burner **17** (FIG. **1**), the flames light the fuse **130** over the rear burner **17**, which ignites the gunpowder disposed in the interior cavity **128**. The ignition of the gun powder creates a separation force **F1** resulting in separation of the chute member **22** from the base member **20** at the second end **26** causing rotation of the chute member **22** about the hinge **60** in the direction of arrow **132**. The front actuation device **120a** remains intact and is retained and otherwise supported by the hinge **60** allowing the chute member **22** to rotate in the direction of arrow **132**. As the chute member **22** is rotated, the fire suppression powder **36** is released and gravitally flows from the storage area **28** and guided toward the fire, and in particular, the rear burner **17**, by the chute member **22**. Flow is restricted by an opening **53** formed by the metering bar **51**, which causes the fire suppression powder **36** to fall onto the fire at a controlled rate.

(34) Likewise, when a fire occurs on the front burner **15**, flames light the fuse **130** on the first end **24**, which ignites the gunpowder in the interior cavity **128**. As illustrated in FIGS. **10** and **11**, the ignition of the gun powder creates a separation force **F2** resulting in separation of the chute member **22** from the base member **20** at the first end **24**, causing rotation of the chute member **22** about the rear hinge **62** in the direction of arrow **134**. As the chute member **22** is rotated away from the base member **20**, the extension member **23** extends outward in the direction of arrow **55** so as to direct the fire suppression powder **36** over the front burner **15**.

(35) A chute push bar **180** extends from the base member **20** and is sized to contact a chute extension **182** that extends from the chute member **22**. In operation, when the actuation member **120a** actuates causing the chute member **22** to rotate in the direction of arrow **134**, the extension **23** extends outward in response to the chute extension **182** contacting the chute push bar **180**. In other embodiments. However, other methods of extension may be used. For example, in other embodiments, a biasing member (not illustrated), such as a spring, may be utilized to exert a force on the extension member **23** to force it in the direction of arrow **55** to the extended position. Thus, in response to the detection of a fire, as the chute member **22** transitions to the dispensing position, the stored energy in the biasing member exerts a force on the extension member **23** to position the extension member **23** in the extended position. In addition or in lieu of the foregoing, the chute member **23** is operable move to the extended position via gravity acting on the chute member **23**.

(36) Referring now to FIGS. **12-14**, with detailed views shown as FIG. **12a**, FIG. **12b**, FIG. **13a**, and FIG. **14a**, the first and second ends **24** and **26** each optionally include a rotation stop **150** and a retention system **152** for preventing over rotation of and separation of the chute member **22** from

the fire suppression system **12**. In the embodiment illustrated in FIGS. **12-14** rotation stops **150** are formed or otherwise disposed on the base sidewalls **42** and **44** to limit the rotation of the chute member **22**. In addition, base upper guides **162** and base lower guides **164** are also formed on or otherwise disposed on the sidewalls **42** and **44** of the base **20**. Corresponding retaining guides **166** are located on the chute member sidewalls **50a** and **50b** and are positioned between and slideably engage the base upper and lower guides **162** and **164** on the base member **20**. In use, the base upper and lower guides **162** and **164**, in addition to providing a guide for rotation of the chute member **22**, the base upper and lower guides **162** and **164** prevent separation of the chute member **22** from the base member **20** in the event that both actuation devices **120a** and **120b** actuate.

(37) FIGS. **13** and **14** illustrate the rotation of the chute member **22**. In FIG. **13**, as the chute member **22** rotates so as to extinguish a fire on the rear burner **17**, the base upper and lower guides **162** and **164** disposed at the first end **24** engage the corresponding retaining guides **166**. The chute member **22** rotates in the direction of arrow **132** until the retaining guides **166** contact rotation stops **150**, at which point rotation stops. This also prevents separation of the chute member **22** from the base member **20**.

(38) Referring to FIG. **14**, as the chute member **22** rotates to the front open position to dispense the fire suppression powder **36** on the front burner, the base upper and lower guides **162** and **164** disposed on the second end **26** engage the corresponding retaining guides **166** on the base member **20**. The chute member **22** rotates in the direction of arrow **134** until the retaining guides **166** contact the rear rotation stops **150**. This prevents further rotation and prevents separation of the chute member **22** from the base member **20**.

(39) Turning to FIG. **15**, an embodiment of the fire suppression system **12** is illustrated having an end cap or cover **190** position to cover the first end **24**. According to embodiments disclosed herein, the cover **190** is secured to the fire suppression system **12** via a snap/friction fit, an adhesive or any other method, such as screws, that can securely fasten the cover **190** to the fire suppression system **12**. According to some embodiments, the cover **190** can be sized to extend around the sides of the fire suppression system **12**, can have a height greater than the height of the fire suppression system **12**, and further, a single cover can extend between multiple fire suppression systems **12** when mounted to an overhead support surface **16**. The cover **190** is optional and functions to provide an aesthetic appearance to the suppression system **12**.

(40) FIGS. **16** and **17** illustrate another embodiment of the fire suppression system **12** in which the base member **20** is formed having a varying height. For example, the base member **20** varies in height from the first end **24** to the second end **26**. In FIGS. **16** and **17**, the height of the base **20** member gradually increases from the first end **24** to the second end **26** forming a wedge shape appearance. Significant advantages result from this wedge shape. For example, the width **W** of the fire suppression system **12** can be narrowed in this embodiment (as compared to the embodiment illustrated in FIGS. **1-15**) so as to store the same volume of powder **36** inside the storage area **28**. In addition, because an increased volume of powder **36** is stored closer to the second end **26** rather than evenly distributed between the first and second ends **24** and **26**, the center of gravity of the fire suppression system **12** is closer to the second end **26**. This is important in situations where the magnets **32** closer to the first end **24** are unable to attach to an overhead support structure **16**. For example, referring to FIG. **18**, oftentimes the forward undersides of a microwave includes a recessed portion **16a** to enable unobstructed viewing of the cooking surface **18**. As a result, a suitable surface is not available for engagement with the magnets **32** located toward the first end **24**. Because the center of gravity is rearward and closer to the second end **26**, the magnets **32** closer to the second end **26** are able to support the fire suppression system **12** and resist the moment in the direction of arrow **192** since the moment is reduced due to a lesser amount of powder, and thus weight, cantilevering away from the support structure **16**. Furthermore, by having a narrower profile due to the wedge shape, to the extent the fire suppression system **12** covers a vent or light on the bottom of the microwave, the narrower profile will reduce the total overlap. In addition to

the above, by having the center of gravity closer to the second end, as the system **12** transitions to the dispensing position, the release of powder **36** occurs in a more controlled fashion, especially as the chute **22** and extension **23** are fully extended.

(41) It should be understood that the size of the fire suppression system **12** may vary. For example, the length **L** is approximately 6 inches and the width **W** is approximately 5 inches. However, it should be understood that these lengths may be different depending on the size of the stovetop cooking surface **18**, including the position of burners **15** and **17**, and the size of the overhead support surface **16**. For example, according to some embodiments, the length **L** may be selected between and including a range between 5 inches and 12 inches. And the width **W** may be selected between and including a range between 2 inches and 6 inches. It should be understood that in other embodiments, the length **L** and width **W** may be outside of these ranges. Furthermore, the height **H1** is about 1.5 inches, however, it should be understood that height **H1** may be otherwise (i.e., taller or shorter). Referring to FIGS. **17** and **18**, in some embodiments, the height of the wedge shaped base **20** at the first end **24** is 1.5 inches and the height **H2** at the second end is 2.25 inches, although the heights at both ends **24** and **26** may be different (i.e., taller or shorter).

(42) Referring now to FIGS. **19-23**, a stovetop support system **100** is employed to secure the fire suppression device **12** to an adjacently position wall or other support surface **101**, rather than the underside of the microwave **16**, such that the suppression device is disposed above the stovetop **18**. Referring specifically to FIGS. **21** and **22**, the wall support system **100** includes a base member **102** to be secured to the wall and a bracket member **104** configured to extend and otherwise cantilever outward from the base member **104**. In the embodiment illustrated in FIGS. **21** and **22**, the bracket member **104** is removably attachable to the base member **102** via an arm **106** that cantilevers outward from the base member **102**. Referring specifically to FIG. **22**, the connector arm **106** is formed integrally with the base member **102** and the bracket member **104** is removably detachable to the arm **106**. However, it should be understood that the wall support system **100** may be otherwise formed. For example, the wall support system **100** may be a single unitary piece attachable to the wall, or the bracket member **104** can be integrally formed with the connector arm **106**.

(43) Referring specifically to FIG. **22**, the fire suppression device **12** is configured to be secured to the bracket member **104** via a plurality of screws **108**. In the embodiment illustrated in FIGS. **22** and **23**, four screws **108** are used to secure the fire suppression device **12** to the bracket **104**; however, it should be understood that a greater or fewer number of screws **108** can be used. During installation openings **120** on the fire suppression device are aligned with corresponding openings on the bracket **104** so as to secure the fire suppression device **12** to the bracket **104** via the screws **108**. It should be further understood that other attachment mechanisms may be used. For example, one or more magnets (not illustrated) could be used to secure the fire suppression device **12** to the wall support system **100**. In other embodiments, an adhesive may be used.

(44) With continued reference to FIG. **22**, the position of the bracket **104** may be adjusted toward or away from the wall in the direction of arrows **110** via a slot **112**. In the embodiment illustrated in FIG. **22**, the slot **112** is formed on the bracket **104**; however, the slot **112** may be formed on the arm **106** or on both the bracket **104** and the arm **106**. Regardless of the configuration, a screw **114** can be used to adjust and secure the bracket **104** relative to the arm **106** so as to adjust the position of the fire suppression device **12** over the stovetop **18** (FIG. **1**).

(45) According to other embodiments, the wall support system **100** may be integrally formed with the fire suppression device **12**. For example, the wall support system **100** may extend from a rear wall **118** of the first suppression device **12** to facilitate securing the fire suppression device to the wall.

(46) Embodiments disclosed in FIGS. **19-23** enable the fire suppression device to be mounted above the stovetop cooking surface **18** without interfering with vents, lighting and having to accommodate irregular mounting surfaces oftentimes occur with overhead support structures **16**

such as microwaves and vent hoods.

(47) In the foregoing description of certain embodiments, specific terminology has been resorted to for the sake of clarity. However, the disclosure is not intended to be limited to the specific terms so selected, and it is to be understood that each specific term includes other technical equivalents which operate in a similar manner to accomplish a similar technical purpose.

(48) In the specification and claims, the word “comprising” is to be understood in its “open” sense, that is, in the sense of “including”, and thus not limited to its “closed” sense, that is the sense of “consisting only of”. A corresponding meaning is to be attributed to the corresponding words “comprise”, “comprised” and “comprises” where they appear.

(49) In addition, the foregoing describes only some embodiments of the invention(s), and alterations, modifications, additions and/or changes can be made thereto without departing from the scope and spirit of the disclosed embodiments, the embodiments being illustrative and not restrictive.

(50) Furthermore, invention(s) have described in connection with what are presently considered to be the most practical and preferred embodiments, it is to be understood that the invention is not to be limited to the disclosed embodiments, but on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the invention(s), as defined solely by the appended claims. Also, the various embodiments described above may be implemented in conjunction with other embodiments, e.g., aspects of one embodiment may be combined with aspects of another embodiment to realize yet other embodiments. Further, each independent feature or component of any given assembly may constitute an additional embodiment.

Claims

1. A stovetop fire suppression system for selectively releasing a fire suppressant powder onto a stovetop first or second burner, the stovetop fire suppression system comprising: a base member and a chute member secured to the base member at opposed first and second ends of the base member, the chute member movable between a storage position, whereby the chute member and the base member form a storage area for storing the fire suppressant powder therein, and a dispensing position, whereby the chute member is positioned to release the fire suppressant powder from the storage area; a first heat sensitive member disposed at the base section first end; a second heat sensitive member disposed at the base section second end; and wherein in response to actuation of the first heat sensitive member being exposed to a pre-determined temperature, the chute member is movable to the dispensing position to release the fire suppressant powder onto the first burner, and in response to actuation of the second heat sensitive member being exposed to the pre-determined temperature, the chute member is movable to the dispensing position to release the fire suppressant powder onto the second burner.
2. The stovetop fire suppression system of claim 1, wherein the chute member is pivotably secured to the base member at a base member first end and a base member second end.
3. The stovetop fire suppression system of claim 1, further comprising an extension member extending from the chute member in response to the second heat sensitive member being exposed to the pre-determined temperature to dispense the fire suppressant powder onto the second burner.
4. The stovetop fire suppression system of claim 3, wherein the extension member telescopically extends from the chute member.
5. The stovetop fire suppression system of claim 1, further comprising a metering bar extending laterally across the chute member to control the flow of the fire suppressant powder onto the applicable first or second burner.
6. The stovetop fire suppression system of claim 1, further comprising a plurality of support arms secured to the base member for securing the fire suppression system to an overhead support

structure disposed above the first and second burners.

7. The stovetop fire suppression system of claim 6, wherein the plurality of support arms are pivotably secured to the base member.

8. The stovetop fire suppression system of claim 6, wherein the overhead support structure is a microwave oven or a vent hood.

9. The stovetop fire suppression system of claim 6, wherein the plurality of support arms further include a magnet for securing the suppression system to an overhead support surface.

10. A stovetop fire suppression system for selectively releasing a fire suppressant powder onto a stovetop first or second burner, the stovetop fire suppression system comprising: a base member having a top wall, a front wall, a rear wall, and a pair of sidewalls extending between the front and rear walls; a chute member secured to the base member, the base member and the chute member forming a storage area for storing the fire suppressant powder; a first hinge rotatably secured to the base member adjacent the base member front wall and a second hinge rotatably secured to the base member adjacent the base member rear wall, the chute member secured to the first hinge and the second hinge at each respective end of the chute member; a first heat sensitive member disposed adjacent the base section front wall and a second heat sensitive member disposed adjacent the base section rear wall; and wherein in response to the first heat sensitive member being exposed to a pre-determined temperature, the chute member moves to the dispensing position to release the fire suppressant powder onto the first burner, and in response to of the second heat sensitive member being exposed to the pre-determined temperature, the chute member moves to the dispensing position to release the fire suppressant powder onto the second burner.

11. The stovetop fire suppression system of claim 10, wherein the heat sensitive members include a fuse, a charge cup and a charge cap, the charge cup and the charge cap forming an interior area to receive a portion of the fuse, such that upon actuation of the actuation member, the charge cup separates from the charge cap.

12. The stovetop fire suppression system of claim 10, further comprising an extension member extending from the chute member in response of to the second heat sensitive member being exposed to the pre-determined temperature to dispense the fire suppressant powder onto the second burner.

13. The stovetop fire suppression system of claim 12, wherein the extension member telescopingly extends from the chute member.

14. The stovetop fire suppression system of claim 10, wherein the chute member further comprises a pair of sidewalls and at least one metering bar extending laterally across the chute member to control the flow of fire suppressant powder onto the applicable first burner or the second burner.

15. The stovetop fire suppression system of claim 10, further comprising at least one retaining arm pivotably secured to the base member for securing the fire suppression system to a support surface disposed above the first and second burners.

16. The stovetop fire suppression system of claim 15, wherein the at least one retaining arm further includes a magnet for securing the fire suppression system to the support surface.

17. The stovetop fire suppression system of claim 10, wherein a height of the base member at the second end is greater than the height of the base member at the first end.

18. The stovetop fire suppression system of claim 17, wherein the height of the base member at the second end is 2.25 inches.

19. A stovetop fire suppression system for selectively releasing a fire suppressant powder onto a stovetop burner, the stovetop fire suppression system comprising: a base member having a first end and an opposed second end; a chute member having a bottom wall and rotatably secured adjacent the base member first end, the chute member and the base member forming a storage area for storing the fire suppressant powder; an extension member having a bottom wall and slidably engaged with the chute member; a heat sensitive member disposed adjacent the base member second end; and wherein in response to the heat sensitive member being exposed to a pre-

determined temperature, the chute member rotates from a storage position to a dispensing position and the extension member slidably and telescopingly extends from the chute member such that the bottom wall of the extension member and the bottom wall of the chute member are disposed adjacent to each other and form an extended and continuous ramp extending from the chute member to direct and release the fire suppressant powder onto the stovetop burner.

20. The stovetop fire suppression system of claim 19, wherein the chute member further comprises a pair of sidewalls and at least one metering bar extending laterally across the chute member to control the flow of fire suppressant powder.
